Annual Groundwater Monitoring Report

Appalachian Power Company

Mountaineer Plant

Bottom Ash Pond CCR Management Unit

Letart, WV

January 2022

Prepared by:
American Electric Power Service Corporation
1 Riverside Plaza
Columbus, Ohio 43215

APPALACHIAN POWER℠

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BOUNDLESS ENERGY℠

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Abbreviations:
ASD – Alternate Source Demonstration
CCR – Coal Combustion Residual
GWPS – Groundwater Protection Standard
SSI – Statistically Significant Increase
SSL – Statistically Significant Level
MTBAP – Mountaineer Bottom Ash Pond

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 the bottom ash pond CCR unit at Appalachian Power Company's, a wholly-owned subsidiary of American Electric Power Company (AEP), Mountaineer Power Plant. The USEPA's CCR rules require that the Annual Groundwater Monitoring and Corrective Action Report be posted to the operating record for the preceding year no later than January 31.

In general, the following activities were completed:

- An assessment monitoring program for Mountaineer Bottom Ash Pond (MT BAP) was established on April 13, 2018.
- Statistically significant level of lithium concentrations above groundwater protection standards were observed on January 8, 2019. An Assessment of Corrective Measures (ACM) was initiated on March 26, 2019. The ACM was completed on June 24, 2019 and the public meeting to discuss the proposed remedies was held on August 22, 2019. The ACM was revised on November 30, 2020 per federal EPA comments received via conference call discussions.
- Two semi-annual progress reports on selecting a remedy pursuant to § 257.97 were completed on March 20, 2021 and September 20, 2021. A final remedy was selected on December 22, 2021. The corrective action will be initiated within 90 days of selecting a remedy.
- Mountaineer BAP started 2021 in assessment of corrective measures (ACM). The BAP followed the assessment monitoring sampling requirements while in ACM. The BAP completed ACM and selected a remedy in December 2021, therefore, ending the year in the corrective action program. The corrective action monitoring program will be established and implemented within 90 days of the selection of remedy.
- Groundwater samples were collected in March, May, and October 2021 and analyzed for Appendix III and Appendix IV constituents, as specified in 40 CFR 257.95 *et seq.* and AEP's *Groundwater Sampling and Analysis Plan (2016)*.
- Analytical results for groundwater monitoring are included in **Appendix 1** along with groundwater flow rates and direction.
- Groundwater data underwent various validation tests, including tests for completeness, valid values, transcription errors, and consistent units.
- The Statistical Analysis Plan (SAP) for MT BAP was revised in January 2021 and is included in **Appendix 2** with a record of revisions.

- The October 2020 sampling event statistical analysis was completed in February 2021. The statistical analysis identified the following:
    - Lithium exceeded the groundwater protection standard (GWPS) at MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S.
    - Statistically significant increase (SSI) for boron above the upper prediction limit was observed at MW-1604D, MW-1604S, MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S
    - SSI for calcium above the upper prediction limit was observed at MW-1604S, MW-1605D, MW-1606D, and MW-1607D.
    - SSI for chloride above the upper prediction limit was observed at MW-1604S, MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S.
    - SSI for Fluoride above the upper prediction limit was observed at MW-1606S and MW-1607D.
    - SSI for Sulfate above the upper prediction limit was observed at MW-1604S, MW-1605D, MW-1606D, MW-1606S, and MW-1607D.
    - SSI for TDS above the upper prediction limit was observed at MW-1604D, MW-1604S, MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S.
- Notification of a statistically significant level (SSL) of constituent above groundwater protection standard (GWPS) was completed for Lithium for the October 2020 sampling event.
- The statistical analysis for the May 2021 assessment monitoring event was completed in September 2021 and is included in **Appendix 2**. The statistical analysis identified the following:
    - Lithium exceeded the groundwater protection standard (GWPS) at MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S.
    - SSI for boron above the upper prediction limit was observed at MW-1604D, MW-1604S, MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S.
    - SSI for calcium above the upper prediction limit was observed at MW-1604S, MW-1605D, and MW-1606D.
    - SSI for chloride above the upper prediction limit was observed at MW-1604D, MW-1604S, MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S.

- SSI for Fluoride above the upper prediction limit was observed at MW-1605S, MW-1606S, and MW-1607D.
- SSI for Sulfate above the upper prediction limit was observed at MW-1604S, MW-1605D, MW-1606D, and MW-1607D.
- SSI for TDS above the upper prediction limit was observed at MW-1604D, MW-1604S, MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S.

- Notification of a statistically significant level (SSL) of constituent above groundwater protection standard (GWPS) was completed for Lithium.
- The October 2021 sampling event data are still undergoing statistical analysis.

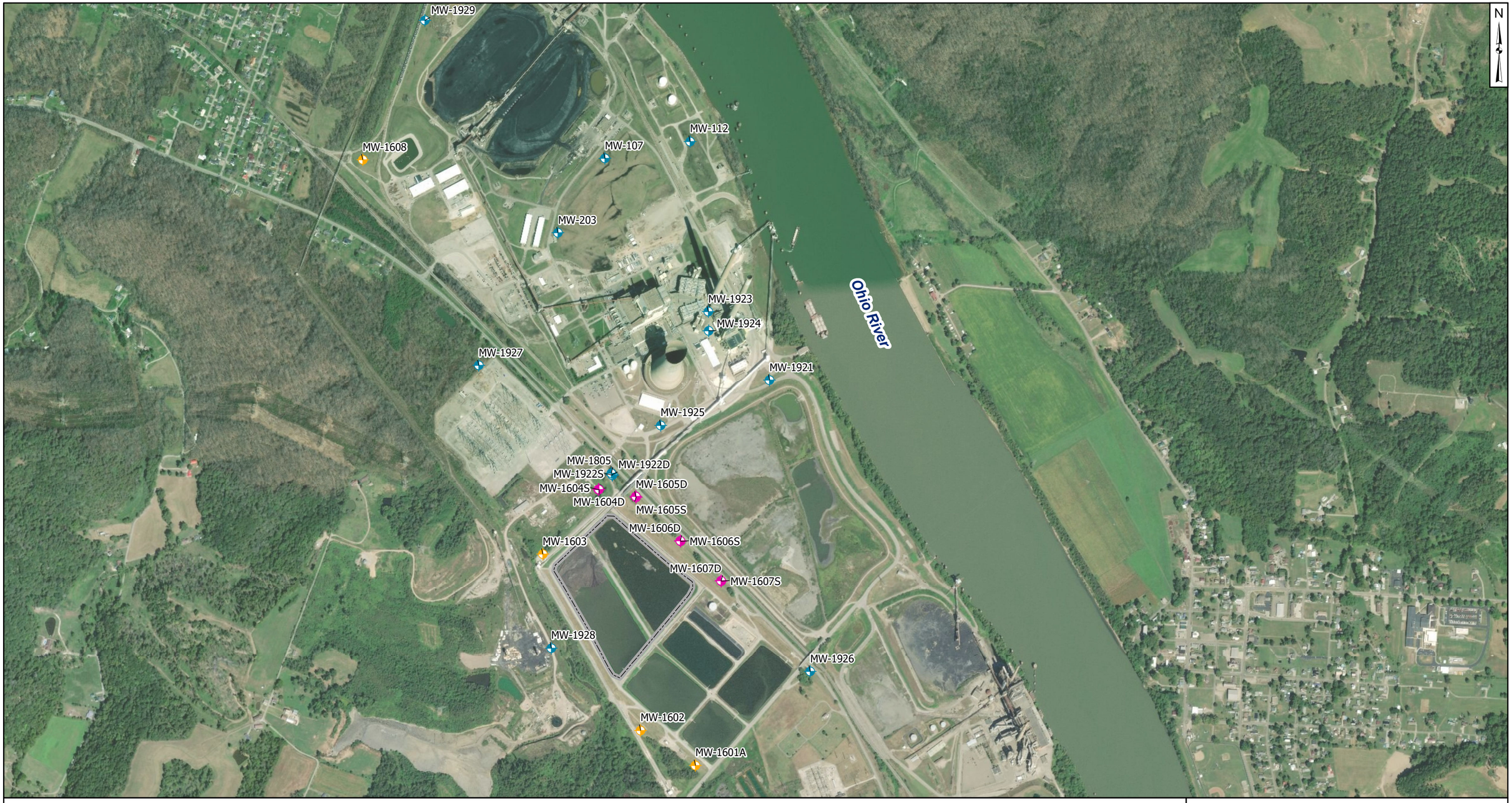
The major components of this annual report, to the extent applicable at this time, are presented in sections that follow:

- A map, aerial photograph or a drawing showing the CCR management unit(s), all groundwater monitoring wells and monitoring well identification numbers.
- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a statement as to why that happened.
- 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 SSI's or SSL's (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). This is not applicable.
- A summary of any transition between monitoring programs or an alternate monitoring frequency, 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 (**Appendix 4**).
- 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). This is not applicable.
- Other information required to be included in the annual report such as alternate source demonstration or assessment of corrective measures, if applicable

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

Figure 1 that follows depicts the PE-certified groundwater monitoring network, the monitoring well locations, and their corresponding identification numbers. The total groundwater monitoring network includes 4 up-gradient wells and 8 down-gradient wells. The monitoring well distribution adequately cover down-gradient and up-gradient areas as detailed in the *Ground Water Monitoring Well Network Evaluation* report that was placed in the American Electric Power CCR public internet site on March 9, 2017. Additional wells are shown in the figure that were installed as part of the Nature and Extent Characterization study.



Monitoring Well Network

- Compliance Sampling Location
- Background Sampling Location
- Nature and Extent Wells
- Bottom Ash Ponds

Notes

- Monitoring well coordinates provided by AEP.
- Site features based on information available in Ash Pond System-CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2016) provided by AEP.

1,000 500 0 1,000 Feet

Site Layout
CCR Bottom Ash Ponds
AEP Mountaineer Generating Plant
Letart, West Virginia

Geosyntec consultants

Columbus, Ohio | 2020/01/24

Figure **1**

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Mountaineer\AEP-Mountaineer_BAP_Site_Layout.mxd. ARevezzo. 1/24/2020. CHA8423/07/08.

III. Monitoring Wells Installed or Decommissioned

No monitoring wells were installed or decommissioned in 2021.

IV. Groundwater Quality Data and Static Water Elevation Data and Flow Rate

Appendix 1 contains tables showing the groundwater quality data collected during the establishment of background quality, detection monitoring, 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. It is important to note that MW-1928 although installed, was unable to be sampled due to very low groundwater yield the first attempt and the monitoring well being dry and not recovering on the following attempts.

V. Groundwater Quality Data Statistical Analysis

Statistical analysis of the October 2020 257.95(d)(1) (assessment monitoring of all Appendix III and detected Appendix IV parameters) resulted in a SSL above the GWPS for lithium in February 2021. A notice of this SSL was placed in the facility electronic operating record and on the publicly available internet site. The full statistical analysis report for this event is included in **Appendix 2**.

Statistical analysis of the May 2021 257.95(d)(1) sampling was completed in September 2021 and resulted in a SSL above GWPS for lithium. A notice of this SSL was placed in the facility electronic operating record and on the publicly available internet site. The full statistical analysis report for this event is included in **Appendix 2**.

The notice of statistically significant levels above the groundwater protection standard that were completed in 2021 can be found in **Appendix 4** and on the publicly available internet site at https://www.aep.com/environment/ccr.

VI. Alternative Source Demonstrations

No alternative source demonstrations were completed related to the assessment monitoring sampling events and statistical analysis.

VII. Discussion About Transition Between Monitoring Requirements or Alternate Monitoring Frequency

The Mountaineer Bottom Ash Pond CCR Unit transitioned from the Assessment Monitoring program to the Assessment of Corrective Measures program on March 26, 2019 due to the SSL above a GWPS on January 8, 2019. An Assessment of Corrective Measures Report was

completed on June 24, 2019. A public meeting was held on August 22, 2019 to present the assessment of corrective measure options. Two semi-annual reports describing the progress in selecting and designing the remedy were completed in March and September 2021. Semi-annual assessment monitoring sampling and analysis was continued in 2021. The selection of remedy was completed on December 22, 2021. The remedy will be initiated within 90 days of selection. The corrective action monitoring program will be established and implemented within 90 days. The notice for initiating assessment of corrective measures can be found in **Appendix 4** of this report and on the publicly available internet site at https://www.aep.com/environment/ccr. The selection of remedy report can also be found on the publicly available internet site.

Regarding defining an alternate monitoring frequency, the groundwater velocity and monitoring well production is high enough at this facility that no modification to the monitoring frequency is needed.

VIII. Other Information Required

All required information has been included in this annual groundwater monitoring report.

IX. Description of Any Problems Encountered in 2021 and Actions Taken

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

X. A Projection of Key Activities for the Upcoming Year

Key activities for 2022 include:

- Implement the remedy for groundwater corrective actions;
- Establish and implement the corrective action monitoring program (CAMP);
- Complete groundwater monitoring in accordance with the CAMP and the CCR Rule;
- Respond to any new data received in light of what the CCR rule requires; and
- Preparation of the next annual groundwater report.

APPENDIX 1

Tables and figures follow that show the groundwater monitoring data collected and rate and direction of groundwater flow. The dates that the samples were collected are also shown.

Table 1 - Groundwater Data Summary: MW-107
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
6/18/2018	Assessment	--	--	--	--	6.8	--	--
4/10/2019	Assessment	0.614	270	71.4	0.21	6.8	518	1,270
6/18/2019	Assessment	0.592	245	71.7	0.22	--	545	1,250
9/10/2019	Assessment	0.696	316	79.7	0.19	7.1	631	1,410
3/10/2020	Assessment	--	--	--	0.25	--	--	--
5/13/2020	Assessment	0.579	239	66.5	0.26	6.7	555	1,240
10/6/2020	Assessment	0.560	179	46.1	0.25	6.6	301	845
3/23/2021	Assessment	0.757	225	48.5	0.25	7.1	454	1,060
5/18/2021	Assessment	0.684	204	51.8	0.25	6.8	418	1,040
10/27/2021	Assessment	0.491	185	48.6	0.21	6.8	273	850

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-107
Mountaineer - BAP
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
4/10/2019	Assessment	< 0.1 U1	1.08	68.3	< 0.1 U1	0.05 J1	0.4 J1	1.03	1.854	0.21	0.4 J1	0.02 J1	< 0.002 U1	< 2 U1	0.7 J1	< 0.5 U1
6/18/2019	Assessment	0.03 J1	0.44	69.4	< 0.02 U1	0.05	0.08 J1	1.45	0.2284	0.22	0.04 J1	< 0.009 U1	< 0.002 U1	< 0.4 U1	0.6	< 0.1 U1
9/10/2019	Assessment	0.02 J1	0.44	67.8	< 0.02 U1	0.04 J1	0.07 J1	1.08	3.5	0.19	< 0.05 U1	0.00358	< 0.002 U1	< 0.4 U1	0.8	< 0.1 U1
3/10/2020	Assessment	< 0.02 U1	0.42	48.2	< 0.02 U1	0.03 J1	0.1 J1	0.741	0.161	0.25	< 0.05 U1	0.00410	< 0.002 U1	< 0.4 U1	0.7	< 0.1 U1
5/13/2020	Assessment	0.03 J1	0.59	48.1	--	0.07	0.2 J1	1.90	0.524	0.26	< 0.05 U1	0.00336	--	0.7 J1	0.5	< 0.1 U1
10/6/2020	Assessment	< 0.02 U1	0.34	35.4	--	0.02 J1	0.548	0.219	1.111	0.25	< 0.05 U1	0.00308	< 0.002 U1	< 0.4 U1	1.0	< 0.1 U1
3/23/2021	Assessment	0.03 J1	0.33	42.4	< 0.007 U1	0.03 J1	0.355	0.154	0.1427	0.25	< 0.05 U1	0.00370	< 0.002 U1	0.7 J1	0.4	< 0.04 U1
5/18/2021	Assessment	0.06 J1	0.25	39.0	< 0.007 U1	0.031	0.20	0.169	0.41	0.25	< 0.05 U1	0.00350	< 0.002 U1	0.2 J1	0.47 J1	< 0.04 U1
10/27/2021	Assessment	< 0.02 U1	0.30	37.1	< 0.007 U1	0.024	0.58	0.269	0.81	0.21	< 0.05 U1	0.00357	< 0.002 U1	0.6	0.97	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-112
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
6/19/2019	Assessment	0.283	142	37.2	0.24	7.2	255	668
5/13/2020	Assessment	0.246	108	33.3	0.29	6.8	205	533
3/24/2021	Assessment	0.315	170	45.6	0.32	7.1	333	753
5/19/2021	Assessment	0.324	159	45.6	0.30	7.0	347	800

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-112
Mountaineer - BAP
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
6/19/2019	Assessment	< 0.02 U1	0.40	76.9	< 0.02 U1	< 0.01 U1	0.2 J1	0.02 J1	0.0507	0.24	0.02 J1	< 0.009 U1	< 0.002 U1	11.2	1.5	< 0.1 U1
5/13/2020	Assessment	< 0.02 U1	0.33	59.7	--	< 0.01 U1	0.236	0.02 J1	0.08899	0.29	< 0.05 U1	0.00151	--	5.62	0.9	< 0.1 U1
3/24/2021	Assessment	0.03 J1	0.41	73.7	< 0.007 U1	0.007 J1	0.419	0.03 J1	0.13538	0.32	< 0.05 U1	0.00180	< 0.002 U1	9.18	0.7	< 0.04 U1
5/19/2021	Assessment	0.06 J1	0.38	72.7	< 0.007 U1	0.005 J1	0.34	0.023	0.78	0.3	< 0.05 U1	0.00186	< 0.002 U1	8.3	0.85	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-203
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
6/18/2019	Assessment	0.1 J1	115	31.4	0.22	7.2	86.8	472
9/11/2019	Assessment	0.104	106	10.1	0.22	7.1	65.5	435
3/11/2020	Assessment	--	--	--	0.25	7.0	--	--
5/13/2020	Assessment	0.094	103	12.6	0.28	7.0	77.1	434
10/6/2020	Assessment	0.085	92.3	12.5	0.32	6.8	60.0	423
3/23/2021	Assessment	0.090	98.1	15.6	0.32	7.3	56.2	353
5/18/2021	Assessment	0.077	101	60.8	0.29	7.1	54.8	430
10/27/2021	Assessment	0.085	95.0	27.2	0.28	7.2	64.1	380

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-203
Mountaineer - BAP
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
6/18/2019	Assessment	< 0.02 U1	0.30	34.7	< 0.02 U1	< 0.01 U1	0.2 J1	0.054	0.1139	0.22	0.113	< 0.009 U1	< 0.002 U1	2 J1	1.4	< 0.1 U1
9/11/2019	Assessment	0.02 J1	0.33	31.6	< 0.02 U1	< 0.01 U1	0.2 J1	0.139	0.381	0.22	0.2 J1	0.00230	< 0.002 U1	1 J1	1.1	< 0.1 U1
3/11/2020	Assessment	< 0.02 U1	0.25	33.4	< 0.02 U1	< 0.01 U1	0.217	0.05 J1	0.824	0.25	0.1 J1	0.00237	< 0.002 U1	1 J1	1.4	< 0.1 U1
5/13/2020	Assessment	< 0.02 U1	0.29	31.0	--	< 0.01 U1	0.204	0.03 J1	0.4071	0.28	< 0.05 U1	0.00227	--	1 J1	1.1	< 0.1 U1
10/6/2020	Assessment	0.03 J1	0.28	24.6	--	< 0.01 U1	0.360	0.107	1.568	0.32	0.226	0.00205	< 0.002 U1	0.9 J1	0.8	< 0.1 U1
3/23/2021	Assessment	0.03 J1	0.29	26.7	< 0.007 U1	0.007 J1	0.211	0.04 J1	0.501	0.32	< 0.05 U1	0.00194	< 0.002 U1	1 J1	1.3	< 0.04 U1
5/18/2021	Assessment	0.06 J1	0.27	28.2	< 0.007 U1	0.005 J1	0.19 J1	0.027	3.67	0.29	< 0.05 U1	0.00199	< 0.002 U1	1	1.08	< 0.04 U1
10/27/2021	Assessment	< 0.02 U1	0.25	26.5	< 0.007 U1	0.005 J1	0.44	0.015 J1	0.46	0.28	< 0.05 U1	0.00224	< 0.002 U1	1.1	1.05	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1601A
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/28/2016	Background	0.211	141	21.8	0.17	7.6	130	538
11/1/2016	Background	0.170	122	17.3	0.19	7.2	136	534
12/19/2016	Background	0.196	130	20.4	0.18	7.2	141	544
2/20/2017	Background	0.253	117	31.0	0.20	7.2	135	568
3/27/2017	Background	0.515	119	42.1	0.19	7.1	148	530
4/18/2017	Background	0.259	130	55.3	0.19	7.1	169	580
5/15/2017	Background	0.224	159	74.4	0.18	7.7	197	676
6/12/2017	Background	0.285	138	57.7	0.18	6.9	170	586
10/31/2017	Detection	0.224	137	49.4	0.19	7.1	169	564
5/10/2018	Assessment	--	--	--	0.16	7.3	--	--
9/20/2018	Assessment	0.251	148	51.0	0.19	7.1	189	638
4/9/2019	Assessment	0.224	155	44.4	0.1 J1	7.1	176	692
6/20/2019	Assessment	0.160	165	48.6	0.16	7.3	207	730
9/11/2019	Assessment	0.153	164	45.8	0.14	7.0	221	749
3/11/2020	Assessment	--	--	--	0.14	6.7	--	--
5/15/2020	Assessment	0.136	185	22.7	0.16	6.7	274	814
10/8/2020	Assessment	0.114	178	18.4	0.13	6.8	252	748
3/22/2021	Assessment	0.128	179	16.0	0.15	7.0	241	738
5/20/2021	Assessment	0.122	173	16.1	0.13	6.6	241	750
10/28/2021	Assessment	0.121	173	13.0	0.12	6.9	222	700

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1601A
Mountaineer - BAP
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
9/28/2016	Background	0.05	0.62	46.6	< 0.005 U1	0.01 J1	0.3	0.116	0.43758	0.17	0.132	0.002	< 0.002 U1	2.61	1.3	0.053
11/1/2016	Background	0.05 J1	0.61	45.2	< 0.005 U1	0.02 J1	1.3	0.086	2.011	0.19	0.108	0.001	< 0.002 U1	2.36	1.1	0.058
12/19/2016	Background	0.05 J1	0.65	47.0	< 0.005 U1	0.02 J1	0.806	0.282	1.544	0.18	0.383	< 0.0002 U1	< 0.002 U1	0.93	1.1	0.04 J1
2/20/2017	Background	0.03 J1	0.55	41.4	< 0.005 U1	0.02 J1	0.198	0.132	0.313	0.20	0.139	0.005	< 0.002 U1	1.42	1.4	0.070
3/27/2017	Background	0.03 J1	0.49	40.2	< 0.005 U1	0.01 J1	0.225	0.097	0.495	0.19	0.069	0.006	< 0.002 U1	2.85	1.0	0.03 J1
4/18/2017	Background	0.03 J1	0.59	47.5	< 0.004 U1	0.01 J1	0.170	0.093	0.814	0.19	0.052	0.007	0.003 J1	1.53	1.5	0.04 J1
5/15/2017	Background	0.04 J1	0.79	56.9	< 0.004 U1	0.02 J1	0.166	0.154	1.279	0.18	0.141	< 0.0002 U1	< 0.002 U1	2.04	1.3	0.04 J1
6/12/2017	Background	0.04 J1	0.61	49.0	< 0.004 U1	0.02 J1	0.152	0.098	0.599	0.18	0.063	0.004	< 0.002 U1	1.13	1.5	0.04 J1
5/10/2018	Assessment	0.03 J1	0.55	63.9	< 0.004 U1	0.02 J1	0.153	0.083	0.767	0.16	0.034	0.004	< 0.002 U1	0.99	1.5	0.03 J1
9/20/2018	Assessment	0.03 J1	0.58	55.3	< 0.004 U1	0.02 J1	0.131	0.059	0.696	0.19	0.005 J1	0.004	< 0.002 U1	0.76	1.1	0.04 J1
4/9/2019	Assessment	< 0.1 U1	0.61	52.0	< 0.1 U1	< 0.05 U1	0.2 J1	0.2 J1	1.168	0.1 J1	< 0.1 U1	0.02 J1	< 0.002 U1	< 2 U1	1.1	< 0.5 U1
6/20/2019	Assessment	0.03 J1	0.63	63.1	< 0.02 U1	0.02 J1	0.314	0.03 J1	0.45	0.16	0.07 J1	< 0.009 U1	< 0.002 U1	0.9 J1	1.3	< 0.1 U1
9/11/2019	Assessment	0.03 J1	0.62	65.3	< 0.02 U1	0.02 J1	0.370	0.03 J1	1.168	0.14	< 0.05 U1	0.00184	< 0.002 U1	0.9 J1	1.1	< 0.1 U1
3/11/2020	Assessment	< 0.02 U1	0.58	64.9	< 0.02 U1	0.01 J1	0.205	0.02 J1	1.685	0.14	< 0.05 U1	0.00183	< 0.002 U1	1 J1	1.4	< 0.1 U1
5/15/2020	Assessment	0.03 J1	0.57	67.8	--	0.02 J1	0.1 J1	< 0.02 U1	0.553	0.16	< 0.05 U1	0.00190	--	0.7 J1	0.9	< 0.1 U1
10/8/2020	Assessment	0.03 J1	0.59	61.0	--	0.02 J1	0.328	0.04 J1	0.0868	0.13	< 0.05 U1	0.00168	< 0.002 U1	0.7 J1	0.9	< 0.1 U1
3/22/2021	Assessment	0.03 J1	0.55	65.4	< 0.007 U1	0.02 J1	0.456	0.02 J1	1.17	0.15	< 0.05 U1	0.00198	< 0.002 U1	3.96	0.9	< 0.04 U1
5/20/2021	Assessment	0.08 J1	0.54	67.7	< 0.007 U1	0.016 J1	0.23	0.012 J1	0.78	0.13	< 0.05 U1	0.00194	< 0.002 U1	0.5	0.94	< 0.04 U1
10/28/2021	Assessment	0.03 J1	0.55	64.4	< 0.007 U1	0.016 J1	0.28	0.012 J1	1.43	0.12	< 0.05 U1	0.00226	< 0.002 U1	0.5	0.85	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1602
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/28/2016	Background	0.141	74.9	7.95	0.17	7.3	167	412
11/1/2016	Background	0.115	71.1	8.70	0.18	6.6	178	424
12/19/2016	Background	0.120	74.7	9.91	0.18	6.9	188	470
2/20/2017	Background	0.093	69.6	9.76	0.19	6.5	193	494
3/27/2017	Background	0.240	86.6	12.0	0.19	6.3	231	504
4/17/2017	Background	0.107	91.1	12.1	0.20	6.7	248	520
5/15/2017	Background	0.115	105	12.6	0.19	7.0	273	598
6/12/2017	Background	0.153	94.0	11.8	0.20	6.8	269	588
10/31/2017	Detection	0.093	78.1	8.41	0.23	6.7	184	468
5/10/2018	Assessment	--	--	--	0.23	7.0	--	--
9/20/2018	Assessment	0.109	81.6	10.5	0.25	7.1	195	502
4/9/2019	Assessment	0.09 J1	99.8	11.4	0.20	6.6	221	595
6/20/2019	Assessment	0.1 J1	91.2	10.7	0.23	7.0	267	606
9/11/2019	Assessment	0.111	95.1	10.4	0.21	6.7	259	603
3/11/2020	Assessment	--	--	--	0.23	6.4	--	--
5/15/2020	Assessment	0.118	99.2	9.67	0.25	6.4	264	595
10/8/2020	Assessment	0.108	96.7	8.61	0.23	6.5	253	575
3/22/2021	Assessment	0.110	96.9	8.58	0.29	6.8	238	550
5/20/2021	Assessment	0.117	87.7	7.54	0.27	6.5	238	580
10/28/2021	Assessment	0.127	91.3 M1, P3	7.49	0.26	6.9	222	530

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.
P3: The precision on the matrix spike duplicate (MSD) was above acceptance limits.

Table 1 - Groundwater Data Summary: MW-1602
Mountaineer - BAP
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
9/28/2016	Background	0.02 J1	0.40	27.1	< 0.005 U1	0.02 J1	0.2	0.217	0.275	0.17	0.255	0.013	< 0.002 U1	0.90	0.08 J1	0.092
11/1/2016	Background	0.02 J1	0.35	28.7	< 0.005 U1	0.02 J1	0.6	0.108	2.086	0.18	0.070	0.014	< 0.002 U1	1.48	0.1	0.116
12/19/2016	Background	0.02 J1	0.43	28.9	< 0.005 U1	0.01 J1	1.65	0.225	0.7053	0.18	0.272	0.008	< 0.002 U1	0.56	0.08 J1	0.02 J1
2/20/2017	Background	< 0.01 U1	0.35	26.9	< 0.005 U1	0.01 J1	0.194	0.052	0.75	0.19	0.052	0.013	< 0.002 U1	0.63	0.1	0.02 J1
3/27/2017	Background	0.01 J1	0.34	29.9	< 0.005 U1	0.02 J1	0.456	0.059	0.679	0.19	0.063	0.019	< 0.002 U1	1.49	0.2	0.01 J1
4/17/2017	Background	0.02 J1	0.36	32.1	< 0.004 U1	0.01 J1	0.240	0.049	0.337	0.20	0.087	0.017	0.002 J1	0.66	0.1	0.01 J1
5/15/2017	Background	0.02 J1	0.42	33.2	< 0.004 U1	0.02 J1	0.136	0.072	1.9116	0.19	0.078	0.009	< 0.002 U1	1.28	0.1	0.04 J1
6/12/2017	Background	0.03 J1	0.36	33.1	< 0.004 U1	0.01 J1	0.408	0.066	0.2898	0.20	0.061	0.018	< 0.002 U1	0.53	0.1	0.02 J1
5/10/2018	Assessment	0.02 J1	0.34	31.2	0.005 J1	0.01 J1	0.121	0.036	0.342	0.23	0.038	0.015	< 0.002 U1	0.71	0.1	0.03 J1
9/20/2018	Assessment	0.01 J1	0.32	26.7	< 0.004 U1	0.01 J1	0.210	0.02 J1	0.683	0.25	0.01 J1	0.012	< 0.002 U1	0.84	0.07 J1	0.02 J1
4/9/2019	Assessment	< 0.1 U1	0.4 J1	29.0	< 0.1 U1	< 0.05 U1	< 0.2 U1	< 0.1 U1	1.0509	0.20	< 0.1 U1	0.02 J1	< 0.002 U1	3 J1	0.2 J1	< 0.5 U1
6/20/2019	Assessment	0.02 J1	0.33	29.5	< 0.02 U1	0.01 J1	0.2 J1	0.03 J1	0.1531	0.23	0.07 J1	0.01 J1	< 0.002 U1	0.9 J1	0.1 J1	< 0.1 U1
9/11/2019	Assessment	< 0.02 U1	0.31	27.3	< 0.02 U1	0.01 J1	0.2 J1	< 0.02 U1	0.451	0.21	< 0.05 U1	0.00979	< 0.002 U1	1 J1	0.1 J1	< 0.1 U1
3/11/2020	Assessment	< 0.02 U1	0.31	28.9	< 0.02 U1	< 0.01 U1	0.261	< 0.02 U1	0.4389	0.23	0.05 J1	0.0117	< 0.002 U1	1 J1	0.2 J1	< 0.1 U1
5/15/2020	Assessment	0.02 J1	0.31	30.0	--	0.01 J1	0.2 J1	0.04 J1	0.5819	0.25	< 0.05 U1	0.0126	--	0.9 J1	0.09 J1	< 0.1 U1
10/8/2020	Assessment	0.04 J1	0.33	25.7	--	0.01 J1	0.311	0.04 J1	0.194	0.23	< 0.05 U1	0.0104	< 0.002 U1	0.9 J1	0.08 J1	< 0.1 U1
3/22/2021	Assessment	0.02 J1	0.31	26.2	< 0.007 U1	0.02 J1	0.531	0.03 J1	0.8182	0.29	0.06 J1	0.0109	< 0.002 U1	1 J1	0.1 J1	< 0.04 U1
5/20/2021	Assessment	0.07 J1	0.30	25.9	< 0.007 U1	0.012 J1	0.65	0.018 J1	0.58	0.27	< 0.05 U1	0.0118	< 0.002 U1	1.1	0.10 J1	< 0.04 U1
10/28/2021	Assessment	< 0.02 U1	0.31	24.5	< 0.007 U1	0.011 J1	0.47	0.013 J1	0.86	0.26	< 0.05 U1	0.0129	< 0.002 U1	1.1	0.11 J1	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1603
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/28/2016	Background	0.327	124	15.7	0.07 J1	7.3	388	618
11/2/2016	Background	0.334	146	22.8	0.08 J1	6.6	483	814
12/19/2016	Background	0.495	164	30.1	0.1 J1	7.4	504	908
2/20/2017	Background	0.543	169	27.4	0.1 J1	6.8	485	962
3/28/2017	Background	0.781	181	25.2	0.1 J1	6.6	476	918
4/17/2017	Background	0.519	170	22.9	0.1 J1	6.9	474	910
5/15/2017	Background	0.546	187	24.7	0.1 J1	7.4	470	910
6/12/2017	Background	0.535	176	20.5	0.1 J1	7.0	482	878
10/31/2017	Detection	0.360	171	13.1	0.1 J1	6.6	553	872
5/10/2018	Assessment	--	--	--	0.09 J1	6.6	--	--
9/20/2018	Assessment	0.324	167	14.0	0.09	6.6	524	920
4/9/2019	Assessment	0.408	182	15.8	0.11	6.8	429	918
6/20/2019	Assessment	0.299	162	10.9	0.09	7.0	434	878
9/11/2019	Assessment	0.308	156	10.0	0.09	6.7	421	853
3/11/2020	Assessment	--	--	--	0.06	6.4	--	--
5/15/2020	Assessment	0.275	161	10.7	0.09	6.5	387	809
10/8/2020	Assessment	0.221	139	8.86	0.07	6.3	332	692
3/22/2021	Assessment	0.218	177	9.93	0.09	6.7	364	840
5/20/2021	Assessment	0.232	162	10.3	0.08	6.3	390	820
10/28/2021	Assessment	0.328	176	18.7	0.09	6.9	372	860

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1603
Mountaineer - BAP
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
9/28/2016	Background	0.02 J1	0.36	29.5	< 0.005 U1	0.02 J1	0.3	0.317	0.0927	0.07 J1	0.253	0.021	< 0.002 U1	1.21	0.1	0.02 J1
11/2/2016	Background	0.02 J1	0.36	34.1	< 0.005 U1	0.01 J1	0.4	0.166	2.593	0.08 J1	0.131	0.022	< 0.002 U1	2.47	0.4	0.04 J1
12/19/2016	Background	0.03 J1	0.40	33.1	< 0.005 U1	0.01 J1	2.37	0.134	0.966	0.1 J1	0.084	0.010	< 0.002 U1	0.36	0.3	0.063
2/20/2017	Background	0.01 J1	0.37	31.7	< 0.005 U1	0.01 J1	0.229	0.105	0.384	0.1 J1	0.077	0.012	< 0.002 U1	0.37	0.4	0.02 J1
3/28/2017	Background	0.02 J1	0.36	32.9	< 0.005 U1	0.01 J1	0.545	0.093	0.2071	0.1 J1	0.080	0.020	< 0.002 U1	0.72	0.2	< 0.01 U1
4/17/2017	Background	0.03 J1	0.52	33.7	0.005 J1	0.01 J1	0.304	0.377	0.6154	0.1 J1	0.308	0.018	0.003 J1	0.27	0.2	0.01 J1
5/15/2017	Background	0.03 J1	0.43	33.0	< 0.004 U1	0.01 J1	0.415	0.101	1.6052	0.1 J1	0.079	0.012	< 0.002 U1	0.71	0.1	0.02 J1
6/12/2017	Background	0.03 J1	0.35	32.0	< 0.004 U1	0.01 J1	0.963	0.085	0.776	0.1 J1	0.059	0.021	< 0.002 U1	0.29	0.1	0.01 J1
5/10/2018	Assessment	0.02 J1	0.31	41.3	0.007 J1	0.01 J1	0.099	0.054	0.363	0.09 J1	0.042	0.021	< 0.002 U1	0.14	0.2	0.02 J1
9/20/2018	Assessment	0.02 J1	0.26	35.9	< 0.004 U1	0.01 J1	0.102	0.032	0.881	0.09	0.02 J1	0.022	< 0.002 U1	0.07 J1	0.4	0.01 J1
4/9/2019	Assessment	< 0.1 U1	0.56	32.4	< 0.1 U1	< 0.05 U1	0.4 J1	0.622	2.389	0.11	0.5 J1	0.030	< 0.002 U1	< 2 U1	0.4 J1	< 0.5 U1
6/20/2019	Assessment	0.03 J1	0.41	30.7	< 0.02 U1	0.01 J1	0.249	0.204	0.2974	0.09	0.176	< 0.009 U1	< 0.002 U1	0.9 J1	0.3	< 0.1 U1
9/11/2019	Assessment	0.03 J1	0.35	30.9	< 0.02 U1	0.01 J1	0.205	0.112	1.07	0.09	0.1 J1	0.0150	< 0.002 U1	0.5 J1	0.2	< 0.1 U1
3/11/2020	Assessment	< 0.02 U1	0.29	30.4	< 0.02 U1	0.01 J1	0.224	0.061	2.036	0.06	0.08 J1	0.0175	< 0.002 U1	< 0.4 U1	0.2 J1	< 0.1 U1
5/15/2020	Assessment	< 0.02 U1	0.27	30.0	--	0.01 J1	0.210	0.094	0.701	0.09	0.07 J1	0.0182	--	< 0.4 U1	0.2 J1	< 0.1 U1
10/8/2020	Assessment	0.15	0.41	26.8	--	0.01 J1	0.552	0.392	0.0948	0.07	0.310	0.0142	< 0.002 U1	< 0.4 U1	0.2	< 0.1 U1
3/22/2021	Assessment	0.03 J1	0.32	31.2	< 0.007 U1	0.01 J1	0.341	0.110	1.916	0.09	0.1 J1	0.0153	< 0.002 U1	0.1 J1	0.1 J1	< 0.04 U1
5/20/2021	Assessment	0.08 J1	0.29	30.9	< 0.007 U1	0.012 J1	0.74	0.152	0.49	0.08	0.16 J1	0.0154	< 0.002 U1	0.1 J1	0.13 J1	< 0.04 U1
10/28/2021	Assessment	0.02 J1	0.23	29.5	< 0.007 U1	0.010 J1	0.45	0.033	1.59	0.09	< 0.05 U1	0.0158	< 0.002 U1	0.1 J1	0.14 J1	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1604D
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/26/2016	Background	3.54	306	111	0.18	7.3	865	1,650
11/1/2016	Background	2.98	277	116	0.19	7.3	866	1,580
12/20/2016	Background	3.07	289	118	0.17	7.4	863	1,630
2/21/2017	Background	3.01	260	111	0.21	7.2	823	1,640
3/28/2017	Background	4.18	293	112	0.19	7.2	814	1,660
4/19/2017	Background	2.97	269	109	0.20	7.2	797	1,570
5/16/2017	Background	2.95	300	112	0.18	7.9	828	1,610
6/13/2017	Background	2.98	283	118	0.18	7.5	856	1,620
10/30/2017	Detection	2.60	295	116	0.20	7.2	833	1,570
1/22/2018	Detection	3.07	291	118	--	7.2	862	1,620
5/9/2018	Assessment	--	--	--	0.21	7.1	--	--
9/19/2018	Assessment	1.33	144	41.3	0.19	7.2	313	838
4/9/2019	Assessment	2.82	236	100	0.15	6.9	539	1,300
6/19/2019	Assessment	1.66	196	93.0	0.14	7.2	461	1,110
9/9/2019	Assessment	2.18	217	82.2	0.17	7.0	551	1,210
3/10/2020	Assessment	--	--	--	0.22	6.4	--	--
5/14/2020	Assessment	4.65	205	113	0.25	6.7	667	1,390
10/9/2020	Assessment	3.58	188	57.9	0.20	6.7	483	1,080
3/24/2021	Assessment	3.68	175	70.4	0.24	7.2	489	1,080
5/20/2021	Assessment	4.02	174	80.5	0.24	7.0	508	1,160
10/27/2021	Assessment	3.32	186	48.7	0.15	6.9	314	250

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1604D
Mountaineer - BAP
Appendix IV Constituents

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
9/26/2016	Background	0.14	0.48	29.1	< 0.005 U1	0.14	0.4	1.76	1.38	0.18	0.106	0.059	< 0.002 U1	19.8	0.9	0.235
11/1/2016	Background	0.15	0.59	28.4	< 0.005 U1	0.17	0.5	1.78	1.056	0.19	0.039	0.057	0.036	20.0	1.0	0.261
12/20/2016	Background	0.14	0.57	30.3	< 0.005 U1	0.17	0.798	1.92	1.45	0.17	0.02 J1	0.045	< 0.002 U1	20.8	1.0	0.283
2/21/2017	Background	0.11	0.45	26.2	< 0.005 U1	0.13	0.297	1.85	0.824	0.21	0.02 J1	0.050	< 0.002 U1	17.4	0.7	0.264
3/28/2017	Background	0.13	0.41	28.9	< 0.005 U1	0.13	0.416	1.74	0.806	0.19	0.022	0.064	< 0.002 U1	18.2	0.7	0.336
4/19/2017	Background	0.12	0.49	27.9	< 0.004 U1	0.09	0.323	1.60	1.537	0.20	0.584	0.051	0.003 J1	17.4	0.7	0.217
5/16/2017	Background	0.13	0.54	27.5	< 0.004 U1	0.10	0.079	1.60	3.489	0.18	0.027	0.052	< 0.002 U1	18.1	0.5	0.231
6/13/2017	Background	0.15	0.46	27.9	< 0.008 U1	0.15	0.180	1.95	1.058	0.18	0.03 J1	0.058	< 0.002 U1	18.3	0.8	0.256
5/9/2018	Assessment	0.04 J1	0.34	32.0	< 0.004 U1	0.04	0.195	0.314	0.687	0.21	0.035	0.024	< 0.002 U1	2.05	1.4	0.02 J1
9/19/2018	Assessment	0.04 J1	0.29	37.0	< 0.004 U1	0.03	0.169	0.203	0.316	0.19	0.303	0.016	< 0.002 U1	1.57	3.8	0.02 J1
4/9/2019	Assessment	< 0.1 U1	0.4 J1	42.5	< 0.1 U1	0.05 J1	0.2 J1	0.345	0.957	0.15	< 0.1 U1	0.038	< 0.002 U1	< 2 U1	2.0	< 0.5 U1
6/19/2019	Assessment	0.04 J1	0.28	52.9	< 0.02 U1	0.04 J1	0.212	0.242	0.1922	0.14	0.07 J1	< 0.009 U1	< 0.002 U1	1 J1	3.1	< 0.1 U1
9/9/2019	Assessment	0.03 J1	0.30	55.6	< 0.02 U1	0.03 J1	0.345	0.181	0.464	0.17	< 0.05 U1	0.0188	< 0.002 U1	2 J1	3.4	< 0.1 U1
3/10/2020	Assessment	0.02 J1	0.31	34.2	< 0.02 U1	0.03 J1	0.311	0.138	0.834	0.22	< 0.05 U1	0.0235	< 0.002 U1	1 J1	0.8	< 0.1 U1
5/14/2020	Assessment	0.03 J1	0.28	34.1	--	0.03 J1	0.729	0.117	0.1393	0.25	< 0.05 U1	0.0218	--	1 J1	0.7	< 0.1 U1
10/9/2020	Assessment	0.03 J1	0.29	27.3	--	0.02 J1	1.02	0.140	0.123	0.20	0.06 J1	0.0190	< 0.002 U1	1 J1	3.0	< 0.1 U1
3/25/2021	Assessment	0.04 J1	0.28	26.5	< 0.007 U1	0.02 J1	0.219	0.105	0.677	0.24	< 0.05 U1	0.0217	< 0.002 U1	2 J1	1.2	< 0.04 U1
5/20/2021	Assessment	0.08 J1	0.25	24.4	< 0.007 U1	0.022	0.26	0.091	0.32	0.24	< 0.05 U1	0.0213	< 0.002 U1	1.4	1.39	< 0.04 U1
10/27/2021	Assessment	0.03 J1	0.29	24.1	< 0.007 U1	0.027	0.28	0.134	0.61	0.15	< 0.05 U1	0.0213	< 0.002 U1	1.5	1.49	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1604S
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/26/2016	Background	2.12	178	83.9	0.20	7.0	602	1,280
11/1/2016	Background	1.90	167	99.4	0.21	7.1	626	1,310
12/20/2016	Background	2.35	165	99.9	0.19	7.2	618	1,300
2/21/2017	Background	3.08	168	112	0.21	7.0	634	1,430
3/28/2017	Background	4.04	180	116	0.20	6.9	663	1,420
4/19/2017	Background	3.68	191	130	0.21	7.0	716	1,500
5/16/2017	Background	3.63	202	122	0.19	7.7	708	1,510
6/13/2017	Background	3.48	182	112	0.20	7.5	685	1,400
10/30/2017	Detection	2.17	167	85.3	0.21	7.1	544	1,150
1/22/2018	Detection	2.36	--	105	--	6.9	602	1,312
5/9/2018	Assessment	--	--	--	0.22	7.4	--	--
9/19/2018	Assessment	2.49	262	109	0.22	7.3	742	1,500
4/9/2019	Assessment	3.50	301	132	0.19	7.1	703	1,650
6/19/2019	Assessment	3.15	278	127	0.16	7.3	741	1,580
9/9/2019	Assessment	3.23	267	128	0.20	7.3	770	1,520
3/10/2020	Assessment	--	--	--	0.24	6.7	--	--
5/14/2020	Assessment	3.68	250	116	0.25	6.9	715	1,520
10/9/2020	Assessment	2.59	265	107	0.21	7.0	635	1,360
3/25/2021	Assessment	2.48	220	95.3	0.29	7.3	577	1,210
5/20/2021	Assessment	2.72	223	100	0.27	7.1	602	1,300
10/27/2021	Assessment	2.94	221	93.5	0.26	7.1	532	1,210

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1604S
Mountaineer - BAP
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
9/26/2016	Background	0.04 J1	0.39	29.4	< 0.005 U1	0.03	0.2	0.358	0.136	0.20	0.114	0.034	< 0.002 U1	3.20	3.1	0.03 J1
11/1/2016	Background	0.04 J1	0.46	27.2	< 0.005 U1	0.04	0.3	0.307	0.769	0.21	0.065	0.035	< 0.002 U1	2.47	2.5	0.02 J1
12/20/2016	Background	0.04 J1	0.42	26.6	< 0.005 U1	0.04	1.97	0.390	0.5256	0.19	0.093	0.023	< 0.002 U1	2.71	2.7	0.03 J1
2/21/2017	Background	0.03 J1	0.42	26.7	< 0.005 U1	0.04	0.379	0.501	0.92	0.21	0.140	0.033	< 0.002 U1	2.52	2.2	0.03 J1
3/28/2017	Background	0.03 J1	0.37	31.6	< 0.005 U1	0.03	0.692	0.308	0.585	0.20	0.055	0.042	< 0.002 U1	2.53	2.2	0.119
4/19/2017	Background	0.03 J1	0.44	28.9	< 0.004 U1	0.04	0.158	0.317	0.722	0.21	0.051	0.041	0.003 J1	2.53	1.7	0.02 J1
5/16/2017	Background	0.04 J1	0.51	32.2	< 0.004 U1	0.04	0.098	0.317	2.577	0.19	0.100	0.033	< 0.002 U1	2.54	2.0	0.04 J1
6/13/2017	Background	0.03 J1	0.41	28.7	< 0.004 U1	0.04	0.149	0.308	0.598	0.20	0.033	0.038	< 0.002 U1	2.41	2.5	0.02 J1
5/9/2018	Assessment	0.13	0.33	28.7	0.024	0.15	0.107	1.83	1.173	0.22	0.034	0.051	< 0.002 U1	16.2	1.0	0.220
9/19/2018	Assessment	0.13	0.32	26.6	< 0.004 U1	0.15	0.093	1.88	1.159	0.22	0.02 J1	0.052	< 0.002 U1	15.6	0.8	0.251
4/9/2019	Assessment	0.2 J1	0.54	29.1	< 0.1 U1	0.27	0.3 J1	2.41	1.472	0.19	< 0.1 U1	0.061	< 0.002 U1	17.8	1.2	< 0.5 U1
6/19/2019	Assessment	0.15	0.33	29.0	< 0.02 U1	0.21	0.09 J1	2.16	1.256	0.16	< 0.02 U1	0.032	< 0.002 U1	16.6	1.0	0.3 J1
9/9/2019	Assessment	0.14	0.34	29.0	< 0.02 U1	0.21	0.1 J1	2.14	1.15	0.20	< 0.05 U1	0.0476	< 0.002 U1	16.3	1.0	0.3 J1
3/10/2020	Assessment	0.14	0.29	28.9	< 0.02 U1	0.12	0.323	1.72	1.662	0.24	< 0.05 U1	0.0390	< 0.002 U1	13.7	1.2	0.2 J1
5/14/2020	Assessment	0.15	0.30	29.1	--	0.19	0.1 J1	1.93	1.038	0.25	< 0.05 U1	0.0419	--	14.9	1.1	0.2 J1
10/9/2020	Assessment	0.16	0.32	28.2	--	0.21	0.798	2.08	9.989	0.21	< 0.05 U1	0.0384	< 0.002 U1	15.0	0.9	0.3 J1
3/25/2021	Assessment	0.25	0.35	28.2	< 0.007 U1	0.20	0.506	4.70	2.14	0.29	0.245	0.0368	< 0.002 U1	13.7	1.1	0.2 J1
5/20/2021	Assessment	0.16	0.25	25.3	< 0.007 U1	0.174	0.21	1.77	1.38	0.27	< 0.05 U1	0.0374	< 0.002 U1	14.5	0.96	0.24
10/27/2021	Assessment	0.15	0.35	24.9	< 0.007 U1	0.171	0.41	2.36	1.48	0.26	< 0.05 U1	0.0380	< 0.002 U1	13.9	0.76	0.23

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1605D
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/27/2016	Background	12.2	462	195	0.18	7.6	1,480	2,650
11/2/2016	Background	9.96	381	195	0.19	7.4	1,500	2,510
12/20/2016	Background	9.35	341	168	0.18	7.4	1,290	2,300
2/21/2017	Background	9.16	318	163	0.20	7.3	1,190	2,290
3/28/2017	Background	11.6	344	169	0.20	7.2	1,200	2,350
4/18/2017	Background	9.06	360	172	0.20	7.5	1,180	2,280
5/16/2017	Background	8.77	374	187	0.20	7.9	1,130	2,240
6/13/2017	Background	9.09	351	196	0.17	--	1,190	2,260
10/31/2017	Detection	7.83	324	198	0.21	7.3	1,170	2,170
1/22/2018	Detection	9.33	321	197	--	7.2	1,070	2,060
5/9/2018	Assessment	--	--	--	0.23	7.5	--	--
9/19/2018	Assessment	9.11	278	188	0.22	7.6	972	1,960
4/9/2019	Assessment	6.90	247	169	0.22	7.3	791	1,710
6/19/2019	Assessment	6.57	265	165	0.19	7.5	877	1,890
9/10/2019	Assessment	8.57	283	168	0.17	7.2	974	2,050
3/10/2020	Assessment	--	--	--	0.19	6.9	--	--
5/19/2020	Assessment	6.92	265	169	0.17	7.0	848	1,670
10/9/2020	Assessment	4.81	247	109	0.20	7.2	682	1,490
3/25/2021	Assessment	4.32	233	121	0.22	7.5	772	1,540
5/19/2021	Assessment	4.90	224	128	0.21	7.2	785	1,590
10/26/2021	Assessment	3.70	183	103	0.21	7.2	526	1,230

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1605D
Mountaineer - BAP
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
9/27/2016	Background	0.03 J1	2.29	31.5	< 0.01 U1	0.04	0.1	1.91	1.06	0.18	0.080	0.085	< 0.002 U1	54.6	0.2	0.06 J1
11/2/2016	Background	0.03 J1	2.48	30.6	< 0.01 U1	0.04	0.2	1.79	1.925	0.19	0.044	0.078	< 0.002 U1	52.4	0.2	0.05 J1
12/20/2016	Background	0.03 J1	2.26	28.2	< 0.01 U1	0.04 J1	2.29	1.75	2.662	0.18	0.03 J1	0.063	< 0.002 U1	54.7	0.3	0.05 J1
2/21/2017	Background	0.04 J1	2.23	25.9	< 0.005 U1	0.03	0.282	1.84	1.033	0.20	0.021	0.071	< 0.002 U1	46.8	0.2	0.138
3/28/2017	Background	0.04 J1	2.01	27.9	< 0.005 U1	0.03	0.556	1.69	0.578	0.20	0.02 J1	0.086	< 0.002 U1	44.6	0.2	0.090
4/18/2017	Background	0.03 J1	2.25	25.8	< 0.008 U1	0.02 J1	0.127	1.69	0.821	0.20	0.02 J1	0.077	0.002 J1	43.2	0.2 J1	0.04 J1
5/16/2017	Background	0.03 J1	2.45	26.3	< 0.004 U1	0.02 J1	0.099	1.63	3.433	0.20	0.01 J1	0.075	< 0.002 U1	48.1	0.2	0.04 J1
6/13/2017	Background	0.04 J1	1.99	27.2	< 0.008 U1	0.04	0.120	1.86	0.668	0.17	0.02 J1	0.081	< 0.002 U1	45.5	0.4	0.05 J1
5/9/2018	Assessment	0.03 J1	2.22	21.6	< 0.004 U1	0.01 J1	0.067	1.51	0.523	0.23	0.02 J1	0.062	< 0.002 U1	46.4	0.2	0.04 J1
9/19/2018	Assessment	0.04 J1	2.51	25.9	< 0.004 U1	0.02 J1	0.229	1.80	0.759	0.22	0.01 J1	0.060	< 0.002 U1	47.9	0.3	0.05 J1
4/9/2019	Assessment	0.04 J1	2.81	26.4	< 0.02 U1	0.01 J1	0.06 J1	1.56	0.543	0.22	0.03 J1	0.075	< 0.002 U1	40.6	0.2	< 0.1 U1
6/19/2019	Assessment	< 0.04 U1	2.67	28.6	< 0.04 U1	0.02 J1	0.2 J1	1.65	0.831	0.19	< 0.04 U1	0.02 J1	< 0.002 U1	40.0	0.2 J1	< 0.2 U1
9/10/2019	Assessment	0.03 J1	2.78	33.1	< 0.02 U1	0.03 J1	0.04 J1	1.69	1.641	0.17	< 0.05 U1	0.0561	< 0.002 U1	39.7	0.3	< 0.1 U1
3/10/2020	Assessment	0.03 J1	3.01	29.6	< 0.02 U1	0.02 J1	0.08 J1	1.67	0.3851	0.19	< 0.05 U1	0.0502	< 0.002 U1	32.7	0.2 J1	< 0.1 U1
5/19/2020	Assessment	0.04 J1	2.73	25.7	--	0.01 J1	0.1 J1	1.45	0.425	0.17	< 0.05 U1	0.0495	--	32.8	0.2 J1	< 0.1 U1
10/9/2020	Assessment	< 0.02 U1	3.09	23.0	--	< 0.01 U1	0.208	1.43	0.8083	0.20	0.05 J1	0.0439	< 0.002 U1	35.7	0.09 J1	< 0.1 U1
3/25/2021	Assessment	0.03 J1	2.98	27.3	< 0.007 U1	0.01 J1	0.1 J1	1.55	3.315	0.22	< 0.05 U1	0.0447	< 0.002 U1	30.1	0.2 J1	< 0.04 U1
5/19/2021	Assessment	0.06 J1	2.83	26.6	< 0.007 U1	0.014 J1	0.17 J1	1.54	1.28	0.21	< 0.05 U1	0.0455	< 0.002 U1	29.3	0.14 J1	< 0.04 U1
10/26/2021	Assessment	0.04 J1	2.90	24.3	< 0.007 U1	0.011 J1	0.19 J1	1.23	0.62	0.21	< 0.05 U1	0.0413	< 0.002 U1	33.0	0.11 J1	0.05 J1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1605S
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/27/2016	Background	8.30	224	150	0.24	7.5	965	1,910
11/1/2016	Background	6.55	220	159	0.25	7.3	1,010	1,930
12/20/2016	Background	7.30	279	173	0.22	7.4	1,180	2,160
2/21/2017	Background	9.04	249	179	0.25	7.2	1,110	2,220
3/28/2017	Background	10.8	261	212	0.25	7.1	1,110	2,250
4/18/2017	Background	8.69	244	180	0.23	7.4	1,100	2,120
5/16/2017	Background	8.75	251	217	0.26	7.7	1,060	2,160
6/13/2017	Background	8.80	218	191	0.24	7.8	1,000	1,980
10/31/2017	Detection	5.88	212	222	0.25	7.2	1,040	2,000
1/22/2018	Detection	10.1	231	220	--	7.1	976	1,970
5/9/2018	Assessment	--	--	--	0.30	7.2	--	--
9/19/2018	Assessment	7.75	182	171	0.32	7.4	793	1,650
4/9/2019	Assessment	9.39	164	140	0.33	7.2	599	1,450
6/19/2019	Assessment	7.02	156	140	0.23	7.4	649	1,510
9/10/2019	Assessment	8.05	174	149	0.26	7.2	694	1,470
3/10/2020	Assessment	--	--	--	0.30	6.9	--	--
5/19/2020	Assessment	4.83	154	93.5	0.28	6.9	543	1,160
10/9/2020	Assessment	3.99	163	85.4	0.28	7.0	492	1,150
3/24/2021	Assessment	4.63	160	85.8	0.33	7.4	512	1,120
5/19/2021	Assessment	4.74	154	93.2	0.30	7.1	528	1,180
10/26/2021	Assessment	3.95	167	81.9	0.29	7.3	568	1,220

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1605S
Mountaineer - BAP
Appendix IV Constituents

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
9/27/2016	Background	0.16	1.38	49.6	0.02 J1	0.13	0.6	3.16	0.777	0.24	2.18	0.086	< 0.002 U1	25.8	1.1	0.174
11/1/2016	Background	0.07	0.93	38.2	0.009 J1	0.08	0.7	1.26	2.692	0.25	0.793	0.084	< 0.002 U1	23.9	0.9	0.055
12/20/2016	Background	0.07 J1	0.88	37.0	< 0.01 U1	0.08	2.85	0.861	0.337	0.22	0.410	0.076	< 0.002 U1	22.9	0.7	0.05 J1
2/21/2017	Background	0.04 J1	0.86	36.0	0.007 J1	0.08	0.390	1.10	0.785	0.25	0.636	0.068	< 0.002 U1	17.5	1.1	0.055
3/28/2017	Background	0.03 J1	0.63	32.5	< 0.005 U1	0.06	0.349	0.448	0.466	0.25	0.181	0.076	< 0.002 U1	15.4	1.0	0.102
4/18/2017	Background	0.06 J1	0.74	31.9	< 0.008 U1	0.08	0.245	0.715	0.827	0.23	0.285	0.067	0.003 J1	20.8	3.0	0.04 J1
5/16/2017	Background	0.06 J1	0.88	33.3	< 0.008 U1	0.08	0.585	0.647	2.733	0.26	0.382	0.076	< 0.002 U1	18.6	1.7	0.06 J1
6/13/2017	Background	0.05 J1	0.75	30.8	< 0.008 U1	0.08	0.387	0.708	0.611	0.24	0.541	0.071	< 0.002 U1	17.8	1.7	0.05 J1
5/9/2018	Assessment	0.04 J1	0.50	23.5	< 0.004 U1	0.06	0.083	0.518	0.3045	0.30	0.056	0.051	< 0.002 U1	15.6	2.0	0.04 J1
9/19/2018	Assessment	0.04 J1	0.49	23.1	< 0.004 U1	0.05	0.644	0.360	0.347	0.32	0.093	0.049	< 0.002 U1	15.1	1.0	0.04 J1
4/9/2019	Assessment	0.05 J1	0.64	25.2	< 0.02 U1	0.05	0.293	0.631	0.369	0.33	0.331	0.079	< 0.002 U1	15.9	0.7	< 0.1 U1
6/19/2019	Assessment	0.04 J1	0.47	23.6	< 0.02 U1	0.05 J1	0.1 J1	0.279	0.424	0.23	0.08 J1	0.040	< 0.002 U1	13.6	0.6	< 0.1 U1
9/10/2019	Assessment	0.04 J1	0.59	29.6	< 0.02 U1	0.05 J1	0.237	0.379	0.542	0.26	0.202	0.0524	< 0.002 U1	14.2	0.4	< 0.1 U1
3/10/2020	Assessment	0.08 J1	0.62	26.5	< 0.02 U1	0.04 J1	0.305	0.723	0.842	0.30	0.497	0.0558	< 0.002 U1	12.8	0.8	< 0.1 U1
5/19/2020	Assessment	0.04 J1	0.47	21.1	--	0.03 J1	0.1 J1	0.208	0.639	0.28	< 0.05 U1	0.0523	--	12.3	0.7	< 0.1 U1
10/9/2020	Assessment	0.04 J1	0.47	24.6	--	0.03 J1	0.266	0.195	1.4891	0.28	0.05 J1	0.0470	< 0.002 U1	11.2	0.5	< 0.1 U1
3/24/2021	Assessment	0.04 J1	0.42	25.7	< 0.007 U1	0.05 J1	0.2 J1	0.208	0.919	0.33	0.06 J1	0.0509	< 0.002 U1	13.4	0.4 J1	< 0.04 U1
5/19/2021	Assessment	0.09 J1	0.43	26.9	< 0.007 U1	0.047	0.34	0.603	0.77	0.30	0.14 J1	0.0516	< 0.002 U1	12.4	0.39 J1	< 0.04 U1
10/26/2021	Assessment	0.04 J1	0.39	28.2	< 0.007 U1	0.050	0.07 J1	0.324	0.69	0.29	< 0.05 U1	0.0542 M1	< 0.002 U1	11.9	0.96	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.

Table 1 - Groundwater Data Summary: MW-1606D
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/27/2016	Background	4.29	278	190	0.25	7.2	813	1,710
11/2/2016	Background	3.97	252	201	0.28	7.4	796	1,720
12/20/2016	Background	4.96	260	206	0.24	7.5	796	1,690
2/21/2017	Background	5.48	242	190	0.26	7.3	759	1,670
3/28/2017	Background	6.90	247	187	0.26	7.2	739	1,700
4/18/2017	Background	5.46	274	104	0.26	7.4	385	1,690
5/16/2017	Background	5.26	278	218	0.26	8.0	764	1,730
6/13/2017	Background	5.90	262	219	0.24	7.5	752	1,680
10/31/2017	Detection	7.03	287	213	0.24	7.3	770	1,590
1/23/2018	Detection	9.59	322	237	--	7.4	760	1,730
5/9/2018	Assessment	--	--	--	0.26	7.4	--	--
9/19/2018	Assessment	7.27	260	201	0.26	7.2	722	1,610
4/8/2019	Assessment	7.32	265	214	0.26	7.2	682	1,600
6/19/2019	Assessment	7.79	281	231	0.1 J1	7.4	693	1,690
9/10/2019	Assessment	6.38	281	244	0.49	7.4	588	1,700
3/10/2020	Assessment	--	--	--	0.27	7.0	--	--
5/19/2020	Assessment	5.92	270	178	0.24	7.0	756	1,600
10/8/2020	Assessment	6.85	273	208	0.23	7.1	694	1,650
3/25/2021	Assessment	7.50	239	170	0.27	7.4	703	1,580
5/18/2021	Assessment	7.99	230	180	0.26	7.1	682	1,590
10/26/2021	Assessment	7.25	216	226	0.26	7.0	652	1,650

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1606D
Mountaineer - BAP
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
9/27/2016	Background	0.19	0.71	64.0	0.005 J1	0.07	0.3	2.20	8.459	0.25	0.522	0.129	< 0.002 U1	81.4	1.8	0.123
11/2/2016	Background	0.19	0.84	62.6	< 0.005 U1	0.07	0.9	1.92	3.659	0.28	0.491	0.120	< 0.002 U1	81.2	4.7	0.092
12/20/2016	Background	0.16	0.63	58.4	< 0.005 U1	0.06	0.736	1.52	1.179	0.24	0.164	0.110	< 0.002 U1	83.2	3.6	0.094
2/21/2017	Background	0.16	0.51	52.6	< 0.005 U1	0.07	0.300	1.33	1.71	0.26	0.082	0.109	< 0.002 U1	76.6	4.1	0.119
3/28/2017	Background	0.15	0.44	53.6	< 0.005 U1	0.05	0.541	1.17	1.459	0.26	0.087	0.130	< 0.002 U1	73.3	3.6	0.113
4/18/2017	Background	0.25	1.38	64.2	0.01 J1	0.08	0.853	4.26	1.212	0.26	2.04	0.119	0.004 J1	71.5	4.1	0.097
5/16/2017	Background	0.19	0.63	56.7	0.031	0.07	0.163	1.39	3.18	0.26	0.162	0.124	< 0.002 U1	79.1	5.9	0.095
6/13/2017	Background	0.16	0.52	52.0	< 0.008 U1	0.08	0.153	1.46	1.026	0.24	0.084	0.132	< 0.002 U1	77.8	8.1	0.09 J1
5/9/2018	Assessment	0.16	0.44	53.0	< 0.004 U1	0.07	0.198	1.40	0.972	0.26	0.115	0.112	< 0.002 U1	70.3	2.6	0.086
9/19/2018	Assessment	0.15	0.38	48.9	0.004 J1	0.07	0.151	1.17	0.4378	0.26	0.01 J1	0.107	< 0.002 U1	65.3	3.3	0.108
4/8/2019	Assessment	0.15	0.35	47.3	< 0.02 U1	0.07	0.1 J1	1.25	0.94	0.26	0.03 J1	0.124	< 0.002 U1	71.8	8.1	< 0.1 U1
6/19/2019	Assessment	0.14	0.37	49.4	< 0.02 U1	0.09	0.07 J1	1.36	0.933	0.1 J1	< 0.02 U1	0.058	< 0.002 U1	68.3	9.6	0.1 J1
9/10/2019	Assessment	0.15	0.40	51.4	< 0.02 U1	0.08	0.1 J1	1.09	2.2714	0.49	< 0.05 U1	0.0835	< 0.002 U1	68.5	1.0	< 0.1 U1
3/10/2020	Assessment	0.14	0.35	45.3	< 0.02 U1	0.05	0.2 J1	1.11	0.946	0.27	< 0.05 U1	0.0700	< 0.002 U1	62.5	0.5	< 0.1 U1
5/19/2020	Assessment	0.15	0.32	45.6	--	0.06	0.1 J1	1.10	0.975	0.24	< 0.05 U1	0.0681	--	67.0	0.5	< 0.1 U1
10/8/2020	Assessment	0.14	0.36	45.6	--	0.08	0.247	1.54	0.908	0.23	< 0.05 U1	0.0633	< 0.002 U1	63.6	4.2	< 0.1 U1
3/25/2021	Assessment	0.15	0.35	47.3	< 0.007 U1	0.08	0.202	1.56	0.444	0.27	< 0.05 U1	0.0658	< 0.002 U1	66.9	3.2	0.07 J1
5/18/2021	Assessment	0.20	0.33	46.1	< 0.007 U1	0.082	0.46	1.60	1.24	0.26	< 0.05 U1	0.0666	< 0.002 U1	66.9	3.62	0.07 J1
10/26/2021	Assessment	0.14	0.28	46.1	< 0.007 U1	0.075	0.30	1.60	0.89	0.26	< 0.05 U1	0.0594	< 0.002 U1	61.2	1.92	0.07 J1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1606S
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/27/2016	Background	5.25	219	182	0.50	6.0	621	1,470
11/2/2016	Background	4.57	183	183	0.57	7.2	638	1,470
12/20/2016	Background	5.35	200	170	0.46	7.3	621	1,420
2/21/2017	Background	5.03	211	231	0.46	7.1	578	1,500
3/28/2017	Background	6.67	217	226	0.45	7.0	589	1,500
4/18/2017	Background	5.80	228	217	0.43	7.2	615	1,540
5/16/2017	Background	5.72	228	227	0.45	7.7	635	3,230
6/13/2017	Background	6.12	230	230	0.45	7.4	643	1,540
10/31/2017	Detection	9.54	226	187	0.46	7.1	644	1,410
1/23/2018	Detection	6.62	218	184	0.43	7.2	660	1,450
5/9/2018	Assessment	--	--	--	0.44	6.9	--	--
9/19/2018	Assessment	5.87	199	219	0.46	7.1	571	1,370
4/8/2019	Assessment	7.68	229	223	0.54	6.8	592	1,480
6/19/2019	Assessment	6.08	223	232	0.25	7.2	581	1,490
9/10/2019	Assessment	6.19	229	221	0.28	7.3	705	1,460
3/10/2020	Assessment	--	--	--	0.40	6.8	--	--
5/19/2020	Assessment	5.94	207	181	0.38	6.7	646	1,400
10/8/2020	Assessment	6.35	206	172	0.38	6.9	572	1,460
3/25/2021	Assessment	6.09	172	137	0.45	7.2	516	1,280
5/18/2021	Assessment	4.92	158	141	0.45	7.0	505	1,290
10/26/2021	Assessment	5.49	181	152	0.38	6.9	497	1,300

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1606S
Mountaineer - BAP
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
9/27/2016	Background	0.16	0.88	76.7	< 0.005 U1	0.08	0.2	0.466	0.592	0.50	0.234	0.116	< 0.002 U1	112	1.2	0.074
11/2/2016	Background	0.17	0.94	69.7	< 0.005 U1	0.07	0.4	0.432	1.55	0.57	0.207	0.103	< 0.002 U1	112	1.0	0.060
12/20/2016	Background	0.16	0.83	71.6	< 0.005 U1	0.07	1.26	0.280	1.656	0.46	0.084	0.102	< 0.002 U1	101	0.9	0.063
2/21/2017	Background	0.15	0.88	77.2	< 0.005 U1	0.08	0.384	0.372	0.993	0.46	0.158	0.108	< 0.002 U1	93.1	0.7	0.086
3/28/2017	Background	0.14	0.78	75.7	< 0.005 U1	0.06	0.742	0.258	0.945	0.45	0.096	0.126	< 0.002 U1	90.1	0.7	0.100
4/18/2017	Background	0.16	0.86	74.2	< 0.004 U1	0.07	0.134	0.234	1.303	0.43	0.070	0.117	0.002 J1	92.4	0.8	0.062
5/16/2017	Background	0.16	0.90	74.1	< 0.004 U1	0.07	0.093	0.241	2.167	0.45	0.062	0.110	< 0.002 U1	90.2	0.9	0.069
6/13/2017	Background	0.16	0.81	77.1	< 0.008 U1	0.09	0.178	0.281	1.28	0.45	0.090	0.118	< 0.002 U1	95.7	0.9	0.07 J1
5/9/2018	Assessment	0.14	0.72	73.2	< 0.004 U1	0.08	0.056	0.318	0.3443	0.44	0.040	0.107	< 0.002 U1	70.2	2.0	0.076
9/19/2018	Assessment	0.13	0.69	64.8	0.005 J1	0.06	0.297	0.260	0.439	0.46	0.02 J1	0.096	< 0.002 U1	70.6	2.8	0.112
4/8/2019	Assessment	0.15	0.70	63.1	< 0.02 U1	0.07	0.08 J1	0.320	0.595	0.54	0.107	0.117	< 0.002 U1	67.7	1.4	< 0.1 U1
6/19/2019	Assessment	0.15	0.63	67.2	< 0.02 U1	0.08	0.08 J1	0.171	1.0123	0.25	0.111	0.056	< 0.002 U1	58.9	1.3	0.1 J1
9/10/2019	Assessment	0.13	0.67	70.4	< 0.02 U1	0.07	0.08 J1	0.312	2.682	0.28	< 0.05 U1	0.0877	< 0.002 U1	54.9	2.7	< 0.1 U1
3/10/2020	Assessment	0.13	0.62	60.9	< 0.02 U1	0.07	0.1 J1	0.322	0.434	0.40	0.05 J1	0.0721	< 0.002 U1	51.7	4.4	< 0.1 U1
5/19/2020	Assessment	0.14	0.65	59.8	--	0.06	0.1 J1	0.435	0.3814	0.38	< 0.05 U1	0.0730	--	56.0	5.3	< 0.1 U1
10/8/2020	Assessment	0.14	0.68	57.4	--	0.07	0.492	0.148	0.682	0.38	< 0.05 U1	0.0701	< 0.002 U1	56.4	1.9	< 0.1 U1
3/25/2021	Assessment	0.16	0.70	54.1	< 0.007 U1	0.05	0.232	0.153	0.745	0.45	< 0.05 U1	0.0604	< 0.002 U1	62.5	3.0	0.06 J1
5/18/2021	Assessment	0.17	0.63	52.1	< 0.007 U1	0.067	0.19 J1	0.192	0.79	0.45	< 0.05 U1	0.0652	< 0.002 M1, P3, U1	52.8	3.49	0.06 J1
10/26/2021	Assessment	0.15	0.61	55.6	< 0.007 U1	0.061	0.21	0.142	0.67	0.38	0.08 J1	0.0644	< 0.002 U1	50.6	1.87	0.06 J1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.
P3: The precision on the matrix spike duplicate (MSD) was above acceptance limits.

Table 1 - Groundwater Data Summary: MW-1607D
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/27/2016	Background	1.64	141	88.3	0.54	6.9	285	744
11/2/2016	Background	1.42	155	103	0.61	7.8	376	856
12/20/2016	Background	1.46	187	118	0.50	7.7	474	1,050
1/23/2017	Background	--	--	--	--	7.5	--	--
2/21/2017	Background	1.54	165	107	0.51	7.6	415	1,010
3/29/2017	Background	1.89	162	106	0.52	7.6	393	938
4/18/2017	Background	1.58	168	104	0.52	7.6	383	904
5/16/2017	Background	1.54	156	102	0.52	8.4	347	876
6/14/2017	Background	1.50	159	104	0.49	7.6	365	872
10/31/2017	Detection	1.76	214	138	0.47	7.6	626	1,290
1/23/2018	Detection	2.34	244	150	0.44	7.5	668	1,380
5/10/2018	Assessment	--	--	--	0.54	7.5	--	--
9/20/2018	Assessment	2.44	222	163	0.52	7.7	662	1,450
4/8/2019	Assessment	3.10	232	162	0.52	7.4	656	1,480
6/19/2019	Assessment	3.14	234	167	0.40	7.8	710	1,600
9/10/2019	Assessment	3.65	233	174	0.56	7.7	699	1,610
3/11/2020	Assessment	--	--	--	0.41	7.1	--	--
5/20/2020	Assessment	3.89	228	181	0.51	7.2	722	1,620
10/8/2020	Assessment	4.16	232	170	0.49	7.3	703	1,650
3/25/2021	Assessment	4.43	212	170	0.57	7.6	668	1,550
5/18/2021	Assessment	4.46	197	170	0.53	7.3	652	1,590
10/26/2021	Assessment	4.46	201	164	0.52	7.3	612	1,530

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1607D
Mountaineer - BAP
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
9/27/2016	Background	0.04 J1	0.91	117	< 0.005 U1	0.02 J1	0.3	0.439	0.86	0.54	0.179	0.068	< 0.002 U1	96.2	0.1	0.05 J1
11/2/2016	Background	0.03 J1	1.02	155	< 0.005 U1	0.02 J1	0.7	0.396	3.997	0.61	0.058	0.069	< 0.002 U1	91.1	0.07 J1	0.04 J1
12/20/2016	Background	0.03 J1	1.02	168	< 0.005 U1	0.005 J1	2.07	0.526	1.689	0.50	0.038	0.075	< 0.002 U1	89.6	0.03 J1	0.04 J1
2/21/2017	Background	0.03 J1	1.14	133	< 0.005 U1	< 0.004 U1	0.090	0.481	0.883	0.51	0.041	0.072	< 0.002 U1	87.7	0.03 J1	0.04 J1
3/29/2017	Background	0.05	1.24	140	0.008 J1	0.03	0.602	0.805	1.872	0.52	0.628	0.087	0.002 J1	85.9	0.5	0.062
4/18/2017	Background	0.03 J1	1.00	126	< 0.004 U1	< 0.005 U1	0.133	0.414	1.535	0.52	0.070	0.079	0.002 J1	81.8	0.05 J1	0.02 J1
5/16/2017	Background	0.03 J1	1.11	129	< 0.004 U1	< 0.005 U1	0.078	0.399	1.265	0.52	0.041	0.087	< 0.002 U1	91.2	0.04 J1	0.02 J1
6/14/2017	Background	0.03 J1	0.98	131	< 0.004 U1	< 0.005 U1	0.141	0.439	1.764	0.49	0.124	0.088	< 0.002 U1	90.8	0.03 J1	0.04 J1
5/10/2018	Assessment	0.03 J1	1.15	73.5	< 0.004 U1	< 0.005 U1	0.051	0.521	1.254	0.54	0.043	0.089	< 0.002 U1	80.9	< 0.03 U1	0.02 J1
9/20/2018	Assessment	0.03 J1	1.34	92.3	< 0.004 U1	< 0.005 U1	0.158	0.769	0.926	0.52	0.044	0.104	< 0.002 U1	83.4	< 0.03 U1	0.04 J1
4/8/2019	Assessment	0.03 J1	1.31	75.7	< 0.02 U1	< 0.01 U1	0.07 J1	0.778	1.3269	0.52	0.05 J1	0.127	< 0.002 U1	79.8	0.05 J1	< 0.1 U1
6/19/2019	Assessment	0.03 J1	1.61	82.3	< 0.02 U1	< 0.01 U1	0.1 J1	0.799	1.31	0.40	0.07 J1	0.072	< 0.002 U1	81.8	0.06 J1	< 0.1 U1
9/10/2019	Assessment	0.03 J1	1.53	79.3	< 0.02 U1	0.01 J1	0.05 J1	0.848	1.855	0.56	< 0.05 U1	0.110	< 0.002 U1	82.1	0.09 J1	< 0.1 U1
3/11/2020	Assessment	< 0.02 U1	1.56	68.3	< 0.02 U1	< 0.01 U1	0.08 J1	0.846	2.552	0.41	< 0.05 U1	0.108	< 0.002 U1	79.6	0.04 J1	< 0.1 U1
5/20/2020	Assessment	0.03 J1	1.42	65.6	--	< 0.01 U1	0.2 J1	0.913	0.815	0.51	0.05 J1	0.104	--	83.5	0.08 J1	< 0.1 U1
10/8/2020	Assessment	0.03 J1	1.80	75.8	--	< 0.01 U1	0.244	1.01	1.304	0.49	< 0.05 U1	0.0966	< 0.002 U1	83.8	0.06 J1	< 0.1 U1
3/25/2021	Assessment	0.03 J1	1.86	75.3	< 0.007 U1	0.004 J1	0.1 J1	0.874	1.002	0.57	< 0.05 U1	0.0770	< 0.002 U1	75.9	< 0.09 U1	< 0.04 U1
5/18/2021	Assessment	0.07 J1	1.86	71.7	< 0.007 U1	0.01 J1	0.26	0.843	1.34	0.53	< 0.05 U1	0.103	< 0.002 U1	75.0	< 0.09 U1	< 0.04 U1
10/26/2021	Assessment	0.03 J1	1.87	70.3	< 0.007 U1	0.008 J1	0.44	0.853	1.55	0.52	< 0.05 U1	0.0968	< 0.002 U1	72.3	< 0.09 U1	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1607S
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/27/2016	Background	--	--	--	--	7.6	--	--
11/2/2016	Background	1.35	126	90.6	0.32	7.6	214	698
12/21/2016	Background	1.02	129	92.7	0.33	7.7	246	716
2/21/2017	Background	1.27	131	91.9	0.29	7.5	244	746
3/28/2017	Background	1.70	131	93.1	0.28	7.4	233	706
4/18/2017	Background	1.65	135	92.6	0.30	7.6	225	678
5/16/2017	Background	1.64	133	97.5	0.29	8.2	221	746
6/14/2017	Background	1.74	136	96.3	0.27	7.5	229	708
10/31/2017	Detection	1.32	165	100	0.28	7.5	343	860
1/23/2018	Detection	1.49	--	111	--	7.4	--	--
5/10/2018	Assessment	--	--	--	0.29	7.4	--	--
9/20/2018	Assessment	1.71	220	151	0.28	7.6	478	1,160
4/8/2019	Assessment	2.35	226	153	0.26	7.2	504	1,310
6/19/2019	Assessment	2.46	233	154	0.19	7.5	524	1,370
9/10/2019	Assessment	3.21	198	167	0.27	7.7	465	1,350
3/10/2020	Assessment	--	--	--	0.24	6.9	--	--
5/20/2020	Assessment	3.55	190	172	0.23	7.0	407	1,230
10/8/2020	Assessment	3.26	187	148	0.24	7.0	371	1,180
3/25/2021	Assessment	3.37	187	166	0.26	7.4	373	1,160
5/18/2021	Assessment	3.40 P3	177	163	0.25	7.1	375	1,200
10/26/2021	Assessment	3.07	156	141	0.24	7.1	312	1,120

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
P3: The precision on the matrix spike duplicate (MSD) was above acceptance limits.

Table 1 - Groundwater Data Summary: MW-1607S
Mountaineer - BAP
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
10/31/2016	Background	0.46	1.86	56.7	0.01 J1	0.06	0.8	2.59	2.504	0.31	1.40	0.098	0.003 J1	48.4	7.1	0.060
11/2/2016	Background	0.45	1.30	55.5	< 0.005 U1	0.04	0.4	0.752	1.338	0.32	0.264	0.092	< 0.002 U1	50.4	7.0	0.05 J1
12/21/2016	Background	0.84	11.2	114	0.123	0.22	3.10	20.1	2.81	0.33	11.0	0.088	0.012	45.7	9.4	0.150
2/21/2017	Background	0.42	1.19	63.9	0.007 J1	0.03	0.325	1.21	1.974	0.29	0.267	0.091	< 0.002 U1	41.3	9.0	0.069
3/28/2017	Background	0.43	1.17	66.8	< 0.005 U1	0.02	0.390	0.942	1.153	0.28	0.134	0.110	< 0.002 U1	39.2	9.2	0.052
4/18/2017	Background	0.55	1.62	67.6	0.01 J1	0.06	0.514	2.60	1.632	0.30	1.25	0.102	0.003 J1	45.1	8.9	0.058
5/16/2017	Background	0.50	1.17	63.7	< 0.004 U1	0.03	0.226	0.851	2.408	0.29	0.159	0.094	< 0.002 U1	48.1	9.1	0.05 J1
6/14/2017	Background	0.48	1.10	62.9	< 0.004 U1	0.03	0.200	0.936	1.017	0.27	0.138	0.106	< 0.002 U1	46.1	9.4	0.05 J1
5/10/2018	Assessment	0.44	0.93	71.1	< 0.004 U1	0.04	0.121	1.18	1.29	0.29	0.128	0.103	< 0.002 U1	43.2	11.4	0.064
9/20/2018	Assessment	0.42	0.90	80.6	< 0.004 U1	0.04	0.086	0.840	0.584	0.28	0.094	0.118	< 0.002 U1	41.5	8.8	0.089
4/8/2019	Assessment	0.40	0.94	72.7	< 0.02 U1	0.04 J1	0.376	1.21	0.723	0.26	0.09 J1	0.141	< 0.002 U1	37.9	7.0	< 0.1 U1
6/19/2019	Assessment	0.44	0.96	81.0	< 0.02 U1	0.04 J1	0.428	0.990	1.121	0.19	0.108	0.075	< 0.002 U1	34.6	5.6	< 0.1 U1
9/10/2019	Assessment	0.41	0.87	67.7	< 0.02 U1	0.05 J1	0.357	0.971	2.765	0.27	0.09 J1	0.0990	< 0.002 U1	35.0	4.3	< 0.1 U1
3/10/2020	Assessment	0.41	0.92	69.2	< 0.02 U1	0.04 J1	0.321	1.23	1.171	0.24	0.06 J1	0.110	< 0.002 U1	35.5	4.5	< 0.1 U1
5/20/2020	Assessment	0.45	0.93	66.8	--	0.04 J1	0.249	1.42	0.3123	0.23	0.06 J1	0.105	--	35.8	5.7	< 0.1 U1
10/8/2020	Assessment	0.48	0.89	64.0	--	0.03 J1	0.509	1.27	1.553	0.24	0.2 J1	0.0937	< 0.002 U1	35.9	3.3	< 0.1 U1
3/25/2021	Assessment	0.43	0.93	70.7	< 0.007 U1	0.04 J1	0.329	1.28	0.963	0.26	0.08 J1	0.0796	< 0.002 U1	30.4	4.1	0.07 J1
5/18/2021	Assessment	0.49	0.91	68.0 P3	< 0.007 U1	0.108	0.23	1.45	0.39	0.25	0.19 J1	0.103	< 0.002 U1	30.5	4.05	0.07 J1
10/26/2021	Assessment	0.40	0.92	65.0	< 0.007 U1	0.036	0.31	1.27	0.52	0.24	0.08 J1	0.0974	< 0.002 U1	30.1	2.71	0.07 J1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
P3: The precision on the matrix spike duplicate (MSD) was above acceptance limits.

Table 1 - Groundwater Data Summary: MW-1608
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
9/27/2016	Background	0.150	93.8	6.55	0.27	7.4	70.6	368
11/1/2016	Background	0.113	86.2	6.43	0.30	7.3	64.3	352
12/19/2016	Background	0.118	83.0	4.25	0.26	7.3	58.3	338
2/22/2017	Background	0.156	83.3	4.37	0.25	7.1	94.4	398
3/27/2017	Background	0.238	80.3	5.27	0.24	6.8	112	350
4/17/2017	Background	0.233	101	7.08	0.23	7.0	168	424
5/15/2017	Background	0.200	102	8.62	0.23	7.8	208	475
6/12/2017	Background	0.169	110	8.23	0.21	6.7	204	486
10/31/2017	Detection	0.140	94.7	5.13	0.22	7.1	131	430
5/10/2018	Assessment	--	--	--	0.18	6.8	--	--
9/20/2018	Assessment	0.169	128	6.59	0.21	7.2	256	572
4/9/2019	Assessment	0.156	102	6.82	0.20	6.9	179	451
6/18/2019	Assessment	0.116	86.5	5.06	0.16	6.2	144	416
9/10/2019	Assessment	0.124	92.0	4.01	0.20	7.1	109	369
3/10/2020	Assessment	--	--	--	0.21	6.7	--	--
5/13/2020	Assessment	0.108	92.7	5.22	0.22	6.8	158	440
10/6/2020	Assessment	0.074	83.9	1.57	0.27	6.7	56.4	440
3/23/2021	Assessment	0.059	81.8	2.82	0.29	6.9	76.5	325
5/18/2021	Assessment	0.085	80.3	2.58	0.27	6.9	78.3	340
10/27/2021	Assessment	0.069	78.2	1.45	0.29	7.0	50.3	300

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1608
Mountaineer - BAP
Appendix IV Constituents

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
9/27/2016	Background	0.10	0.82	42.0	0.02 J1	0.03	0.9	1.21	0.454	0.27	0.881	0.003	< 0.002 U1	2.35	1.2	0.03 J1
11/1/2016	Background	0.04 J1	0.53	33.4	< 0.005 U1	0.02 J1	0.6	0.254	2.282	0.30	0.232	0.004	< 0.002 U1	2.16	1.3	0.081
12/19/2016	Background	0.04 J1	0.68	32.2	0.009 J1	0.02	2.78	0.588	0.379	0.26	0.405	< 0.0002 U1	< 0.002 U1	1.94	1.1	0.03 J1
2/22/2017	Background	0.03 J1	0.52	32.4	< 0.005 U1	0.01 J1	0.364	0.240	1.235	0.25	0.205	0.003	< 0.002 U1	1.40	1.5	0.053
3/27/2017	Background	0.03 J1	0.56	31.4	< 0.005 U1	0.01 J1	0.335	0.330	0.417	0.24	0.274	0.006	< 0.002 U1	2.49	1.3	0.04 J1
4/17/2017	Background	0.04 J1	0.50	35.3	< 0.004 U1	0.01 J1	0.223	0.196	0.1298	0.23	0.173	0.006	0.002 J1	1.89	1.3	0.01 J1
5/15/2017	Background	0.04 J1	0.49	35.1	< 0.004 U1	0.008 J1	0.151	0.098	0.857	0.23	0.073	0.006	< 0.002 U1	2.08	1.0	0.01 J1
6/12/2017	Background	0.03 J1	0.49	36.4	< 0.004 U1	0.006 J1	0.277	0.040	0.146	0.21	0.024	0.016	< 0.002 U1	1.57	1.1	0.02 J1
5/10/2018	Assessment	0.02 J1	0.37	46.6	0.009 J1	0.01 J1	0.126	0.095	0.565	0.18	0.079	0.0003 J1	< 0.002 U1	0.53	0.9	0.02 J1
9/20/2018	Assessment	0.03 J1	0.42	42.6	< 0.004 U1	0.008 J1	0.264	0.052	0.55	0.21	0.037	0.004	< 0.002 U1	1.18	1.2	0.02 J1
4/9/2019	Assessment	0.04 J1	0.56	41.2	< 0.02 U1	0.02 J1	0.372	0.597	0.2435	0.20	0.454	0.01 J1	< 0.002 U1	1 J1	1.2	< 0.1 U1
6/18/2019	Assessment	0.03 J1	0.40	32.0	< 0.02 U1	0.01 J1	0.306	0.05 J1	0.104	0.16	0.06 J1	< 0.009 U1	< 0.002 U1	0.8 J1	0.8	< 0.1 U1
9/10/2019	Assessment	0.03 J1	0.52	26.8	0.05 J1	< 0.01 U1	0.327	0.056	1.348	0.20	0.06 J1	0.00286	< 0.002 U1	1 J1	1.0	< 0.1 U1
3/10/2020	Assessment	< 0.02 U1	0.37	30.5	< 0.02 U1	< 0.01 U1	0.264	0.070	0.67	0.21	0.06 J1	0.00229	< 0.002 U1	0.6 J1	4.3	< 0.1 U1
5/13/2020	Assessment	0.04 J1	0.36	31.3	--	0.02 J1	0.2 J1	0.092	0.569	0.22	0.275	0.00241	--	0.7 J1	2.1	< 0.1 U1
10/6/2020	Assessment	0.09 J1	0.66	30.5	--	0.05	0.707	0.659	0.0286	0.27	0.476	0.00241	< 0.002 U1	2 J1	1.7	< 0.1 U1
3/23/2021	Assessment	0.04 J1	0.55	31.9	< 0.007 U1	0.02 J1	0.429	0.399	0.9785	0.29	0.334	0.00187	< 0.002 U1	0.6 J1	1.4	< 0.04 U1
5/18/2021	Assessment	0.09 J1	0.45	25.0	< 0.007 U1	0.009 J1	0.25	0.125	0.56	0.27	0.10 J1	0.00209	< 0.002 U1	1	2.06	< 0.04 U1
10/27/2021	Assessment	0.04 J1	0.49	23.0	< 0.007 U1	0.01 J1	0.43	0.113	1.09	0.29	0.10 J1	0.00226	< 0.002 U1	1.9	1.32	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1805
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
4/10/2019	Assessment	4.24	147	146	0.36	7.8	639	1,500
6/19/2019	Assessment	6.38	280	156	0.1 J1	7.5	894	1,860
9/10/2019	Assessment	6.00	273	--	--	7.4	--	--
9/11/2019	Assessment	--	--	167	0.24	--	908	1,880
3/10/2020	Assessment	--	--	--	0.27	7.2	--	--
5/14/2020	Assessment	5.74	254	169	0.24	7.2	923	1,800
10/9/2020	Assessment	5.11	265	131	0.19	7.2	789	1,660
3/25/2021	Assessment	4.67	225	127	0.24	7.6	762	1,530
5/19/2021	Assessment	4.46	204	124	0.29	7.2	735	1,480
10/26/2021	Assessment	3.43	111	140	0.29	7.3	473	1,250

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1805
Mountaineer - BAP
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
4/10/2019	Assessment	2.14	20.3	54.3	< 0.1 U1	< 0.05 U1	1.00	3.31	3.12	0.36	1.21	0.043	< 0.002 U1	80.1	< 0.3 U1	< 0.5 U1
6/19/2019	Assessment	< 0.04 U1	66.3	42.4	< 0.04 U1	< 0.02 U1	0.2 J1	4.91	1.412	0.1 J1	< 0.04 U1	0.032	< 0.002 U1	96.2	0.1 J1	< 0.2 U1
9/10/2019	Assessment	0.07 J1	70.4	41.9	< 0.02 U1	< 0.01 U1	0.415	3.39	2.7353	--	0.1 J1	0.0426	< 0.002 U1	78.0	0.1 J1	< 0.1 U1
9/11/2019	Assessment	--	--	--	--	--	--	--	--	0.24	--	--	--	--	--	--
3/10/2020	Assessment	0.02 J1	11.4	24.3	< 0.02 U1	< 0.01 U1	0.2 J1	0.091	1.409	0.27	< 0.05 U1	0.0316	< 0.002 U1	10.7	< 0.03 U1	< 0.1 U1
5/14/2020	Assessment	0.03 J1	56.0	41.3	--	< 0.01 U1	0.1 J1	0.384	0.641	0.24	< 0.05 U1	0.0422	--	42.7	0.1 J1	< 0.1 U1
10/9/2020	Assessment	< 0.02 U1	80.9	32.2	--	< 0.01 U1	0.326	1.01	1.5	0.19	< 0.05 U1	0.0432	< 0.002 U1	50.0	0.05 J1	< 0.1 U1
3/25/2021	Assessment	0.03 J1	74.2	28.8	< 0.007 U1	< 0.004 U1	0.2 J1	0.417	0.755	0.24	< 0.05 U1	0.0426	< 0.002 U1	43.9	< 0.09 U1	< 0.04 U1
5/19/2021	Assessment	0.05 J1	69.5	27.7	< 0.007 U1	< 0.004 U1	0.32	0.358	0.98	0.29	< 0.05 U1	0.0409	< 0.002 U1	41.0	< 0.09 U1	< 0.04 U1
10/26/2021	Assessment	0.04 J1	37.3	25.2	< 0.007 U1	< 0.004 U1	0.24	0.066	0.58	0.29	< 0.05 U1	0.0347	< 0.002 U1	10.6	< 0.09 M1, U1	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1921
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
4/10/2019	Assessment	0.571	55.9	34.7	0.77	7.6	106	452
6/19/2019	Assessment	0.644	77.7	33.3	0.87	8.2	128	435
9/11/2019	Assessment	0.647	79.6	--	--	7.6	--	--
9/13/2019	Assessment	--	--	33.2	0.79	--	131	438
3/12/2020	Assessment	--	--	--	0.94	7.4	--	--
5/18/2020	Assessment	0.751	88.3	35.8	0.98	7.4	153	469
10/6/2020	Assessment	0.577	77.2	38.7	0.98	7.2	127	603
3/22/2021	Assessment	0.654	86.8	51.3	1.05	7.8	130	448
5/20/2021	Assessment	0.585	83.8	53.6	1.00	7.7	137	470
10/29/2021	Assessment	0.563	85.3	56.9	0.96	7.6	152	500

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1921
Mountaineer - BAP
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
4/10/2019	Assessment	0.1 J1	3.36	68.0	< 0.1 U1	< 0.05 U1	1.13	2.64	1.678	0.77	0.944	0.075	0.002 J1	478	0.4 J1	< 0.5 U1
6/19/2019	Assessment	0.10	1.19	51.2	< 0.02 U1	< 0.01 U1	0.07 J1	0.860	0.276	0.87	0.06 J1	0.074	< 0.002 U1	502	0.2 J1	< 0.1 U1
9/11/2019	Assessment	0.1 J1	1.25	50.8	< 0.02 U1	0.03 J1	0.1 J1	0.692	1.228	--	0.08 J1	0.0926	< 0.002 U1	500	0.1 J1	< 0.1 U1
9/13/2019	Assessment	--	--	--	--	--	--	--	--	0.79	--	--	--	--	--	--
3/12/2020	Assessment	0.08 J1	1.21	58.5	< 0.02 U1	< 0.01 U1	0.230	0.879	3.441	0.94	0.217	0.0995	< 0.002 U1	461	0.1 J1	< 0.1 U1
5/18/2020	Assessment	0.11	1.12	54.1	--	< 0.01 U1	0.2 J1	0.795	1.053	0.98	0.385	0.0990	--	472	0.1 J1	< 0.1 U1
10/6/2020	Assessment	0.11	1.18	47.4	--	< 0.01 U1	0.524	0.604	0.451	0.98	0.2 J1	0.0870	< 0.002 U1	472	0.1 J1	< 0.1 U1
3/23/2021	Assessment	0.14	1.61	54.7	0.02 J1	0.06	0.748	0.951	0.925	1.05	0.572	0.0672	< 0.002 U1	364	0.2	0.06 J1
5/20/2021	Assessment	0.16	1.59	55.5	0.009 J1	0.043	0.46	0.707	0.62	1.0	0.30	0.0942	< 0.002 U1	489	0.19 J1	0.07 J1
10/29/2021	Assessment	0.09 J1	1.22	56.9	< 0.007 U1	0.023	0.48	0.574	1.04	0.96	0.1 J1	0.0862	< 0.002 U1	417	0.13 J1	0.05 J1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1922D
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
4/9/2019	Assessment	1.00	145	53.5	0.29	7.5	333	908
6/19/2019	Assessment	0.725	121	44.1	0.31	7.6	269	724
9/10/2019	Assessment	0.440	96.5	--	--	7.6	--	--
9/11/2019	Assessment	--	--	32.7	0.33	--	167	566
3/11/2020	Assessment	--	--	--	0.29	6.9	--	--
5/19/2020	Assessment	0.310	80.0	28.3	0.32	7.0	118	484
10/8/2020	Assessment	0.131	64.5	19.5	0.30	7.1	47.3	389
3/25/2021	Assessment	0.098	59.8	18.8	0.34	7.6	34.6	362
5/20/2021	Assessment	0.085	58.7	18.1	0.32	7.4	25.2	370
10/27/2021	Assessment	0.071	59.5	17.6	0.31	7.4	22.1	340

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1922D
Mountaineer - BAP
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
4/9/2019	Assessment	0.88	323	69.3	< 0.1 U1	< 0.05 U1	0.4 J1	1.02	2.64	0.29	0.1 J1	0.02 J1	< 0.002 U1	488	< 0.2 U1	< 0.5 U1
6/19/2019	Assessment	0.29	716	54.7	< 0.02 U1	< 0.01 U1	< 0.04 U1	0.530	3.332	0.31	< 0.02 U1	< 0.009 U1	< 0.002 U1	515	0.04 J1	< 0.1 U1
9/10/2019	Assessment	1.04	839	51.0	< 0.02 U1	0.01 J1	0.08 J1	0.492	3.089	--	< 0.05 U1	0.0126	< 0.002 U1	478	0.06 J1	< 0.1 U1
9/11/2019	Assessment	--	--	--	--	--	--	--	--	0.33	--	--	--	--	--	--
3/11/2020	Assessment	0.63	1,240	72.3	< 0.02 U1	< 0.01 U1	0.335	0.267	3.28	0.29	0.07 J1	0.0117	< 0.002 U1	314	0.05 J1	< 0.1 U1
5/19/2020	Assessment	0.31	522	66.3	--	< 0.01 U1	0.2 J1	0.218	1.816	0.32	< 0.05 U1	0.0110	--	289	< 0.03 U1	< 0.1 U1
10/8/2020	Assessment	4.91	1,040	144	--	< 0.01 U1	0.351	0.326	2.815	0.30	0.07 J1	0.00747	< 0.002 U1	109	< 0.03 U1	< 0.1 U1
3/25/2021	Assessment	1.61	546	227	< 0.007 U1	< 0.004 U1	0.248	0.215	3.232	0.34	< 0.05 U1	0.00796	< 0.002 U1	77.6	< 0.09 U1	< 0.04 U1
5/20/2021	Assessment	0.65	494	262	< 0.007 U1	< 0.004 U1	0.18 J1	0.104	4.45	0.32	< 0.05 U1	0.00755	< 0.002 U1	40.5	< 0.09 U1	< 0.04 U1
10/27/2021	Assessment	0.60	456	331	< 0.007 U1	< 0.004 U1	< 0.04 U1	0.124	5.33	0.31	< 0.05 U1	0.00779	< 0.002 U1	47.7	< 0.09 U1	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1922S
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
4/9/2019	Assessment	7.66	359	171	0.16	7.2	978	2,090
6/20/2019	Assessment	6.95	335	169	0.17	7.4	1,020	2,090
9/10/2019	Assessment	6.34	342	--	--	7.3	--	--
9/11/2019	Assessment	--	--	179	0.19	--	1,070	2,060
3/11/2020	Assessment	--	--	--	0.1 J1	6.9	--	--
5/18/2020	Assessment	6.92	345	160	0.19	6.9	1,060	1,920
10/8/2020	Assessment	4.09	293	126	0.16	7.1	842	1,750
3/25/2021	Assessment	4.22	284	120	0.20	7.4	832	1,630
5/20/2021	Assessment	3.60	265	117	0.19	7.2	828	1,660
10/26/2021	Assessment	2.99	250	102	0.17	7.2	721	1,460

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1922S
Mountaineer - BAP
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
4/9/2019	Assessment	< 0.1 U1	1.95	30.7	< 0.1 U1	< 0.05 U1	0.3 J1	1.83	2.124	0.16	0.3 J1	0.082	< 0.002 U1	43.5	< 0.2 U1	< 0.5 U1
6/20/2019	Assessment	< 0.04 U1	1.89	26.9	< 0.04 U1	< 0.02 U1	0.2 J1	1.37	1.156	0.17	0.08 J1	0.03 J1	< 0.002 U1	36.4	0.07 J1	< 0.2 U1
9/10/2019	Assessment	0.02 J1	1.75	26.5	< 0.02 U1	< 0.01 U1	0.2 J1	1.23	2.945	--	0.1 J1	0.0556	< 0.002 U1	33.9	0.08 J1	< 0.1 U1
9/11/2019	Assessment	--	--	--	--	--	--	--	--	0.19	--	--	--	--	--	--
3/11/2020	Assessment	< 0.02 U1	2.92	28.0	< 0.04 U1	< 0.01 U1	0.220	1.31	2.028	0.1 J1	0.2 J1	0.0615	< 0.002 U1	32.4	0.09 J1	< 0.1 U1
5/18/2020	Assessment	< 0.02 U1	1.79	27.4	--	< 0.01 U1	0.2 J1	1.52	0.821	0.19	0.06 J1	0.0611	--	34.3	0.1 J1	< 0.1 U1
10/8/2020	Assessment	0.09 J1	3.25	37.7	--	0.11	1.48	2.88	1.844	0.16	1.57	0.0551	0.002 J1	30.7	0.3	< 0.1 U1
3/25/2021	Assessment	0.02 J1	2.12	24.3	< 0.007 U1	0.006 J1	0.222	1.12	0.372	0.20	0.06 J1	0.0484	< 0.002 U1	29.4	< 0.09 U1	< 0.04 U1
5/20/2021	Assessment	0.05 J1	2.04	25.8	< 0.007 U1	0.012 J1	0.25	1.14	0.45	0.19	0.22	0.0520	< 0.002 U1	31.1	0.11 J1	0.05 J1
10/26/2021	Assessment	< 0.02 U1	2.07	25.4	< 0.007 U1	0.010 J1	0.22	1.02	1.3	0.17	0.14 J1	0.0477	< 0.002 U1	27.4	< 0.09 U1	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1923
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
4/10/2019	Assessment	1.09	113	38.0	0.16	7.6	181	584
6/18/2019	Assessment	0.804	91.4	35.9	0.16	7.3	147	526
9/11/2019	Assessment	0.756	105	38.3	0.13	6.8	159	545
3/12/2020	Assessment	--	--	--	0.18	--	--	--
5/14/2020	Assessment	0.770	103	33.1	0.21	7.3	150	525
10/6/2020	Assessment	1.19	117	34.2	0.27	7.2	253	329
3/24/2021	Assessment	1.17	123	33.1	0.23	7.6	260	610
5/20/2021	Assessment	1.27	119	32.8	0.23	7.4	220	630
10/28/2021	Assessment	1.30	117	32.4	0.26	7.4	224	610

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1923
Mountaineer - BAP
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
4/10/2019	Assessment	0.2 J1	0.55	77.6	< 0.1 U1	< 0.05 U1	0.3 J1	0.317	0.706	0.16	0.1 J1	0.223	< 0.002 U1	160	23.8	< 0.5 U1
6/18/2019	Assessment	0.21	0.56	72.9	< 0.02 U1	0.01 J1	0.353	0.657	0.836	0.16	0.255	0.135	< 0.002 U1	101	14.4	< 0.1 U1
9/11/2019	Assessment	0.24	0.75	86.6	< 0.02 U1	0.03 J1	0.541	1.01	2.099	0.13	0.543	0.137	< 0.002 U1	84.2	14.0	< 0.1 U1
3/12/2020	Assessment	0.15	0.58	73.3	< 0.02 U1	0.02 J1	0.903	0.622	0.935	0.18	0.302	0.115	< 0.002 U1	70.1	5.2	< 0.1 U1
5/14/2020	Assessment	0.23	0.69	79.8	--	0.02 J1	0.484	0.814	0.48	0.21	0.354	0.109	--	70.9	4.1	< 0.1 U1
10/6/2020	Assessment	0.18	0.62	86.4	--	0.01 J1	2.13	0.747	1.241	0.27	0.434	0.177	< 0.002 U1	98.0	17.8	< 0.1 U1
3/24/2021	Assessment	0.21	0.52	95.1	< 0.007 U1	0.01 J1	0.715	0.370	0.778	0.23	0.09 J1	0.135	< 0.002 U1	308	38.7	< 0.04 U1
5/20/2021	Assessment	0.23	1.14	98.1	0.041 J1	0.033	1.12	1.84	1.36	0.23	1.16	0.207	< 0.002 U1	344	14.1	< 0.04 U1
10/28/2021	Assessment	0.23	1.66	103 M1, P3	0.064	0.053	2.26	2.65	0.9	0.26	1.98	0.182	0.002 J1	319 M1, P3	7.59	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.
P3: The precision on the matrix spike duplicate (MSD) was above acceptance limits.

Table 1 - Groundwater Data Summary: MW-1924
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
4/10/2019	Assessment	7.49	286	136	0.42	6.9	766	1,700
6/18/2019	Assessment	6.22	243	122	0.38	7.3	721	1,570
9/11/2019	Assessment	4.89	238	109	0.44	7.1	662	1,500
3/12/2020	Assessment	--	--	--	0.44	7.1	--	--
5/14/2020	Assessment	5.28	314	145	0.47	7.0	817	1,730
10/5/2020	Assessment	5.27	301	159	0.40	7.1	851	1,840
3/24/2021	Assessment	5.07	288	131	0.53	7.6	800	1,660
5/20/2021	Assessment	6.17	264	146	0.51	7.3	830	1,720
10/28/2021	Assessment	5.78 M1	214	144	0.52	7.3	663	1,490

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.

Table 1 - Groundwater Data Summary: MW-1924
Mountaineer - BAP
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
4/10/2019	Assessment	0.2 J1	0.91	59.8	< 0.1 U1	0.2 J1	0.3 J1	2.29	0.921	0.42	0.3 J1	0.133	< 0.002 U1	89.5	1.3	< 0.5 U1
6/18/2019	Assessment	0.06 J1	0.55	69.5	< 0.02 U1	0.05	0.1 J1	2.74	1.417	0.38	0.07 J1	0.087	< 0.002 U1	69.0	3.6	< 0.1 U1
9/11/2019	Assessment	0.07 J1	0.61	54.5	< 0.02 U1	0.06	0.2 J1	4.10	1.719	0.44	0.218	0.102	< 0.002 U1	76.7	3.5	< 0.1 U1
3/12/2020	Assessment	0.09 J1	0.72	46.7	< 0.1 U1	0.06	0.324	6.80	0.974	0.44	0.394	0.130	< 0.002 U1	92.0	1.1	< 0.1 U1
5/14/2020	Assessment	0.06 J1	0.66	54.5	--	0.06	0.784	3.10	1.785	0.47	0.229	0.104	--	77.6	1.1	< 0.1 U1
10/5/2020	Assessment	0.09 J1	1.30	55.3	--	0.09	1.64	10.3	1.013	0.40	1.14	0.113	0.003 J1	82.7	0.9	< 0.1 U1
3/24/2021	Assessment	0.07 J1	1.18	44.7	0.03 J1	0.07	1.04	3.26	0.956	0.53	0.905	0.0668	< 0.002 U1	87.1	2.5	< 0.04 U1
5/20/2021	Assessment	0.06 J1	0.56	42.9	0.009 J1	0.068	0.59	2.15	1.3	0.51	0.13 J1	0.0964	< 0.002 U1	112	0.74	< 0.04 U1
10/28/2021	Assessment	0.07 J1	0.57	37.7	< 0.007 U1	0.065	0.37	2.93	1.23	0.52	0.1 J1	0.0877 M1	< 0.002 U1	134	0.50	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.

Table 1 - Groundwater Data Summary: MW-1925
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
4/10/2019	Assessment	4.17	172	128	0.33	7.2	624	1,460
6/19/2019	Assessment	5.21	242	147	0.25	7.6	686	1,520
9/10/2019	Assessment	5.86	249	147	0.26	7.2	683	1,500
3/11/2020	Assessment	--	--	--	0.24	7.0	--	--
5/14/2020	Assessment	4.91	205	119	0.34	7.0	565	1,250
10/6/2020	Assessment	4.31	211	122	0.29	6.8	548	372
3/23/2021	Assessment	3.13	223	106	0.33	7.3	521	1,180
5/19/2021	Assessment	4.26	183	90.2	0.31	7.1	495	1,130
10/28/2021	Assessment	4.28	166 M1	88.3	0.31	7.1	421	1,040

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.

Table 1 - Groundwater Data Summary: MW-1925
Mountaineer - BAP
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
4/10/2019	Assessment	0.2 J1	0.88	46.6	< 0.1 U1	0.06 J1	0.4 J1	1.65	2.726	0.33	0.4 J1	0.094	< 0.002 U1	76.0	6.2	< 0.5 U1
6/19/2019	Assessment	0.18	0.35	48.0	< 0.02 U1	0.04 J1	0.1 J1	1.28	1.245	0.25	0.04 J1	0.095	< 0.002 U1	63.5	6.3	< 0.1 U1
9/10/2019	Assessment	0.20	0.41	45.0	< 0.02 U1	0.06	0.1 J1	1.27	1.041	0.26	0.2 J1	0.0947	< 0.002 U1	54.6	4.1	< 0.1 U1
3/11/2020	Assessment	0.16	0.37	40.4	< 0.02 U1	0.05 J1	0.1 J1	1.21	1.59	0.24	< 0.05 U1	0.0926	< 0.002 U1	56.2	2.9	< 0.1 U1
5/14/2020	Assessment	0.19	0.32	36.8	--	0.04 J1	0.08 J1	1.07	0.91	0.34	< 0.05 U1	0.0853	--	57.9	4.8	< 0.1 U1
10/6/2020	Assessment	0.20	0.56	39.5	--	0.04 J1	0.428	1.07	0.2096	0.29	0.09 J1	0.0776	< 0.002 U1	45.8	5.4	< 0.1 U1
3/23/2021	Assessment	0.21	0.53	39.7	< 0.007 U1	0.05 J1	0.311	1.03	2.076	0.33	0.06 J1	0.0517	< 0.002 U1	47.8	4.4	< 0.04 U1
5/19/2021	Assessment	0.27	0.52	38.3	0.008 J1	0.067	0.47	1.18	1.07	0.31	0.17 J1	0.0714	< 0.002 U1	46.1	4.41	< 0.04 U1
10/28/2021	Assessment	0.20	0.28	33.9	< 0.007 U1	0.037	0.40	0.996	1.96	0.31	< 0.05 U1	0.0621	< 0.002 U1	52.3	2.96	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1926
Mountaineer - BAP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
4/10/2019	Assessment	0.263	95.4	57.8	0.25	7.2	67.4	506
6/20/2019	Assessment	0.165	82.1	23.2	0.28	7.3	47.8	416
9/11/2019	Assessment	0.145	87.6	--	--	7.3	--	--
9/13/2019	Assessment	--	--	8.57	0.24	--	26.4	396
3/11/2020	Assessment	--	--	--	0.28	7.0	--	--
5/18/2020	Assessment	0.146	95.3	7.86	0.29	7.0	28.5	354
10/8/2020	Assessment	0.121	87.2	3.49	0.26	7.0	30.0	351
3/22/2021	Assessment	0.121	89.1	4.15	0.30	7.4	32.2	357
5/20/2021	Assessment	0.132	78.0	3.86	0.28	7.0	29.6	360
10/28/2021	Assessment	0.110	103	3.17	0.25	7.0	35.1	410

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1926
Mountaineer - BAP
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
4/10/2019	Assessment	0.1 J1	0.95	28.8	< 0.1 U1	0.06 J1	0.4 J1	5.05	1.327	0.25	0.981	0.01 J1	< 0.002 U1	9 J1	0.3 J1	< 0.5 U1
6/20/2019	Assessment	0.08 J1	0.38	22.9	< 0.02 U1	0.05	0.06 J1	1.81	0.524	0.28	0.05 J1	< 0.009 U1	< 0.002 U1	7.05	0.3	< 0.1 U1
9/11/2019	Assessment	0.07 J1	0.37	23.9	< 0.02 U1	0.06	0.09 J1	1.17	0.4608	--	0.07 J1	0.00624	< 0.002 U1	5.38	0.4	< 0.1 U1
9/13/2019	Assessment	--	--	--	--	--	--	--	--	0.24	--	--	--	--	--	--
3/11/2020	Assessment	0.03 J1	0.33	20.3	< 0.02 U1	0.04 J1	0.206	1.08	1.316	0.28	< 0.05 U1	0.00675	< 0.002 U1	6.16	0.2	< 0.1 U1
5/18/2020	Assessment	0.08 J1	0.36	23.7	--	0.05	0.2 J1	1.42	0.3552	0.29	< 0.05 U1	0.00744	--	5.72	0.3	< 0.1 U1
10/8/2020	Assessment	0.05 J1	0.32	20.0	--	0.05 J1	0.323	1.03	0.379	0.26	< 0.05 U1	0.00575	< 0.002 U1	5.04	1.0	< 0.1 U1
3/22/2021	Assessment	0.06 J1	0.33	20.8	< 0.007 U1	0.04 J1	0.294	0.953	0.9312	0.30	< 0.05 U1	0.00585	< 0.002 U1	4.52	0.7	< 0.04 U1
5/20/2021	Assessment	0.1	0.31	19.1	< 0.007 U1	0.035	0.62	0.925	0.35	0.28	< 0.05 U1	0.00586	< 0.002 U1	4.7	0.59	0.09 J1
10/28/2021	Assessment	0.05 J1	0.31	22.0	< 0.007 U1	0.039	0.37	0.475	0.46	0.25	0.06 J1	0.00673	< 0.002 U1	4.1	0.73	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1927
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
4/10/2019	Assessment	0.654	151	20.3	0.18	7.3	327	898
6/20/2019	Assessment	0.513	159	15.6	0.13	7.8	335	849
9/11/2019	Assessment	0.498	143	--	--	7.0	--	--
9/13/2019	Assessment	--	--	15.2	0.14	--	306	839
3/11/2020	Assessment	--	--	--	0.14	6.9	--	--
5/14/2020	Assessment	0.501	143	12.9	0.17	6.8	290	807
10/9/2020	Assessment	0.429	155	11.8	0.14	6.9	277	741
3/24/2021	Assessment	0.431	154	12.2	0.18	7.3	294	762
5/20/2021	Assessment	0.420	155	11.6	0.17	7.0	284	770
10/27/2021	Assessment	0.416	151	11.4	0.16	7.0	264	770

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1927
Mountaineer - BAP
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
4/10/2019	Assessment	0.3 J1	0.4 J1	63.4	< 0.1 U1	< 0.05 U1	< 0.2 U1	0.319	1.533	0.18	0.1 J1	0.03 J1	< 0.002 U1	7 J1	0.8 J1	< 0.5 U1
6/20/2019	Assessment	0.15	0.28	61.5	< 0.02 U1	0.05 J1	0.1 J1	0.251	0.866	0.13	0.03 J1	< 0.009 U1	< 0.002 U1	2.82	0.3	< 0.1 U1
9/11/2019	Assessment	0.12	0.27	58.7	< 0.02 U1	0.05	0.08 J1	0.225	1.415	--	< 0.05 U1	0.00638	< 0.002 U1	2 J1	0.4	< 0.1 U1
9/13/2019	Assessment	--	--	--	--	--	--	--	--	0.14	--	--	--	--	--	--
3/11/2020	Assessment	0.09 J1	0.29	56.2	< 0.02 U1	0.06	0.1 J1	0.319	0.765	0.14	< 0.05 U1	0.00723	< 0.002 U1	2 J1	0.2 J1	< 0.1 U1
5/14/2020	Assessment	0.14	0.29	54.4	--	0.06	0.1 J1	0.434	1.19	0.17	0.08 J1	0.00725	--	2 J1	0.1 J1	< 0.1 U1
10/9/2020	Assessment	0.12	0.44	51.3	--	0.07	0.763	0.602	1.371	0.14	0.441	0.00598	< 0.002 U1	2 J1	0.3	< 0.1 U1
3/24/2021	Assessment	0.09 J1	0.25	57.1	< 0.007 U1	0.07	0.256	0.255	0.918	0.18	< 0.05 U1	0.00612	< 0.002 U1	1 J1	0.9	< 0.04 U1
5/20/2021	Assessment	0.15	0.22	56.5	< 0.007 U1	0.055	0.25	0.264	1	0.17	< 0.05 U1	0.00594	< 0.002 U1	1.1	1.39	< 0.04 U1
10/27/2021	Assessment	0.07 J1	0.23	53.4	< 0.007 U1	0.067	0.1 J1	0.331	1.2	0.16	< 0.05 U1	0.00631	< 0.002 U1	1.1	0.98	< 0.04 U1

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.
Due to limited groundwater volume, analytical samples from some sampling events were collected over multiple days.

Table 1 - Groundwater Data Summary: MW-1929
Mountaineer - BAP
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
4/10/2019	Assessment	0.243	115	11.7	0.19	7.5	214	574
6/18/2019	Assessment	0.219	97.8	13.6	0.20	7.5	237	541
9/10/2019	Assessment	0.236	113	15.1	0.19	7.6	234	528
3/10/2020	Assessment	--	--	--	0.23	7.2	--	--
5/13/2020	Assessment	0.189	98.0	10.7	0.23	7.2	176	461
10/9/2020	Assessment	0.218	104	10.7	0.22	7.2	198	508
3/23/2021	Assessment	0.183	103	9.16	0.27	7.6	179	484
5/18/2021	Assessment	0.182	111	8.60	0.23	7.2	163	530
10/27/2021	Assessment	0.248	112	8.13	0.25	7.3	202	520

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.
In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: MW-1929
Mountaineer - BAP
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
4/10/2019	Assessment	< 0.1 U1	0.80	56.9	< 0.1 U1	< 0.05 U1	0.5 J1	3.03	0.823	0.19	1.15	0.01 J1	< 0.002 U1	< 2 U1	1.3	< 0.5 U1
6/18/2019	Assessment	0.02 J1	0.37	47.6	< 0.02 U1	0.02 J1	0.2 J1	0.157	0.398	0.20	0.08 J1	< 0.009 U1	< 0.002 U1	0.7 J1	1.3	< 0.1 U1
9/10/2019	Assessment	0.03 J1	0.47	52.1	< 0.02 U1	0.01 J1	0.280	0.606	2.994	0.19	0.274	0.00480	< 0.002 U1	0.7 J1	1.7	< 0.1 U1
3/10/2020	Assessment	< 0.02 U1	0.41	43.8	< 0.02 U1	< 0.01 U1	0.529	0.214	0.478	0.23	0.1 J1	0.00382	< 0.002 U1	0.5 J1	0.9	< 0.1 U1
5/13/2020	Assessment	0.04 J1	0.79	52.1	--	0.04 J1	0.584	1.81	0.88	0.23	0.870	0.00416	--	0.6 J1	1.1	< 0.1 U1
10/9/2020	Assessment	0.02 J1	0.41	44.6	--	0.01 J1	0.416	0.363	0.988	0.22	0.2 J1	0.00430	< 0.002 U1	0.6 J1	1.8	< 0.1 U1
3/23/2021	Assessment	0.04 J1	0.46	45.9	< 0.007 U1	0.02 J1	0.639	0.638	1.373	0.27	0.355	0.00352	< 0.002 U1	0.6 J1	1.6	< 0.04 U1
5/18/2021	Assessment	0.05 J1	0.47	51.9	< 0.007 U1	0.017 J1	0.40	0.437	1.17	0.23	0.21	0.00363	< 0.002 U1	0.5	0.89	< 0.04 U1
10/27/2021	Assessment	0.02 J1	0.33	45.4	< 0.007 U1	0.005 J1	0.51	0.182	3.24	0.25	0.1 J1	0.00463	< 0.002 U1	0.8	2.08	< 0.04 U1

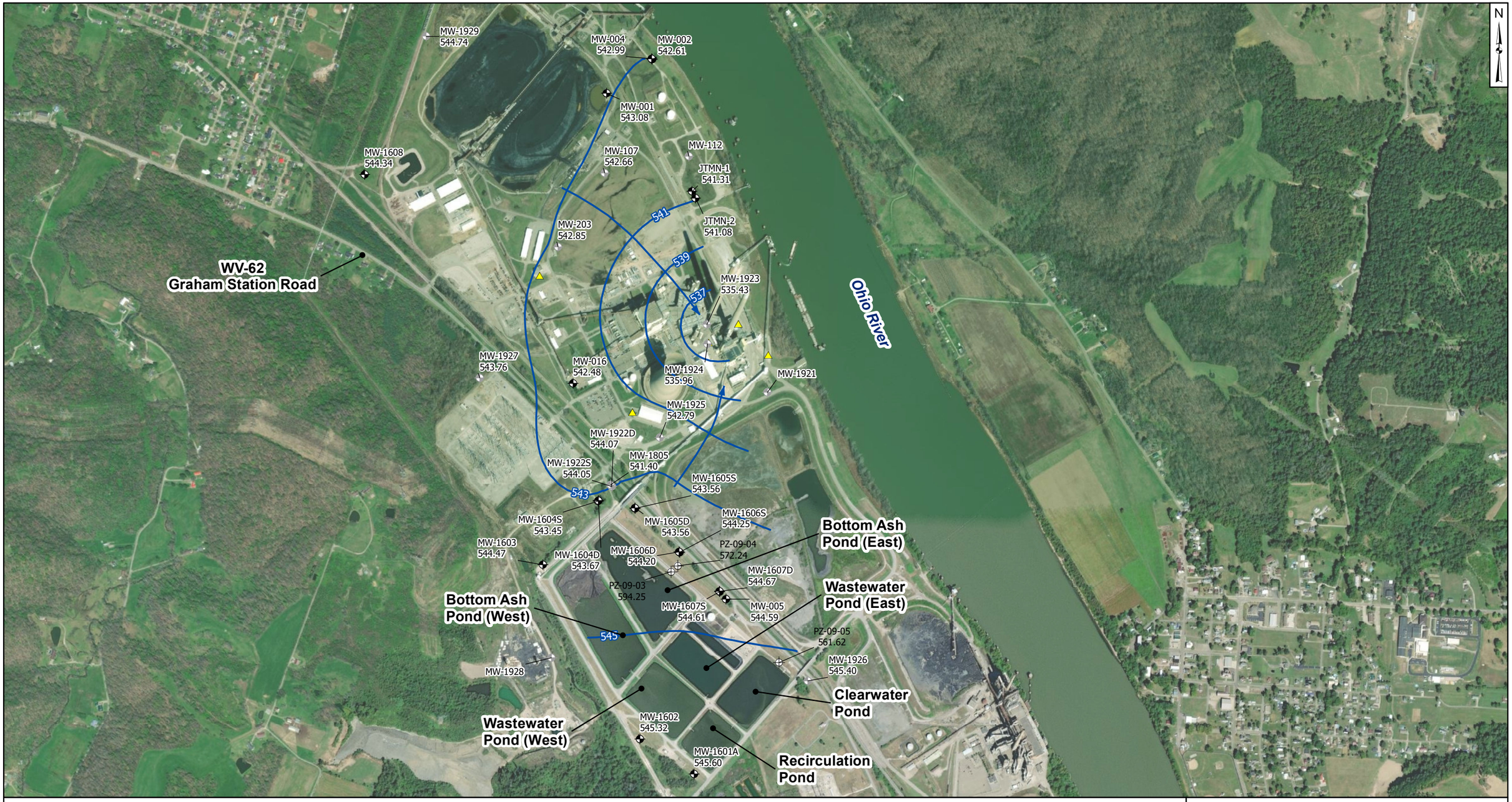
Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.
- -: Not analyzed
J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 2: Residence Time Calculation
Summary Mountaineer Bottom Ash Pond

Geosyntec Consultants, Inc.

			2021-03		2021-05		2021-10	
CCR Management Unit	Monitoring Well	Well Diameter (inches)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)
Bottom Ash Pond	MW-1601A [1]	2.0	93	0.7	148	0.4	91	0.7
	MW-1602 [1]	2.0	66	0.9	172	0.4	114	0.5
	MW-1603 [1]	2.0	403	0.2	253	0.2	593	0.1
	MW-1604D [2]	2.0	210	0.3	109	0.6	397	0.2
	MW-1604S [2]	2.0	245	0.2	328	0.2	448	0.1
	MW-1605D [2]	2.0	406	0.1	354	0.2	338	0.2
	MW-1605S [2]	2.0	406	0.1	352	0.2	89	0.7
	MW-1606D [2]	2.0	443	0.1	411	0.1	195	0.3
	MW-1606S [2]	2.0	462	0.1	425	0.1	151	0.4
	MW-1607D [2]	2.0	158	0.4	278	0.2	118	0.5
	MW-1607S [2]	2.0	186	0.3	237	0.3	47	1.3
	MW-1608 [1]	2.0	148	0.4	145	0.4	661	0.1

Notes:
[1] - Background Well
[2] - Downgradient Well



Legend

- CCR Network Monitoring Wells
- Nature and Extent Monitoring Wells
- Piezometer
- AEP-Owned Pumping Wells
- Groundwater Elevation Contour
- Approximate Groundwater Flow Direction

Notes

- Monitoring well coordinates and water level data (collected on March 18, 2021) provided by AEP.
- Site features based on information available in Ash Pond System-CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2016) provided by AEP.
- Groundwater elevation units are feet above mean sea level.
- Only monitoring wells were used to create groundwater contours.
- MW-1921 (540.88 ft) was not used to generate groundwater contours due to inconsistent or anamalos readings.
- No groundwater was present at MW-1928 during the March 2021 sampling event.
- Normal lower pool elevation of the Ohio River at Racine Lock and Dam is 539.5 ft amsl (USACE).
- Intermittent use of AEP-owned pumping wells for plant activities impact water levels in the vicinity. In general, shallow groundwater beneath the plant flows northeast toward the Ohio River.

1,000 500 0 1,000 Feet

Potentiometric Surface Map - Uppermost Aquifer
March 2021

AEP Mountaineer Generating Plant - Bottom Ash Ponds
New Haven, West Virginia

Geosyntec consultants

Columbus, Ohio | 2021/09/02

Figure **2**

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Legend

- CCR Network Monitoring Wells
- Nature and Extent Monitoring Wells
- Piezometer
- AEP-Owned Pumping Well
- Groundwater Elevation Contour
- Groundwater Elevation Contour (Inferred)
- Approximate Groundwater Flow Direction

Notes

- Monitoring well coordinates and water level data (collected on May 12, 2021) provided by AEP.
- Site features based on information available in Ash Pond System-CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2016) provided by AEP.
- Groundwater elevation units are feet above mean sea level.
- Only monitoring wells were used to generate groundwater contours.
- MW-1805 (531.29 ft) was not used to generate groundwater contours due to inconsistent or anamalous readings.
- No groundwater was present at MW-1928 and MW-112 during the May 2021 sampling event.
- Normal lower pool elevation of the Ohio River at Racine Lock and Dam is 539.5 ft amsl (USACE).
- Intermittent use of AEP-owned pumping wells for plant activities impact water levels in the vicinity. In general, shallow groundwater beneath the plant flows northeast toward the Ohio River.

Potentiometric Surface Map - Uppermost Aquifer
May 2021

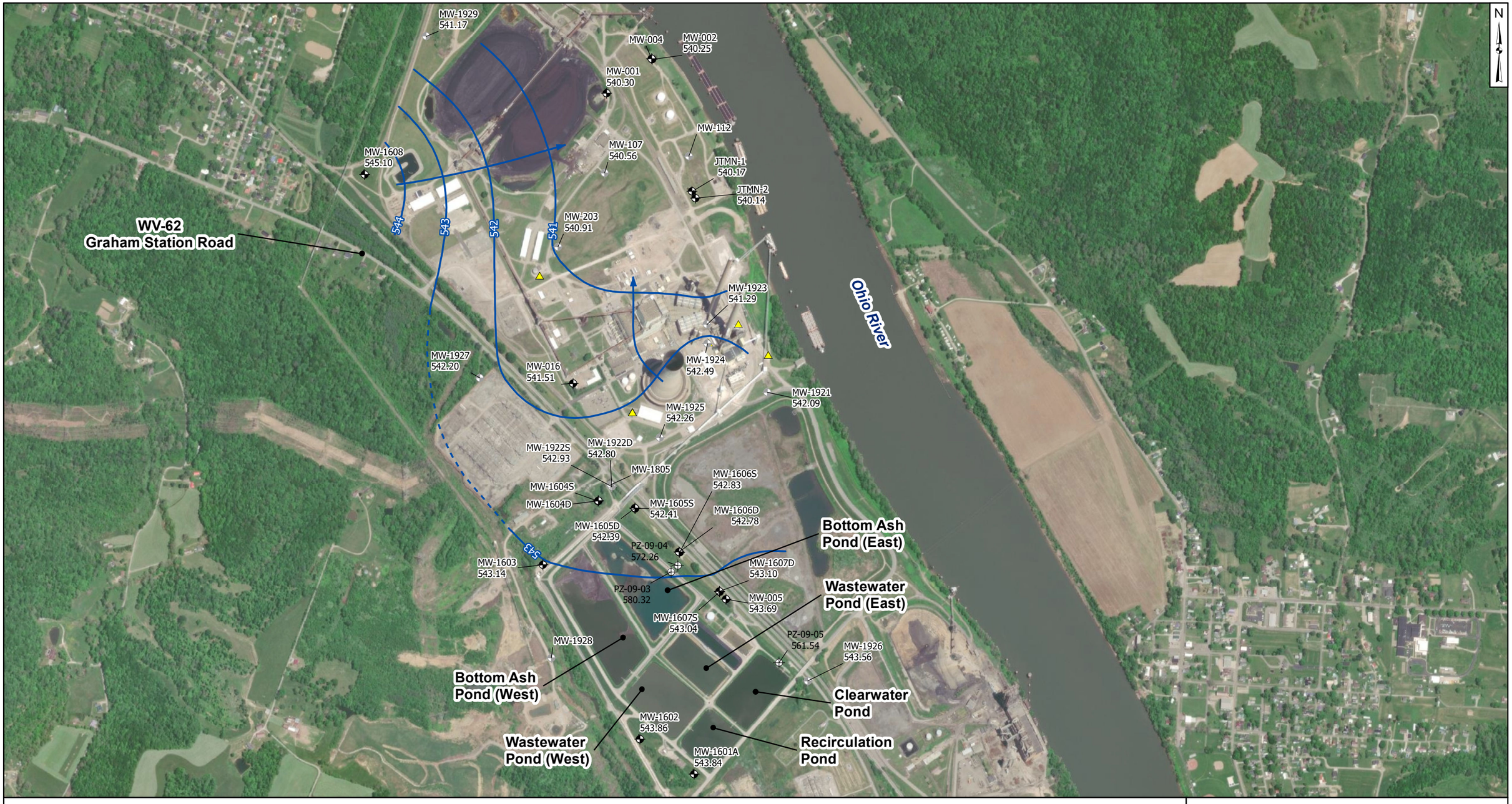
AEP Mountaineer Generating Plant - Bottom Ash Ponds
New Haven, West Virginia

Geosyntec consultants

Columbus, Ohio | 2021/09/02

Figure **3**

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Mountaineer\2021\AEP-Mountaineer_BAP_GW_2021-05.mxd. ARevezzo. 9/2/2021. CHA8423/07/08.



Legend

- CCR Network Monitoring Wells
- Nature and Extent Monitoring Wells
- Piezometer
- AEP-Owned Pumping Well
- Groundwater Elevation Contour
- Groundwater Elevation Contour (Inferred)
- Approximate Groundwater Flow Direction

Notes

- Monitoring well coordinates and water level data (collected on October 25, 2021) provided by AEP.
- Site features based on information available in Ash Pond System-CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2016) provided by AEP.
- Groundwater elevation units are feet above mean sea level.
- Only monitoring wells were used to generate groundwater contours.
- MW-004 (540.49), MW-1604S (540.24), and MW-1604D (540.44), and MW-1805 (540.35 ft) were not used to generate groundwater contours due to inconsistent or anamalous readings.
- No groundwater was present at MW-1928 and MW-112 during the October 2021 sampling event.
- Normal lower pool elevation of the Ohio River at Racine Lock and Dam is 539.5 ft amsl (USACE).
- Intermittent use of AEP-owned pumping wells for plant activities impact water levels in the vicinity. In general, shallow groundwater beneath the plant flows northeast toward the Ohio River.

1,000 500 0 1,000 Feet

Potentiometric Surface Map - Uppermost Aquifer
October 2021

AEP Mountaineer Generating Plant - Bottom Ash Ponds
New Haven, West Virginia

Geosyntec consultants

Columbus, Ohio | 2022/01/19

Figure 4

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Appendix 2

The groundwater data statistical analyses completed in 2021 follow.

STATISTICAL ANALYSIS PLAN

APPALACHIAN POWER COMPANY

MOUNTAINEER PLANT

Prepared in compliance with USEPA's Coal Combustion Residuals Rule, 40 CFR 257.93

Revision 0: January 2017

Revision 1: January 2021

STATISTICAL ANALYSIS PLAN

Submitted to

1 Riverside Plaza
Columbus, Ohio 43215-2372

Submitted by

Geosyntec consultants

engineers | scientists | innovators

941 Chatham Lane
Suite 103
Columbus, Ohio 43221

In collaboration with

Kristina Rayner
Groundwater Stats Consulting

and

Kirk M. Cameron, Ph.D.
MacStat Consulting, Ltd.

CHA8500

January 2021
Revision 1

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LIST OF ACRONYMS AND ABBREVIATIONS

Annual Report	Annual Groundwater Monitoring and Corrective Action Report
ANOVA	analysis of variance
CCR	coal combustion residuals
CFR	Code of Federal Regulations
GWPS	groundwater protection standard
LCL	lower confidence limit
MCL	maximum contaminant level
OLS	ordinary least-squares
ORP	oxidation-reduction potential
PQL	practical quantitation limit
QC	quality control
RCRA	Resource Conservation and Recovery Act
RL	reporting limit
ROS	regression on order statistics
SAP	Statistical Analysis Plan
SSI	statistically significant increase
SSL	statistically significant level
SWFPR	site-wide false positive rate
UCL	upper confidence limit
Unified Guidance	*Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (USEPA, 2009)
UPL	upper prediction limit
USEPA	United States Environmental Protection Agency
UTL	upper tolerance limit

SECTION 1

INTRODUCTION

In April 2015, the United States Environmental Protection Agency (USEPA) issued new regulations regarding the disposal of coal combustion residuals (CCR) in certain landfills and impoundments under 40 CFR 257, Subpart D, referred to as the "CCR rules." Facilities regulated under the CCR rules are required to develop and sample a groundwater monitoring well network to evaluate if landfilled CCR materials are impacting downgradient groundwater quality. As part of the evaluation, the analytical data collected during the sampling events must undergo statistical analysis to identify statistically significant increases (SSIs) in analyte concentrations above background levels. A description of acceptable statistical programs is provided in USEPA's document *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (USEPA, 2009), which is commonly referred to as the "Unified Guidance".

The CCR rules are not prescriptive regarding what statistical analyses should be selected so that groundwater data are interpreted in a consistent manner and the results meet certification requirements. Geosyntec Consultants, Inc. (Geosyntec) prepared this Statistical Analysis Plan (SAP) on behalf of American Electric Power (AEP) to develop a logic process regarding the appropriate statistical analysis of groundwater data collected in compliance with the CCR rules. The SAP will provide a narrative description of the statistical approach and methods used in accordance with the CCR rule reporting requirements [40 CFR 257.93(f)(6)].

This SAP describes statistical procedures to be used to establish background conditions, implement detection monitoring, implement assessment monitoring (as needed), and implement corrective action monitoring (as needed).

Procedures for collecting, preserving, and shipping groundwater samples are not included in this SAP. It is assumed that samples are collected and handled in accordance with AEP's draft *Groundwater Sampling and Analysis Plan* (AEP, 2016*)* and the requirements of 40 CFR 257.93 *et seq.*

SECTION 2

ANALYSES FOR REVIEWING AND PREPARING DATA

2.1 Physical Independence

Most statistical analyses require separate sampling events to be statistically independent. Statistical independence of groundwater samples is most likely to be realized when the samples are collected at time intervals that are sufficiently far apart that the samples are not from the same volume of groundwater. In such cases, the samples of groundwater are considered physically independent. To ensure physical independence, the minimum time between sampling events must be longer than the residence time of groundwater that would be collected in the monitoring well. The minimum time interval between sampling events (t_{min}) can be determined by calculating the groundwater velocity, as follows:

$$v = \frac{Ki}{n} \quad (1)$$

$$t_{min} = \frac{v}{D} \quad (2)$$

where:

$v =$	groundwater velocity
$K =$	hydraulic conductivity
$i =$	hydraulic gradient
$n =$	effective porosity
$t_{min} =$	minimum time interval between sampling events
$D =$	well bore volume (i.e., diameter of well and surrounding filter pack)

2.2 Testing for Normality

Many statistical analyses assume that the sample data are normally distributed. If such an analysis is used, the assumption of normality can be tested using the Shapiro-Wilk test (for sample sizes up to 50) or the Shapiro-Francía test (for sample sizes greater than 50). Normality can also be tested by less computationally intensive means such as graphing data on a probability plot. If the data appear not to be normally distributed (e.g., they are skewed in some fashion), then data may be transformed mathematically such that the transformed data do follow a normal distribution (e.g., lognormal distributions, Box-Cox transformations). Alternatively, a non-parametric test (i.e., a test that does not assume a particular distribution of the data) may be used. However, since non-parametric tests generally require large datasets to maintain an adequately low site-wide false positive rate (SWFPR), transforming the data is preferred.

2.3 Testing for Outliers

Outliers are extreme data points that may represent an anomaly or error. Data sets should be visually inspected for outliers using time series and/or box-and-whisker plots. While they are valuable as screening tools, visual methods are not foolproof. For example, if data are skewed according to a lognormal distribution, the boxplot screening may identify more outliers than actually exist. Typically, goodness-of-fit testing must be done on the non-outlier portion of the data to determine at what scale to test the possible outliers.

Potential outliers should be evaluated for potential sources of error (e.g., in transcription or calculation) or evidence that the data point is not representative (e.g., by examining quality control [QC] data, groundwater geochemistry, sampling procedures, etc.). Errors should be corrected prior to further statistical analysis, and data points that are flagged as non-representative should not be used in the statistical analysis. In addition, data points can be considered extreme outliers if they meet one of the following criteria:

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

or

$$x_i > \tilde{x}_{0.75} + 3 \times IQR \quad (4)$$

where:

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

Extreme outliers may be excluded from the statistical analysis based on professional judgment. Goodness-of-fit testing may be needed to corroborate the classification of data points as extreme outliers. Flagged data and extreme outliers should still be maintained in the database and should be reevaluated as new data are collected.

2.4 Handling Duplicate or Replicate Data

Duplicate or replicate samples are often collected for QC purposes. Averaging the parent sample and duplicate sample results may give a more accurate representation of the constituent concentration at the time, but doing so would reduce the sample variability. Since many statistical tests assume that data are homoscedastic (i.e., the population variance does not change across samples), this technique is not recommended. Unless there is reason to suspect that either the parent sample or the duplicate sample is more representative of site groundwater, one of the samples should be selected at random and that value should be used in the subsequent statistical analysis. However, it should be reported when parent sample and duplicate sample results are

different from a decision-making perspective, e.g., when the duplicate sample exceeds the groundwater protection standard (GWPS) but the parent sample does not.

2.5 Handling Non-Detect Data

If non-detect data are infrequent (less than 15%), half of the reporting limit (RL) can be used in place of these data without significantly altering the results of a statistical test. The RL may be either the laboratory practical quantification limit (PQL) or an established project limit which is less than the maximum contaminant level (MCL) or CCR rule-specified screening level for constituents that do not have an MCL. If non-detect data are more frequent, parametric methods that explicitly consider non-detects or non-parametric methods insensitive to the presence of non-detect data should be used. Where available, estimated results less than the RL (i.e., "J-flagged" data) should be used, and these data should be considered detections for the purposes of statistical analysis.

2.6 Deseasonalizing Data

Most statistical tests assume that data are independent and identically distributed. Datasets with seasonal or cyclic patterns violate this assumption. If seasonal trends are not corrected, the variance of the data will be overestimated, lessening the statistical power of the test. False positives may also be identified for elevated results that are caused by seasonal variation instead of a release.

At the same time, deseasonalizing data inherently assumes that the seasonal pattern will continue into the future, so care should be taken when correcting for seasonality. There should be a physical explanation for the seasonal pattern, and the seasonal pattern should be observed for at least three cycles before deseasonalizing data.

To evaluate whether a seasonal pattern exists, data should first be visually inspected on a time series plot. Observing parallel or antiparallel patterns for the same constituent across multiple wells or for multiple constituents within a single well provides greater assurance of a seasonal pattern and may be used to infer a physical explanation.

If a seasonal pattern is observed, the dataset should undergo a statistical test for seasonality before deseasonalizing the data. First, results are categorized into seasons based on the observed seasonal pattern and the frequency of sampling (e.g., summer or winter; dry season or wet season; first, second, third, or fourth quarter; etc.). Then, the Kruskal-Wallis test can be applied to the various seasonal datasets to test whether the different seasons are statistically significantly different from one another.

To deseasonalize the data, a seasonal mean should be calculated for each season based on the categorization for the dataset, and a grand mean (i.e., the overall mean of all data) should be calculated. Each result should then be corrected based on the difference between the grand mean and the seasonal mean for that result's season. Similar to transforming apparently non-normal data, statistics should be calculated based on the deseasonalized data.

SECTION 3

DETECTION MONITORING

3.1 Establishing Background

By October 17, 2017, eight independent background samples should be collected from each monitoring well in the CCR unit groundwater monitoring system as part of the initial monitoring period [40 CFR 257.94(b)]. Background wells do not necessarily need to be hydraulically upgradient of the CCR unit, but they must not be affected by a release from the CCR unit [40 CFR 257.91(a)(1)]. The sampling frequency should be such that samples are physically independent, as described in **Section 2.1**. Samples should be analyzed for the Appendix III and Appendix IV constituents listed in **Table 1**.

Once analytical data are received, summary statistics (e.g., mean and variance) should be calculated for the background datasets. Initially, analysis should be done independently for each constituent at each well. As part of our protocol in such situations, time series plots and box plots will be prepared along with the summary statistics. The Kaplan-Meier method or robust regression on order statistics (ROS) can be used to compute summary statistics when there are large fractions (i.e., 15% to 50%) of non-detects; these methods are discussed below. If more than 50% of the data are non-detect, then summary statistics cannot be reliably calculated. Procedures for evaluating future data against these background datasets are described in **Section 3.2.1** (for detection monitoring) and **Section 4.1.1** (for assessment monitoring and corrective action monitoring).

Background data will be evaluated for statistically significant temporal trends using (a) ordinary least-squares (OLS) linear regression with a *t*-test ($\alpha = 0.01$) on the slope and/or (b) the non-parametric Theil-Sen slope estimator with Mann-Kendall trend test ($\alpha = 0.05$, or 0.01 for larger datasets). Non-detect data are replaced with half the RL for these analyses. The OLS linear regression or Theil-Sen slope estimator will be used to estimate the rate of change (increasing, no change, or decreasing) over time for each constituent at each well. The *t*-test or Mann-Kendall statistic will be used to determine whether a trend is statistically significant. OLS linear regression should only be used when at most 15% of the data are non-detect, when regression residuals are normally distributed, and when the variance from the regression line does not change over time. The Theil-Sen/Mann-Kendall analysis requires at least five observations for meaningful results; at least eight observations are recommended. Note that a statistically significant increasing trend in background data (or a statistically significant decreasing trend in pH) could indicate an existing release from the CCR unit or another source, and further investigation may be needed to determine the source of this trend.

Background data will also be evaluated for statistically significant seasonal patterns and, if present, will be deseasonalized using the procedure described in **Section 2.6**.

If the trend analysis does not indicate a statistically significant trend, the proposed background data will be tested for normality using one of the methods outlined in **Section 2.2**. When data follow a normal or transformed-normal distribution (e.g. lognormal or other Box-Cox transformation), parametric methods are applied. If fewer than 15% of the data are non-detect, non-detect data may be replaced with half the RL and the mean and variance can be calculated normally. If 15% to 50% of the data are non-detect, two methods – the Kaplan-Meier or Robust ROS method – can be used to determine the sample mean and variance. Kaplan-Meier should not be used if all non-detect data have the same RL or if the maximum detected value is less than the highest RL of the non-detect data. When data do not follow a normal or transformed-normal distribution, or when more than 50% of the data are non-detect, nonparametric methods may be used.

Once the sample mean and variance are calculated for each constituent at each well (assuming no significant trends over time), the data from background wells should be compared for each constituent. The purpose of this exercise is to test for significant spatial variation and to decide between interwell and intrawell approaches. First, the equality of variance across background wells should be tested visually using box-and-whisker plots and/or analytically using Levene's test (α = 0.01). If the variances appear equal, then one-way, parametric analysis of variance (ANOVA) should be conducted across background wells (α = 0.05). If there are no statistically significant differences among the background wells, then interwell comparisons may be appropriate to evaluate SSIs.

If ANOVA indicates statistically significant differences among background wells, then spatial variability can be concluded. As with temporal trends, the existence of spatial variability could indicate an existing release from the CCR unit or another source, and further investigation may be needed to determine the source of this variability. If the spatial variability is not caused by a release from the CCR unit, then intrawell comparisons would be appropriate to evaluate SSIs.

3.2 Evaluating Statistically Significant Increases (SSIs)

After the initial eight rounds of background sampling, groundwater sampling and analysis should be conducted on a semiannual basis. The statistical evaluation of each groundwater monitoring event must be completed within 90 days of receiving the analytical results from the laboratory [40 CFR 257.93(h)(2)].

The CCR rules only require analysis of the Appendix III constituents; however, analyzing additional constituents should be considered. Turbidity, dissolved oxygen, and oxidation-reduction potential (ORP), should be measured in the field in addition to pH. Other geochemical parameters, such as alkalinity, magnesium, potassium, sodium, iron, and manganese, should also be analyzed in the laboratory periodically (e.g., once every one to four years). Both the field and laboratory geochemical parameters can help identify the cause of any apparent change in groundwater quality. Additionally, analyzing for the Appendix IV constituents periodically should be considered to ensure the background dataset for these constituents is complete and current should assessment

monitoring be needed. Statistical analyses should still be limited to the Appendix III constituents to help meet the dual goals of a SWFPR less than 10% per year and an adequate statistical power.

The CCR rules specifically list four methods acceptable for statistical analysis: ANOVA, tolerance intervals, prediction intervals, and control charts [40 CFR 257.93(f)]. Of these, the Unified Guidance recommends prediction limits combined with retesting for maintaining a low SWFPR while providing high statistical power (USEPA, 2009). Control charts are also acceptable as long as parametric methods can be used (i.e., the data or transformed data are normally distributed and the frequency of non-detects is at most 50%), as there is no nonparametric counterpart to the control chart. ANOVA is not recommended as the CCR rules mandate a minimum Type I error (α) of 0.05, at which it would be difficult to maintain an annual SWFPR less than 10%.

Prediction intervals and control charts can be used for both interwell and intrawell comparisons. For interwell comparisons, the pooled data from background monitoring wells should be used for the background dataset; for intrawell comparisons, the background dataset should be a subset of historical data at each monitoring well. (See **Section 3.4** below for procedures for updating background datasets.) Interwell comparisons are preferable, but they should only be used when there are no trends and no statistically significant population differences among background wells; otherwise, a significant test result may only indicate natural spatial variability instead of an SSI.

For prediction intervals, the upper prediction limit (UPL) is calculated according to the following formula:

$$\text{UPL} = \bar{x} + ks \quad (5)$$

where:

$\bar{x} =$ mean concentration of the background dataset
$s =$ standard deviation of the background dataset
$k =$ multiplier based on the characteristics of the site and the statistical test

Values for *k* are chosen to maintain an SWFPR less than 10% and depend on the following: (1) number of wells, (2) number of constituents being evaluated, (3) size of the background dataset, (4) retesting regime, and (5) whether intrawell or interwell comparisons are being used. Values for *k* are listed in Tables 19-1, 19-2, 19-10, and 19-11 in Appendix D of the Unified Guidance (USEPA, 2009). If the *k* value that precisely matches site conditions does not appear in these tables, it can be estimated using the provided values by linear interpolation.

A one-of-two or one-of-three testing regime should be employed; i.e., if at least one sample in a series of two or three (respectively) does not exceed the UPL, then it can be concluded that an SSI has not occurred. In practice, if the initial result does not exceed the UPL, then no resampling is needed. If the initial result does exceed the UPL, then a resample should be collected prior to the next regularly scheduled sampling event at the monitoring well(s) and for the constituent(s) exceeding the UPL. Additional geochemical parameters, such as alkalinity, magnesium,

potassium, sodium, iron, and manganese, should also be analyzed during resampling to help identify the source of the apparent increase. Enough time should elapse between the initial sample and each resample so that the samples are physically independent (**Section 2.1**). If both the initial result and the subsequent resample(s) exceed the UPL, then an SSI can be concluded.

Choosing between a one-of-two and a one-of-three testing regime should be done before conducting the statistical analysis, as the UPL calculation depends on the resampling regime selected. The choice should depend on site conditions and the size of the background dataset. First, if three physically independent samples cannot be collected in a six-month period, then a one-of-two testing regime should be used. A one-of-two testing regime may also be considered (a) if the background dataset has at least 16 data points or (b) if the CCR unit's monitoring well network has nine or fewer downgradient monitoring wells and a background dataset of at least 8 data points. Otherwise, a one-of-three testing regime should be employed to achieve an acceptably high statistical power and an acceptably low SWFPR.

If two physically independent samples cannot be collected in a six-month period, then a reduced monitoring frequency may be warranted. In this case, a demonstration must be made documenting the need for – and effectiveness of – a reduced monitoring frequency. This demonstration must be certified by a qualified professional engineer, and monitoring must still be done on at least an annual basis [40 CFR 257.94(d)].

The above procedure can be used wherever a mean and variance can be calculated for background data, including datasets that are transformed-normal and datasets where the mean and variance are calculated using the Kaplan-Meier or Robust ROS method. (Note that if data are transformed-normal, prediction intervals or control limits should first be calculated for the transformed data and then be transformed back into concentration terms.) Methods for determining prediction intervals where more than half of the background data are non-detect, where background data are neither normal nor transformed-normal, or where statistically significant trends or seasonal patterns exist are described below.

Different analyses can and should be used for different constituents and different monitoring wells within a CCR unit depending on the background data. For instance, if background wells have similar chloride data but different pH data, then interwell comparisons may be considered for chloride analysis and intrawell comparisons may be considered for pH analysis. If boron data are stable above the RL at MW-1 and mostly non-detect at MW-2, then it would be appropriate to use parametric prediction limits at MW-1 and non-parametric prediction limits at MW-2.

3.2.1 Most Background Data Are Non-Detect

If at least half of the data are non-detect, non-parametric prediction intervals with retesting should be used. In this method, the UPL is set either at the highest or at the second-highest concentration observed in the background dataset. A sufficiently large background dataset is paramount for this procedure to achieve an acceptably low SWFPR. To this end, the Kruskal-Wallis test should be performed on all background monitoring wells where at least 50% of the data for the constituent

are non-detect to evaluate spatial variability. If the Kruskal-Wallis test indicates that there is no significant spatial variability among background wells, then the data from the background wells should be pooled to form a larger background dataset and thus to run an interwell test.

The choice between a one-of-two and a one-of-three testing regime should be based on the same criteria used for parametric testing, as described in **Section 3.2**. Choosing between using the highest or second-highest observed concentration as the UPL should depend in part on the size of the background dataset and the number of monitoring wells around the CCR unit. Assuming a one-of-three testing regime is used, the highest observed concentration should be used when the background dataset has fewer than 32 data points and the monitoring network has twelve or fewer wells. If there are at least thirteen wells, the highest observed concentration should be used when the background dataset has fewer than 48 data points. The second-highest observed concentration may be used for larger datasets.

If a one-of-two testing regime must be used due to aquifer conditions, then the highest observed concentration should be used (a) when the background dataset has fewer than 64 data points if there are fifteen or fewer wells or (b) when the background dataset has fewer than 88 data points if there are at least sixteen wells. The second-highest observed concentration may be used for larger data sets.

3.2.2 All Background Data Are Non-Detect

If all of the background data are non-detect, then the Double Quantification Rule should be used. According to this rule, if a sample and verification resample both exceed the PQL, then an SSI can be concluded. This can be thought of as setting the UPL at the PQL with a one-of-two testing regime. The possibility of false positives from this rule does not count against the calculated SWFPR because the false positive risk is small when all previous background data have been non-detect.

3.2.3 Background Data Are neither Normal nor Transformed-Normal

If background data are non-normal and cannot be transformed such that the transformed data do follow a normal distribution, then non-parametric prediction intervals with retesting should be used. In this method, the UPL is set either at the highest or at the second-highest concentration observed in the background dataset. A sufficiently large background dataset is paramount for this procedure to achieve an acceptably low SWFPR. To this end, the Kruskal-Wallis test should be performed on all background monitoring wells where at least 50% of the data for the constituent are non-detect to evaluate spatial variability. If the Kruskal-Wallis test indicates that there is no significant spatial variability among background wells, then the data from the background wells should be pooled to form a larger background dataset and thus to run an interwell test.

The choice between a one-of-two and a one-of-three testing regime should be based on the same criteria used for parametric testing, as described in **Section 3.2**. The choice between using the

highest or second-highest observed concentration as the UPL should be based on the same considerations described in **Section 3.2.1**.

3.2.4 A Significant Temporal Trend Exists

True temporal trends in background data (i.e., absent a release from the facility or another source) are considered unlikely. Thus, a truncated dataset that does not exhibit a statistically significant trend may be used. In these cases, UPLs would be calculated as described in the previous sections.

Alternatively, if there is a significant temporal trend in the background data that is not attributable to a release, prediction limits can be constructed around a trend line. A trend line can be constructed parametrically using OLS linear regression. OLS linear regression should only be used when at most 15% of the data are non-detect, when regression residuals are normally distributed, and when the variance from the regression line does not change over time. If OLS linear regression is used, the UPL can be calculated according to the following equation:

$$\text{UPL} = \widehat{x_0} + t_{1-\alpha,n-2} * s_e * \sqrt{1 + \frac{1}{n} + \frac{(t_0 - \bar{t})^2}{(n-1)s_t^2}} \quad (6)$$

where:

$\widehat{x_0} =$ regression-line estimate of the mean concentration at time t_0
$t_{1-\alpha,n-2} =$ one-tailed *t*-value at a confidence of 1 – α and n – 2 degrees of freedom
$s_e =$ standard error of the regression line
$n =$ number of samples in the background dataset
$t_0 =$ date the groundwater sample being compared to the UPL was collected
$\bar{t} =$ mean of the sampling dates in the background dataset
$s_t =$ standard deviation of the sampling dates in the background dataset

The choice between a one-of-two and a one-of-three testing regime should be based on the same criteria used when there is no significant trend, as described in **Section 3.2**. The choice of α depends on the retesting regime and the number of wells within the monitoring network. If a one-of-two testing regime is employed, an α = 0.02 is recommended if there are eighteen or fewer wells and an α = 0.01 is recommended if there are at least nineteen wells within the monitoring network. If a one-of-three testing regime is employed, an α = 0.05 should be used.

3.2.5 A Significant Seasonal Pattern Exists

If a statistically significant seasonal pattern exists and if there is a physical explanation for the seasonality, the background data should be deseasonalized using the procedure described in **Section 2.6**. The background UPL should be calculated based on the deseasonalized data. Results should then be deseasonalized by subtracting the difference between the seasonal mean and the grand mean before comparing results to the UPL.

3.3 Responding to an Identified SSI

If the statistical evaluation indicates that an SSI is present, the data should be evaluated to assess whether the SSI is caused by a release from the CCR unit. If it can be shown that the SSI resulted from a release from another source, from an error in sampling or analysis, or from natural variability, then a demonstration of this must be made in writing and certified by a qualified professional engineer within 90 days of completing the statistical evaluation [40 CFR 257.94(e)(2)]. (The statistical evaluation itself must be completed within 90 days of receiving the analytical data from the laboratory.) If this demonstration is not made within 90 days of completing the statistical evaluation, then the site must begin assessment monitoring [40 CFR 257.94(e)(1)].

3.4 Updating Background

As recommended in the Unified Guidance, background values should be updated every four to eight measurements, assuming no confirmed SSI is identified (USEPA, 2009). (See **Section 4.4** for procedures for updating background if an SSI has been identified.) A Student's *t*-test or the nonparametric Mann-Whitney test (also known as the Wilcoxon rank-sum test) should be conducted to compare the set of new data points against the existing background dataset, as appropriate. An $\alpha = 0.05$ is recommended given the relatively small size of the datasets, particularly if background is updated every four measurements and particularly if the nonparametric Mann-Whitney test is used. However, an α as low as 0.01 may be used if the existing background dataset is sufficiently large (i.e., contains at least five data points) or if Student's *t*-test is used.

If the *t*-test or Mann-Whitney test does not indicate significant differences, the new data should be combined with the existing background data to calculate an updated UPL. Increasing the size of the background dataset will increase the power of subsequent statistical tests.

If the *t*-test or Mann-Whitney test indicates a statistically significant difference between the two populations, then the data should not be combined with the existing background data until further review determines the cause of the difference. If the differences appear to be caused by a release, then the previous background dataset should continue to be used. Absent evidence of a release, the new dataset should be considered more representative of present-day groundwater conditions and used for background. Note that the *t*-test or Mann-Whitney test is used to compare new data to the existing background dataset for the purposes of updating background. The tests are not used to determine whether an SSI is present or whether a release has occurred.

Periodically, spatial variability among background wells may be re-assessed to determine whether using an interwell or intrawell comparison is appropriate on a constituent-by-constituent basis, as outlined in **Section 3.1**.

SECTION 4

ASSESSMENT MONITORING

A CCR unit must begin assessment monitoring if an SSI is identified and is not attributed to some cause besides a release from the CCR unit. Assessment monitoring must begin within 90 days of identifying the SSI. During this 90-day period, the monitoring well network must be sampled for all Appendix IV constituents [40 CFR 257.95(b)]. Within 90 days of obtaining the results from this sampling event, all of the CCR unit wells must be sampled for all Appendix III constituents and those Appendix IV constituents that were detected during the initial assessment monitoring event [40 CFR 257.95(d)(1)].

After these initial assessment monitoring events, the CCR unit wells must be sampled for all Appendix III constituents and previously detected Appendix IV constituents on a semiannual basis [40 CFR 257.95(d)(1)]. Additionally, the CCR unit wells must be sampled for all Appendix IV constituents on an annual basis [40 CFR 257.95(b)].

As with detection monitoring, if physically independent samples cannot be collected on a semiannual basis, then a reduced monitoring frequency may be warranted. A demonstration must be made documenting the need for – and effectiveness of – a reduced monitoring frequency. This demonstration must be certified by a qualified professional engineer, and monitoring must still be done on at least an annual basis [40 CFR 257.95(c)].

GWPSs must be established for each detected Appendix IV constituent. The GWPS shall be the greater of the background concentration and the MCL established by the USEPA for that constituent. There is no established MCL for cobalt, lead, lithium, and molybdenum. For these constituents, the CCR rules specify a screening level that can be used in place of the MCL. For these constituents, the GWPS shall be the greater of the background concentration and the CCR rule-specified screening level [40 CFR 257.95(h)]. An upper tolerance limit (UTL) with 95% confidence and 95% coverage is often used as the representative background concentration.

A single site-wide GWPS would be recommended for each constituent based on pooled background data, even if natural spatial variability exists. If background data are not pooled, background concentrations and consequently GWPSs would vary from well to well. One difficulty with this approach is that concentrations at one monitoring well may exceed the location-specific GWPS and still be below levels considered as natural background at other locations within the site. The pooled background is often more interpretable and less cumbersome for developing a single background-based GWPS per constituent.

To determine whether a move to corrective action is warranted, a confidence interval constructed on recent data at each compliance monitoring well should be compared to the site-wide GWPS. When the lower confidence limit (LCL) of this interval exceeds the GWPS, an assessment of corrective measures may be justified.

When corrective action is not warranted, to return from assessment monitoring to detection monitoring, the CCR rules specify that all Appendix III and IV constituents must be at or below background levels for two consecutive sampling events [40 CFR 257.95(e)]. Procedures for comparing results to background are described in **Section 4.2**.

4.1 Comparing Data to the GWPS

As stated in **Section 4**, the GWPS is set at the MCL (or CCR rule-specified screening level for cobalt, lead, lithium, and molybdenum) or a value based on background data, whichever is greater. The UTL calculated from the background dataset is often used as the background value.

Tolerance intervals are similar to prediction intervals. However, whereas prediction intervals represent a range where a future result is expected to lie, tolerance intervals represent a range where a proportion of the population is expected to lie. Tolerance intervals have both an associated coverage (i.e., the proportion of the population covered by the tolerance interval) and an associated confidence. A coverage of 95% ($\gamma = 0.95$) and a confidence of 95% ($\alpha = 0.05$) are typically used.

The UTL is calculated similarly to the UPL:

$$\text{UTL} = \bar{x} + \tau s \quad (7)$$

Similar to the UPL calculation, $\bar{x}$ is the mean concentration and s is the standard deviation of the background dataset. However, in this case the multiplier τ is different from that of the UPL calculation and is a function of the chosen coverage and confidence and the size of the background dataset. Values of τ are tabulated in Table 17-3 in Appendix D of the Unified Guidance (USEPA, 2009). As with prediction limits, if the τ value that precisely matches site conditions does not appear in these tables, it can be estimated using the provided values by linear interpolation.

Once a GWPS is established, new data must be evaluated to determine whether they are statistically significantly higher than the GWPS. The statistical analyses listed in 40 CFR 257.93(f) are appropriate for comparing new data to a background dataset but are not appropriate for comparing new data to a fixed standard. For these cases, the Unified Guidance recommends using confidence intervals around the mean or median (USEPA, 2009).

Evaluations should be done for each detected Appendix IV constituent at each well. Data from different wells should not be pooled. When selecting which data to include in the recent dataset, time series plots of concentration data at each well should be created and visually inspected. Only data that exhibit the same behavior as recent data should be included. For instance, if the last eight arsenic results cluster around 9 µg/L and the previous eight results cluster around 4 µg/L, then only the eight most recent results should be used in the statistical analysis. Similarly, if chromium concentrations steadily increased over the last ten samples and were stable previously, then the statistical analysis should only use the ten most recent results and (since they are steadily increasing) should involve constructing a confidence interval around a trend line.

At the same time, datasets should also be sufficiently large to maintain statistical power. As many data points that exhibit the same behavior as recent data as possible should be included, including data collected prior to assessment monitoring (e.g., during the initial eight monitoring events). Ideally, datasets should have at least eight data points; in no case should a dataset have fewer than four data points.

If at least 50% of the recent dataset is non-detect, then a parametric confidence interval should not be used, and the procedure in **Section 4.1.1** should be followed.

New data will be evaluated for statistically significant temporal trends using (1) OLS linear regression with a *t*-test ($\alpha = 0.01$) on the slope and/or (2) the non-parametric Theil-Sen slope estimator with Mann-Kendall trend test ($\alpha = 0.05$, or 0.01 for larger datasets). Non-detect data are replaced with half the RL for these analyses. The OLS linear regression or Theil-Sen slope estimator will be used to estimate the rate of change (increasing, no change, or decreasing) over time for each constituent at each well. The *t*-test or Mann-Kendall statistic will be used to determine whether a trend is statistically significant. OLS linear regression should only be used when at most 15% of the data are non-detect, when regression residuals are normally distributed, and when the variance from the regression line does not change over time. The Theil-Sen/Mann-Kendall analysis requires at least five observations for meaningful results; at least eight observations are recommended. If a significant temporal trend exists, then a confidence interval around the trend line should be constructed as outlined in **Section 4.1.3**.

If the trend analysis does not indicate a statistically significant trend, then the mean and variance should be calculated. If fewer than 15% of the data are non-detect, then the non-detect data can be replaced with half the RL and the mean and variance can be calculated normally. Tolerance intervals are sensitive to the choice of population distribution. Normality should be confirmed using the Shapiro-Wilk (or Shapiro-Francía) test and/or probability plots, as described in **Section 2.2**. If data appear not to be normally distributed, data should be transformed so that the transformed data are normally distributed.

Two methods – the Kaplan-Meier or Robust ROS method – can be used to determine the sample mean and variance when 15% to 50% of the data are non-detect. Kaplan-Meier should not be used if all non-detect data have the same RL or if the maximum detected value is less than the highest RL of the non-detect data.

When most of the data are detections, data are normally distributed, and there is no significant temporal trend, the LCL is calculated according to the following equation:

$$\text{LCL} = \bar{x} - t_{1-\alpha,n-1} * \frac{s}{\sqrt{n}} \quad (8)$$

where:

$\bar{x} =$ mean concentration of the recent dataset
$t_{1-\alpha,n-1} =$ one-tailed *t*-value at a confidence of 1 – α and at n – 1 degrees of freedom
$s =$ standard deviation of the recent dataset
$n =$ number of samples in the recent dataset

The *t* value must be chosen in such a way to balance the competing goals of a low false-positive rate and a high statistical power. The Unified Guidance recommends that the statistical test have at least 80% power ($1 - \beta = 0.8$) when the underlying mean concentration is twice the MCL (USEPA, 2009). Values of the minimum α (from which *t* values can be determined) are tabulated for this criterion for various values of *n* in Table 22-2 in Appendix D of the Unified Guidance (USEPA, 2009). The selected α should be the maximum of the value in Table 22-2 and 0.01.

If data are transformed normal, the LCL should first be calculated for the transformed data and then be transformed back into concentration terms. Correction factors are available but are not expected to be required. Alternatively, a non-parametric LCL can be used, as described in **Section 4.1.2**.

If data are non-normal and cannot be transformed such that the transformed data do follow a normal distribution, then a non-parametric LCL should be used, as described in **Section 4.1.2**.

If the LCL exceeds the GWPS, then a statistically significant exceedance can be concluded. If this occurs, the owner/operator is required to take several actions, including potentially moving the facility to corrective action, as described in **Section 4.3**.

4.1.1 Most Data Are Non-Detect

If background data are mostly non-detect, non-parametric tolerance intervals should be used. In these cases, the UTL is set at either the highest or second-highest concentration observed in the background dataset. If all background data are non-detect, then the UTL would default to the RL. The highest or second-highest observed concentration (or RL) effectively becomes the GWPS when this value is greater than the MCL (or CCR rule-specified screening level for cobalt, lead, lithium, and molybdenum). However, if most background data are non-detect, then detected concentrations are likely less than the MCL (or CCR rule-specified screening level), and the GWPS will be set at the MCL (or CCR rule-specified screening level).

If recent data are mostly non-detect, non-parametric confidence intervals can be constructed around the median by ranking the data from least to greatest and setting the LCL equal to one of the lower values of data. The confidence can be calculated based on the rank of the data point used and the sample size. Confidence values are tabulated in Table 21-11 in Appendix D of the Unified Guidance for sample sizes up to 20 (USEPA, 2009).

However, if most of the recent data are non-detect, then the data point selected for the LCL will also be non-detect. If the RL is less than the GWPS, then no statistically significant exceedance has occurred.

GWPSs should only be determined for detected Appendix IV constituents [40 CFR 257.95(d)(2)]. If all the data for a constituent are non-detect, no statistical evaluation need be performed.

4.1.2 Data Are neither Normal nor Transformed-Normal

If background data are non-normal and cannot be transformed such that the transformed data do follow a normal distribution, then non-parametric tolerance intervals should be used. In these cases, the UTL is set at either the highest or second-highest concentration observed in the background dataset.

If recent data are non-normal and cannot be transformed such that the transformed data do follow a normal distribution, non-parametric confidence intervals can be constructed around the median by ranking the data from least to greatest and setting the LCL equal to one of the lower values of data. The confidence can be calculated based on the rank of the data point used and the sample size. Confidence values are tabulated in Table 21-11 in Appendix D of the Unified Guidance for sample sizes up to 20 (USEPA, 2009).

4.1.3 A Significant Temporal Trend Exists

If recent data show a significant temporal trend, then an LCL below the trend line can be calculated according to the following equation:

$$\text{LCL} = \widehat{x_0} - \sqrt{2s_e^2 * F_{1-2\alpha,2,n-2} * \left(\frac{1}{n} + \frac{(t_0 - \bar{t})^2}{(n-1)s_t^2}\right)} \quad (9)$$

where:

$\widehat{x_0}$ = regression-line estimate of the mean concentration at time t_0
s_e = standard error of the regression line
$F_{1-2\alpha,2,n-2}$ = upper (1 - 2α)th percentage point from an *F*-distribution with 2 and $n - 2$ degrees of freedom
n = number of samples in the recent dataset
t_0 = date of the most recent groundwater sample
$\bar{t}$ = mean of the sampling dates in the recent dataset
s_t = standard deviation of the sampling dates in the recent dataset

Note that the LCL is a function of time; to assess current compliance, the date of the most recent sample should be used for t_0. If and only if the LCL is greater than the GWPS at this time, then a statistically significant exceedance can be concluded. This equation can also be used to assess when the LCL will exceed the GWPS (assuming the current trend continues).

The same α that would have been selected if there were no significant trend (as described in **Section 4.1**) should be used here to determine the proper *F* value.

If the Theil-Sen method is used to determine the trend line, a computationally intensive technique known as bootstrapping can be used to determine the LCL. This procedure is described in Section 21.3.2 of the Unified Guidance (USEPA, 2009).

4.1.4 A Significant Seasonal Pattern Exists

If a statistically significant seasonal pattern exists in the background data and if there is a physical explanation for the seasonality, the background data should be deseasonalized using the procedure described in **Section 2.6**. The background-based UTL should be calculated based on the deseasonalized data, and the GWPS should be set at the MCL (or CCR rule-specified screening level) or the background-based UTL, whichever is greater.

Similarly, if a statistically significant seasonal pattern exists in compliance well data and if there is a physical explanation for the seasonality, the compliance well data should be deseasonalized using the procedure described in **Section 2.6**. The LCL to be compared to the GWPS should be calculated based on the deseasonalized compliance well data.

4.2 Comparing Data to Background

Assessment monitoring data must be compared to the GWPS (the higher of the MCL, CCR rule-specified level, or background level) to assess whether corrective action is warranted at the CCR unit (i.e. the LCL exceeds the GWPS). Additionally, assessment monitoring data may be compared to background data to assess whether the CCR unit can move from assessment monitoring back to detection monitoring.

To return from assessment monitoring to detection monitoring, the CCR rules specify that all Appendix III and IV constituents must be at or below background levels for two consecutive sampling events [40 CFR 257.95(e)]. However, the analysis of all Appendix III and IV constituents is not required for every monitoring event. Therefore, all Appendix III and IV constituents should be collected during two consecutive sampling events on a periodic basis (e.g., every two to four years) and/or when statistical evaluation of assessment monitoring data suggests groundwater concentrations are at or below background levels.

A UTL can be used to represent "a reasonable maximum on likely background concentrations" for Appendix III and IV constituents (USEPA, 2009). As described previously, UTLs can be determined parametrically or non-parametrically. For the parametric intervals, the UTL is calculated according to Equation 7. Non-parametric UTLs can be determined by setting the UTL to the highest or second-highest measured background value. If all background data are non-detect, then non-detect results in compliance wells can be considered statistically similar to background. If a temporal trend in background data exists and is not attributable to a release, background data can be truncated so that no significant temporal trend is evident.

To determine whether Appendix III and IV constituents are at or below background levels, a confidence interval constructed on recent data at each compliance monitoring well should be compared to the background UTL for each constituent. When the upper confidence limit (UCL) is below the background UTL, then it can be concluded that concentrations are at or below background. If UCLs are less than background UTLs for every constituent at every monitoring well for two consecutive events, then the CCR unit may return to detection monitoring.

When most of the data are detections, data are normally distributed, and there is no significant temporal trend, the UCL is calculated according to the following equation:

$$\text{UCL} = \bar{x} + t_{1-\alpha,n-1} * \frac{s}{\sqrt{n}} \quad (10)$$

where:

$\bar{x} =$ mean concentration of the recent dataset
$t_{1-\alpha,n-1} =$ one-tailed *t*-value at a confidence of 1 – α and at n – 1 degrees of freedom
$s =$ standard deviation of the recent dataset
$n =$ number of samples in the recent dataset

If recent data are mostly non-detect or are non-normal and cannot be transformed such that the transformed data follow a normal distribution, non-parametric confidence intervals can be constructed around the median by ranking the data from least to greatest and setting the UCL equal to one of the higher values of data. The confidence can be calculated based on the rank of the data point used and the sample size. Confidence values are tabulated in Table 21-11 in Appendix D of the Unified Guidance for sample sizes up to 20 (USEPA, 2009).

If recent data show a significant temporal trend, then a UCL above the trend line can be calculated according to the following equation:

$$\text{UCL} = \widehat{x_0} + \sqrt{2s_e^2 * F_{1-2\alpha,2,n-2} * \left(\frac{1}{n} + \frac{(t_0 - \bar{t})^2}{(n-1)s_t^2}\right)} \quad (11)$$

where:

$\widehat{x_0} =$ regression-line estimate of the mean concentration at time t_0
$s_e =$ standard error of the regression line
$F_{1-2\alpha,2,n-2} =$ upper (1 - 2α)th percentage point from an *F*-distribution with 2 and $n - 2$ degrees of freedom
$n =$ number of samples in the recent dataset
$t_0 =$ date of the most recent groundwater sample
$\bar{t} =$ mean of the sampling dates in the recent dataset
$s_t =$ standard deviation of the sampling dates in the recent dataset

In all cases, the choice of τ and α (for parametric UTLs and UCLs, respectively), the choice of the highest or second-highest data point (for non-parametric UTLs and UCLs), etc. should be made based on sound statistical judgment and site characteristics (e.g., size of datasets, number of monitoring wells, etc.).

4.3 Required Responses to the Results of the Statistical Evaluation

If the statistical evaluation demonstrates that the concentrations of all Appendix III and Appendix IV constituents are at or below background levels for two consecutive sampling events, then the CCR unit may return to detection monitoring [40 CFR 257.95(e)]. A notification that the CCR unit is returning to detection monitoring must be placed in the facility's operating record.

If the statistical evaluation demonstrates that some Appendix III or Appendix IV constituents are at concentrations above background levels but there are no statistically significant exceedances of GWPSs, then the CCR unit must remain in assessment monitoring [40 CFR 257.95(f)].

If the statistical evaluation demonstrates that an Appendix IV constituent is present at a statistically significant level (SSL) above its GWPS (i.e., if the LCL exceeds the GWPS), then the owner/operator must:

- Include a notification in the facility's operating record that identifies the constituents exceeding GWPSs [40 CFR 257.95(g)];

- Characterize the nature and extent of the release, including installing monitoring wells needed to delineate the plume, installing a monitoring well at the downgradient property boundary, quantifying the nature and the amount of the release, and sampling all wells for Appendix III and detected Appendix IV constituents [40 CFR 257.95(g)(1)];

- If the plume has migrated off-site, notify property owners overlying the plume [40 CFR 257.95(g)(2)]; and

- Either begin an assessment of corrective measures or demonstrate that the SSL is not due to a release from the CCR unit within 90 days of completing the statistical evaluation [40 CFR 257.95(g)(3)]. This demonstration must be made in writing and certified by a qualified professional engineer. The CCR rules require the previous three actions to be taken even if it can be demonstrated that the SSL is not due to a release from the CCR unit.

Reporting requirements for assessment monitoring are summarized in **Section 6.2**.

4.4 Updating Background

Care should be taken when updating background during assessment monitoring since, by definition, an SSI over background has already occurred. Data that appear to be affected by a release from the CCR unit should not be included in updated background datasets. However, it may be possible to update some background datasets (e.g., constituents not associated with a release, wells upgradient of the CCR unit, etc.). Formal updating of Appendix III constituents may be considered when there are at least four new points.

Data should be reviewed every four to eight measurements to assess the possibility of updating background datasets. Professional judgment should first be applied; any data that appear to be affected by a release should be excluded from the background update, even if there is no statistically significant difference between the new data and the existing background data.

For data that appear not to be affected by a release, a Student's *t*-test or Mann-Whitney test should be conducted to compare the set of new data points against the existing background dataset. If the *t*-test or Mann-Whitney test corroborates that there are no significant differences, the new data should be combined with the existing background data to create an updated and expanded background dataset. Increasing the size of the background dataset will increase the power of subsequent statistical tests.

If the *t*-test or Mann-Whitney test indicates a statistically significant difference between the two datasets, then it should be considered that the difference results from a release and the existing background dataset should continue to be used. If and only if there is evidence to suggest that the difference is not related to a release from the CCR unit, then the newer set of measurements should

be used for background so that resulting statistical limits are representative of present-day groundwater quality conditions.

Periodically, spatial variability among background wells may be re-assessed to determine whether using an interwell or intrawell comparison is appropriate on a constituent-by-constituent basis, as outlined in **Section 3.1**.

SECTION 5

CORRECTIVE ACTION MONITORING

A CCR unit must begin an assessment of corrective measures if an SSL is identified and is not attributed to some cause other than a release from the CCR unit. The assessment of corrective measures must begin within 90 days of identifying the SSL [40 CFR 257.95(g)(3)]. Based on the results of the corrective measures assessment, a remedy must be selected as soon as feasible [40 CFR 257.97(a)]. A schedule for implementing and completing the remedial activities must be included in the remedy selection [40 CFR 257.97(d)]. The owner/operator must begin remedial activities within 90 days of selecting a remedy, and a corrective action groundwater monitoring program must be implemented based on the schedule established as part of the remedy selection [40 CFR 257.98(a)].

The corrective action monitoring program must:

- Meet the requirements of an assessment monitoring program [40 CFR 257.98(a)(1)(i)];
- Document the effectiveness of the remedy [40 CFR 257.98(a)(1)(ii)]; and
- Demonstrate compliance with the GWPS [40 CFR 257.98(a)(1)(iii)].

The statistical methods used in corrective action monitoring are similar to those used in assessment monitoring. For each detected Appendix IV constituent, a GWPS is set at the MCL (or CCR rule-specified screening level for cobalt, lead, lithium, and molybdenum) or a value based on background data, whichever is greater. A confidence interval is constructed based on recent data at each compliance well, and the confidence interval is compared to the site-wide GWPS. However, in assessment monitoring, the presumption is that a release has not occurred, and a release is concluded when average concentrations are higher than the GWPS (i.e., when the *lower* confidence limit [LCL] is *greater* than the GWPS). If a CCR unit is in corrective action monitoring, then evidence of a release has already been identified. Therefore, in corrective action monitoring, the presumption is that a release has occurred, and the conclusion that the remedy has successfully decreased concentrations below the GWPS is made when average concentrations are less than the GWPS (i.e., when the *upper* confidence limit [UCL] is *less* than the GWPS). (Note that this presumption only applies to well-constituent pairs where an SSL has previously been identified. Well-constituent pairs in assessment monitoring where an SSL has not been identified effectively remain in assessment monitoring until the entire unit returns to detection monitoring.)

A remedy is considered complete when, among other things, confidence intervals constructed for Appendix IV constituents for wells identified with SSLs have not exceeded the GWPS for three consecutive years [40 CFR 257.98(c)(2)]. In this instance, a return to assessment monitoring would be warranted.

Upon completion of the remedy, the owner/operator must prepare a notification stating that the remedy is complete. The notification must be certified by a qualified professional engineer or approved by the State Director or USEPA and placed in the operating record [40 CFR 257.98(e)]. Otherwise, the owner/operator should follow the reporting requirements for assessment monitoring, as summarized in **Section 6.2**.

5.1 Comparing Data to the GWPS

As stated in **Section 5**, the GWPS is set at the MCL (or CCR rule-specified screening level for cobalt, lead, lithium, and molybdenum) or a value based on background data, whichever is greater. The UTL calculated from the background dataset is often used as the background value. The UTL is calculated as described in **Section 4.1**. Methods for updating background are described in **Section 4.4**.

For well-constituent pairs in corrective action monitoring, new data must be evaluated to determine whether they are statistically significantly lower than the GWPS. The statistical analyses listed in 40 CFR 257.93(f) are appropriate for comparing new data to a background dataset but are not appropriate for comparing new data to a fixed standard. For these cases, the Unified Guidance recommends using confidence intervals around the mean or median (USEPA, 2009).

When selecting which data to include in the recent dataset, time series plots of concentration data at each well should be created and visually inspected. Only data that exhibit the same behavior as recent data should be included. For instance, if the last eight arsenic results cluster around 9 µg/L and the previous eight results cluster around 4 µg/L, then only the eight most recent results should be used in the statistical analysis. Similarly, if chromium concentrations steadily increased over the last ten samples and were stable previously, then the statistical analysis should only use the ten most recent results and (since they are steadily increasing) should involve constructing a confidence interval around a trend line.

At the same time, datasets should also be sufficiently large to maintain statistical power. As many data points that exhibit the same behavior as recent data as possible should be included, including data collected prior to assessment monitoring (e.g., during the initial eight monitoring events). Ideally, datasets should have at least eight data points; in no case should a dataset have fewer than four data points.

If at least 50% of the recent dataset is non-detect, then a parametric confidence interval should not be used, and the procedure in **Section 5.1.1** should be followed.

New data will be evaluated for statistically significant temporal trends using (1) OLS linear regression with a *t*-test ($\alpha = 0.01$) on the slope and/or (2) the non-parametric Theil-Sen slope estimator with Mann-Kendall trend test ($\alpha = 0.05$, or 0.01 for larger datasets). Non-detect data are replaced with half the RL for these analyses. The OLS linear regression or Theil-Sen slope estimator will be used to estimate the rate of change (increasing, no change, or decreasing) over time for each constituent at each well. The *t*-test or Mann-Kendall statistic will be used to

determine whether a trend is statistically significant. OLS linear regression should only be used when at most 15% of the data are non-detect, when regression residuals are normally distributed, and when the variance from the regression line does not change over time. The Theil-Sen/Mann-Kendall analysis requires at least five observations for meaningful results; at least eight observations are recommended. If a significant temporal trend exists, then a confidence interval around the trend line should be constructed as outlined in **Section 5.1.3**.

If the trend analysis does not indicate a statistically significant trend, then the mean and variance should be calculated. If fewer than 15% of the data are non-detect, then the non-detect data can be replaced with half the RL and the mean and variance can be calculated normally. Tolerance intervals are sensitive to the choice of population distribution. Normality should be confirmed using the Shapiro-Wilk (or Shapiro-Francía) test and/or probability plots, as described in **Section 2.2**. If data appear not to be normally distributed, data should be transformed so that the transformed data are normally distributed.

Two methods – the Kaplan-Meier or Robust ROS method – can be used to determine the sample mean and variance when 15% to 50% of the data are non-detect. Kaplan-Meier should not be used if all non-detect data have the same RL or if the maximum detected value is less than the highest RL of the non-detect data.

When most of the data are detections, data are normally distributed, and there is no significant temporal trend, the UCL is calculated according to the following equation:

$$\text{UCL} = \bar{x} + t_{1-\alpha,n-1} * \frac{s}{\sqrt{n}} \quad (10)$$

where:

$\bar{x} =$ mean concentration of the recent dataset
$t_{1-\alpha,n-1} =$ one-tailed *t*-value at a confidence of 1 – α and at n – 1 degrees of freedom
$s =$ standard deviation of the recent dataset
$n =$ number of samples in the recent dataset

The *t* value must be chosen in such a way to balance the competing goals of a low false-positive rate and a high statistical power. The Unified Guidance recommends that the statistical test have at least 80% power ($1 - \beta = 0.8$) when the underlying mean concentration is twice the MCL (USEPA, 2009). Values of the minimum α (from which *t* values can be determined) are tabulated for this criterion for various values of *n* in Table 22-2 in Appendix D of the Unified Guidance (USEPA, 2009). The selected α should be the maximum of the value in Table 22-2 and 0.01.

If data are transformed normal, the UCL should first be calculated for the transformed data and then be transformed back into concentration terms. Correction factors are available but are not expected to be required. Alternatively, a non-parametric LCL can be used, as described in **Section 5.1.2**.

If data are non-normal and cannot be transformed such that the transformed data do follow a normal distribution, then a non-parametric LCL should be used, as described in **Section 5.1.2**.

5.1.1 Most Data Are Non-Detect

If recent data are mostly non-detect, non-parametric confidence intervals can be constructed around the median by ranking the data from least to greatest and setting the UCL equal to one of the higher values of data. The confidence can be calculated based on the rank of the data point used and the sample size. Confidence values are tabulated in Table 21-11 in Appendix D of the Unified Guidance for sample sizes up to 20 (USEPA, 2009).

5.1.2 Data Are neither Normal nor Transformed-Normal

If recent data are non-normal and cannot be transformed such that the transformed data do follow a normal distribution, non-parametric confidence intervals can be constructed around the median by ranking the data from least to greatest and setting the UCL equal to one of the higher values of data. The confidence can be calculated based on the rank of the data point used and the sample size. Confidence values are tabulated in Table 21-11 in Appendix D of the Unified Guidance for sample sizes up to 20 (USEPA, 2009).

5.1.3 A Significant Temporal Trend Exists

If recent data show a significant temporal trend, then a UCL above the trend line can be calculated according to the following equation:

$$\text{UCL} = \widehat{x_0} + \sqrt{2s_e^2 * F_{1-2\alpha,2,n-2} * \left(\frac{1}{n} + \frac{(t_0 - \bar{t})^2}{(n-1)s_t^2}\right)} \quad (11)$$

where:

$\widehat{x_0}$ = regression-line estimate of the mean concentration at time t_0
s_e = standard error of the regression line
$F_{1-2\alpha,2,n-2}$ = upper (1 - 2α)th percentage point from an *F*-distribution with 2 and $n - 2$ degrees of freedom
n = number of samples in the recent dataset
t_0 = date of the most recent groundwater sample
$\bar{t}$ = mean of the sampling dates in the recent dataset
s_t = standard deviation of the sampling dates in the recent dataset

Note that the UCL is a function of time; to assess current compliance, the date of the most recent sample should be used for t_0. If and only if the UCL is less than the GWPS at this time, then it can be concluded that the remedy has successfully decreased concentrations below the GWPS. This equation can also be used to assess when the UCL will decrease below the GWPS (assuming the current trend continues).

The same α that would have been selected if there were no significant trend (as described in **Section 5.1**) should be used here to determine the proper *F* value.

If the Theil-Sen method is used to determine the trend line, a computationally intensive technique known as bootstrapping can be used to determine the UCL. This procedure is described in Section 21.3.2 of the Unified Guidance (USEPA, 2009).

5.1.4 A Significant Seasonal Pattern Exists

If a statistically significant seasonal pattern exists in compliance well data and if there is a physical explanation for the seasonality, the compliance well data should be deseasonalized using the procedure described in **Section 2.6**. The UCL to be compared to the GWPS should be calculated based on the deseasonalized compliance well data.

SECTION 6

REPORTING REQUIREMENTS

The CCR rule specifies reporting requirements throughout the monitoring process. Throughout the process, the required documentation is required to be posted both to the site's operating record and to a public internet set for review. As required by 40 CFR 257.93(f)(6), the chosen statistical methods described within this SAP are certified by a qualified professional engineer as appropriate for groundwater evaluation (**Section 7**).

By January 31 of each year, all existing facilities must submit an Annual Groundwater Monitoring and Corrective Action Report (Annual Report) [40 CFR 257.90(e)]. The Annual Report should be prepared and posted to both the site operating record and the public internet site. A notification should be sent to the State Director (and/or appropriate tribal authority) once the Annual Report is available.

The Annual Report should document site status, summarize key actions taken, describe problems encountered and their resolutions, and project key actions to be taken for the following year. The Annual Report should also include:

- A figure showing the CCR unit and the monitoring well network [40 CFR 257.90(e)(1)];
- An identification of monitoring wells installed or abandoned during the preceding year and the rationale for doing so [40 CFR 257.90(e)(2)];
- A summary of groundwater samples collected, which wells were sampled, what dates the samples were collected, and whether the samples were collected for detection monitoring, assessment monitoring, or corrective action monitoring [40 CFR 257.90(e)(3)]; and
- A discussion of any transition between monitoring programs (i.e., detection monitoring vs. assessment monitoring vs. corrective action monitoring) [40 CFR 257.90(e)(4)].

If appropriate, the Annual Report should detail a demonstration for an alternative groundwater sampling frequency. If no SSIs are identified during each sampling event, an updated Annual Report should be submitted yearly. If SSIs are identified, additional reporting requirements are summarized below.

6.1 Detection Monitoring

If SSIs are identified, the facility should demonstrate within 90 days of the detection, where possible, that SSIs over background are not due to a release from the facility, along with a certification by a qualified professional engineer that the information is accurate. If the SSIs over background are attributed to a release from the facility, the facility should prepare and place on the

operating record within 90 days a notification stating that an assessment monitoring program has been established [40 CFR 257.94(e)(3)].

6.2 Assessment Monitoring

If an assessment monitoring program is in place, the Annual Report must also include [40 CFR 257.95(d)(3)]:

- Analytical results for Appendix III and detected Appendix IV constituents,
- Background concentrations for all Appendix III and Appendix IV constituents, and
- GWPSs established for detected Appendix IV constituents.

The semiannual analytical results for Appendix III and detected Appendix IV constituents must also be posted to the facility's operating record within 90 days of receipt [40 CFR 257.95(d)(1)].

If a constituent is detected at an SSL above its GWPS, a notification must be reported to the site's operating record. Additionally, the facility must notify any person who owns or resides on land that directly overlies any part of an off-site contaminant plume and record the notifications in the facility's operating record. Within 90 days, the facility must either initiate an assessment of corrective measures or demonstrate that the SSL is not due to a release from the CCR unit. The demonstration must be supported by a report certified by a qualified professional engineer [40 CFR 257.95(g)].

If statistics are performed by mid-October 2017 for the first compliance event, one or more resamples would normally be collected and re-analyzed within 90 days. By the end of January 2018, the initial exceedance will be either confirmed or determined to be a false positive. If it is confirmed, then assessment monitoring must be initiated within 90 days, which would fall at the same time as the next regular semi-annual event. In that case, the semi-annual event (March/April timeframe) would be for both assessment and detection monitoring (if assessment monitoring was initiated).

If the facility determines it may return to detection monitoring, the facility should issue a notification to the operating record and public site within 30 days.

6.3 Corrective Action Monitoring

If a corrective action monitoring program is in place, it must meet the requirements of an assessment monitoring program [40 CFR 257.98(a)(1)(i)]. Thus, the reporting requirements for corrective action monitoring will be similar to assessment monitoring, as described in **Section 6.2**. Upon completion of the remedy, the facility must prepare a notification that the remedy has been completed. The notification must be certified by a qualified professional engineer or approved by the State Director or USEPA and placed in the operating record [40 CFR 257.98(e)]

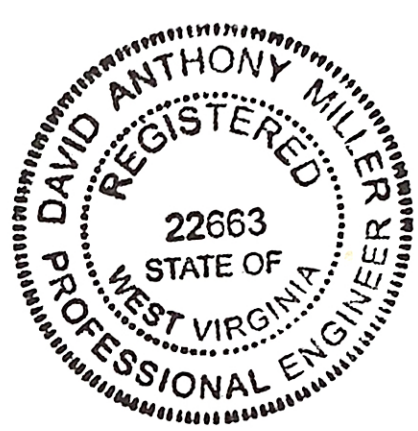
SECTION 7

CERTIFICATION BY QUALIFIED PROFESSIONAL ENGINEER

By means of this certification, I certify that I am a qualified professional engineer as defined in 40 CFR 257.53, that I have reviewed this SAP, and that the statistical methods described therein are appropriate and meet the requirements of 40 CFR 257.93.

DAVID ANTHONY MILLER

Printed Name of Qualified Professional Engineer



David Anthony Miller

Signature

22663	WEST VIRGINIA	01.22.2021
Registration No.	Registration State	Date

SECTION 8

REFERENCES

American Electric Power. 2016. Draft Groundwater Sampling and Analysis Plan. April 1, 2016.

Criteria for Classification of Solid Waste Disposal Facilities and Practices. 40 CFR §257. (2016).

Electric Power Research Institute. 2015. Groundwater Monitoring Guidance for the Coal Combustion Residuals Rule. Palo Alto, CA. 3002006287.

Environmental Protection Agency. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance. EPA 530/R-09-007.

Table 1

Monitored Constituents Under the CCR Rules

Appendix III to 40 CFR 257 – Constituents for Detection Monitoring

Boron
Calcium
Chloride
Fluoride
pH
Sulfate
Total Dissolved Solids (TDS)

Appendix IV to 40 CFR 257 – Constituents for Assessment Monitoring

Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228 combined

APPENDIX A

RECORD OF REVISIONS

Revision 1 (January 2021)

- Added statistical procedures used to implement corrective action monitoring (Section 5) and reporting requirements for corrective action monitoring (Section 6.3).
- Added references to CCR rule-specified screening levels for constituents that do not have an MCL (i.e., cobalt, lead, lithium, and molybdenum) in Sections 2.5, 4, 4.1, and 5.1.
- Removed text from Section 4 regarding a potential assessment monitoring approach for constituents that do not have an MCL because the CCR rule was revised to specify screening levels for these constituents.
- Added statistical procedures used to evaluate whether a seasonal pattern exists and to deseasonalize data (Sections 2.6, 3.2.5, 4.1.4, and 5.1.4).
- Specified that the Mann-Kendall trend test can use an α of 0.01 for sufficiently large datasets (Sections 3.1, 4.1, and 5.1).
- Removed references to control limits in Section 3.2 because prediction limits are generally being used to conduct detection monitoring.
- Removed references to using trend tests to evaluate SSIs at the end of Section 3.2 because prediction limits are generally being used to conduct detection monitoring.
- Clarified that non-parametric limits should be used when data are non-normal and cannot be transformed such that the transformed data do follow a normal distribution (Sections 3.2.3, 4.1.2, and 5.1.2).
- Referred to the Wilcoxon rank-sum/Mann-Whitney test as the Mann-Whitney test to match the statistical output from Sanitas (Sections 3.4 and 4.4).
- Clarified that a background dataset that contains at least five data points is sufficiently large to use an α as low as 0.01 to conduct the Mann-Whitney test as part of a background update, in line with recommendations in the Unified Guidance (Section 3.4).
- Clarified the procedure to be used if the Mann-Whitney test indicates a statistically significant difference between existing background data and newer data (Sections 3.4 and 4.4).

- Clarified that spatial variability among background wells may be assessed periodically as part of a background update because spatial variability is evaluated when background values are initially established (Sections 3.4 and 4.4).

- Clarified that UPLs are used to establish background values for Appendix III constituents and UTLs are used to establish background values for Appendix IV constituents (Section 4.2).

- Added statistical procedures to determine when Appendix III and Appendix IV concentrations are at or below background to evaluate whether units in assessment monitoring may return to detection monitoring (Section 4.2).

- Generally replaced “parameter” with “constituent”.

- Added references to the Unified Guidance and the CCR rule throughout the document.

- Made minor grammatical and stylistic changes throughout the document.

STATISTICAL ANALYSIS SUMMARY
BOTTOM ASH POND
Mountaineer Plant
New Haven, West 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

February 9, 2021

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LIST OF ACRONYMS AND ABBREVIATIONS

AEP	American Electric Power
ASD	Alternative Source Demonstration
BAP	Bottom Ash Pond
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
LPL	Lower Prediction Limit
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
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 the Bottom Ash Pond (BAP), an existing CCR unit at the Mountaineer Power Plant located in New Haven, West Virginia.

Based on detection monitoring conducted in 2017 and 2018, statistically significant increases (SSIs) over background were concluded for boron, calcium, chloride, total dissolved solids (TDS), and sulfate at the BAP. An alternative source was not identified at the time, so the BAP initiated assessment monitoring in April 2018. Groundwater protection standards (GWPS) were set in accordance with 40 CFR 257.95(d)(2) and a statistical evaluation of the assessment monitoring data was conducted in January 2019. Statistically significant levels were observed for lithium (Geosyntec, 2019a). An alternative source was not identified, so the BAP initiated an assessment of corrective measures in accordance with 40 CFR 257.96 and has been completing assessment monitoring since. An assessment monitoring event was conducted at the BAP in October 2020 in accordance with 40 CFR 257.95. The results of this assessment events are documented in this report.

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 data usability.

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. Groundwater protection standards (GWPSs) were re-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 lithium. Thus, the unit will continue the assessment of corrective measures 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 for analysis from each upgradient and downgradient well to meet the requirements of 40 CFR 257.95(d)(1) (October 2020). The samples were analyzed for all Appendix III and IV parameters except beryllium, which was not detected during the March 2020 annual event (Geosyntec, 2020a). A summary of data collected during this assessment monitoring event 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.9.6.27b 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 the BAP were conducted in accordance with the October 2020 *Statistical Analysis Plan* (Geosyntec, 2020), except where noted below. Time series plots and results for all completed statistical tests are provided in Attachment B.

The data obtained in October 2020 were screened for potential outliers. No outliers were identified for these events.

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* (Geosyntec, 2020). The established GWPS was determined to be the greater value of the background concentration and the maximum contaminant level (MCL) or risk-based 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. Tolerance limits were calculated parametrically with 95% coverage and 95% confidence for arsenic, chromium, cobalt, combined radium, fluoride, lithium, and molybdenum. Non-

parametric tolerance limits were calculated for antimony, barium, cadmium, lead, selenium, and thallium due to apparent non-normal distributions and for beryllium and mercury due to a high non-detect frequency. Tolerance limits and the final GWPSs are summarized in Table 2.

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 the Mountaineer BAP:

- The LCL for lithium exceeded the GWPS of 0.0400 mg/L at MW-1605D (0.0530 mg/L), MW-1605S (0.0549 mg/L), MW-1606D (0.0935 mg/L), MW-1606S (0.0851 mg/L), MW-1607D (0.0785 mg/L), and MW-1607S (0.0.0921 mg/L).

As a result, the Mountaineer BAP 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 257.96(b).

2.2.3 Establishment of Appendix III Prediction Limits

Upper prediction limits (UPL) for Appendix III parameters were previously updated in December 2019 after sufficient data was collected following the background monitoring period (Geosyntec, 2019b). Intrawell tests were used to evaluate potential SSIs for pH, whereas interwell tests were used to evaluate potential SSIs for boron, calcium, chloride, fluoride, sulfate, and TDS. Intrawell and interwell prediction limits have been updated periodically during the assessment monitoring period as sufficient data became available. Prediction limits were updated using data through May 2020 for intrawell prediction limits and October 2020 for interwell prediction limits.

Mann-Whitney (Wilcoxon rank-sum) tests were performed to determine whether the newer data are affected by a release from the BAP. Because the interwell Appendix III limits and the Appendix IV GWPSs are based on data from upgradient wells which we would not expect to have been impacted by a release, these tests were used for intrawell Appendix III tests only. Mann-Whitney tests were used to compare the medians of historical data (September 2016 – April 2019) to the new compliance samples (June 2019 – May 2020) for pH. Results were evaluated to determine if the medians of the two groups were similar at the 99% confidence level. Where no significant difference was found, the new compliance data were added to the background dataset. Where a statistically significant difference was found between the medians of the two groups, the data were reviewed to evaluate the cause of the difference and to determine if adding newer data to the background dataset, replacing the background dataset with the newer data, or continuing to use the existing background dataset was most appropriate. If the differences appeared to have

been caused by a release, then the previous background dataset would have continued to be used. No significant differences were found between the two groups; thus, the background dataset for pH was updated with data through May 2020. The complete Mann-Whitney test results and a summary of the significant findings can be found in Attachment B.

After the revised background set was established, 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.

Interwell UPLs were updated for boron, calcium, chloride, fluoride, sulfate, and TDS using historical data through October 2020, and intrawell UPLs and LPLs were updated for pH using the historical data through May 2020 to represent background values. The updated prediction limits are summarized in Table 3. The interwell and intrawell UPLs were calculated for a one-of-two retesting procedure; i.e., if at least one sample in a series of two does not exceed the UPL, then it can be concluded that an SSI has not occurred. The retesting procedures allow achieving an acceptably high statistical power to detect changes at downgradient wells for constituents evaluated using intrawell prediction limits.

2.2.4 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.

Data collected during the October 2020 assessment monitoring event from each compliance well were compared to the 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:

- Boron concentrations exceeded the interwell UPL of 0.580 mg/L at MW-1604D (3.58 mg/L), MW-1604S (2.59 mg/L), MW-1605D (4.81 mg/L), MW-1605S (3.99 mg/L), MW-1606D (6.85 mg/L), MW-1606S (6.35 mg/L), MW-1607D (4.16 mg/L), and MW-1607S (3.26 mg/L).

- Calcium concentrations exceeded the interwell UPL of 212 mg/L at MW-1604S (265 mg/L), MW-1605D (247 mg/L), MW-1606D (273 mg/L), and MW-1607D (232 mg/L).

- Chloride concentrations exceeded the interwell UPL of 64.6 mg/L at MW-1604S (107 mg/L), MW-1605D (109 mg/L), MW-1605S (85.4 mg/L), MW-1606D (208 mg/L), MW-1606S (172 mg/L), MW-1607D (170 mg/L), and MW-1607S (148 mg/L).

- Fluoride concentrations exceeded the interwell UPL of 0.289 mg/L at MW-1606S (0.38 mg/L) and MW-1607D (0.49 mg/L).

- Sulfate concentrations exceeded the interwell UPL of 548 mg/L at MW-1604S (635 mg/L), MW-1605D (682 mg/L), MW-1606D (694 mg/L), MW-1606S (572 mg/L), and MW-1607D (703 mg/L).

- TDS concentrations exceeded the interwell UPL of 993 mg/L at MW-1604D (1,080 mg/L), MW-1604S (1,360 mg/L), MW-1605D (1,490 mg/L), MW-1605S (1,150 mg/L), MW-1606D (1,650 mg/L), MW-1606S (1,460 mg/L), MW-1607D (1,650 mg/L), and MW-1607S (1,180 mg/L).

While the prediction limits were calculated for a one-of-two retesting procedure, SSIs were conservatively assumed if the October 2020 sample was above the UPL or below the LPL. Based on these results, concentrations of Appendix III constituents appear to be above background levels at compliance wells.

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. A review of outliers identified no potential outliers in the October 2020 data. 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 lithium. Appendix III parameters were compared to recalculated prediction limits, with exceedances identified for boron, calcium, chloride, fluoride, sulfate, and TDS.

Based on this evaluation, the Mountaineer BAP 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 257.96b.

SECTION 3

REFERENCES

Geosyntec Consultants (Geosyntec). 2019a. Statistical Analysis Summary – Bottom Ash Pond, Mountaineer Plant. January 8, 2019.

Geosyntec. 2019b. Statistical Analysis Summary – Bottom Ash Pond, Mountaineer Plant. December 23, 2019.

Geosyntec. 2020aa. Statistical Analysis Summary – Bottom Ash Pond. Mountaineer Plant. October 2, 2020.

Geosyntec. 2020b. Statistical Analysis Plan. October 2020.

TABLES

Table 1 - Groundwater Data Summary
Mountaineer Plant - Bottom Ash Pond

Geosyntec Consultants, Inc.

Parameter	Unit	MW-1601A	MW-1602	MW-1603	MW-1604D	MW-1604S	MW-1605D	MW-1605S	MW-1606D	MW-1606S	MW-1607D	MW-1607S	MW-1608
		10/8/2020	10/8/2020	10/8/2020	10/9/2020	10/9/2020	10/9/2020	10/9/2020	10/8/2020	10/8/2020	10/8/2020	10/8/2020	10/6/2020
Antimony	µg/L	0.03 J	0.04 J	0.15	0.03 J	0.16	0.1 U	0.04 J	0.14	0.14	0.03 J	0.48	0.09 J
Arsenic	µg/L	0.59	0.33	0.41	0.29	0.32	3.09	0.47	0.36	0.68	1.80	0.89	0.66
Barium	µg/L	61.0	25.7	26.8	27.3	28.2	23.0	24.6	45.6	57.4	75.8	64.0	30.5
Beryllium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/L	0.114	0.108	0.221	3.58	2.59	4.81	3.99	6.85	6.35	4.16	3.26	0.074
Cadmium	µg/L	0.02 J	0.01 J	0.01 J	0.02 J	0.21	0.05 U	0.03 J	0.08	0.07	0.05 U	0.03 J	0.05
Calcium	mg/L	178	96.7	139	188	265	247	163	273	206	232	187	83.9
Chloride	mg/L	18.4	8.61	8.86	57.9	107	109	85.4	208	172	170	148	1.57
Chromium	µg/L	0.328	0.311	0.552	1.02	0.798	0.208	0.266	0.247	0.492	0.244	0.509	0.707
Cobalt	µg/L	0.04 J	0.04 J	0.392	0.140	2.08	1.43	0.195	1.54	0.148	1.01	1.27	0.659
Combined Radium	pCi/L	0.0868	0.194	0.0948	0.123	9.989	0.8083	1.4891	0.908	0.682	1.304	1.553	
Fluoride	mg/L	0.13	0.23	0.07	0.20	0.21	0.20	0.28	0.23	0.38	0.49	0.24	0.27
Lead	µg/L	0.2 U	0.2 U	0.310	0.06 J	0.2 U	0.05 J	0.05 J	0.2 U	0.2 U	0.2 U	0.2 J	0.476
Lithium	mg/L	0.00168	0.0104	0.0142	0.0190	0.0384	0.0439	0.0470	0.0633	0.0701	0.0966	0.0937	0.00241
Mercury	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Molybdenum	µg/L	0.7 J	0.9 J	2 U	1 J	15.0	35.7	11.2	63.6	56.4	83.8	35.9	2 J
Selenium	µg/L	0.9	0.08 J	0.2	3.0	0.9	0.09 J	0.5	4.2	1.9	0.06 J	3.3	1.7
Sulfate	mg/L	252	253	332	483	635	682	492	694	572	703	371	56.4
Thallium	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.3 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Dissolved Solids	mg/L	748	575	692	1,080	1,360	1,490	1,150	1,650	1,460	1,650	1,180	440
pH	SU	6.8	6.5	6.3	6.7	7.0	7.2	7.0	7.1	6.9	7.3	7.0	6.7

Notes:
mg/L: milligrams per liter
µg/L: micrograms per liter
SU: standard unit
pCi/L: picocuries per liter
U: Parameter was not present in concentrations above method detection limit and is reported as the reporting limit
J: Estimated value. Parameter was detected in concentrations below the reporting limit
- : Not sampled
All samples were collected as part of the assessment monitoring program in accordance with 40 CFR 257.90(e)(3).

Table 2 - Groundwater Protection Standards
Mountaineer Plant - Bottom Ash Pond

Geosyntec Consultants, Inc.

Constituent Name	MCL	CCR Rule-Specified	Calculated UTL	GWPS
Antimony, Total (mg/L)	0.006		0.0002	0.0002
Arsenic, Total (mg/L)	0.010		0.00075	0.00075
Barium, Total (mg/L)	2.00		0.0678	0.0678
Beryllium, Total (mg/L)	0.004		0.0001	0.0001
Cadmium, Total (mg/L)	0.005		0.00005	0.00005
Chromium, Total (mg/L)	0.100		0.000731	0.000731
Cobalt, Total (mg/L)	n/a	0.00600	0.000664	0.00600
Combined Radium, Total (pCi/L)	5.000		2.263	2.263
Fluoride, Total (mg/L)	4.0		0.29	0.29
Lead, Total (mg/L)	n/a	0.0150	0.000881	0.0150
Lithium, Total (mg/L)	n/a	0.0400	0.0250	0.0400
Mercury, Total (mg/L)	0.002		0.000005	0.000005
Molybdenum, Total (mg/L)	n/a	0.100	0.00277	0.100
Selenium, Total (mg/L)	0.050		0.0043	0.0043
Thallium, Total (mg/L)	0.0020		0.00050	0.00050

Notes:
MCL: Maximum Contaminant Level
CCR: Coal Combustion Residual
Calculated UTL (Upper Tolerance Limit) represents site-specific background values.
GWPS: Groundwater Protection Standard

Table 3 - Appendix III Data Summary
Mountaineer Plant - Bottom Ash Pond

Geosyntec Consultants, Inc.

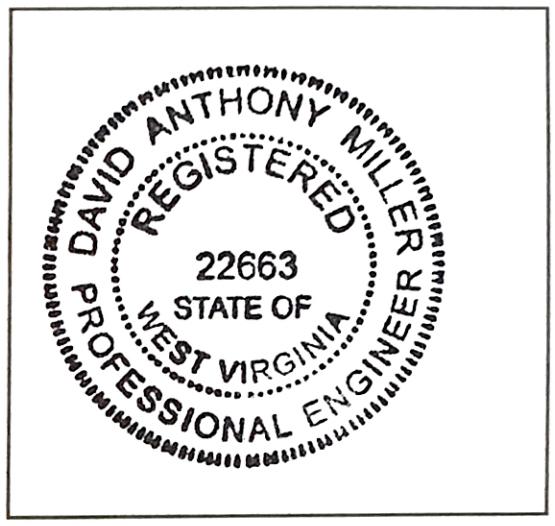
Analyte	Unit	Description	MW-1604D	MW-1604S	MW-1605D	MW-1605S	MW-1606D	MW-1606S	MW-1607D	MW-1607S
			10/9/2020	10/9/2020	10/9/2020	10/9/2020	10/8/2020	10/8/2020	10/8/2020	10/8/2020
Boron	mg/L	Interwell Background Value (UPL)	0.580							
		Analytical Result	**3.58**	**2.59**	**4.81**	**3.99**	**6.85**	**6.35**	**4.16**	**3.26**
Calcium	mg/L	Interwell Background Value (UPL)	212							
		Analytical Result	188	**265**	**247**	163	**273**	206	**232**	187
Chloride	mg/L	Interwell Background Value (UPL)	64.6							
		Analytical Result	57.9	**107**	**109**	**85.4**	**208**	**172**	**170**	**148**
Fluoride	mg/L	Interwell Background Value (UPL)	0.289							
		Analytical Result	0.20	0.21	0.20	0.28	0.23	**0.38**	**0.49**	0.24
pH	SU	Intrawell Background Value (UPL)	7.9	7.7	7.9	7.8	7.9	7.9	8.1	7.9
		Intrawell Background Value (LPL)	6.4	6.6	6.8	6.7	6.8	6.2	6.9	6.9
		Analytical Result	6.7	7.0	7.2	7.0	7.1	6.9	7.3	7.0
Sulfate	mg/L	Interwell Background Value (UPL)	548							
		Analytical Result	483	**635**	**682**	492	**694**	**572**	**703**	371
Total Dissolved Solids	mg/L	Interwell Background Value (UPL)	993							
		Analytical Result	**1,080**	**1,360**	**1,490**	**1,150**	**1,650**	**1,460**	**1,650**	**1,180**

Notes:
UPL: Upper prediction limit
LPL: Lower prediction limit
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 Mountaineer Bottom Ash Pond 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

22663	WEST VIRGINIA	02.09.21
License Number	Licensing State	Date

ATTACHMENT B

Statistical Analysis Output

GROUNDWATER STATS CONSULTING

January 15, 2021

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

Re: Mountaineer BAP – Assessment Monitoring Report & Background Update – 2020

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the statistical analysis and background update of 2020 groundwater data for American Electric Power Inc.'s Mountaineer Bottom Ash Pond. 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 United States Environmental Protection Agency (USEPA) Unified Guidance (2009).

Sampling began at the site for the CCR program in 2016. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

- **Upgradient wells:** MW-1601A, MW-1602, MW-1603, MW-1608; and
- **Downgradient wells:** MW-1604D, MW-1604S, MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, MW-1607S.

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 analysis was reviewed by Jim Loftis, emeritus professor of Civil and Environmental Engineering at Colorado State University and senior adviser for Groundwater Stats Consulting.

The CCR program consists of the following constituents listed below. The terms "constituent" and "parameter" are interchangeable.

- **Appendix III** (Detection Monitoring) **-** boron, calcium, chloride, fluoride, pH, sulfate, and TDS
- **Appendix IV** (Assessment Monitoring) **–** antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium

For all constituents, a substitution of the most recent reporting limit is used for nondetect data. In the time series plots, a single reporting limit substitution is used across all wells for a given parameter since the wells are plotted as a group. For calculating intrawell prediction limits, the substitution is performed for individual wells and may differ across wells. This generally gives the most conservative limit in each case.

Time series plots for Appendix III and IV parameters are provided for all wells and are used to evaluate concentrations over time as well as for the purpose of updating statistical limits (Figure A). Additionally, box plots are included for all constituents at upgradient and downgradient wells (Figure B). Values in background which have been flagged as outliers may be seen in a lighter font and as a disconnected symbol on the graph. A summary of these values follows this letter (Figure C). The time series plots are used to initially screen for suspected outliers and trends, while the box plots provide visual representation of variation within individual wells and between all wells.

For regulatory comparison of current observations against statistical limits for Appendix III constituents, the annual site-wide false positive rate is based on the USEPA Unified Guidance (2009) recommendation of 10% (5% for each semi-annual sample event). Power curves are included with this report to demonstrate that the selected statistical method provides sufficient power to detect a change at any of the downgradient wells which complies with the USEPA Unified Guidance recommendation. The EPA suggests the selected statistical method should provide at least 55% power at 3 standard deviations or at least 80% power at 4 standard deviations. Power curves were based on the following:

Semi-Annual Sampling
1-of-2 resample plan
Constituents, c=7
Downgradient wells, w=8

Summary of Statistical Method – Appendix III Parameters:

Based on the original background screening described in the 2017 screening report, the following statistical methods were selected for Appendix III parameters:

1) Intrawell prediction limits, combined with a 1-of-2 resample plan for pH
2) Interwell prediction limits, combined with a 1-of-2 resample plan for boron, calcium, chloride, fluoride, sulfate, and TDS

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. While the annual false positive rate associated with parametric limits is fixed at 10% as recommended by the EPA Unified Guidance (2009), the false positive rate associated with nonparametric limits is not fixed and depends upon the available background sample size, number of future comparisons, and verification resample plan. 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 as appropriate. Nondetects are handled as follows:

- 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 most recent 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.

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 is necessary to accommodate these types of changes. In the intrawell case, data for all wells and constituents may be 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 the interwell case, prediction limits are updated with upgradient well data following each sampling event after careful screening for any new outliers. In some cases, deselecting the earlier portion of data may be necessary prior to construction of limits so that resulting statistical limits are conservative (lower) from a regulatory perspective and capable of rapidly detecting 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.

Summary of Appendix III Background Update – Conducted in November 2019

Samples from all wells for intrawell parameters and from all upgradient wells for interwell parameters were evaluated using Tukey's outlier test and visual screening. A summary of Tukey's test results and flagged outliers followed the November 2019 background update.

For constituents requiring intrawell prediction limits, the Mann-Whitney (Wilcoxon Rank Sum) test was used to compare the medians of historical data through June 2017 to the new compliance samples at each well through April 2019 to evaluate whether the groups are statistically different at the 99% confidence level. When the test finds no statistically significant difference between the medians of the two groups, background data may be updated with compliance data. No statistically significant differences were found between the two groups for any of the well/constituent pairs, and therefore, all background data sets for pH were updated. The full results of the Mann-Whitney test were included with the November 2019 background update.

Appendix III Background Update – October 2020

Prior to updating background data during this analysis, Tukey's outlier test and visual screening were used to re-evaluate data for outliers at all wells for pH, which utilizes intrawell prediction limits, and at all upgradient wells for boron, calcium, chloride, fluoride, sulfate, and TDS which utilize interwell prediction limits (Figure C). No outliers were noted by Tukey's test at any of the wells for pH; however, high pH values for wells MW-1607D and MW-1607S were flagged as outliers and deselected prior to constructing prediction limits in order to maintain intrawell prediction limits that are conservative (i.e. more pH neutral) from a regulatory perspective. An unusually high value for TDS in well MW-1606S was identified visually and flagged as an outlier. Since TDS is evaluated using interwell methods, the flagged value has no effect on the calculation of prediction limits.

Tukey's outlier test on pooled upgradient well data did not identify any potential outliers, and no values were flagged. As mentioned above, any flagged data are displayed in a

lighter font and as a disconnected symbol on the time series reports, as well as in a lighter font on the accompanying data pages. Tukey's test results and a table of flagged outliers follow this report (Figure C).

For pH, which requires intrawell prediction limits, the Mann-Whitney (Wilcoxon Rank Sum) test was used to compare the medians of historical data through April 2019 to the new compliance samples at each well through May 2020 (Figure D). The test evaluates whether the groups are statistically different at the 99% confidence level. If no statistically significant differences are noted, background data may be updated to include more recent data. No statistically significant differences were identified found between the two groups for pH, therefore, all wells for pH were updated with data through May 2020 for the construction of intrawell prediction limits. Mann-Whitney results are included in Figure D at the end of this report.

Intrawell prediction limits using all historical data through May 2020, combined with a 1-of-2 resample plan, were constructed, and results of the updated limits follow this letter (Figure E).

For parameters tested using interwell analyses (boron, calcium, chloride, fluoride, sulfate, and TDS) the Sen's Slope/Mann-Kendall trend test was used on upgradient wells to determine whether concentrations are statistically increasing, decreasing or stable (Figure F). Statistically significant trends were identified for the following upgradient well/constituent pairs:

Increasing:

- Calcium: MW-1601A and MW-1602
- Fluoride: MW-1602
- Sulfate: MW-1601A
- TDS: MW-1601A and MW-1602

Decreasing:

- Chloride: MW-1603
- Fluoride: MW-1601A and MW-1608

The magnitudes of the trends above are either fairly small relative to average concentrations within each well or would not greatly affect the interwell prediction limits. With limited background samples collected to date, all data from upgradient wells were used to construct interwell prediction limits for all Appendix III parameters except pH which is tested using intrawell prediction limits. As more data are collected, all upgradient

well data will be re-evaluated for possible deselection of earlier measurements if they no longer represent present-day groundwater quality conditions.

Interwell prediction limits, combined with a 1-of-2 resample plan, were updated using all available data from upgradient wells through October 2020 for boron, calcium, chloride, fluoride, sulfate, and TDS (Figure G). Interwell prediction limits pool upgradient well data to establish a background limit for an individual constituent. A summary table of the updated limits may be found following this letter in the Prediction Limit Summary Tables.

Evaluation of Appendix IV Parameters – November 2020

Prior to evaluating Appendix IV parameters, background data are screened through visual screening and Tukey's outlier test for potential outliers and extreme trending patterns that would lead to artificially elevated statistical limits. High outliers are also 'cautiously' flagged in the downgradient wells when they are clearly much different from the rest of the data. This is intended to be a regulatory conservative approach in that it will reduce the variance and thus reduce the width of parametric confidence intervals, although it will also reduce the mean and thus lower the entire interval. The intent is to better represent the actual downgradient mean.

Tukey's outlier test for Appendix IV parameters in downgradient wells identified high values for antimony, arsenic, barium, cadmium, cobalt, fluoride, lead, and selenium among downgradient wells MW-1606D, MW-1607D, and MW-1607S. Each of these values were flagged with the exception of those for cobalt in well MW-1606D, fluoride in well MW-1606D, and selenium in well MW-1607D. The values that were flagged as outliers were all recorded for 12/21/2016. Therefore, they were likely the result of a systematic error and are not representative of current conditions. The exceptions listed above were not flagged because those values were below their respective MCLs and thus could not result in a confidence interval exceedance. For September 2016 a high value for combined radium in in well MW-1606D and for molybdenum in well MW-1604S as well as a low value for combined radium in well MW-1604S were identified visually and flagged as not representative of current conditions.

Tukey's outlier test on pooled upgradient well data did not identify any outliers; however, during the November and December 2016 sample events, high values were reported for chromium in several wells (both upgradient and downgradient). These values were identified visually and flagged in the database as outliers as they did not appear to represent the population at these wells and do not represent current conditions. All flagged values may be seen on the Outlier Summary following this letter (Figure C).

Parametric upper tolerance limits were used to calculate background limits from pooled upgradient well data through October 2020 for Appendix IV parameters with a target of 95% confidence and 95% coverage for use as background limits (Figure H). The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. These background limits were compared to the Maximum Contaminant Levels (MCLs) and CCR Rule-Specified levels as shown 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 I).

Confidence intervals were then constructed on downgradient wells with data through October 2020 for each of the Appendix IV parameters and then compared to the GWPS, i.e. the highest limit of the MCL, CCR Rule-Specified level, or background limit as discussed above (Figure J). Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard. Complete graphical results of the confidence intervals follow this letter. Exceedances were identified for the following well/constituent pairs:

- Lithium: MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S

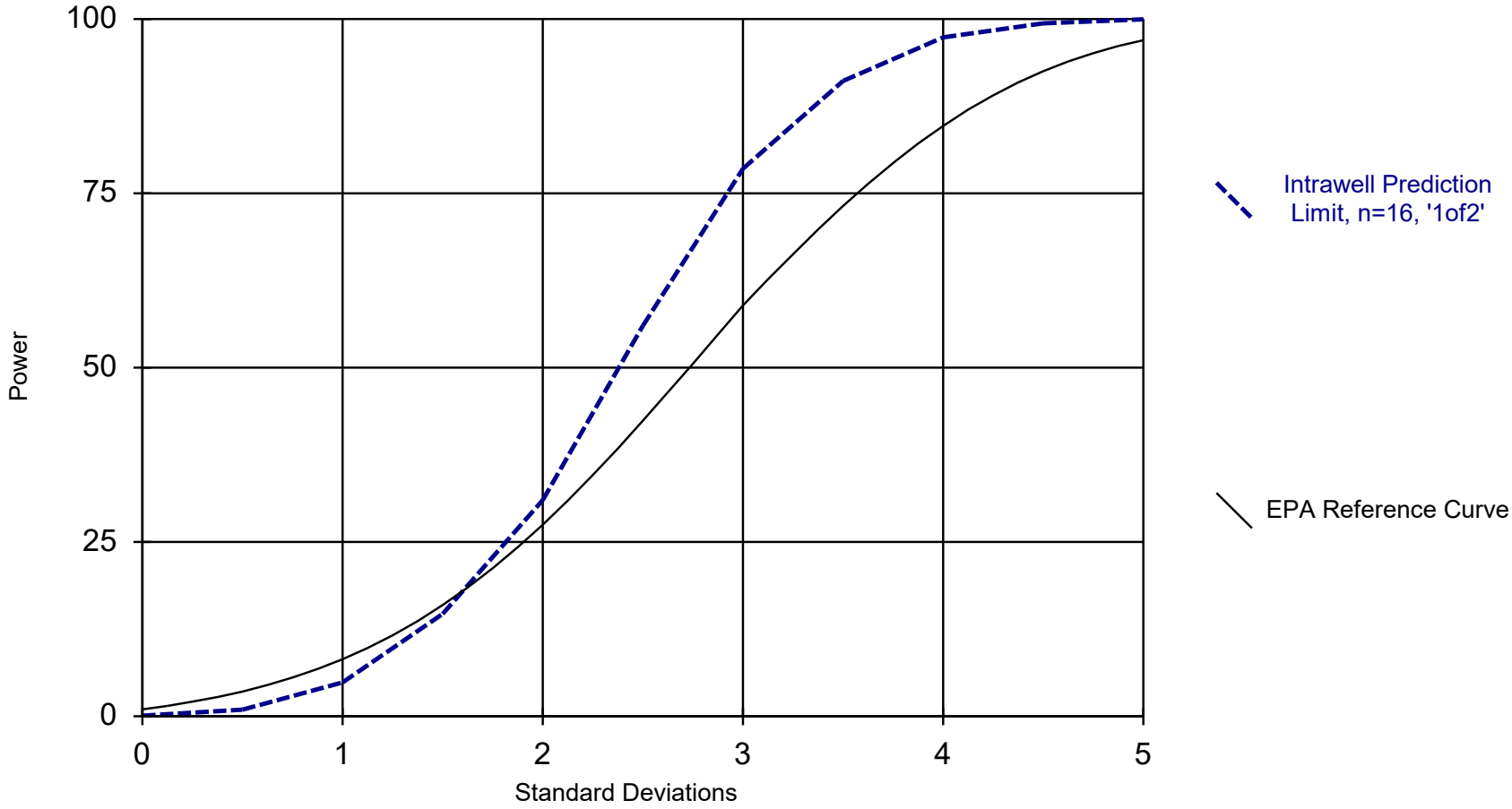
Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Mountaineer BAP. If you have any questions or comments, please feel free to contact us.

For Groundwater Stats Consulting,

Andrew T. Collins
Project Manager

Kristina L. Rayner
Groundwater Statistician

Intrawell Power Curve

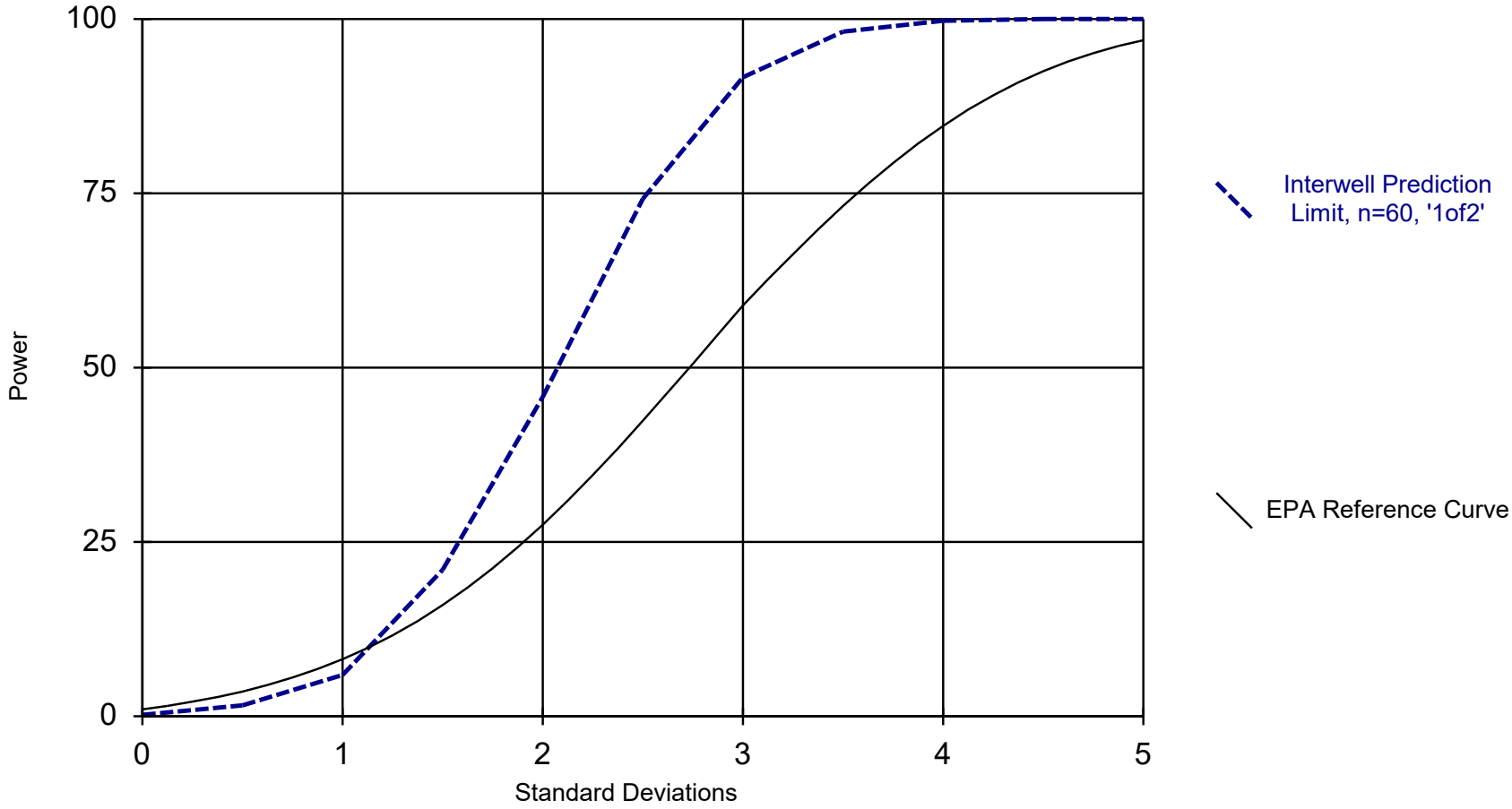


Kappa = 2.316, based on 8 compliance wells and 7 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 1/15/2021 3:14 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Interwell Power Curve



Kappa = 1.958, based on 8 compliance wells and 7 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 1/15/2021 3:15 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

100% Non-Detects

Analysis Run 1/12/2021 1:33 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Beryllium, total (mg/L)
MW-1604D, MW-1605D

Tukey's Outlier Analysis - Downgradient Wells - Significant Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 3:50 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony, total (mg/L)	**MW-1607S**	**Yes**	**0.00084**	**12/21/2016**	**NP**	**NaN**	**16**	**0.0004738**	**0.0001051**	**ln(x)**	**ShapiroWilk**
Arsenic, total (mg/L)	**MW-1607S**	**Yes**	**0.0112**	**12/21/2016**	**NP**	**NaN**	**16**	**0.001747**	**0.002536**	**ln(x)**	**ShapiroWilk**
Barium, total (mg/L)	**MW-1607S**	**Yes**	**0.114**	**12/21/2016**	**NP**	**NaN**	**16**	**0.07026**	**0.01356**	**ln(x)**	**ShapiroWilk**
Cadmium, total (mg/L)	**MW-1607S**	**Yes**	**0.00022**	**12/21/2016**	**NP**	**NaN**	**16**	**0.00005063**	**0.0000464**	**ln(x)**	**ShapiroWilk**
Cobalt, total (mg/L)	**MW-1606D**	**Yes**	**0.00426**	**4/18/2017**	**NP**	**NaN**	**16**	**0.001579**	**0.0007754**	**ln(x)**	**ShapiroWilk**
Cobalt, total (mg/L)	**MW-1607S**	**Yes**	**0.0201**	**12/21/2016**	**NP**	**NaN**	**16**	**0.002443**	**0.004741**	**ln(x)**	**ShapiroWilk**
Fluoride, total (mg/L)	**MW-1606D**	**Yes**	**0.1,0.49**	**6/19/2019,9/11/2019**	**NP**	**NaN**	**17**	**0.2588**	**0.0714**	**sqrt(x)**	**ShapiroWilk**
Lead, total (mg/L)	**MW-1607S**	**Yes**	**0.011**	**12/21/2016**	**NP**	**NaN**	**16**	**0.0009651**	**0.002707**	**ln(x)**	**ShapiroWilk**
Selenium, total (mg/L)	**MW-1607D**	**Yes**	**0.0005**	**3/29/2017**	**NP**	**NaN**	**16**	**0.00008312**	**0.0001131**	**ln(x)**	**ShapiroWilk**

Tukey's Outlier Analysis - Downgradient Wells - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 3:50 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.00009688	0.0000657	sqrt(x)	ShapiroWilk
Antimony, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.0000925	0.00006148	x^2	ShapiroWilk
Antimony, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.00003625	0.000007188	sqrt(x)	ShapiroWilk
Antimony, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.00005688	0.00003092	ln(x)	ShapiroWilk
Antimony, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.0001644	0.00002851	ln(x)	ShapiroWilk
Antimony, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.0001481	0.00001276	x^2	ShapiroWilk
Antimony, total (mg/L)	MW-1607D	n/a	n/a	n/a	NP	NaN	16	0.00003312	0.000007042	unknown	ShapiroWilk
Antimony, total (mg/L)	**MW-1607S**	**Yes**	**0.00084**	**12/21/2016**	**NP**	**NaN**	**16**	**0.0004738**	**0.0001051**	**ln(x)**	**ShapiroWilk**
Arsenic, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.000405	0.0001094	normal	ShapiroWilk
Arsenic, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.0003869	0.00007499	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.002486	0.0003347	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.0007063	0.0002421	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.0005394	0.0002695	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.000765	0.0001069	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.001259	0.0002639	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	**MW-1607S**	**Yes**	**0.0112**	**12/21/2016**	**NP**	**NaN**	**16**	**0.001747**	**0.002536**	**ln(x)**	**ShapiroWilk**
Barium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.03386	0.009042	ln(x)	ShapiroWilk
Barium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.02874	0.001571	ln(x)	ShapiroWilk
Barium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.02733	0.002965	normal	ShapiroWilk
Barium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.03041	0.007438	ln(x)	ShapiroWilk
Barium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.05316	0.006409	ln(x)	ShapiroWilk
Barium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.06957	0.006594	x^5	ShapiroWilk
Barium, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.107	0.03385	x^(1/3)	ShapiroWilk
Barium, total (mg/L)	**MW-1607S**	**Yes**	**0.114**	**12/21/2016**	**NP**	**NaN**	**16**	**0.07026**	**0.01356**	**ln(x)**	**ShapiroWilk**
Beryllium, total (mg/L)	MW-1604D	n/a	n/a	n/a	NP	NaN	14	0.0001	0	unknown	ShapiroWilk
Beryllium, total (mg/L)	MW-1604S	n/a	n/a	n/a	NP	NaN	14	0.00009457	0.00002031	unknown	ShapiroWilk
Beryllium, total (mg/L)	MW-1605D	n/a	n/a	n/a	NP	NaN	14	0.0001	0	unknown	ShapiroWilk
Beryllium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	14	0.00008114	0.00003757	ln(x)	ShapiroWilk
Beryllium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	14	0.000075	0.00004147	x^(1/3)	ShapiroWilk
Beryllium, total (mg/L)	MW-1606S	n/a	n/a	n/a	NP	NaN	14	0.00009321	0.00002539	unknown	ShapiroWilk
Beryllium, total (mg/L)	MW-1607D	n/a	n/a	n/a	NP	NaN	14	0.00009343	0.00002459	unknown	ShapiroWilk
Beryllium, total (mg/L)	MW-1607S	n/a	n/a	n/a	NP	NaN	14	0.00008214	0.00004011	unknown	ShapiroWilk
Cadmium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.00008438	0.00005633	ln(x)	ShapiroWilk
Cadmium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.0001131	0.00008459	normal	ShapiroWilk
Cadmium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.00002531	0.00001087	sqrt(x)	ShapiroWilk
Cadmium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.00006438	0.00002529	ln(x)	ShapiroWilk
Cadmium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.00007	0.00001095	x^2	ShapiroWilk
Cadmium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.00007188	0.000008342	x^(1/3)	ShapiroWilk
Cadmium, total (mg/L)	MW-1607D	n/a	n/a	n/a	NP	NaN	16	0.0000225	0.000006325	unknown	ShapiroWilk
Cadmium, total (mg/L)	**MW-1607S**	**Yes**	**0.00022**	**12/21/2016**	**NP**	**NaN**	**16**	**0.00005063**	**0.0000464**	**ln(x)**	**ShapiroWilk**
Chromium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.0003859	0.0002592	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.0003661	0.0004779	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.0002974	0.0005459	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.0005084	0.0006537	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.0003195	0.0002789	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.0002923	0.0003215	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.0003167	0.000505	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	0.0005251	0.0007075	ln(x)	ShapiroWilk
Cobalt, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.0009925	0.0008151	x^6	ShapiroWilk
Cobalt, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.001185	0.0008758	x^3	ShapiroWilk
Cobalt, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.001683	0.0001425	x^3	ShapiroWilk
Cobalt, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.000762	0.0007065	ln(x)	ShapiroWilk
Cobalt, total (mg/L)	**MW-1606D**	**Yes**	**0.00426**	**4/18/2017**	**NP**	**NaN**	**16**	**0.001579**	**0.0007754**	**ln(x)**	**ShapiroWilk**
Cobalt, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.0003031	0.00008992	sqrt(x)	ShapiroWilk
Cobalt, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.0006489	0.0002138	normal	ShapiroWilk

Tukey's Outlier Analysis - Downgradient Wells - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 3:50 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Cobalt, total (mg/L)	**MW-1607S**	**Yes**	**0.0201**	**12/21/2016**	**NP**	**NaN**	**16**	**0.002443**	**0.004741**	**ln(x)**	**ShapiroWilk**
Combined Radium 226 + 228 (pCi/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.957	0.8133	x^(1/3)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	1.608	2.304	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	1.131	0.8667	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.8866	0.7705	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	1.892	1.958	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	1.066	0.6786	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	1.575	0.793	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	1.522	0.7709	sqrt(x)	ShapiroWilk
Fluoride, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	17	0.19	0.02598	sqrt(x)	ShapiroWilk
Fluoride, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	17	0.2065	0.02029	normal	ShapiroWilk
Fluoride, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	17	0.1953	0.01807	x^(1/3)	ShapiroWilk
Fluoride, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	17	0.2641	0.03242	ln(x)	ShapiroWilk
Fluoride, total (mg/L)	**MW-1606D**	**Yes**	**0.1,0.49**	**6/19/2019,9/11/2019**	**NP**	**NaN**	**17**	**0.2588**	**0.0714**	**sqrt(x)**	**ShapiroWilk**
Fluoride, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	18	0.4328	0.07752	x^2	ShapiroWilk
Fluoride, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	18	0.5039	0.05066	x^2	ShapiroWilk
Fluoride, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	17	0.2747	0.03502	x^3	ShapiroWilk
Lead, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.0001322	0.0001502	ln(x)	ShapiroWilk
Lead, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.0001191	0.00007161	x^(1/3)	ShapiroWilk
Lead, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.00007219	0.0000781	ln(x)	ShapiroWilk
Lead, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.0004323	0.0005147	ln(x)	ShapiroWilk
Lead, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.0002992	0.0004852	ln(x)	ShapiroWilk
Lead, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.0001206	0.00006899	x^(1/3)	ShapiroWilk
Lead, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.0001272	0.0001482	ln(x)	ShapiroWilk
Lead, total (mg/L)	**MW-1607S**	**Yes**	**0.011**	**12/21/2016**	**NP**	**NaN**	**16**	**0.0009651**	**0.002707**	**ln(x)**	**ShapiroWilk**
Lithium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.03826	0.01797	normal	ShapiroWilk
Lithium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.04012	0.00928	x^(1/3)	ShapiroWilk
Lithium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.06454	0.01768	x^2	ShapiroWilk
Lithium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.06441	0.01463	normal	ShapiroWilk
Lithium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.1037	0.02599	x^5	ShapiroWilk
Lithium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.09868	0.02088	x^4	ShapiroWilk
Lithium, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.08973	0.01726	ln(x)	ShapiroWilk
Lithium, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	0.1016	0.01468	ln(x)	ShapiroWilk
Mercury, total (mg/L)	MW-1604D	n/a	n/a	n/a	NP	NaN	15	0.000006933	0.000008058	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1604S	n/a	n/a	n/a	NP	NaN	15	0.000004867	5.2e-7	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1605D	n/a	n/a	n/a	NP	NaN	15	0.0000048	7.7e-7	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1605S	n/a	n/a	n/a	NP	NaN	15	0.000004867	5.2e-7	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1606D	n/a	n/a	n/a	NP	NaN	15	0.000004933	2.6e-7	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1606S	n/a	n/a	n/a	NP	NaN	15	0.0000048	7.7e-7	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1607D	n/a	n/a	n/a	NP	NaN	15	0.0000046	0.000001056	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1607S	n/a	n/a	n/a	NP	NaN	15	0.0000052	0.000002007	unknown	ShapiroWilk
Molybdenum, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.01029	0.008831	x^5	ShapiroWilk
Molybdenum, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.009188	0.006846	x^5	ShapiroWilk
Molybdenum, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.04411	0.0069	normal	ShapiroWilk
Molybdenum, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.01709	0.004318	ln(x)	ShapiroWilk
Molybdenum, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.07259	0.006631	ln(x)	ShapiroWilk
Molybdenum, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.07956	0.02099	sqrt(x)	ShapiroWilk
Molybdenum, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.08558	0.004945	ln(x)	ShapiroWilk
Molybdenum, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	0.04148	0.005373	normal	ShapiroWilk
pH, field (SU)	MW-1601A (bg)	No	n/a	n/a	NP	NaN	17	7.118	0.266	ln(x)	ShapiroWilk
pH, field (SU)	MW-1602 (bg)	No	n/a	n/a	NP	NaN	17	6.734	0.2818	ln(x)	ShapiroWilk
pH, field (SU)	MW-1603 (bg)	No	n/a	n/a	NP	NaN	17	6.776	0.3324	ln(x)	ShapiroWilk
pH, field (SU)	MW-1604D	No	n/a	n/a	NP	NaN	18	7.144	0.3269	x^2	ShapiroWilk
pH, field (SU)	MW-1604S	No	n/a	n/a	NP	NaN	18	7.141	0.2479	ln(x)	ShapiroWilk
pH, field (SU)	MW-1605D	No	n/a	n/a	NP	NaN	17	7.342	0.2406	ln(x)	ShapiroWilk

Tukey's Outlier Analysis - Downgradient Wells - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 3:50 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
pH, field (SU)	MW-1605S	No	n/a	n/a	NP	NaN	18	7.259	0.2353	ln(x)	ShapiroWilk
pH, field (SU)	MW-1606D	No	n/a	n/a	NP	NaN	18	7.332	0.2335	ln(x)	ShapiroWilk
pH, field (SU)	MW-1606S	No	n/a	n/a	NP	NaN	18	7.059	0.3673	x^6	ShapiroWilk
pH, field (SU)	MW-1607D	No	n/a	n/a	NP	NaN	18	7.558	0.3267	ln(x)	ShapiroWilk
pH, field (SU)	MW-1607S	No	n/a	n/a	NP	NaN	18	7.452	0.3004	ln(x)	ShapiroWilk
pH, field (SU)	MW-1608 (bg)	No	n/a	n/a	NP	NaN	17	6.979	0.3569	sqrt(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.001531	0.001136	ln(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.001694	0.0007576	ln(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.0002244	0.00006957	sqrt(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.001119	0.0006765	ln(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.004106	0.002709	sqrt(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.001806	0.001369	ln(x)	ShapiroWilk
Selenium, total (mg/L)	**MW-1607D**	**Yes**	**0.0005**	**3/29/2017**	**NP**	**NaN**	**16**	**0.00008312**	**0.0001131**	**ln(x)**	**ShapiroWilk**
Selenium, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	0.007481	0.002283	normal	ShapiroWilk
Thallium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.0003202	0.0001658	normal	ShapiroWilk
Thallium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.000255	0.0004789	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.0002255	0.0002209	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.0002291	0.0002191	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.0002261	0.000191	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.0002108	0.0002019	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.0002108	0.0002316	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	0.0002308	0.0002167	ln(x)	ShapiroWilk

Tukey's Outlier Analysis - Upgradient Wells - All Results (No Significant)

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/12/2021, 1:14 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.00004406	0.00003186	ln(x)	ShapiroFrancia
Arsenic, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0004619	0.0001313	ln(x)	ShapiroFrancia
Barium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.03771	0.01128	ln(x)	ShapiroFrancia
Beryllium, total (mg/L)	MW-1601A,MW-1602,..	n/a	n/a	n/a w/combined bg	NP	NaN	56	0.00008937	0.00002887	unknown	ShapiroFrancia
Boron, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	60	0.2288	0.1476	ln(x)	ShapiroFrancia
Cadmium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.00001534	0.000007503	ln(x)	ShapiroFrancia
Calcium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	60	122.9	36.43	ln(x)	ShapiroFrancia
Chloride, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	60	18.54	16.12	ln(x)	ShapiroFrancia
Chromium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0004183	0.0004798	ln(x)	ShapiroFrancia
Cobalt, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0001595	0.0002023	ln(x)	ShapiroFrancia
Combined Radium 226 + 228 (pCi/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.782	0.6318	x^(1/3)	ShapiroFrancia
Fluoride, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	68	0.1737	0.05894	x^2	ShapiroFrancia
Lead, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0001459	0.0001499	ln(x)	ShapiroFrancia
Lithium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.01101	0.007003	sqrt(x)	ShapiroFrancia
Mercury, total (mg/L)	MW-1601A,MW-1602,..	n/a	n/a	n/a w/combined bg	NP	NaN	60	0.000004833	6.4e-7	unknown	ShapiroFrancia
Molybdenum, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.001161	0.0006869	x^(1/3)	ShapiroFrancia
Selenium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0007531	0.0007212	x^(1/3)	ShapiroFrancia
Sulfate, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	60	249.3	134.3	x^(1/3)	ShapiroFrancia
Thallium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0002163	0.0002297	ln(x)	ShapiroFrancia
Total Dissolved Solids [TDS] (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	60	610.2	180.6	ln(x)	ShapiroFrancia

Welch's t-test/Mann-Whitney - All Results (No Significant)

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/15/2021, 10:07 AM

Constituent	Well	Calc.	0.01	Method
pH, field (SU)	MW-1601A (bg)	-1.761	No	Mann-W
pH, field (SU)	MW-1602 (bg)	-1.031	No	Mann-W
pH, field (SU)	MW-1603 (bg)	-1.274	No	Mann-W
pH, field (SU)	MW-1604D	-2.551	No	Mann-W
pH, field (SU)	MW-1604S	-0.8497	No	Mann-W
pH, field (SU)	MW-1605D	-1.702	No	Mann-W
pH, field (SU)	MW-1605S	-1.875	No	Mann-W
pH, field (SU)	MW-1606D	-1.534	No	Mann-W
pH, field (SU)	MW-1606S	-0.8503	No	Mann-W
pH, field (SU)	MW-1607D	-0.182	No	Mann-W
pH, field (SU)	MW-1607S	-0.9115	No	Mann-W
pH, field (SU)	MW-1608 (bg)	-1.823	No	Mann-W

Appendix III - Intrawell Prediction Limits - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 4:19 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
pH, field (SU)	MW-1601A	7.738	6.54	n/a	1 future	n/a	16	7.139	0.2586	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1602	7.406	6.094	n/a	1 future	n/a	16	6.75	0.283	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1603	7.55	6.058	n/a	1 future	n/a	16	6.804	0.3221	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1604D	7.896	6.444	n/a	1 future	n/a	17	7.17	0.317	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1604S	7.728	6.57	n/a	1 future	n/a	17	7.149	0.253	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1605D	7.921	6.779	n/a	1 future	n/a	16	7.35	0.2463	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1605S	7.81	6.737	n/a	1 future	n/a	17	7.274	0.2346	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1606D	7.874	6.824	n/a	1 future	n/a	17	7.349	0.2294	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1606S	7.93	6.21	n/a	1 future	n/a	17	7.07	0.3755	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1607D	8.115	6.931	n/a	1 future	n/a	16	7.523	0.2556	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1607S	7.902	6.903	n/a	1 future	n/a	16	411.2	35.51	0	None	x^3	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1608	7.83	6.168	n/a	1 future	n/a	16	6.999	0.3587	0	None	No	0.0004701	Param Intra 1 of 2

Appendix III Trend Tests - Upgradient Wells - Significant Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 4:24 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Calcium, total (mg/L)	**MW-1601A (bg)**	**14.17**	**68**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Calcium, total (mg/L)	**MW-1602 (bg)**	**6.502**	**55**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Chloride, total (mg/L)	**MW-1603 (bg)**	**-4.624**	**-69**	**-53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride, total (mg/L)	**MW-1601A (bg)**	**-0.01329**	**-65**	**-63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride, total (mg/L)	**MW-1602 (bg)**	**0.01824**	**94**	**63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride, total (mg/L)	**MW-1608 (bg)**	**-0.01908**	**-67**	**-63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate, total (mg/L)	**MW-1601A (bg)**	**29.83**	**86**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids [TDS] (mg/L)	**MW-1601A (bg)**	**70.43**	**79**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids [TDS] (mg/L)	**MW-1602 (bg)**	**44.7**	**60**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**

Appendix III Trend Tests - Upgradient Wells - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 4:24 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron, total (mg/L)	MW-1601A (bg)	-0.02655	-38	-53	No	15	0	n/a	n/a	0.01	NP
Boron, total (mg/L)	MW-1602 (bg)	-0.003183	-23	-53	No	15	0	n/a	n/a	0.01	NP
Boron, total (mg/L)	MW-1603 (bg)	-0.05611	-47	-53	No	15	0	n/a	n/a	0.01	NP
Boron, total (mg/L)	MW-1608 (bg)	-0.0149	-33	-53	No	15	0	n/a	n/a	0.01	NP
Calcium, total (mg/L)	**MW-1601A (bg)**	**14.17**	**68**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Calcium, total (mg/L)	**MW-1602 (bg)**	**6.502**	**55**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Calcium, total (mg/L)	MW-1603 (bg)	-1.106	-5	-53	No	15	0	n/a	n/a	0.01	NP
Calcium, total (mg/L)	MW-1608 (bg)	1.019	12	53	No	15	0	n/a	n/a	0.01	NP
Chloride, total (mg/L)	MW-1601A (bg)	1.504	9	53	No	15	0	n/a	n/a	0.01	NP
Chloride, total (mg/L)	MW-1602 (bg)	-0.02286	-1	-53	No	15	0	n/a	n/a	0.01	NP
Chloride, total (mg/L)	**MW-1603 (bg)**	**-4.624**	**-69**	**-53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Chloride, total (mg/L)	MW-1608 (bg)	-0.5127	-21	-53	No	15	0	n/a	n/a	0.01	NP
Fluoride, total (mg/L)	**MW-1601A (bg)**	**-0.01329**	**-65**	**-63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride, total (mg/L)	**MW-1602 (bg)**	**0.01824**	**94**	**63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride, total (mg/L)	MW-1603 (bg)	0	-28	-63	No	17	0	n/a	n/a	0.01	NP
Fluoride, total (mg/L)	**MW-1608 (bg)**	**-0.01908**	**-67**	**-63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate, total (mg/L)	**MW-1601A (bg)**	**29.83**	**86**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate, total (mg/L)	MW-1602 (bg)	21.35	49	53	No	15	0	n/a	n/a	0.01	NP
Sulfate, total (mg/L)	MW-1603 (bg)	-23.74	-41	-53	No	15	0	n/a	n/a	0.01	NP
Sulfate, total (mg/L)	MW-1608 (bg)	19.74	21	53	No	15	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	**MW-1601A (bg)**	**70.43**	**79**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids [TDS] (mg/L)	**MW-1602 (bg)**	**44.7**	**60**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids [TDS] (mg/L)	MW-1603 (bg)	-17.94	-20	-53	No	15	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	MW-1608 (bg)	22.38	38	53	No	15	0	n/a	n/a	0.01	NP

Appendix III - Interwell Prediction Limits - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 4:26 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron, total (mg/L)	n/a	0.5802	n/a	n/a	8 future	n/a	60	-1.641	0.5599	0	None	ln(x)	0.0009403	Param Inter 1 of 2
Calcium, total (mg/L)	n/a	211.7	n/a	n/a	8 future	n/a	60	4.767	0.3004	0	None	ln(x)	0.0009403	Param Inter 1 of 2
Chloride, total (mg/L)	n/a	64.56	n/a	n/a	8 future	n/a	60	2.603	0.7989	0	None	ln(x)	0.0009403	Param Inter 1 of 2
Fluoride, total (mg/L)	n/a	0.2886	n/a	n/a	8 future	n/a	68	0.1737	0.05894	0	None	No	0.0009403	Param Inter 1 of 2
Sulfate, total (mg/L)	n/a	547.8	n/a	n/a	8 future	n/a	60	15.24	4.17	0	None	sqrt(x)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids [TDS] (mg/L)	n/a	993.4	n/a	n/a	8 future	n/a	60	24.44	3.614	0	None	sqrt(x)	0.0009403	Param Inter 1 of 2

Upper Tolerance Limit Summary Table

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/12/2021, 1:27 PM

Constituent	Upper Lim.	Lower Lim.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony, total (mg/L)	0.00015	n/a	n/a	64	n/a	n/a	15.63	n/a	n/a	0.03752	NP Inter(normality)
Arsenic, total (mg/L)	0.0007452	n/a	n/a	64	0.02128	0.003002	0	None	sqrt(x)	0.05	Inter
Barium, total (mg/L)	0.0678	n/a	n/a	64	n/a	n/a	0	n/a	n/a	0.03752	NP Inter(normality)
Beryllium, total (mg/L)	0.0001	n/a	n/a	56	n/a	n/a	87.5	n/a	n/a	0.05656	NP Inter(NDs)
Cadmium, total (mg/L)	0.00005	n/a	n/a	64	n/a	n/a	9.375	n/a	n/a	0.03752	NP Inter(normality)
Chromium, total (mg/L)	0.0007306	n/a	n/a	60	0.06551	0.01218	1.667	None	x^(1/3)	0.05	Inter
Cobalt, total (mg/L)	0.0006643	n/a	n/a	64	-9.249	0.9643	6.25	None	ln(x)	0.05	Inter
Combined Radium 226 + 228 (pCi/L)	2.263	n/a	n/a	64	0.8159	0.3437	0	None	sqrt(x)	0.05	Inter
Fluoride, total (mg/L)	0.2911	n/a	n/a	68	0.1737	0.05894	0	None	No	0.05	Inter
Lead, total (mg/L)	0.000881	n/a	n/a	64	n/a	n/a	14.06	n/a	n/a	0.03752	NP Inter(normality)
Lithium, total (mg/L)	0.02504	n/a	n/a	64	0.01101	0.007003	9.375	None	No	0.05	Inter
Mercury, total (mg/L)	0.000005	n/a	n/a	60	n/a	n/a	93.33	n/a	n/a	0.04607	NP Inter(NDs)
Molybdenum, total (mg/L)	0.002766	n/a	n/a	64	0.0326	0.009978	7.813	None	sqrt(x)	0.05	Inter
Selenium, total (mg/L)	0.0043	n/a	n/a	64	n/a	n/a	0	n/a	n/a	0.03752	NP Inter(normality)
Thallium, total (mg/L)	0.0005	n/a	n/a	64	n/a	n/a	39.06	n/a	n/a	0.03752	NP Inter(normality)

Confidence Intervals - Significant Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/14/2021, 3:02 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Lithium, total (mg/L)	**MW-1605D**	**0.07605**	**0.05304**	**0.04**	**Yes**	**16**	**0.06454**	**0.01768**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1605S**	**0.07392**	**0.05489**	**0.04**	**Yes**	**16**	**0.06441**	**0.01463**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1606D**	**0.1213**	**0.09346**	**0.04**	**Yes**	**16**	**0.1037**	**0.02599**	**0**	**None**	**x^3**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1606S**	**0.1123**	**0.0851**	**0.04**	**Yes**	**16**	**0.09868**	**0.02088**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607D**	**0.101**	**0.07849**	**0.04**	**Yes**	**16**	**0.08973**	**0.01726**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607S**	**0.1112**	**0.09206**	**0.04**	**Yes**	**16**	**0.1016**	**0.01468**	**0**	**None**	**No**	**0.01**	**Param.**

Confidence Intervals - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/14/2021, 3:02 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony, total (mg/L)	MW-1604D	0.00014	0.00003	0.006	No	16	0.00008437	0.00005228	6.25	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1604S	0.00015	0.00003	0.006	No	16	0.0000925	0.00006148	0	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1605D	0.00005	0.00003	0.006	No	16	0.00003625	0.000007188	12.5	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1605S	0.00007	0.00004	0.006	No	16	0.00005688	0.00003092	0	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1606D	0.00019	0.00014	0.006	No	16	0.0001644	0.00002851	0	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1606S	0.0001564	0.0001398	0.006	No	16	0.0001481	0.00001276	0	None	No	0.01	Param.
Antimony, total (mg/L)	MW-1607D	0.00004	0.00003	0.006	No	16	0.00003312	0.000007042	6.25	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1607S	0.0004765	0.0004222	0.006	No	15	0.0004493	0.00004008	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1604D	0.0004762	0.0003338	0.01	No	16	0.000405	0.0001094	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1604S	0.0004357	0.0003381	0.01	No	16	0.0003869	0.00007499	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1605D	0.002704	0.002268	0.01	No	16	0.002486	0.0003347	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1605S	0.0008429	0.0005507	0.01	No	16	0.0007063	0.0002421	0	None	sqrt(x)	0.01	Param.
Arsenic, total (mg/L)	MW-1606D	0.00071	0.00036	0.01	No	16	0.0005394	0.0002695	0	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	MW-1606S	0.0008345	0.0006955	0.01	No	16	0.000765	0.0001069	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1607D	0.00143	0.001087	0.01	No	16	0.001259	0.0002639	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1607S	0.0013	0.0009	0.01	No	15	0.001117	0.0002896	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	MW-1604D	0.0425	0.0275	2	No	16	0.03386	0.009042	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	MW-1604S	0.0294	0.0267	2	No	16	0.02874	0.001571	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	MW-1605D	0.02926	0.0254	2	No	16	0.02733	0.002965	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1605S	0.03525	0.02557	2	No	16	0.03041	0.007438	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1606D	0.05733	0.04899	2	No	16	0.05316	0.006409	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1606S	0.07386	0.06528	2	No	16	0.06957	0.006594	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1607D	0.129	0.08496	2	No	16	0.107	0.03385	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1607S	0.0722	0.06249	2	No	15	0.06735	0.007166	0	None	No	0.01	Param.
Beryllium, total (mg/L)	MW-1604S	0.0001	0.000024	0.004	No	14	0.00009457	0.00002031	92.86	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1605S	0.0001	0.00002	0.004	No	14	0.00008114	0.00003757	78.57	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1606D	0.0001	0.00001	0.004	No	14	0.000075	0.00004147	71.43	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1606S	0.0001	0.000005	0.004	No	14	0.00009321	0.00002539	92.86	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1607D	0.0001	0.000008	0.004	No	14	0.00009343	0.00002459	92.86	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1607S	0.000123	0.00001	0.004	No	14	0.00008214	0.00004011	71.43	None	No	0.01	NP (NDs)
Cadmium, total (mg/L)	MW-1604D	0.00015	0.00003	0.005	No	16	0.00008438	0.00005633	0	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1604S	0.00021	0.00003	0.005	No	16	0.0001131	0.00008459	0	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1605D	0.00004	0.00001	0.005	No	16	0.00002531	0.00001087	6.25	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1605S	0.000079	0.0000473	0.005	No	16	0.00006438	0.00002529	0	None	sqrt(x)	0.01	Param.
Cadmium, total (mg/L)	MW-1606D	0.00007713	0.00006287	0.005	No	16	0.00007	0.00001095	0	None	No	0.01	Param.
Cadmium, total (mg/L)	MW-1606S	0.00008	0.00006	0.005	No	16	0.00007188	0.000008342	0	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1607D	0.00003	0.00002	0.005	No	16	0.0000225	0.000006325	68.75	None	No	0.01	NP (NDs)
Cadmium, total (mg/L)	MW-1607S	0.00004679	0.00003188	0.005	No	15	0.00003933	0.000011	0	None	No	0.01	Param.
Chromium, total (mg/L)	MW-1604D	0.0005168	0.0002156	0.1	No	16	0.0003859	0.0002592	0	None	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	MW-1604S	0.0003242	0.0001191	0.1	No	15	0.0002591	0.0002206	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	MW-1605D	0.0002274	0.00008338	0.1	No	15	0.0001645	0.0001295	0	None	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	MW-1605S	0.000488	0.0002165	0.1	No	15	0.0003523	0.0002004	0	None	No	0.01	Param.
Chromium, total (mg/L)	MW-1606D	0.0004277	0.0001402	0.1	No	16	0.0003195	0.0002789	0	None	x^(1/3)	0.01	Param.
Chromium, total (mg/L)	MW-1606S	0.0003448	0.0001037	0.1	No	16	0.0002923	0.0003215	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	MW-1607D	0.0002457	0.00008153	0.1	No	15	0.0001998	0.0001975	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	MW-1607S	0.0004732	0.0002337	0.1	No	15	0.0003535	0.0001767	0	None	No	0.01	Param.
Cobalt, total (mg/L)	MW-1604D	0.00185	0.00014	0.006	No	16	0.0009925	0.0008151	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1604S	0.00214	0.000308	0.006	No	16	0.001185	0.0008758	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1605D	0.001775	0.00159	0.006	No	16	0.001683	0.0001425	0	None	No	0.01	Param.
Cobalt, total (mg/L)	MW-1605S	0.001004	0.0003722	0.006	No	16	0.000762	0.0007065	0	None	x^(1/3)	0.01	Param.
Cobalt, total (mg/L)	MW-1606D	0.00192	0.00111	0.006	No	16	0.001579	0.0007754	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1606S	0.0003616	0.0002446	0.006	No	16	0.0003031	0.00008992	0	None	No	0.01	Param.
Cobalt, total (mg/L)	MW-1607D	0.000848	0.000414	0.006	No	16	0.0006489	0.0002138	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1607S	0.00142	0.000851	0.006	No	15	0.001266	0.0005711	0	None	No	0.01	NP (normality)

Confidence Intervals - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/14/2021, 3:02 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Combined Radium 226 + 228 (pCi/L)	MW-1604D	1.334	0.4283	5	No	16	0.957	0.8133	0	None	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1604S	1.662	0.598	5	No	15	1.706	2.35	0	None	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-1605D	1.48	0.6031	5	No	16	1.131	0.8667	0	None	x^(1/3)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1605S	1.073	0.4422	5	No	16	0.8866	0.7705	0	None	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1606D	1.813	0.8691	5	No	15	1.454	0.9055	0	None	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1606S	1.507	0.6245	5	No	16	1.066	0.6786	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1607D	1.949	1.092	5	No	16	1.575	0.793	0	None	x^(1/3)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1607S	2.024	1.021	5	No	16	1.522	0.7709	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1604D	0.2063	0.1737	4	No	17	0.19	0.02598	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1604S	0.2192	0.1938	4	No	17	0.2065	0.02029	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1605D	0.2066	0.184	4	No	17	0.1953	0.01807	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1605S	0.2844	0.2438	4	No	17	0.2641	0.03242	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1606D	0.27	0.24	4	No	17	0.2588	0.0714	0	None	No	0.01	NP (normality)
Fluoride, total (mg/L)	MW-1606S	0.4797	0.3859	4	No	18	0.4328	0.07752	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1607D	0.5345	0.4732	4	No	18	0.5039	0.05066	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1607S	0.2966	0.2528	4	No	17	0.2747	0.03502	0	None	No	0.01	Param.
Lead, total (mg/L)	MW-1604D	0.00009405	0.00002674	0.015	No	16	0.0001322	0.0001502	25	Kaplan-Meier	ln(x)	0.01	Param.
Lead, total (mg/L)	MW-1604S	0.0002	0.000034	0.015	No	16	0.0001191	0.00007161	37.5	None	No	0.01	NP (normality)
Lead, total (mg/L)	MW-1605D	0.0002	0.00002	0.015	No	16	0.00007219	0.0000781	25	None	No	0.01	NP (normality)
Lead, total (mg/L)	MW-1605S	0.00058	0.0001455	0.015	No	16	0.0004323	0.0005147	6.25	None	x^(1/3)	0.01	Param.
Lead, total (mg/L)	MW-1606D	0.000246	0.00004554	0.015	No	16	0.0002992	0.0004852	31.25	Kaplan-Meier	ln(x)	0.01	Param.
Lead, total (mg/L)	MW-1606S	0.0001357	0.00006068	0.015	No	16	0.0001206	0.00006899	18.75	Kaplan-Meier	No	0.01	Param.
Lead, total (mg/L)	MW-1607D	0.0002	0.000043	0.015	No	16	0.0001272	0.0001482	18.75	None	No	0.01	NP (normality)
Lead, total (mg/L)	MW-1607S	0.000267	0.00009	0.015	No	15	0.0002961	0.0004235	0	None	No	0.01	NP (normality)
Lithium, total (mg/L)	MW-1604D	0.058	0.0188	0.04	No	16	0.03826	0.01797	6.25	None	No	0.01	NP (normality)
Lithium, total (mg/L)	MW-1604S	0.04616	0.03408	0.04	No	16	0.04012	0.00928	0	None	No	0.01	Param.
Lithium, total (mg/L)	**MW-1605D**	**0.07605**	**0.05304**	**0.04**	**Yes**	**16**	**0.06454**	**0.01768**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1605S**	**0.07392**	**0.05489**	**0.04**	**Yes**	**16**	**0.06441**	**0.01463**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1606D**	**0.1213**	**0.09346**	**0.04**	**Yes**	**16**	**0.1037**	**0.02599**	**0**	**None**	**x^3**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1606S**	**0.1123**	**0.0851**	**0.04**	**Yes**	**16**	**0.09868**	**0.02088**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607D**	**0.101**	**0.07849**	**0.04**	**Yes**	**16**	**0.08973**	**0.01726**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607S**	**0.1112**	**0.09206**	**0.04**	**Yes**	**16**	**0.1016**	**0.01468**	**0**	**None**	**No**	**0.01**	**Param.**
Mercury, total (mg/L)	MW-1604D	0.000036	0.000003	0.002	No	15	0.000006933	0.000008058	86.67	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1604S	0.000005	0.000003	0.002	No	15	0.000004867	5.2e-7	93.33	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1605D	0.000005	0.000002	0.002	No	15	0.0000048	7.7e-7	93.33	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1605S	0.000005	0.000003	0.002	No	15	0.000004867	5.2e-7	93.33	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1606D	0.000005	0.000004	0.002	No	15	0.000004933	2.6e-7	93.33	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1606S	0.000005	0.000002	0.002	No	15	0.0000048	7.7e-7	93.33	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1607D	0.000005	0.000002	0.002	No	15	0.0000046	0.000001056	86.67	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1607S	0.000012	0.000003	0.002	No	15	0.0000052	0.000002007	80	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	MW-1604D	0.0198	0.001	0.1	No	16	0.01029	0.008831	6.25	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	MW-1604S	0.0163	0.00252	0.1	No	15	0.009587	0.00689	0	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	MW-1605D	0.0486	0.03962	0.1	No	16	0.04411	0.0069	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1605S	0.0199	0.01428	0.1	No	16	0.01709	0.004318	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1606D	0.0769	0.06827	0.1	No	16	0.07259	0.006631	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1606S	0.09321	0.0659	0.1	No	16	0.07956	0.02099	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1607D	0.08879	0.08236	0.1	No	16	0.08558	0.004945	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1607S	0.04498	0.03799	0.1	No	16	0.04148	0.005373	0	None	No	0.01	Param.
Selenium, total (mg/L)	MW-1604D	0.0031	0.0007	0.05	No	16	0.001531	0.001136	0	None	No	0.01	NP (normality)
Selenium, total (mg/L)	MW-1604S	0.002187	0.001201	0.05	No	16	0.001694	0.0007576	0	None	No	0.01	Param.
Selenium, total (mg/L)	MW-1605D	0.0003	0.00009	0.05	No	16	0.0002244	0.00006957	0	None	No	0.01	NP (normality)
Selenium, total (mg/L)	MW-1605S	0.00146	0.0006917	0.05	No	16	0.001119	0.0006765	0	None	sqrt(x)	0.01	Param.
Selenium, total (mg/L)	MW-1606D	0.005869	0.002344	0.05	No	16	0.004106	0.002709	0	None	No	0.01	Param.
Selenium, total (mg/L)	MW-1606S	0.002215	0.0009601	0.05	No	16	0.001806	0.001369	0	None	ln(x)	0.01	Param.

Confidence Intervals - All Results

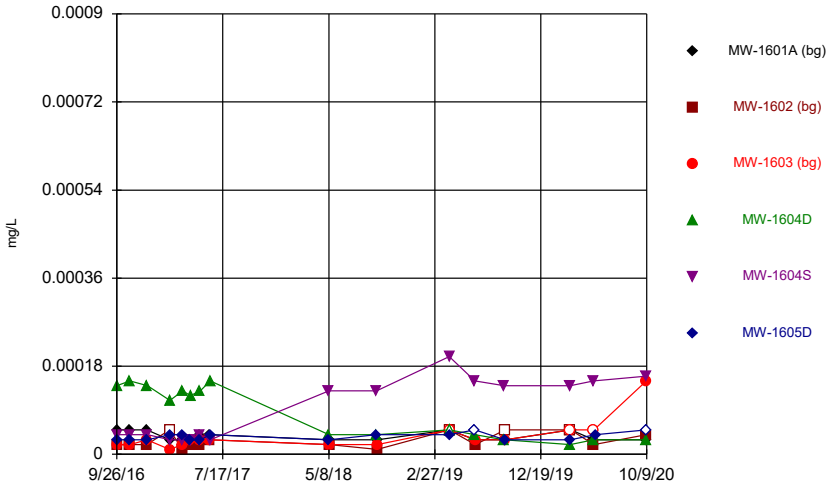
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/14/2021, 3:02 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Selenium, total (mg/L)	MW-1607D	0.00009	0.00004	0.05	No	16	0.00008312	0.0001131	12.5	None	No	0.01	NP (normality)
Selenium, total (mg/L)	MW-1607S	0.008966	0.005996	0.05	No	16	0.007481	0.002283	0	None	No	0.01	Param.
Thallium, total (mg/L)	MW-1604D	0.0005	0.000217	0.002	No	16	0.0003202	0.0001658	37.5	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1604S	0.0003	0.00002	0.002	No	16	0.0001613	0.0001449	6.25	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1605D	0.0005	0.00004	0.002	No	16	0.0002255	0.0002209	37.5	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1605S	0.0005	0.00005	0.002	No	16	0.0002291	0.0002191	37.5	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1606D	0.0005	0.000092	0.002	No	16	0.0002261	0.000191	31.25	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1606S	0.0005	0.000063	0.002	No	16	0.0002108	0.0002019	31.25	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1607D	0.0005	0.00002	0.002	No	16	0.0002108	0.0002316	37.5	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1607S	0.0005	0.000052	0.002	No	16	0.0002308	0.0002167	37.5	None	No	0.01	NP (normality)

FIGURE A.

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

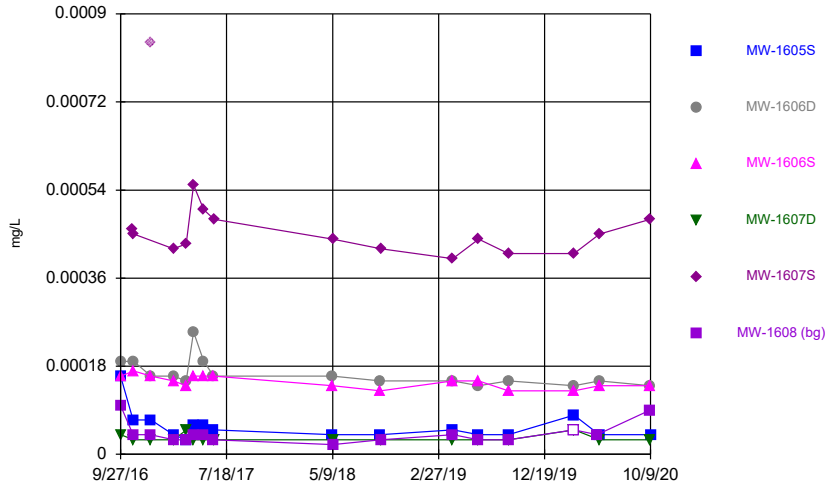
Time Series



Constituent: Antimony, total Analysis Run 1/14/2021 2:34 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

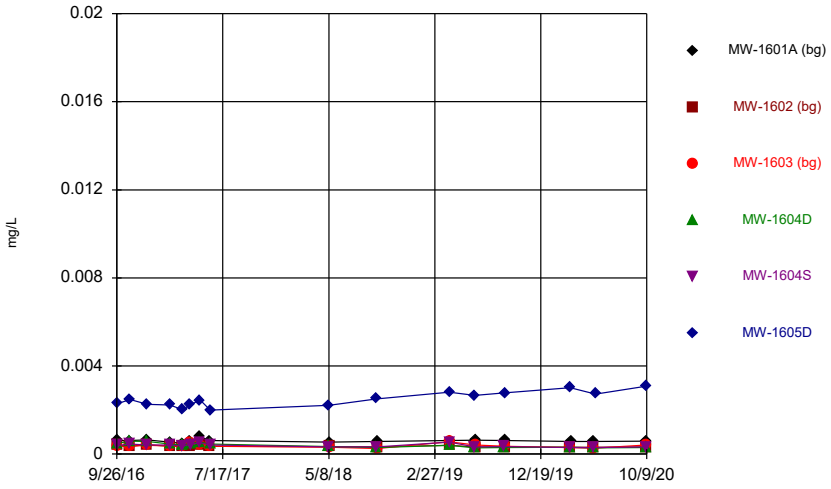
Time Series



Constituent: Antimony, total Analysis Run 1/14/2021 2:34 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

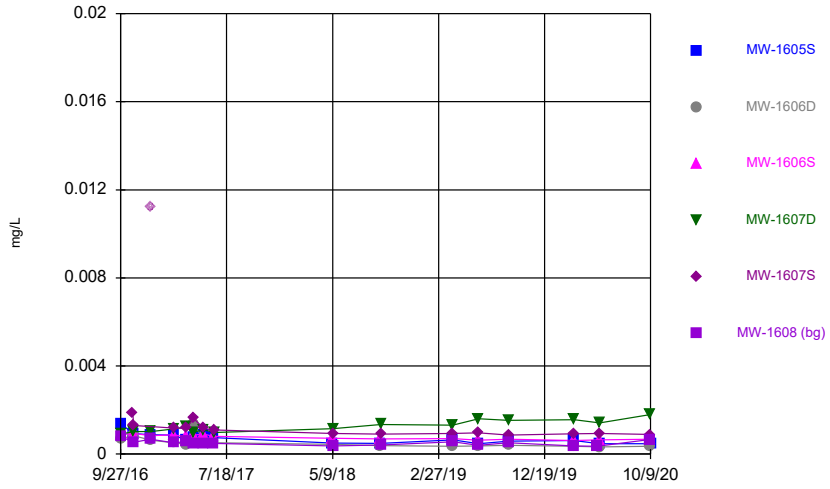
Time Series



Constituent: Arsenic, total Analysis Run 1/14/2021 2:34 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

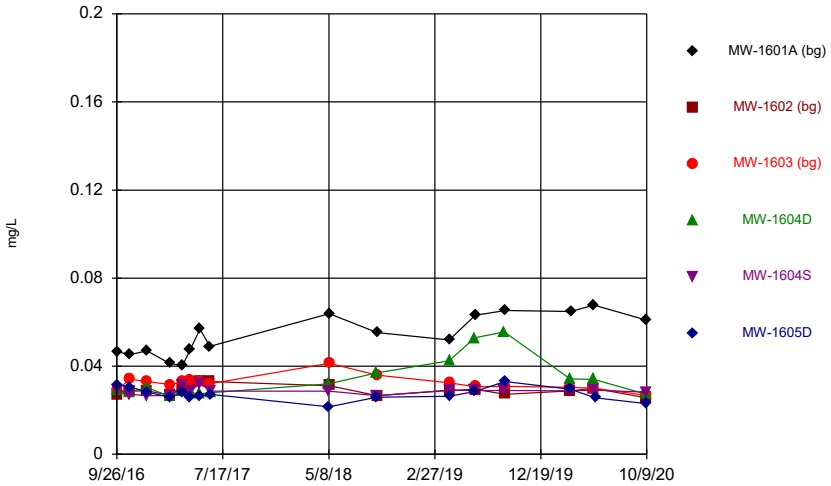
Time Series



Constituent: Arsenic, total Analysis Run 1/14/2021 2:34 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series



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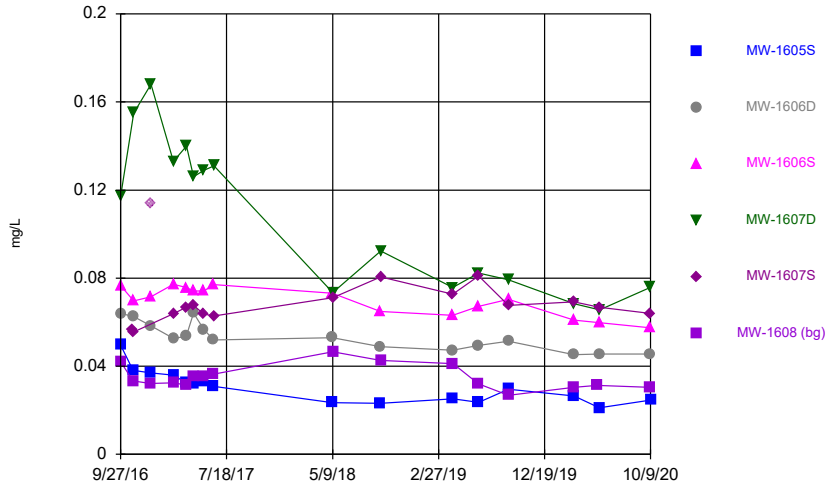
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series



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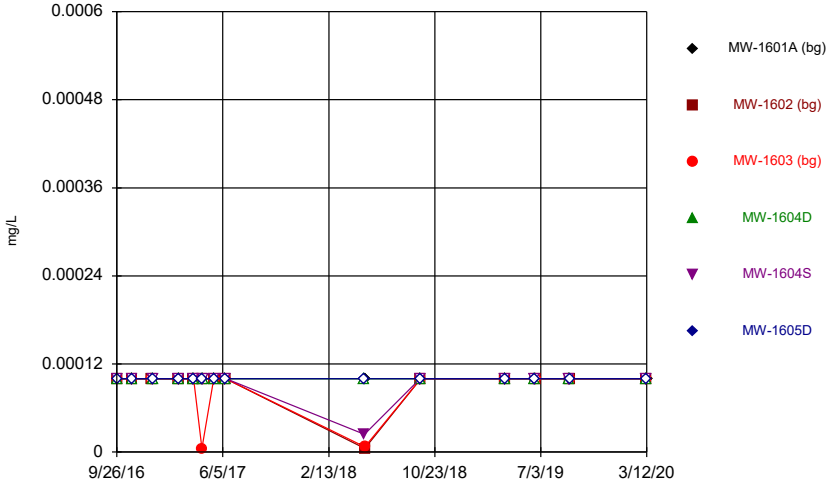
Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Time Series



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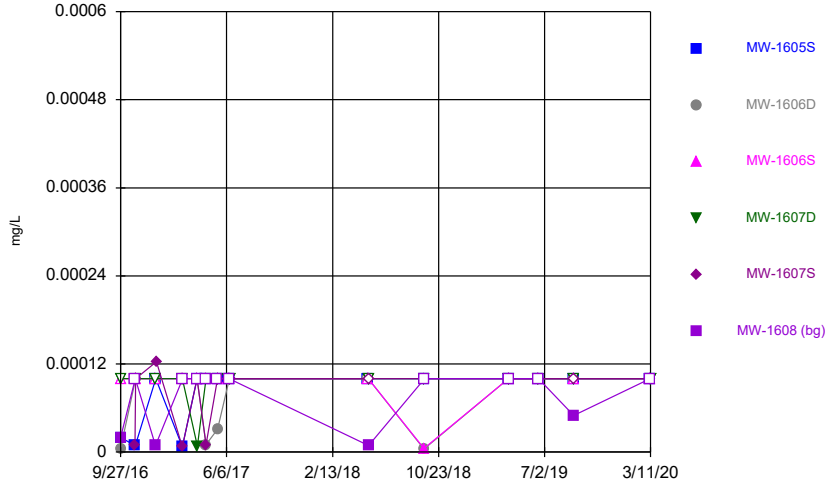
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Time Series

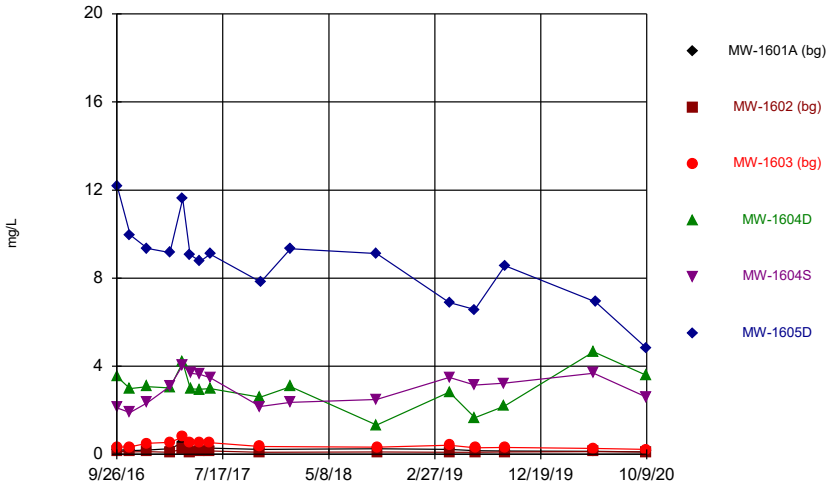


Constituent: Beryllium, total Analysis Run 1/14/2021 2:34 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series

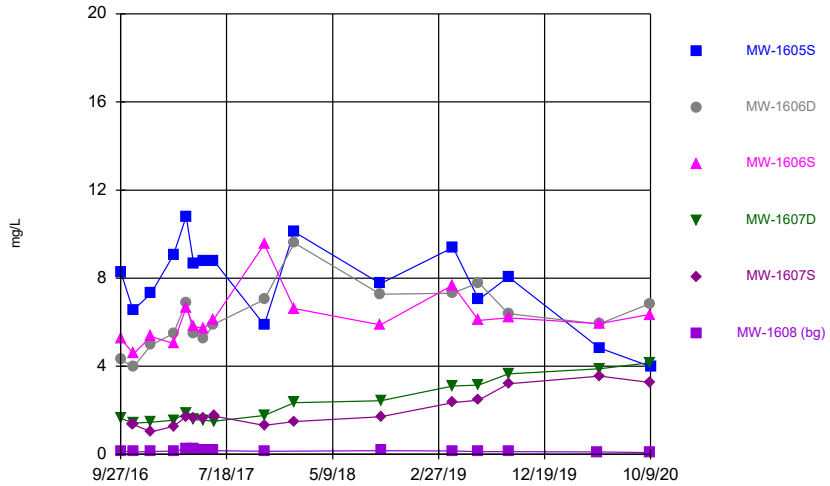


Constituent: Boron, total Analysis Run 1/14/2021 2:34 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series



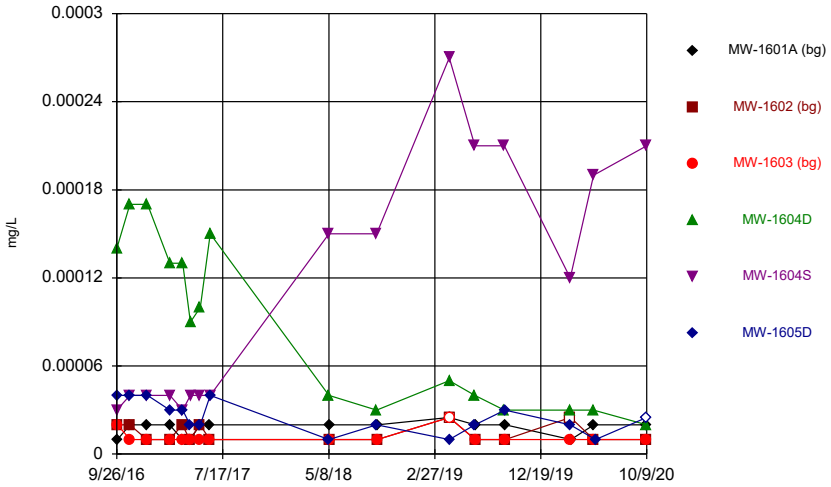
Constituent: Boron, total Analysis Run 1/14/2021 2:34 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Time Series



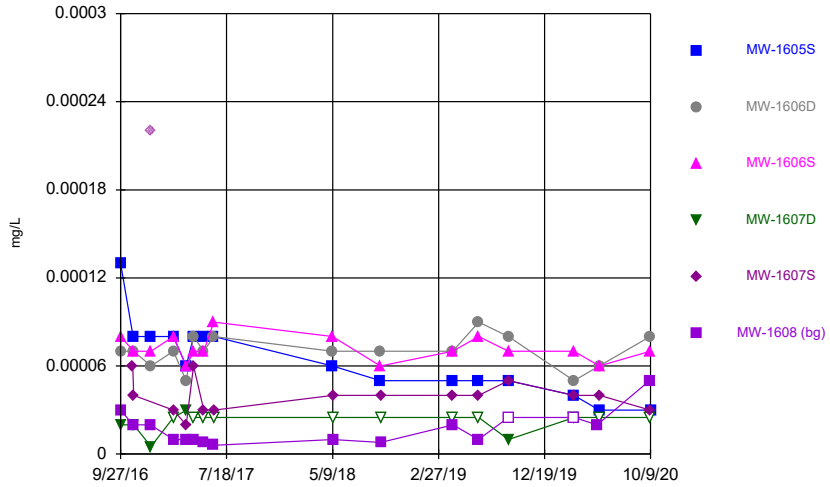
Constituent: Cadmium, total Analysis Run 1/14/2021 2:34 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Time Series

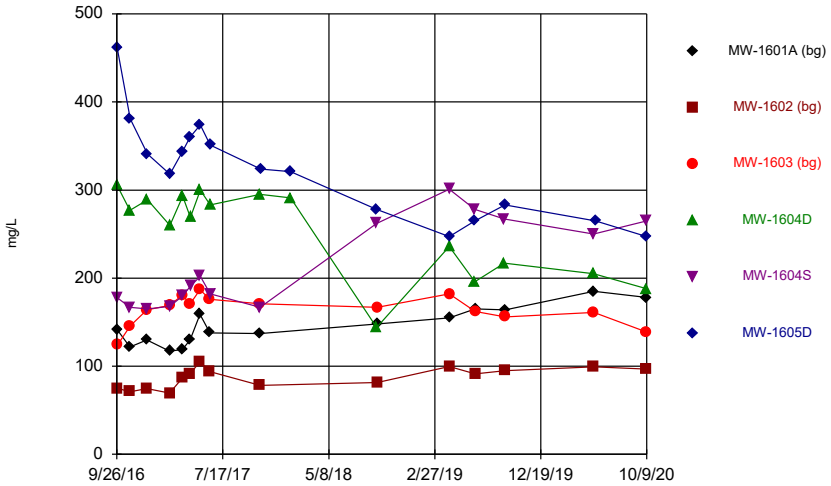


Constituent: Cadmium, total Analysis Run 1/14/2021 2:34 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series

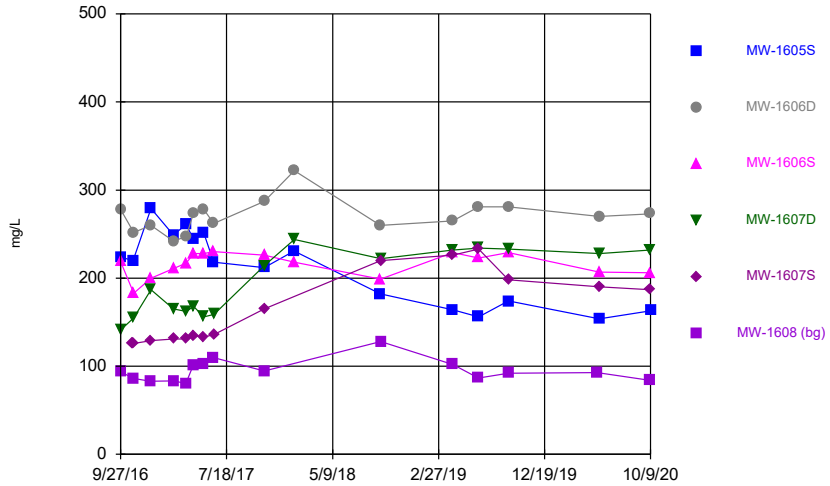


Constituent: Calcium, total Analysis Run 1/14/2021 2:34 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series

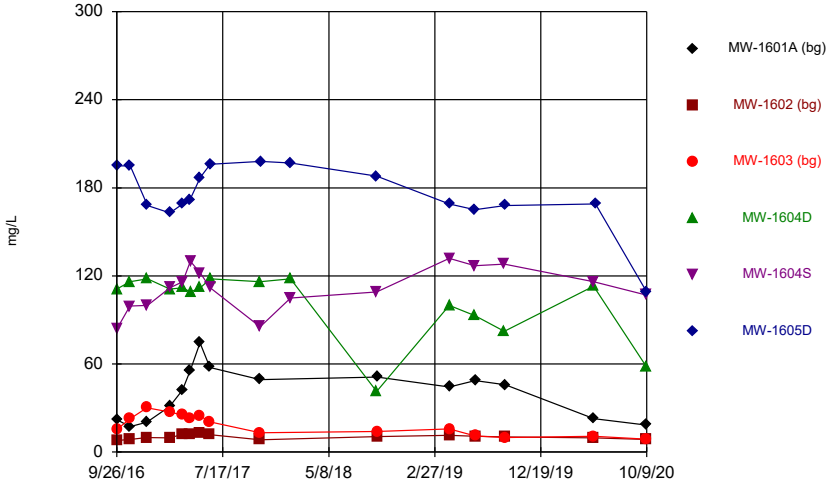


Constituent: Calcium, total Analysis Run 1/14/2021 2:34 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series

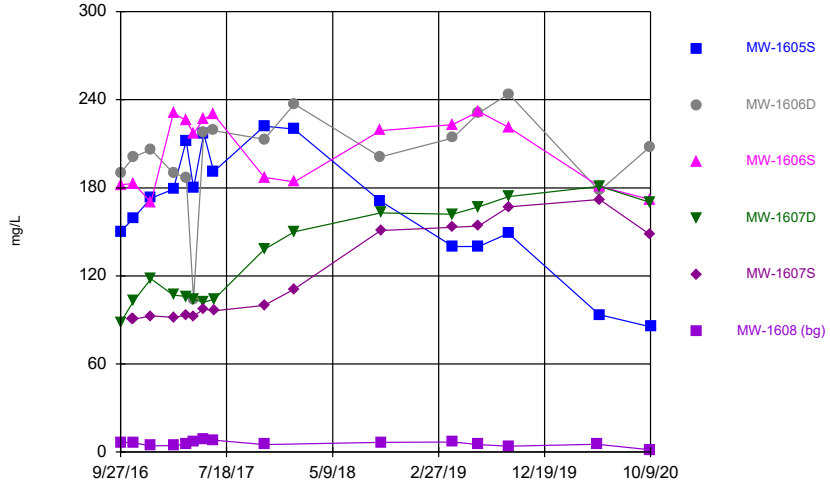


Constituent: Chloride, total Analysis Run 1/14/2021 2:34 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series

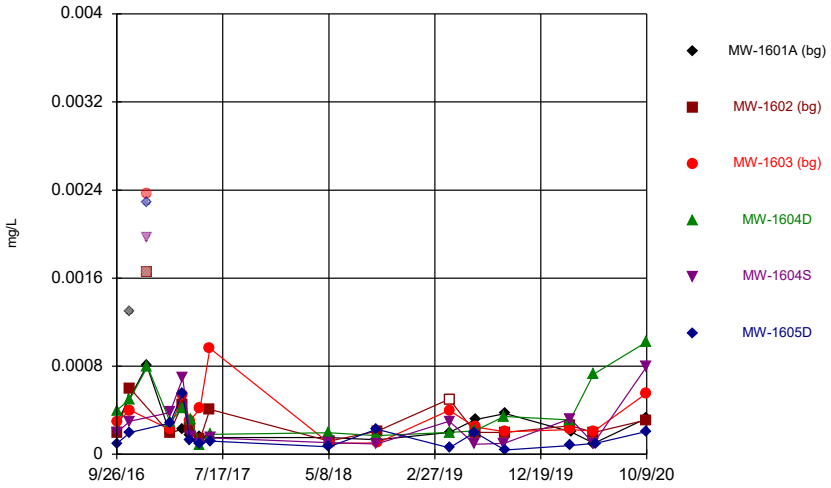


Constituent: Chloride, total Analysis Run 1/14/2021 2:34 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

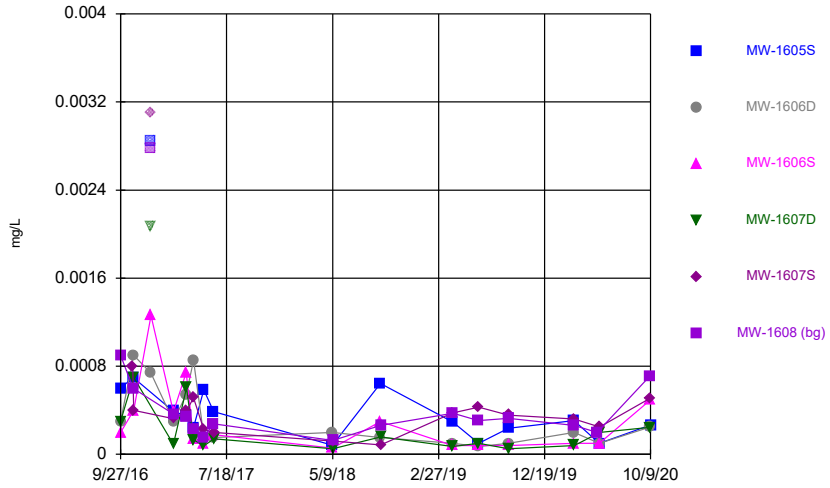
Time Series



Constituent: Chromium, total Analysis Run 1/14/2021 2:34 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

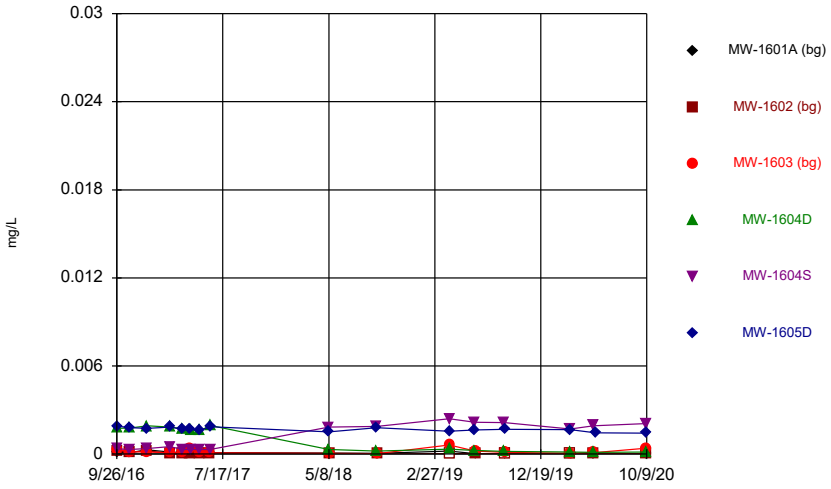
Time Series



Constituent: Chromium, total Analysis Run 1/14/2021 2:34 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

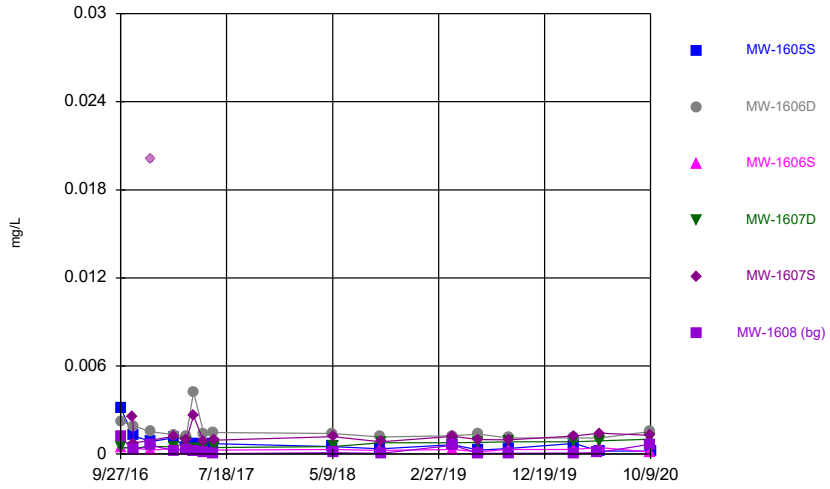
Time Series



Constituent: Cobalt, total Analysis Run 1/14/2021 2:34 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

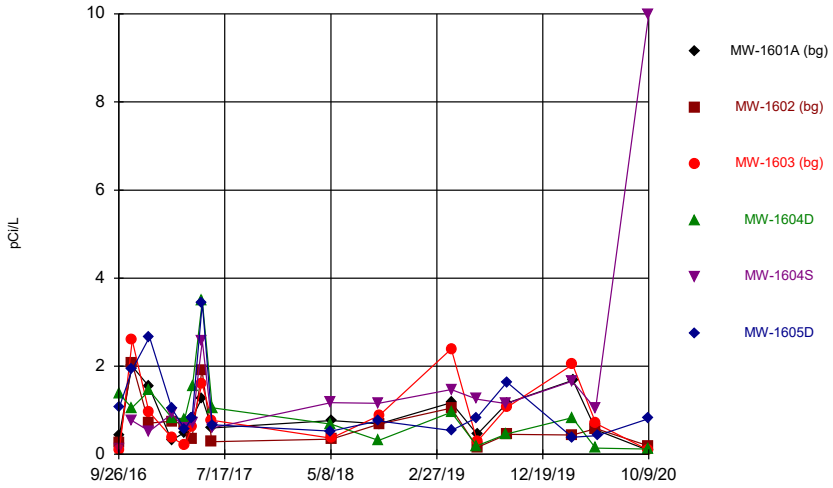
Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series



Constituent: Cobalt, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

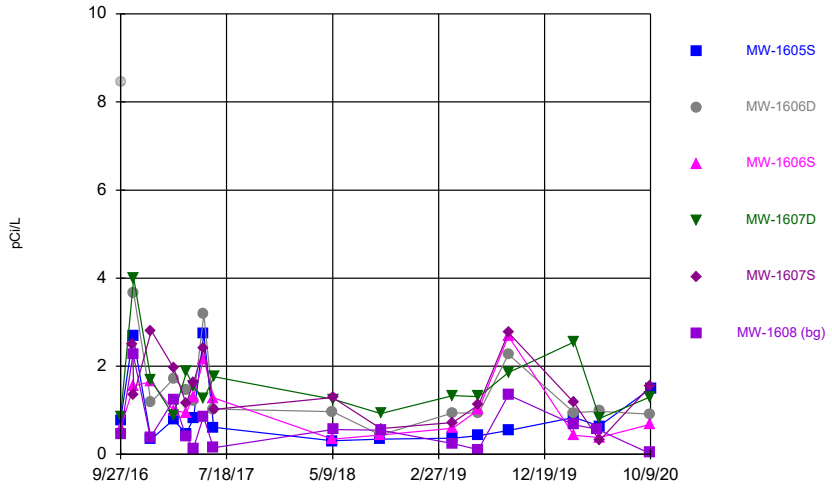
Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

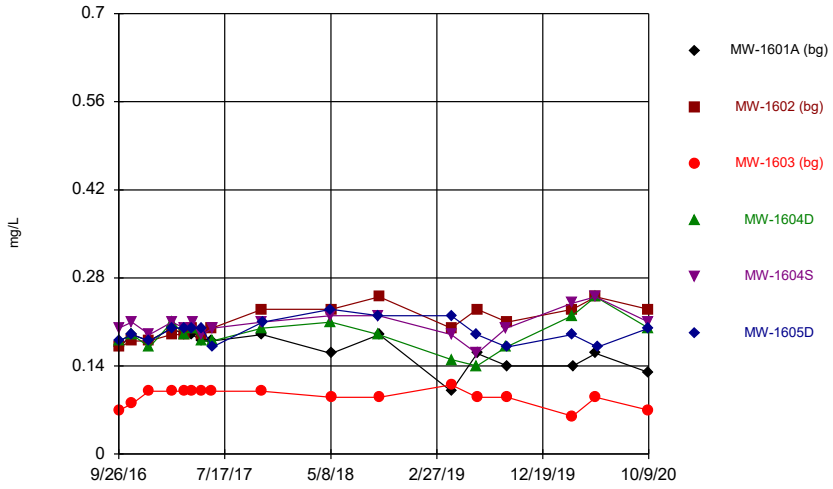
Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

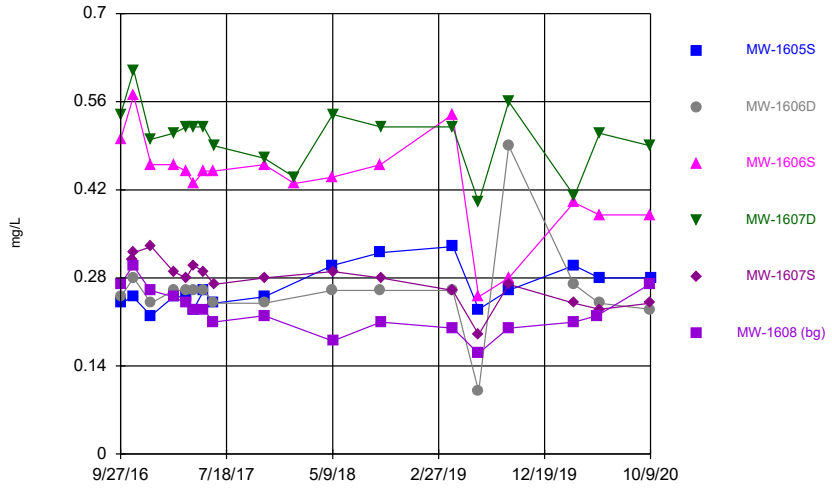
Time Series



Constituent: Fluoride, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

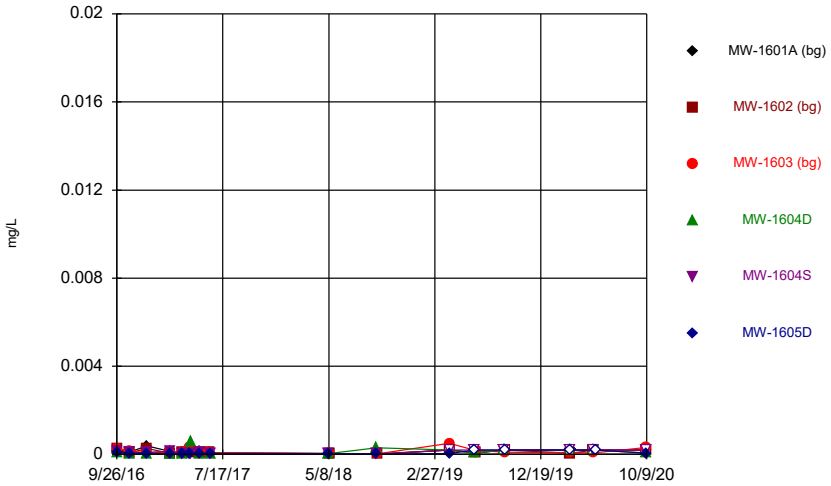
Time Series



Constituent: Fluoride, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

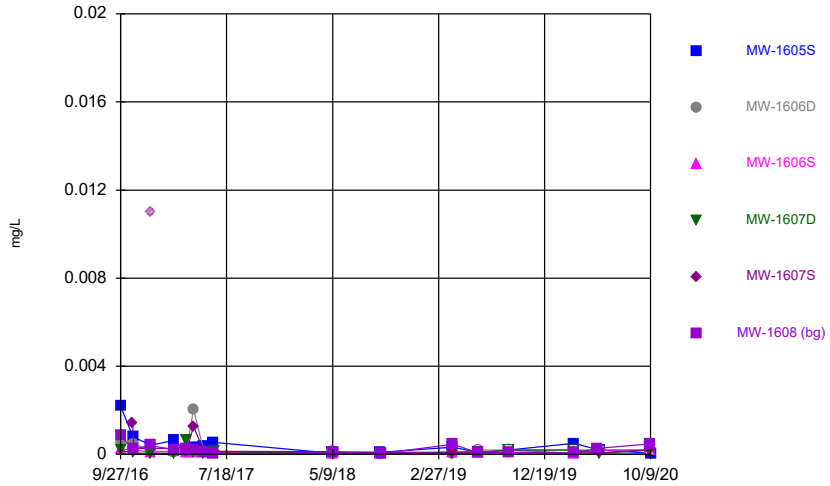
Time Series



Constituent: Lead, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

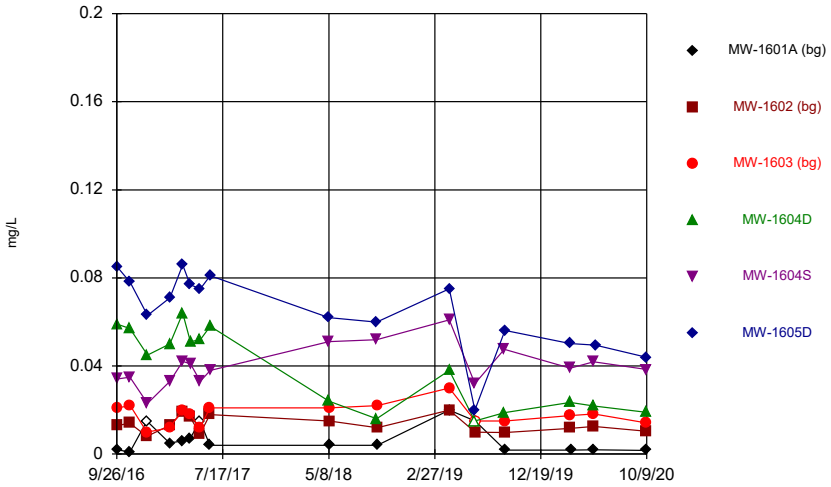
Time Series



Constituent: Lead, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

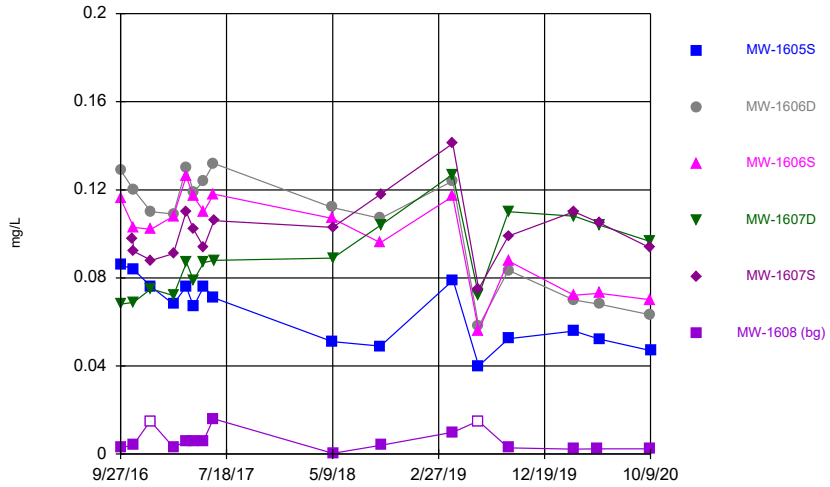
Time Series



Constituent: Lithium, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

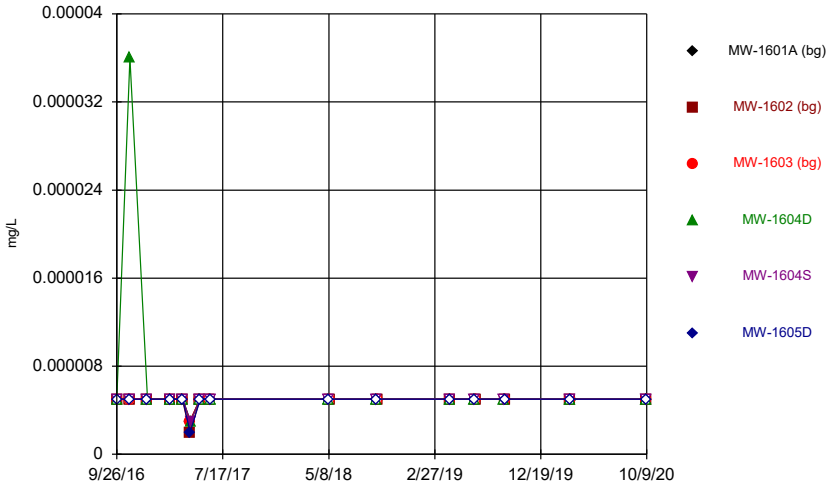
Time Series



Constituent: Lithium, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

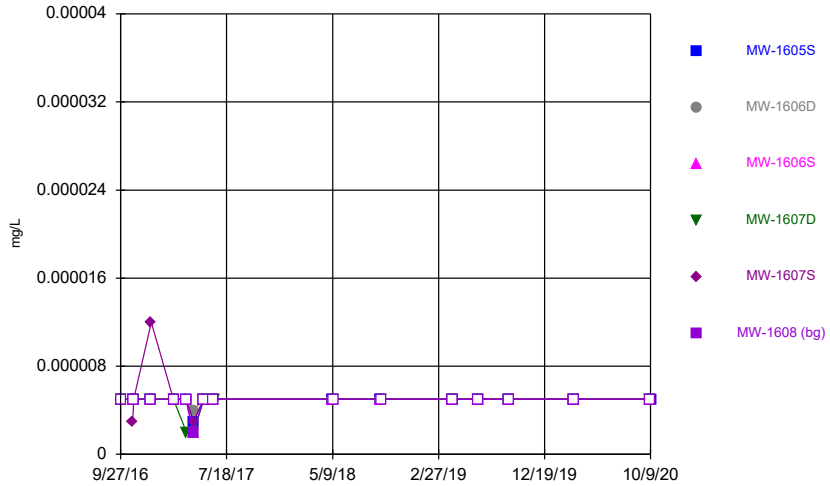
Time Series



Constituent: Mercury, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

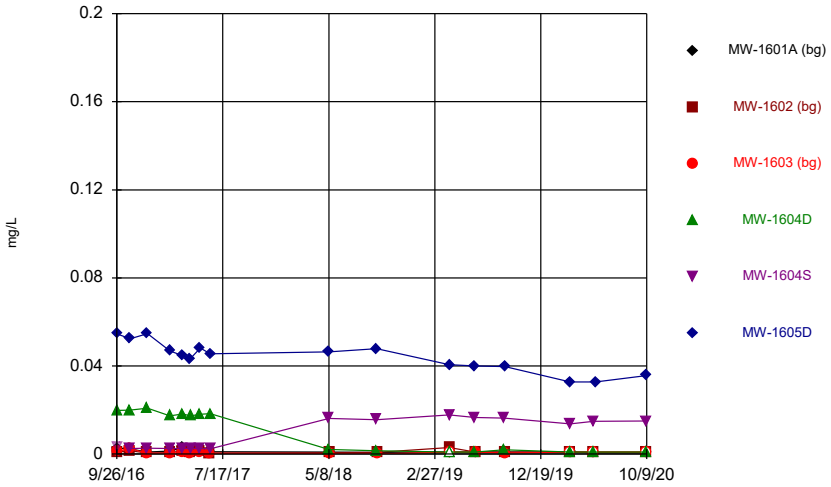
Time Series



Constituent: Mercury, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

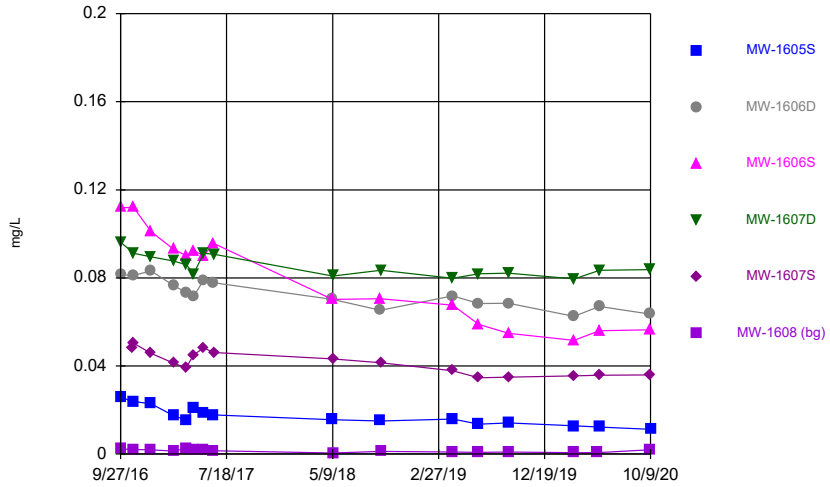
Time Series



Constituent: Molybdenum, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

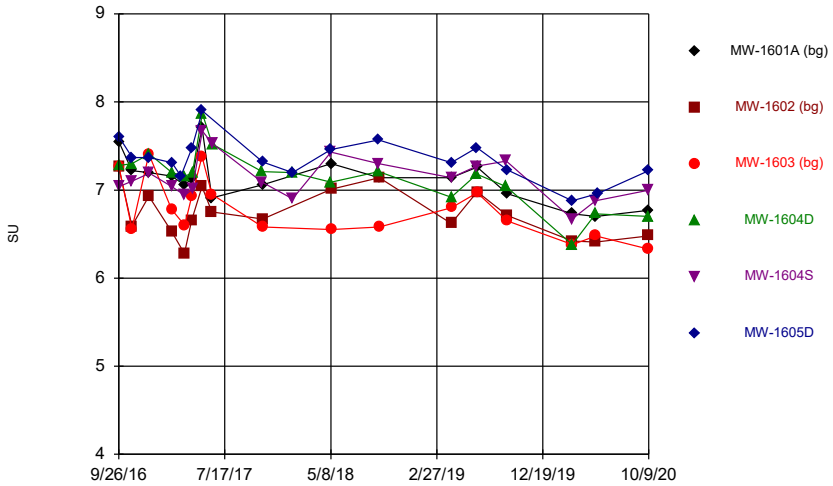
Time Series



Constituent: Molybdenum, total Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series

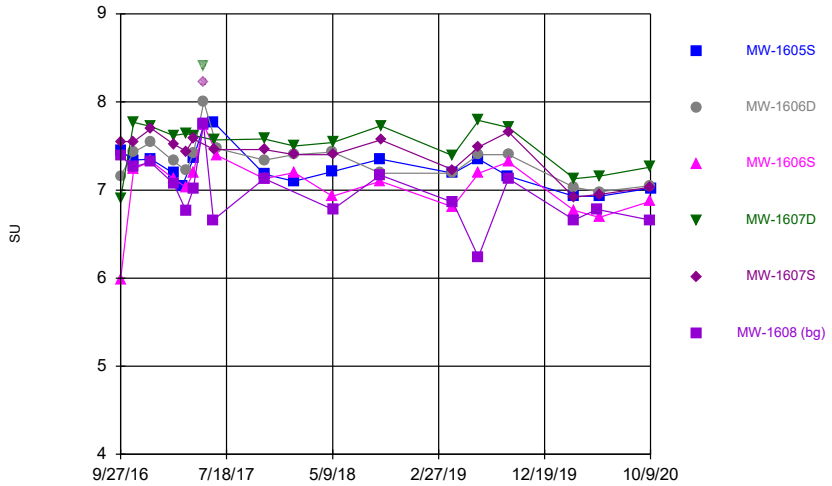


Constituent: pH, field Analysis Run 1/14/2021 2:35 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series

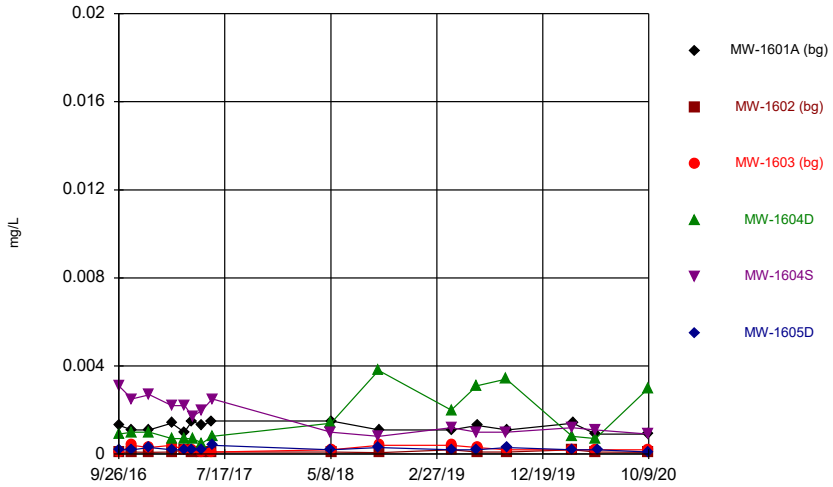


Constituent: pH, field Analysis Run 1/14/2021 2:35 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series



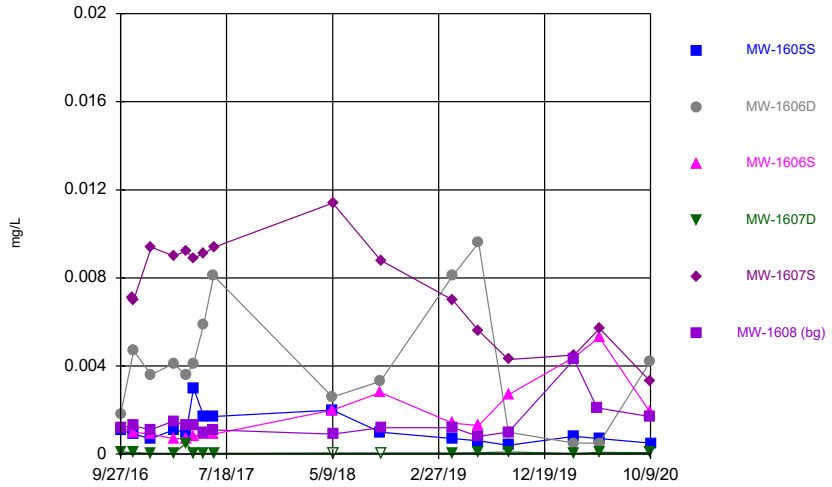
Constituent: Selenium, total Analysis Run 1/14/2021 2:35 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Time Series

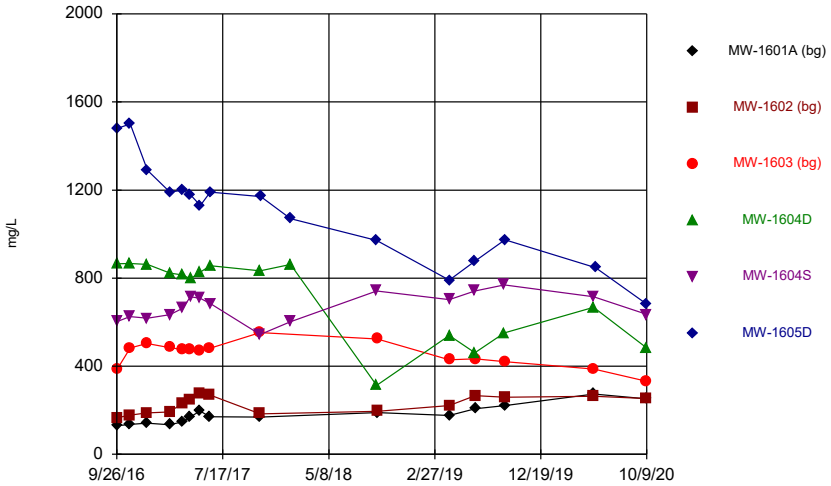


Constituent: Selenium, total Analysis Run 1/14/2021 2:35 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series

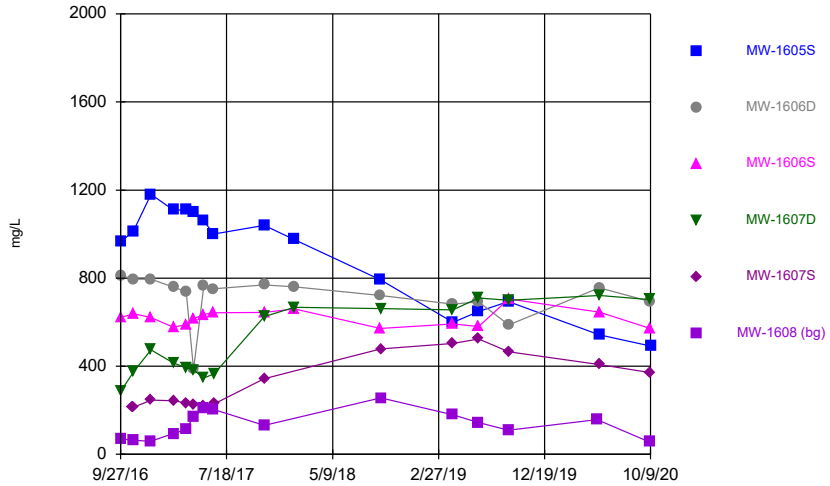


Constituent: Sulfate, total Analysis Run 1/14/2021 2:35 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Time Series



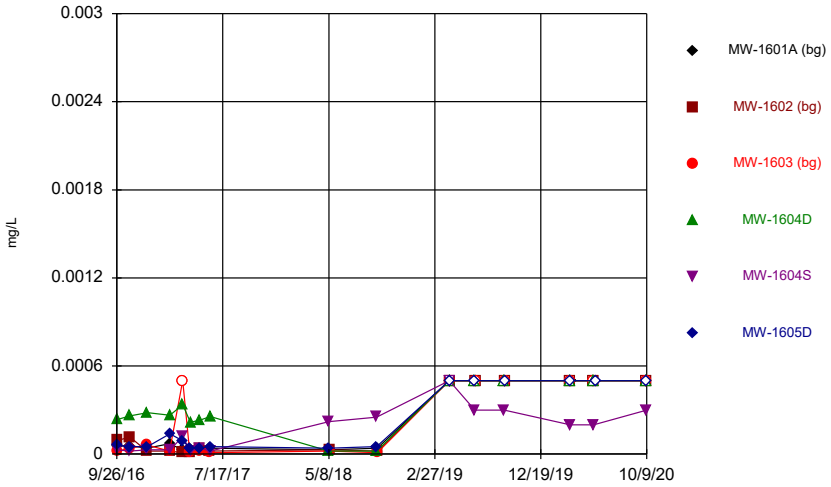
Constituent: Sulfate, total Analysis Run 1/14/2021 2:35 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Time Series



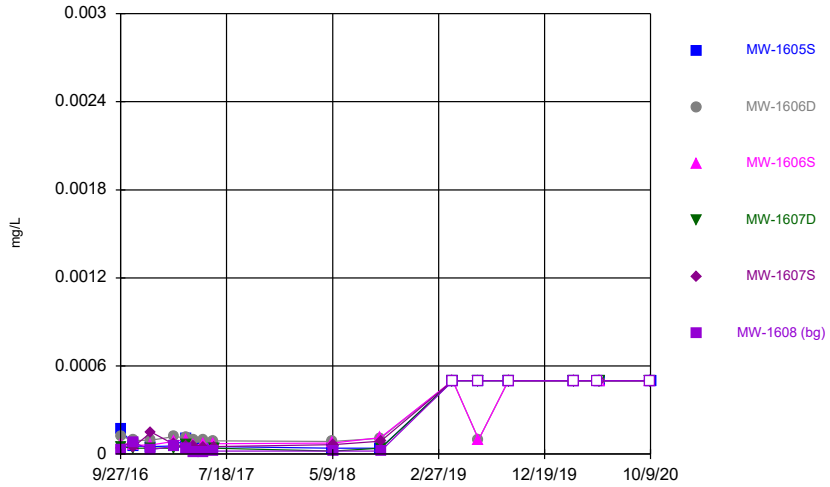
Constituent: Thallium, total Analysis Run 1/14/2021 2:35 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

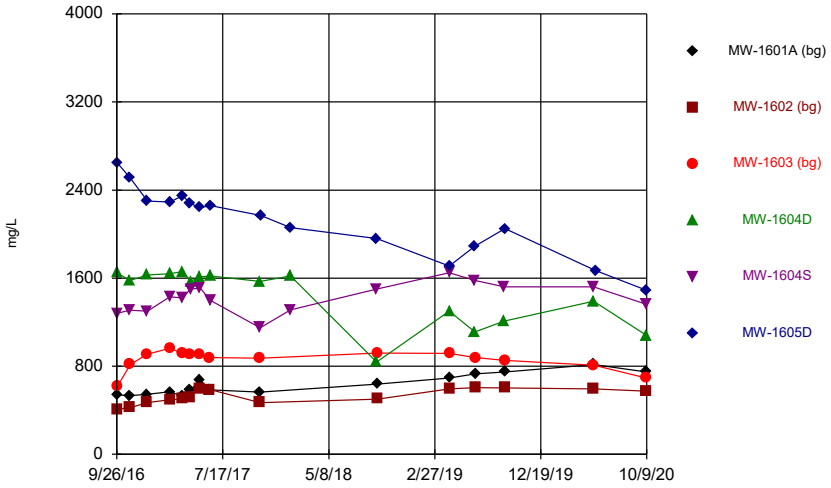
Time Series



Constituent: Thallium, total Analysis Run 1/14/2021 2:35 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

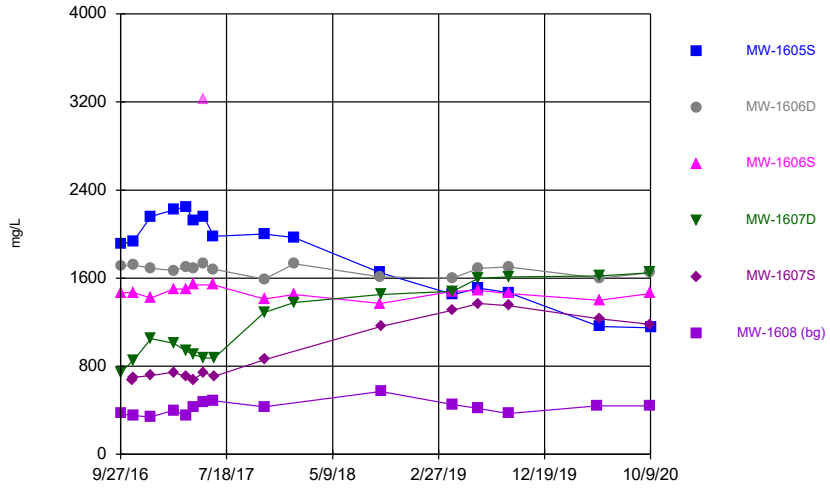
Time Series



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

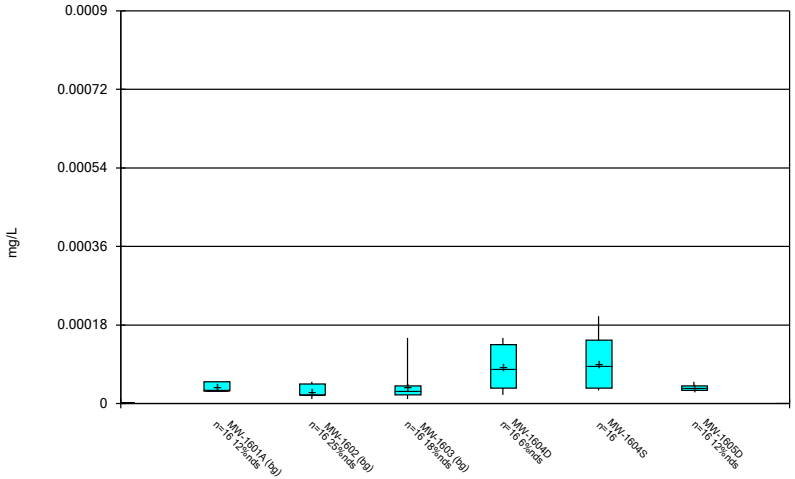
Time Series



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/14/2021 2:35 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

FIGURE B.

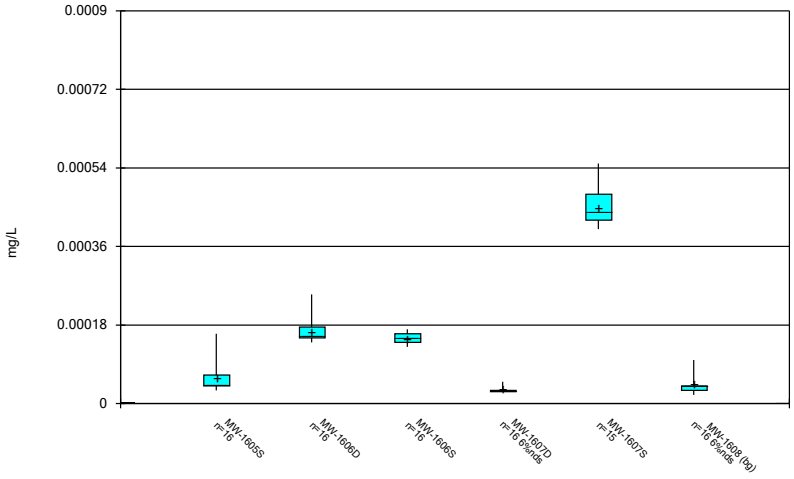
Box & Whiskers Plot



Constituent: Antimony, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

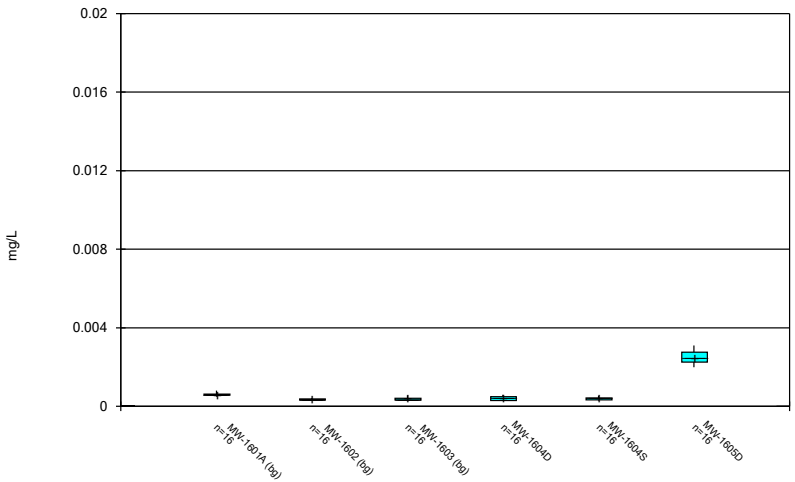
Box & Whiskers Plot



Constituent: Antimony, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

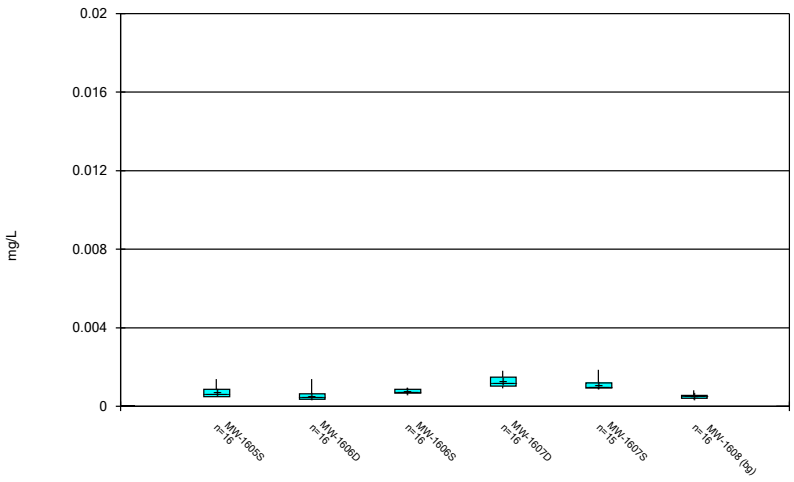
Box & Whiskers Plot



Constituent: Arsenic, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

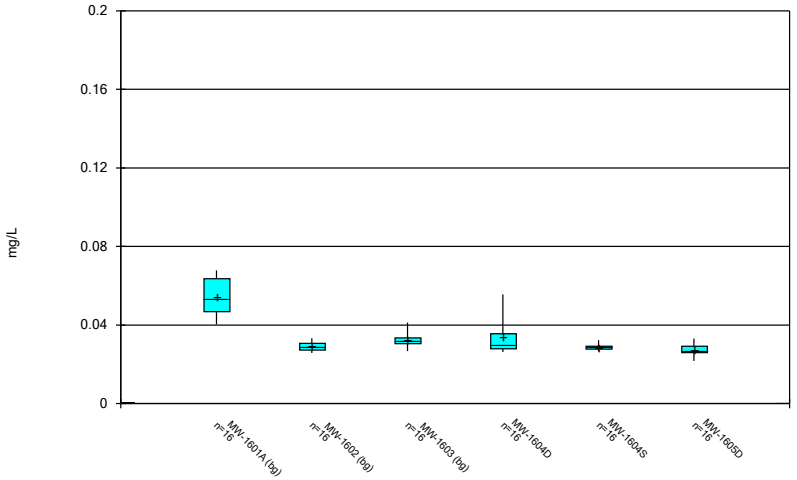
Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Box & Whiskers Plot



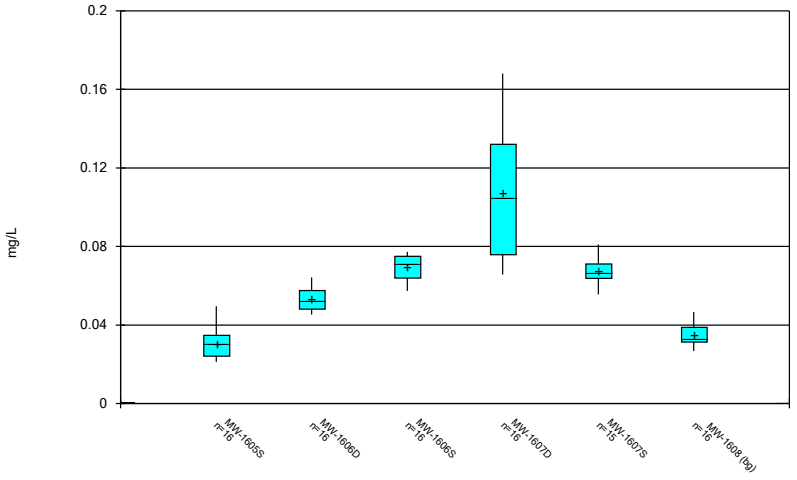
Constituent: Arsenic, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



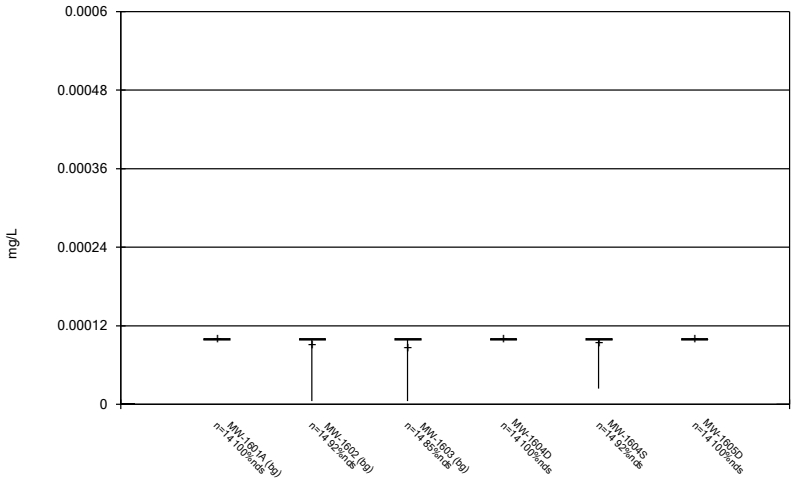
Constituent: Barium, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



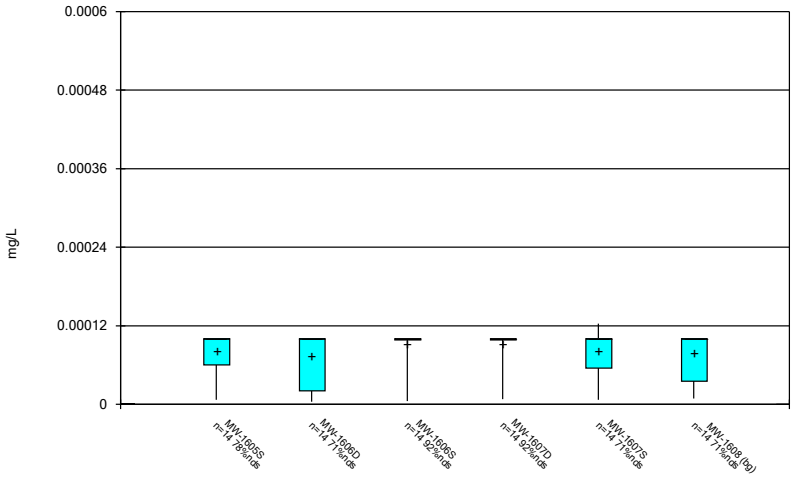
Constituent: Barium, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



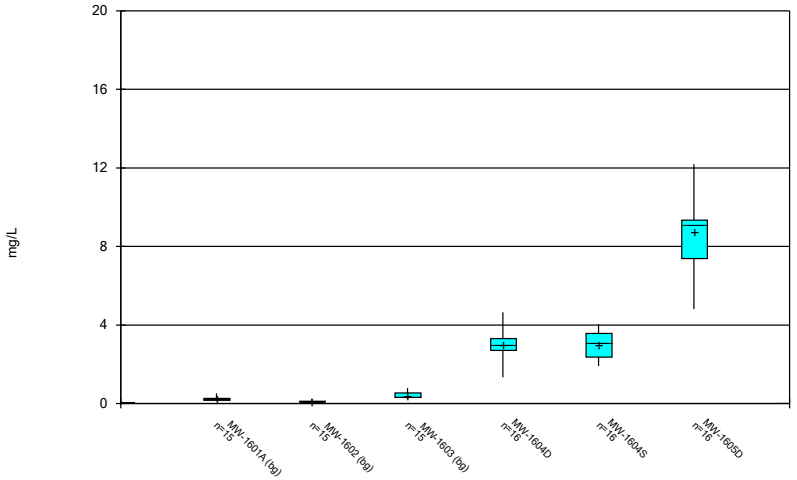
Constituent: Beryllium, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



Constituent: Beryllium, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

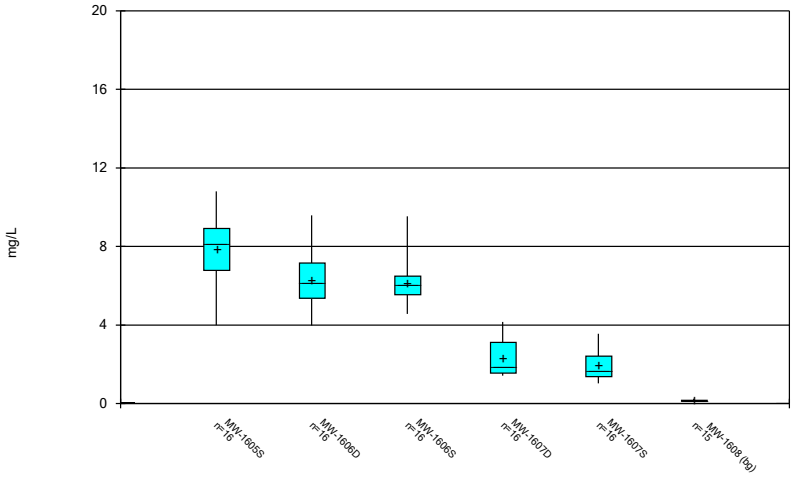
Box & Whiskers Plot



Constituent: Boron, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

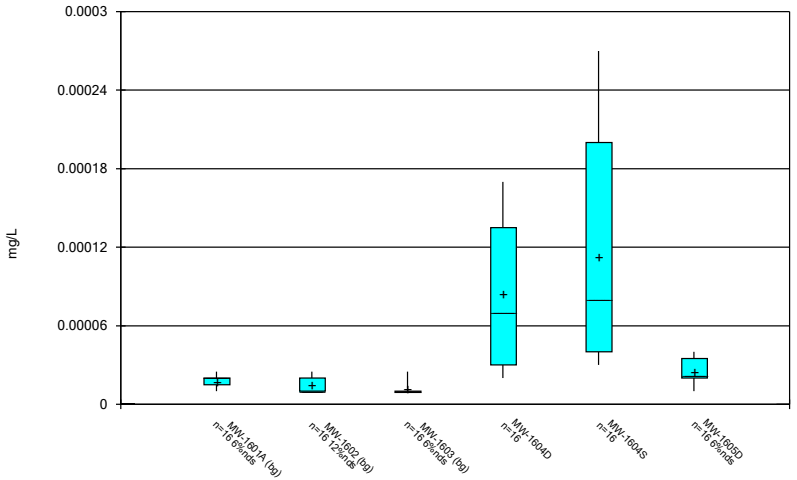
Box & Whiskers Plot



Constituent: Boron, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

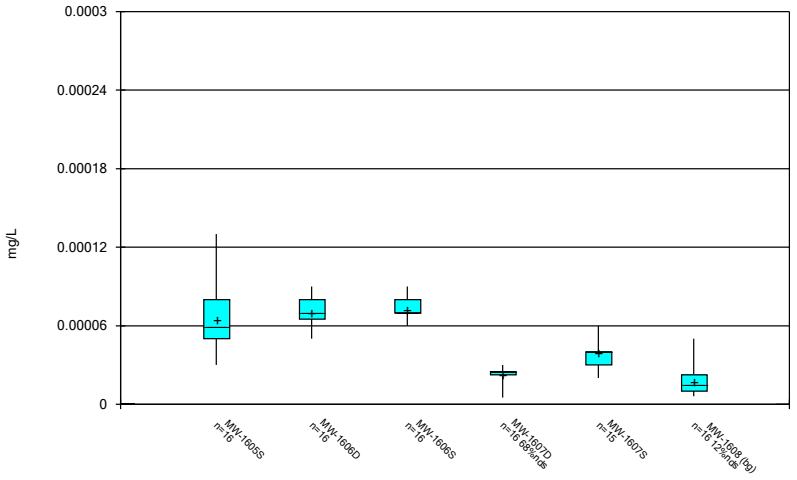
Box & Whiskers Plot



Constituent: Cadmium, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

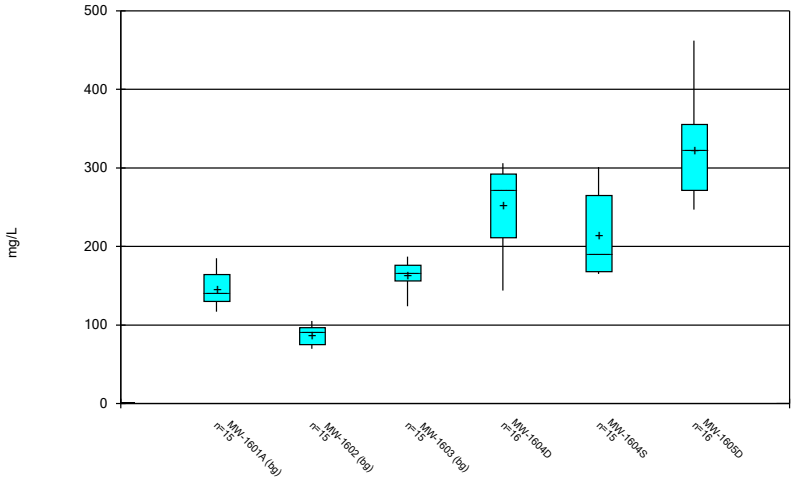
Box & Whiskers Plot



Constituent: Cadmium, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Box & Whiskers Plot

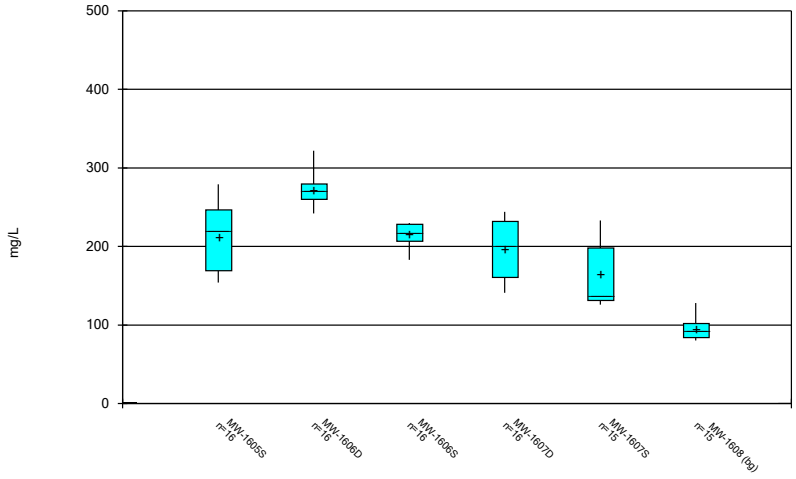


Constituent: Calcium, total Analysis Run 1/14/2021 2:43 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Box & Whiskers Plot

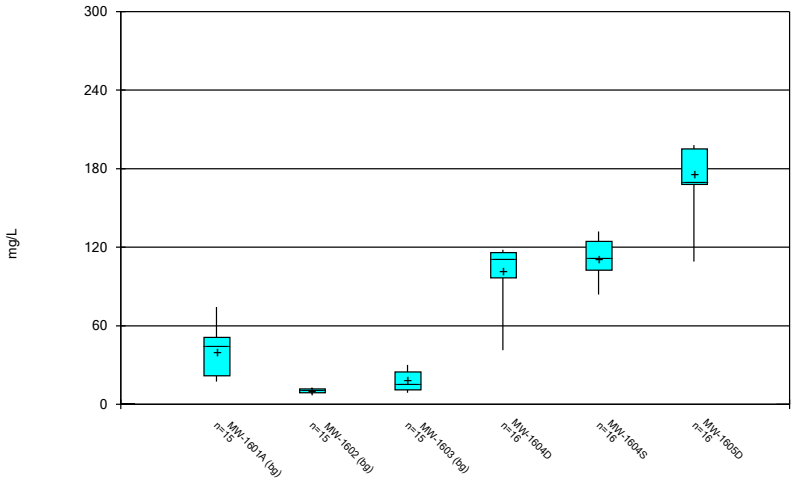


Constituent: Calcium, total Analysis Run 1/14/2021 2:43 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Box & Whiskers Plot

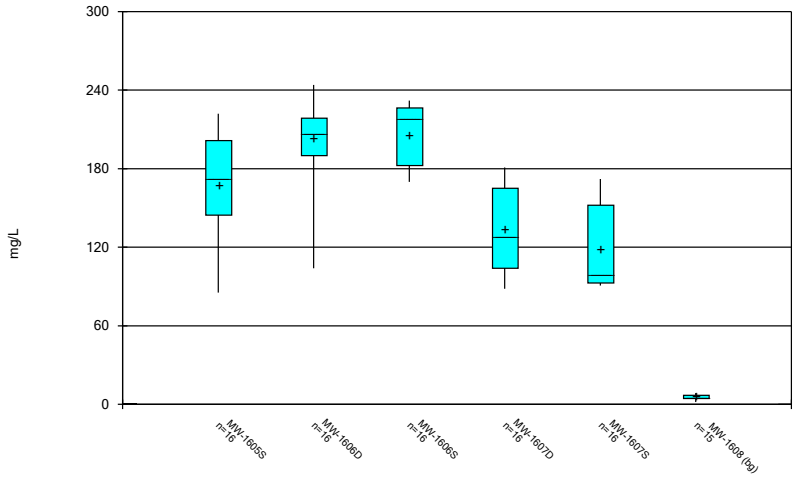


Constituent: Chloride, total Analysis Run 1/14/2021 2:43 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

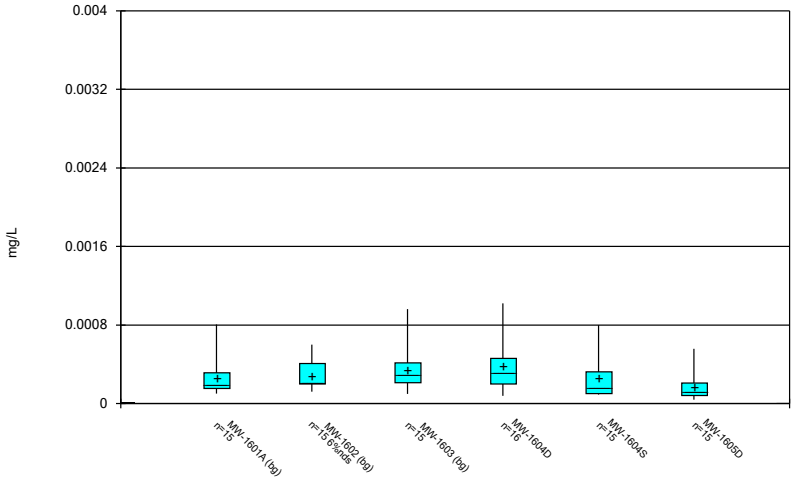
Box & Whiskers Plot



Constituent: Chloride, total Analysis Run 1/14/2021 2:43 PM

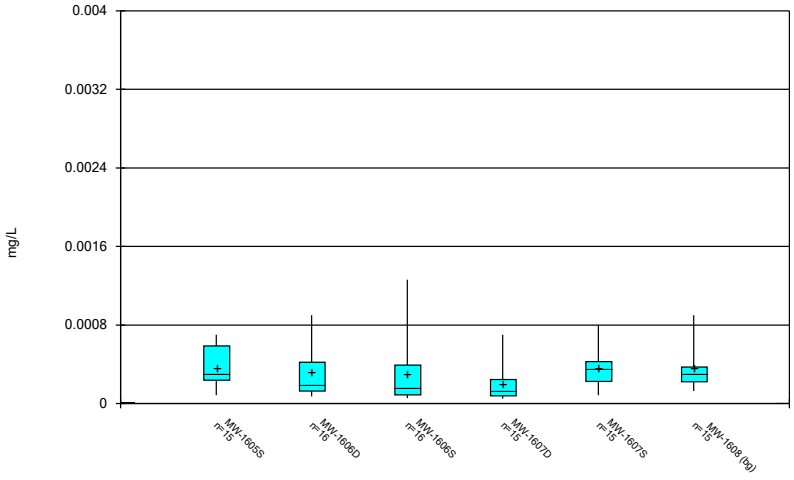
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



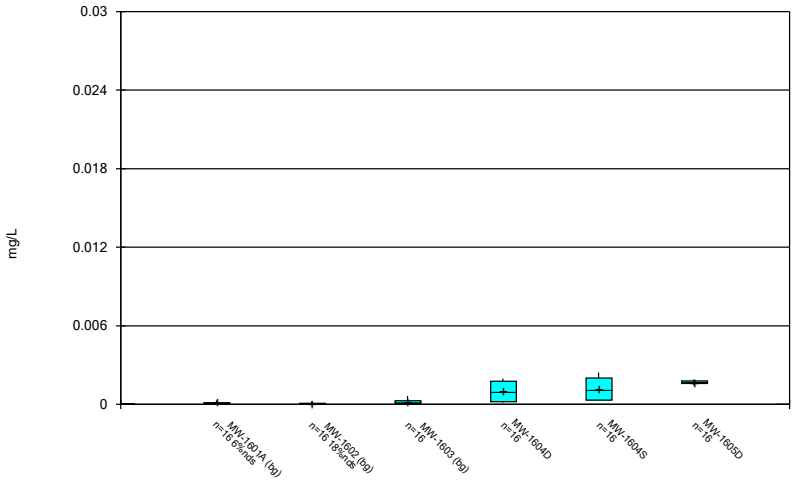
Constituent: Chromium, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



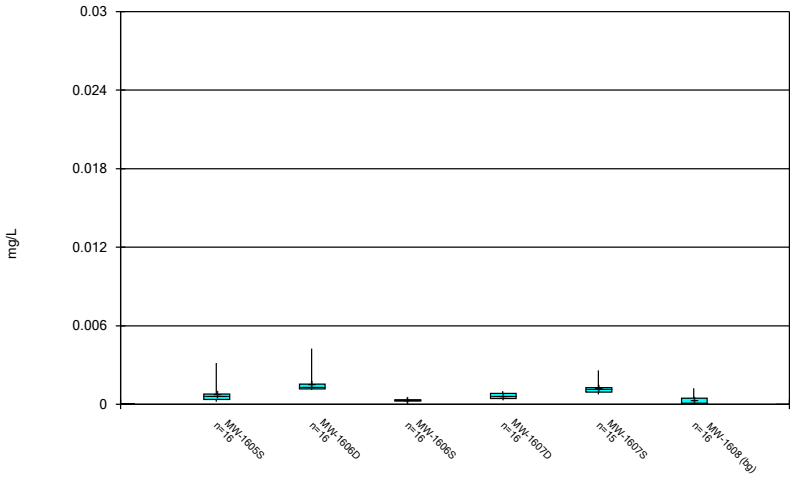
Constituent: Chromium, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



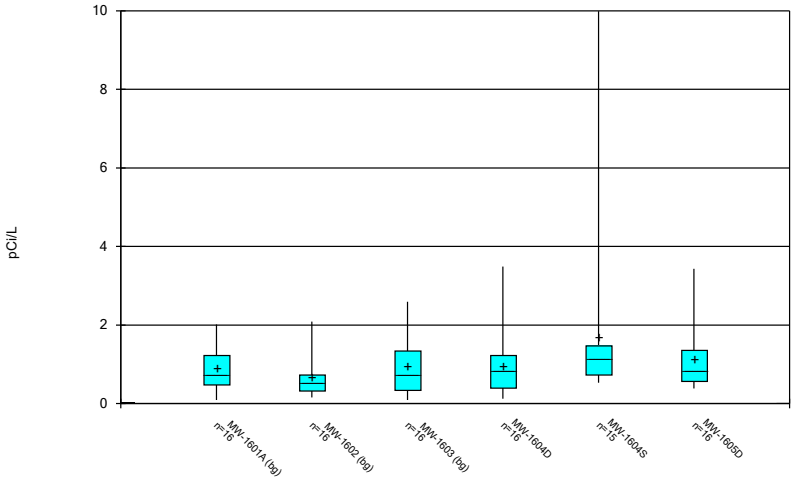
Constituent: Cobalt, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



Constituent: Cobalt, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

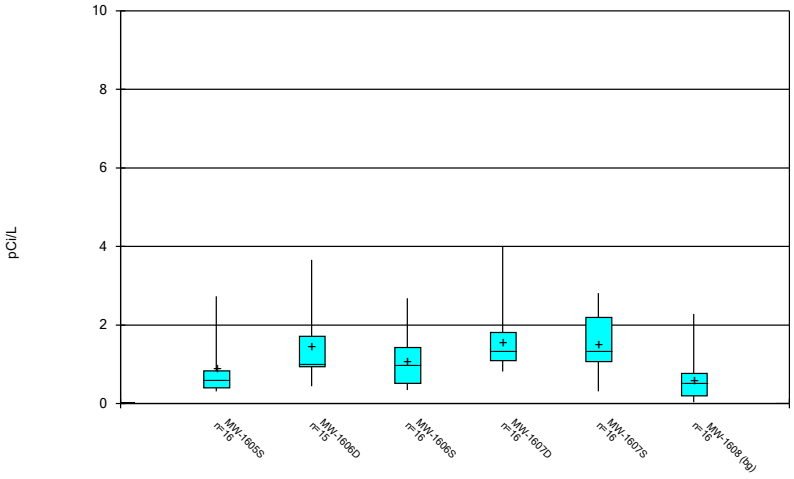
Box & Whiskers Plot



Constituent: Combined Radium 226 + 228 Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

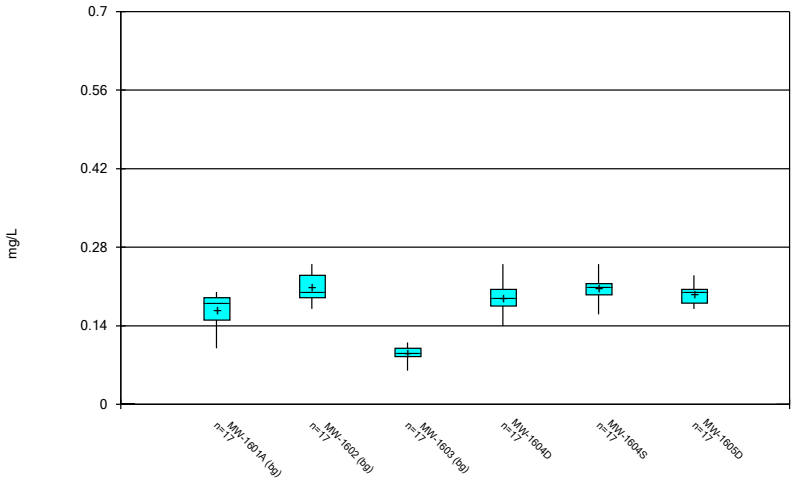
Box & Whiskers Plot



Constituent: Combined Radium 226 + 228 Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

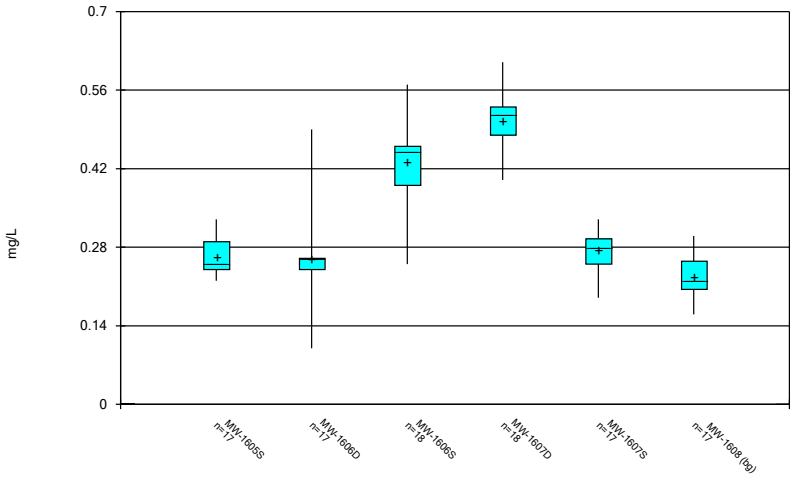
Box & Whiskers Plot



Constituent: Fluoride, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

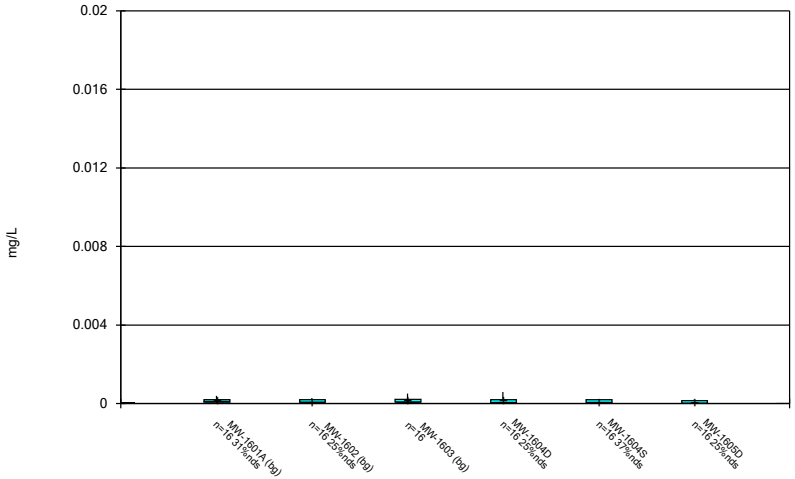
Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Fluoride, total Analysis Run 1/14/2021 2:43 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

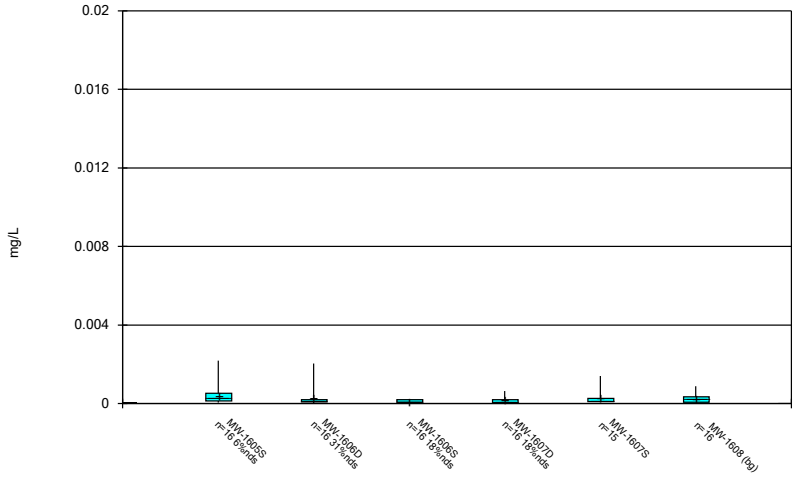
Box & Whiskers Plot



Constituent: Lead, total Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

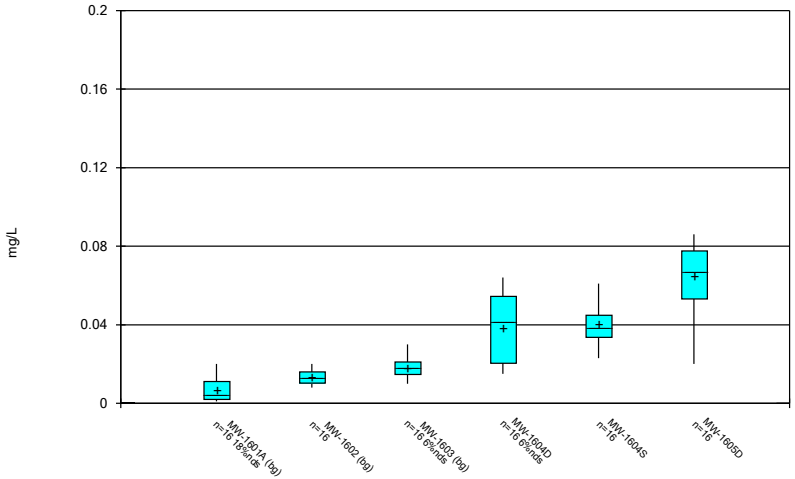
Box & Whiskers Plot



Constituent: Lead, total Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

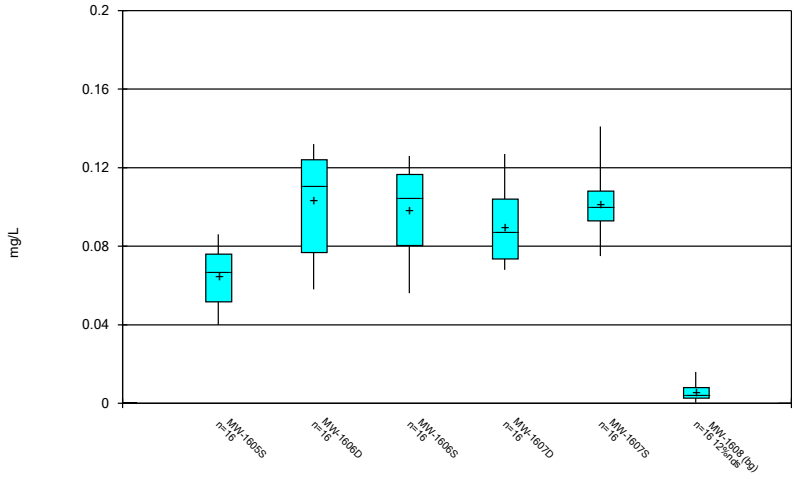
Box & Whiskers Plot



Constituent: Lithium, total Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

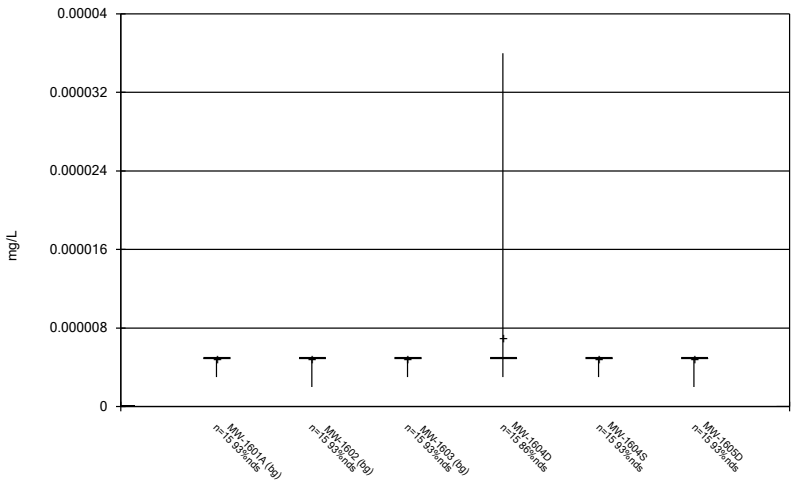
Box & Whiskers Plot



Constituent: Lithium, total Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

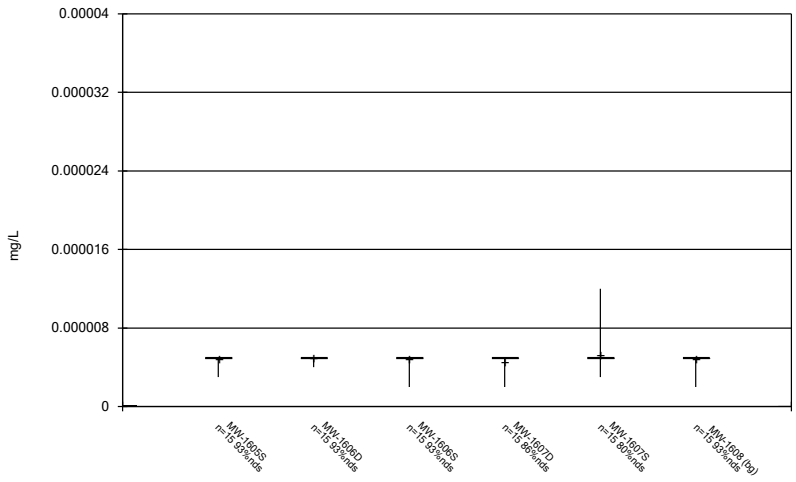
Box & Whiskers Plot



Constituent: Mercury, total Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

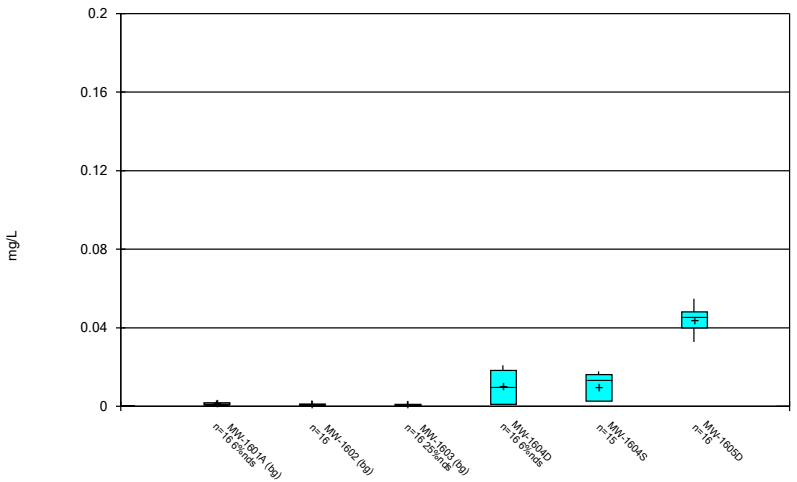
Box & Whiskers Plot



Constituent: Mercury, total Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

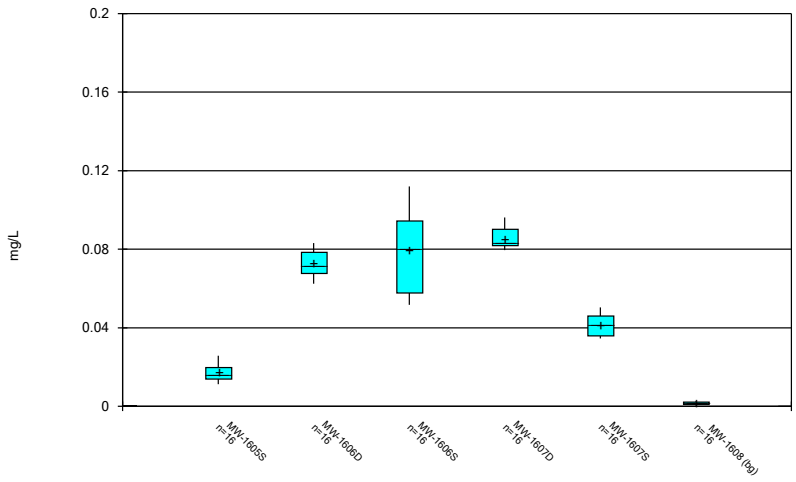
Box & Whiskers Plot



Constituent: Molybdenum, total Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

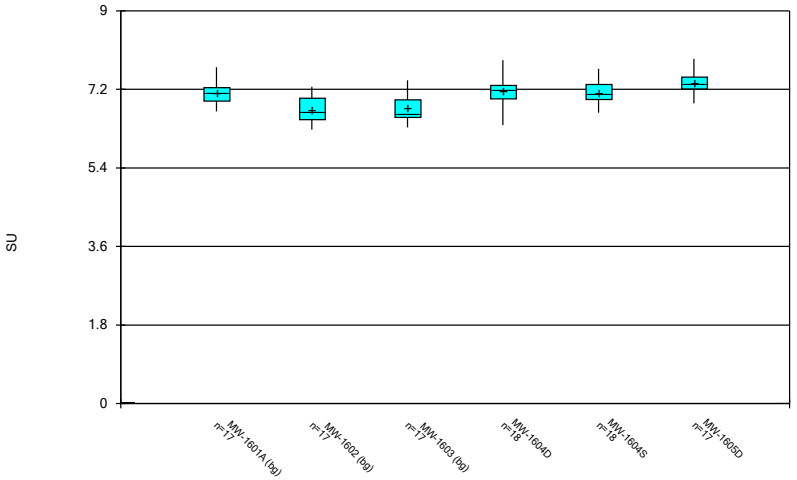
Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Molybdenum, total Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

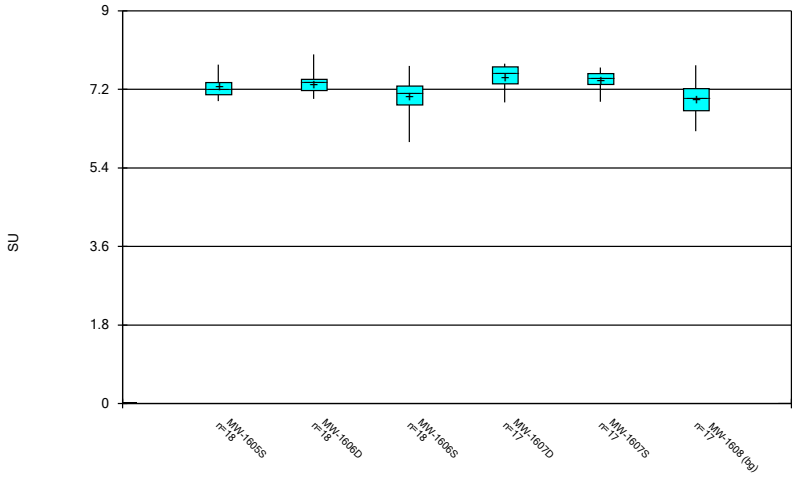
Box & Whiskers Plot



Constituent: pH, field Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

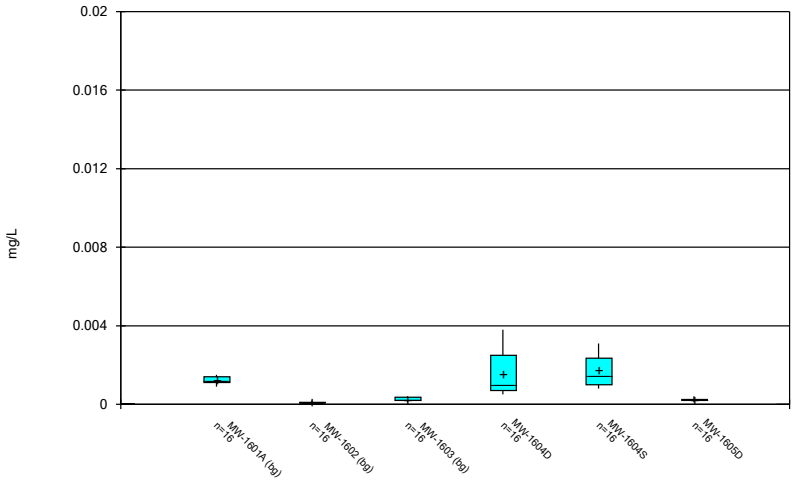
Box & Whiskers Plot



Constituent: pH, field Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

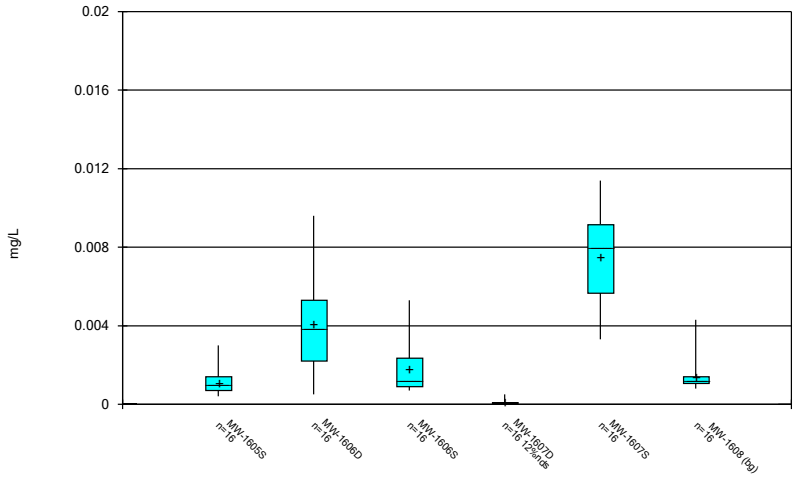
Box & Whiskers Plot



Constituent: Selenium, total Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

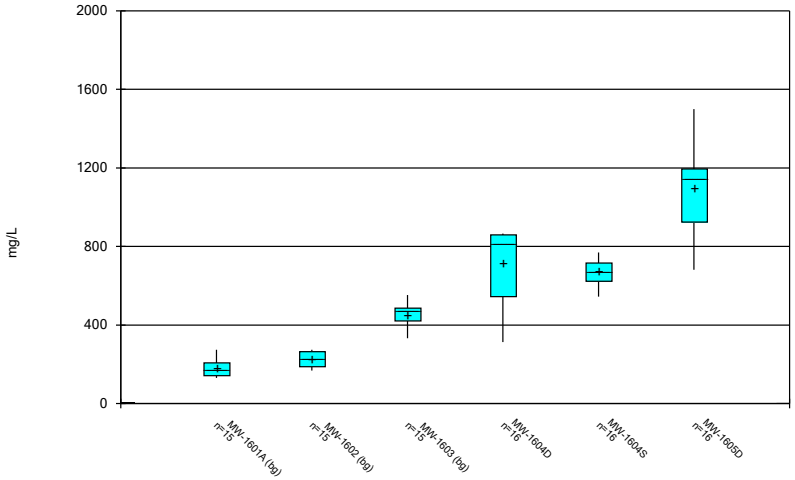
Box & Whiskers Plot



Constituent: Selenium, total Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Box & Whiskers Plot

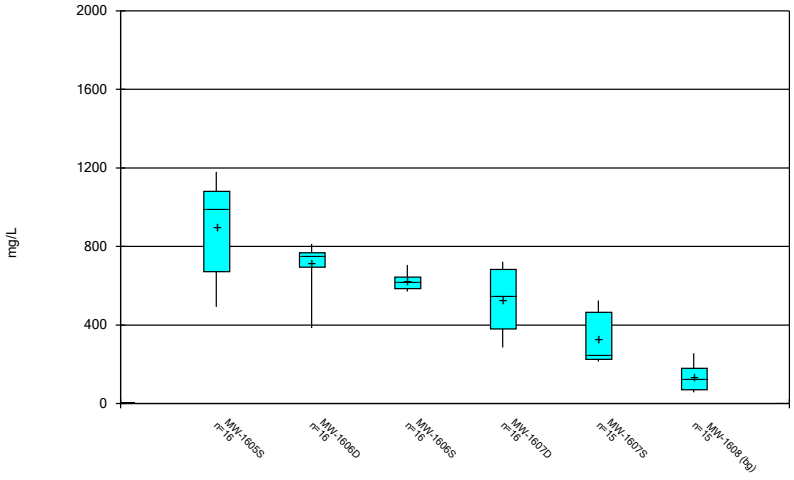


Constituent: Sulfate, total Analysis Run 1/14/2021 2:44 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Box & Whiskers Plot

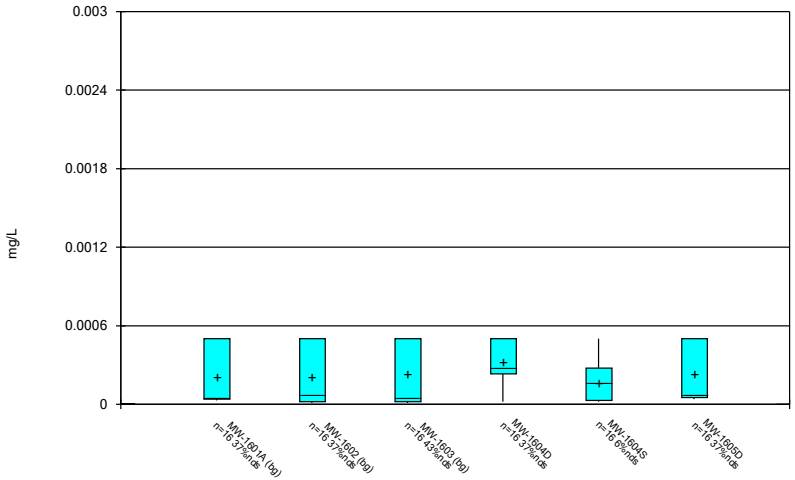


Constituent: Sulfate, total Analysis Run 1/14/2021 2:44 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Box & Whiskers Plot

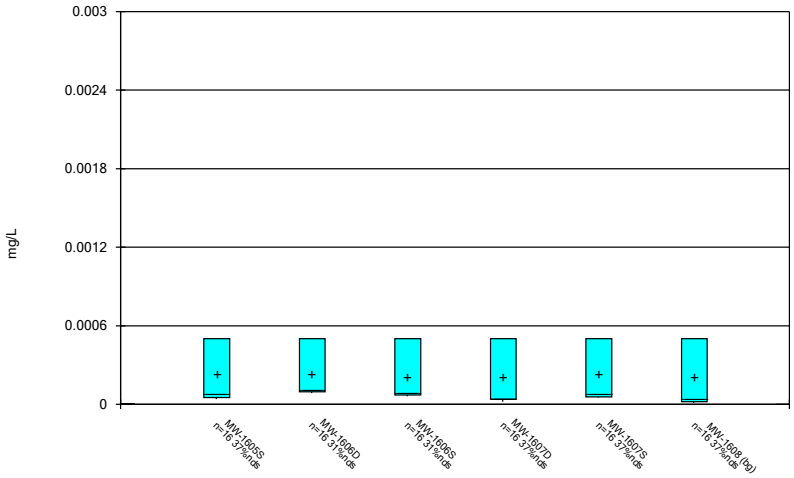


Constituent: Thallium, total Analysis Run 1/14/2021 2:44 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

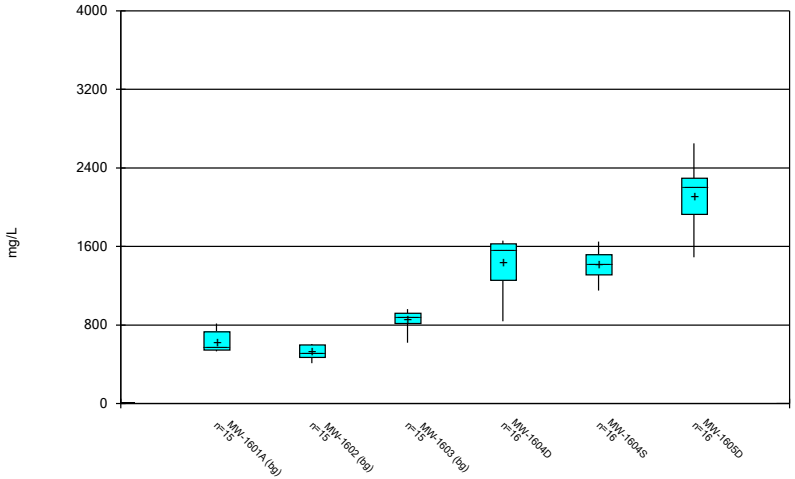
Box & Whiskers Plot



Constituent: Thallium, total Analysis Run 1/14/2021 2:44 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

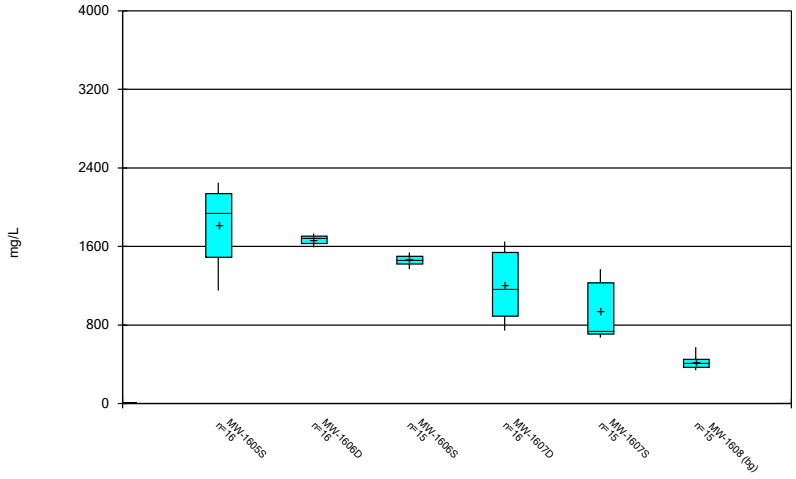
Box & Whiskers Plot



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/14/2021 2:44 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

FIGURE C.

Outlier Summary

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/14/2021, 2:56 PM

	MW-1607S Antimony, total (mg/L)	MW-1607S Arsenic, total (mg/L)	MW-1607S Barium, total (mg/L)	MW-1607S Cadmium, total (mg/L)	MW-1601A Chromium, total (mg/L)	MW-1602 Chromium, total (mg/L)	MW-1603 Chromium, total (mg/L)	MW-1604S Chromium, total (mg/L)	MW-1605D Chromium, total (mg/L)	MW-1605S Chromium, total (mg/L)
9/26/2016										
9/27/2016										
11/1/2016					0.0013 (o)					
12/19/2016						0.00165 (o)	0.00237 (o)			
12/20/2016								0.00197 (o)	0.00229 (o)	0.00285 (o)
12/21/2016	0.00084 (o)	0.0112 (o)	0.114 (o)	0.00022 (o)						
5/16/2017										

	MW-1607D Chromium, total (mg/L)	MW-1607S Chromium, total (mg/L)	MW-1608 Chromium, total (mg/L)	MW-1607S Cobalt, total (mg/L)	MW-1604S Combined Radium 226 + 228 (pCi/L)	MW-1606D Combined Radium 226 + 228 (pCi/L)	MW-1607S Lead, total (mg/L)	MW-1604S Molybdenum, total (mg/L)	MW-1607D pH, field (SU)	MW-1607S pH, field (SU)
9/26/2016				0.136 (o)			0.0032 (o)			
9/27/2016					8.459 (o)					
11/1/2016										
12/19/2016			0.00278 (o)							
12/20/2016	0.00207 (o)									
12/21/2016		0.0031 (o)		0.0201 (o)		0.011 (o)				
5/16/2017								8.41 (o)	8.23 (o)	

	MW-1606S Total Dissolved Solids [TDS] (mg/L)
9/26/2016	
9/27/2016	
11/1/2016	
12/19/2016	
12/20/2016	
12/21/2016	
5/16/2017	3230 (o)

Tukey's Outlier Analysis - Downgradient Wells - Significant Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 3:50 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony, total (mg/L)	**MW-1607S**	**Yes**	**0.00084**	**12/21/2016**	**NP**	**NaN**	**16**	**0.0004738**	**0.0001051**	**ln(x)**	**ShapiroWilk**
Arsenic, total (mg/L)	**MW-1607S**	**Yes**	**0.0112**	**12/21/2016**	**NP**	**NaN**	**16**	**0.001747**	**0.002536**	**ln(x)**	**ShapiroWilk**
Barium, total (mg/L)	**MW-1607S**	**Yes**	**0.114**	**12/21/2016**	**NP**	**NaN**	**16**	**0.07026**	**0.01356**	**ln(x)**	**ShapiroWilk**
Cadmium, total (mg/L)	**MW-1607S**	**Yes**	**0.00022**	**12/21/2016**	**NP**	**NaN**	**16**	**0.00005063**	**0.0000464**	**ln(x)**	**ShapiroWilk**
Cobalt, total (mg/L)	**MW-1606D**	**Yes**	**0.00426**	**4/18/2017**	**NP**	**NaN**	**16**	**0.001579**	**0.0007754**	**ln(x)**	**ShapiroWilk**
Cobalt, total (mg/L)	**MW-1607S**	**Yes**	**0.0201**	**12/21/2016**	**NP**	**NaN**	**16**	**0.002443**	**0.004741**	**ln(x)**	**ShapiroWilk**
Fluoride, total (mg/L)	**MW-1606D**	**Yes**	**0.1,0.49**	**6/19/2019,9/11/2019**	**NP**	**NaN**	**17**	**0.2588**	**0.0714**	**sqrt(x)**	**ShapiroWilk**
Lead, total (mg/L)	**MW-1607S**	**Yes**	**0.011**	**12/21/2016**	**NP**	**NaN**	**16**	**0.0009651**	**0.002707**	**ln(x)**	**ShapiroWilk**
Selenium, total (mg/L)	**MW-1607D**	**Yes**	**0.0005**	**3/29/2017**	**NP**	**NaN**	**16**	**0.00008312**	**0.0001131**	**ln(x)**	**ShapiroWilk**

Tukey's Outlier Analysis - Downgradient Wells - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 3:50 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.00009688	0.0000657	sqrt(x)	ShapiroWilk
Antimony, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.0000925	0.00006148	x^2	ShapiroWilk
Antimony, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.00003625	0.000007188	sqrt(x)	ShapiroWilk
Antimony, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.00005688	0.00003092	ln(x)	ShapiroWilk
Antimony, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.0001644	0.00002851	ln(x)	ShapiroWilk
Antimony, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.0001481	0.00001276	x^2	ShapiroWilk
Antimony, total (mg/L)	MW-1607D	n/a	n/a	n/a	NP	NaN	16	0.00003312	0.000007042	unknown	ShapiroWilk
Antimony, total (mg/L)	**MW-1607S**	**Yes**	**0.00084**	**12/21/2016**	**NP**	**NaN**	**16**	**0.0004738**	**0.0001051**	**ln(x)**	**ShapiroWilk**
Arsenic, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.000405	0.0001094	normal	ShapiroWilk
Arsenic, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.0003869	0.00007499	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.002486	0.0003347	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.0007063	0.0002421	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.0005394	0.0002695	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.000765	0.0001069	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.001259	0.0002639	ln(x)	ShapiroWilk
Arsenic, total (mg/L)	**MW-1607S**	**Yes**	**0.0112**	**12/21/2016**	**NP**	**NaN**	**16**	**0.001747**	**0.002536**	**ln(x)**	**ShapiroWilk**
Barium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.03386	0.009042	ln(x)	ShapiroWilk
Barium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.02874	0.001571	ln(x)	ShapiroWilk
Barium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.02733	0.002965	normal	ShapiroWilk
Barium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.03041	0.007438	ln(x)	ShapiroWilk
Barium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.05316	0.006409	ln(x)	ShapiroWilk
Barium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.06957	0.006594	x^5	ShapiroWilk
Barium, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.107	0.03385	x^(1/3)	ShapiroWilk
Barium, total (mg/L)	**MW-1607S**	**Yes**	**0.114**	**12/21/2016**	**NP**	**NaN**	**16**	**0.07026**	**0.01356**	**ln(x)**	**ShapiroWilk**
Beryllium, total (mg/L)	MW-1604D	n/a	n/a	n/a	NP	NaN	14	0.0001	0	unknown	ShapiroWilk
Beryllium, total (mg/L)	MW-1604S	n/a	n/a	n/a	NP	NaN	14	0.00009457	0.00002031	unknown	ShapiroWilk
Beryllium, total (mg/L)	MW-1605D	n/a	n/a	n/a	NP	NaN	14	0.0001	0	unknown	ShapiroWilk
Beryllium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	14	0.00008114	0.00003757	ln(x)	ShapiroWilk
Beryllium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	14	0.000075	0.00004147	x^(1/3)	ShapiroWilk
Beryllium, total (mg/L)	MW-1606S	n/a	n/a	n/a	NP	NaN	14	0.00009321	0.00002539	unknown	ShapiroWilk
Beryllium, total (mg/L)	MW-1607D	n/a	n/a	n/a	NP	NaN	14	0.00009343	0.00002459	unknown	ShapiroWilk
Beryllium, total (mg/L)	MW-1607S	n/a	n/a	n/a	NP	NaN	14	0.00008214	0.00004011	unknown	ShapiroWilk
Cadmium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.00008438	0.00005633	ln(x)	ShapiroWilk
Cadmium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.0001131	0.00008459	normal	ShapiroWilk
Cadmium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.00002531	0.00001087	sqrt(x)	ShapiroWilk
Cadmium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.00006438	0.00002529	ln(x)	ShapiroWilk
Cadmium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.00007	0.00001095	x^2	ShapiroWilk
Cadmium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.00007188	0.000008342	x^(1/3)	ShapiroWilk
Cadmium, total (mg/L)	MW-1607D	n/a	n/a	n/a	NP	NaN	16	0.0000225	0.000006325	unknown	ShapiroWilk
Cadmium, total (mg/L)	**MW-1607S**	**Yes**	**0.00022**	**12/21/2016**	**NP**	**NaN**	**16**	**0.00005063**	**0.0000464**	**ln(x)**	**ShapiroWilk**
Chromium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.0003859	0.0002592	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.0003661	0.0004779	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.0002974	0.0005459	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.0005084	0.0006537	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.0003195	0.0002789	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.0002923	0.0003215	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.0003167	0.000505	ln(x)	ShapiroWilk
Chromium, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	0.0005251	0.0007075	ln(x)	ShapiroWilk
Cobalt, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.0009925	0.0008151	x^6	ShapiroWilk
Cobalt, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.001185	0.0008758	x^3	ShapiroWilk
Cobalt, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.001683	0.0001425	x^3	ShapiroWilk
Cobalt, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.000762	0.0007065	ln(x)	ShapiroWilk
Cobalt, total (mg/L)	**MW-1606D**	**Yes**	**0.00426**	**4/18/2017**	**NP**	**NaN**	**16**	**0.001579**	**0.0007754**	**ln(x)**	**ShapiroWilk**
Cobalt, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.0003031	0.00008992	sqrt(x)	ShapiroWilk
Cobalt, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.0006489	0.0002138	normal	ShapiroWilk

Tukey's Outlier Analysis - Downgradient Wells - All Results

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Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Cobalt, total (mg/L)	**MW-1607S**	**Yes**	**0.0201**	**12/21/2016**	**NP**	**NaN**	**16**	**0.002443**	**0.004741**	**ln(x)**	**ShapiroWilk**
Combined Radium 226 + 228 (pCi/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.957	0.8133	x^(1/3)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	1.608	2.304	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	1.131	0.8667	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.8866	0.7705	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	1.892	1.958	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	1.066	0.6786	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	1.575	0.793	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	1.522	0.7709	sqrt(x)	ShapiroWilk
Fluoride, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	17	0.19	0.02598	sqrt(x)	ShapiroWilk
Fluoride, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	17	0.2065	0.02029	normal	ShapiroWilk
Fluoride, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	17	0.1953	0.01807	x^(1/3)	ShapiroWilk
Fluoride, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	17	0.2641	0.03242	ln(x)	ShapiroWilk
Fluoride, total (mg/L)	**MW-1606D**	**Yes**	**0.1,0.49**	**6/19/2019,9/11/2019**	**NP**	**NaN**	**17**	**0.2588**	**0.0714**	**sqrt(x)**	**ShapiroWilk**
Fluoride, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	18	0.4328	0.07752	x^2	ShapiroWilk
Fluoride, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	18	0.5039	0.05066	x^2	ShapiroWilk
Fluoride, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	17	0.2747	0.03502	x^3	ShapiroWilk
Lead, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.0001322	0.0001502	ln(x)	ShapiroWilk
Lead, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.0001191	0.00007161	x^(1/3)	ShapiroWilk
Lead, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.00007219	0.0000781	ln(x)	ShapiroWilk
Lead, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.0004323	0.0005147	ln(x)	ShapiroWilk
Lead, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.0002992	0.0004852	ln(x)	ShapiroWilk
Lead, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.0001206	0.00006899	x^(1/3)	ShapiroWilk
Lead, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.0001272	0.0001482	ln(x)	ShapiroWilk
Lead, total (mg/L)	**MW-1607S**	**Yes**	**0.011**	**12/21/2016**	**NP**	**NaN**	**16**	**0.0009651**	**0.002707**	**ln(x)**	**ShapiroWilk**
Lithium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.03826	0.01797	normal	ShapiroWilk
Lithium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.04012	0.00928	x^(1/3)	ShapiroWilk
Lithium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.06454	0.01768	x^2	ShapiroWilk
Lithium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.06441	0.01463	normal	ShapiroWilk
Lithium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.1037	0.02599	x^5	ShapiroWilk
Lithium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.09868	0.02088	x^4	ShapiroWilk
Lithium, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.08973	0.01726	ln(x)	ShapiroWilk
Lithium, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	0.1016	0.01468	ln(x)	ShapiroWilk
Mercury, total (mg/L)	MW-1604D	n/a	n/a	n/a	NP	NaN	15	0.000006933	0.000008058	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1604S	n/a	n/a	n/a	NP	NaN	15	0.000004867	5.2e-7	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1605D	n/a	n/a	n/a	NP	NaN	15	0.0000048	7.7e-7	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1605S	n/a	n/a	n/a	NP	NaN	15	0.000004867	5.2e-7	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1606D	n/a	n/a	n/a	NP	NaN	15	0.000004933	2.6e-7	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1606S	n/a	n/a	n/a	NP	NaN	15	0.0000048	7.7e-7	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1607D	n/a	n/a	n/a	NP	NaN	15	0.0000046	0.000001056	unknown	ShapiroWilk
Mercury, total (mg/L)	MW-1607S	n/a	n/a	n/a	NP	NaN	15	0.0000052	0.000002007	unknown	ShapiroWilk
Molybdenum, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.01029	0.008831	x^5	ShapiroWilk
Molybdenum, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.009188	0.006846	x^5	ShapiroWilk
Molybdenum, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.04411	0.0069	normal	ShapiroWilk
Molybdenum, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.01709	0.004318	ln(x)	ShapiroWilk
Molybdenum, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.07259	0.006631	ln(x)	ShapiroWilk
Molybdenum, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.07956	0.02099	sqrt(x)	ShapiroWilk
Molybdenum, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.08558	0.004945	ln(x)	ShapiroWilk
Molybdenum, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	0.04148	0.005373	normal	ShapiroWilk
pH, field (SU)	MW-1601A (bg)	No	n/a	n/a	NP	NaN	17	7.118	0.266	ln(x)	ShapiroWilk
pH, field (SU)	MW-1602 (bg)	No	n/a	n/a	NP	NaN	17	6.734	0.2818	ln(x)	ShapiroWilk
pH, field (SU)	MW-1603 (bg)	No	n/a	n/a	NP	NaN	17	6.776	0.3324	ln(x)	ShapiroWilk
pH, field (SU)	MW-1604D	No	n/a	n/a	NP	NaN	18	7.144	0.3269	x^2	ShapiroWilk
pH, field (SU)	MW-1604S	No	n/a	n/a	NP	NaN	18	7.141	0.2479	ln(x)	ShapiroWilk
pH, field (SU)	MW-1605D	No	n/a	n/a	NP	NaN	17	7.342	0.2406	ln(x)	ShapiroWilk

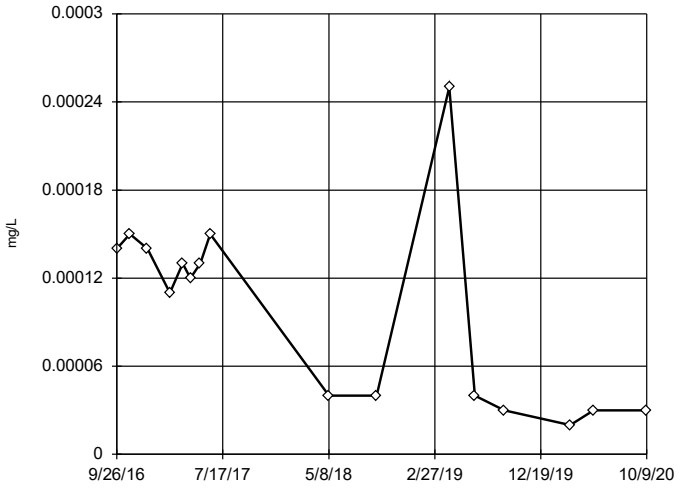
Tukey's Outlier Analysis - Downgradient Wells - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 3:50 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
pH, field (SU)	MW-1605S	No	n/a	n/a	NP	NaN	18	7.259	0.2353	ln(x)	ShapiroWilk
pH, field (SU)	MW-1606D	No	n/a	n/a	NP	NaN	18	7.332	0.2335	ln(x)	ShapiroWilk
pH, field (SU)	MW-1606S	No	n/a	n/a	NP	NaN	18	7.059	0.3673	x^6	ShapiroWilk
pH, field (SU)	MW-1607D	No	n/a	n/a	NP	NaN	18	7.558	0.3267	ln(x)	ShapiroWilk
pH, field (SU)	MW-1607S	No	n/a	n/a	NP	NaN	18	7.452	0.3004	ln(x)	ShapiroWilk
pH, field (SU)	MW-1608 (bg)	No	n/a	n/a	NP	NaN	17	6.979	0.3569	sqrt(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.001531	0.001136	ln(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.001694	0.0007576	ln(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.0002244	0.00006957	sqrt(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.001119	0.0006765	ln(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.004106	0.002709	sqrt(x)	ShapiroWilk
Selenium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.001806	0.001369	ln(x)	ShapiroWilk
Selenium, total (mg/L)	**MW-1607D**	**Yes**	**0.0005**	**3/29/2017**	**NP**	**NaN**	**16**	**0.00008312**	**0.0001131**	**ln(x)**	**ShapiroWilk**
Selenium, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	0.007481	0.002283	normal	ShapiroWilk
Thallium, total (mg/L)	MW-1604D	No	n/a	n/a	NP	NaN	16	0.0003202	0.0001658	normal	ShapiroWilk
Thallium, total (mg/L)	MW-1604S	No	n/a	n/a	NP	NaN	16	0.000255	0.0004789	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1605D	No	n/a	n/a	NP	NaN	16	0.0002255	0.0002209	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1605S	No	n/a	n/a	NP	NaN	16	0.0002291	0.0002191	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1606D	No	n/a	n/a	NP	NaN	16	0.0002261	0.000191	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1606S	No	n/a	n/a	NP	NaN	16	0.0002108	0.0002019	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1607D	No	n/a	n/a	NP	NaN	16	0.0002108	0.0002316	ln(x)	ShapiroWilk
Thallium, total (mg/L)	MW-1607S	No	n/a	n/a	NP	NaN	16	0.0002308	0.0002167	ln(x)	ShapiroWilk

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

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

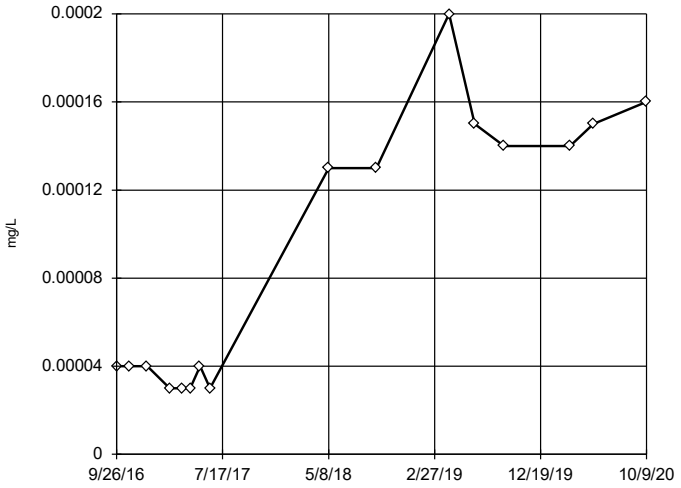
High cutoff = 0.0008777, low cutoff = -0.0001414, based on IQR multiplier of 3.

Constituent: Antimony, total Analysis Run 1/11/2021 3:46 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

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

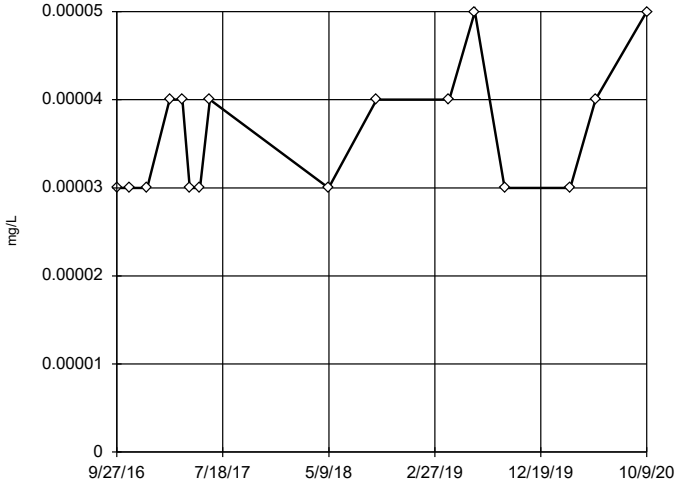
High cutoff = 0.0002836, low cutoff = -0.0002411, based on IQR multiplier of 3.

Constituent: Antimony, total Analysis Run 1/11/2021 3:46 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

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

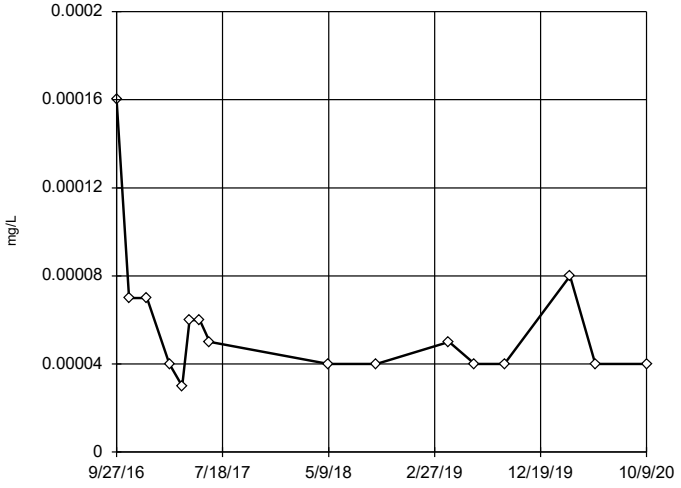
High cutoff = 0.00007862, low cutoff = 0.000008616, based on IQR multiplier of 3.

Constituent: Antimony, total Analysis Run 1/11/2021 3:46 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

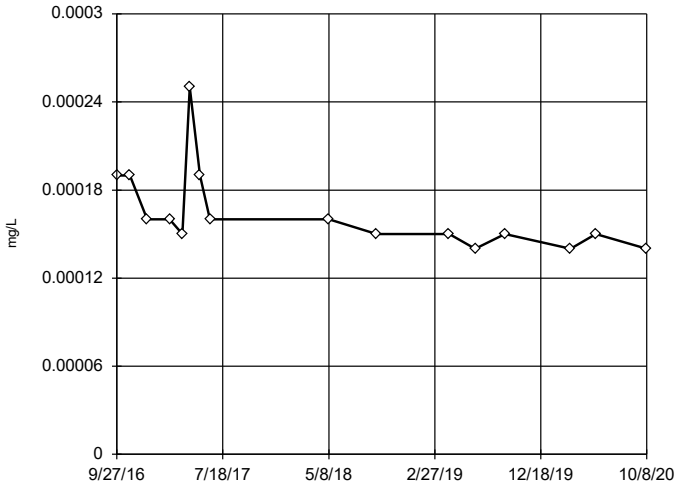
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.0002756, low cutoff = 0.000009405, based on IQR multiplier of 3.

Constituent: Antimony, total Analysis Run 1/11/2021 3:46 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.0002738, low cutoff = 0.00009551, based on IQR multiplier of 3.

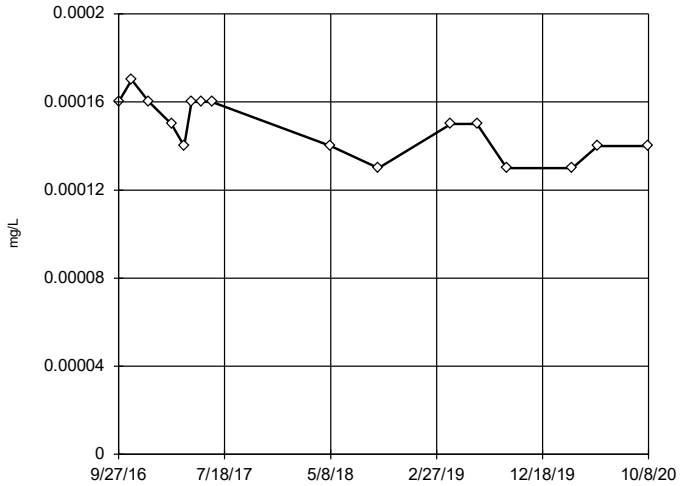
Constituent: Antimony, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.0002088, low cutoff = 0.00004, based on IQR multiplier of 3.

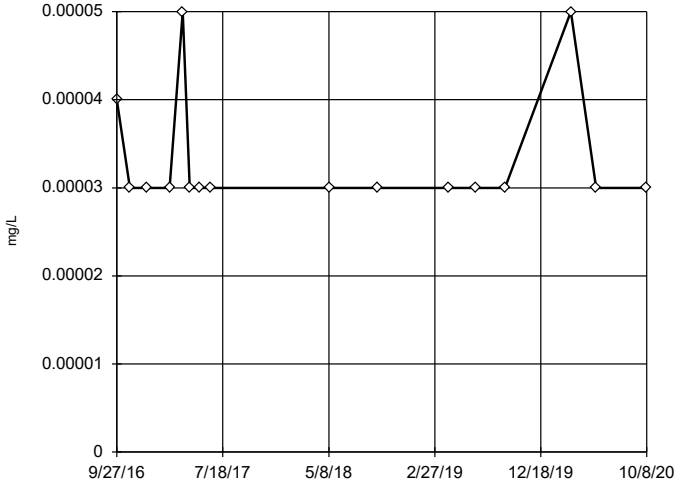
Constituent: Antimony, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

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

The results were invalidated, because the lower and upper quartiles are equal.

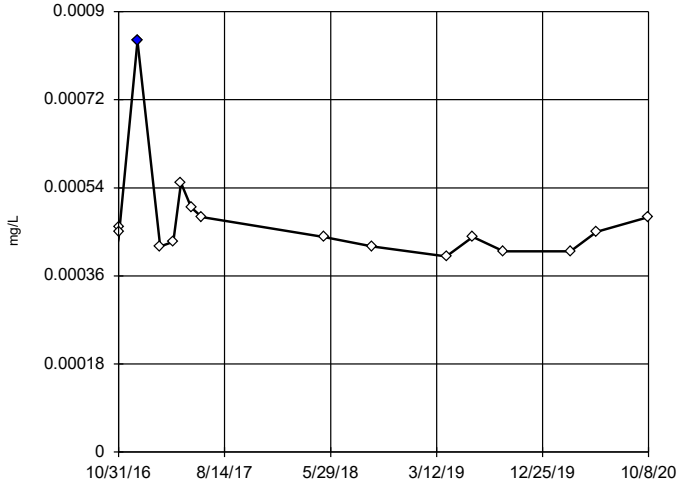
Constituent: Antimony, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

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).

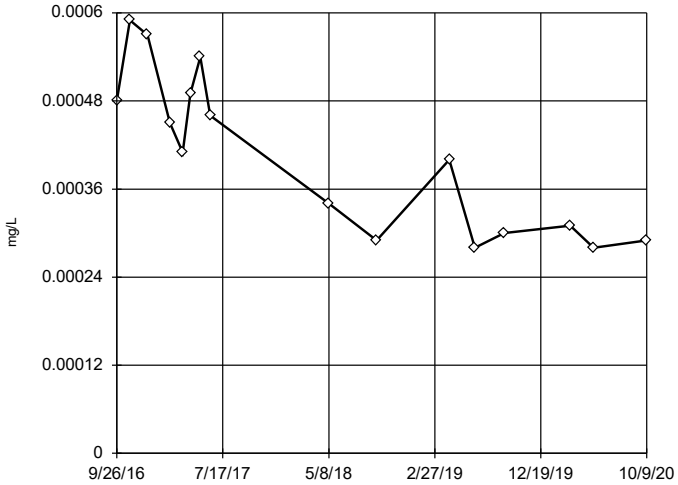
High cutoff = 0.0007165, low cutoff = 0.0002814, based on IQR multiplier of 3.

Constituent: Antimony, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.001055, low cutoff = -0.000275, based on IQR multiplier of 3.

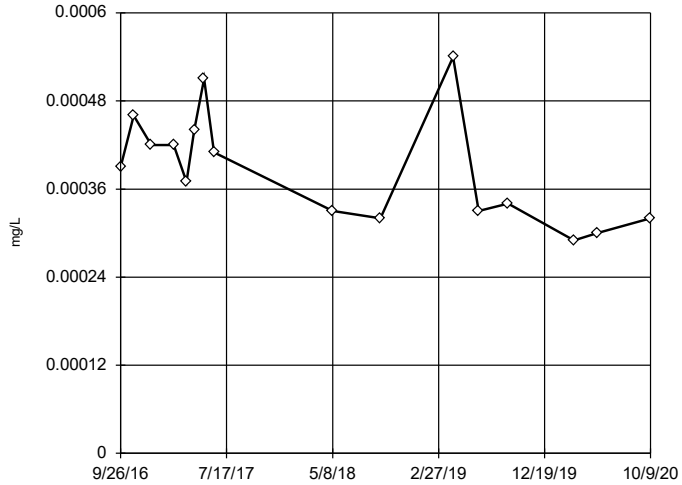
Constituent: Arsenic, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.0009952, low cutoff = 0.0001404, based on IQR multiplier of 3.

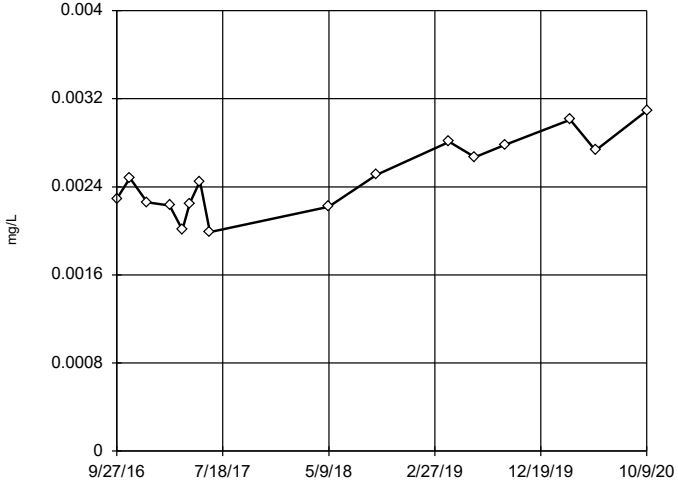
Constituent: Arsenic, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.005125, low cutoff = 0.001204, based on IQR multiplier of 3.

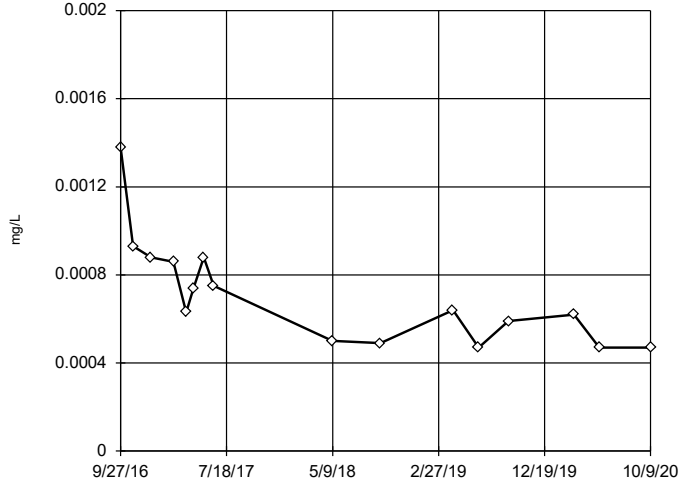
Constituent: Arsenic, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

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

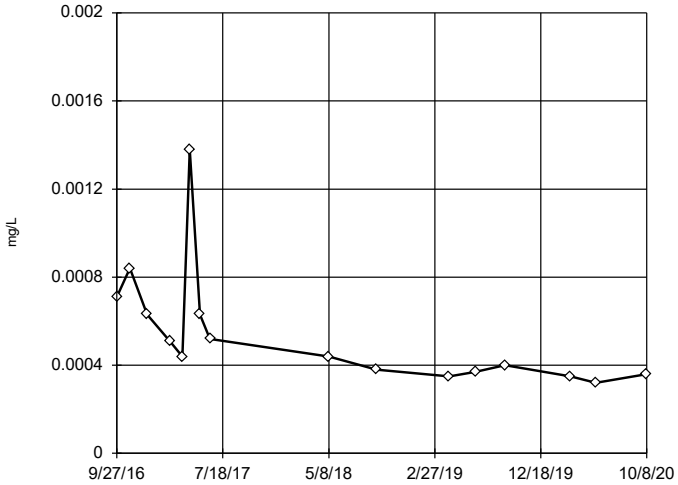
High cutoff = 0.004723, low cutoff = 0.00009117, based on IQR multiplier of 3.

Constituent: Arsenic, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.00324, low cutoff = 0.00007096, based on IQR multiplier of 3.

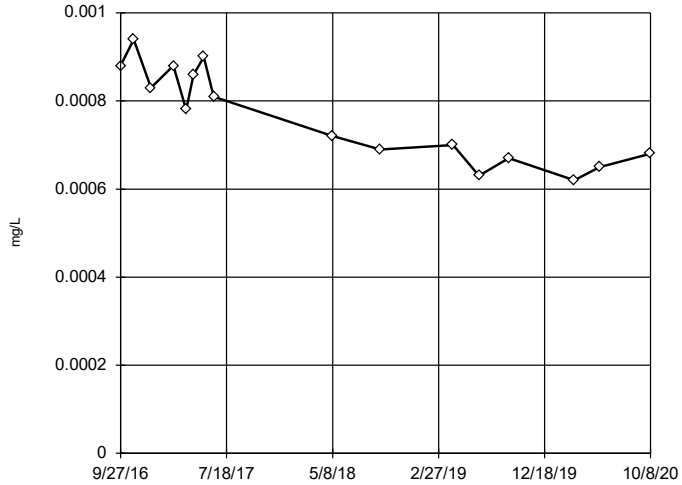
Constituent: Arsenic, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.001862, low cutoff = 0.0003153, based on IQR multiplier of 3.

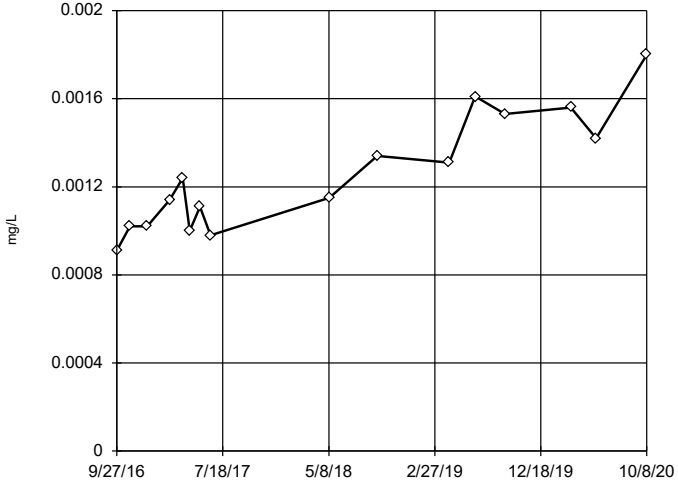
Constituent: Arsenic, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.004448, low cutoff = 0.000338, based on IQR multiplier of 3.

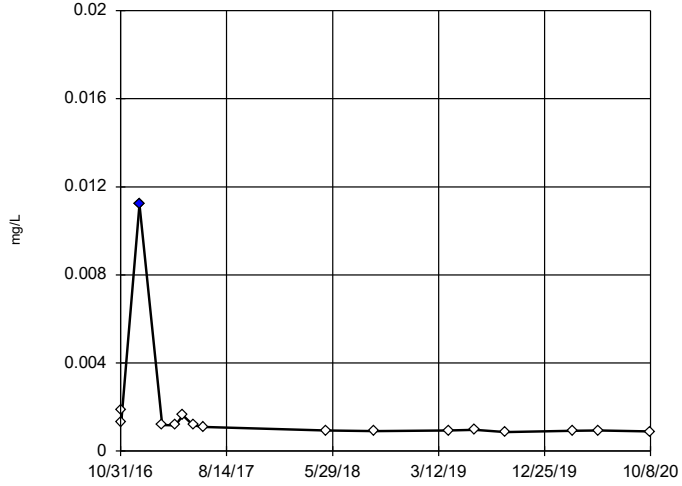
Constituent: Arsenic, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

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).

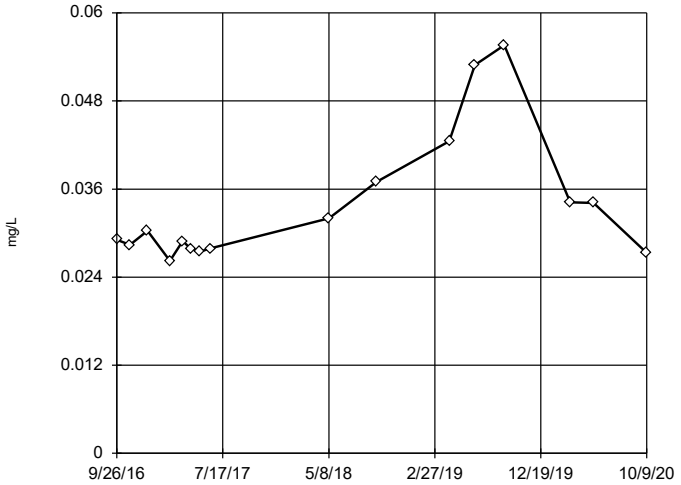
High cutoff = 0.003024, low cutoff = 0.0003805, based on IQR multiplier of 3.

Constituent: Arsenic, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.07373, low cutoff = 0.01346, based on IQR multiplier of 3.

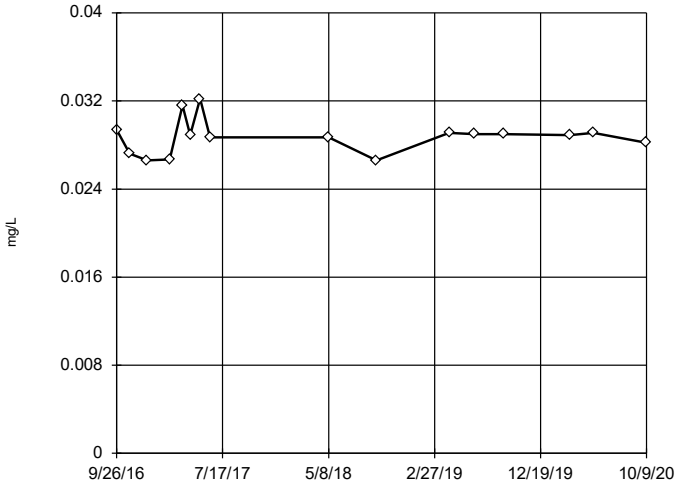
Constituent: Barium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.03376, low cutoff = 0.02388, based on IQR multiplier of 3.

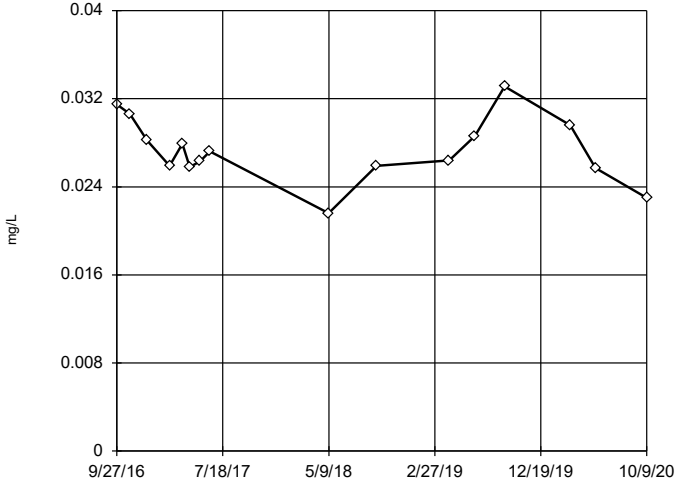
Constituent: Barium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.03885, low cutoff = 0.0161, based on IQR multiplier of 3.

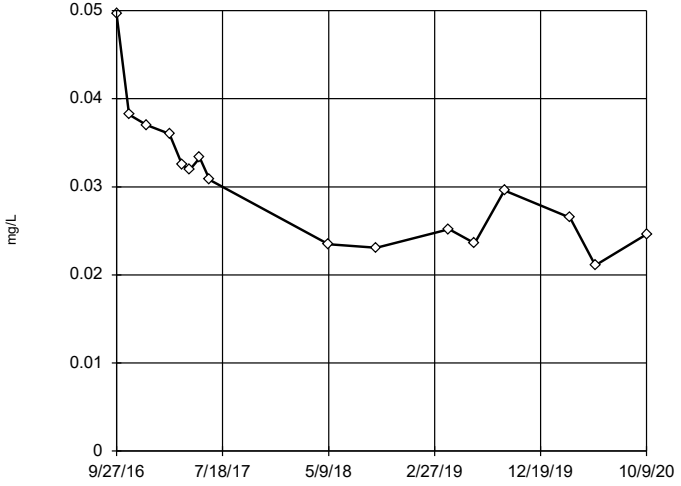
Constituent: Barium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

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

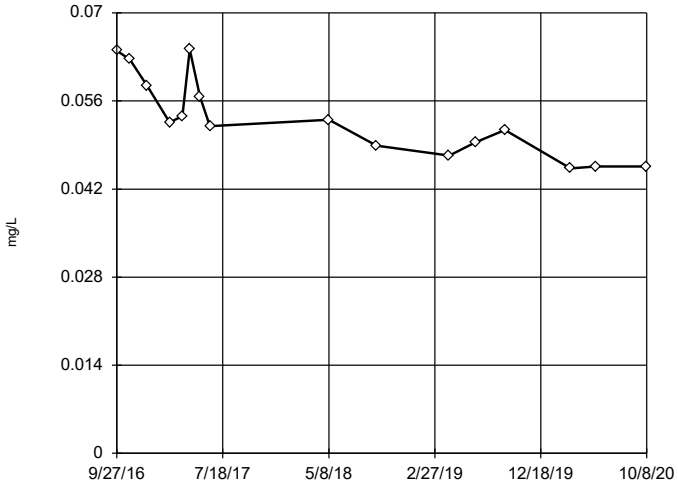
High cutoff = 0.1027, low cutoff = 0.00812, based on IQR multiplier of 3.

Constituent: Barium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.09857, low cutoff = 0.02808, based on IQR multiplier of 3.

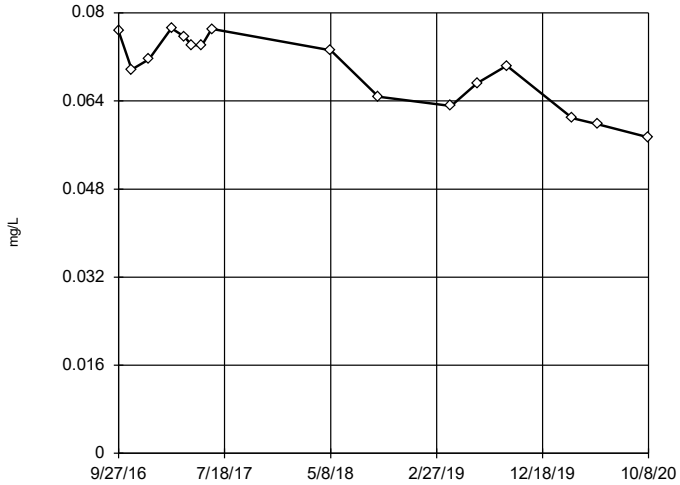
Constituent: Barium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

Data were x^5 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.09104, low cutoff = -0.07762, based on IQR multiplier of 3.

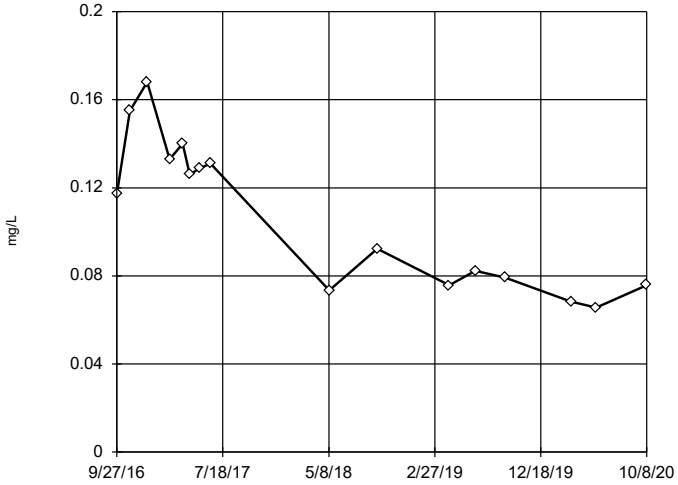
Constituent: Barium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.4517, low cutoff = 0.004491, based on IQR multiplier of 3.

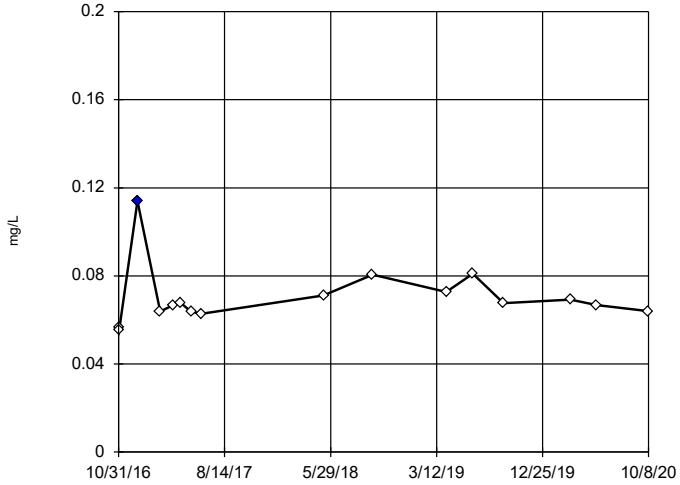
Constituent: Barium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

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).

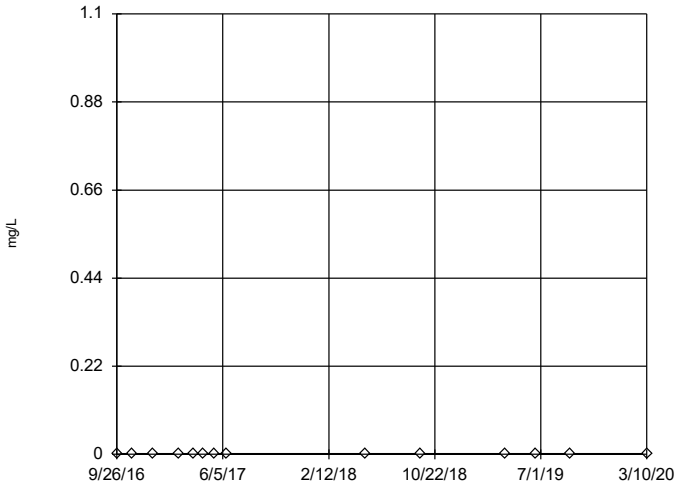
High cutoff = 0.1029, low cutoff = 0.04458, based on IQR multiplier of 3.

Constituent: Barium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 14

No outliers found. Tukey's method selected by user.

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

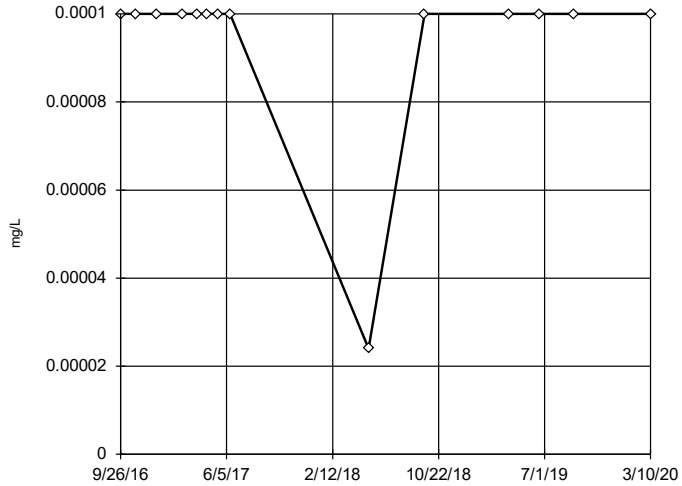
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 14

No outliers found. Tukey's method selected by user.

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

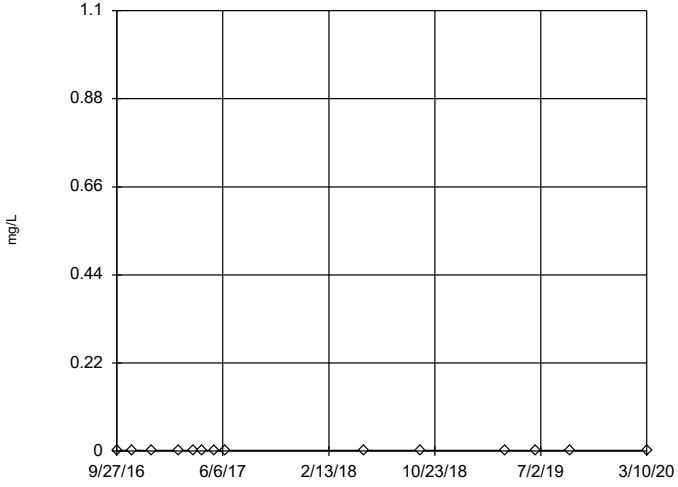
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 14

No outliers found. Tukey's method selected by user.

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

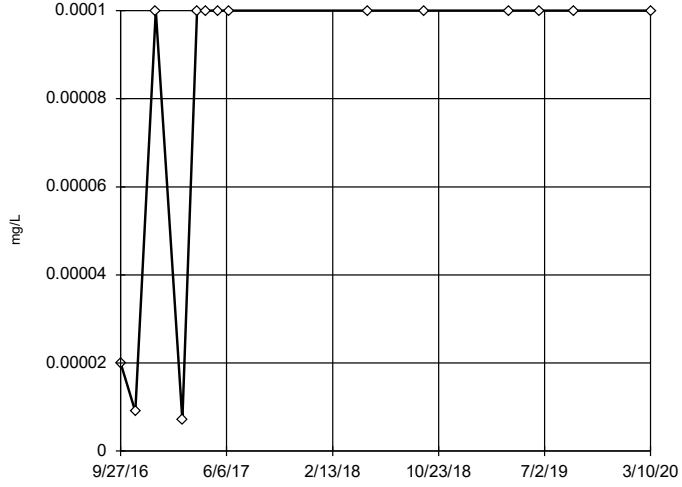
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 14

No outliers found. Tukey's method selected by user.

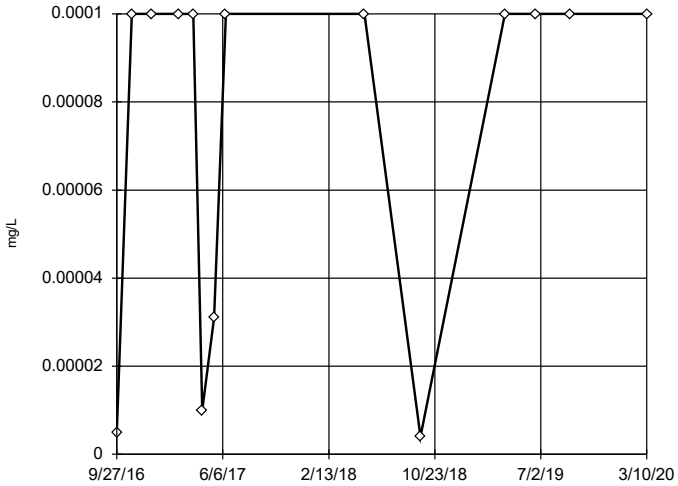
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.001118, low cutoff = 0.000004, based on IQR multiplier of 3.

Constituent: Beryllium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 14

No outliers found. Tukey's method selected by user.

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

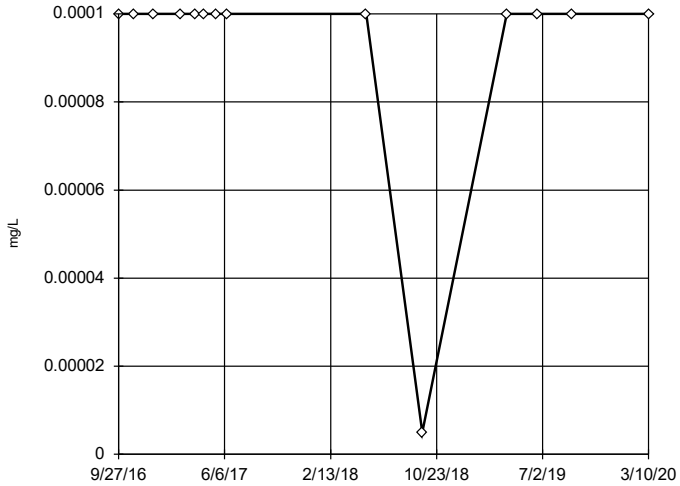
High cutoff = 0.001199, low cutoff = -0.00003703, based on IQR multiplier of 3.

Constituent: Beryllium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 14

No outliers found. Tukey's method selected by user.

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

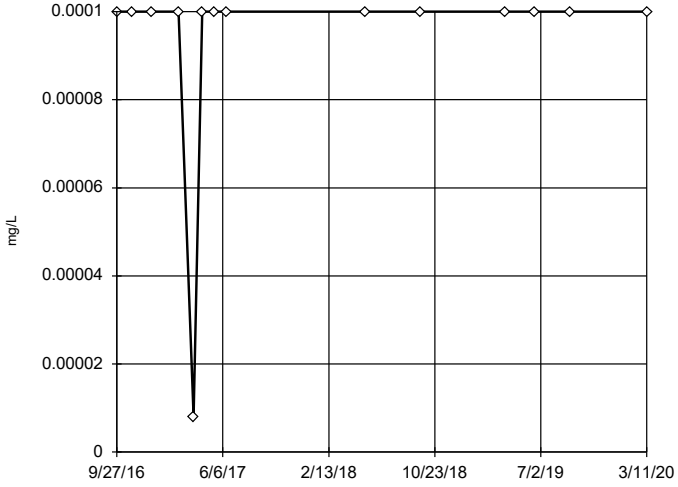
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 14

No outliers found. Tukey's method selected by user.

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

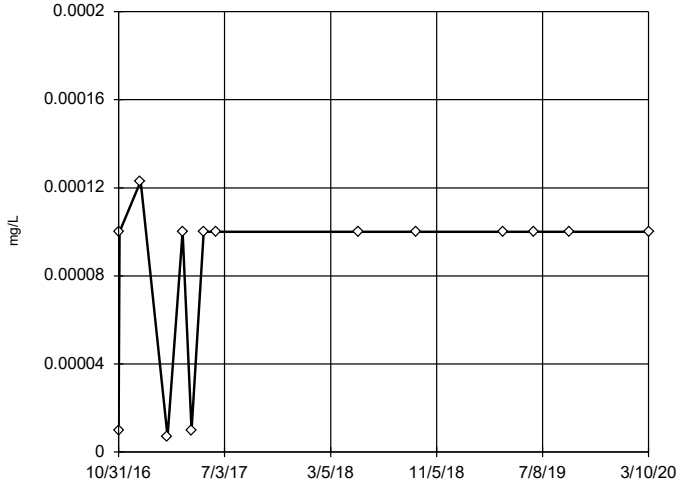
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 14

No outliers found. Tukey's method selected by user.

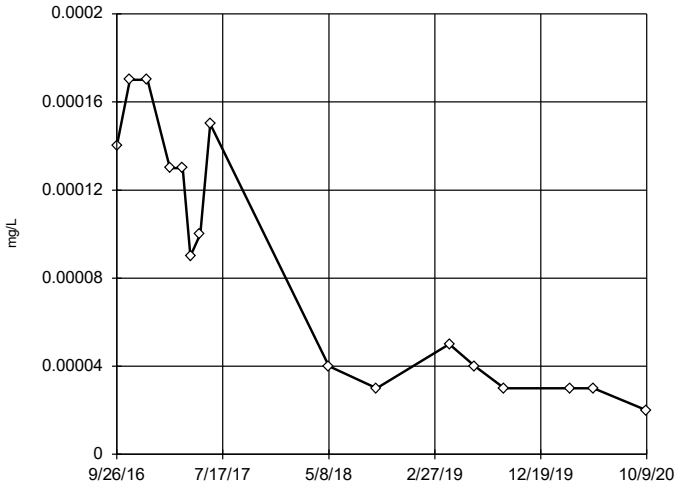
Data were x^4 transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Beryllium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.01227, low cutoff = 3.3e-7, based on IQR multiplier of 3.

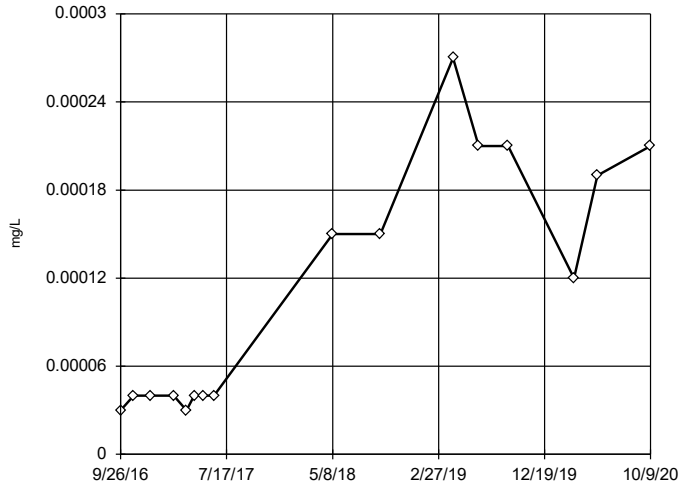
Constituent: Cadmium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.00068, low cutoff = -0.00044, based on IQR multiplier of 3.

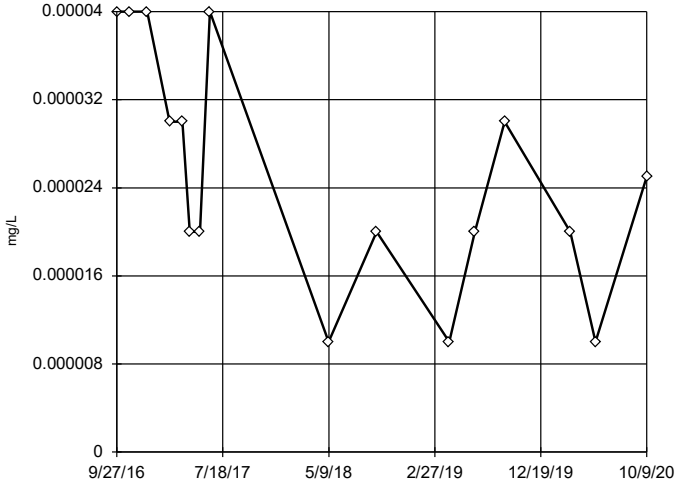
Constituent: Cadmium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.0001038, low cutoff = 3.5e-8, based on IQR multiplier of 3.

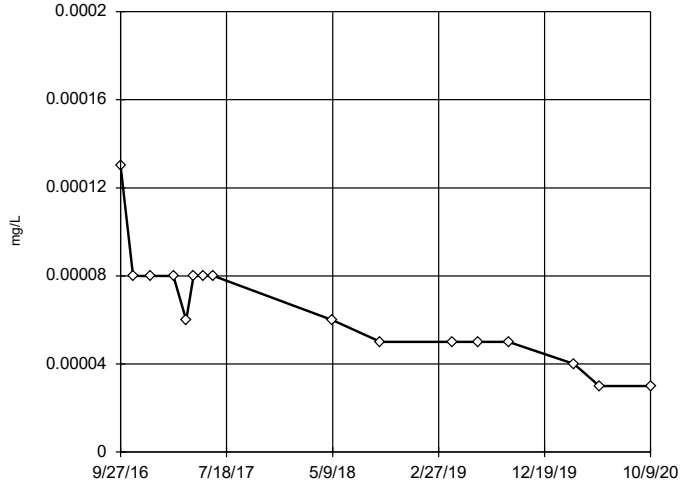
Constituent: Cadmium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

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

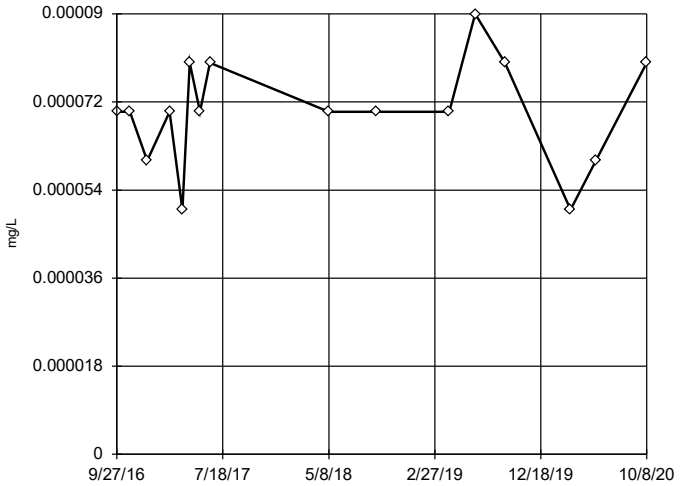
High cutoff = 0.0003277, low cutoff = 0.00001221, based on IQR multiplier of 3.

Constituent: Cadmium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.0001134, low cutoff = -0.0000469, based on IQR multiplier of 3.

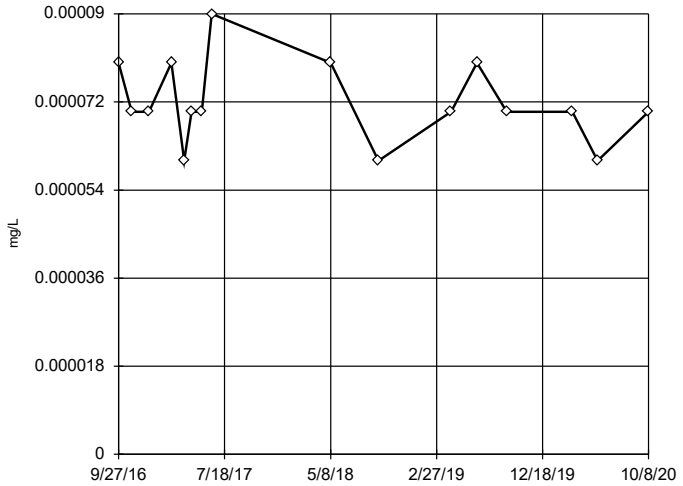
Constituent: Cadmium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.0001156, low cutoff = 0.00004506, based on IQR multiplier of 3.

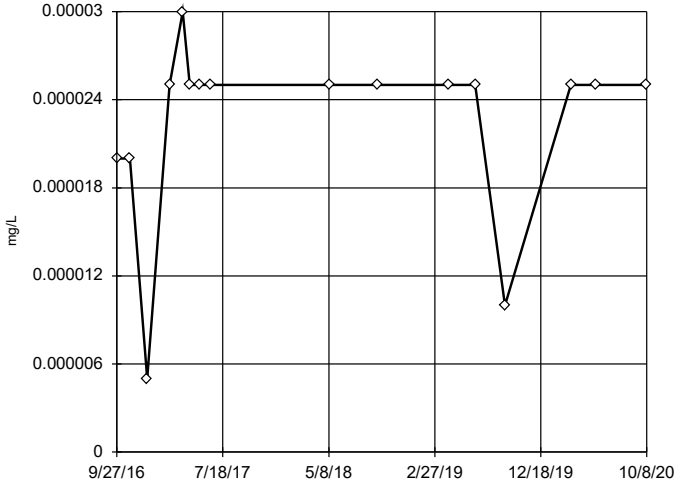
Constituent: Cadmium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

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

The results were invalidated, because both the lower and upper quartiles represent reporting limits.

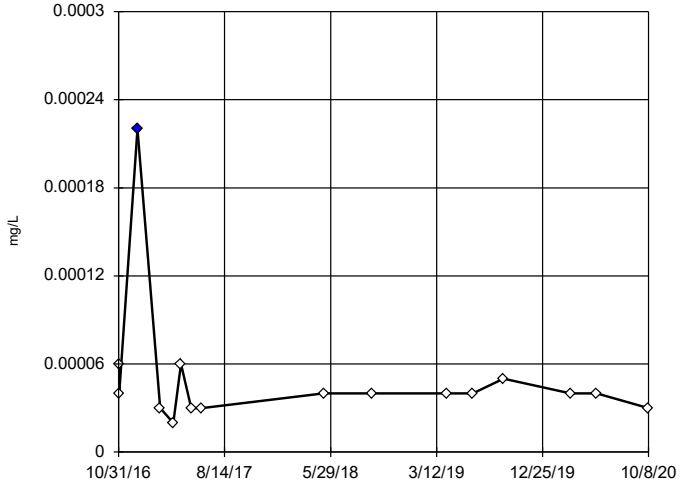
Constituent: Cadmium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

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).

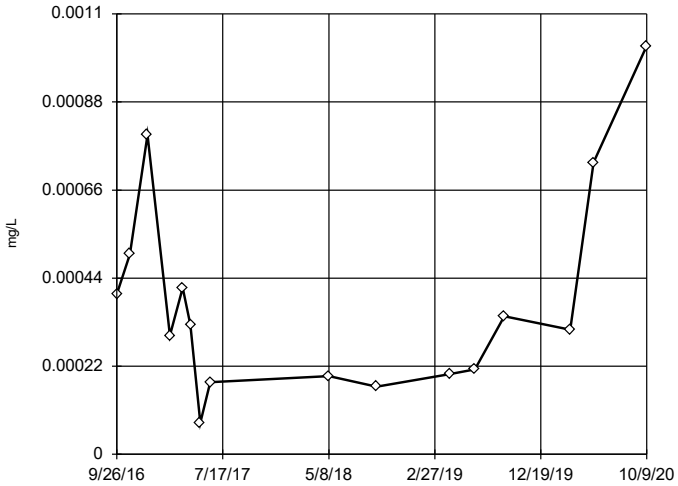
High cutoff = 0.0001481, low cutoff = 0.000009056, based on IQR multiplier of 3.

Constituent: Cadmium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.005617, low cutoff = 0.00001603, based on IQR multiplier of 3.

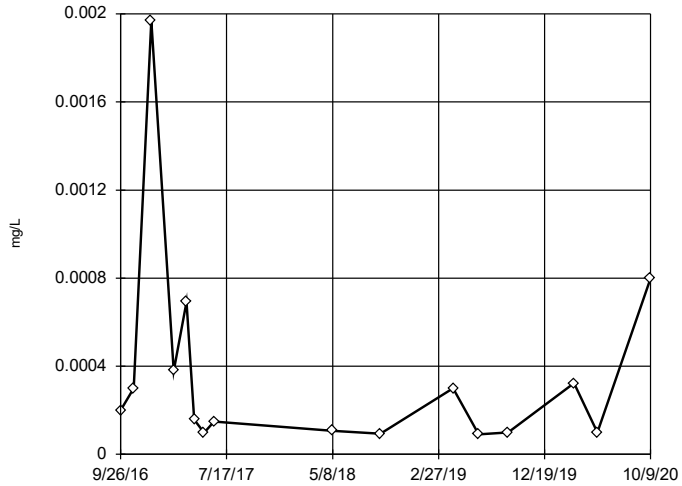
Constituent: Chromium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.01499, low cutoff = 0.000002335, based on IQR multiplier of 3.

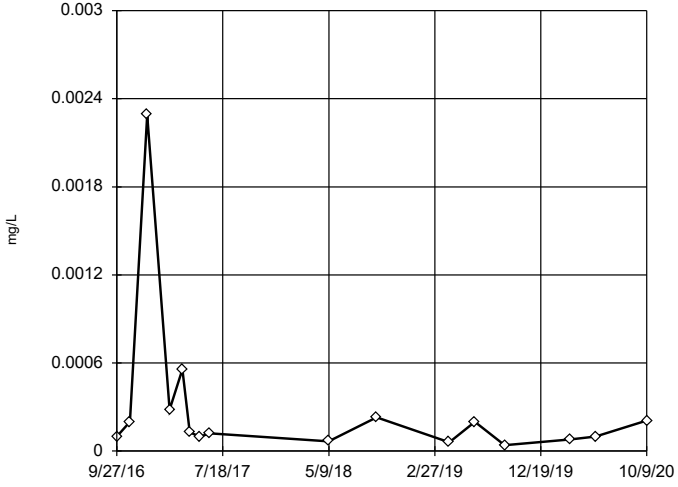
Constituent: Chromium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.003219, low cutoff = 0.000006034, based on IQR multiplier of 3.

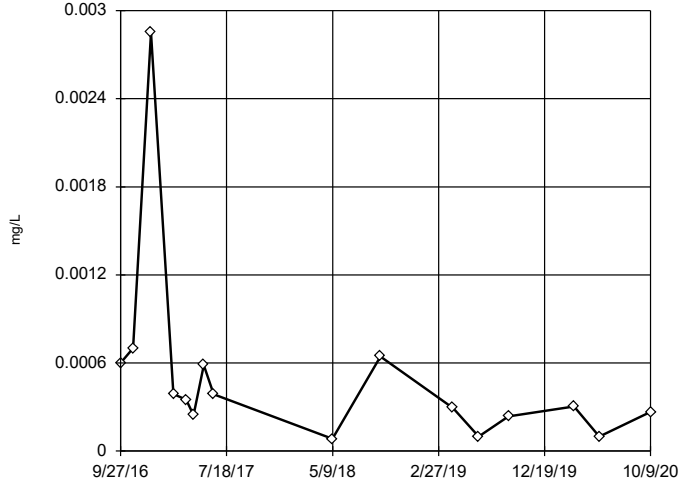
Constituent: Chromium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

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

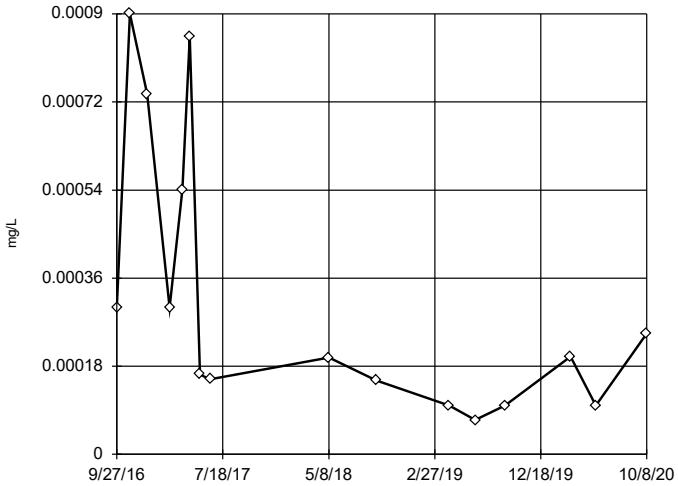
High cutoff = 0.008805, low cutoff = 0.00001621, based on IQR multiplier of 3.

Constituent: Chromium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.0142, low cutoff = 0.000003487, based on IQR multiplier of 3.

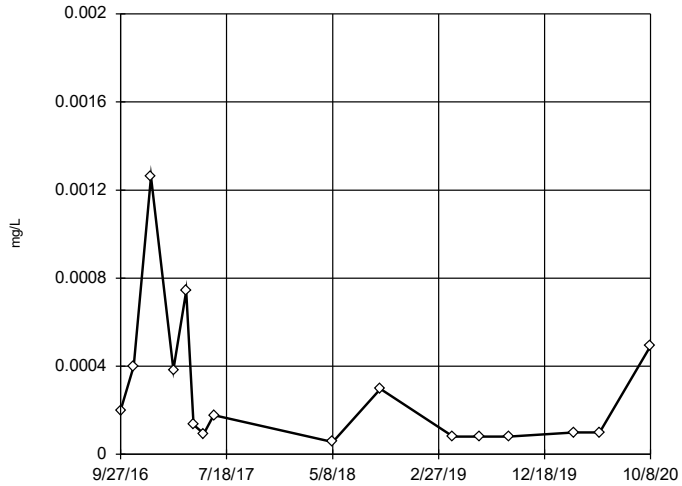
Constituent: Chromium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.03676, low cutoff = 9.2e-7, based on IQR multiplier of 3.

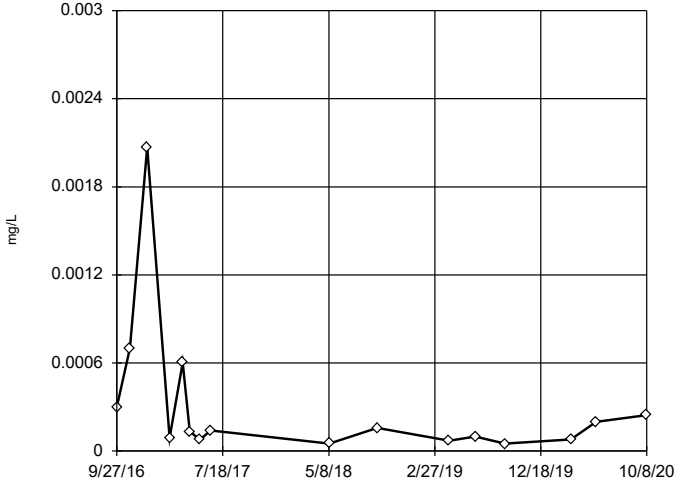
Constituent: Chromium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.01087, low cutoff = 0.000001966, based on IQR multiplier of 3.

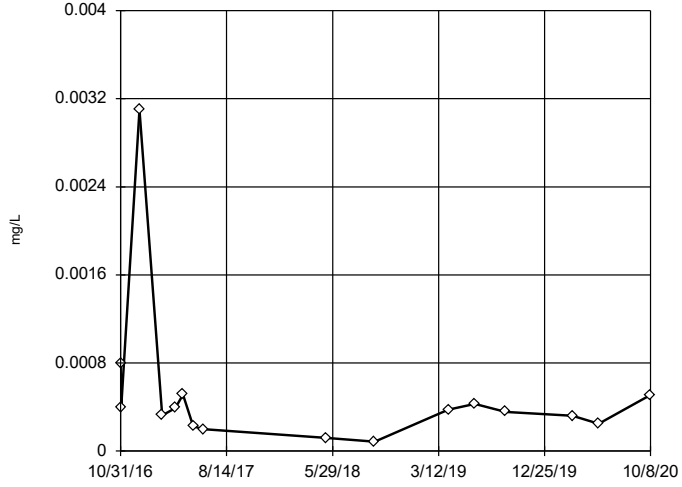
Constituent: Chromium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

No outliers found. Tukey's method selected by user.

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

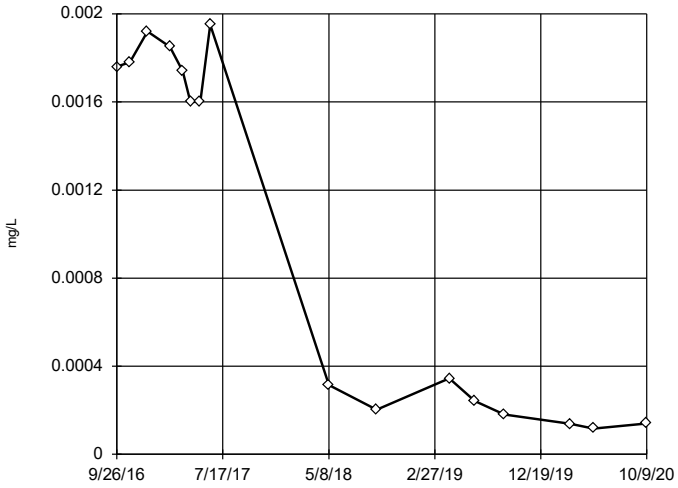
High cutoff = 0.003555, low cutoff = 0.00003114, based on IQR multiplier of 3.

Constituent: Chromium, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.00223, low cutoff = -0.002126, based on IQR multiplier of 3.

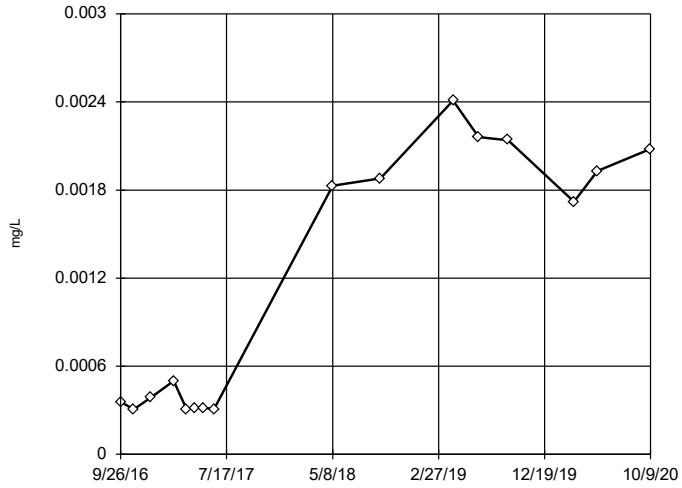
Constituent: Cobalt, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.003184, low cutoff = -0.002891, based on IQR multiplier of 3.

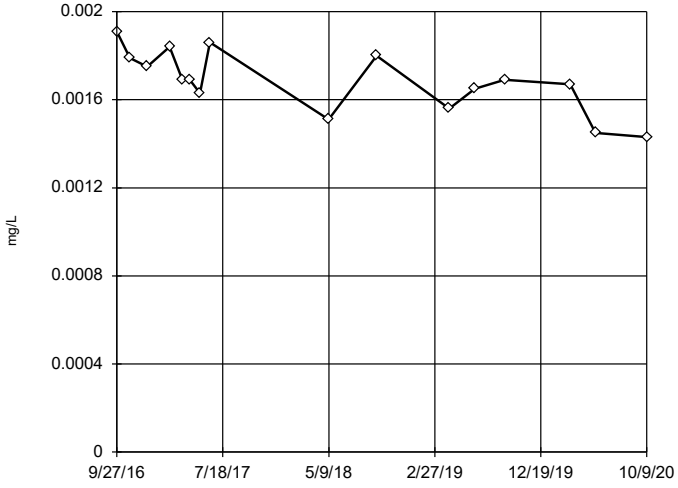
Constituent: Cobalt, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.00222, low cutoff = -0.001031, based on IQR multiplier of 3.

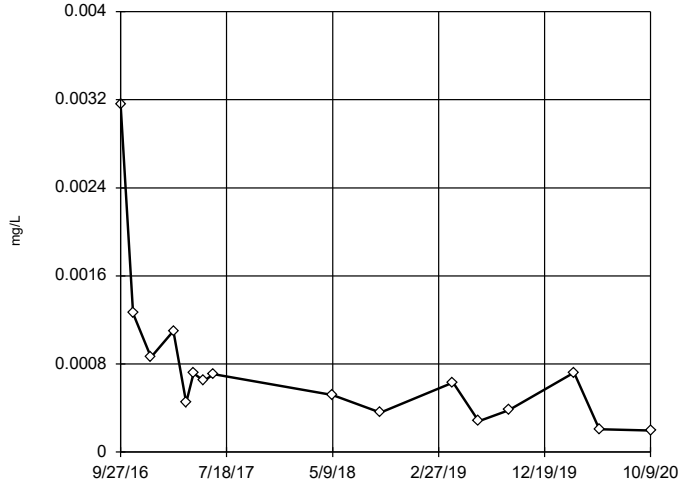
Constituent: Cobalt, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

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

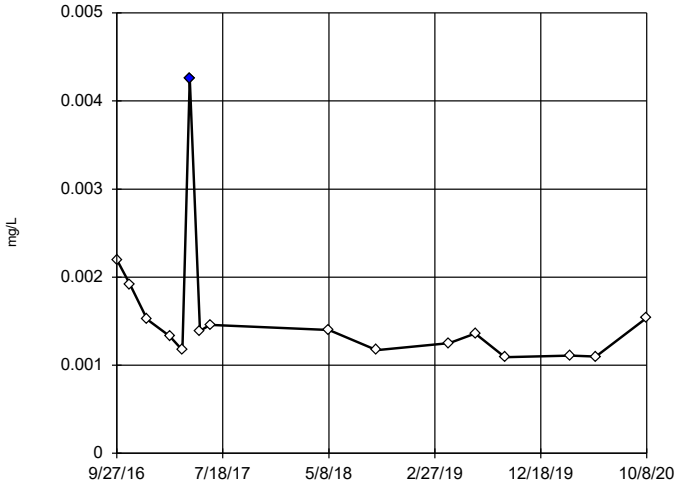
High cutoff = 0.007689, low cutoff = 0.0000379, based on IQR multiplier of 3.

Constituent: Cobalt, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

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 = 0.003421, low cutoff = 0.0005232, based on IQR multiplier of 3.

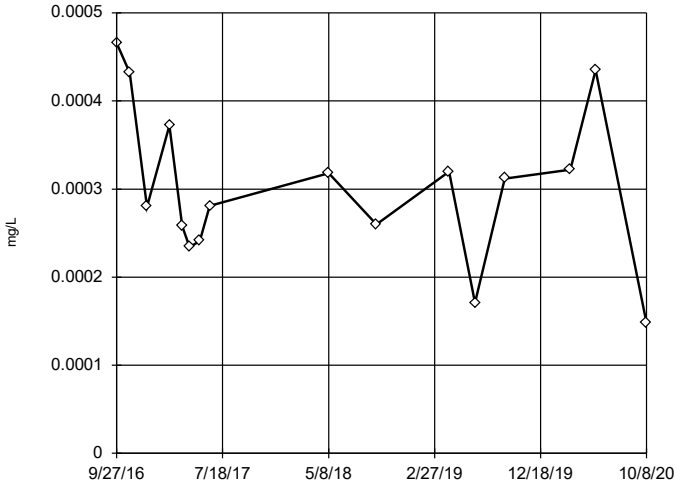
Constituent: Cobalt, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.0007335, low cutoff = 0.00005366, based on IQR multiplier of 3.

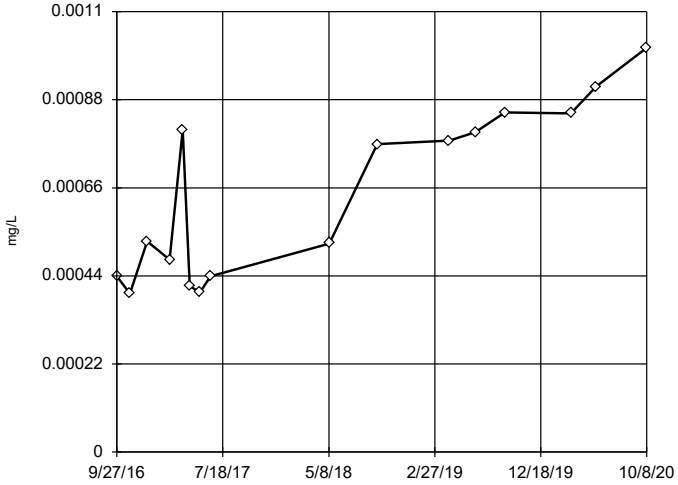
Constituent: Cobalt, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.001985, low cutoff = -0.0007205, based on IQR multiplier of 3.

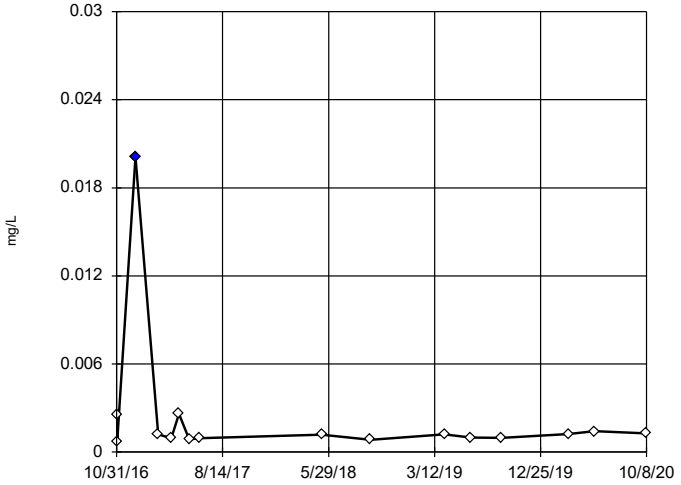
Constituent: Cobalt, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

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).

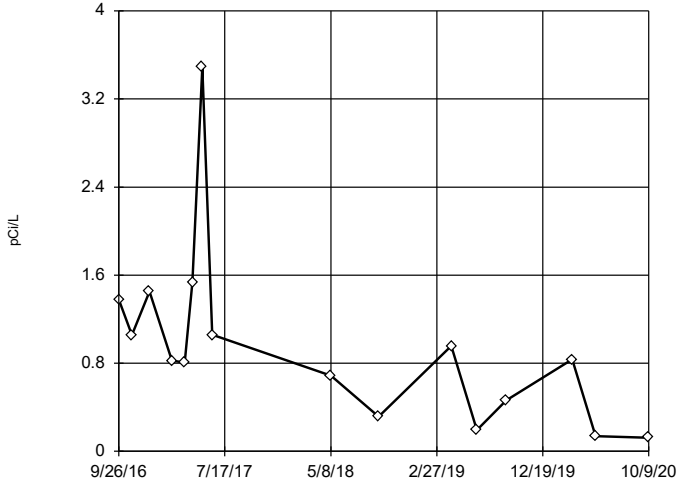
High cutoff = 0.003928, low cutoff = 0.000321, based on IQR multiplier of 3.

Constituent: Cobalt, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 9.02, low cutoff = -0.02385, based on IQR multiplier of 3.

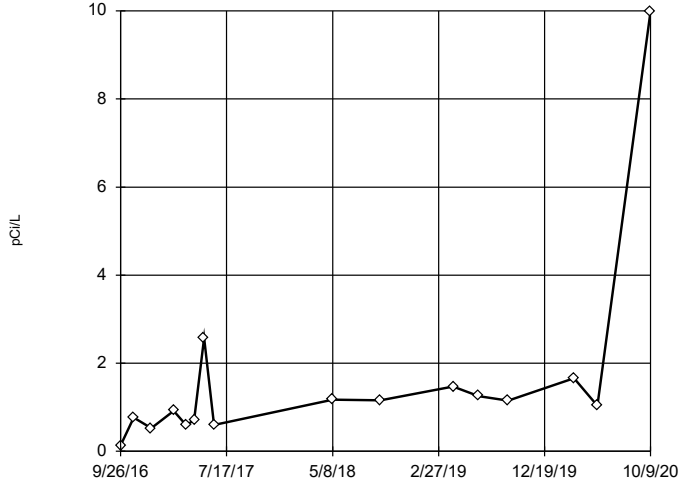
Constituent: Combined Radium 226 + 228 Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 12.02, low cutoff = 0.0743, based on IQR multiplier of 3.

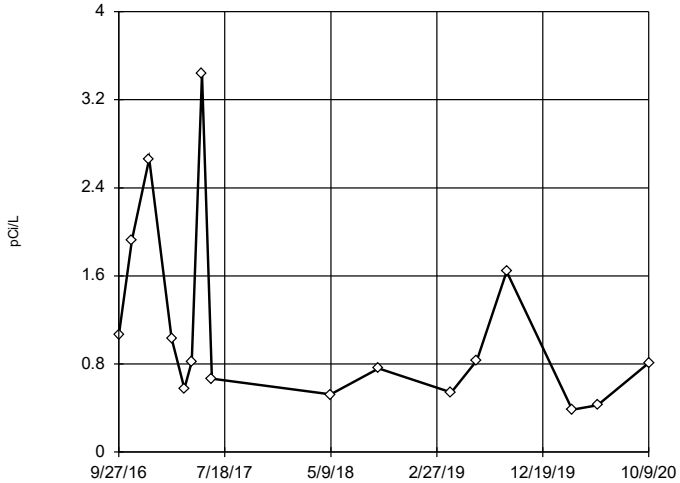
Constituent: Combined Radium 226 + 228 Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 17.21, low cutoff = 0.04294, based on IQR multiplier of 3.

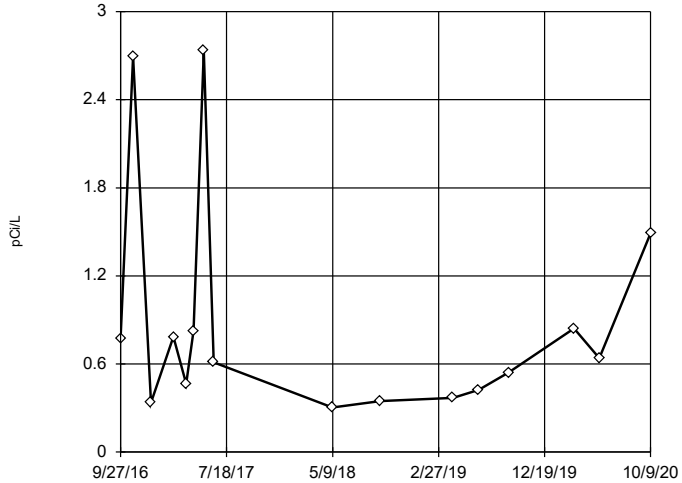
Constituent: Combined Radium 226 + 228 Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

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

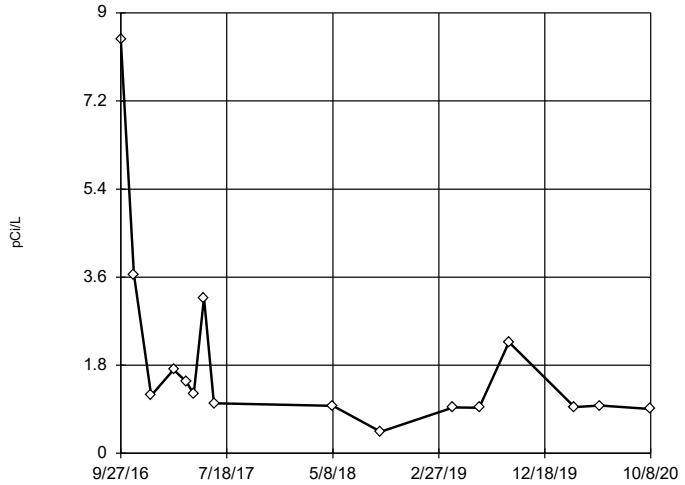
High cutoff = 7.835, low cutoff = 0.04213, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 17.99, low cutoff = 0.1033, based on IQR multiplier of 3.

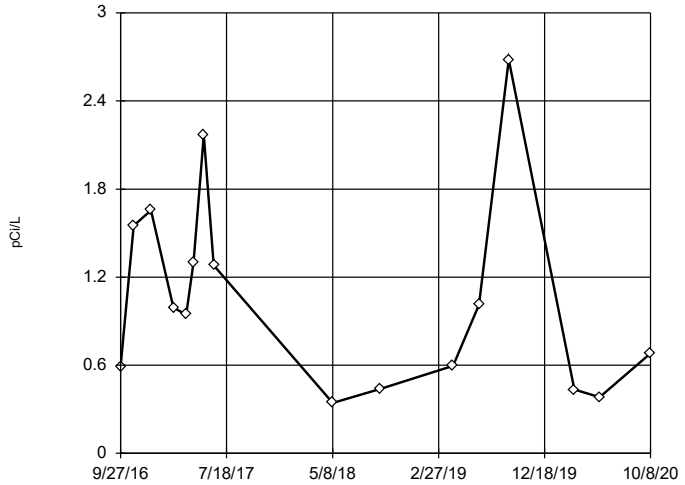
Constituent: Combined Radium 226 + 228 Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 30.79, low cutoff = 0.02353, based on IQR multiplier of 3.

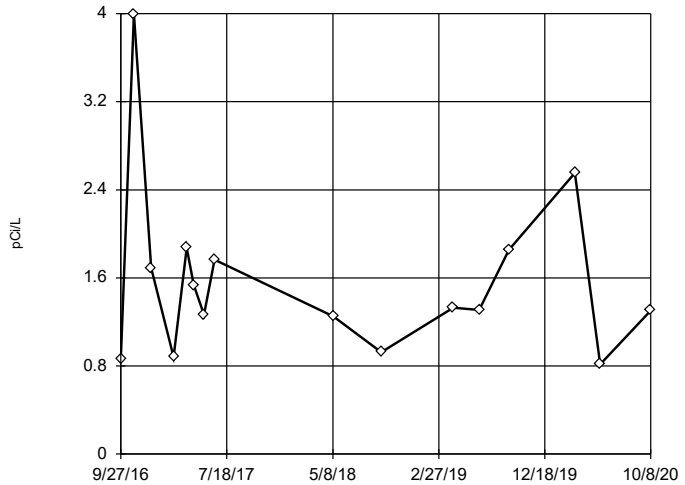
Constituent: Combined Radium 226 + 228 Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 8.598, low cutoff = 0.2263, based on IQR multiplier of 3.

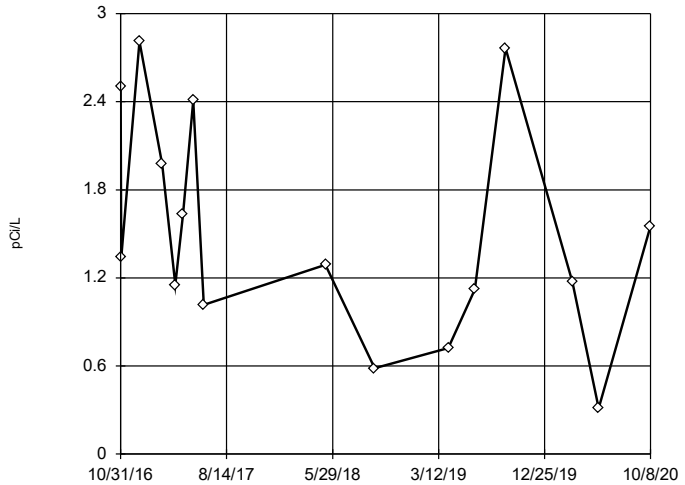
Constituent: Combined Radium 226 + 228 Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

No outliers found. Tukey's method selected by user.

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

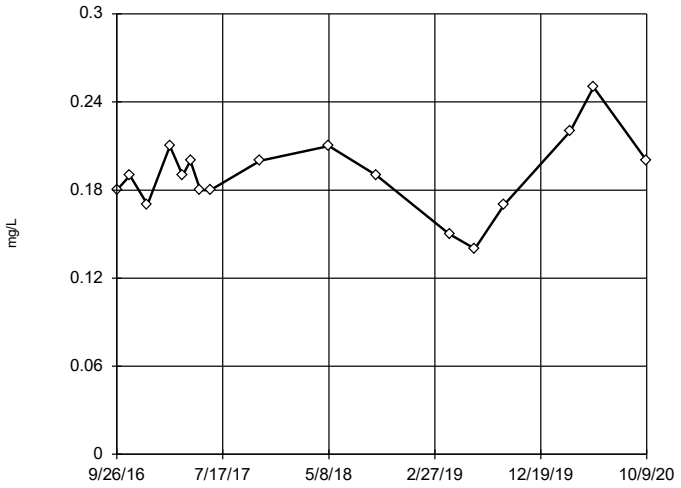
High cutoff = 7.911, low cutoff = -0.0904, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 1/11/2021 3:47 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 17

No outliers found. Tukey's method selected by user.

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

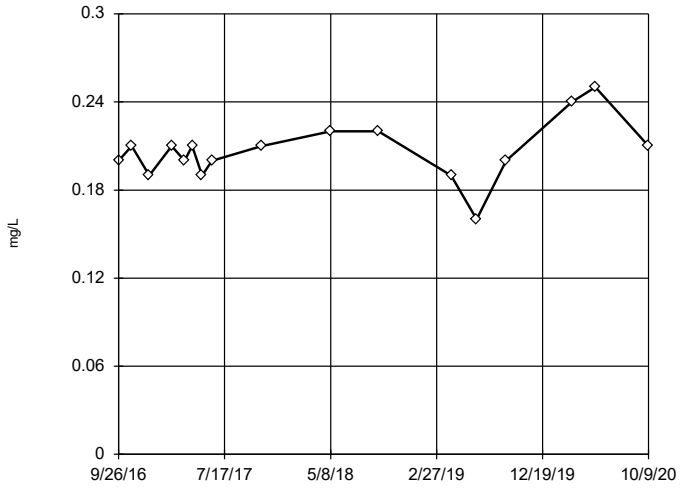
High cutoff = 0.3092, low cutoff = 0.09919, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 17

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

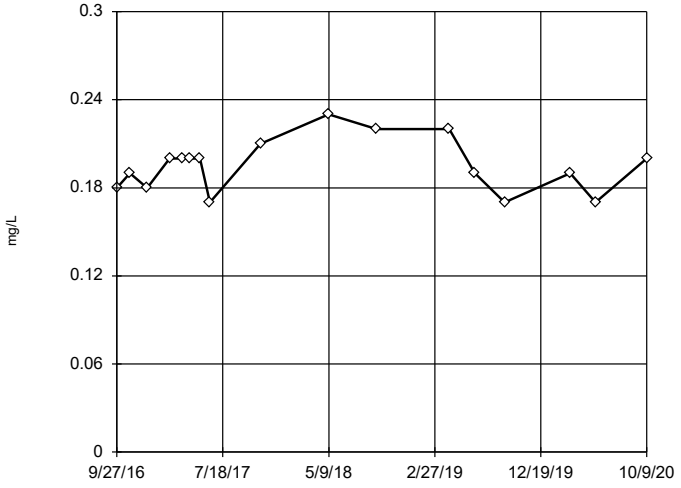
High cutoff = 0.275, low cutoff = 0.135, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 17

No outliers found. Tukey's method selected by user.

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

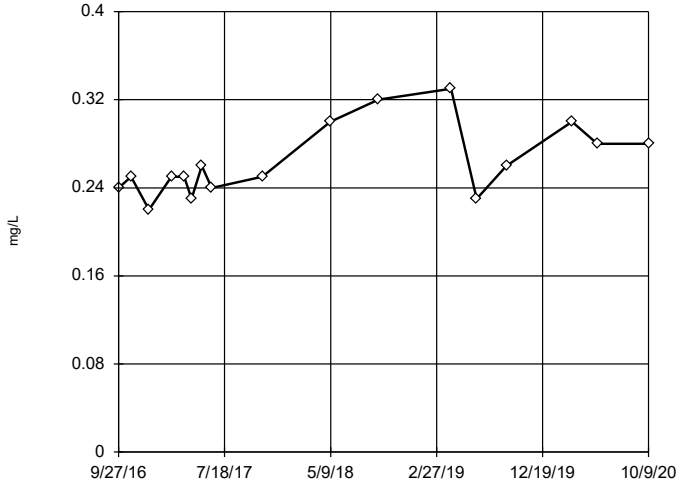
High cutoff = 0.2935, low cutoff = 0.1174, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 17

No outliers found. Tukey's method selected by user.

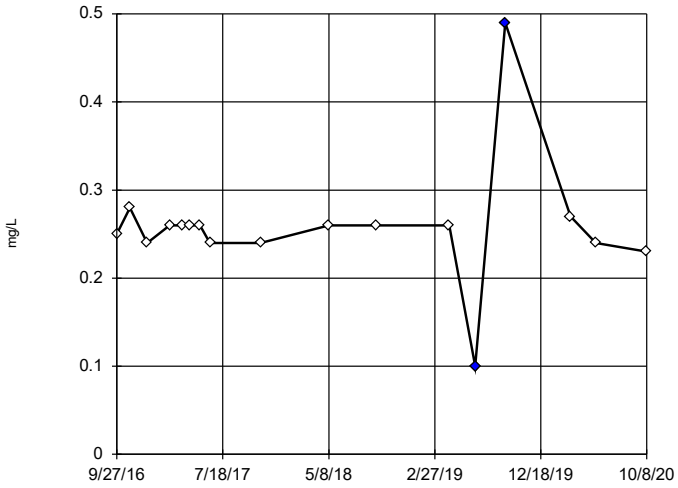
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.5104, low cutoff = 0.1363, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 17

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

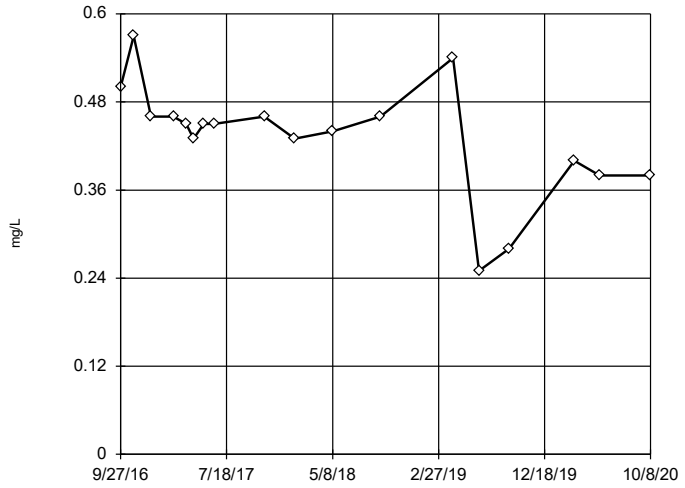
Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.3248, low cutoff = 0.1848, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 1/11/2021 3:47 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606S



n = 18

No outliers found.
Tukey's method selected by user.

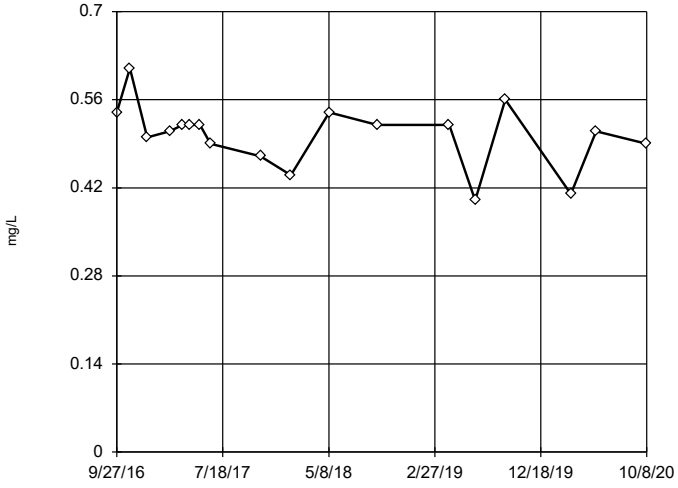
Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.6243, low cutoff = -0.1612, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1607D



n = 18

No outliers found.
Tukey's method selected by user.

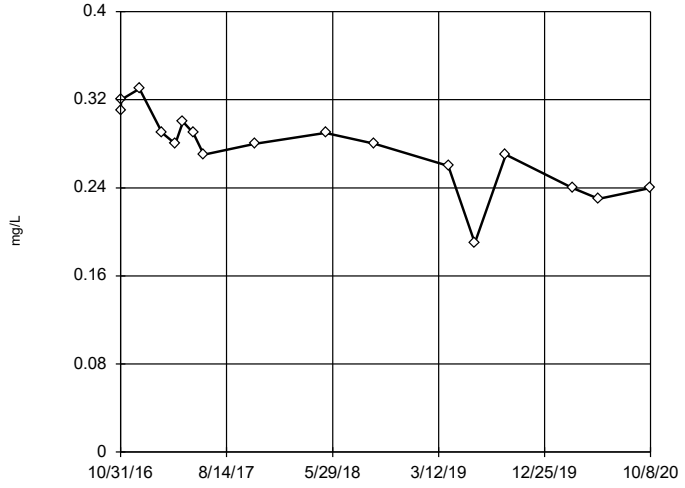
Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.6576, low cutoff = 0.2811, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1607S



n = 17

No outliers found.
Tukey's method selected by user.

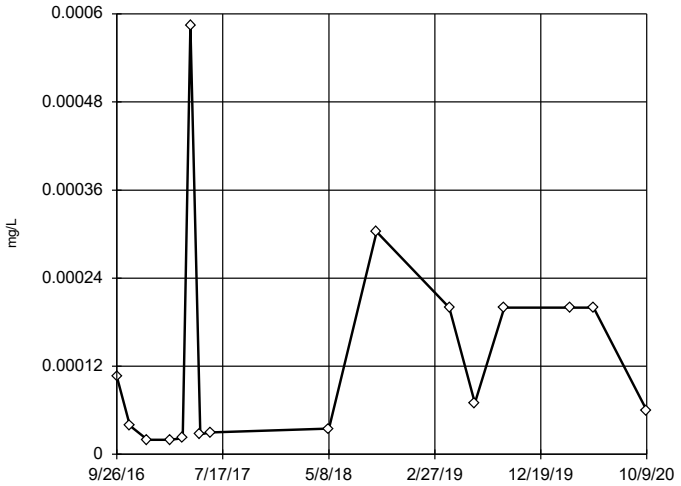
Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.3819, low cutoff = -0.2426, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.06941, low cutoff = 8.2e-8, based on IQR multiplier of 3.

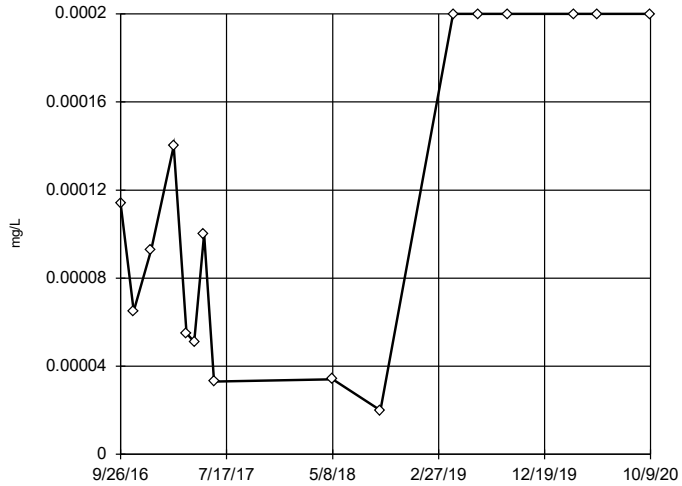
Constituent: Lead, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.001783, low cutoff = -0.00001603, based on IQR multiplier of 3.

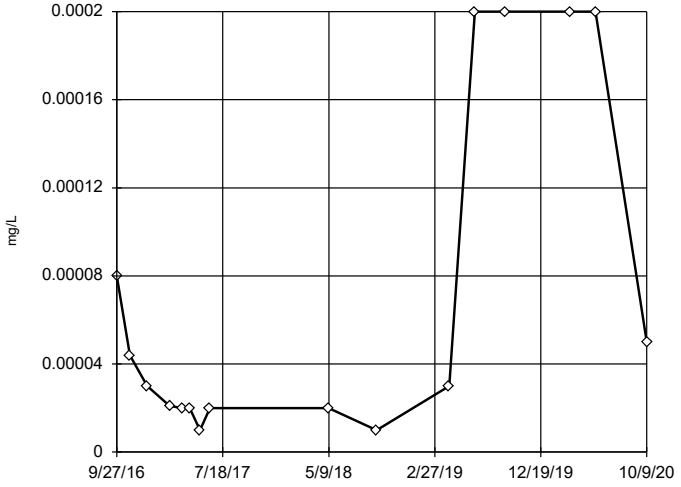
Constituent: Lead, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.032, low cutoff = 7.9e-8, based on IQR multiplier of 3.

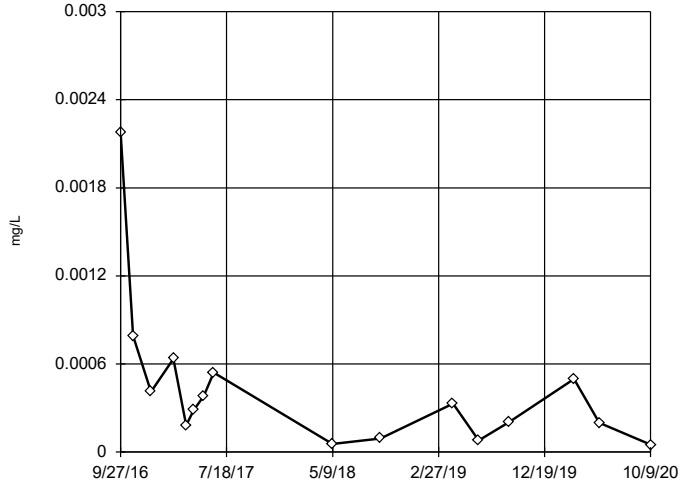
Constituent: Lead, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

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

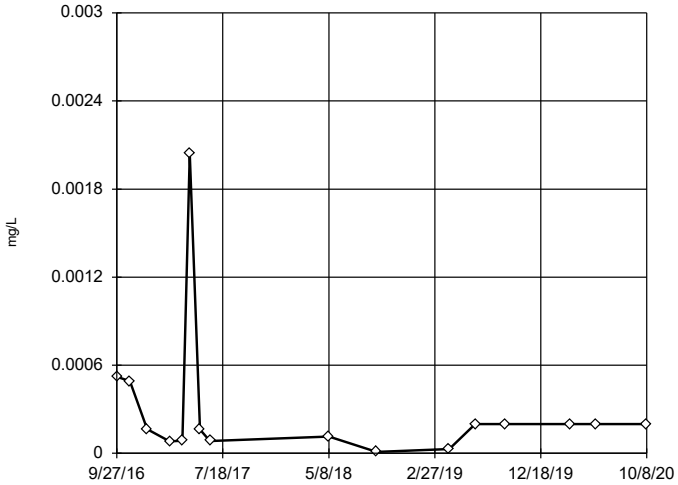
High cutoff = 0.0331, low cutoff = 0.000002032, based on IQR multiplier of 3.

Constituent: Lead, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.002561, low cutoff = 0.000006676, based on IQR multiplier of 3.

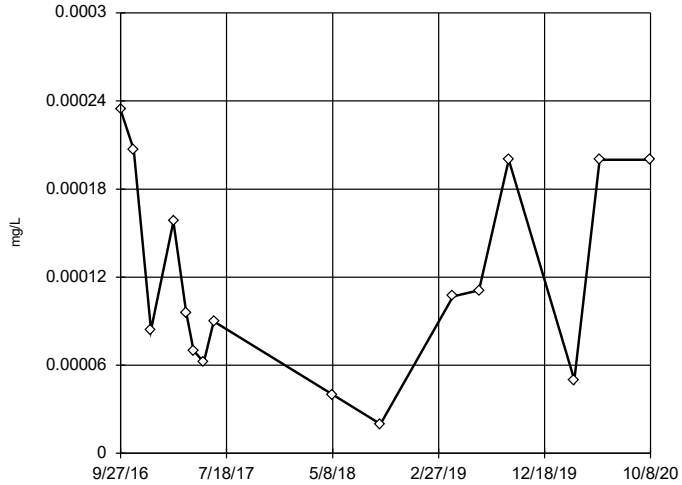
Constituent: Lead, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.001433, low cutoff = -0.000002661, based on IQR multiplier of 3.

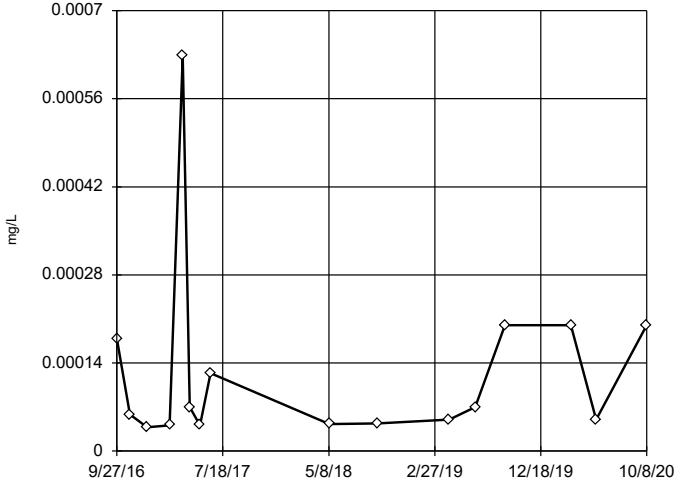
Constituent: Lead, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.01557, low cutoff = 5.3e-7, based on IQR multiplier of 3.

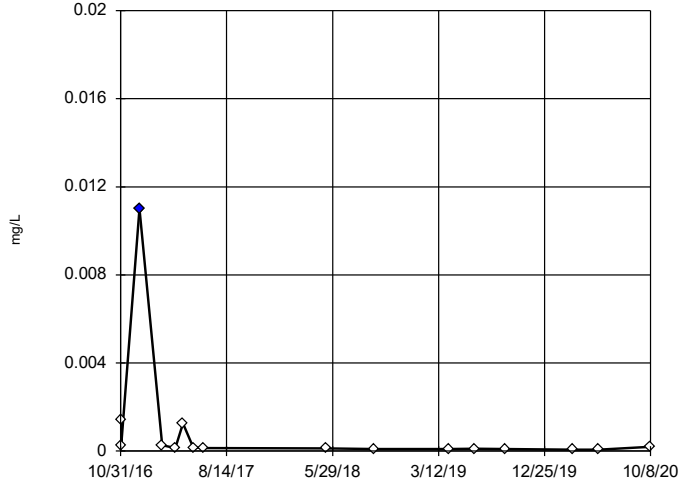
Constituent: Lead, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

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).

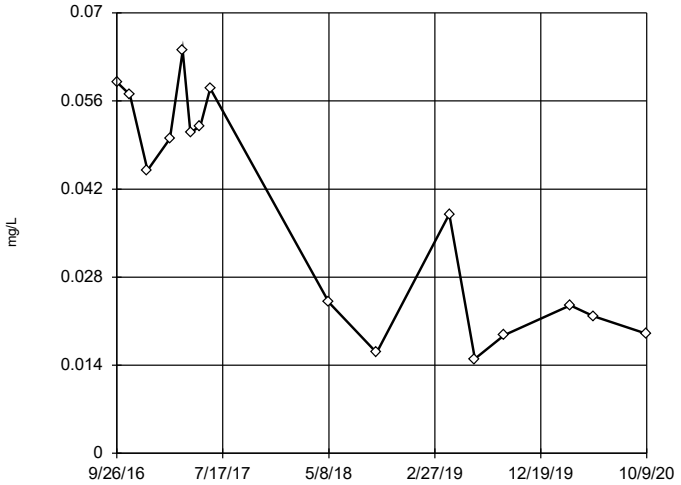
High cutoff = 0.006385, low cutoff = 0.000003824, based on IQR multiplier of 3.

Constituent: Lead, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

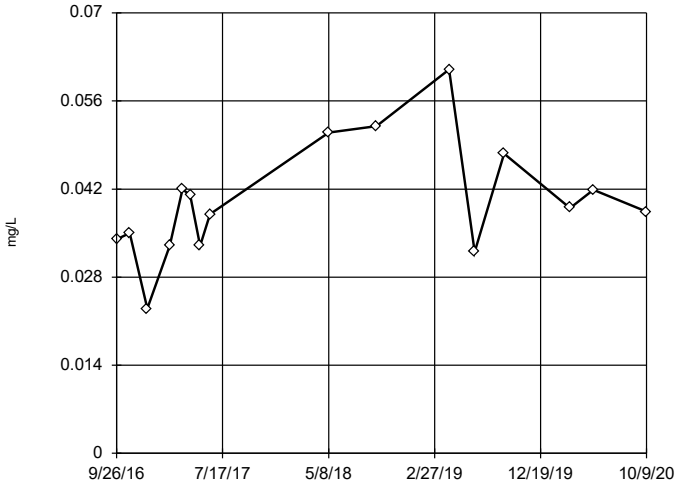
High cutoff = 0.1568, low cutoff = -0.0819, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

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

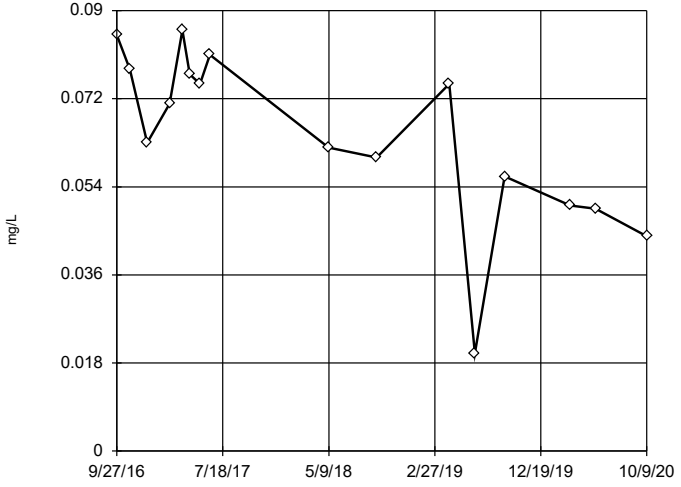
High cutoff = 0.09293, low cutoff = 0.0113, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

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

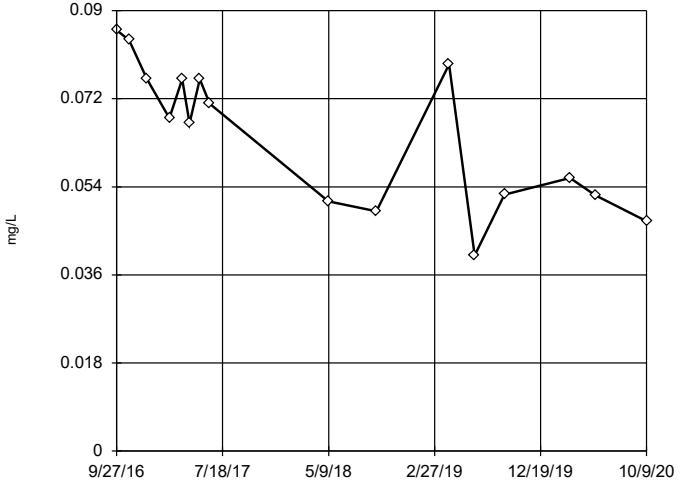
High cutoff = 0.1246, low cutoff = -0.08176, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

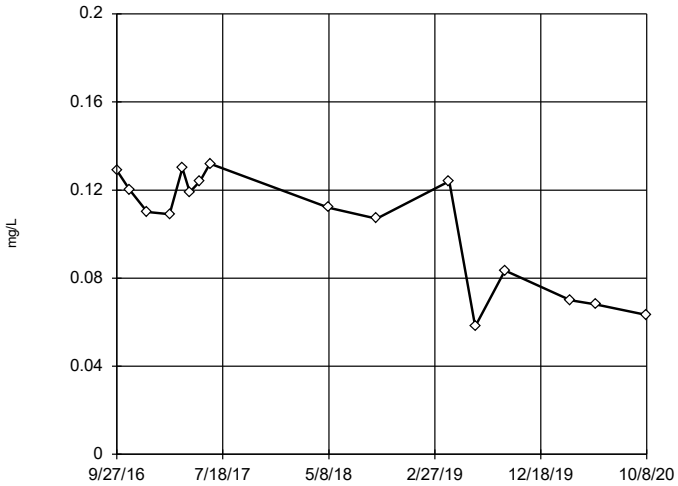
High cutoff = 0.1491, low cutoff = -0.0214, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

Data were x^5 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.1611, low cutoff = -0.1502, based on IQR multiplier of 3.

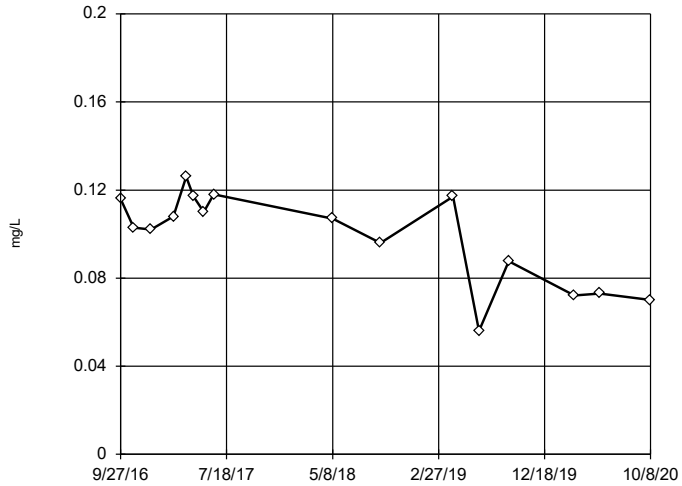
Constituent: Lithium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.1569, low cutoff = -0.1394, based on IQR multiplier of 3.

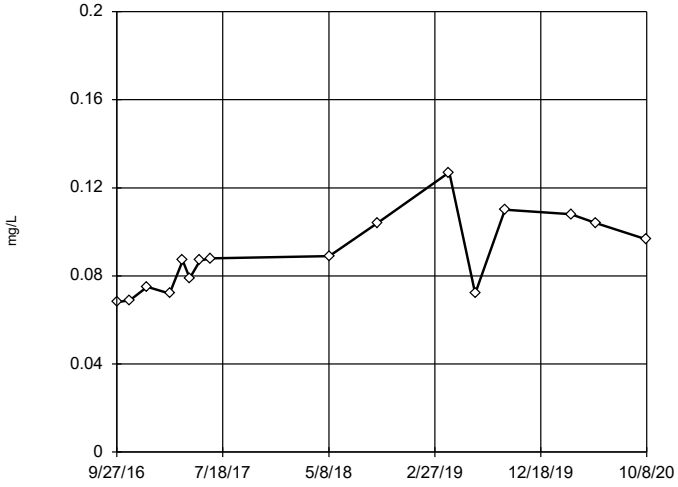
Constituent: Lithium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.2948, low cutoff = 0.02592, based on IQR multiplier of 3.

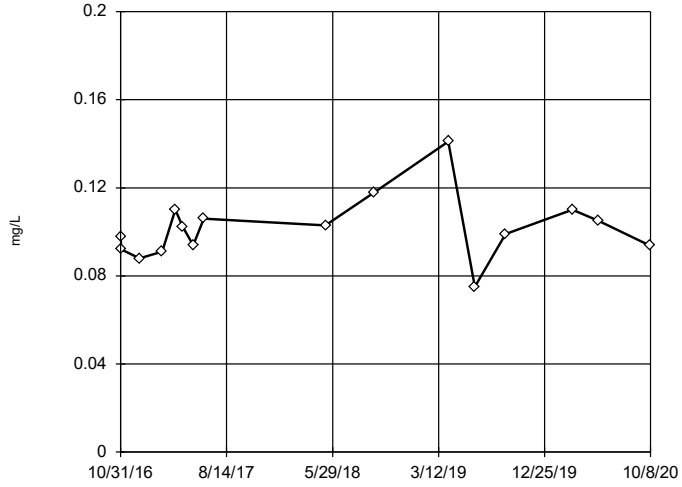
Constituent: Lithium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

No outliers found. Tukey's method selected by user.

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

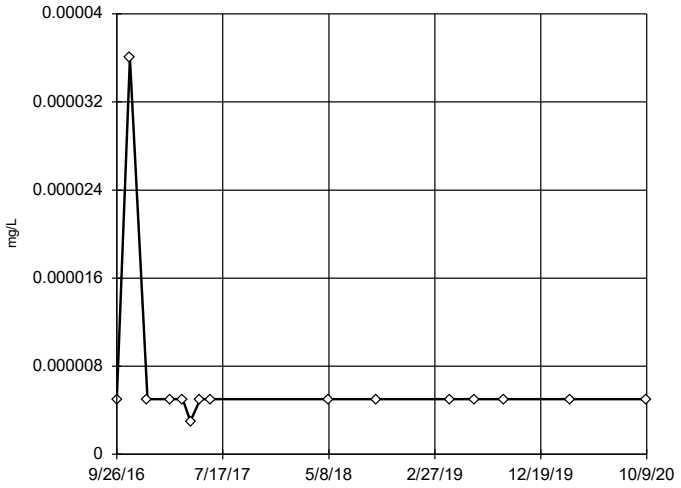
High cutoff = 0.1699, low cutoff = 0.05902, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 15

No outliers found. Tukey's method selected by user.

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

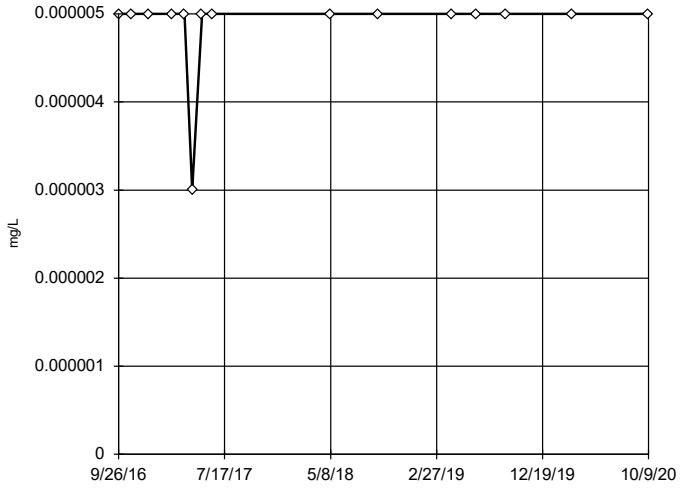
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 15

No outliers found. Tukey's method selected by user.

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

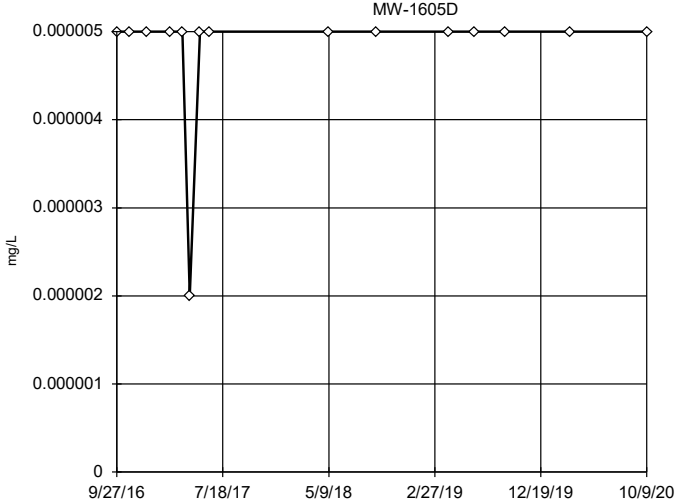
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 15

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

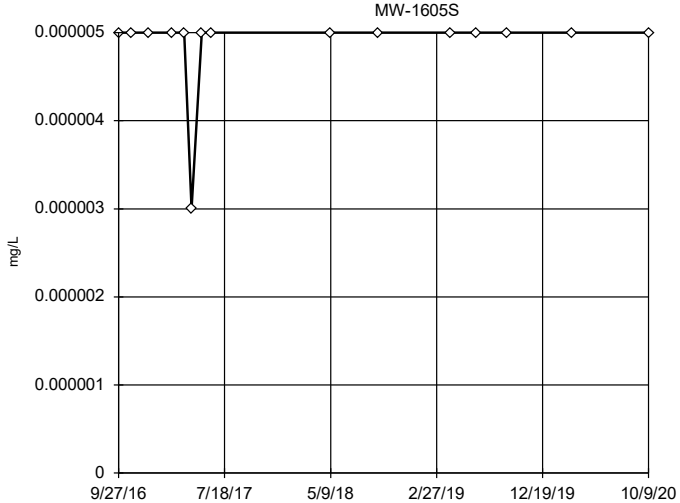
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 15

No outliers found. Tukey's method selected by user.

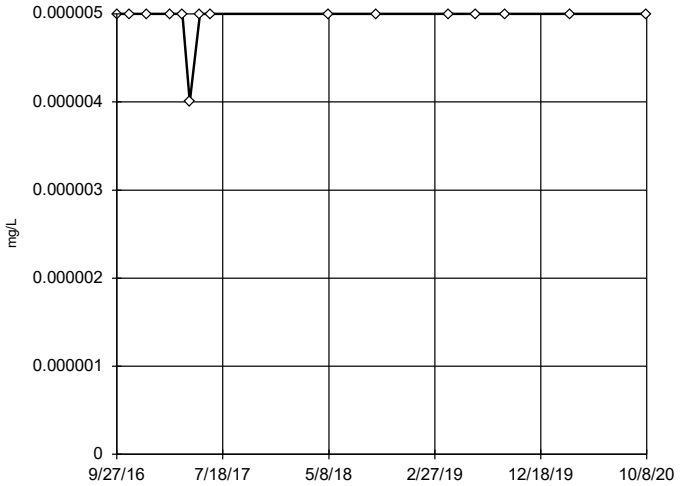
Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 15

No outliers found. Tukey's method selected by user.

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

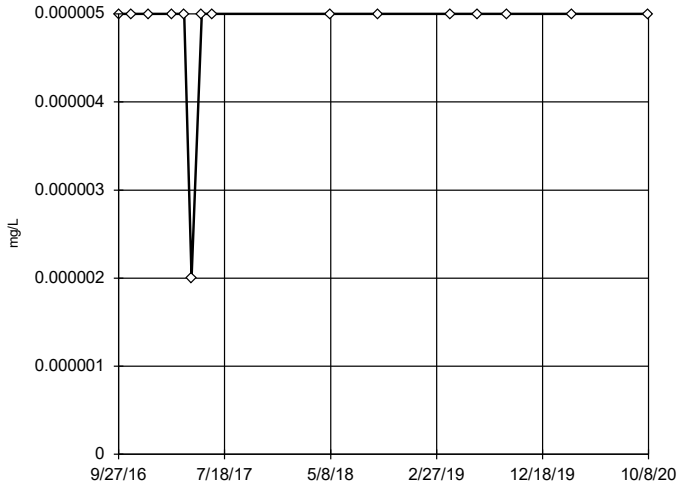
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 15

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

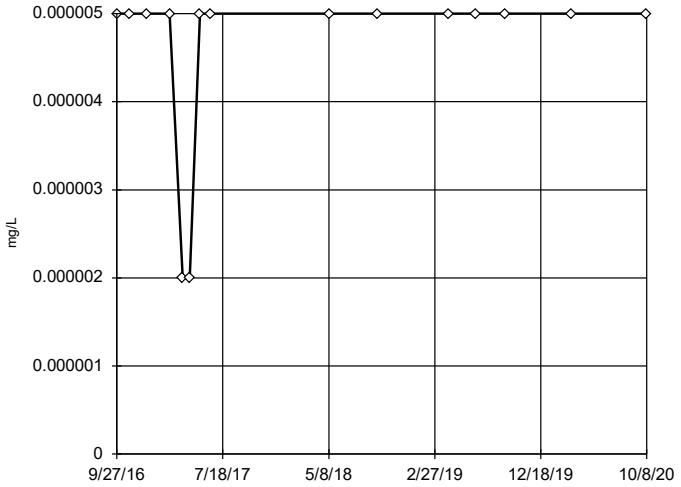
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 15

No outliers found. Tukey's method selected by user.

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

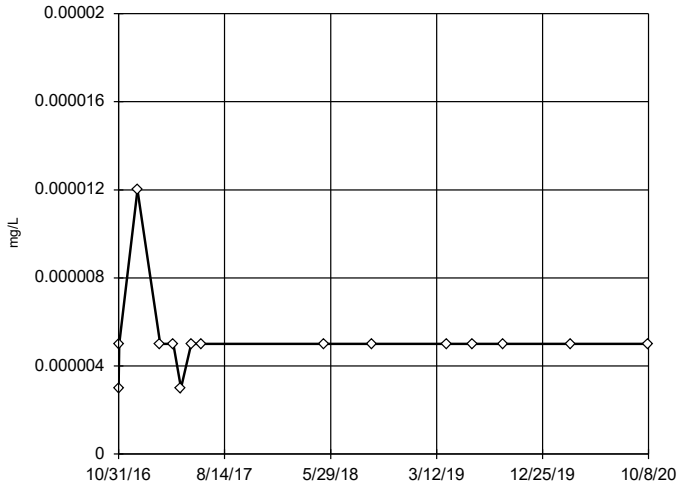
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 15

No outliers found. Tukey's method selected by user.

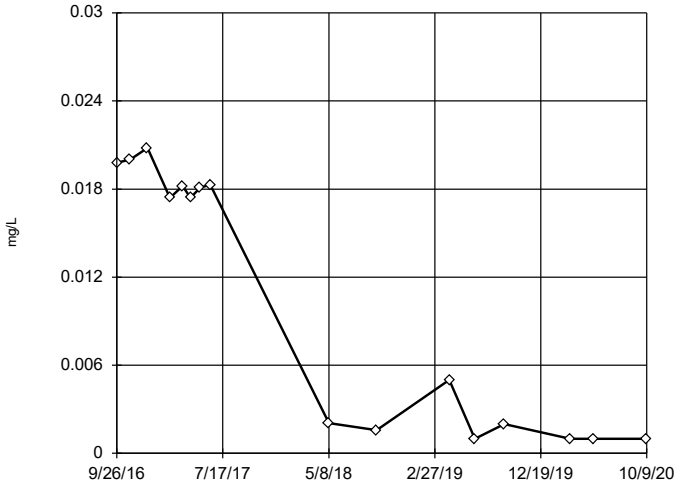
Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

Data were x^5 transformed to achieve best W statistic (graph shown in original units).

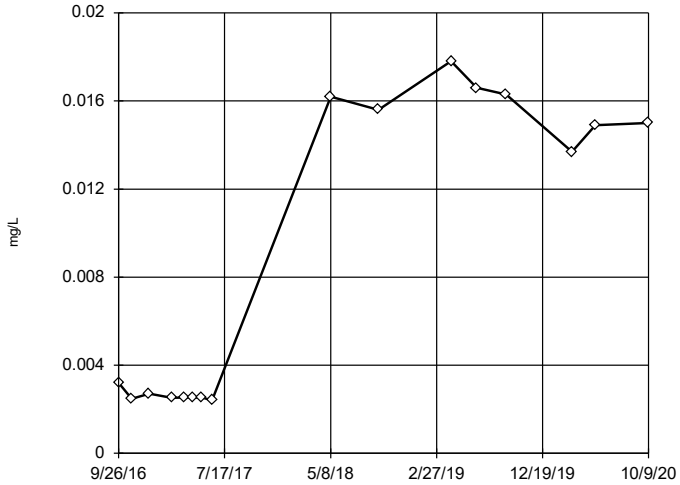
High cutoff = 0.02408, low cutoff = -0.02273, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

Data were x^5 transformed to achieve best W statistic (graph shown in original units).

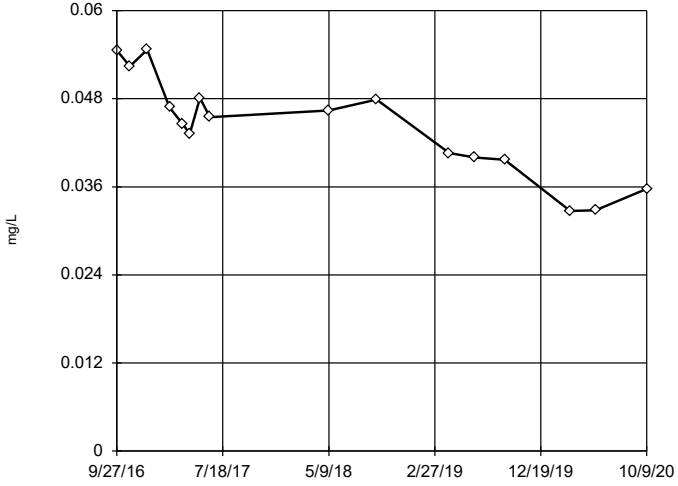
High cutoff = 0.02099, low cutoff = -0.01982, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

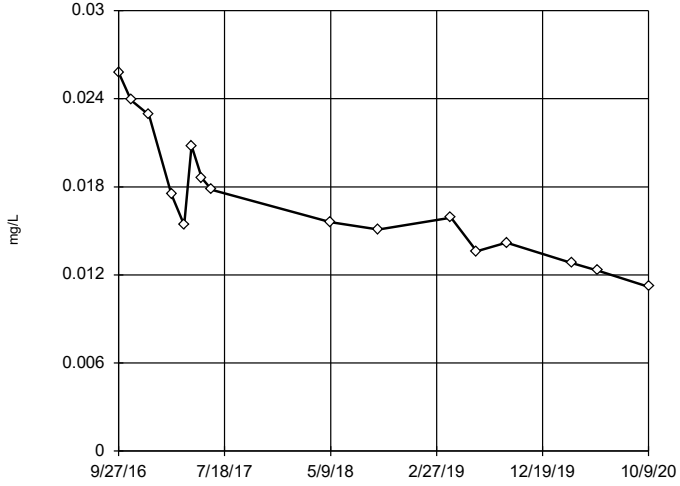
High cutoff = 0.07245, low cutoff = 0.0154, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

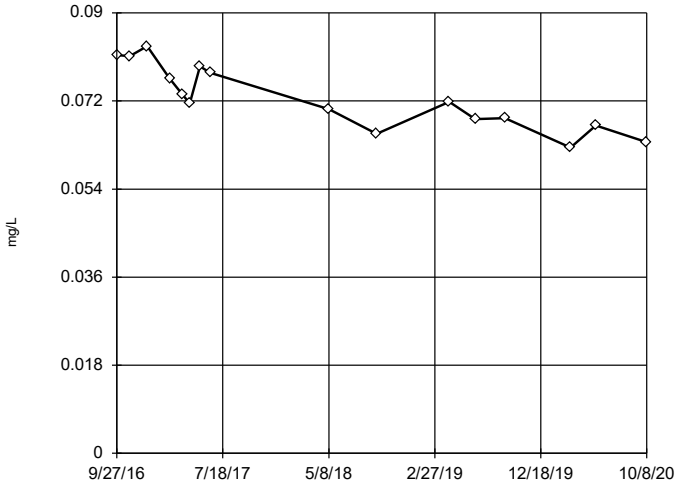
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.05577, low cutoff = 0.004901, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

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

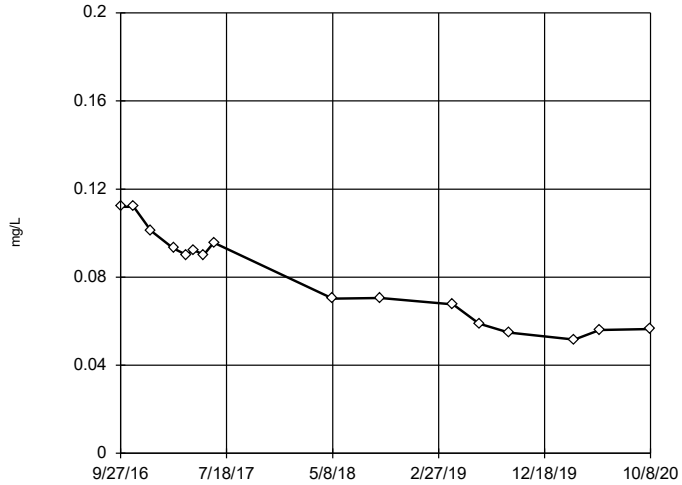
High cutoff = 0.1223, low cutoff = 0.04338, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

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

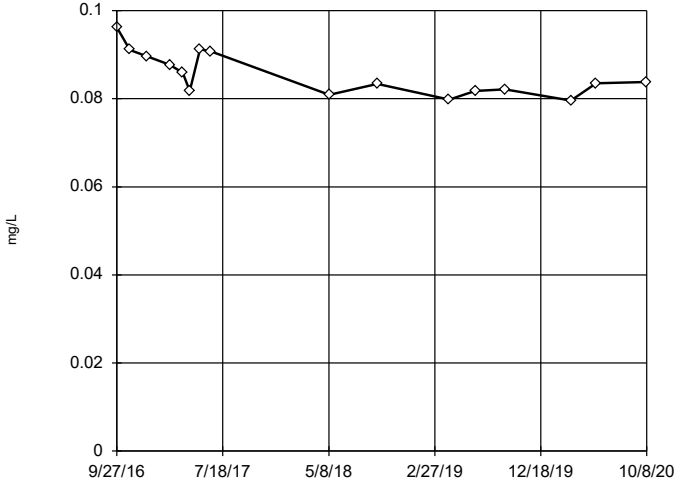
High cutoff = 0.2588, low cutoff = 0.001493, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

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

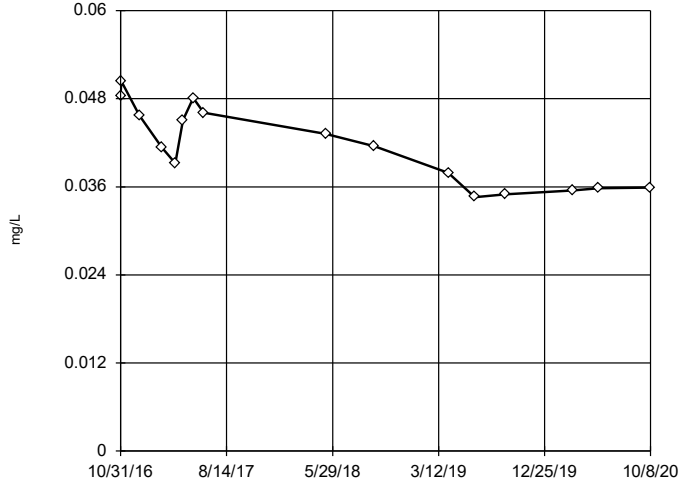
High cutoff = 0.1209, low cutoff = 0.06101, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

No outliers found. Tukey's method selected by user.

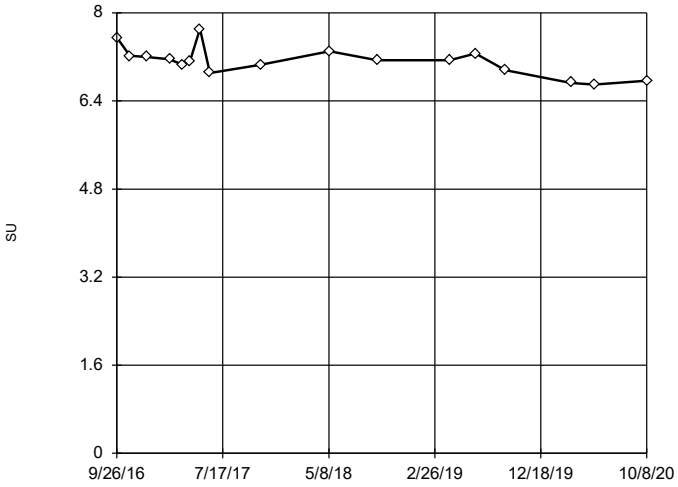
Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.07605, low cutoff = 0.0057, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1601A (bg)



n = 17

No outliers found. Tukey's method selected by user.

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

High cutoff = 8.238, low cutoff = 6.095, based on IQR multiplier of 3.

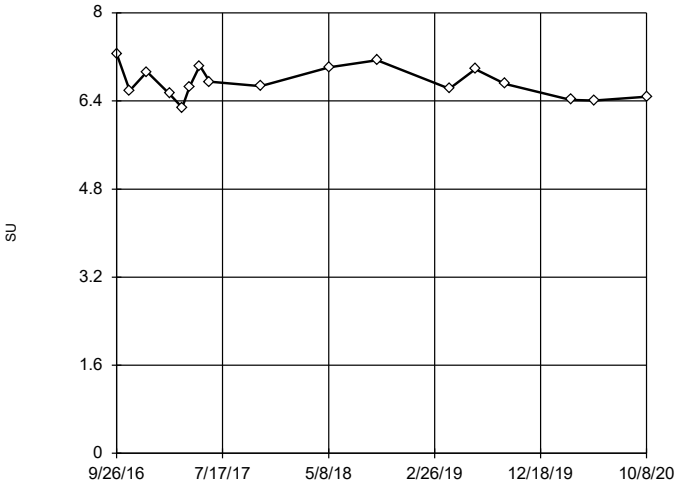
Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 17

No outliers found. Tukey's method selected by user.

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

High cutoff = 8.698, low cutoff = 5.231, based on IQR multiplier of 3.

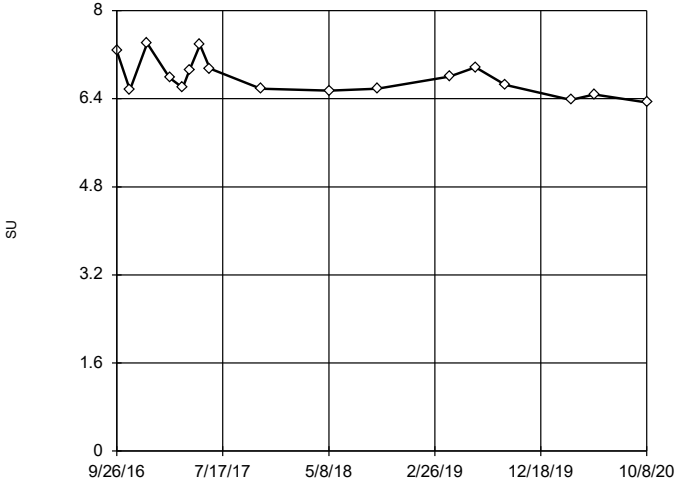
Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603 (bg)



n = 17

No outliers found. Tukey's method selected by user.

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

High cutoff = 8.331, low cutoff = 5.476, based on IQR multiplier of 3.

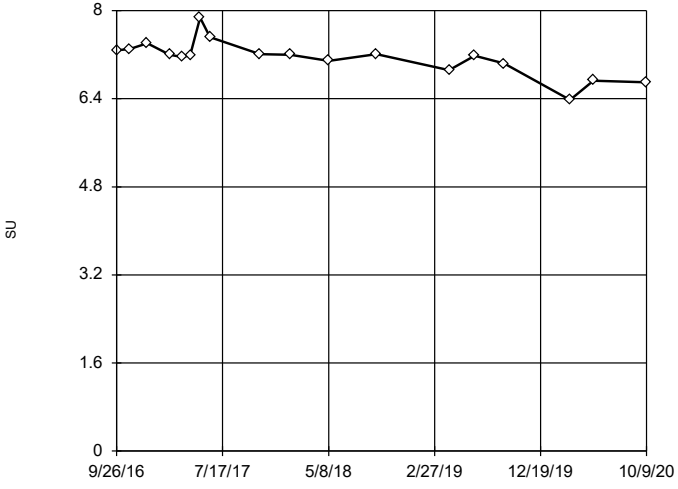
Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604D



n = 18

No outliers found. Tukey's method selected by user.

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

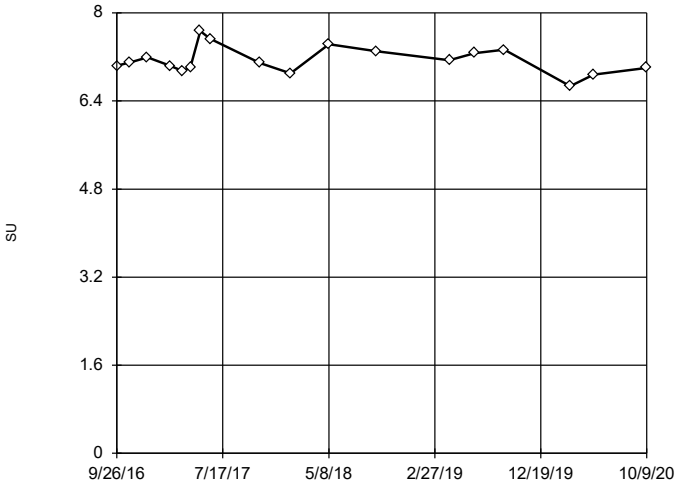
High cutoff = 8.149, low cutoff = 5.955, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604S



n = 18

No outliers found. Tukey's method selected by user.

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

High cutoff = 8.456, low cutoff = 6.029, based on IQR multiplier of 3.

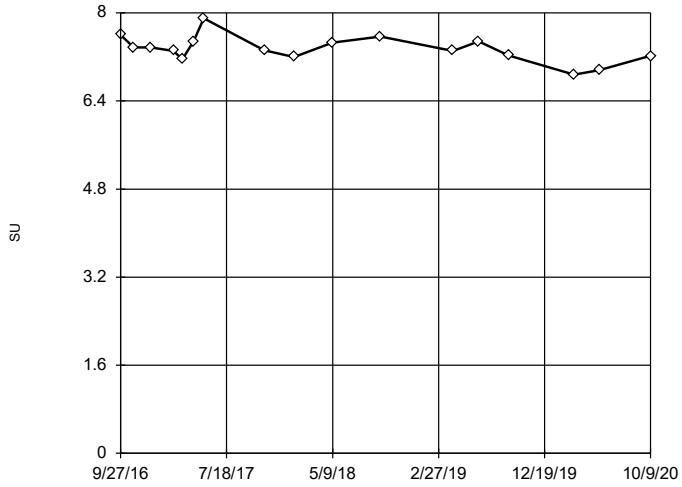
Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 17

No outliers found. Tukey's method selected by user.

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

High cutoff = 8.352, low cutoff = 6.457, based on IQR multiplier of 3.

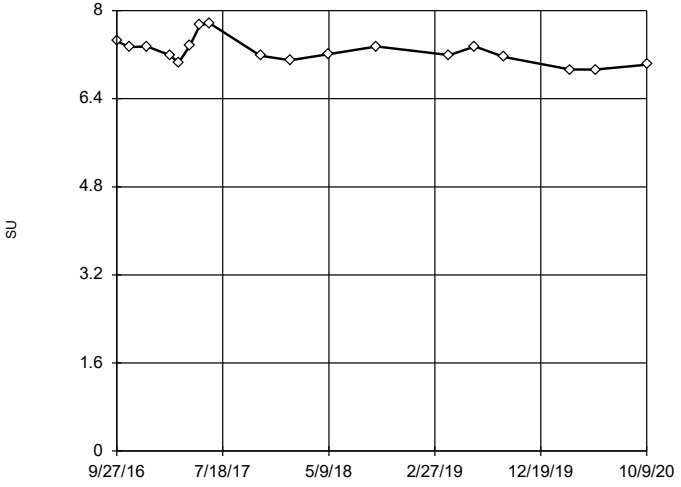
Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 18

No outliers found. Tukey's method selected by user.

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

High cutoff = 8.263, low cutoff = 6.297, based on IQR multiplier of 3.

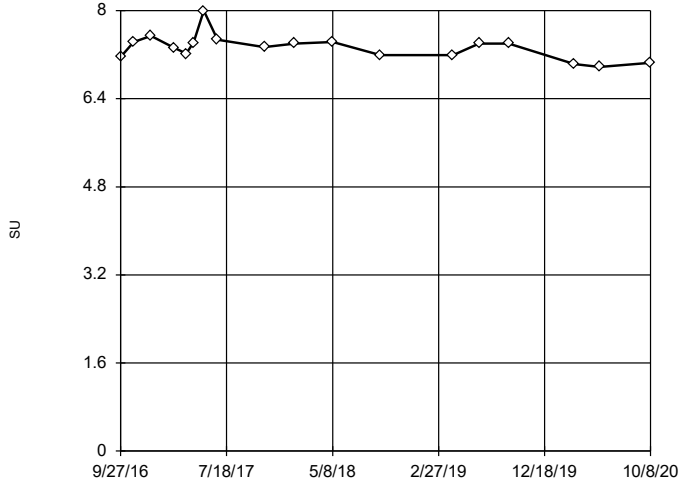
Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606D



n = 18

No outliers found. Tukey's method selected by user.

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

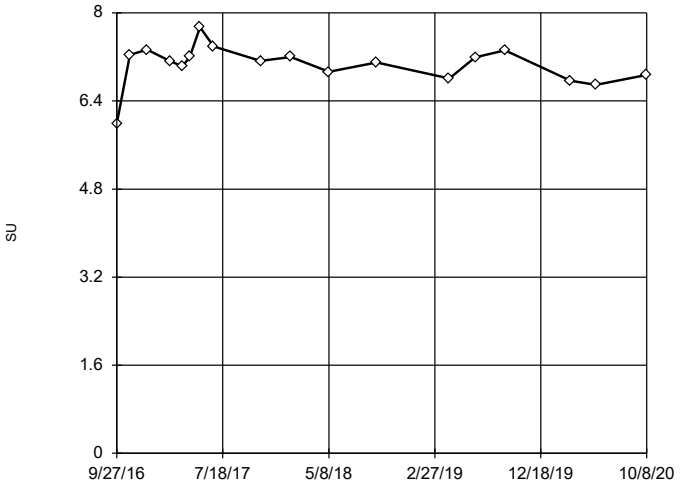
High cutoff = 8.251, low cutoff = 6.461, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606S



n = 18

No outliers found. Tukey's method selected by user.

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

High cutoff = 8.128, low cutoff = -5.774, based on IQR multiplier of 3.

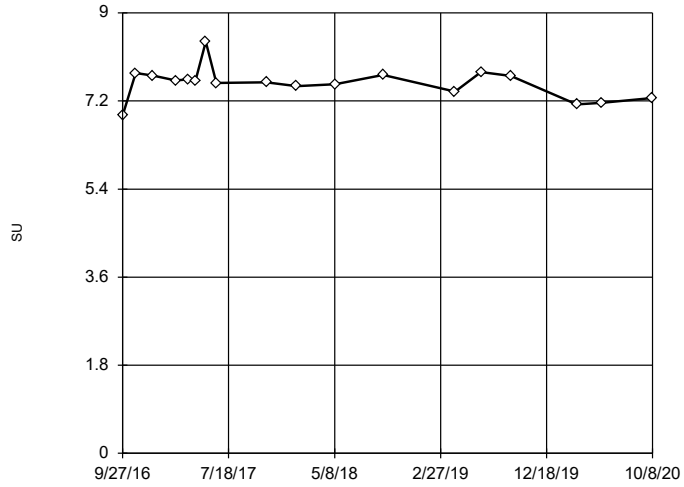
Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 18

No outliers found. Tukey's method selected by user.

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

High cutoff = 9.062, low cutoff = 6.244, based on IQR multiplier of 3.

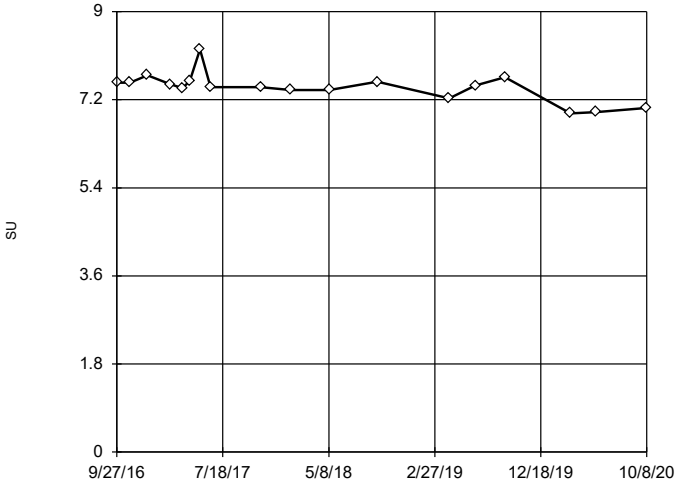
Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 18

No outliers found. Tukey's method selected by user.

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

High cutoff = 8.413, low cutoff = 6.586, based on IQR multiplier of 3.

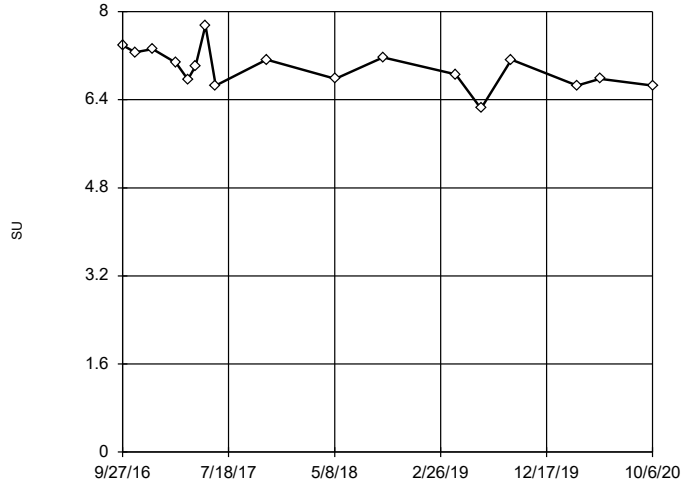
Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 17

No outliers found. Tukey's method selected by user.

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

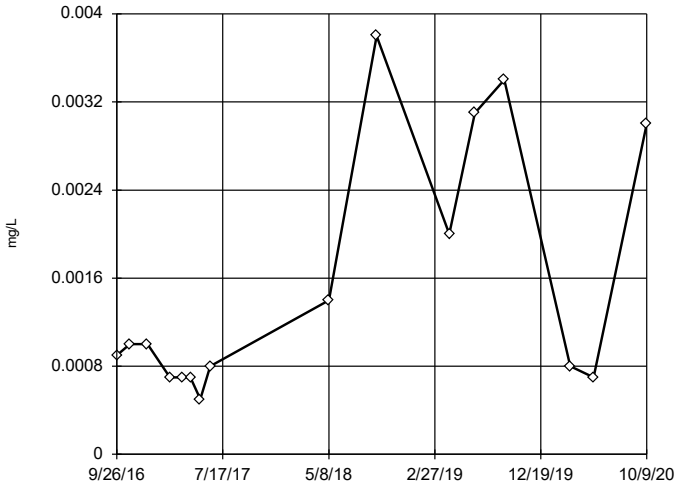
High cutoff = 8.823, low cutoff = 5.322, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.105, low cutoff = 0.00001634, based on IQR multiplier of 3.

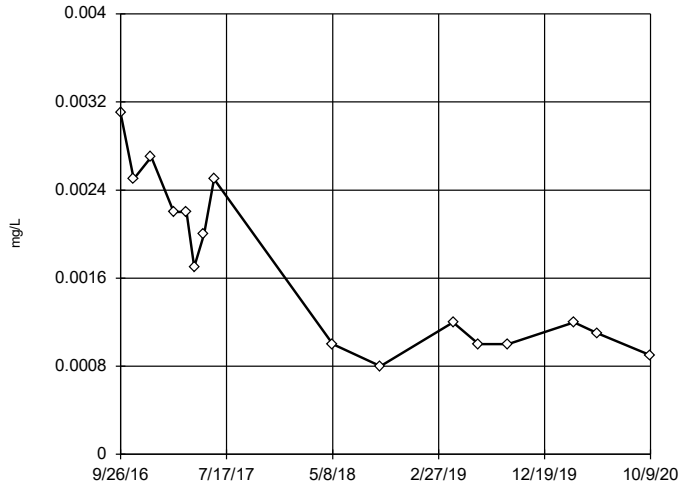
Constituent: Selenium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.03025, low cutoff = 0.00007753, based on IQR multiplier of 3.

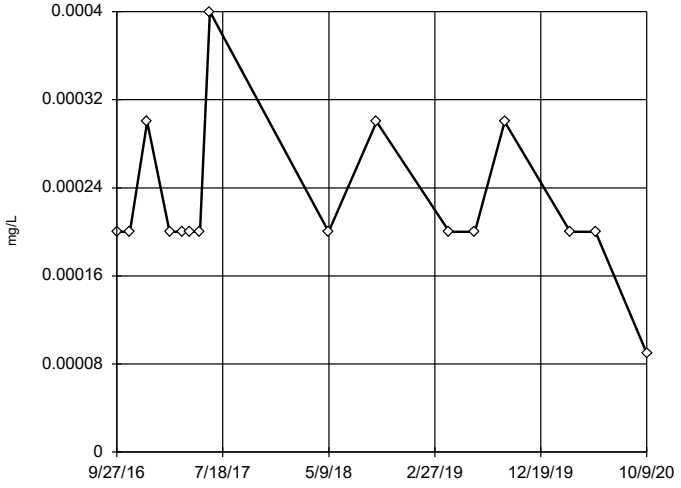
Constituent: Selenium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.0004202, low cutoff = 0.00008788, based on IQR multiplier of 3.

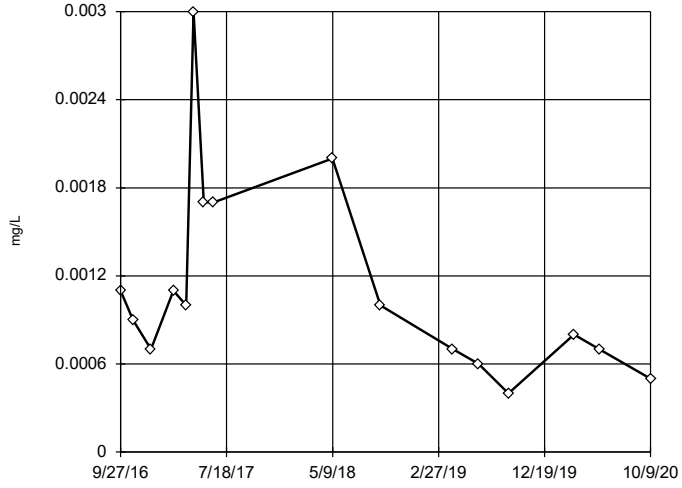
Constituent: Selenium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

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

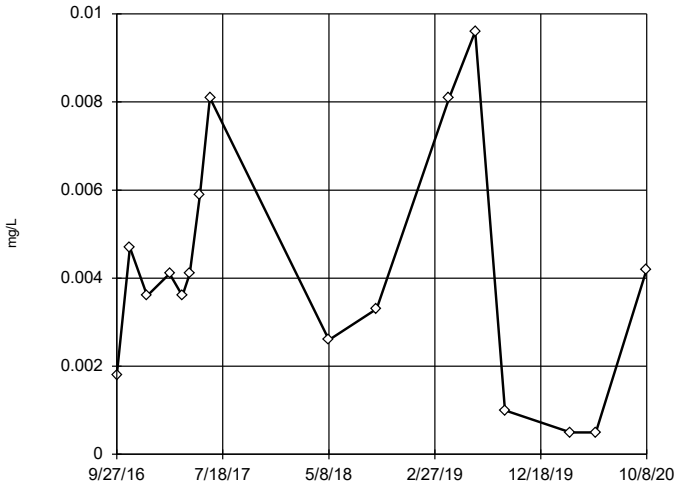
High cutoff = 0.0102, low cutoff = 0.00009389, based on IQR multiplier of 3.

Constituent: Selenium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.02268, low cutoff = -0.0009746, based on IQR multiplier of 3.

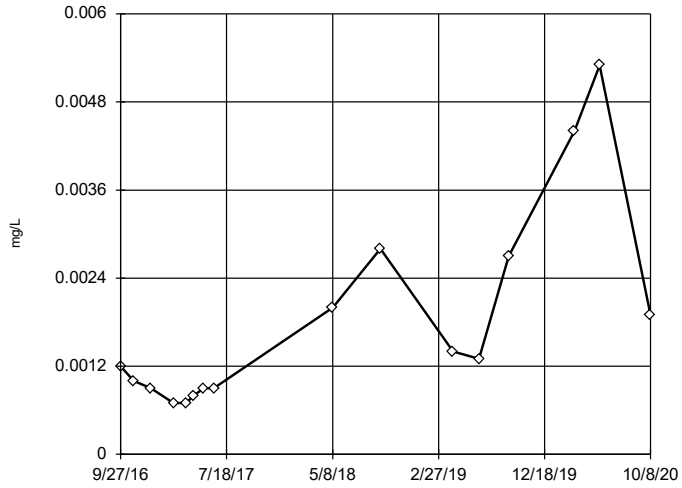
Constituent: Selenium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.04, low cutoff = 0.00005229, based on IQR multiplier of 3.

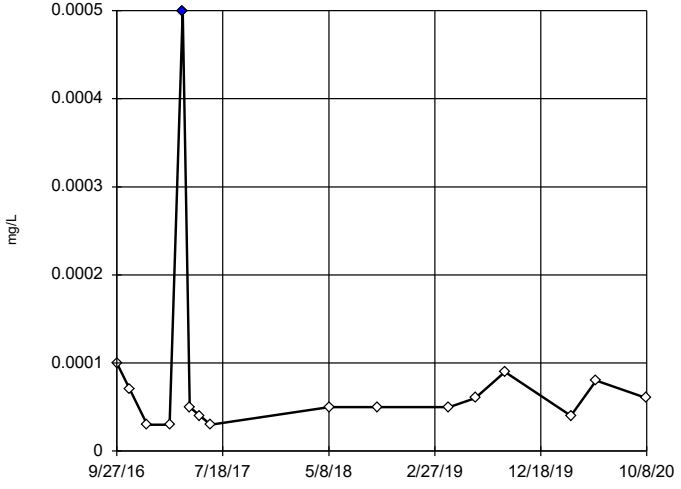
Constituent: Selenium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

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 = 0.00049, low cutoff = 0.000006109, based on IQR multiplier of 3.

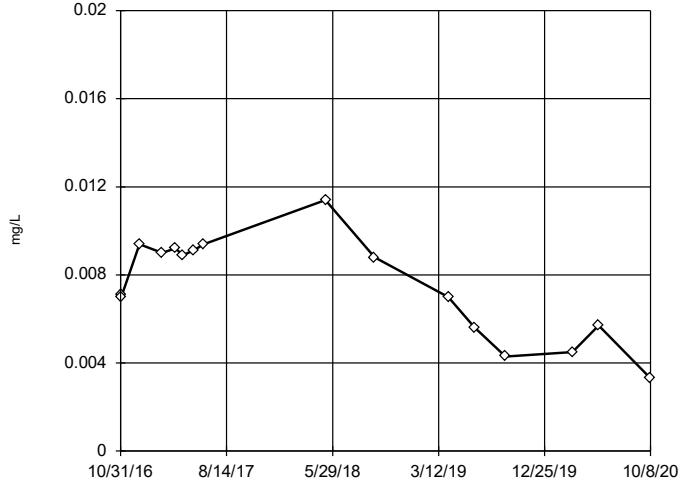
Constituent: Selenium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

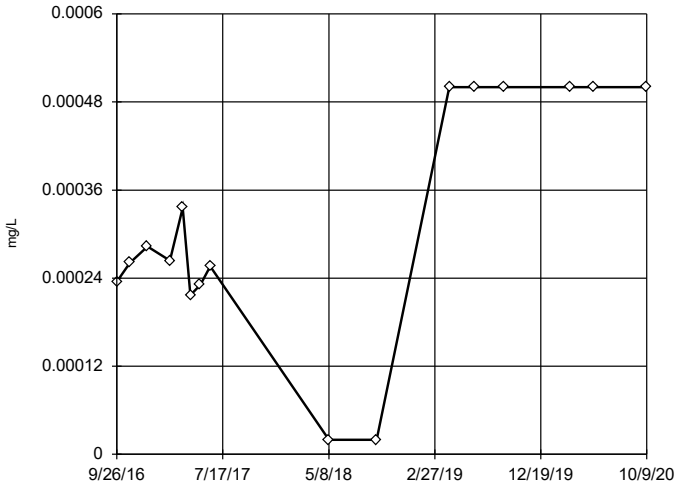
High cutoff = 0.01965, low cutoff = -0.00485, based on IQR multiplier of 3.

Constituent: Selenium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1604D



n = 16

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

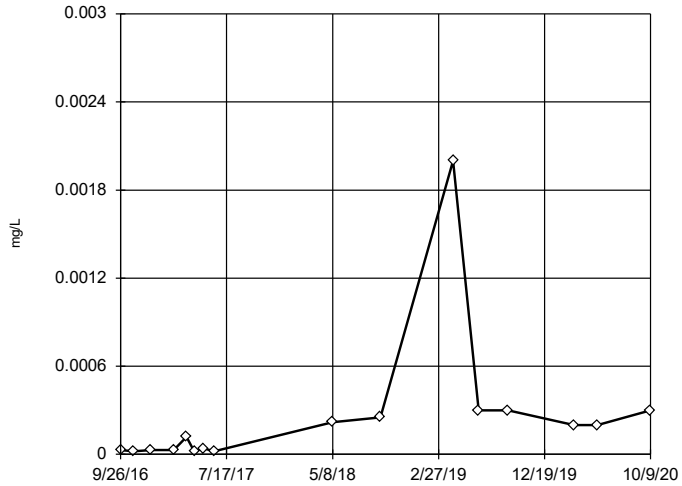
High cutoff = 0.001301, low cutoff = -0.000568, based on IQR multiplier of 3.

Constituent: Thallium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604S



n = 16

No outliers found. Tukey's method selected by user.

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

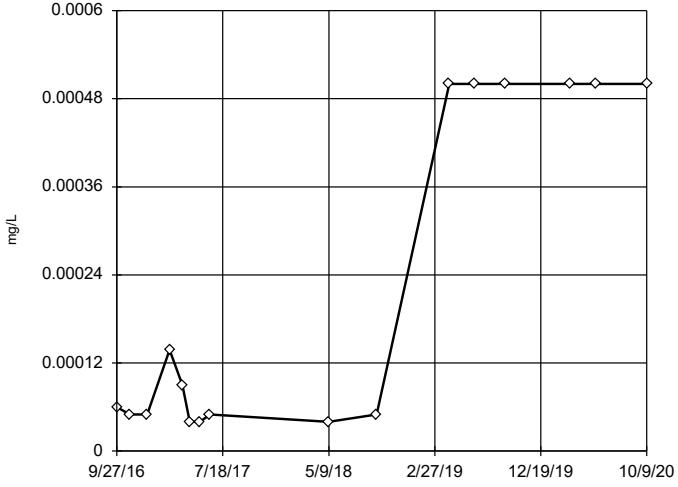
High cutoff = 0.21, low cutoff = 3.9e-8, based on IQR multiplier of 3.

Constituent: Thallium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605D



n = 16

No outliers found. Tukey's method selected by user.

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

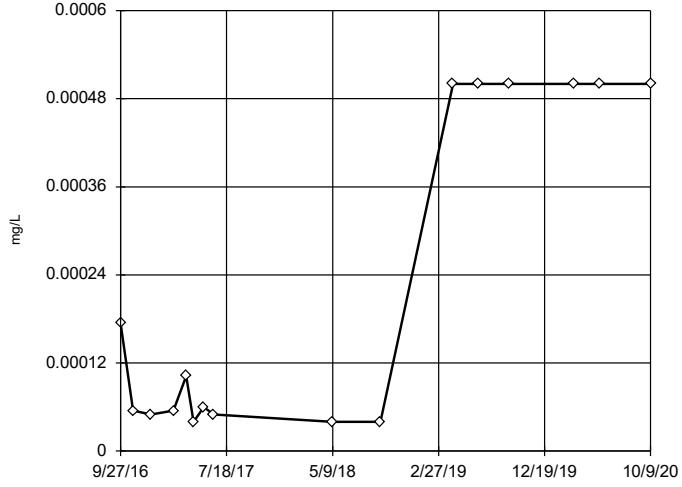
High cutoff = 0.5, low cutoff = 5.0e-8, based on IQR multiplier of 3.

Constituent: Thallium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605S



n = 16

No outliers found. Tukey's method selected by user.

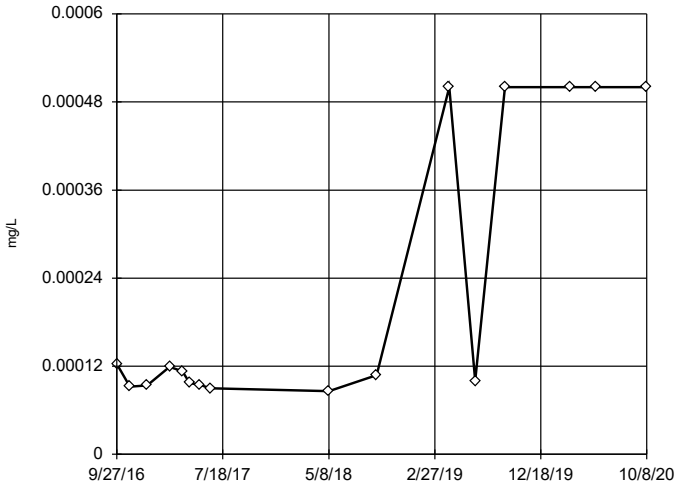
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.5, low cutoff = 5.0e-8, based on IQR multiplier of 3.

Constituent: Thallium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening

MW-1606D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.07406, low cutoff = 6.4e-7, based on IQR multiplier of 3.

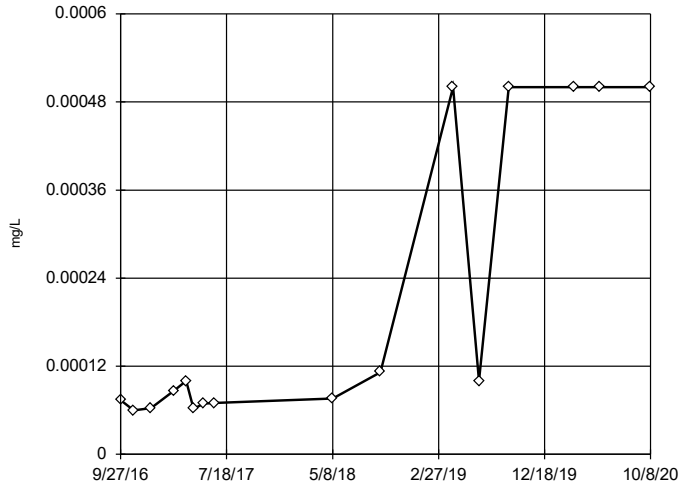
Constituent: Thallium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1606S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.1862, low cutoff = 1.9e-7, based on IQR multiplier of 3.

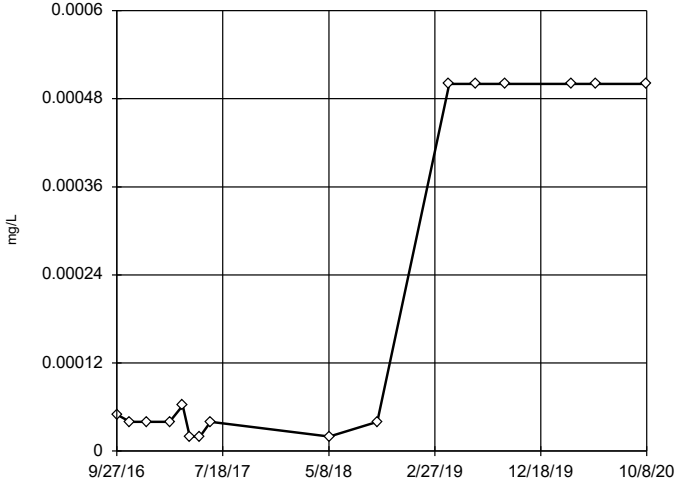
Constituent: Thallium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607D



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.9766, low cutoff = 2.0e-8, based on IQR multiplier of 3.

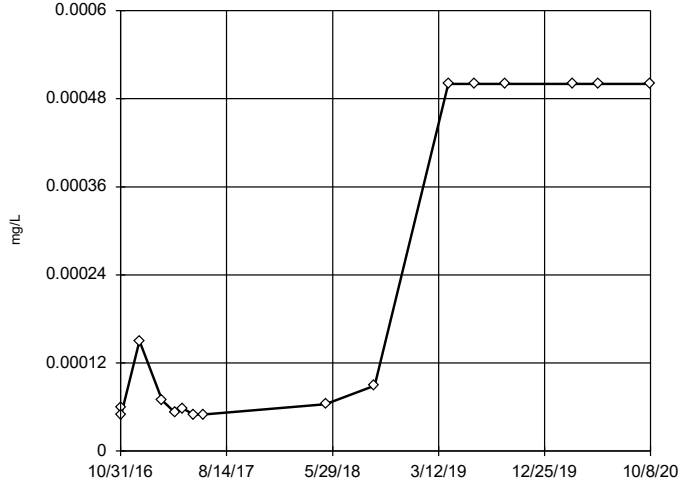
Constituent: Thallium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607S



n = 16

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.3773, low cutoff = 7.3e-8, based on IQR multiplier of 3.

Constituent: Thallium, total Analysis Run 1/11/2021 3:48 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

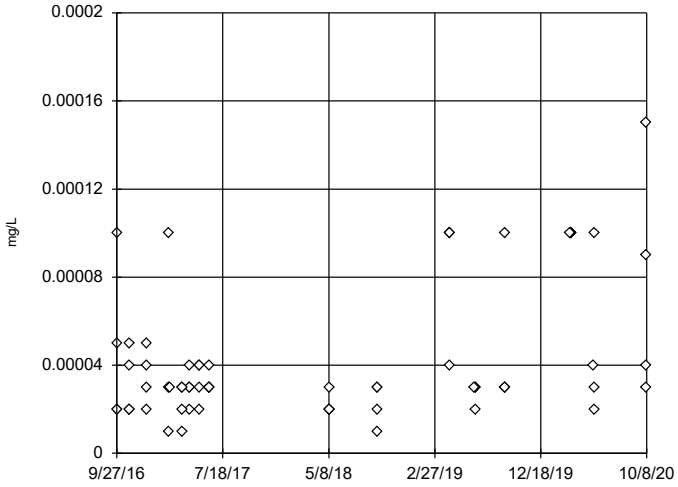
Tukey's Outlier Analysis - Upgradient Wells - All Results (No Significant)

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/12/2021, 1:14 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.00004406	0.00003186	ln(x)	ShapiroFrancia
Arsenic, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0004619	0.0001313	ln(x)	ShapiroFrancia
Barium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.03771	0.01128	ln(x)	ShapiroFrancia
Beryllium, total (mg/L)	MW-1601A,MW-1602,..	n/a	n/a	n/a w/combined bg	NP	NaN	56	0.00008937	0.00002887	unknown	ShapiroFrancia
Boron, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	60	0.2288	0.1476	ln(x)	ShapiroFrancia
Cadmium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.00001534	0.000007503	ln(x)	ShapiroFrancia
Calcium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	60	122.9	36.43	ln(x)	ShapiroFrancia
Chloride, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	60	18.54	16.12	ln(x)	ShapiroFrancia
Chromium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0004183	0.0004798	ln(x)	ShapiroFrancia
Cobalt, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0001595	0.0002023	ln(x)	ShapiroFrancia
Combined Radium 226 + 228 (pCi/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.782	0.6318	x^(1/3)	ShapiroFrancia
Fluoride, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	68	0.1737	0.05894	x^2	ShapiroFrancia
Lead, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0001459	0.0001499	ln(x)	ShapiroFrancia
Lithium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.01101	0.007003	sqrt(x)	ShapiroFrancia
Mercury, total (mg/L)	MW-1601A,MW-1602,..	n/a	n/a	n/a w/combined bg	NP	NaN	60	0.000004833	6.4e-7	unknown	ShapiroFrancia
Molybdenum, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.001161	0.0006869	x^(1/3)	ShapiroFrancia
Selenium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0007531	0.0007212	x^(1/3)	ShapiroFrancia
Sulfate, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	60	249.3	134.3	x^(1/3)	ShapiroFrancia
Thallium, total (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	64	0.0002163	0.0002297	ln(x)	ShapiroFrancia
Total Dissolved Solids [TDS] (mg/L)	MW-1601A,MW-1602,..	No	n/a	n/a w/combined bg	NP	NaN	60	610.2	180.6	ln(x)	ShapiroFrancia

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.0005, low cutoff = 0.000001789, based on IQR multiplier of 3.

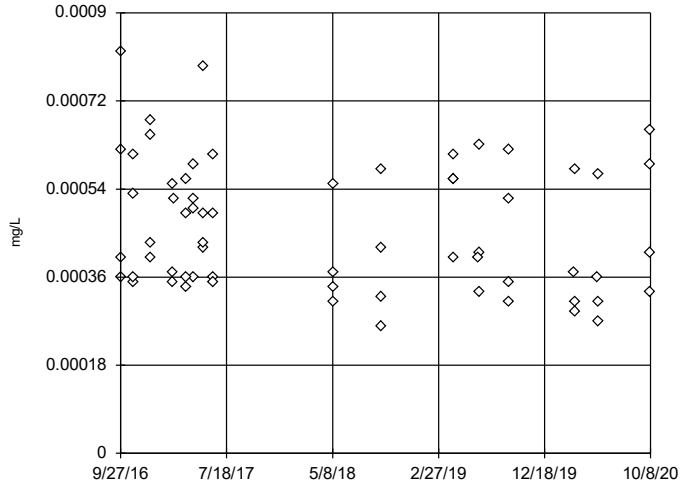
Constituent: Antimony, total Analysis Run 1/12/2021 1:13 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.002278, low cutoff = 0.00008803, based on IQR multiplier of 3.

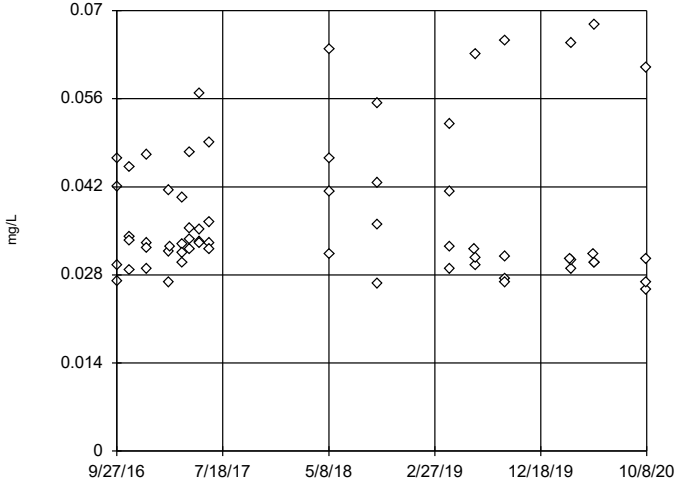
Constituent: Arsenic, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.1162, low cutoff = 0.01099, based on IQR multiplier of 3.

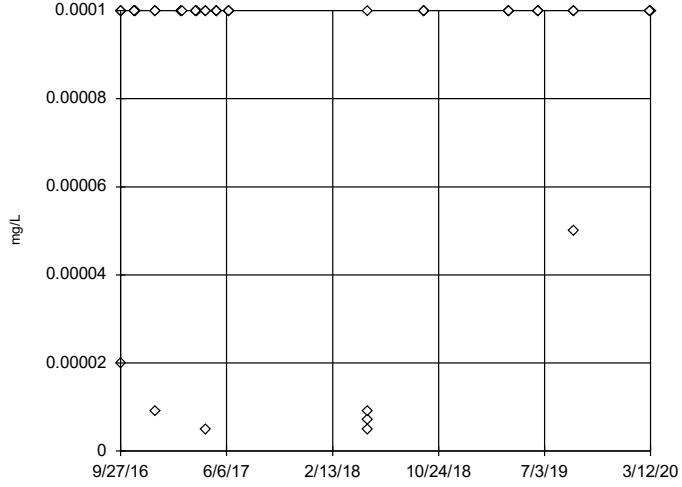
Constituent: Barium, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 56

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

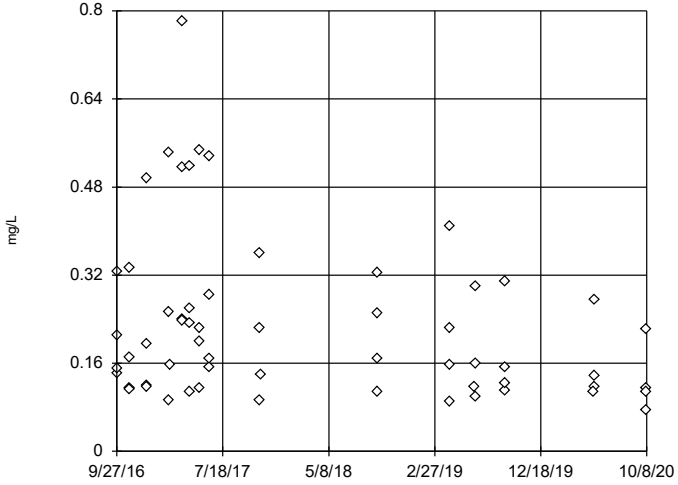
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 60

No outliers found. Tukey's method selected by user.

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

High cutoff = 3.836, low cutoff = 0.008539, based on IQR multiplier of 3.

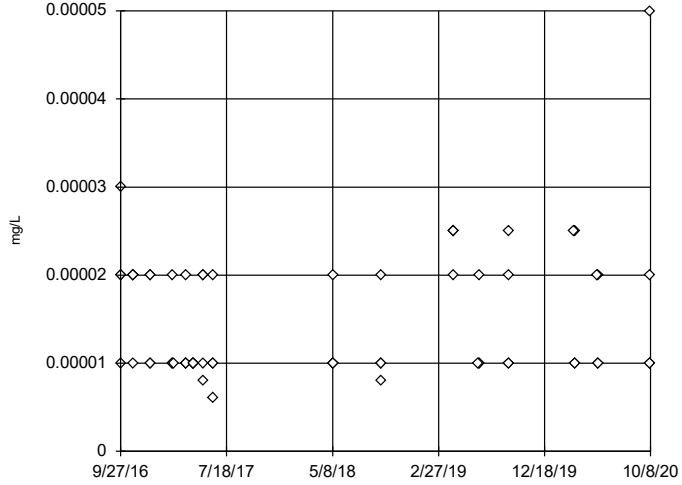
Constituent: Boron, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.00016, low cutoff = 0.00000125, based on IQR multiplier of 3.

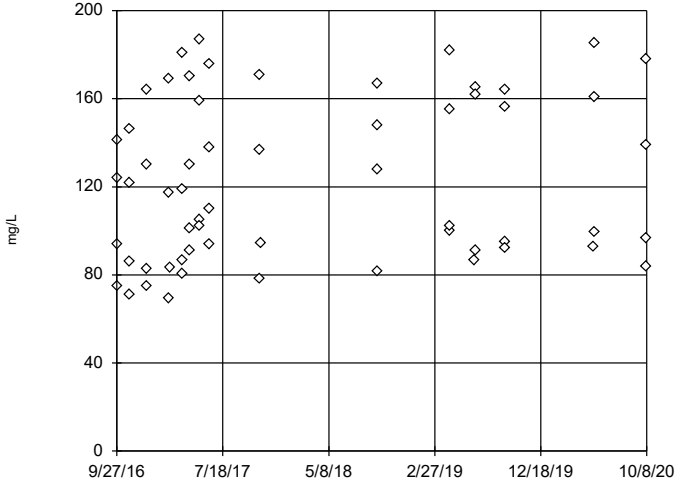
Constituent: Cadmium, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 60

No outliers found. Tukey's method selected by user.

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

High cutoff = 852.7, low cutoff = 17.19, based on IQR multiplier of 3.

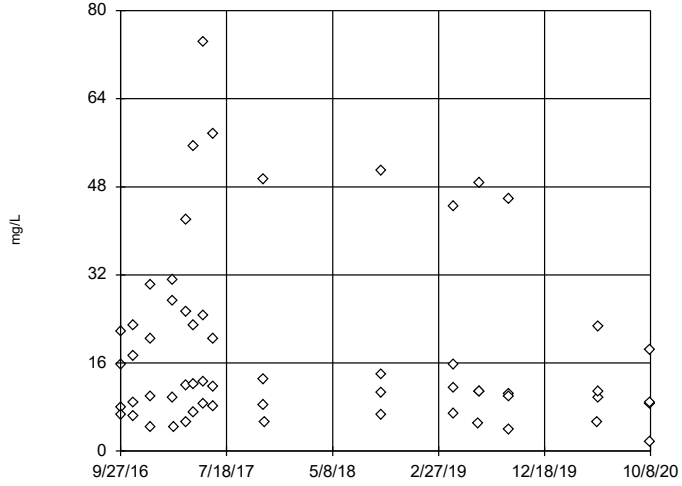
Constituent: Calcium, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 60

No outliers found. Tukey's method selected by user.

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

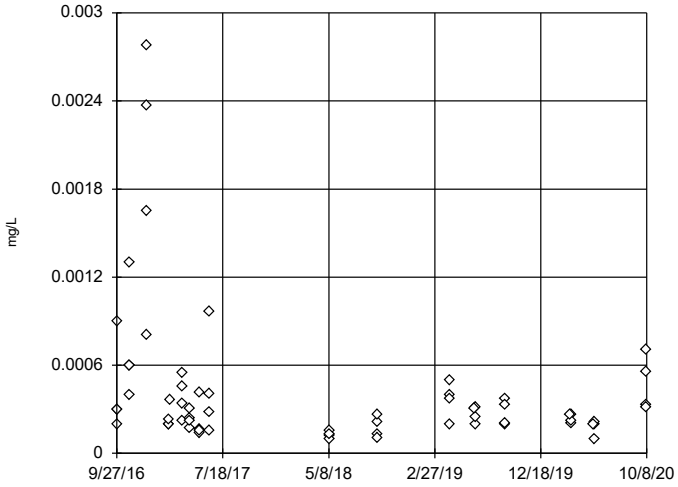
High cutoff = 473.4, low cutoff = 0.4015, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.003329, low cutoff = 0.00002427, based on IQR multiplier of 3.

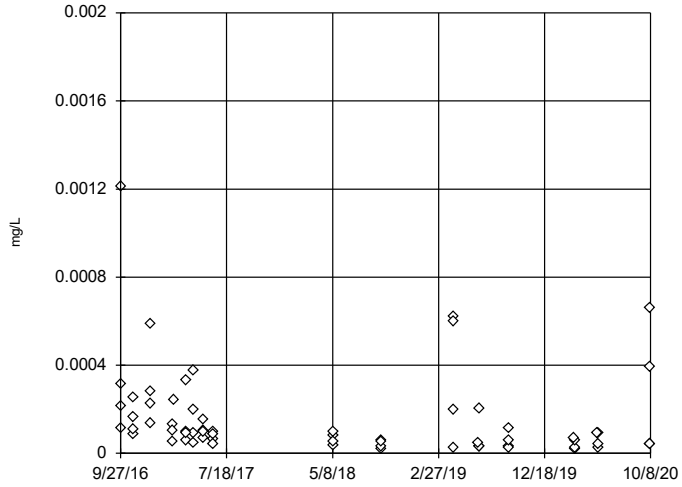
Constituent: Chromium, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.01267, low cutoff = 7.7e-7, based on IQR multiplier of 3.

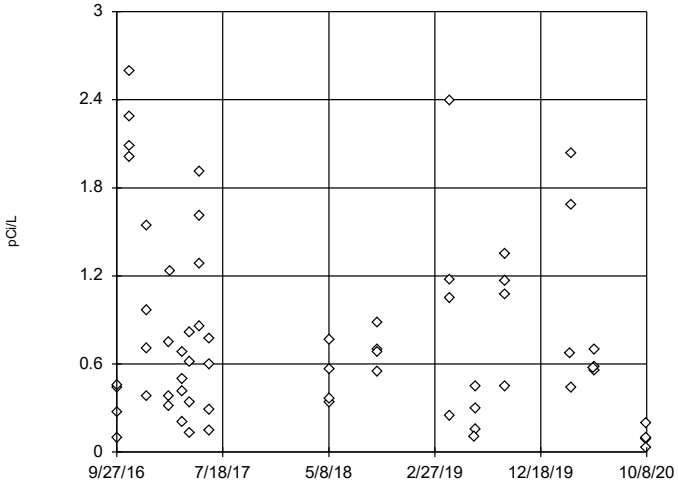
Constituent: Cobalt, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 7.828, low cutoff = -0.01933, based on IQR multiplier of 3.

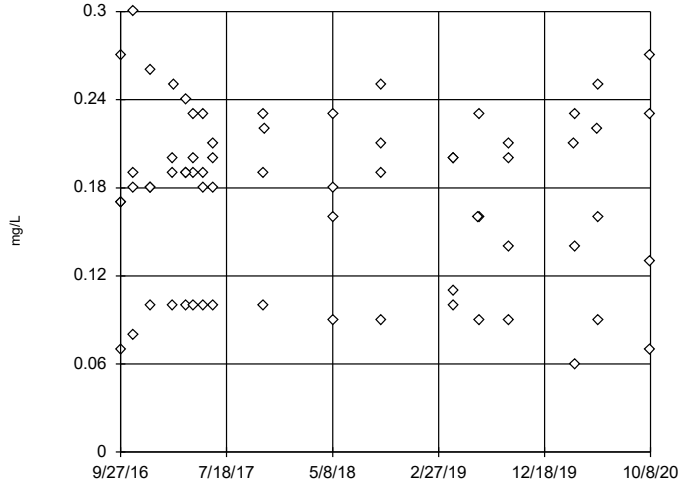
Constituent: Combined Radium 226 + 228 Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 68

No outliers found. Tukey's method selected by user.

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

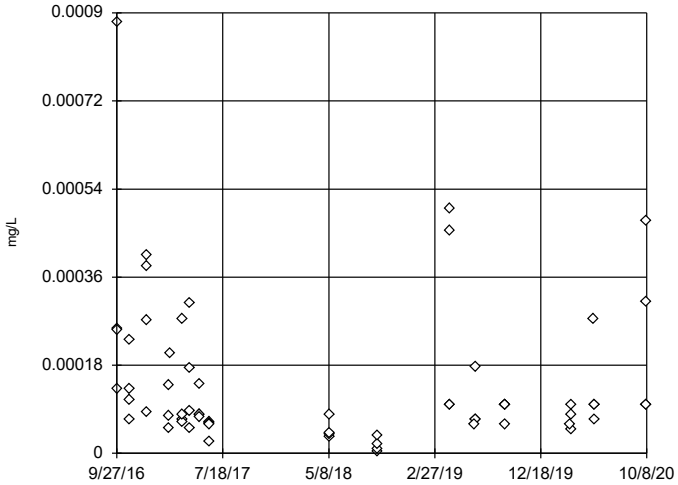
High cutoff = 0.3897, low cutoff = -0.3075, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.003891, low cutoff = 0.00000278, based on IQR multiplier of 3.

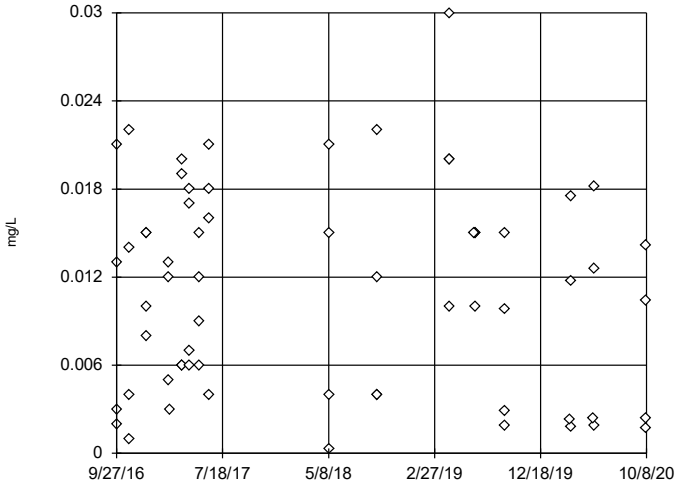
Constituent: Lead, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.09498, low cutoff = -0.01451, based on IQR multiplier of 3.

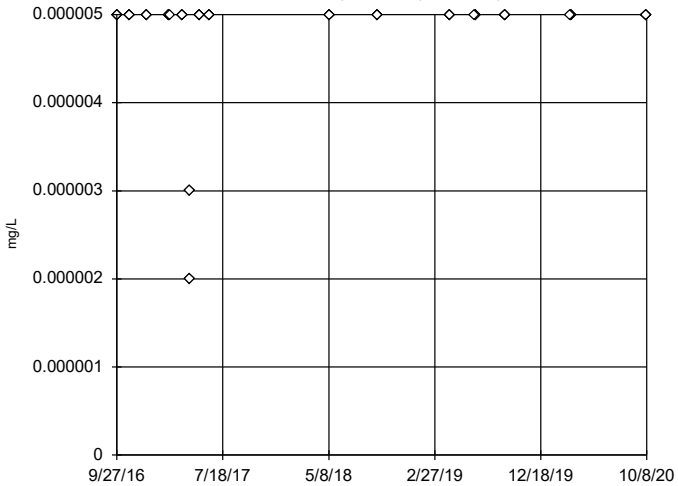
Constituent: Lithium, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 60

No outliers found. Tukey's method selected by user.

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

The results were invalidated, because the lower and upper quartiles are equal.

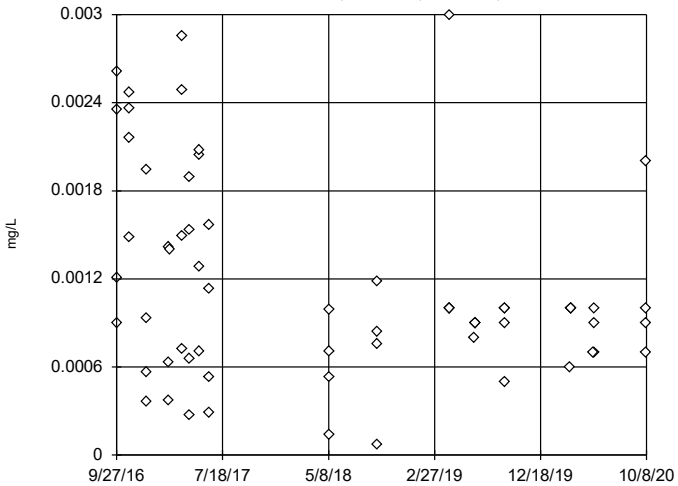
Constituent: Mercury, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

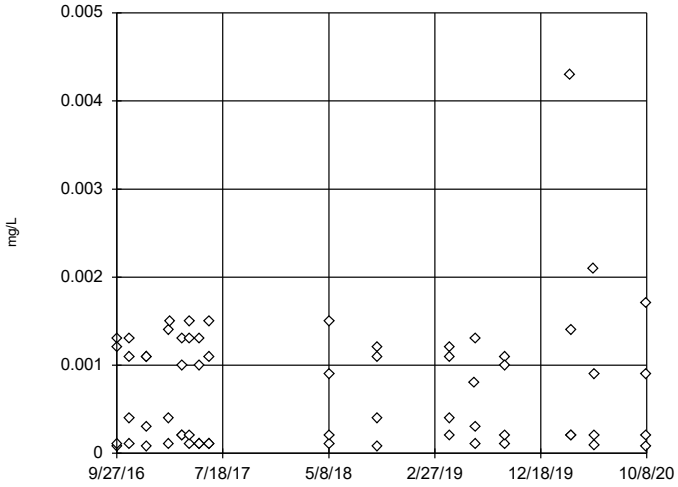
High cutoff = 0.006789, low cutoff = 0.000002593, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 0.01919, low cutoff = -0.001295, based on IQR multiplier of 3.

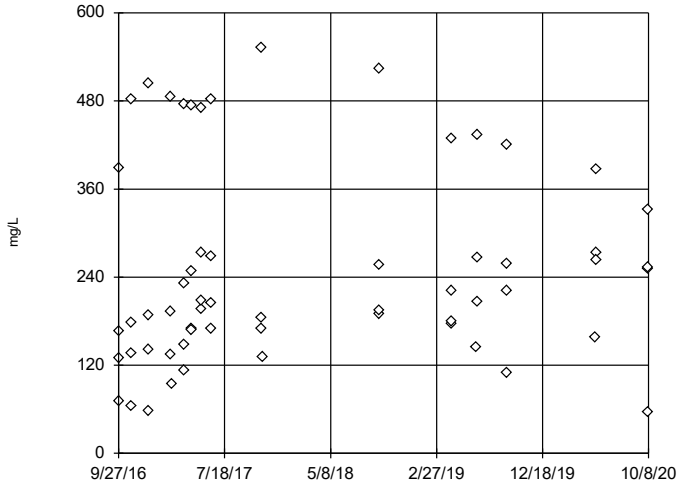
Constituent: Selenium, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 60

No outliers found. Tukey's method selected by user.

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

High cutoff = 1148, low cutoff = 4.886, based on IQR multiplier of 3.

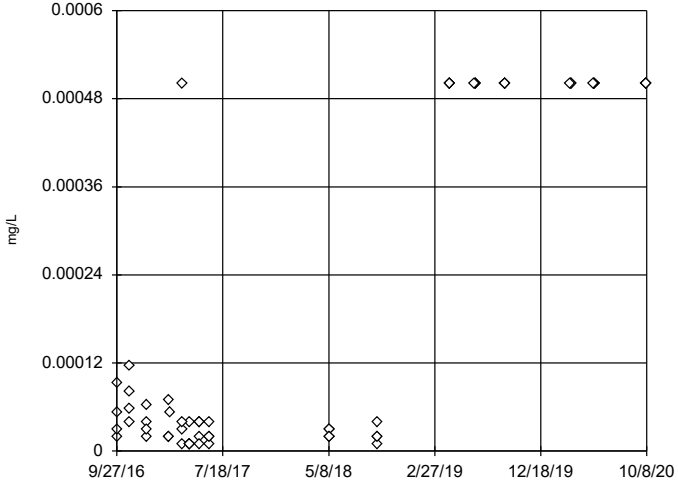
Constituent: Sulfate, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 64

No outliers found. Tukey's method selected by user.

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

High cutoff = 7.813, low cutoff = 1.3e-9, based on IQR multiplier of 3.

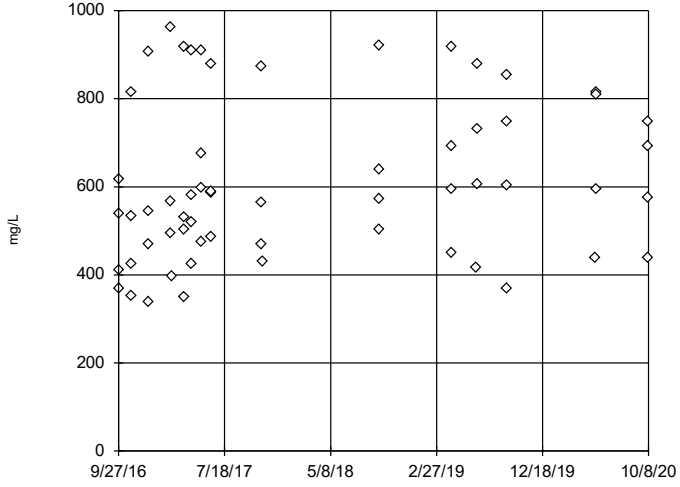
Constituent: Thallium, total Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

MW-1601A,MW-1602,MW-1603,MW-1608



n = 60

No outliers found. Tukey's method selected by user.

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

High cutoff = 3043, low cutoff = 115.4, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 1/12/2021 1:14 PM View: Outlier Tests

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

FIGURE D.

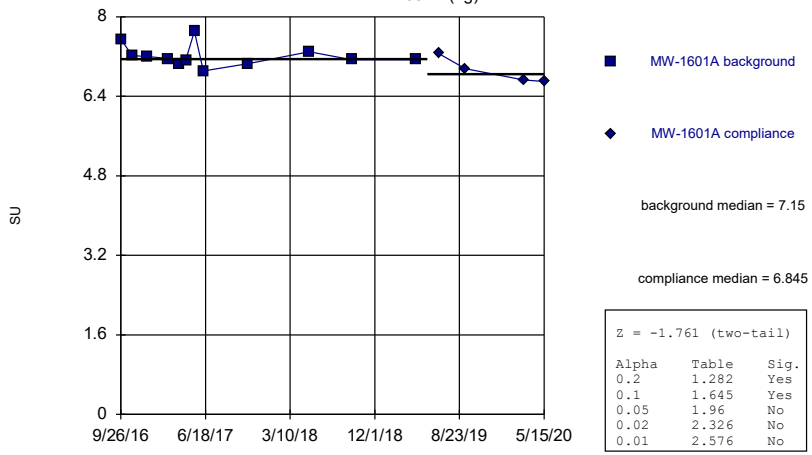
Welch's t-test/Mann-Whitney - All Results (No Significant)

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/15/2021, 10:07 AM

Constituent	Well	Calc.	0.01	Method
pH, field (SU)	MW-1601A (bg)	-1.761	No	Mann-W
pH, field (SU)	MW-1602 (bg)	-1.031	No	Mann-W
pH, field (SU)	MW-1603 (bg)	-1.274	No	Mann-W
pH, field (SU)	MW-1604D	-2.551	No	Mann-W
pH, field (SU)	MW-1604S	-0.8497	No	Mann-W
pH, field (SU)	MW-1605D	-1.702	No	Mann-W
pH, field (SU)	MW-1605S	-1.875	No	Mann-W
pH, field (SU)	MW-1606D	-1.534	No	Mann-W
pH, field (SU)	MW-1606S	-0.8503	No	Mann-W
pH, field (SU)	MW-1607D	-0.182	No	Mann-W
pH, field (SU)	MW-1607S	-0.9115	No	Mann-W
pH, field (SU)	MW-1608 (bg)	-1.823	No	Mann-W

Mann-Whitney (Wilcoxon Rank Sum)

MW-1601A (bg)

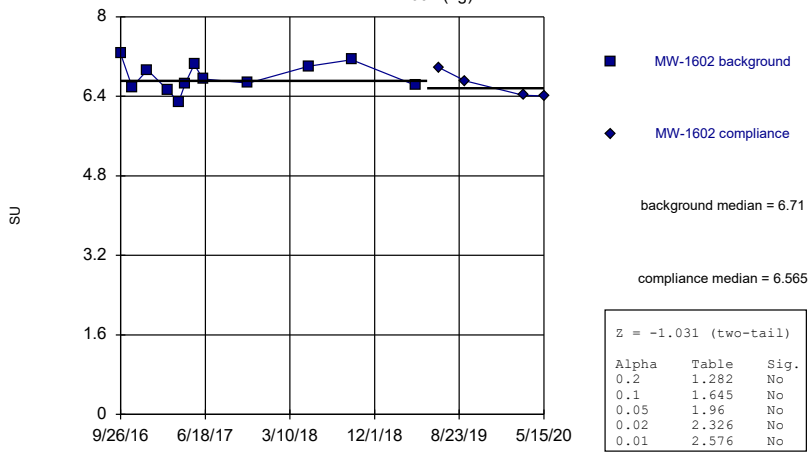


Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-1602 (bg)

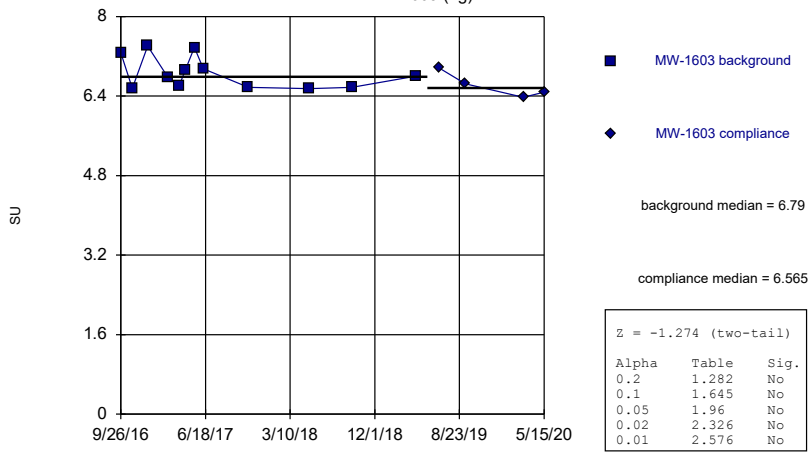


Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-1603 (bg)

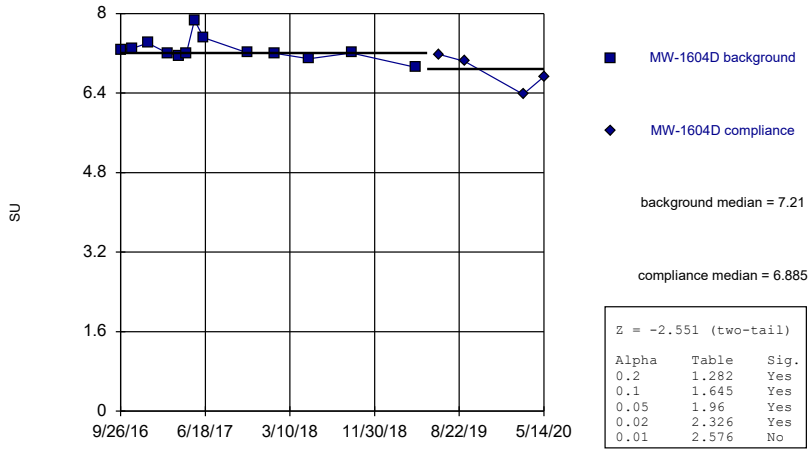


Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

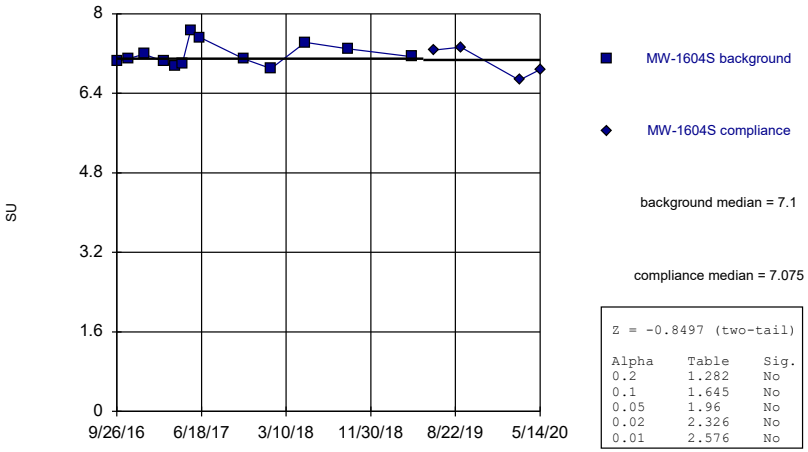
MW-1604D



Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Mann-Whitney (Wilcoxon Rank Sum)

MW-1604S

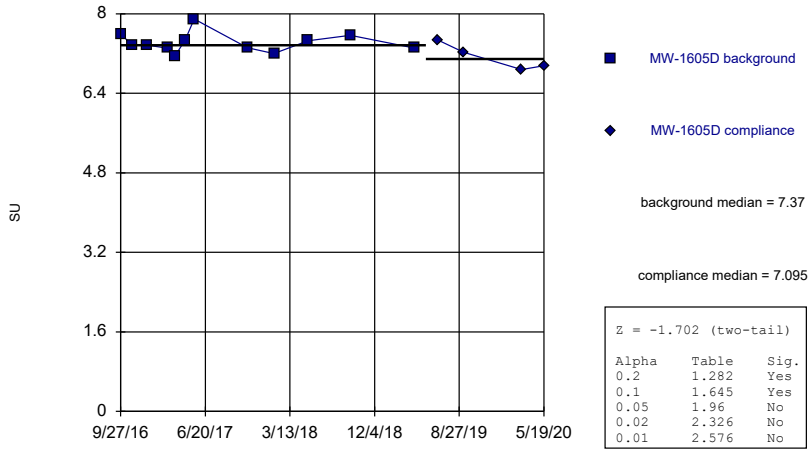


Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-1605D

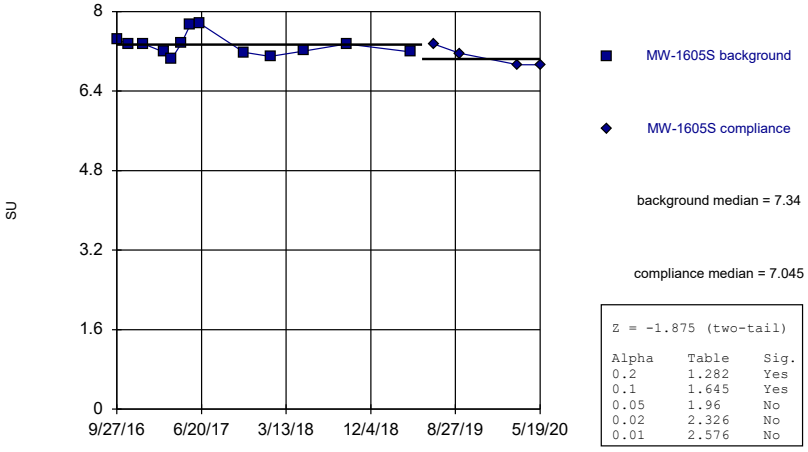


Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-1605S

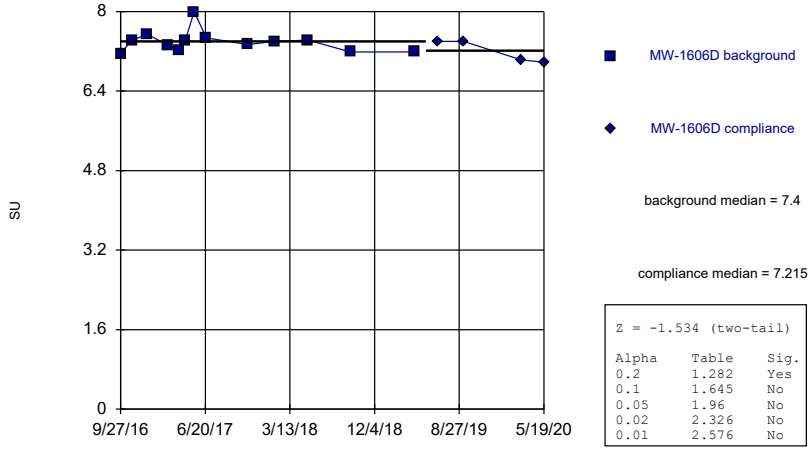


Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

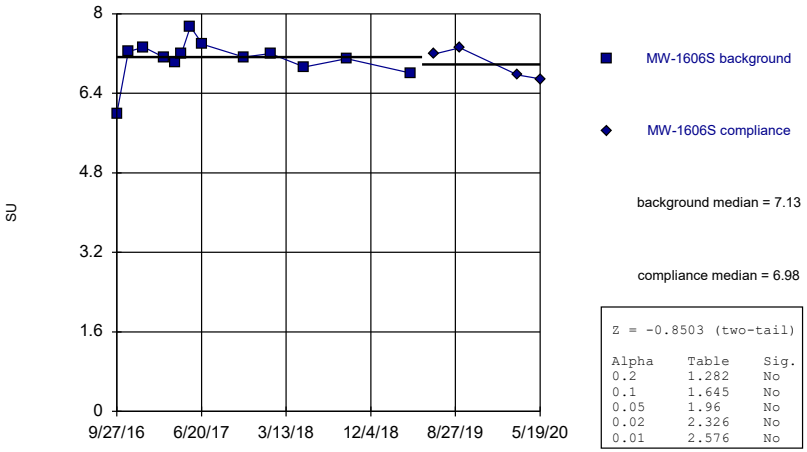
MW-1606D



Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Mann-Whitney (Wilcoxon Rank Sum)

MW-1606S



Z = -0.8503 (two-tail)

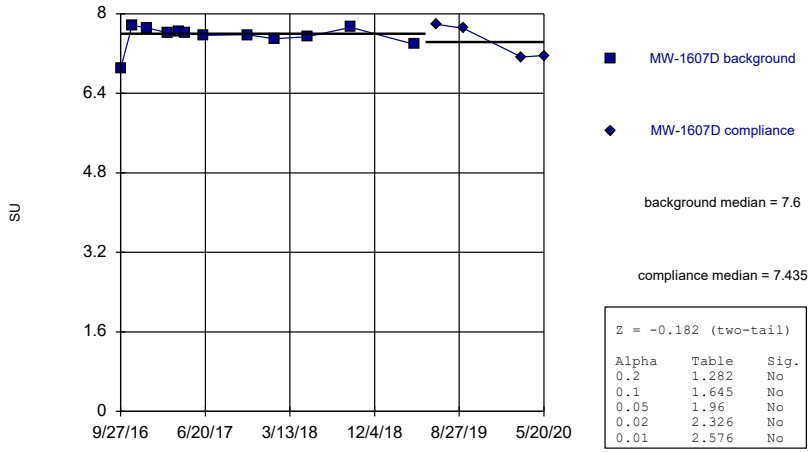
Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-1607D



Z = -0.182 (two-tail)

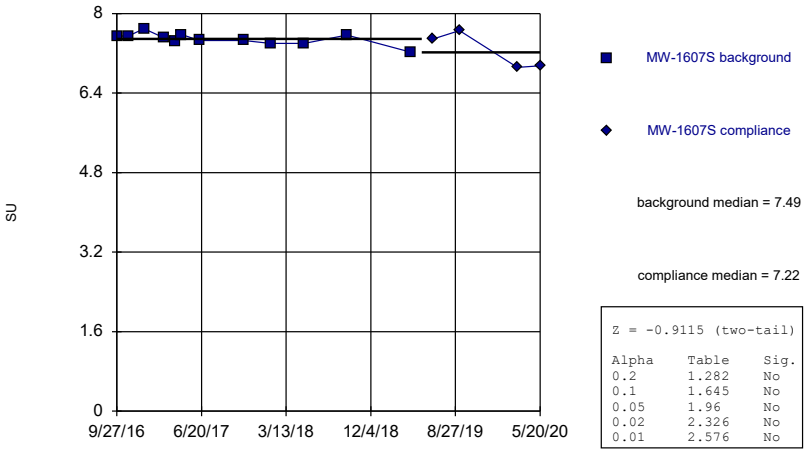
Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-1607S



Z = -0.9115 (two-tail)

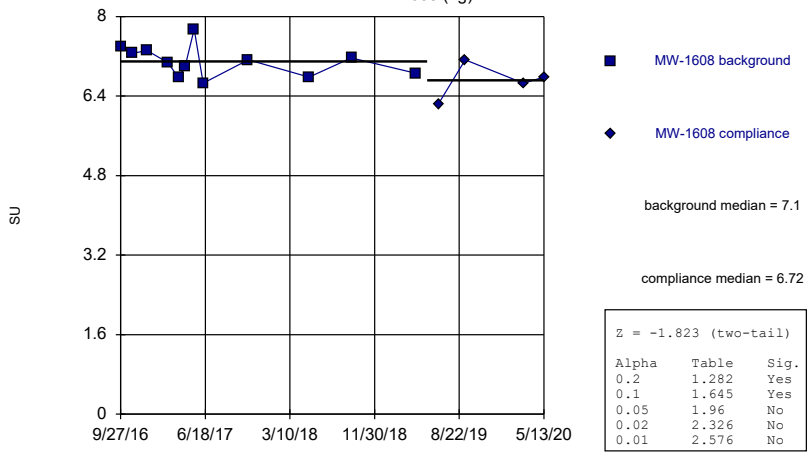
Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-1608 (bg)



Z = -1.823 (two-tail)

Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	Yes
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

Constituent: pH, field Analysis Run 1/15/2021 10:05 AM View: Mann-Whitney
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

FIGURE E.

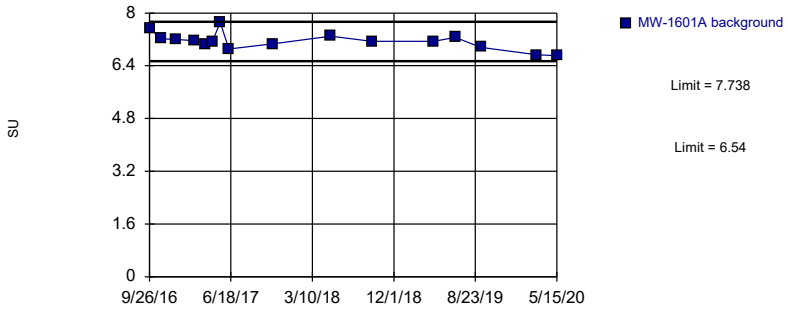
Appendix III - Intrawell Prediction Limits - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 4:19 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
pH, field (SU)	MW-1601A	7.738	6.54	n/a	1 future	n/a	16	7.139	0.2586	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1602	7.406	6.094	n/a	1 future	n/a	16	6.75	0.283	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1603	7.55	6.058	n/a	1 future	n/a	16	6.804	0.3221	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1604D	7.896	6.444	n/a	1 future	n/a	17	7.17	0.317	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1604S	7.728	6.57	n/a	1 future	n/a	17	7.149	0.253	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1605D	7.921	6.779	n/a	1 future	n/a	16	7.35	0.2463	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1605S	7.81	6.737	n/a	1 future	n/a	17	7.274	0.2346	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1606D	7.874	6.824	n/a	1 future	n/a	17	7.349	0.2294	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1606S	7.93	6.21	n/a	1 future	n/a	17	7.07	0.3755	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1607D	8.115	6.931	n/a	1 future	n/a	16	7.523	0.2556	0	None	No	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1607S	7.902	6.903	n/a	1 future	n/a	16	411.2	35.51	0	None	x^3	0.0004701	Param Intra 1 of 2
pH, field (SU)	MW-1608	7.83	6.168	n/a	1 future	n/a	16	6.999	0.3587	0	None	No	0.0004701	Param Intra 1 of 2

Prediction Limit

Intrawell Parametric, MW-1601A (bg)



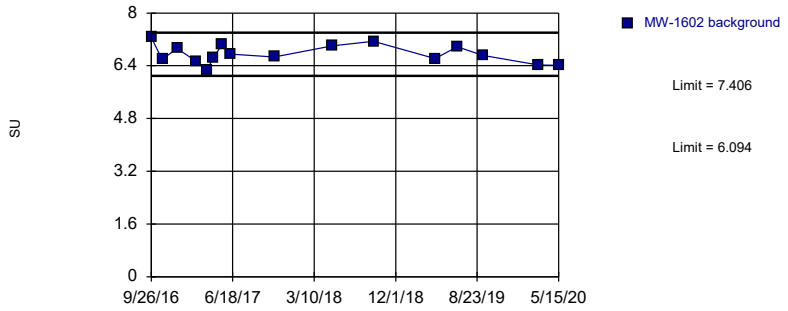
Background Data Summary: Mean=7.139, Std. Dev.=0.2586, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9493, critical = 0.844. Kappa = 2.316 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1602 (bg)



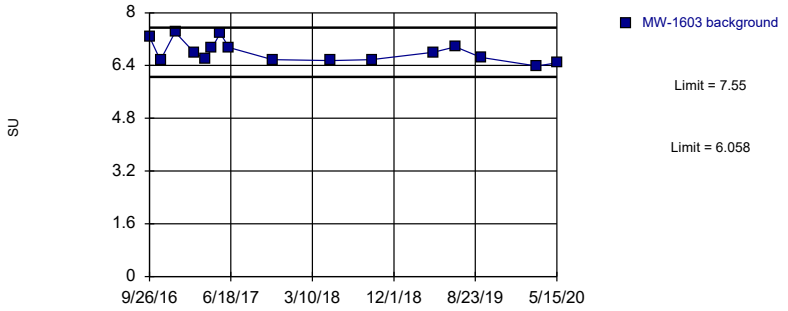
Background Data Summary: Mean=6.75, Std. Dev.=0.283, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9684, critical = 0.844. Kappa = 2.316 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1603 (bg)



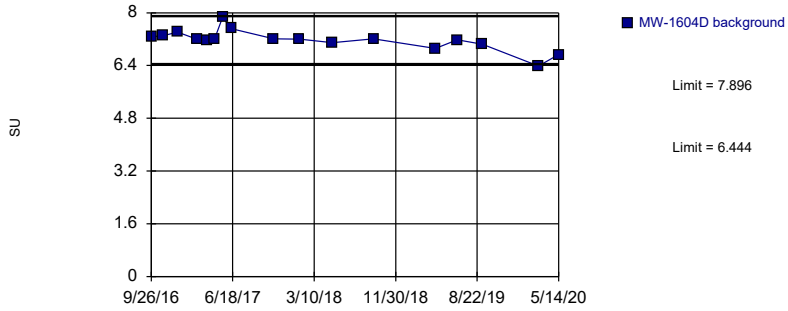
Background Data Summary: Mean=6.804, Std. Dev.=0.3221, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8964, critical = 0.844. Kappa = 2.316 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1604D

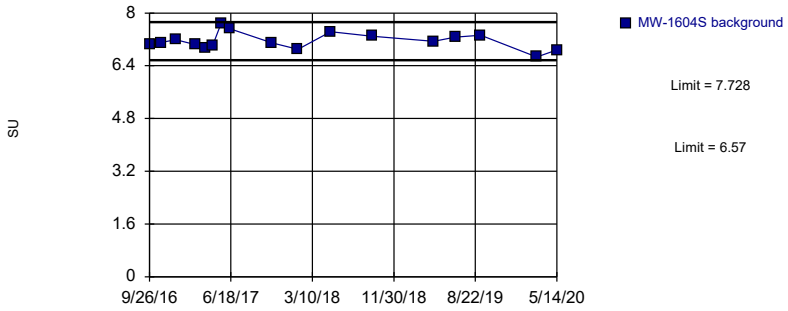


Background Data Summary: Mean=7.17, Std. Dev.=0.317, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9134, critical = 0.851. Kappa = 2.289 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Prediction Limit

Intrawell Parametric, MW-1604S



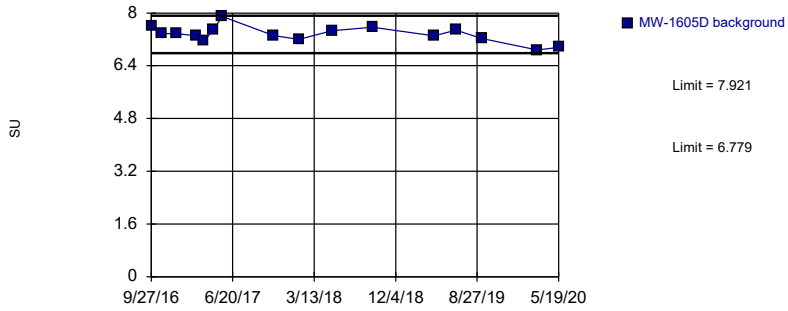
Background Data Summary: Mean=7.149, Std. Dev.=0.253, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9846, critical = 0.851. Kappa = 2.289 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1605D



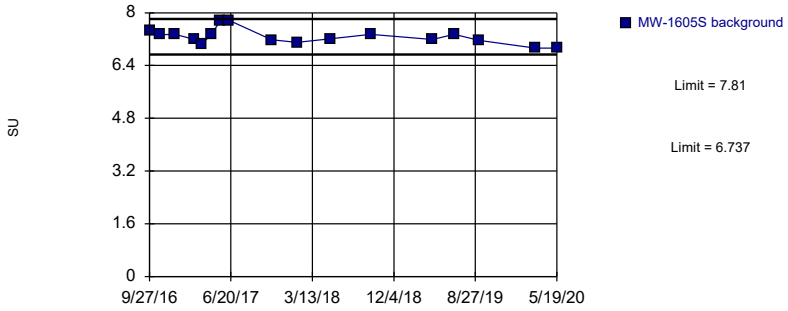
Background Data Summary: Mean=7.35, Std. Dev.=0.2463, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9702, critical = 0.844. Kappa = 2.316 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1605S



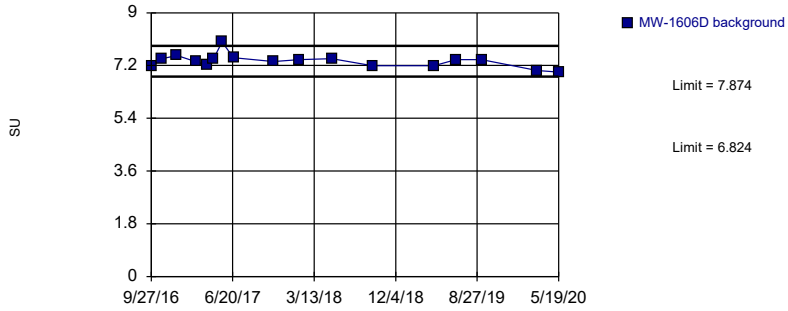
Background Data Summary: Mean=7.274, Std. Dev.=0.2346, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9211, critical = 0.851. Kappa = 2.289 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1606D

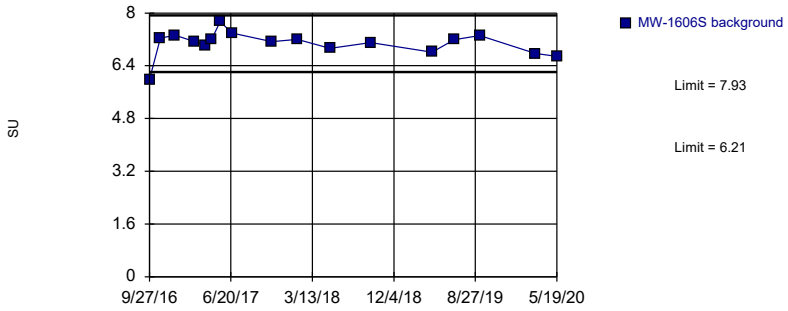


Background Data Summary: Mean=7.349, Std. Dev.=0.2294, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8907, critical = 0.851. Kappa = 2.289 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Prediction Limit

Intrawell Parametric, MW-1606S



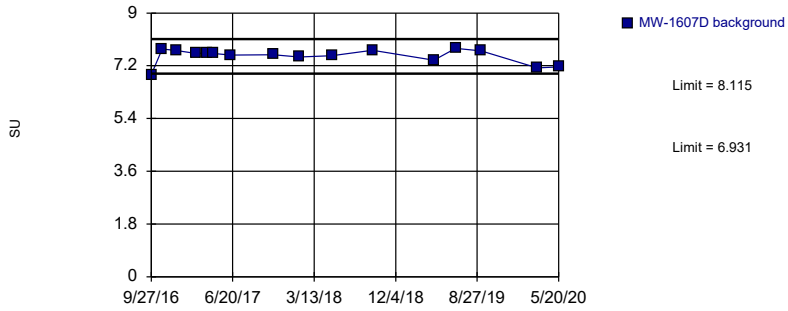
Background Data Summary: Mean=7.07, Std. Dev.=0.3755, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8907, critical = 0.851. Kappa = 2.289 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1607D



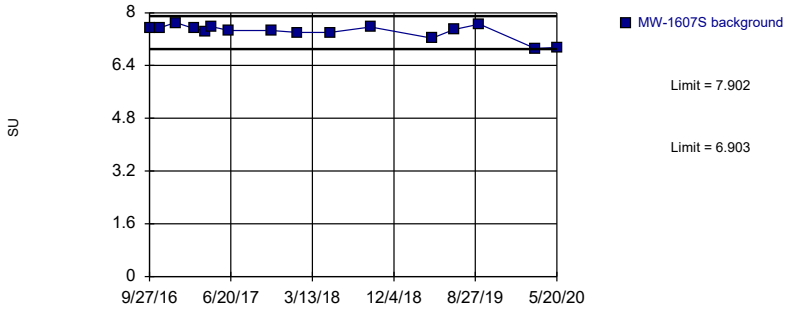
Background Data Summary: Mean=7.523, Std. Dev.=0.2556, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8497, critical = 0.844. Kappa = 2.316 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1607S



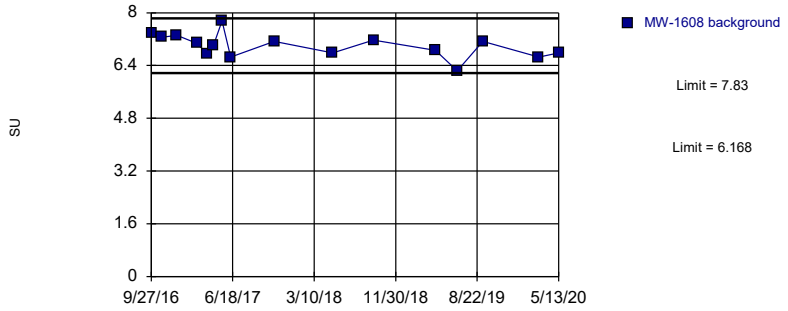
Background Data Summary (based on cube transformation): Mean=411.2, Std. Dev.=35.51, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8522, critical = 0.844. Kappa = 2.316 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1608 (bg)



Background Data Summary: Mean=6.999, Std. Dev.=0.3587, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9777, critical = 0.844. Kappa = 2.316 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.0009403. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/11/2021 4:17 PM View: Intrawell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

FIGURE F.

Appendix III Trend Tests - Upgradient Wells - Significant Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 4:24 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Calcium, total (mg/L)	**MW-1601A (bg)**	**14.17**	**68**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Calcium, total (mg/L)	**MW-1602 (bg)**	**6.502**	**55**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Chloride, total (mg/L)	**MW-1603 (bg)**	**-4.624**	**-69**	**-53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride, total (mg/L)	**MW-1601A (bg)**	**-0.01329**	**-65**	**-63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride, total (mg/L)	**MW-1602 (bg)**	**0.01824**	**94**	**63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride, total (mg/L)	**MW-1608 (bg)**	**-0.01908**	**-67**	**-63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate, total (mg/L)	**MW-1601A (bg)**	**29.83**	**86**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids [TDS] (mg/L)	**MW-1601A (bg)**	**70.43**	**79**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids [TDS] (mg/L)	**MW-1602 (bg)**	**44.7**	**60**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**

Appendix III Trend Tests - Upgradient Wells - All Results

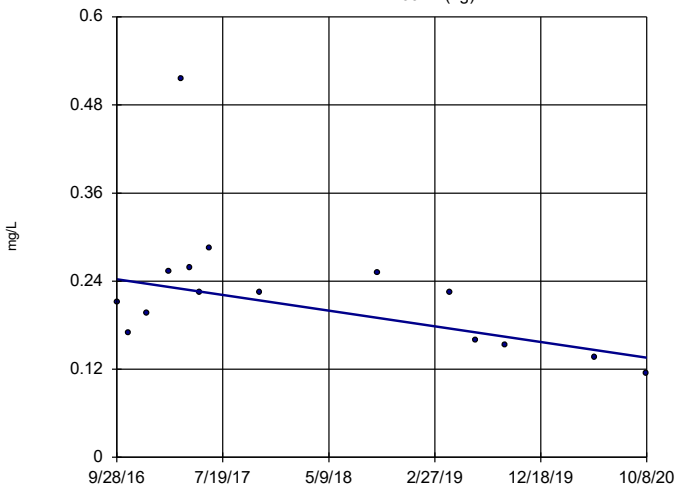
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 4:24 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron, total (mg/L)	MW-1601A (bg)	-0.02655	-38	-53	No	15	0	n/a	n/a	0.01	NP
Boron, total (mg/L)	MW-1602 (bg)	-0.003183	-23	-53	No	15	0	n/a	n/a	0.01	NP
Boron, total (mg/L)	MW-1603 (bg)	-0.05611	-47	-53	No	15	0	n/a	n/a	0.01	NP
Boron, total (mg/L)	MW-1608 (bg)	-0.0149	-33	-53	No	15	0	n/a	n/a	0.01	NP
Calcium, total (mg/L)	**MW-1601A (bg)**	**14.17**	**68**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Calcium, total (mg/L)	**MW-1602 (bg)**	**6.502**	**55**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Calcium, total (mg/L)	MW-1603 (bg)	-1.106	-5	-53	No	15	0	n/a	n/a	0.01	NP
Calcium, total (mg/L)	MW-1608 (bg)	1.019	12	53	No	15	0	n/a	n/a	0.01	NP
Chloride, total (mg/L)	MW-1601A (bg)	1.504	9	53	No	15	0	n/a	n/a	0.01	NP
Chloride, total (mg/L)	MW-1602 (bg)	-0.02286	-1	-53	No	15	0	n/a	n/a	0.01	NP
Chloride, total (mg/L)	**MW-1603 (bg)**	**-4.624**	**-69**	**-53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Chloride, total (mg/L)	MW-1608 (bg)	-0.5127	-21	-53	No	15	0	n/a	n/a	0.01	NP
Fluoride, total (mg/L)	**MW-1601A (bg)**	**-0.01329**	**-65**	**-63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride, total (mg/L)	**MW-1602 (bg)**	**0.01824**	**94**	**63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride, total (mg/L)	MW-1603 (bg)	0	-28	-63	No	17	0	n/a	n/a	0.01	NP
Fluoride, total (mg/L)	**MW-1608 (bg)**	**-0.01908**	**-67**	**-63**	**Yes**	**17**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate, total (mg/L)	**MW-1601A (bg)**	**29.83**	**86**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate, total (mg/L)	MW-1602 (bg)	21.35	49	53	No	15	0	n/a	n/a	0.01	NP
Sulfate, total (mg/L)	MW-1603 (bg)	-23.74	-41	-53	No	15	0	n/a	n/a	0.01	NP
Sulfate, total (mg/L)	MW-1608 (bg)	19.74	21	53	No	15	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	**MW-1601A (bg)**	**70.43**	**79**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids [TDS] (mg/L)	**MW-1602 (bg)**	**44.7**	**60**	**53**	**Yes**	**15**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids [TDS] (mg/L)	MW-1603 (bg)	-17.94	-20	-53	No	15	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	MW-1608 (bg)	22.38	38	53	No	15	0	n/a	n/a	0.01	NP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601A (bg)



n = 15

Slope = -0.02655 units per year.

Mann-Kendall statistic = -38
critical = -53

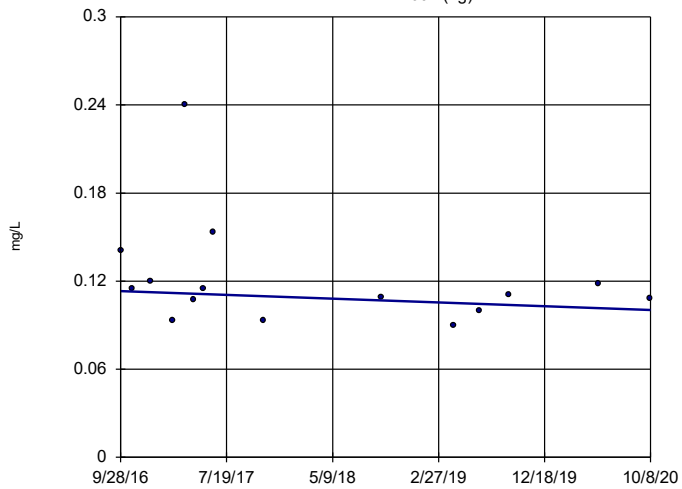
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 15

Slope = -0.003183 units per year.

Mann-Kendall statistic = -23
critical = -53

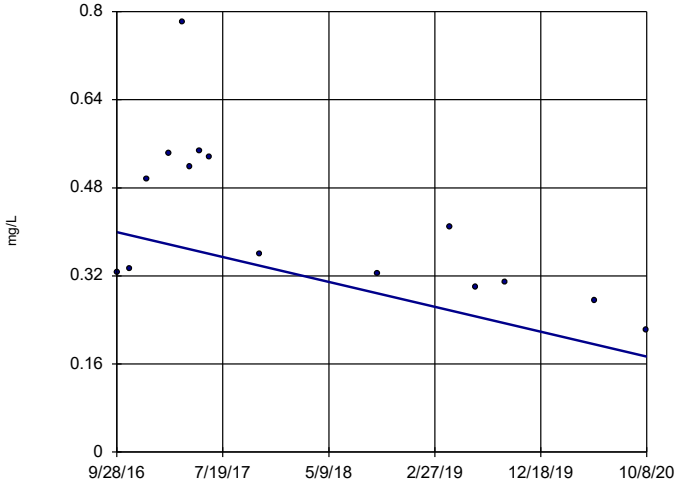
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603 (bg)



n = 15

Slope = -0.05611 units per year.

Mann-Kendall statistic = -47
critical = -53

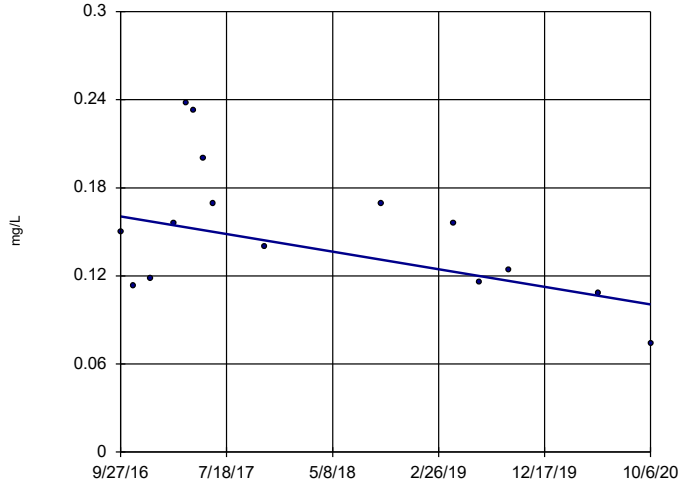
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 15

Slope = -0.0149 units per year.

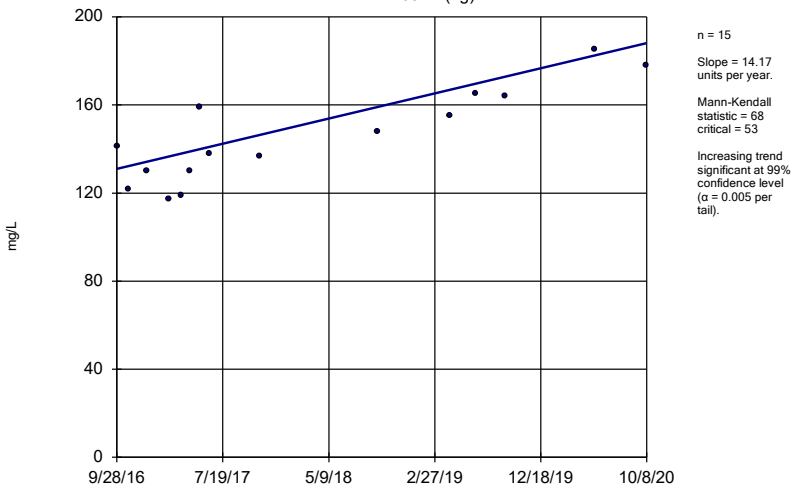
Mann-Kendall statistic = -33
critical = -53

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sen's Slope Estimator

MW-1601A (bg)



n = 15

Slope = 14.17 units per year.

Mann-Kendall statistic = 68 critical = 53

Increasing trend significant at 99% confidence level (α = 0.005 per tail).

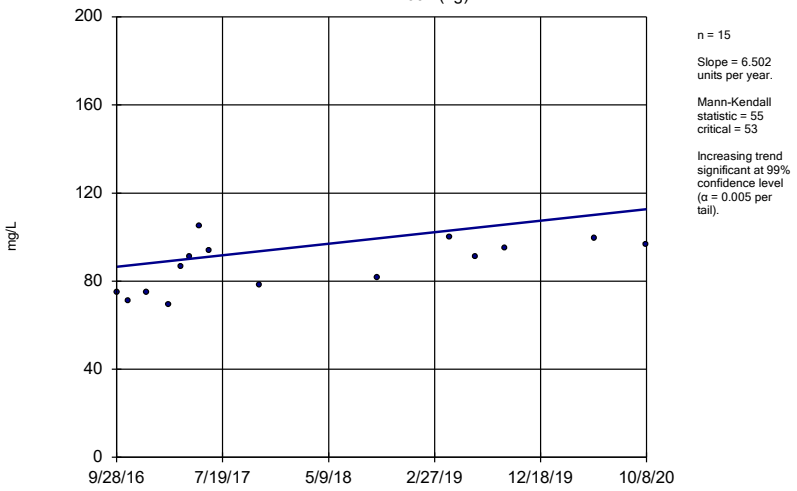
Constituent: Calcium, total Analysis Run 1/11/2021 4:20 PM View: Interwell

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 15

Slope = 6.502 units per year.

Mann-Kendall statistic = 55 critical = 53

Increasing trend significant at 99% confidence level (α = 0.005 per tail).

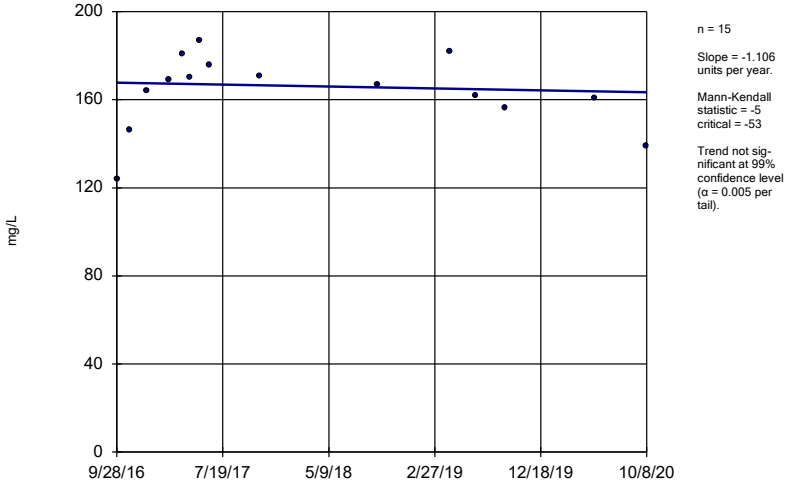
Constituent: Calcium, total Analysis Run 1/11/2021 4:20 PM View: Interwell

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603 (bg)



n = 15

Slope = -1.106 units per year.

Mann-Kendall statistic = -5 critical = -53

Trend not sig-nificant at 99% confidence level (α = 0.005 per tail).

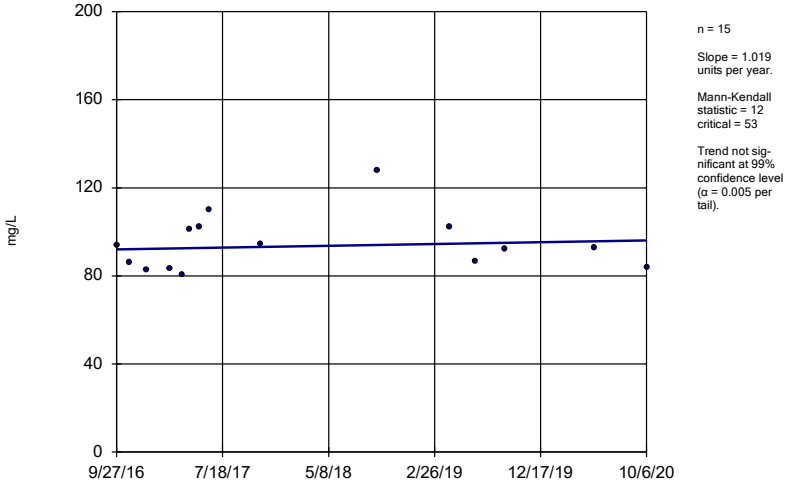
Constituent: Calcium, total Analysis Run 1/11/2021 4:20 PM View: Interwell

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 15

Slope = 1.019 units per year.

Mann-Kendall statistic = 12 critical = 53

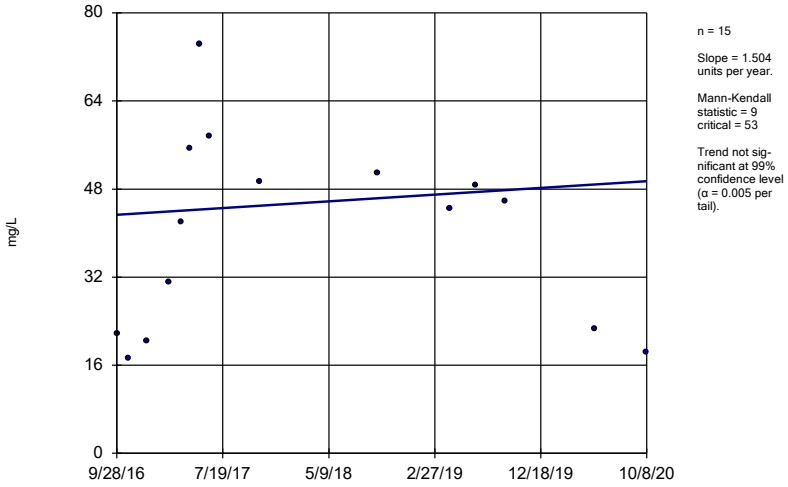
Trend not sig-nificant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium, total Analysis Run 1/11/2021 4:20 PM View: Interwell

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sen's Slope Estimator

MW-1601A (bg)



n = 15

Slope = 1.504 units per year.

Mann-Kendall statistic = 9 critical = 53

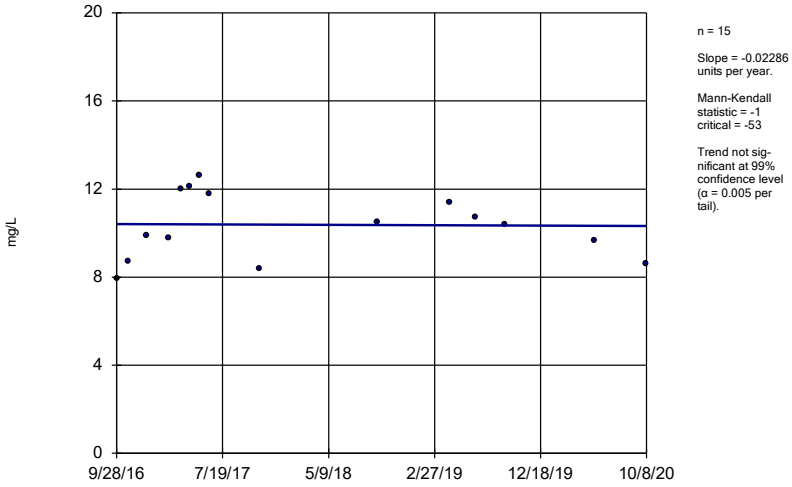
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 15

Slope = -0.02286 units per year.

Mann-Kendall statistic = -1 critical = -53

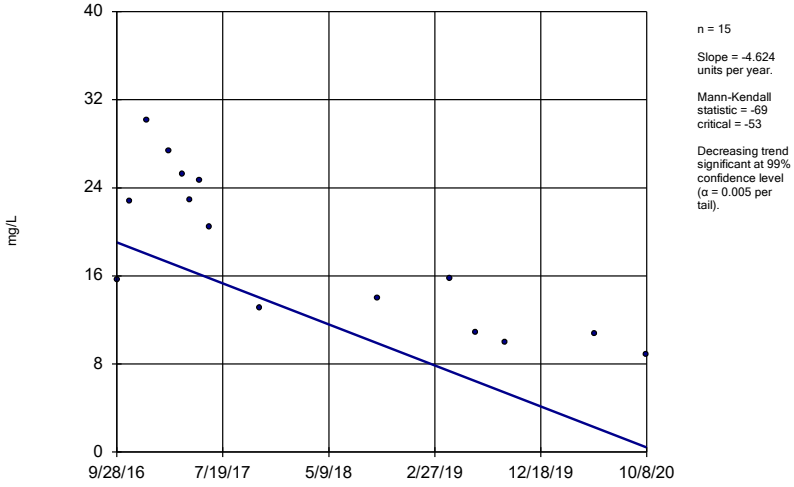
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603 (bg)



n = 15

Slope = -4.624 units per year.

Mann-Kendall statistic = -69 critical = -53

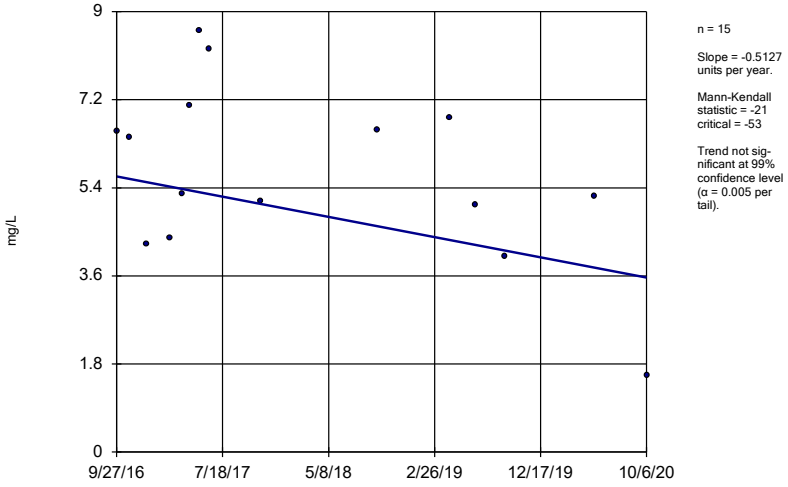
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 15

Slope = -0.5127 units per year.

Mann-Kendall statistic = -21 critical = -53

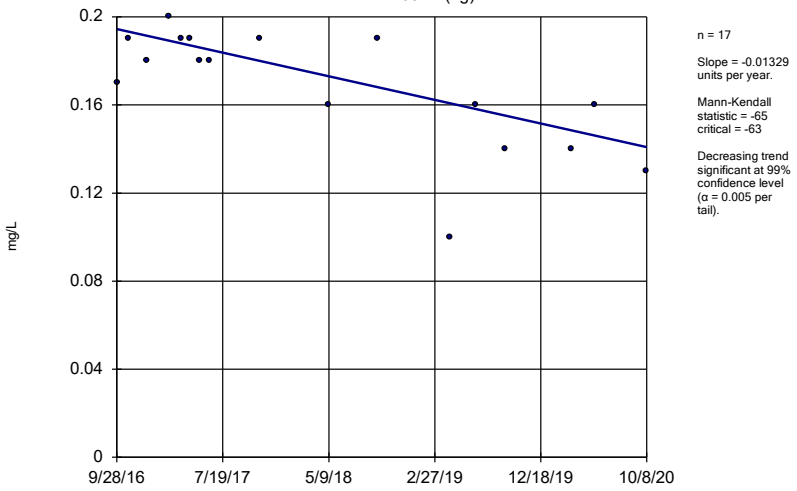
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601A (bg)



n = 17

Slope = -0.01329 units per year.

Mann-Kendall statistic = -65
critical = -63

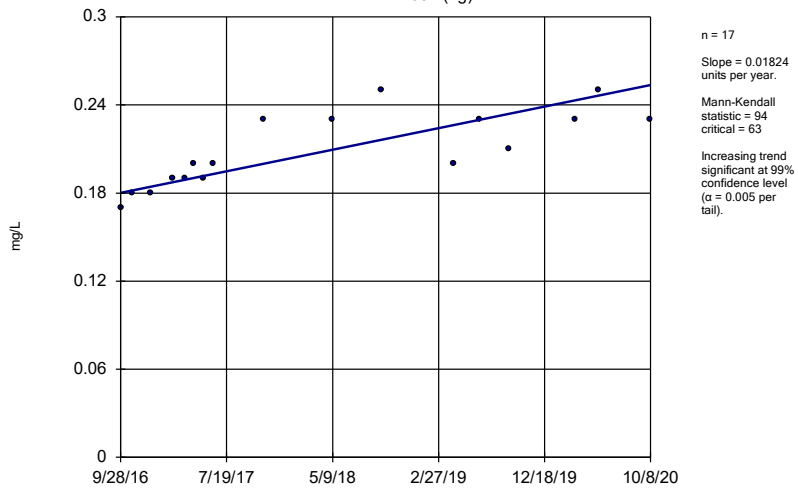
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 17

Slope = 0.01824 units per year.

Mann-Kendall statistic = 94
critical = 63

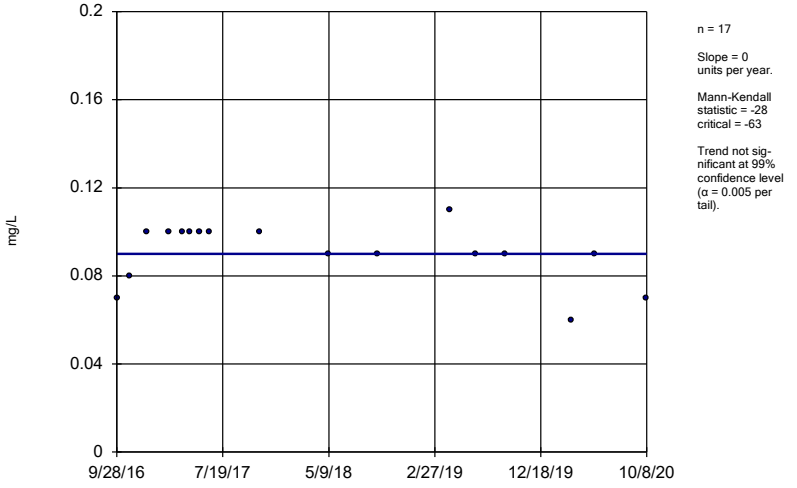
Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603 (bg)



n = 17

Slope = 0 units per year.

Mann-Kendall statistic = -28
critical = -63

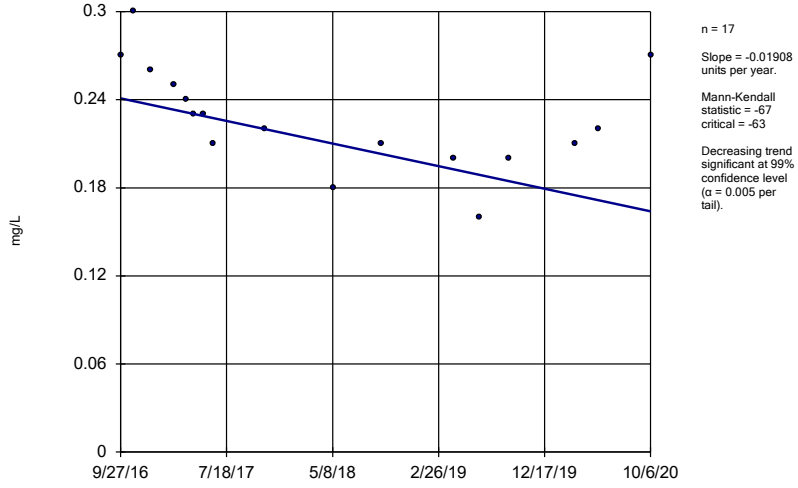
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 17

Slope = -0.01908 units per year.

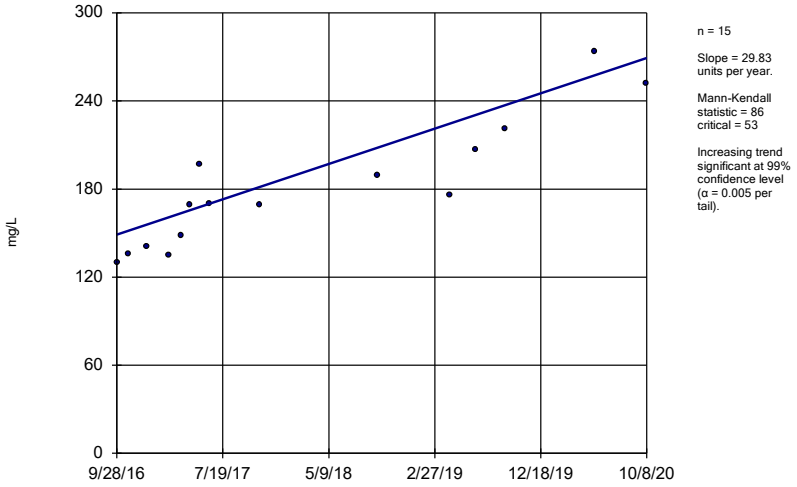
Mann-Kendall statistic = -67
critical = -63

Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride, total Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sen's Slope Estimator

MW-1601A (bg)



n = 15

Slope = 29.83 units per year.

Mann-Kendall statistic = 86 critical = 53

Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate, total Analysis Run 1/11/2021 4:20 PM View: Interwell

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

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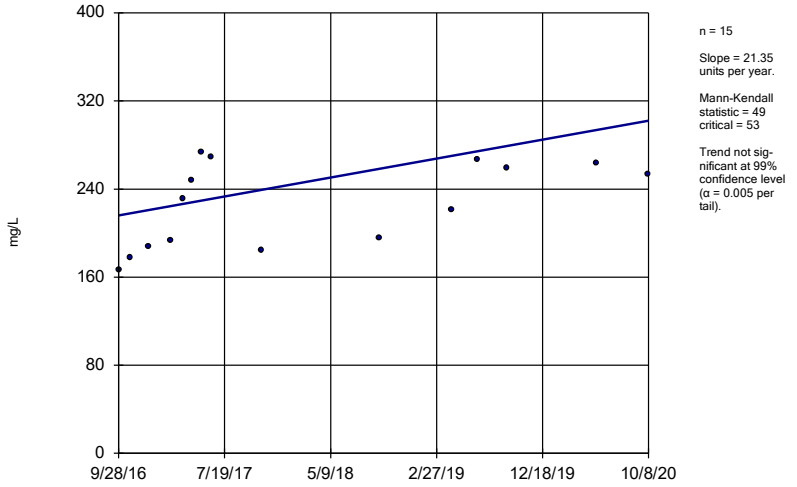
Sen's Slope Estimator

MW-1602 (bg)



n = 15

Slope = 21.35 units per year.

Mann-Kendall statistic = 49 critical = 53

Trend not significant at 99% confidence level (α = 0.005 per tail).

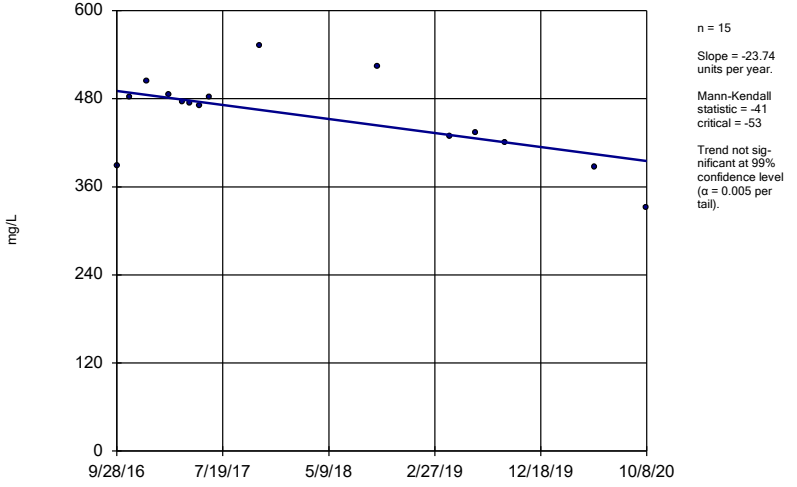
Constituent: Sulfate, total Analysis Run 1/11/2021 4:20 PM View: Interwell

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603 (bg)



n = 15

Slope = -23.74 units per year.

Mann-Kendall statistic = -41 critical = -53

Trend not significant at 99% confidence level (α = 0.005 per tail).

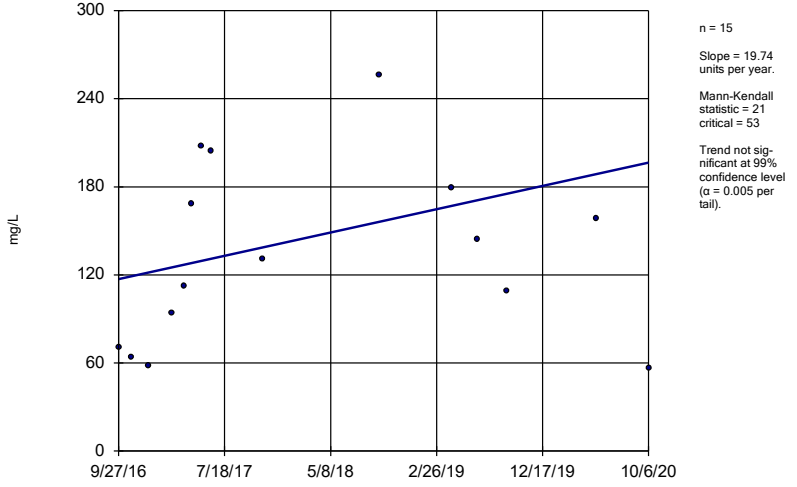
Constituent: Sulfate, total Analysis Run 1/11/2021 4:20 PM View: Interwell

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 15

Slope = 19.74 units per year.

Mann-Kendall statistic = 21 critical = 53

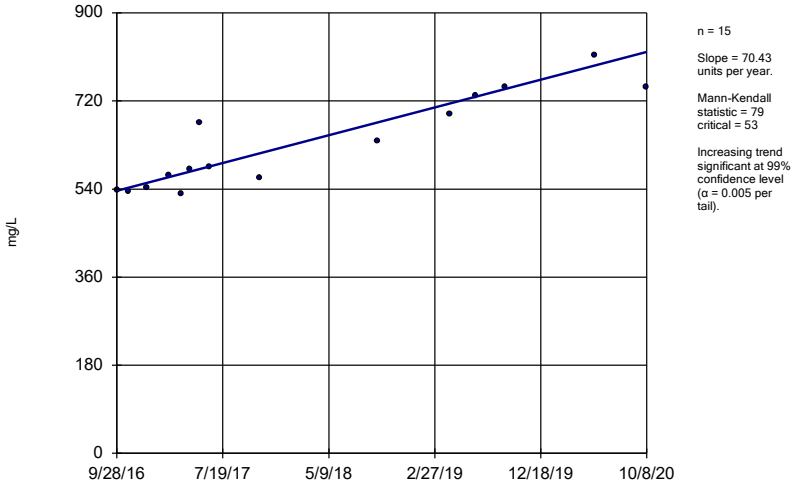
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate, total Analysis Run 1/11/2021 4:20 PM View: Interwell

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sen's Slope Estimator

MW-1601A (bg)



n = 15

Slope = 70.43 units per year.

Mann-Kendall statistic = 79
critical = 53

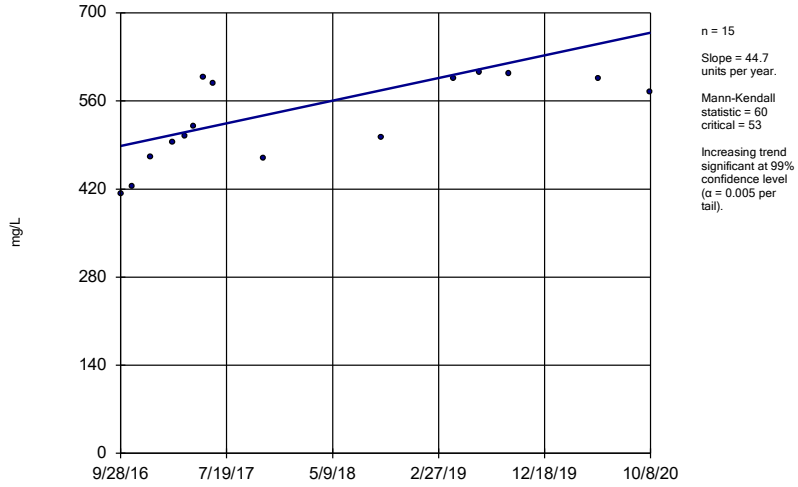
Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids [TDS] Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 15

Slope = 44.7 units per year.

Mann-Kendall statistic = 60
critical = 53

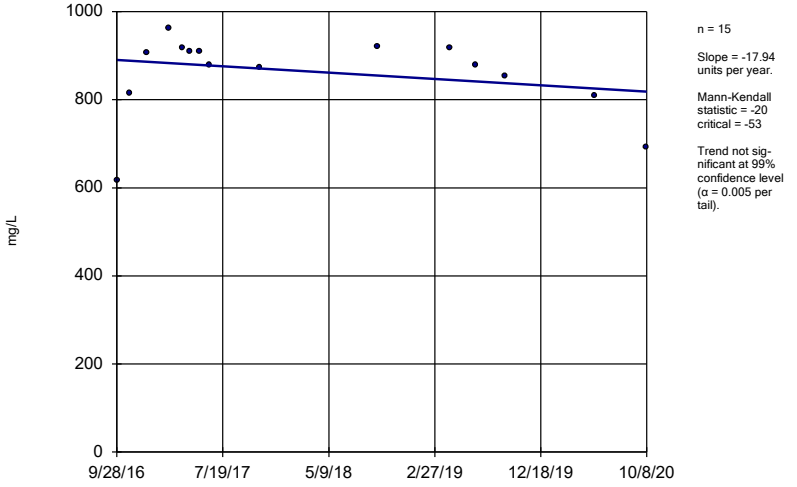
Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids [TDS] Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603 (bg)



n = 15

Slope = -17.94 units per year.

Mann-Kendall statistic = -20
critical = -53

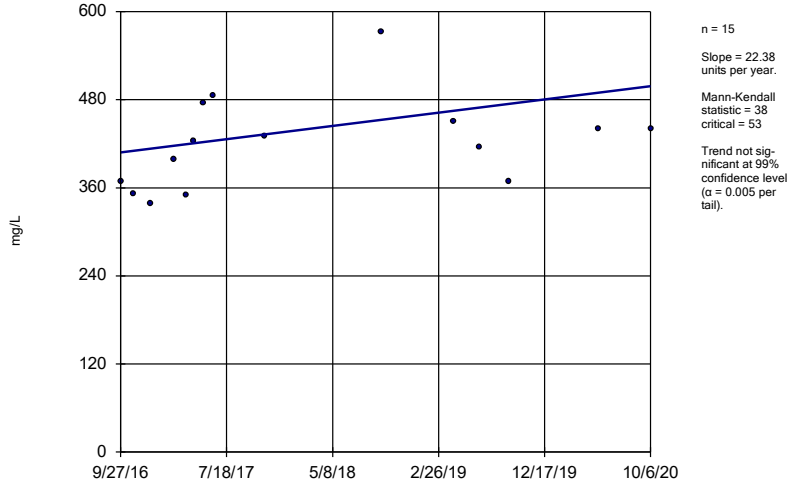
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids [TDS] Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.27b Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 15

Slope = 22.38 units per year.

Mann-Kendall statistic = 38
critical = 53

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids [TDS] Analysis Run 1/11/2021 4:20 PM View: Interwell
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

FIGURE G.

Appendix III - Interwell Prediction Limits - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/11/2021, 4:26 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron, total (mg/L)	n/a	0.5802	n/a	n/a	8 future	n/a	60	-1.641	0.5599	0	None	ln(x)	0.0009403	Param Inter 1 of 2
Calcium, total (mg/L)	n/a	211.7	n/a	n/a	8 future	n/a	60	4.767	0.3004	0	None	ln(x)	0.0009403	Param Inter 1 of 2
Chloride, total (mg/L)	n/a	64.56	n/a	n/a	8 future	n/a	60	2.603	0.7989	0	None	ln(x)	0.0009403	Param Inter 1 of 2
Fluoride, total (mg/L)	n/a	0.2886	n/a	n/a	8 future	n/a	68	0.1737	0.05894	0	None	No	0.0009403	Param Inter 1 of 2
Sulfate, total (mg/L)	n/a	547.8	n/a	n/a	8 future	n/a	60	15.24	4.17	0	None	sqrt(x)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids [TDS] (mg/L)	n/a	993.4	n/a	n/a	8 future	n/a	60	24.44	3.614	0	None	sqrt(x)	0.0009403	Param Inter 1 of 2

FIGURE H.

Upper Tolerance Limit Summary Table

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/12/2021, 1:27 PM

Constituent	Upper Lim.	Lower Lim.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony, total (mg/L)	0.00015	n/a	n/a	64	n/a	n/a	15.63	n/a	n/a	0.03752	NP Inter(normality)
Arsenic, total (mg/L)	0.0007452	n/a	n/a	64	0.02128	0.003002	0	None	sqrt(x)	0.05	Inter
Barium, total (mg/L)	0.0678	n/a	n/a	64	n/a	n/a	0	n/a	n/a	0.03752	NP Inter(normality)
Beryllium, total (mg/L)	0.0001	n/a	n/a	56	n/a	n/a	87.5	n/a	n/a	0.05656	NP Inter(NDs)
Cadmium, total (mg/L)	0.00005	n/a	n/a	64	n/a	n/a	9.375	n/a	n/a	0.03752	NP Inter(normality)
Chromium, total (mg/L)	0.0007306	n/a	n/a	60	0.06551	0.01218	1.667	None	x^(1/3)	0.05	Inter
Cobalt, total (mg/L)	0.0006643	n/a	n/a	64	-9.249	0.9643	6.25	None	ln(x)	0.05	Inter
Combined Radium 226 + 228 (pCi/L)	2.263	n/a	n/a	64	0.8159	0.3437	0	None	sqrt(x)	0.05	Inter
Fluoride, total (mg/L)	0.2911	n/a	n/a	68	0.1737	0.05894	0	None	No	0.05	Inter
Lead, total (mg/L)	0.000881	n/a	n/a	64	n/a	n/a	14.06	n/a	n/a	0.03752	NP Inter(normality)
Lithium, total (mg/L)	0.02504	n/a	n/a	64	0.01101	0.007003	9.375	None	No	0.05	Inter
Mercury, total (mg/L)	0.000005	n/a	n/a	60	n/a	n/a	93.33	n/a	n/a	0.04607	NP Inter(NDs)
Molybdenum, total (mg/L)	0.002766	n/a	n/a	64	0.0326	0.009978	7.813	None	sqrt(x)	0.05	Inter
Selenium, total (mg/L)	0.0043	n/a	n/a	64	n/a	n/a	0	n/a	n/a	0.03752	NP Inter(normality)
Thallium, total (mg/L)	0.0005	n/a	n/a	64	n/a	n/a	39.06	n/a	n/a	0.03752	NP Inter(normality)

FIGURE I.

MOUNTAINEER BAP GWPS				
Constituent Name	**MCL**	**CCR Rule-Specified**	**Background Limit**	**GWPS**
Antimony, Total (mg/L)	0.006		0.0002	0.006
Arsenic, Total (mg/L)	0.01		0.00075	0.01
Barium, Total (mg/L)	2		0.068	2
Beryllium, Total (mg/L)	0.004		0.0001	0.004
Cadmium, Total (mg/L)	0.005		0.00005	0.005
Chromium, Total (mg/L)	0.1		0.00073	0.1
Cobalt, Total (mg/L)	n/a	0.006	0.0007	0.006
Combined Radium, Total (pCi/L)	5		2.26	5
Fluoride, Total (mg/L)	4		0.29	4
Lead, Total (mg/L)	0.015		0.00088	0.015
Lithium, Total (mg/L)	n/a	0.04	0.025	0.04
Mercury, Total (mg/L)	0.002		0.000005	0.002
Molybdenum, Total (mg/L)	n/a	0.1	0.0028	0.1
Selenium, Total (mg/L)	0.05		0.0043	0.05
Thallium, Total (mg/L)	0.002		0.0005	0.002

**GWPS = Groundwater Protection Standard*

**MCL = Maximum Contaminant Level*

**CCR = Coal Combustion Residual*

FIGURE J.

Confidence Intervals - Significant Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/14/2021, 3:02 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Lithium, total (mg/L)	**MW-1605D**	**0.07605**	**0.05304**	**0.04**	**Yes**	**16**	**0.06454**	**0.01768**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1605S**	**0.07392**	**0.05489**	**0.04**	**Yes**	**16**	**0.06441**	**0.01463**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1606D**	**0.1213**	**0.09346**	**0.04**	**Yes**	**16**	**0.1037**	**0.02599**	**0**	**None**	**x^3**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1606S**	**0.1123**	**0.0851**	**0.04**	**Yes**	**16**	**0.09868**	**0.02088**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607D**	**0.101**	**0.07849**	**0.04**	**Yes**	**16**	**0.08973**	**0.01726**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607S**	**0.1112**	**0.09206**	**0.04**	**Yes**	**16**	**0.1016**	**0.01468**	**0**	**None**	**No**	**0.01**	**Param.**

Confidence Intervals - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/14/2021, 3:02 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony, total (mg/L)	MW-1604D	0.00014	0.00003	0.006	No	16	0.00008437	0.00005228	6.25	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1604S	0.00015	0.00003	0.006	No	16	0.0000925	0.00006148	0	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1605D	0.00005	0.00003	0.006	No	16	0.00003625	0.000007188	12.5	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1605S	0.00007	0.00004	0.006	No	16	0.00005688	0.00003092	0	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1606D	0.00019	0.00014	0.006	No	16	0.0001644	0.00002851	0	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1606S	0.0001564	0.0001398	0.006	No	16	0.0001481	0.00001276	0	None	No	0.01	Param.
Antimony, total (mg/L)	MW-1607D	0.00004	0.00003	0.006	No	16	0.00003312	0.000007042	6.25	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1607S	0.0004765	0.0004222	0.006	No	15	0.0004493	0.00004008	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1604D	0.0004762	0.0003338	0.01	No	16	0.000405	0.0001094	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1604S	0.0004357	0.0003381	0.01	No	16	0.0003869	0.00007499	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1605D	0.002704	0.002268	0.01	No	16	0.002486	0.0003347	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1605S	0.0008429	0.0005507	0.01	No	16	0.0007063	0.0002421	0	None	sqrt(x)	0.01	Param.
Arsenic, total (mg/L)	MW-1606D	0.00071	0.00036	0.01	No	16	0.0005394	0.0002695	0	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	MW-1606S	0.0008345	0.0006955	0.01	No	16	0.000765	0.0001069	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1607D	0.00143	0.001087	0.01	No	16	0.001259	0.0002639	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1607S	0.0013	0.0009	0.01	No	15	0.001117	0.0002896	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	MW-1604D	0.0425	0.0275	2	No	16	0.03386	0.009042	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	MW-1604S	0.0294	0.0267	2	No	16	0.02874	0.001571	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	MW-1605D	0.02926	0.0254	2	No	16	0.02733	0.002965	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1605S	0.03525	0.02557	2	No	16	0.03041	0.007438	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1606D	0.05733	0.04899	2	No	16	0.05316	0.006409	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1606S	0.07386	0.06528	2	No	16	0.06957	0.006594	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1607D	0.129	0.08496	2	No	16	0.107	0.03385	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1607S	0.0722	0.06249	2	No	15	0.06735	0.007166	0	None	No	0.01	Param.
Beryllium, total (mg/L)	MW-1604S	0.0001	0.000024	0.004	No	14	0.00009457	0.00002031	92.86	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1605S	0.0001	0.00002	0.004	No	14	0.00008114	0.00003757	78.57	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1606D	0.0001	0.00001	0.004	No	14	0.000075	0.00004147	71.43	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1606S	0.0001	0.000005	0.004	No	14	0.00009321	0.00002539	92.86	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1607D	0.0001	0.000008	0.004	No	14	0.00009343	0.00002459	92.86	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1607S	0.000123	0.00001	0.004	No	14	0.00008214	0.00004011	71.43	None	No	0.01	NP (NDs)
Cadmium, total (mg/L)	MW-1604D	0.00015	0.00003	0.005	No	16	0.00008438	0.00005633	0	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1604S	0.00021	0.00003	0.005	No	16	0.0001131	0.00008459	0	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1605D	0.00004	0.00001	0.005	No	16	0.00002531	0.00001087	6.25	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1605S	0.000079	0.0000473	0.005	No	16	0.00006438	0.00002529	0	None	sqrt(x)	0.01	Param.
Cadmium, total (mg/L)	MW-1606D	0.00007713	0.00006287	0.005	No	16	0.00007	0.00001095	0	None	No	0.01	Param.
Cadmium, total (mg/L)	MW-1606S	0.00008	0.00006	0.005	No	16	0.00007188	0.000008342	0	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1607D	0.00003	0.00002	0.005	No	16	0.0000225	0.000006325	68.75	None	No	0.01	NP (NDs)
Cadmium, total (mg/L)	MW-1607S	0.00004679	0.00003188	0.005	No	15	0.00003933	0.000011	0	None	No	0.01	Param.
Chromium, total (mg/L)	MW-1604D	0.0005168	0.0002156	0.1	No	16	0.0003859	0.0002592	0	None	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	MW-1604S	0.0003242	0.0001191	0.1	No	15	0.0002591	0.0002206	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	MW-1605D	0.0002274	0.00008338	0.1	No	15	0.0001645	0.0001295	0	None	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	MW-1605S	0.000488	0.0002165	0.1	No	15	0.0003523	0.0002004	0	None	No	0.01	Param.
Chromium, total (mg/L)	MW-1606D	0.0004277	0.0001402	0.1	No	16	0.0003195	0.0002789	0	None	x^(1/3)	0.01	Param.
Chromium, total (mg/L)	MW-1606S	0.0003448	0.0001037	0.1	No	16	0.0002923	0.0003215	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	MW-1607D	0.0002457	0.00008153	0.1	No	15	0.0001998	0.0001975	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	MW-1607S	0.0004732	0.0002337	0.1	No	15	0.0003535	0.0001767	0	None	No	0.01	Param.
Cobalt, total (mg/L)	MW-1604D	0.00185	0.00014	0.006	No	16	0.0009925	0.0008151	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1604S	0.00214	0.000308	0.006	No	16	0.001185	0.0008758	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1605D	0.001775	0.00159	0.006	No	16	0.001683	0.0001425	0	None	No	0.01	Param.
Cobalt, total (mg/L)	MW-1605S	0.001004	0.0003722	0.006	No	16	0.000762	0.0007065	0	None	x^(1/3)	0.01	Param.
Cobalt, total (mg/L)	MW-1606D	0.00192	0.00111	0.006	No	16	0.001579	0.0007754	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1606S	0.0003616	0.0002446	0.006	No	16	0.0003031	0.00008992	0	None	No	0.01	Param.
Cobalt, total (mg/L)	MW-1607D	0.000848	0.000414	0.006	No	16	0.0006489	0.0002138	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1607S	0.00142	0.000851	0.006	No	15	0.001266	0.0005711	0	None	No	0.01	NP (normality)

Confidence Intervals - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/14/2021, 3:02 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Combined Radium 226 + 228 (pCi/L)	MW-1604D	1.334	0.4283	5	No	16	0.957	0.8133	0	None	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1604S	1.662	0.598	5	No	15	1.706	2.35	0	None	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-1605D	1.48	0.6031	5	No	16	1.131	0.8667	0	None	x^(1/3)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1605S	1.073	0.4422	5	No	16	0.8866	0.7705	0	None	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1606D	1.813	0.8691	5	No	15	1.454	0.9055	0	None	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1606S	1.507	0.6245	5	No	16	1.066	0.6786	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1607D	1.949	1.092	5	No	16	1.575	0.793	0	None	x^(1/3)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1607S	2.024	1.021	5	No	16	1.522	0.7709	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1604D	0.2063	0.1737	4	No	17	0.19	0.02598	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1604S	0.2192	0.1938	4	No	17	0.2065	0.02029	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1605D	0.2066	0.184	4	No	17	0.1953	0.01807	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1605S	0.2844	0.2438	4	No	17	0.2641	0.03242	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1606D	0.27	0.24	4	No	17	0.2588	0.0714	0	None	No	0.01	NP (normality)
Fluoride, total (mg/L)	MW-1606S	0.4797	0.3859	4	No	18	0.4328	0.07752	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1607D	0.5345	0.4732	4	No	18	0.5039	0.05066	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1607S	0.2966	0.2528	4	No	17	0.2747	0.03502	0	None	No	0.01	Param.
Lead, total (mg/L)	MW-1604D	0.00009405	0.00002674	0.015	No	16	0.0001322	0.0001502	25	Kaplan-Meier	ln(x)	0.01	Param.
Lead, total (mg/L)	MW-1604S	0.0002	0.000034	0.015	No	16	0.0001191	0.00007161	37.5	None	No	0.01	NP (normality)
Lead, total (mg/L)	MW-1605D	0.0002	0.00002	0.015	No	16	0.00007219	0.0000781	25	None	No	0.01	NP (normality)
Lead, total (mg/L)	MW-1605S	0.00058	0.0001455	0.015	No	16	0.0004323	0.0005147	6.25	None	x^(1/3)	0.01	Param.
Lead, total (mg/L)	MW-1606D	0.000246	0.00004554	0.015	No	16	0.0002992	0.0004852	31.25	Kaplan-Meier	ln(x)	0.01	Param.
Lead, total (mg/L)	MW-1606S	0.0001357	0.00006068	0.015	No	16	0.0001206	0.00006899	18.75	Kaplan-Meier	No	0.01	Param.
Lead, total (mg/L)	MW-1607D	0.0002	0.000043	0.015	No	16	0.0001272	0.0001482	18.75	None	No	0.01	NP (normality)
Lead, total (mg/L)	MW-1607S	0.000267	0.00009	0.015	No	15	0.0002961	0.0004235	0	None	No	0.01	NP (normality)
Lithium, total (mg/L)	MW-1604D	0.058	0.0188	0.04	No	16	0.03826	0.01797	6.25	None	No	0.01	NP (normality)
Lithium, total (mg/L)	MW-1604S	0.04616	0.03408	0.04	No	16	0.04012	0.00928	0	None	No	0.01	Param.
Lithium, total (mg/L)	**MW-1605D**	**0.07605**	**0.05304**	**0.04**	**Yes**	**16**	**0.06454**	**0.01768**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1605S**	**0.07392**	**0.05489**	**0.04**	**Yes**	**16**	**0.06441**	**0.01463**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1606D**	**0.1213**	**0.09346**	**0.04**	**Yes**	**16**	**0.1037**	**0.02599**	**0**	**None**	**x^3**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1606S**	**0.1123**	**0.0851**	**0.04**	**Yes**	**16**	**0.09868**	**0.02088**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607D**	**0.101**	**0.07849**	**0.04**	**Yes**	**16**	**0.08973**	**0.01726**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607S**	**0.1112**	**0.09206**	**0.04**	**Yes**	**16**	**0.1016**	**0.01468**	**0**	**None**	**No**	**0.01**	**Param.**
Mercury, total (mg/L)	MW-1604D	0.000036	0.000003	0.002	No	15	0.000006933	0.000008058	86.67	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1604S	0.000005	0.000003	0.002	No	15	0.000004867	5.2e-7	93.33	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1605D	0.000005	0.000002	0.002	No	15	0.0000048	7.7e-7	93.33	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1605S	0.000005	0.000003	0.002	No	15	0.000004867	5.2e-7	93.33	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1606D	0.000005	0.000004	0.002	No	15	0.000004933	2.6e-7	93.33	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1606S	0.000005	0.000002	0.002	No	15	0.0000048	7.7e-7	93.33	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1607D	0.000005	0.000002	0.002	No	15	0.0000046	0.000001056	86.67	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1607S	0.000012	0.000003	0.002	No	15	0.0000052	0.000002007	80	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	MW-1604D	0.0198	0.001	0.1	No	16	0.01029	0.008831	6.25	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	MW-1604S	0.0163	0.00252	0.1	No	15	0.009587	0.00689	0	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	MW-1605D	0.0486	0.03962	0.1	No	16	0.04411	0.0069	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1605S	0.0199	0.01428	0.1	No	16	0.01709	0.004318	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1606D	0.0769	0.06827	0.1	No	16	0.07259	0.006631	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1606S	0.09321	0.0659	0.1	No	16	0.07956	0.02099	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1607D	0.08879	0.08236	0.1	No	16	0.08558	0.004945	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1607S	0.04498	0.03799	0.1	No	16	0.04148	0.005373	0	None	No	0.01	Param.
Selenium, total (mg/L)	MW-1604D	0.0031	0.0007	0.05	No	16	0.001531	0.001136	0	None	No	0.01	NP (normality)
Selenium, total (mg/L)	MW-1604S	0.002187	0.001201	0.05	No	16	0.001694	0.0007576	0	None	No	0.01	Param.
Selenium, total (mg/L)	MW-1605D	0.0003	0.00009	0.05	No	16	0.0002244	0.00006957	0	None	No	0.01	NP (normality)
Selenium, total (mg/L)	MW-1605S	0.00146	0.0006917	0.05	No	16	0.001119	0.0006765	0	None	sqrt(x)	0.01	Param.
Selenium, total (mg/L)	MW-1606D	0.005869	0.002344	0.05	No	16	0.004106	0.002709	0	None	No	0.01	Param.
Selenium, total (mg/L)	MW-1606S	0.002215	0.0009601	0.05	No	16	0.001806	0.001369	0	None	ln(x)	0.01	Param.

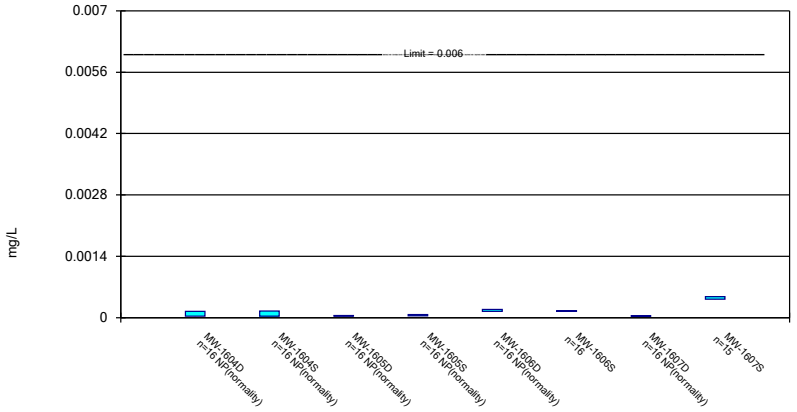
Confidence Intervals - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/14/2021, 3:02 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Selenium, total (mg/L)	MW-1607D	0.00009	0.00004	0.05	No	16	0.00008312	0.0001131	12.5	None	No	0.01	NP (normality)
Selenium, total (mg/L)	MW-1607S	0.008966	0.005996	0.05	No	16	0.007481	0.002283	0	None	No	0.01	Param.
Thallium, total (mg/L)	MW-1604D	0.0005	0.000217	0.002	No	16	0.0003202	0.0001658	37.5	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1604S	0.0003	0.00002	0.002	No	16	0.0001613	0.0001449	6.25	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1605D	0.0005	0.00004	0.002	No	16	0.0002255	0.0002209	37.5	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1605S	0.0005	0.00005	0.002	No	16	0.0002291	0.0002191	37.5	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1606D	0.0005	0.000092	0.002	No	16	0.0002261	0.000191	31.25	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1606S	0.0005	0.000063	0.002	No	16	0.0002108	0.0002019	31.25	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1607D	0.0005	0.00002	0.002	No	16	0.0002108	0.0002316	37.5	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1607S	0.0005	0.000052	0.002	No	16	0.0002308	0.0002167	37.5	None	No	0.01	NP (normality)

Parametric and Non-Parametric (NP) Confidence Interval

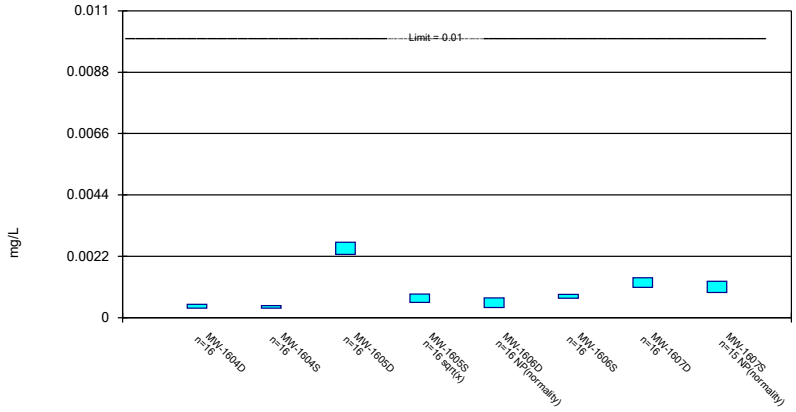
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Antimony, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

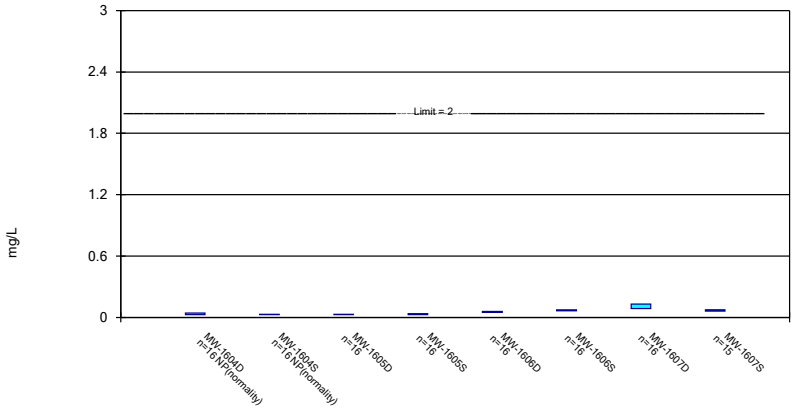
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

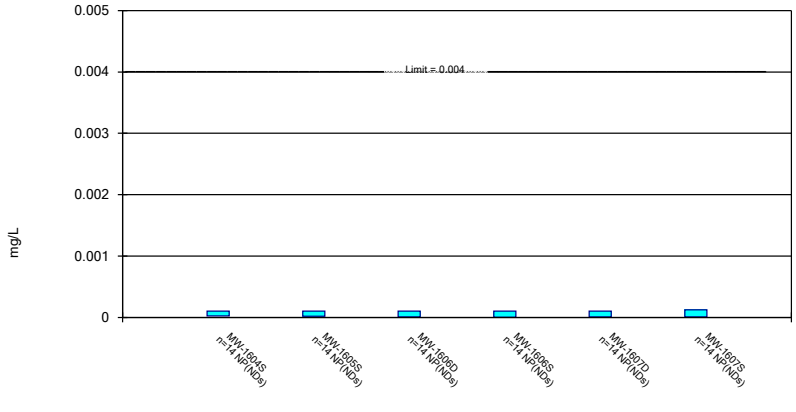
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Non-Parametric Confidence Interval

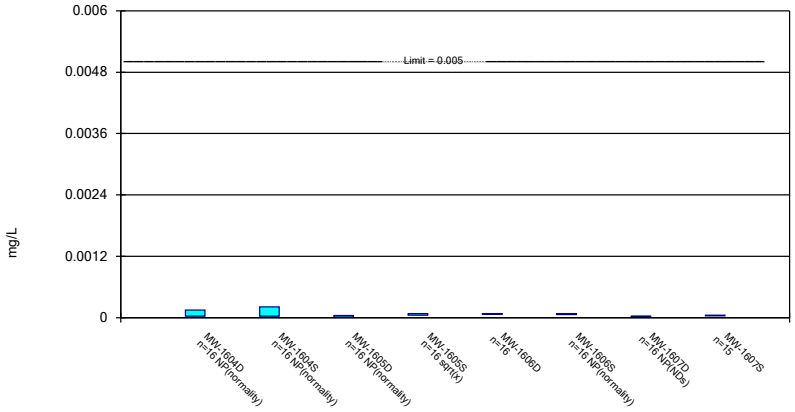
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Beryllium, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

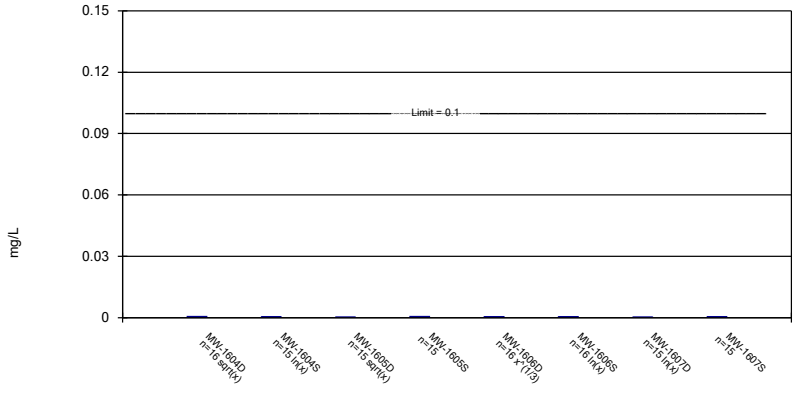
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cadmium, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric Confidence Interval

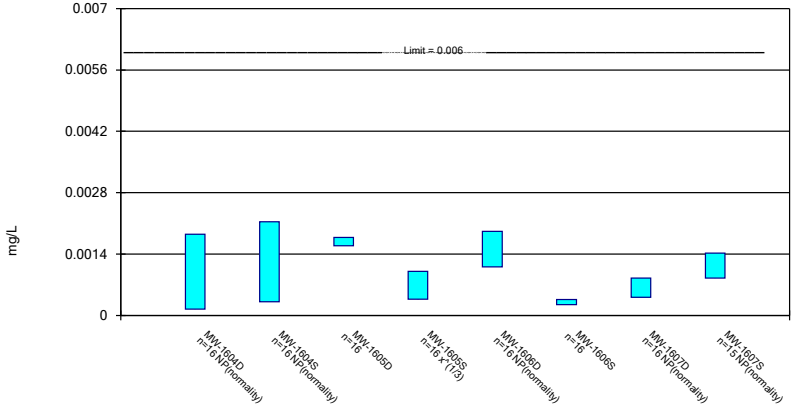
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

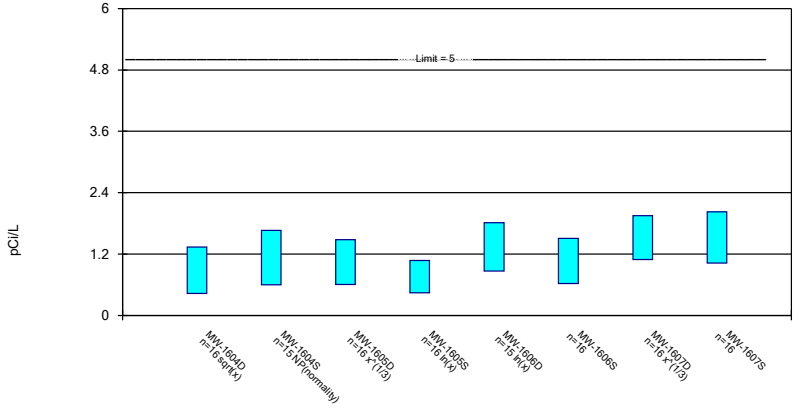
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

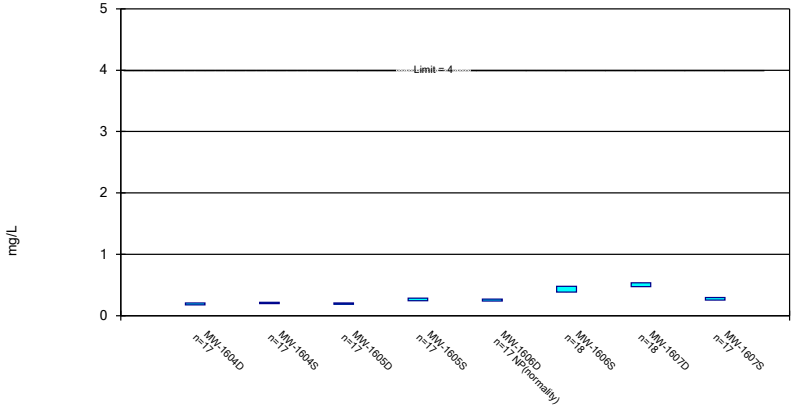
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

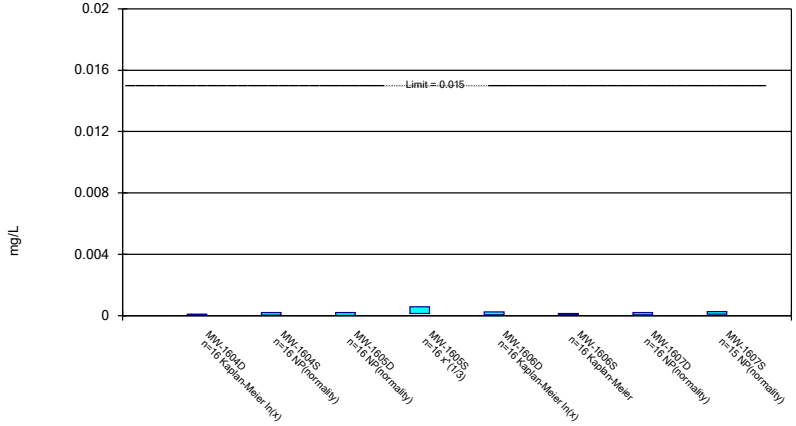
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

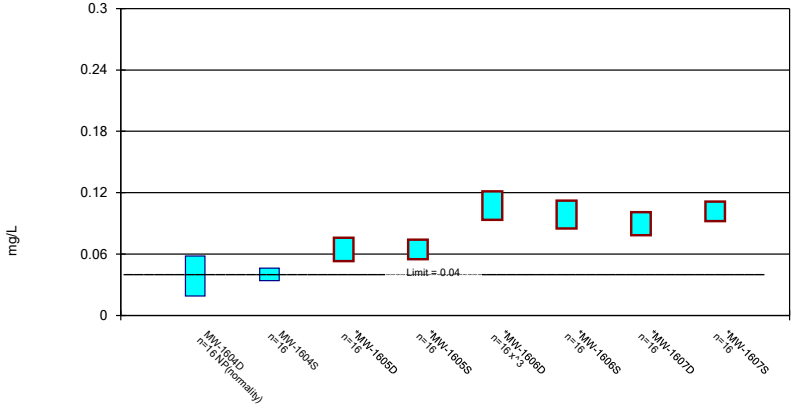
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

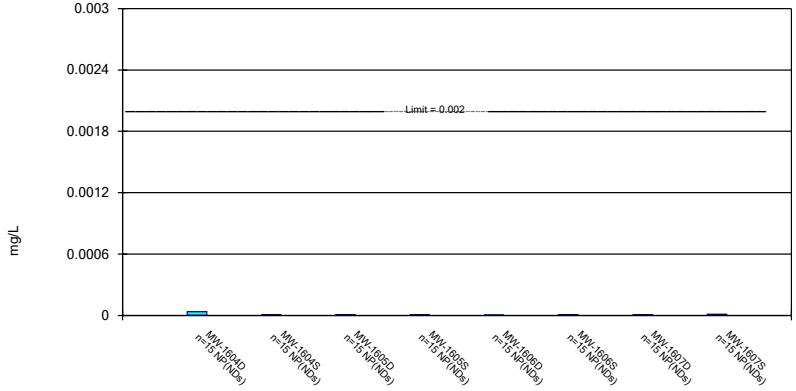
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Non-Parametric Confidence Interval

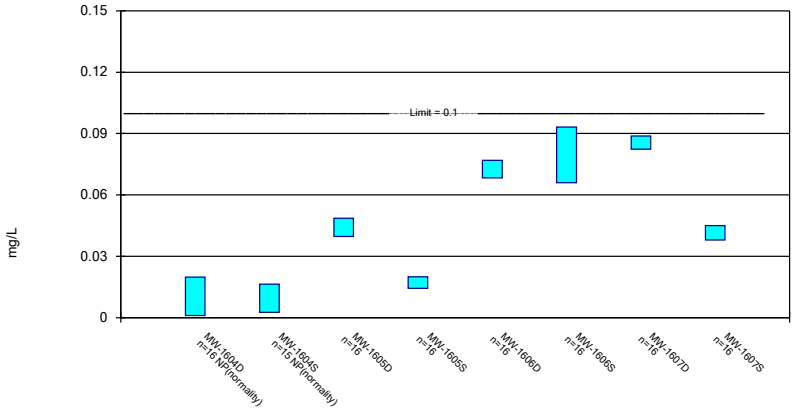
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Mercury, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

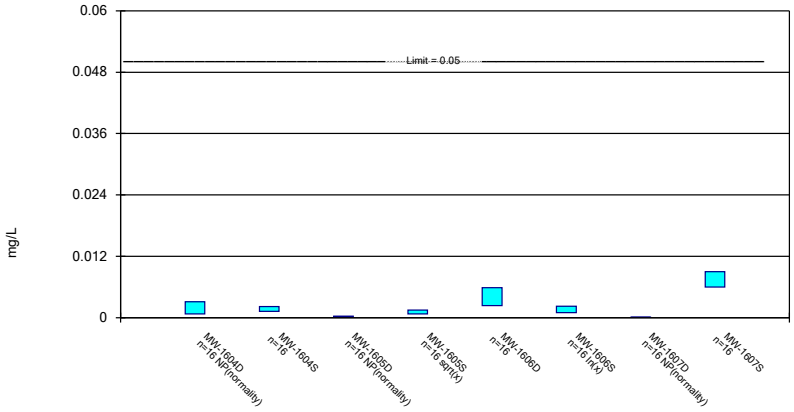
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

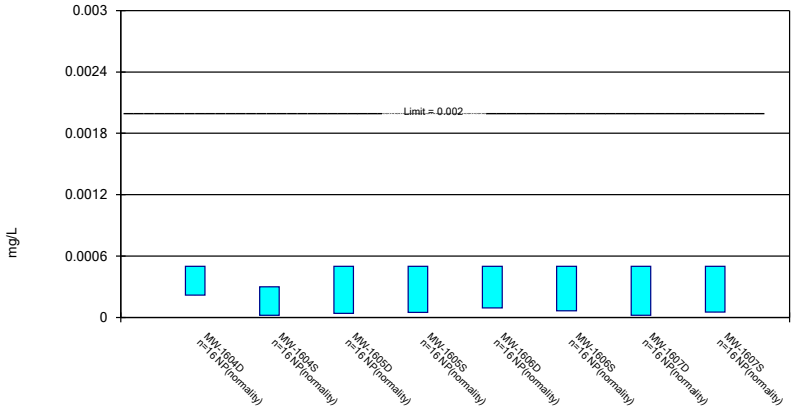
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Thallium, total Analysis Run 1/14/2021 2:59 PM View: Appendix IV
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

STATISTICAL ANALYSIS SUMMARY
BOTTOM ASH POND
Mountaineer Plant
New Haven, West 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

September 19, 2021

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LIST OF ACRONYMS AND ABBREVIATIONS

AEP	American Electric Power
ASD	Alternative Source Demonstration
BAP	Bottom Ash Pond
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
LPL	Lower Prediction Limit
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
TDS	Total Dissolved Solids
UPL	Upper Prediction Limit
USEPA	United States Environmental Protection Agency

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 the Bottom Ash Pond (BAP), an existing CCR unit at the Mountaineer Power Plant located in New Haven, West Virginia.

Based on detection monitoring conducted in 2017 and 2018, statistically significant increases (SSIs) over background were concluded for boron, calcium, chloride, total dissolved solids (TDS), and sulfate at the BAP. An alternative source was not identified at the time, so the BAP initiated assessment monitoring in April 2018. Groundwater protection standards (GWPS) were set in accordance with 40 CFR 257.95(d)(2) and a statistical evaluation of the assessment monitoring data was conducted in January 2019. Statistically significant levels (SSLs) were observed for lithium (Geosyntec, 2019). An alternative source was not identified, so the BAP initiated an assessment of corrective measures in accordance with 40 CFR 257.96 and has been completing assessment monitoring since. Assessment monitoring events were conducted at the BAP in March 2021 and May 2021 in accordance with 40 CFR 257.95. The results of these assessment events are documented in this report.

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 data usability.

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. Confidence intervals were calculated for Appendix IV parameters at the compliance wells to assess whether Appendix IV parameters were present at SSLs above previously calculated GWPS. SSLs were identified for lithium. Thus, the unit will continue the assessment of corrective measures 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, two sets of samples were collected for analysis from each upgradient and downgradient well to meet the requirements of 40 CFR 257.95(b) (March 2021) and 257.95(d)(1) (May 2021). The samples from both events were analyzed for all Appendix III and 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 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.9.6.30f 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 the BAP were conducted in accordance with the October 2020 *Statistical Analysis Plan* (Geosyntec, 2020). Time series plots and results for all completed statistical tests are provided in Attachment B.

The data obtained in March 2021 and May 2021 were screened for potential outliers. No outliers were identified for these events.

2.2.1 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. Calculated confidence limits are shown in Attachment B. The calculated confidence limits were compared to the GWPSs provided in Table 2. The GWPSs were established during a previous statistical analysis as either

the greater value of the background concentration or the maximum contaminant level (MCL) and risk-based level specified in 40 CFR 257.95(h)(2) (Geosyntec, 2021).

The following SSLs were identified at the Mountaineer BAP:

- The LCL for lithium exceeded the GWPS of 0.0400 mg/L at MW-1605D (0.0516 mg/L), MW-1605S (0.0542 mg/L), MW-1606D (0.0666 mg/L), MW-1606S (0.0809 mg/L), MW-1607D (0.0796 mg/L), and MW-1607S (0.0915 mg/L).

As a result, the Mountaineer BAP 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 257.96(b).

2.2.2 Evaluation of Potential Appendix III SSIs

The Appendix III results were analyzed to assess whether concentrations of Appendix III parameters at the compliance wells exceeded background concentrations. Data collected during the May 2021 assessment monitoring event from each compliance well were compared to previously established prediction limits to assess whether the results are above background values. The results from these events and the prediction limits are summarized in Table 3. The following exceedances of the upper prediction limits (UPLs) were noted:

- Boron concentrations exceeded the interwell UPL of 0.580 mg/L at MW-1604D (4.02 mg/L), MW-1604S (2.72 mg/L), MW-1605D (4.90 mg/L), MW-1605S (4.74 mg/L), MW-1606D (7.99 mg/L), MW-1606S (4.92 mg/L), MW-1607D (4.46 mg/L), and MW-1607S (3.40 mg/L).

- Calcium concentrations exceeded the interwell UPL of 212 mg/L at MW-1604S (223 mg/L), MW-1605D (224 mg/L), and MW-1606D (230 mg/L).

- Chloride concentrations exceeded the interwell UPL of 64.6 mg/L at MW-1604D (80.5 mg/L) MW-1604S (100 mg/L), MW-1605D (128 mg/L), MW-1605S (93.2 mg/L), MW-1606D (180 mg/L), MW-1606S (141 mg/L), MW-1607D (170 mg/L), and MW-1607S (163 mg/L).

- Fluoride concentrations exceeded the interwell UPL of 0.289 mg/L at MW-1605S (0.30 mg/L), MW-1606S (0.45 mg/L), and MW-1607D (0.53 mg/L).

- Sulfate concentrations exceeded the interwell UPL of 548 mg/L at MW-1604S (602 mg/L), MW-1605D (785 mg/L), MW-1606D (682 mg/L), and MW-1607D (652 mg/L).

- TDS concentrations exceeded the interwell UPL of 993 mg/L at MW-1604D (1,160 mg/L), MW-1604S (1,300 mg/L), MW-1605D (1,590 mg/L), MW-1605S (1,180 mg/L), MW-1606D (1,590 mg/L), MW-1606S (1,290 mg/L), MW-1607D (1,590 mg/L), and MW-1607S (1,200 mg/L).

While the prediction limits were calculated for a one-of-two retesting procedure, SSIs were conservatively assumed if the May 2021 sample was above the UPL or below the LPL. Based on these results, concentrations of Appendix III constituents appear to be above background levels at compliance wells.

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. A review of outliers identified no potential outliers in the March 2021 or May 2021 data. 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 lithium. Appendix III parameters were compared to recalculated prediction limits, with exceedances identified for boron, calcium, chloride, fluoride, sulfate, and TDS.

Based on this evaluation, the Mountaineer BAP 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 257.96b.

SECTION 3

REFERENCES

Geosyntec Consultants (Geosyntec). 2019. Statistical Analysis Summary – Bottom Ash Pond, Mountaineer Plant. January 8, 2019.

Geosyntec. 2020. Statistical Analysis Summary – Bottom Ash Pond. Mountaineer Plant. October 2, 2020.

Geosyntec. 2021. Statistical Analysis Summary – Bottom Ash Pond, Mountaineer Plant. February 9, 2021.

TABLES

Table 1 - Groundwater Data Summary
Mountaineer Plant - Bottom Ash Pond

Parameter	Unit	MW-1601A		MW-1602		MW-1603		MW-1604D		MW-1604S		MW-1605D		MW-1605S	
		3/23/2021	5/20/2021	3/23/2021	5/19/2021	3/23/2021	5/20/2021	3/25/2021	5/20/2021	3/25/2021	5/20/2021	3/25/2021	5/19/2021	3/24/2021	5/19/2021
Antimony	µg/L	0.03 J	0.08 J	0.02 J	0.07 J	0.03 J	0.08 J	0.04 J	0.08 J	0.25	0.16	0.03 J	0.06 J	0.04 J	0.09 J
Arsenic	µg/L	0.55	0.54	0.31	0.30	0.32	0.29	0.28	0.25	0.35	0.25	2.98	2.83	0.42	0.43
Barium	µg/L	65.4	67.7	26.2	25.9	31.2	30.9	26.5	24.4	28.2	25.3	27.3	26.6	25.7	26.9
Beryllium	µg/L	0.1 U	0.05 U	0.1 U	0.05 U	0.1 U	0.05 U	0.1 U	0.05 U	0.1 U	0.05 U	0.1 U	0.05 U	0.1 U	0.05 U
Boron	mg/L	0.128	0.122	0.110	0.117	0.218	0.232	3.68	4.02	2.48	2.72	4.32	4.90	4.63	4.74
Cadmium	µg/L	0.02 J	0.016 J	0.02 J	0.012 J	0.01 J	0.012 J	0.02 J	0.022	0.20	0.174	0.01 J	0.014 J	0.05 J	0.047
Calcium	mg/L	179	173	96.9	87.7	177	162	175	174	220	223	233	224	160	154
Chloride	mg/L	16.0	16.1	8.58	7.54	9.93	10.3	70.4	80.5	95.3	100	121	128	85.8	93.2
Chromium	µg/L	0.456	0.23	0.531	0.65	0.341	0.74	0.219	0.26	0.506	0.21	0.1 J	0.17 J	0.2 J	0.34
Cobalt	µg/L	0.02 J	0.012 J	0.03 J	0.018 J	0.110	0.152	0.105	0.091	4.70	1.77	1.55	1.54	0.208	0.603
Combined Radium	pCi/L	1.17	0.78	0.8182	0.58	1.916	0.49	0.677	0.32	2.14	1.38	3.315	1.28	0.919	0.77
Fluoride	mg/L	0.15	0.13	0.29	0.27	0.09	0.08	0.24	0.24	0.29	0.27	0.22	0.21	0.33	0.30
Lead	µg/L	0.2 U	0.2 U	0.06 J	0.2 U	0.1 J	0.16 J	0.2 U	0.2 U	0.245	0.2 U	0.2 U	0.2 U	0.06 J	0.14 J
Lithium	mg/L	0.00198	0.00194	0.0109	0.0118	0.0153	0.0154	0.0217	0.0213	0.0368	0.0374	0.0447	0.0455	0.0509	0.0516
Mercury	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Molybdenum	µg/L	3.96	0.5	1 J	1.1	0.1 J	0.1 J	2 J	1.4	13.7	14.5	30.1	29.3	13.4	12.4
Selenium	µg/L	0.9	0.94	0.1 J	0.10 J	0.1 J	0.13 J	1.2	1.39	1.1	0.96	0.2 J	0.14 J	0.4 J	0.39 J
Sulfate	mg/L	241	241	238	238	364	390	489	508	577	602	772	785	512	528
Thallium	µg/L	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 J	0.24	0.5 U	0.2 U	0.5 U	0.2 U
Total Dissolved Solids	mg/L	738	750	550	580	840	820	1,080	1,160	1,210	1,300	1,540	1,590	1,120	1,180
pH	SU	7.0	6.6	6.8	6.5	6.7	6.3	7.2	7.0	7.3	7.1	7.5	7.2	7.4	7.1

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.
-: Not analyzed

Table 1 - Groundwater Data Summary
Mountaineer Plant - Bottom Ash Pond

Parameter	Unit	MW-1606D		MW-1606S		MW-1607D		MW-1607S		MW-1608	
		3/25/2021	5/18/2021	3/25/2021	5/18/2021	3/25/2021	5/18/2021	3/25/2021	5/18/2021	3/23/2021	5/18/2021
Antimony	µg/L	0.15	0.20	0.16	0.17	0.03 J	0.07 J	0.43	0.49	0.04 J	0.09 J
Arsenic	µg/L	0.35	0.33	0.70	0.63	1.86	1.86	0.93	0.91	0.55	0.45
Barium	µg/L	47.3	46.1	54.1	52.1	75.3	71.7	70.7	68.0	31.9	25.0
Beryllium	µg/L	0.1 U	0.05 U	0.1 U	0.05 U	0.1 U	0.05 U	0.1 U	0.05 U	0.1 U	0.05 U
Boron	mg/L	7.50	7.99	6.09	4.92	4.43	4.46	3.37	3.40	0.059	0.085
Cadmium	µg/L	0.08	0.082	0.05	0.067	0.004 J	0.01 J	0.04 J	0.108	0.02 J	0.009 J
Calcium	mg/L	239	230	172	158	212	197	187	177	81.8	80.3
Chloride	mg/L	170	180	137	141	170	170	166	163	2.82	2.58
Chromium	µg/L	0.202	0.46	0.232	0.19 J	0.1 J	0.26	0.329	0.23	0.429	0.25
Cobalt	µg/L	1.56	1.60	0.153	0.192	0.874	0.843	1.28	1.45	0.399	0.125
Combined Radium	pCi/L	0.444	1.24	0.745	0.79	1.002	1.34	0.963	0.39	0.9785	0.56
Fluoride	mg/L	0.27	0.26	0.45	0.45	0.57	0.53	0.26	0.25	0.29	0.27
Lead	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.08 J	0.19 J	0.334	0.10 J
Lithium	mg/L	0.0658	0.0666	0.0604	0.0652	0.0770	0.103	0.0796	0.103	0.00187	0.00209
Mercury	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Molybdenum	µg/L	66.9	66.9	62.5	52.8	75.9	75.0	30.4	30.5	0.6 J	1
Selenium	µg/L	3.2	3.62	3.0	3.49	0.5 U	0.5 U	4.1	4.05	1.4	2.06
Sulfate	mg/L	703	682	516	505	668	652	373	375	76.5	78.3
Thallium	µg/L	0.07 J	0.07 J	0.06 J	0.06 J	0.5 U	0.2 U	0.07 J	0.07 J	0.5 U	0.2 U
Total Dissolved Solids	mg/L	1,580	1,590	1,280	1,290	1,550	1,590	1,160	1,200	325	340
pH	SU	7.4	7.1	7.2	7.0	7.6	7.3	7.4	7.1	6.9	6.9

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.
-: Not analyzed

Table 2 - Appendix IV Groundwater Protection Standards
Mountaineer Plant - Bottom Ash Pond

Geosyntec Consultants, Inc.

Constituent Name	MCL	CCR Rule-Specified	Calculated UTL	GWPS
Antimony, Total (mg/L)	0.006		0.0002	0.006
Arsenic, Total (mg/L)	0.010		0.00075	0.010
Barium, Total (mg/L)	2.00		0.068	2.00
Beryllium, Total (mg/L)	0.004		0.0001	0.004
Cadmium, Total (mg/L)	0.005		0.00005	0.005
Chromium, Total (mg/L)	0.100		0.00073	0.100
Cobalt, Total (mg/L)	n/a	0.00600	0.00066	0.00600
Combined Radium, Total (pCi/L)	5.00		2.263	5.00
Fluoride, Total (mg/L)	4.0		0.29	4.0
Lead, Total (mg/L)	n/a	0.015	0.00088	0.015
Lithium, Total (mg/L)	n/a	0.040	0.0250	0.040
Mercury, Total (mg/L)	0.002		0.000005	0.002
Molybdenum, Total (mg/L)	n/a	0.100	0.0028	0.100
Selenium, Total (mg/L)	0.050		0.0043	0.050
Thallium, Total (mg/L)	0.0020		0.00050	0.0020

Notes:
MCL = Maximum Contaminant Level
CCR = Coal Combustion Residual
GWPS = Groundwater Protection Standard
Calculated UTL (Upper Tolerance Limit) represents site-specific background values.

Table 3 - Appendix III Data Summary
Mountaineer Plant - Bottom Ash Pond

Geosyntec Consultants, Inc.

Analyte	Unit	Description	MW-1604D	MW-1604S	MW-1605D	MW-1605S	MW-1606D	MW-1606S	MW-1607D	MW-1607S
			5/20/2021	5/20/2021	5/19/2021	5/19/2021	5/18/2021	5/18/2021	5/18/2021	5/18/2021
Boron	mg/L	Interwell Background Value (UPL)	0.580							
		Analytical Result	**4.02**	**2.72**	**4.90**	**4.74**	**7.99**	**4.92**	**4.46**	**3.40**
Calcium	mg/L	Interwell Background Value (UPL)	212							
		Analytical Result	174	**223**	**224**	154	**230**	158	197	177
Chloride	mg/L	Interwell Background Value (UPL)	64.6							
		Analytical Result	**80.5**	**100**	**128**	**93.2**	**180**	**141**	**170**	**163**
Fluoride	mg/L	Interwell Background Value (UPL)	0.289							
		Analytical Result	0.24	0.27	0.21	**0.30**	0.26	**0.45**	**0.53**	0.25
pH	SU	Intrawell Background Value (UPL)	7.9	7.7	7.9	7.8	7.9	7.9	8.1	7.9
		Intrawell Background Value (LPL)	6.4	6.6	6.8	6.7	6.8	6.2	6.9	6.9
		Analytical Result	7.0	7.1	7.2	7.1	7.1	7.0	7.3	7.1
Sulfate	mg/L	Interwell Background Value (UPL)	548							
		Analytical Result	508	**602**	**785**	528	**682**	505	**652**	375
Total Dissolved Solids	mg/L	Interwell Background Value (UPL)	993							
		Analytical Result	**1,160**	**1,300**	**1,590**	**1,180**	**1,590**	**1,290**	**1,590**	**1,200**

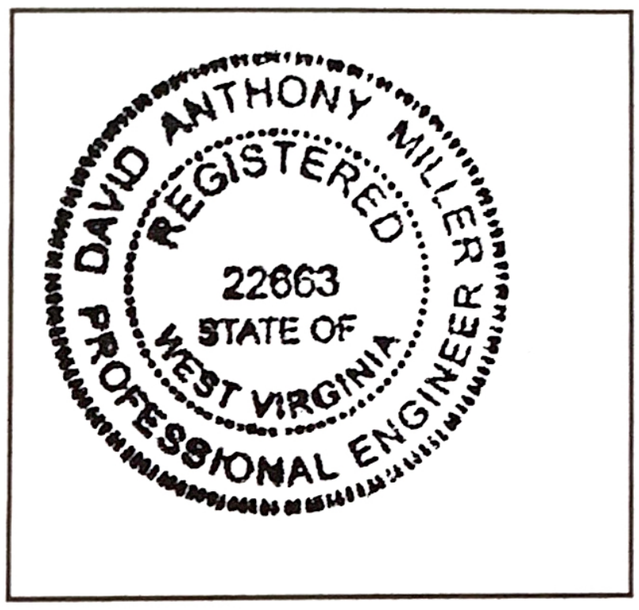
Notes:
UPL: Upper prediction limit
LPL: Lower prediction limit
Bold values exceed the background value.
Background values are shaded gray.

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 Mountaineer Bottom Ash Pond 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

22663	WEST VIRGINIA	09.19.21
License Number	Licensing State	Date

ATTACHMENT B

Statistical Analysis Output

GROUNDWATER STATS CONSULTING

August 31, 2021

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

Re: Mountaineer Bottom Ash Pond
Assessment Monitoring Summary – May 2021

Dear Ms. Kreinberg,

Groundwater Stats Consulting (GSC), formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the Assessment Monitoring statistical analysis of groundwater data through May 2021 at American Electric Power Company's Mountaineer Bottom Ash Pond. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities (CCR Rule, 2015) as well as with the United States Environmental Protection Agency (USEPA) Unified Guidance (2009).

Sampling began at the site for the CCR program in 2016. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

- **Upgradient wells:** MW-1601A, MW-1602, MW-1603, and MW-1608
- **Downgradient wells:** MW-1604D, MW-1604S, MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S

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 analysis was reviewed by Kristina Rayner, Groundwater Statistician and Founder of Groundwater Stats Consulting.

The CCR program consists of the following constituents:

- **Appendix IV** (Assessment Monitoring) **–** antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium

Time series and box plots for Appendix IV parameters are provided for all wells and constituents; and are used to evaluate concentrations over the entire record (Figures A and B, respectively). Values in background which have previously been flagged as outliers may be seen in a lighter font and disconnected symbol on the graphs. Additionally, a summary of flagged values follows this letter (Figure C). While the reporting limits may vary from well to well, a single reporting limit substitution is used across all wells for a given parameter in the time series plots since the wells are plotted as a group. Note that during this analysis, the reporting limits for beryllium and thallium decreased to 0.00005 mg/L and 0.0002 mg/L, respectively.

Note that when there are no detections present in downgradient wells for a given constituent, statistical analyses are not required. A summary of Appendix IV downgradient well/constituent pairs with 100% non-detects follows this letter.

Summary of Statistical Methods – Appendix IV Parameters

Parametric tolerance 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 non-detects, 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 (USEPA, 2009), data are analyzed using either parametric or non-parametric prediction limits as appropriate.

- No statistical analyses are required on wells and analytes containing 100% non-detects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% non-detects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for non-detects is the most recent practical quantification limit (PQL) as reported by the laboratory.
- When data contain between 15-50% non-detects, the Kaplan-Meier non-detect 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 tolerance limits are used on data containing greater than 50% non-detects.

Summary of Background Update – Conducted in January 2021

Outlier Analysis

Prior to evaluating Appendix IV parameters, background (upgradient) data were screened through visual screening and Tukey's outlier test for potential outliers and extreme trending patterns that would lead to artificially elevated statistical limits. High outliers are also 'cautiously' flagged in the downgradient wells when they are clearly much different from the rest of the data. This is intended to be a regulatory conservative approach in that it will reduce the variance and thus reduce the width of parametric confidence intervals; although it will also reduce the mean and thus lower the entire interval. The intent is to better represent the actual downgradient mean.

Tukey's outlier test results for Appendix IV parameters were included with the background update conducted in January 2021. As mentioned above, a list of flagged values follows this report (Figure C).

Tolerance Limits

Interwell upper tolerance limits were used to calculate background limits from all available pooled upgradient well data for each Appendix IV parameter through October 2020 (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). GWPS will be updated during Fall 2021.

Evaluation of Appendix IV Parameters – May 2021

Confidence intervals were then constructed with data through May 2021 on downgradient wells for each of the Appendix IV parameters using the highest limit of the MCL, CCR-Rule specified levels, or background limit as the GWPS 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. Complete graphical results of the confidence intervals follow this letter. Exceedances were identified for the following well/constituent pairs:

- Lithium: MW-1605D, MW-1605S, MW-1606D, MW-1606S, MW-1607D, and MW-1607S

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Mountaineer Bottom Ash Pond. If you have any questions or comments, please feel free to contact us.

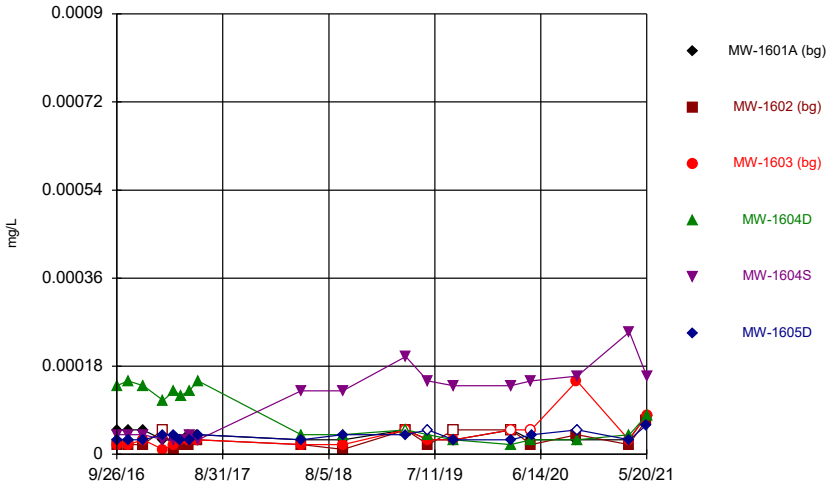
For Groundwater Stats Consulting,

Andrew T. Collins
Project Manager

Kristina L. Rayner
Groundwater Statistician

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

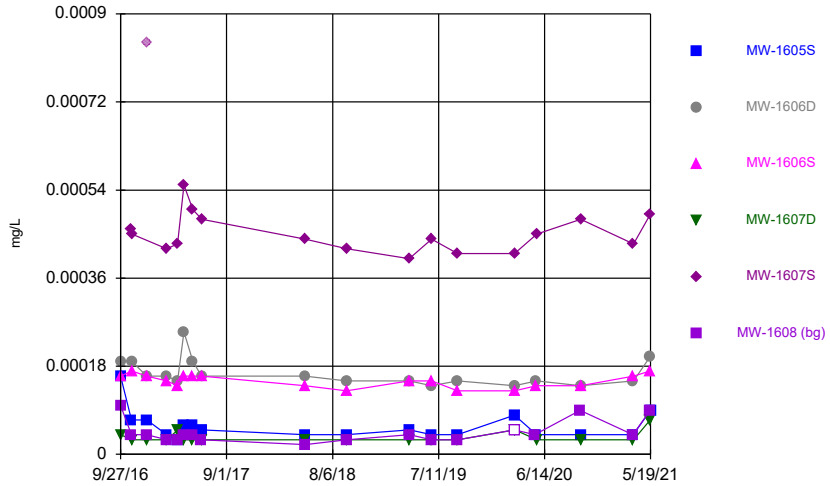
Time Series



Constituent: Antimony, total Analysis Run 8/30/2021 2:07 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

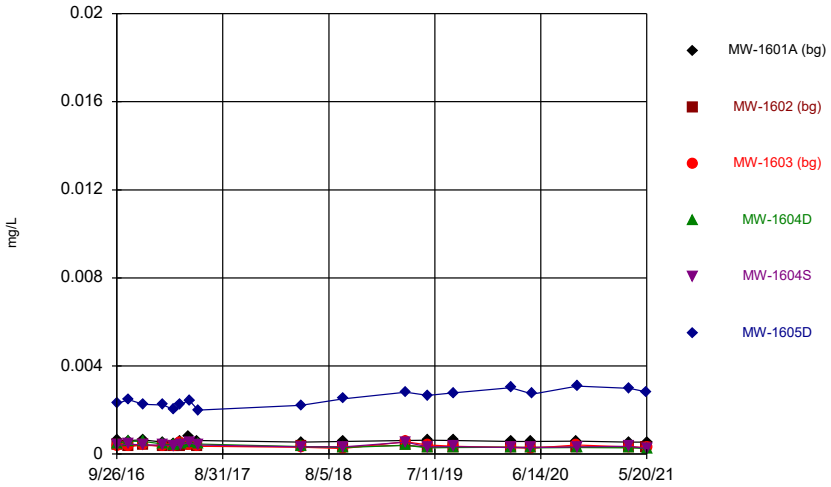
Time Series



Constituent: Antimony, total Analysis Run 8/30/2021 2:07 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

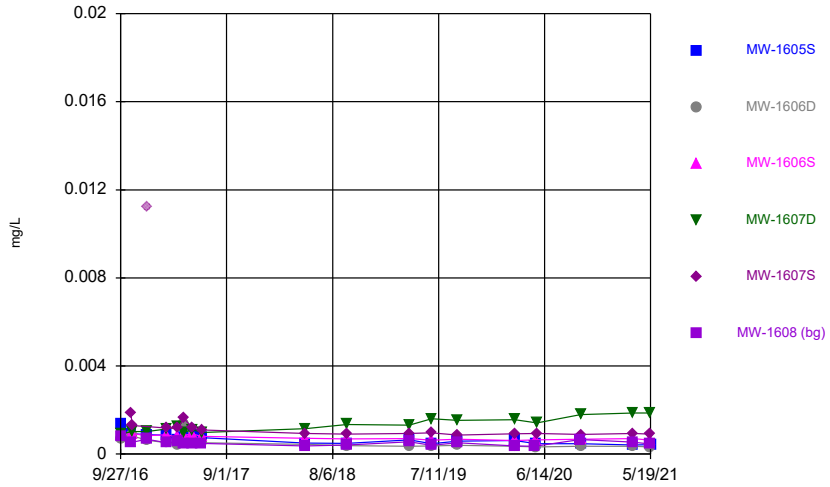
Time Series



Constituent: Arsenic, total Analysis Run 8/30/2021 2:07 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Time Series



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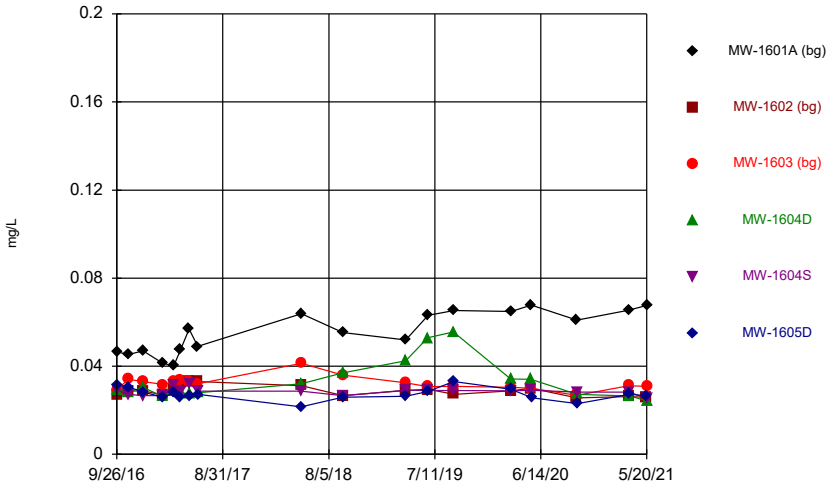
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Time Series



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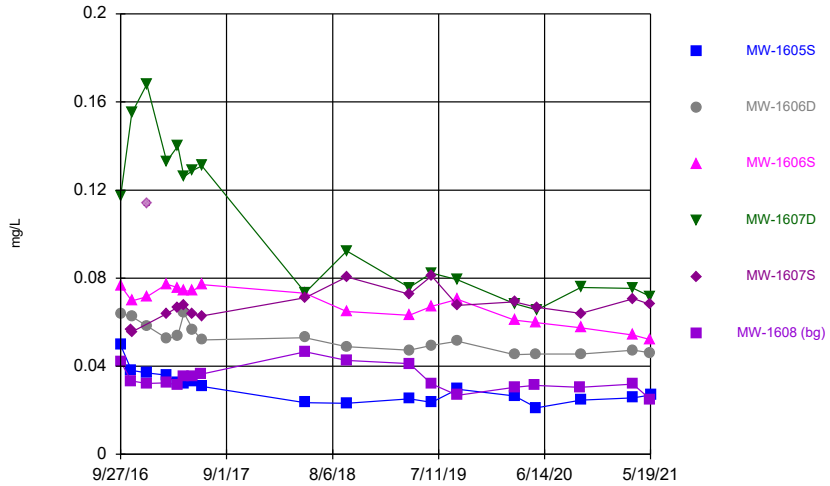
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Time Series



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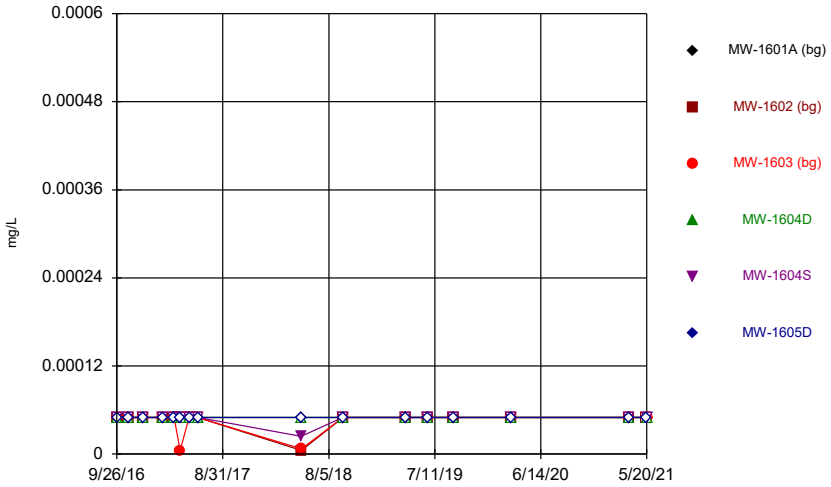
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series

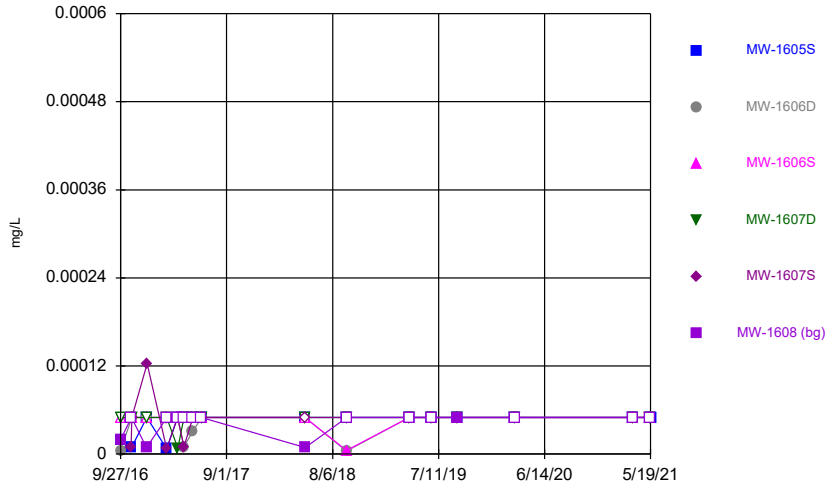


Constituent: Beryllium, total Analysis Run 8/30/2021 2:07 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series

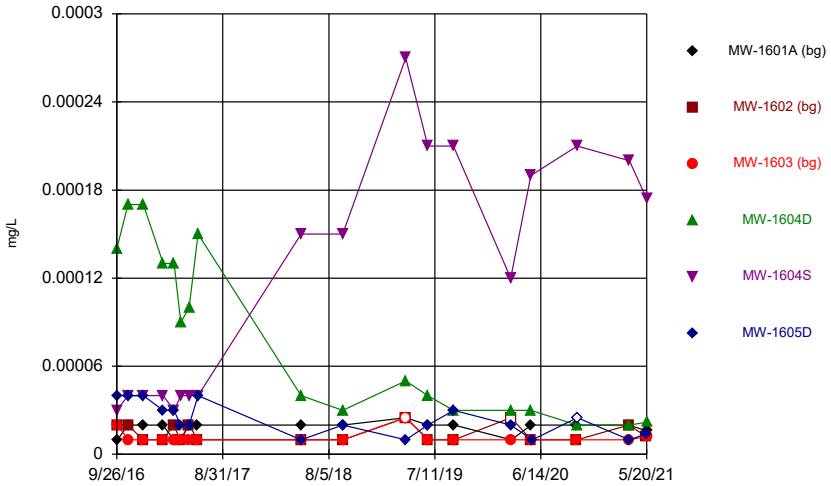


Constituent: Beryllium, total Analysis Run 8/30/2021 2:07 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series



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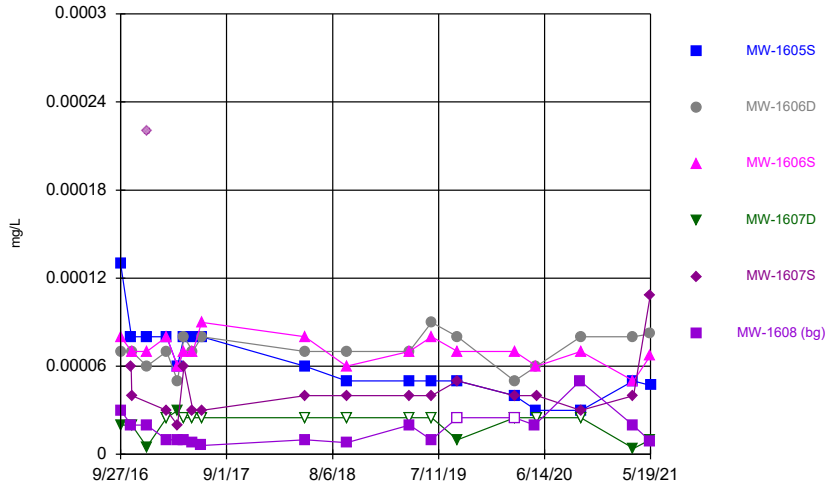
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series



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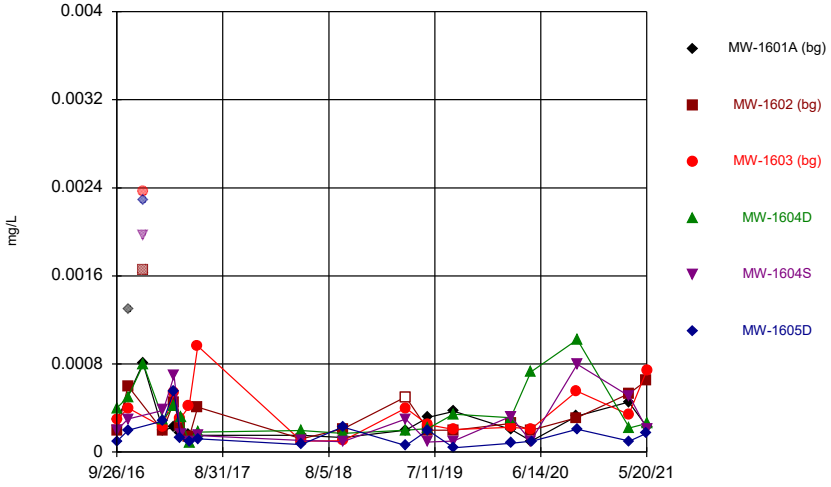
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

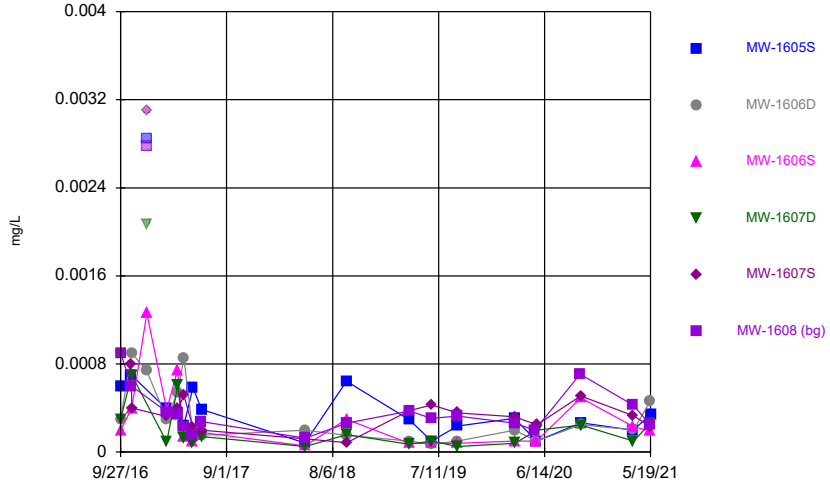
Time Series



Constituent: Chromium, total Analysis Run 8/30/2021 2:07 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

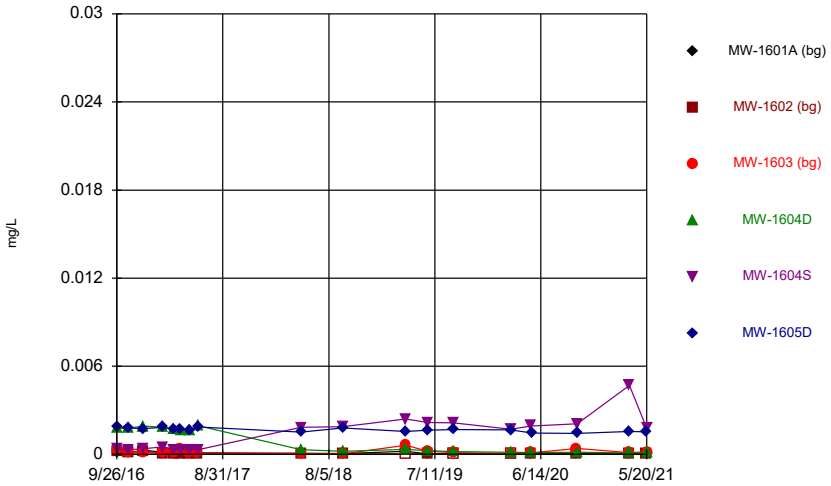
Time Series



Constituent: Chromium, total Analysis Run 8/30/2021 2:07 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

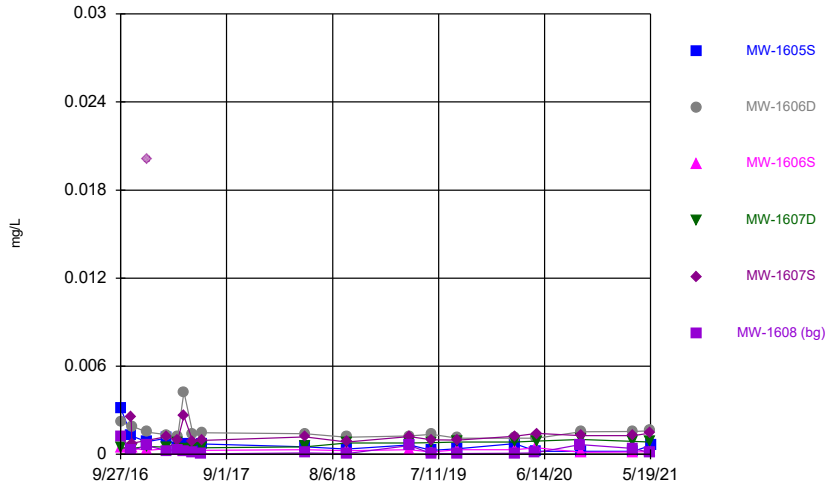
Time Series



Constituent: Cobalt, total Analysis Run 8/30/2021 2:07 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Time Series



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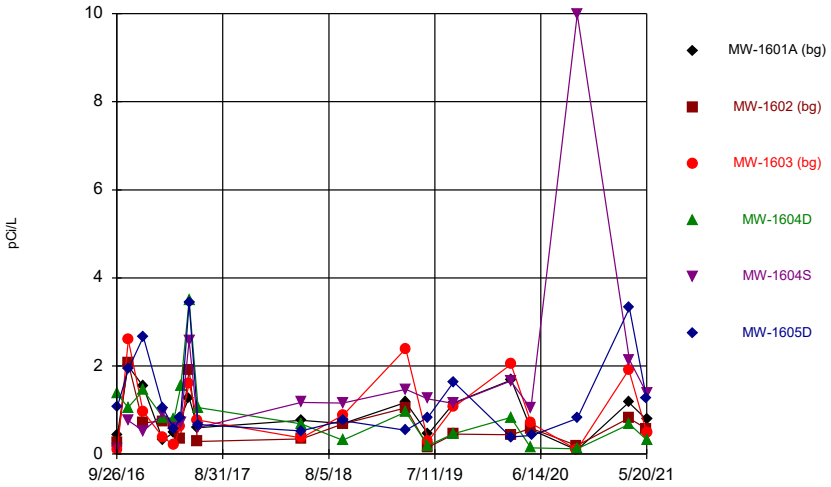
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

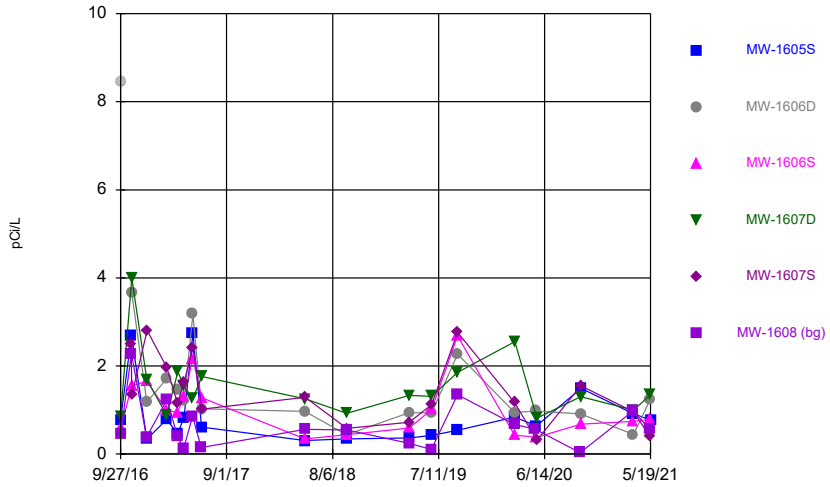
Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 8/30/2021 2:07 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

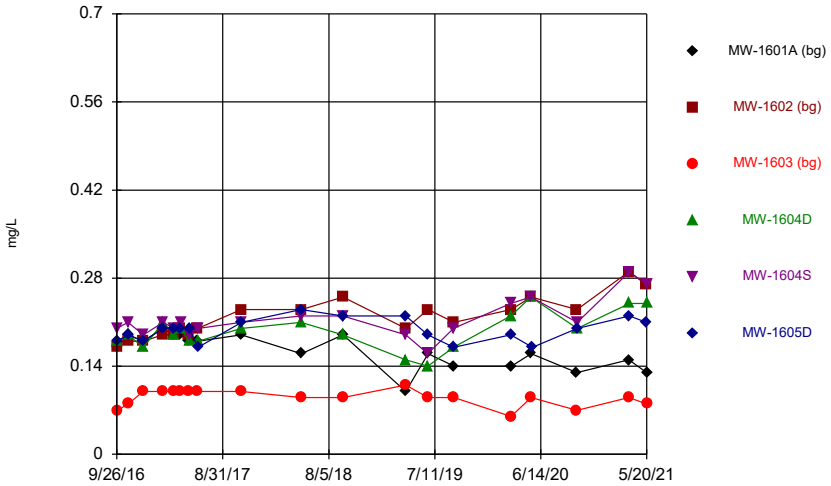
Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 8/30/2021 2:07 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Time Series

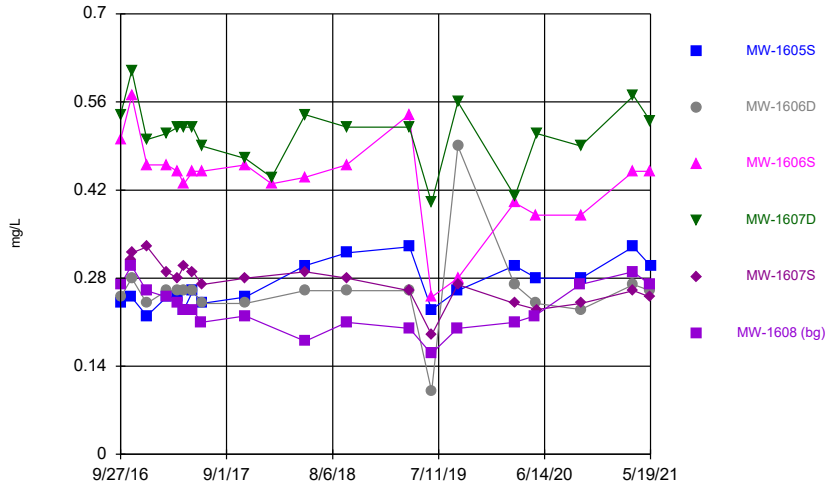


Constituent: Fluoride, total Analysis Run 8/30/2021 2:07 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Time Series



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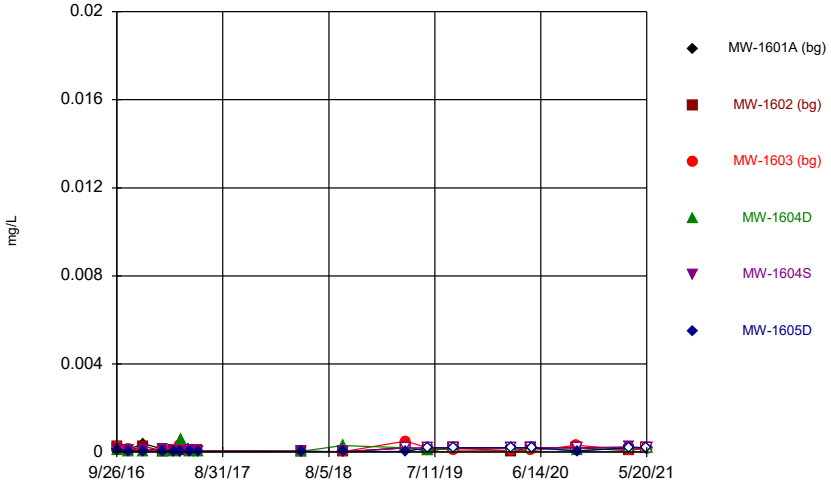
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Time Series



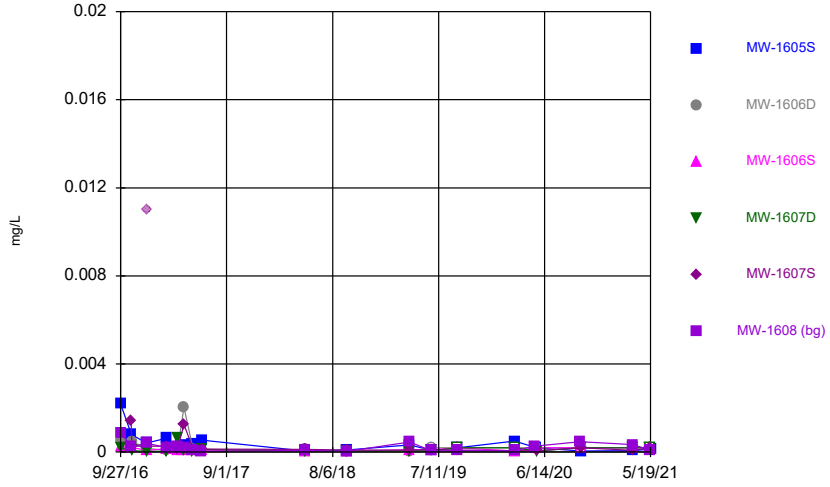
Constituent: Lead, total Analysis Run 8/30/2021 2:08 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Time Series

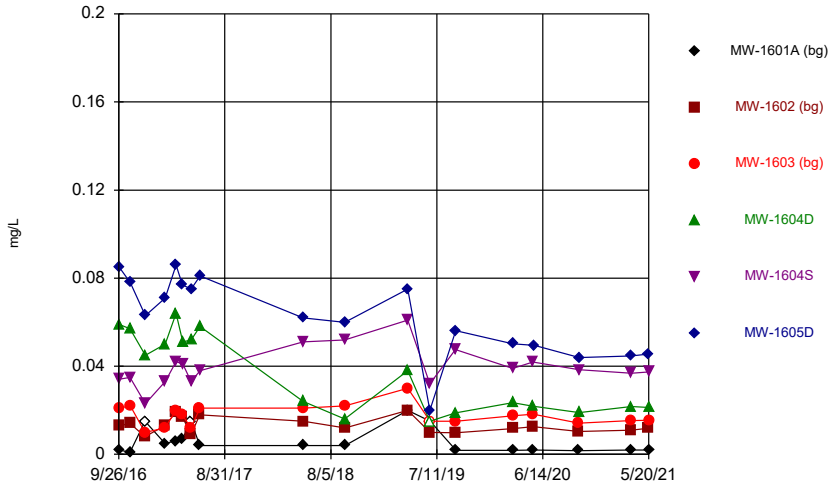


Constituent: Lead, total Analysis Run 8/30/2021 2:08 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Lithium, total Analysis Run 8/30/2021 2:08 PM
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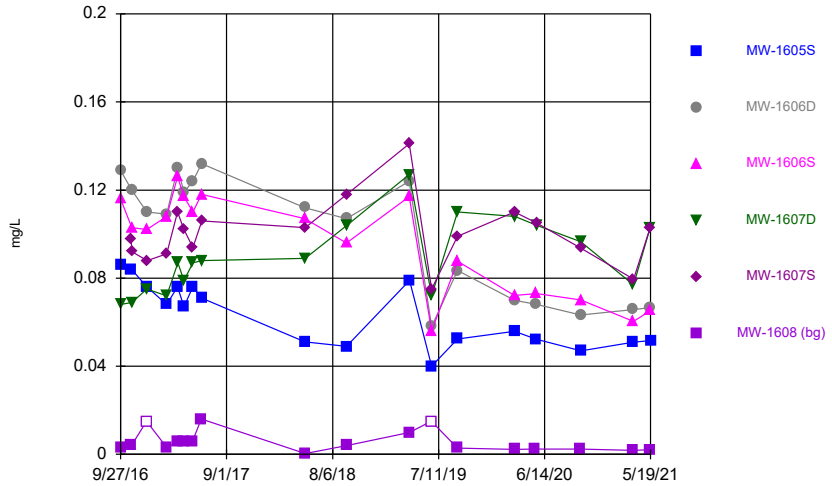
Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series



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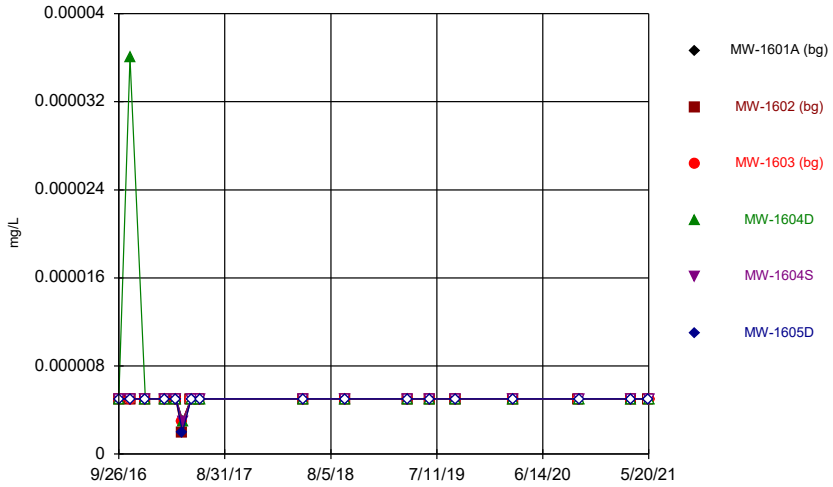
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

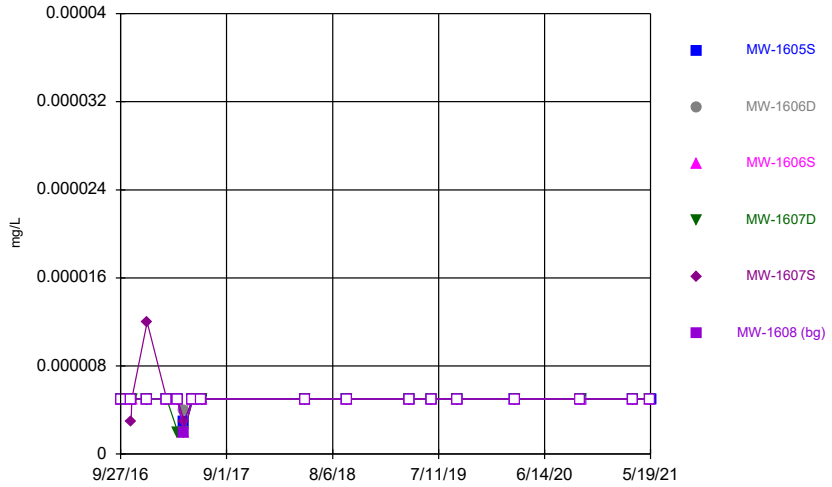
Time Series



Constituent: Mercury, total Analysis Run 8/30/2021 2:08 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

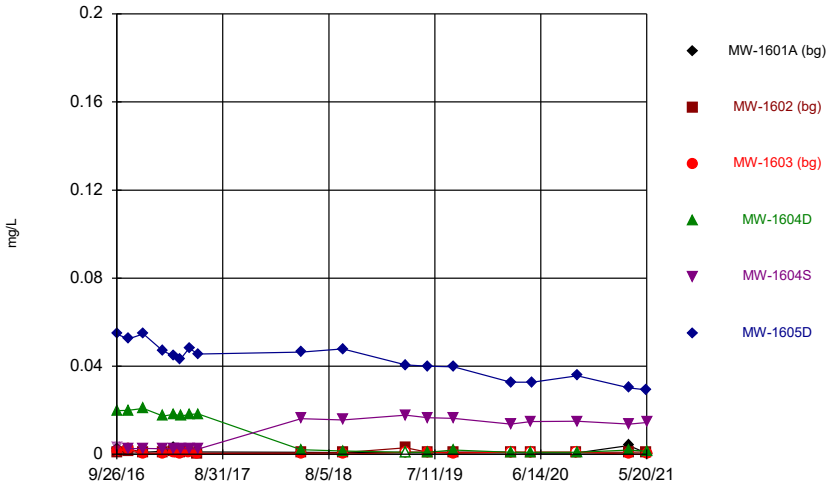
Time Series



Constituent: Mercury, total Analysis Run 8/30/2021 2:08 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

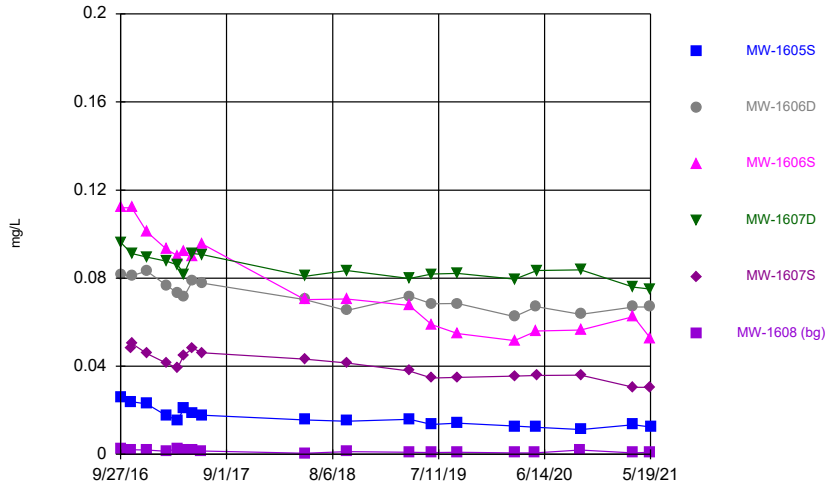
Time Series



Constituent: Molybdenum, total Analysis Run 8/30/2021 2:08 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

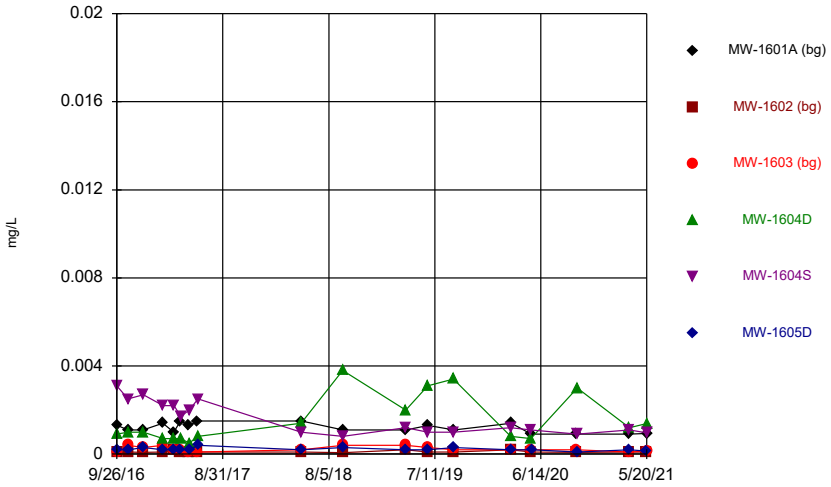
Time Series



Constituent: Molybdenum, total Analysis Run 8/30/2021 2:08 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

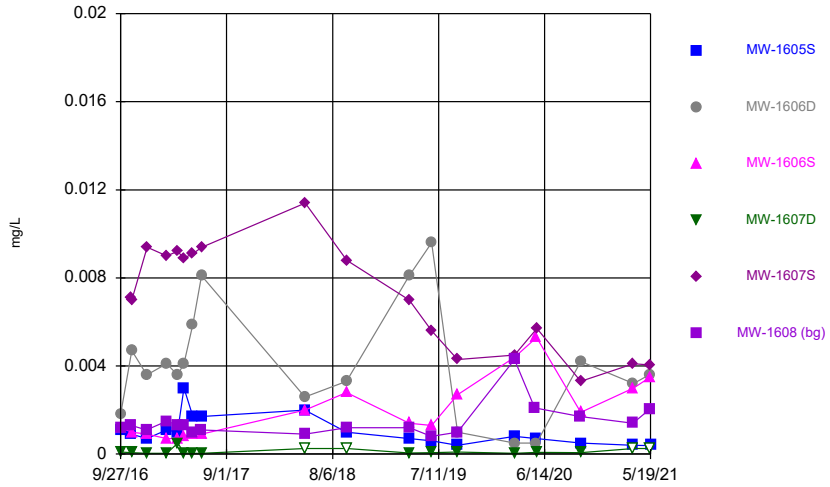
Time Series



Constituent: Selenium, total Analysis Run 8/30/2021 2:08 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

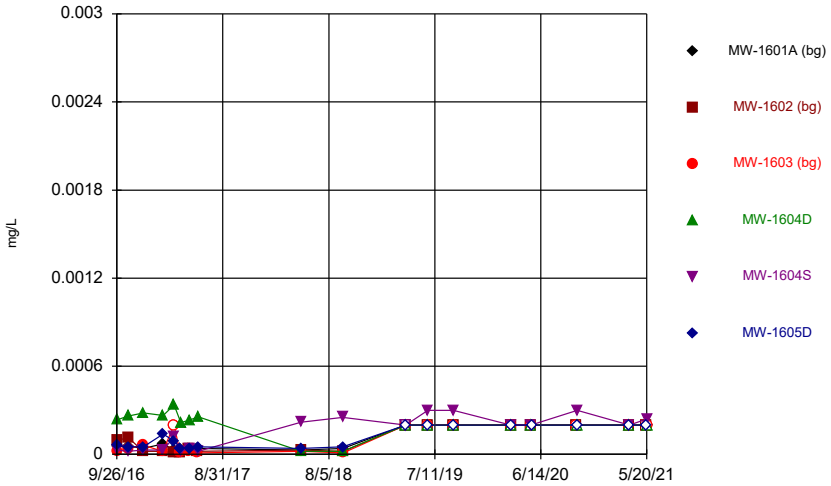
Time Series



Constituent: Selenium, total Analysis Run 8/30/2021 2:08 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

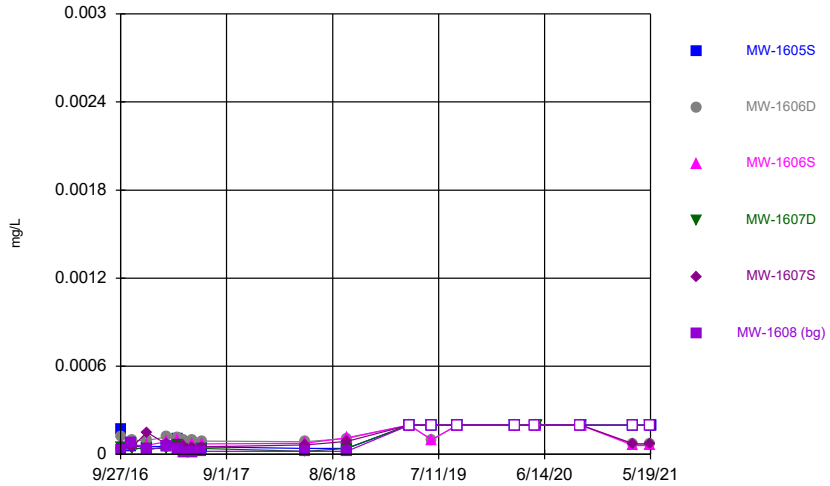
Time Series



Constituent: Thallium, total Analysis Run 8/30/2021 2:08 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series



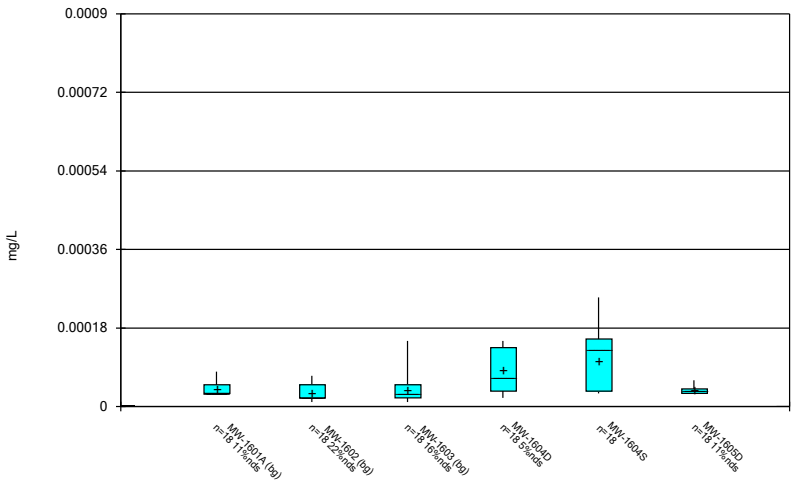
Constituent: Thallium, total Analysis Run 8/30/2021 2:08 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

100% Non-Detects

Analysis Run 8/30/2021 2:13 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Beryllium, total (mg/L)
MW-1604D, MW-1605D

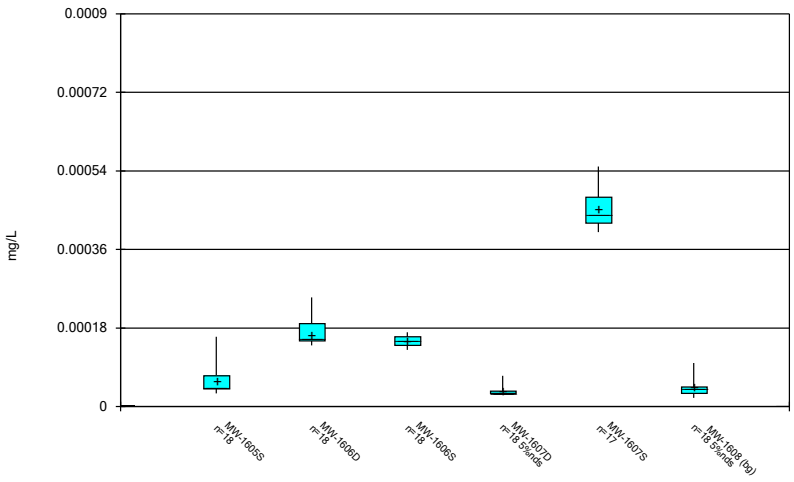
Box & Whiskers Plot



Constituent: Antimony, total Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

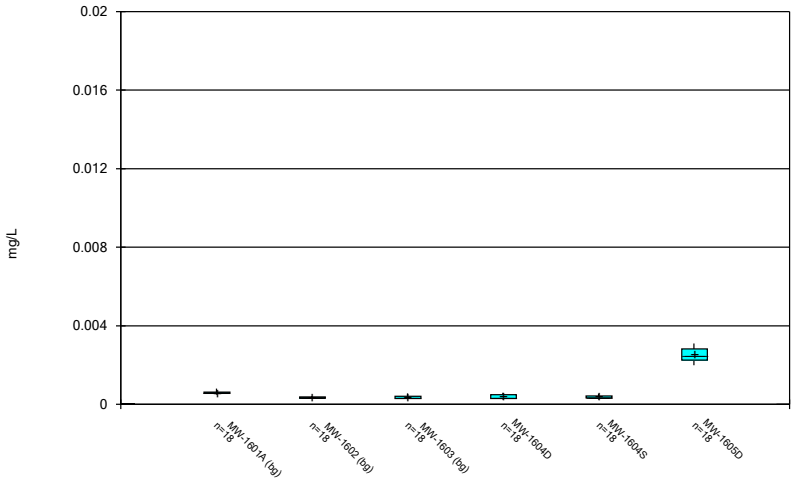
Box & Whiskers Plot



Constituent: Antimony, total Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

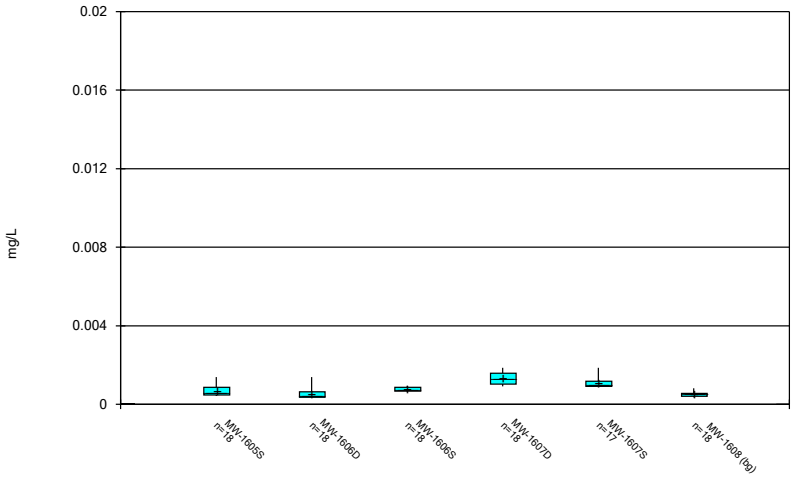
Box & Whiskers Plot



Constituent: Arsenic, total Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

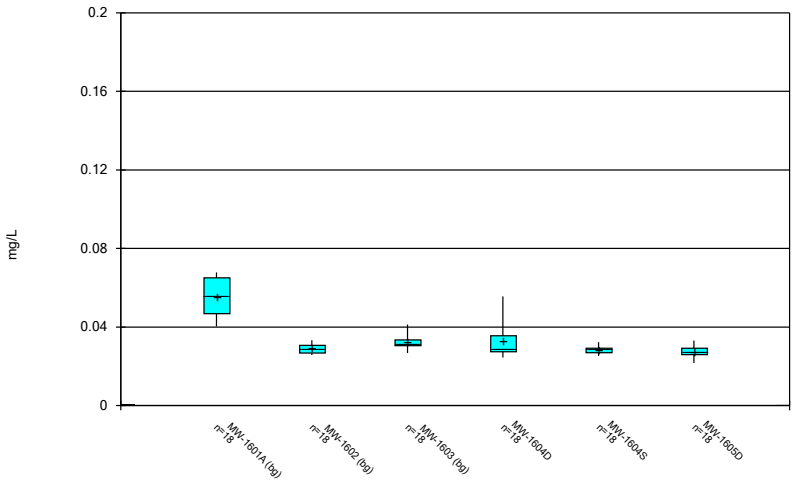
Box & Whiskers Plot



Constituent: Arsenic, total Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Box & Whiskers Plot

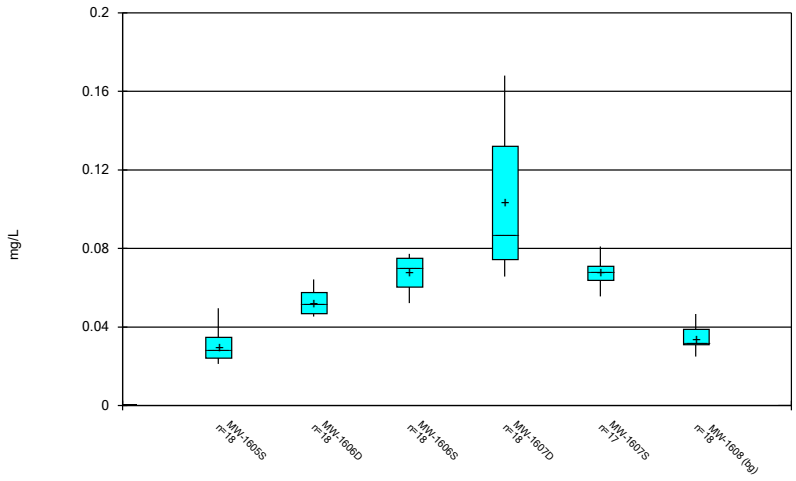


Constituent: Barium, total Analysis Run 8/30/2021 2:09 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Box & Whiskers Plot

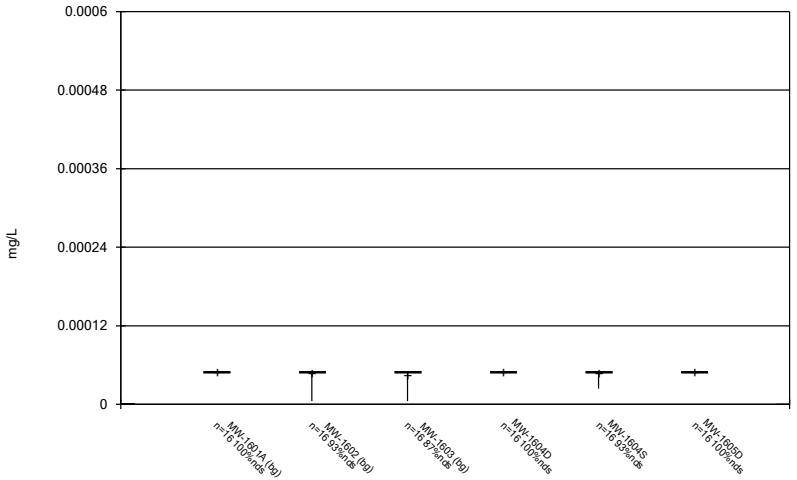


Constituent: Barium, total Analysis Run 8/30/2021 2:09 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Box & Whiskers Plot

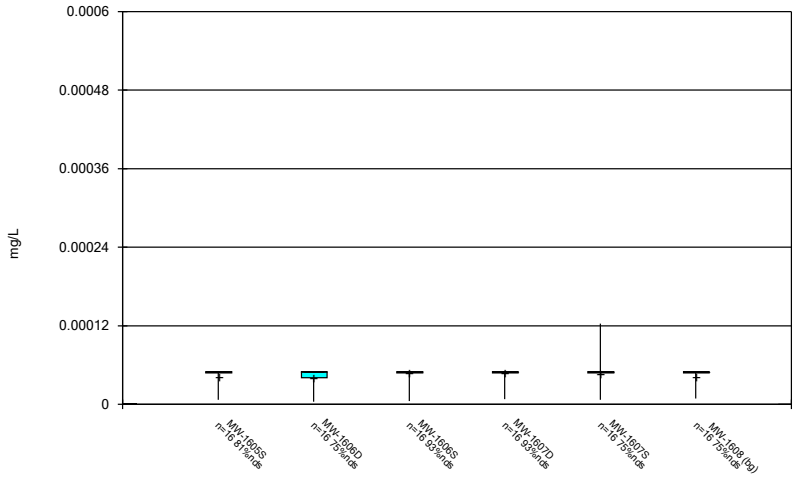


Constituent: Beryllium, total Analysis Run 8/30/2021 2:09 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

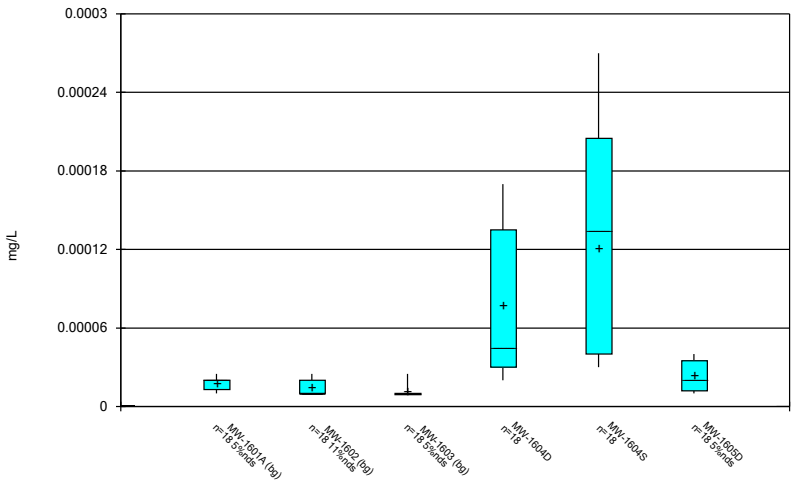
Box & Whiskers Plot



Constituent: Beryllium, total Analysis Run 8/30/2021 2:09 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

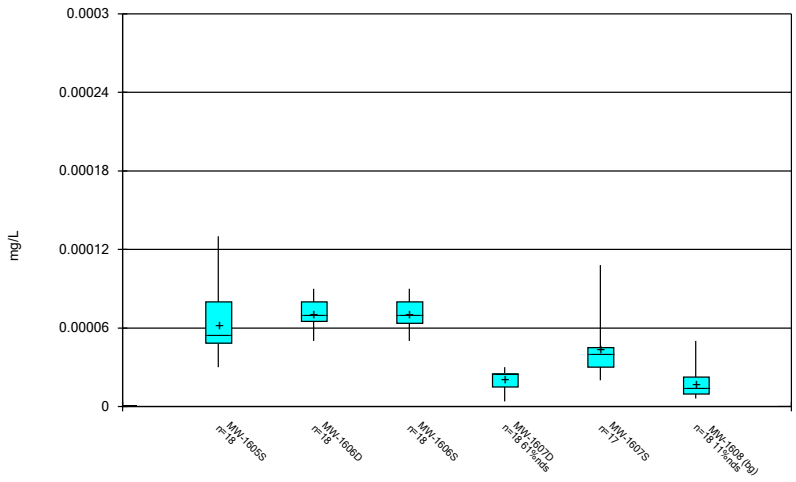
Box & Whiskers Plot



Constituent: Cadmium, total Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

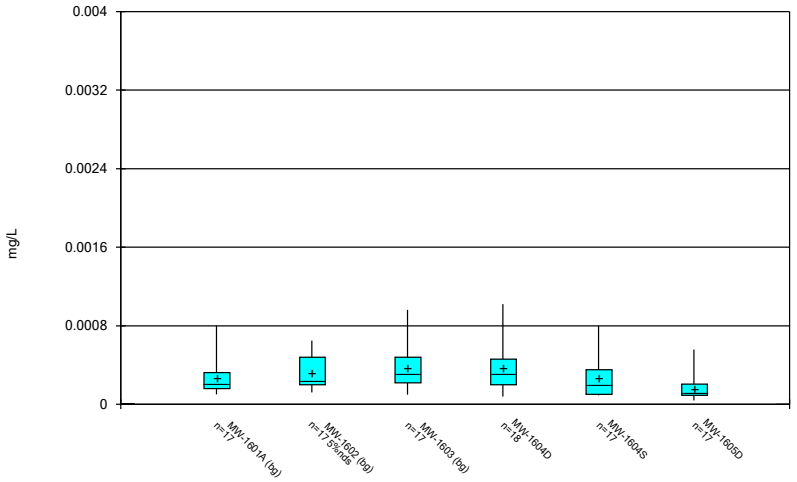
Box & Whiskers Plot



Constituent: Cadmium, total Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

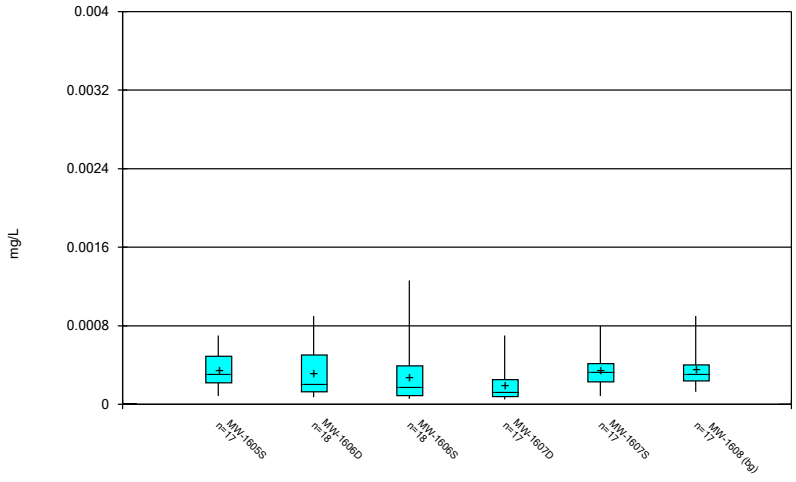
Box & Whiskers Plot



Constituent: Chromium, total Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

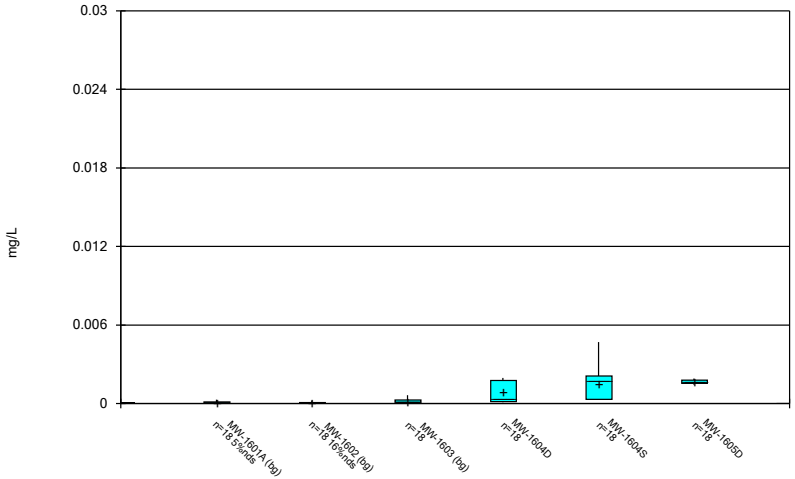
Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Box & Whiskers Plot



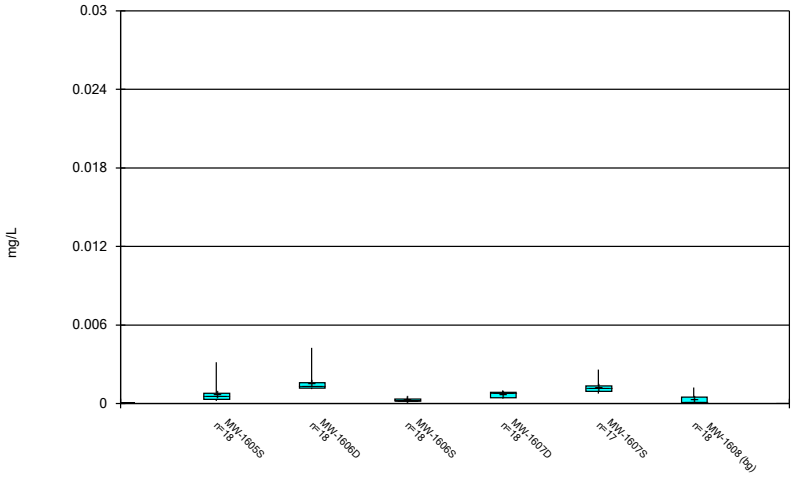
Constituent: Chromium, total Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



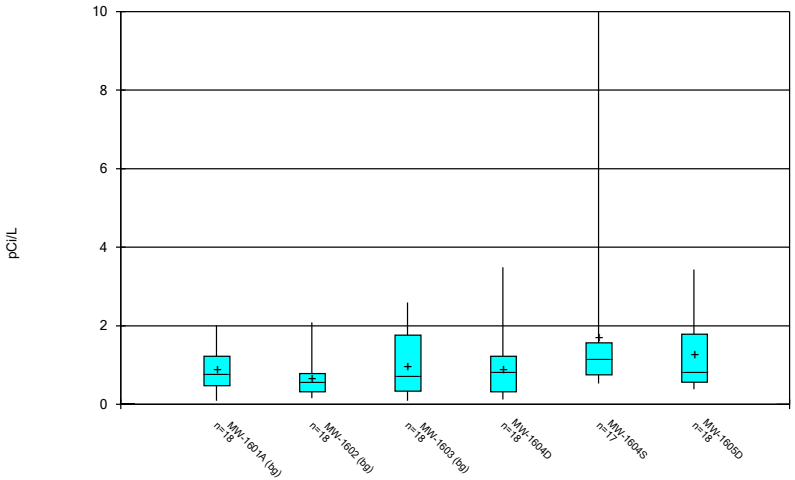
Constituent: Cobalt, total Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



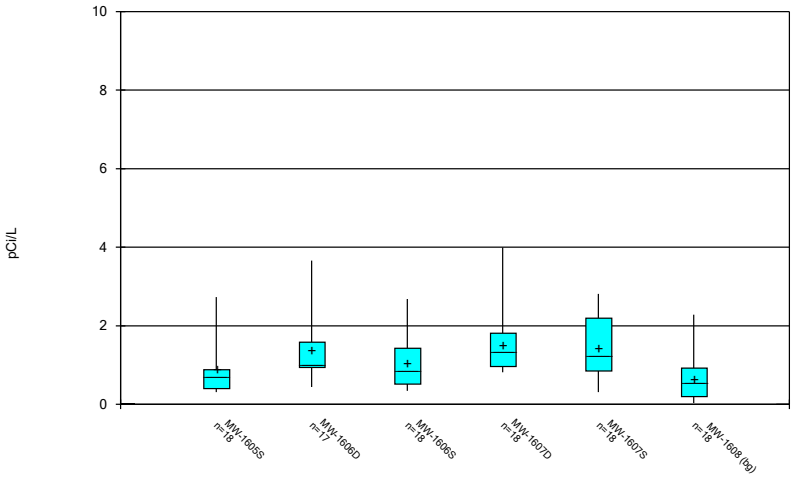
Constituent: Cobalt, total Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



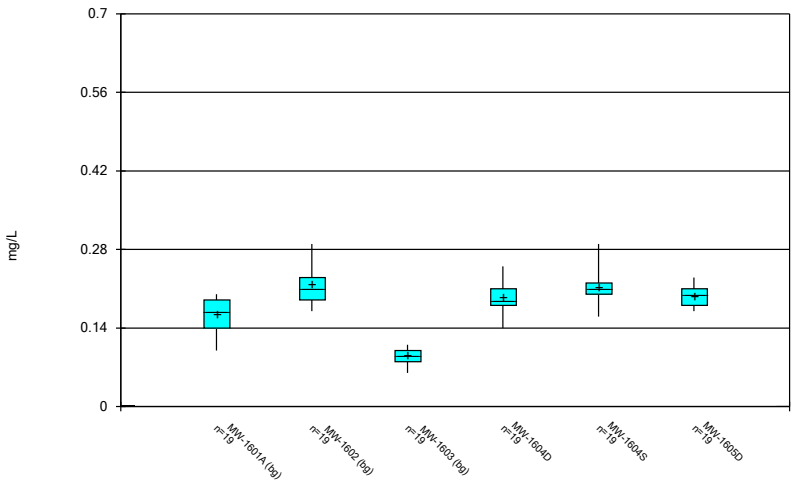
Constituent: Combined Radium 226 + 228 Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Box & Whiskers Plot



Constituent: Combined Radium 226 + 228 Analysis Run 8/30/2021 2:09 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

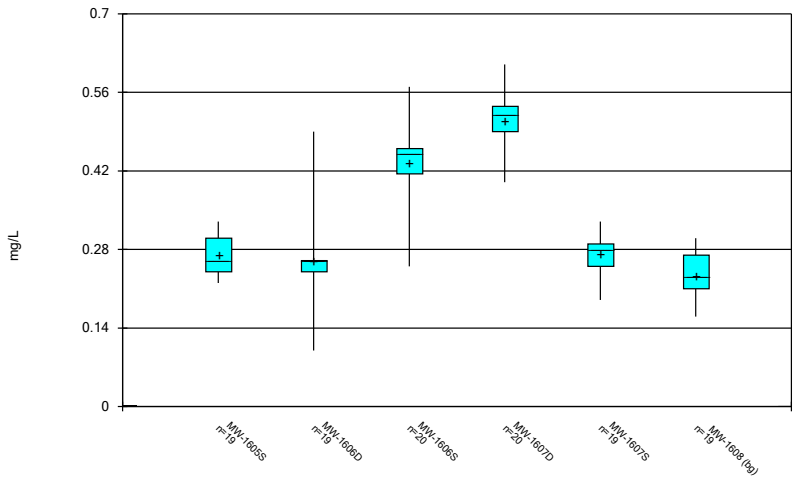
Box & Whiskers Plot



Constituent: Fluoride, total Analysis Run 8/30/2021 2:10 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

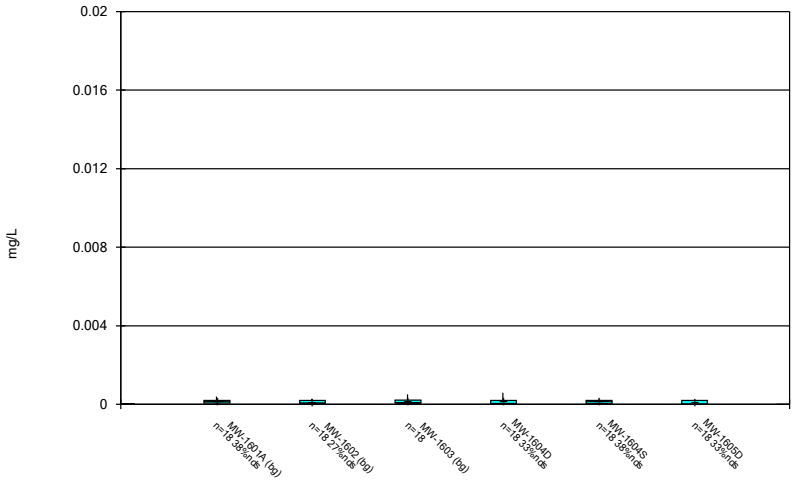
Box & Whiskers Plot



Constituent: Fluoride, total Analysis Run 8/30/2021 2:10 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

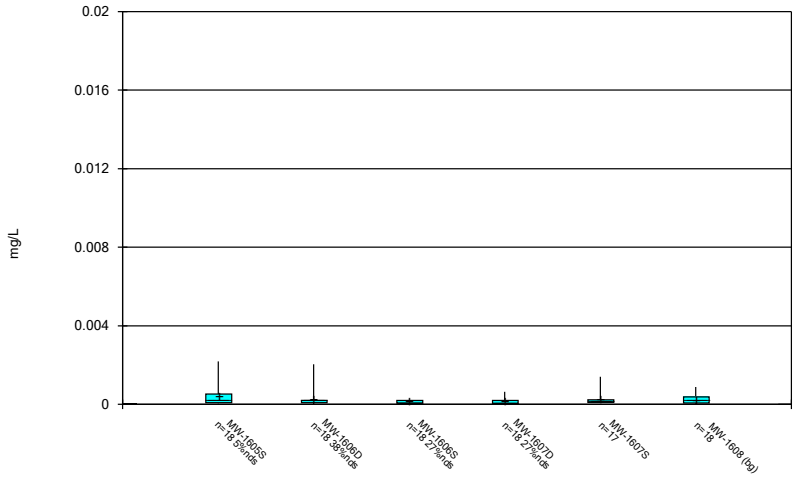
Box & Whiskers Plot



Constituent: Lead, total Analysis Run 8/30/2021 2:10 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

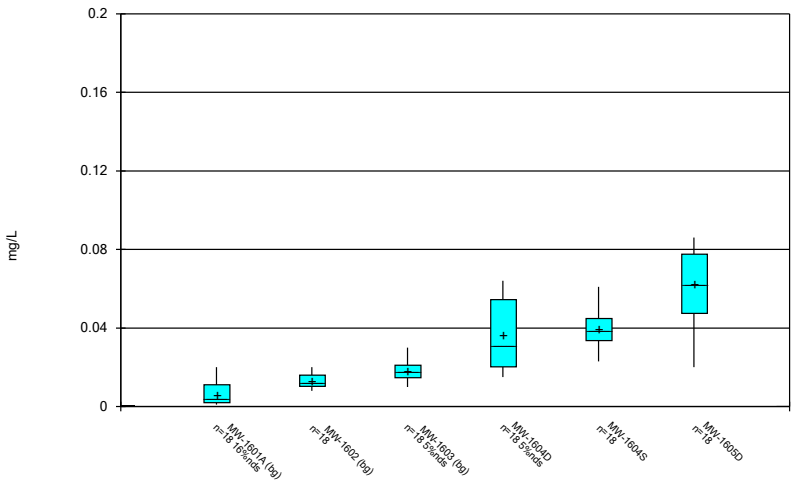
Box & Whiskers Plot



Constituent: Lead, total Analysis Run 8/30/2021 2:10 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Box & Whiskers Plot

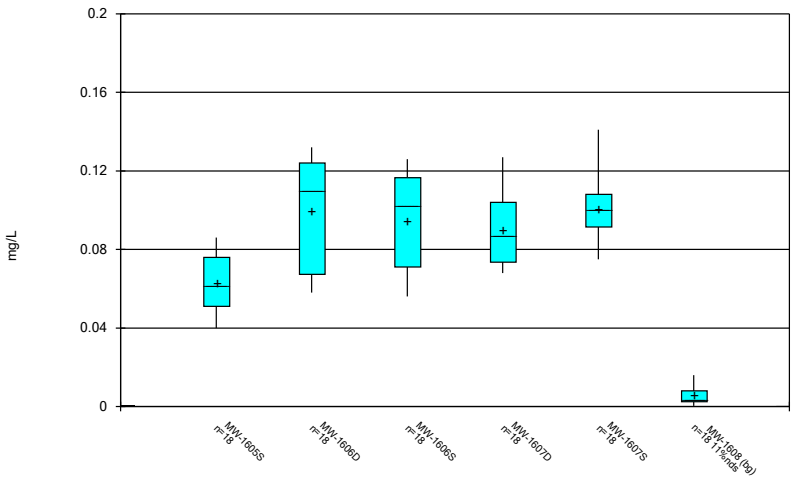


Constituent: Lithium, total Analysis Run 8/30/2021 2:10 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Box & Whiskers Plot

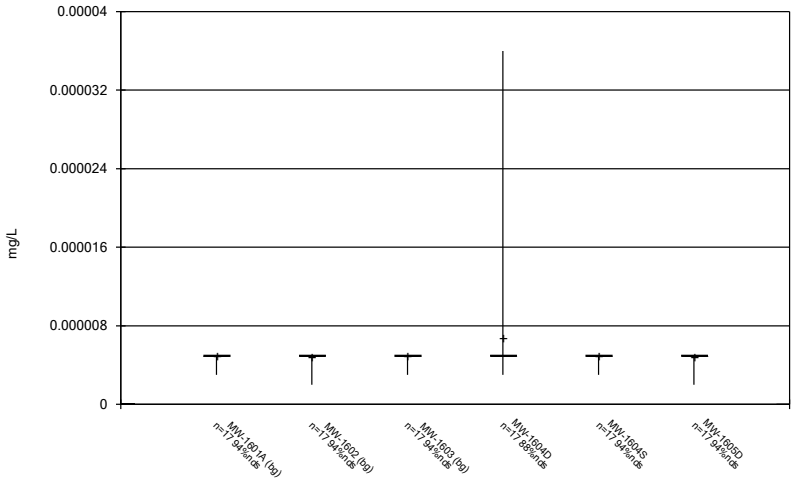


Constituent: Lithium, total Analysis Run 8/30/2021 2:10 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Box & Whiskers Plot

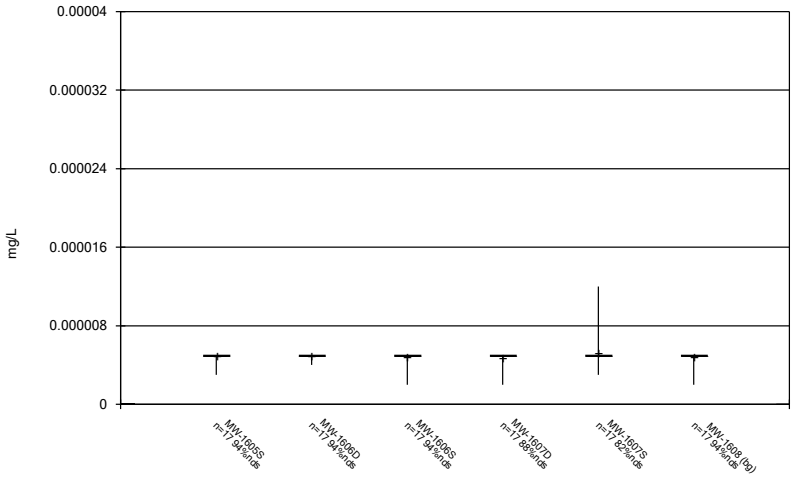


Constituent: Mercury, total Analysis Run 8/30/2021 2:10 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

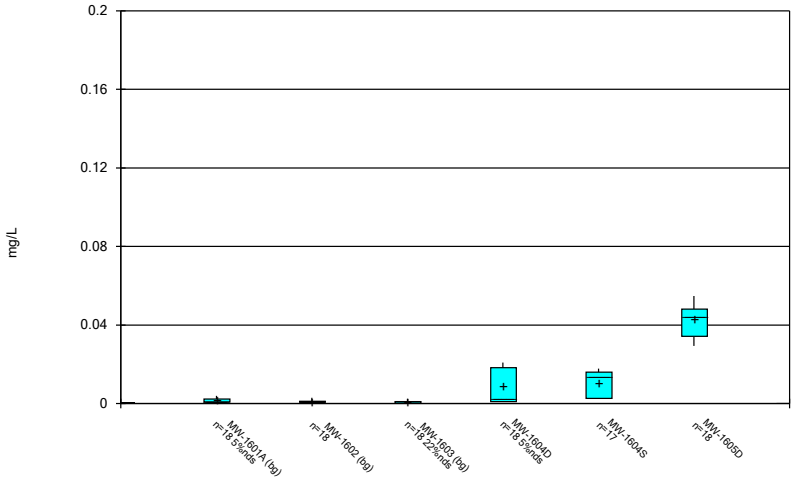
Box & Whiskers Plot



Constituent: Mercury, total Analysis Run 8/30/2021 2:10 PM

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

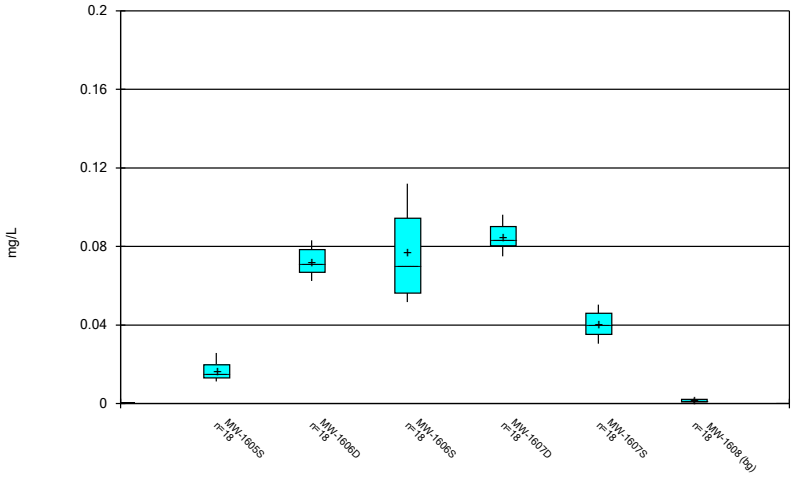
Box & Whiskers Plot



Constituent: Molybdenum, total Analysis Run 8/30/2021 2:10 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

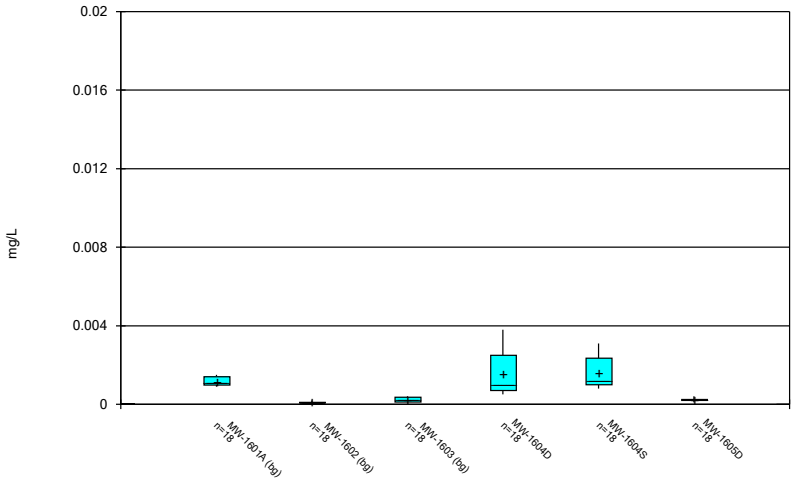
Box & Whiskers Plot



Constituent: Molybdenum, total Analysis Run 8/30/2021 2:10 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

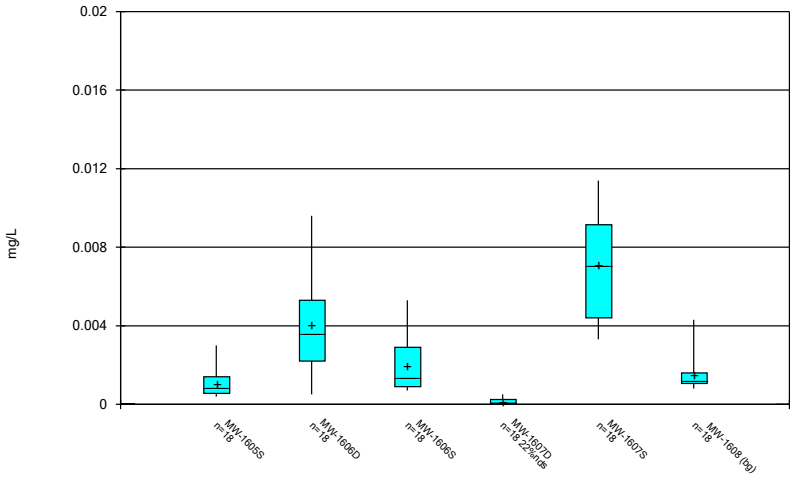
Box & Whiskers Plot



Constituent: Selenium, total Analysis Run 8/30/2021 2:10 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

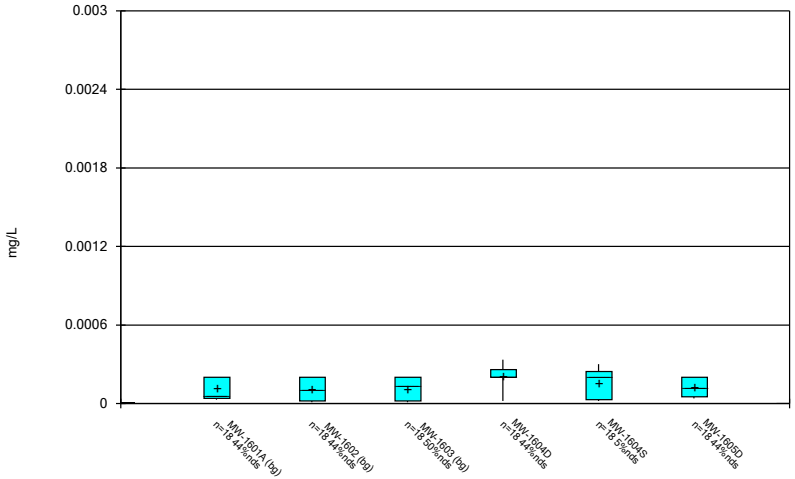
Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Selenium, total Analysis Run 8/30/2021 2:10 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

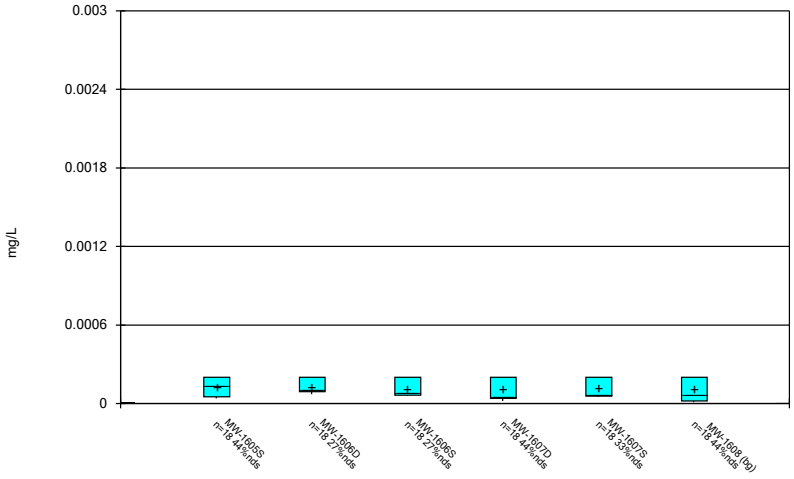
Box & Whiskers Plot



Constituent: Thallium, total Analysis Run 8/30/2021 2:10 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Thallium, total Analysis Run 8/30/2021 2:10 PM
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Outlier Summary

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 8/30/2021, 2:11 PM

	MW-1607S Antimony, total (mg/L)	MW-1607S Arsenic, total (mg/L)	MW-1607S Barium, total (mg/L)	MW-1607S Cadmium, total (mg/L)	MW-1601A Chromium, total (mg/L)	MW-1602 Chromium, total (mg/L)	MW-1603 Chromium, total (mg/L)	MW-1604S Chromium, total (mg/L)	MW-1605D Chromium, total (mg/L)	MW-1605S Chromium, total (mg/L)
9/26/2016										
9/27/2016										
11/1/2016					0.0013 (o)					
12/19/2016						0.00165 (o)	0.00237 (o)			
12/20/2016								0.00197 (o)	0.00229 (o)	0.00285 (o)
12/21/2016	0.00084 (o)	0.0112 (o)	0.114 (o)	0.00022 (o)						

	MW-1607D Chromium, total (mg/L)	MW-1607S Chromium, total (mg/L)	MW-1608 Chromium, total (mg/L)	MW-1607S Cobalt, total (mg/L)	MW-1604S Combined Radium 226 + 228 (pCi/L)	MW-1606D Combined Radium 226 + 228 (pCi/L)	MW-1607S Lead, total (mg/L)	MW-1604S Molybdenum, total (mg/L)
9/26/2016				0.136 (o)			0.0032 (o)	
9/27/2016					8.459 (o)			
11/1/2016								
12/19/2016			0.00278 (o)					
12/20/2016	0.00207 (o)							
12/21/2016		0.0031 (o)		0.0201 (o)		0.011 (o)		

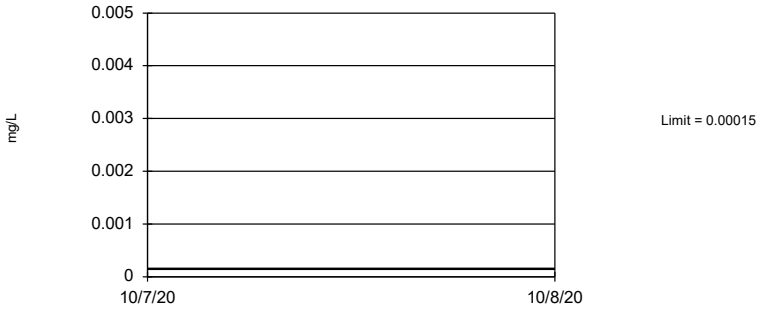
Upper Tolerance Limit Summary Table

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 1/12/2021, 1:27 PM

Constituent	Upper Lim.	Lower Lim.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony, total (mg/L)	0.00015	n/a	n/a	64	n/a	n/a	15.63	n/a	n/a	0.03752	NP Inter(normality)
Arsenic, total (mg/L)	0.0007452	n/a	n/a	64	0.02128	0.003002	0	None	sqrt(x)	0.05	Inter
Barium, total (mg/L)	0.0678	n/a	n/a	64	n/a	n/a	0	n/a	n/a	0.03752	NP Inter(normality)
Beryllium, total (mg/L)	0.0001	n/a	n/a	56	n/a	n/a	87.5	n/a	n/a	0.05656	NP Inter(NDs)
Cadmium, total (mg/L)	0.00005	n/a	n/a	64	n/a	n/a	9.375	n/a	n/a	0.03752	NP Inter(normality)
Chromium, total (mg/L)	0.0007306	n/a	n/a	60	0.06551	0.01218	1.667	None	x^(1/3)	0.05	Inter
Cobalt, total (mg/L)	0.0006643	n/a	n/a	64	-9.249	0.9643	6.25	None	ln(x)	0.05	Inter
Combined Radium 226 + 228 (pCi/L)	2.263	n/a	n/a	64	0.8159	0.3437	0	None	sqrt(x)	0.05	Inter
Fluoride, total (mg/L)	0.2911	n/a	n/a	68	0.1737	0.05894	0	None	No	0.05	Inter
Lead, total (mg/L)	0.000881	n/a	n/a	64	n/a	n/a	14.06	n/a	n/a	0.03752	NP Inter(normality)
Lithium, total (mg/L)	0.02504	n/a	n/a	64	0.01101	0.007003	9.375	None	No	0.05	Inter
Mercury, total (mg/L)	0.000005	n/a	n/a	60	n/a	n/a	93.33	n/a	n/a	0.04607	NP Inter(NDs)
Molybdenum, total (mg/L)	0.002766	n/a	n/a	64	0.0326	0.009978	7.813	None	sqrt(x)	0.05	Inter
Selenium, total (mg/L)	0.0043	n/a	n/a	64	n/a	n/a	0	n/a	n/a	0.03752	NP Inter(normality)
Thallium, total (mg/L)	0.0005	n/a	n/a	64	n/a	n/a	39.06	n/a	n/a	0.03752	NP Inter(normality)

Tolerance Limit

Interwell Non-parametric

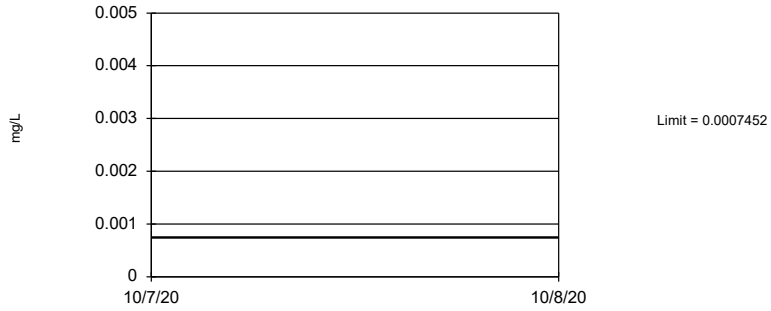


Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 64 background values. 15.63% NDs. 93.16% coverage at alpha=0.01; 95.51% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.03752.

Constituent: Antimony, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Parametric

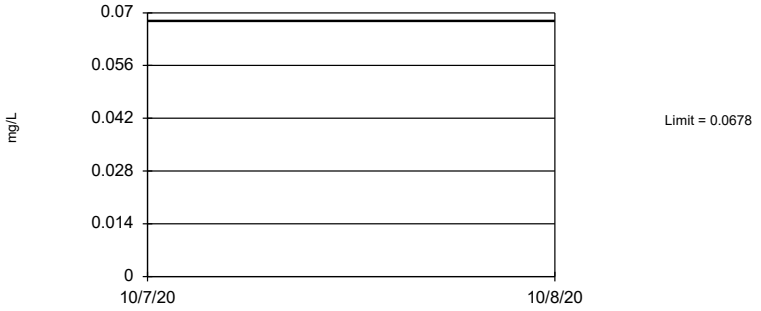


95% coverage. Background Data Summary (based on square root transformation): Mean=0.02128, Std. Dev.=0.003002, n=64. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9561, critical = 0.947. Report alpha = 0.05.

Constituent: Arsenic, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Non-parametric

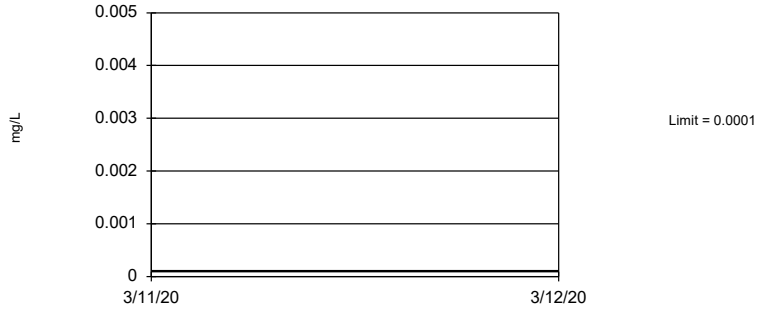


Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 64 background values. 93.16% coverage at alpha=0.01; 95.51% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.03752.

Constituent: Barium, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Non-parametric

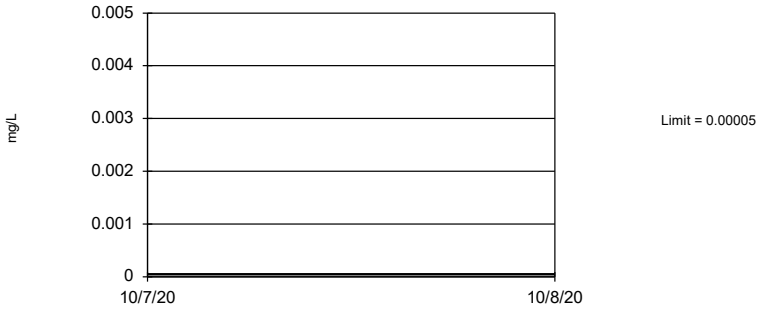


Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 56 background values. 87.5% NDs. 91.99% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05656.

Constituent: Beryllium, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Non-parametric

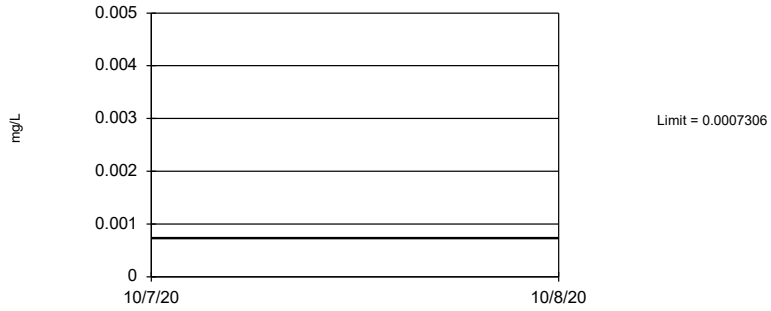


Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 64 background values. 9.375% NDs. 93.16% coverage at alpha=0.01; 95.51% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.03752.

Constituent: Cadmium, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Parametric

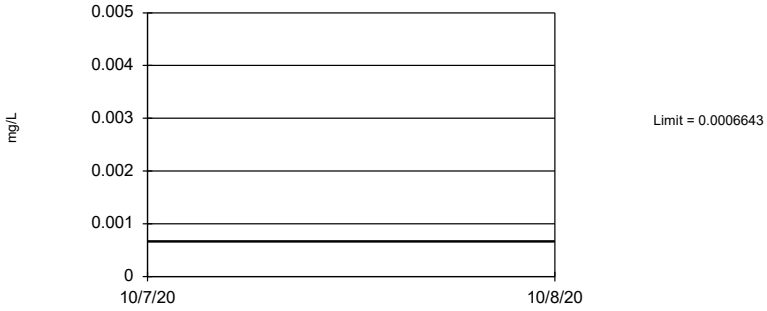


95% coverage. Background Data Summary (based on cube root transformation): Mean=0.06551, Std. Dev.=0.01218, n=60, 1.667% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9489, critical = 0.945. Report alpha = 0.05.

Constituent: Chromium, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Parametric

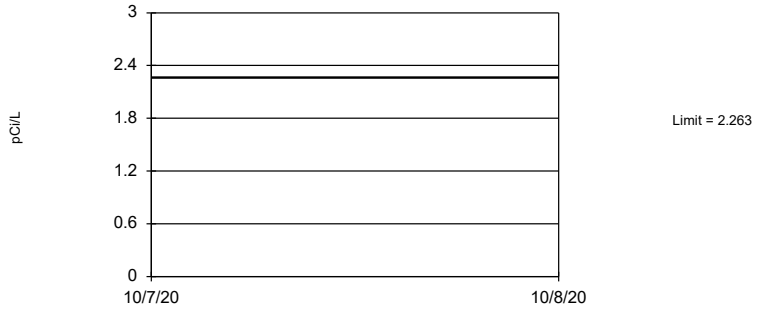


95% coverage. Background Data Summary (based on natural log transformation): Mean=-9.249, Std. Dev.=0.9643, n=64, 6.25% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9733, critical = 0.947. Report alpha = 0.05.

Constituent: Cobalt, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Parametric

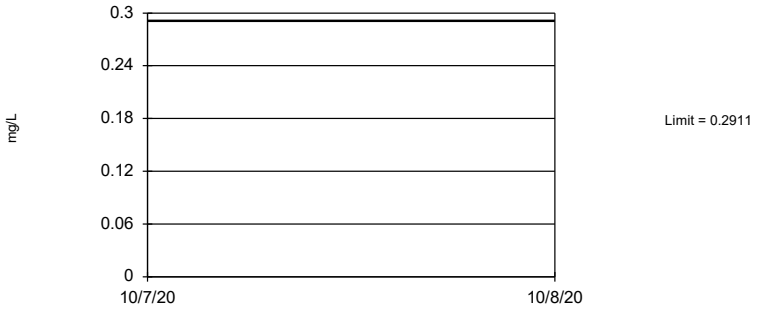


95% coverage. Background Data Summary (based on square root transformation): Mean=0.8159, Std. Dev.=0.3437, n=64. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9732, critical = 0.947. Report alpha = 0.05.

Constituent: Combined Radium 226 + 228 Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Parametric



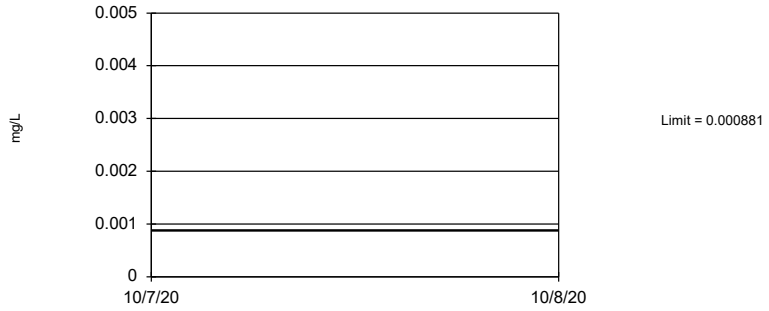
95% coverage. Background Data Summary: Mean=0.1737, Std. Dev.=0.05894, n=68. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9552, critical = 0.95. Report alpha = 0.05.

Constituent: Fluoride, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Non-parametric



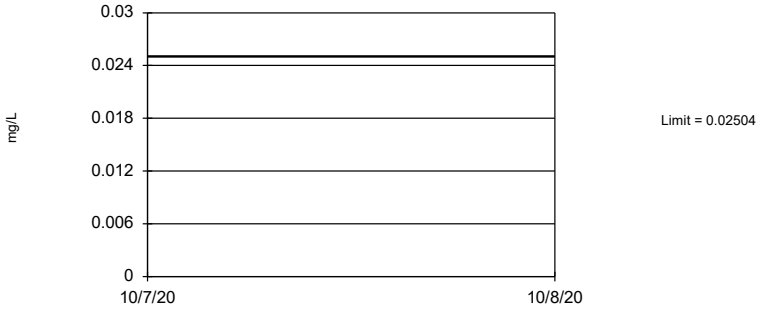
Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 64 background values. 14.06% NDs. 93.16% coverage at alpha=0.01; 95.51% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.03752.

Constituent: Lead, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Parametric



95% coverage. Background Data Summary: Mean=0.01101, Std. Dev.=0.007003, n=64, 9.375% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9545, critical = 0.947. Report alpha = 0.05.

Constituent: Lithium, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Non-parametric

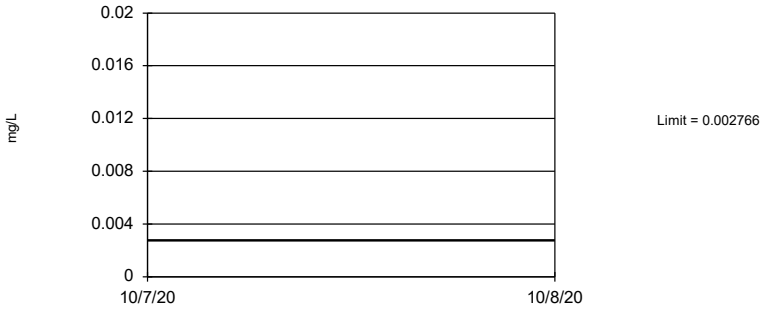
Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 60 background values. 93.33% NDs. 92.77% coverage at alpha=0.01; 95.12% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.04607.

Constituent: Mercury, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Parametric



95% coverage. Background Data Summary (based on square root transformation): Mean=0.0326, Std. Dev.=0.009978, n=64, 7.813% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9662, critical = 0.947. Report alpha = 0.05.

Constituent: Molybdenum, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

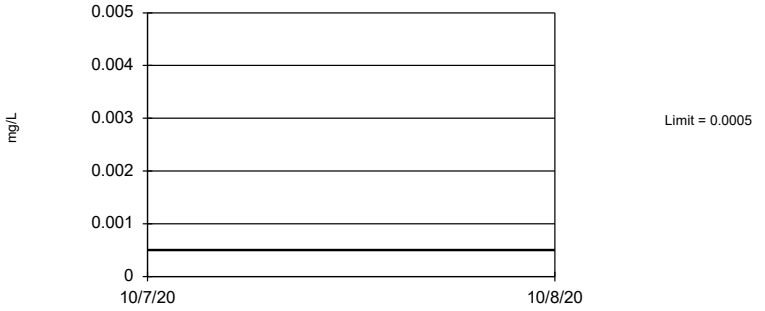
Interwell Non-parametric

Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 64 background values. 93.16% coverage at alpha=0.01; 95.51% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.03752.

Constituent: Selenium, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Tolerance Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 64 background values. 39.06% NDs. 93.16% coverage at alpha=0.01; 95.51% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.03752.

Constituent: Thallium, total Analysis Run 1/12/2021 1:25 PM View: Appendix IV - UTLs
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

MOUNTAINEER BAP GWPS				
Constituent Name	**MCL**	**CCR Rule-Specified**	**Background Limit**	**GWPS**
Antimony, Total (mg/L)	0.006		0.00015	0.006
Arsenic, Total (mg/L)	0.01		0.00075	0.01
Barium, Total (mg/L)	2		0.068	2
Beryllium, Total (mg/L)	0.004		0.0001	0.004
Cadmium, Total (mg/L)	0.005		0.00005	0.005
Chromium, Total (mg/L)	0.1		0.00073	0.1
Cobalt, Total (mg/L)	n/a	0.006	0.00066	0.006
Combined Radium, Total (pCi/L)	5		2.26	5
Fluoride, Total (mg/L)	4		0.29	4
Lead, Total (mg/L)	0.015		0.00088	0.015
Lithium, Total (mg/L)	n/a	0.04	0.025	0.04
Mercury, Total (mg/L)	0.002		0.000005	0.002
Molybdenum, Total (mg/L)	n/a	0.1	0.0028	0.1
Selenium, Total (mg/L)	0.05		0.0043	0.05
Thallium, Total (mg/L)	0.002		0.0005	0.002

**GWPS = Groundwater Protection Standard*

**MCL = Maximum Contaminant Level*

**CCR = Coal Combustion Residual*

Confidence Interval - Significant Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 8/30/2021, 2:17 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Lithium, total (mg/L)	**MW-1605D**	**0.07313**	**0.05164**	**0.04**	**Yes**	**18**	**0.06238**	**0.01776**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1605S**	**0.07165**	**0.05424**	**0.04**	**Yes**	**18**	**0.06294**	**0.01439**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1606D**	**0.124**	**0.0666**	**0.04**	**Yes**	**18**	**0.09952**	**0.02726**	**0**	**None**	**No**	**0.01**	**NP (normality)**
Lithium, total (mg/L)	**MW-1606S**	**0.1085**	**0.0809**	**0.04**	**Yes**	**18**	**0.09469**	**0.0228**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607D**	**0.09993**	**0.07958**	**0.04**	**Yes**	**18**	**0.08976**	**0.01682**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607S**	**0.1094**	**0.09154**	**0.04**	**Yes**	**18**	**0.1005**	**0.01474**	**0**	**None**	**No**	**0.01**	**Param.**

Confidence Interval - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 8/30/2021, 2:17 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony, total (mg/L)	MW-1604D	0.00014	0.00003	0.006	No	18	0.00008167	0.00005021	5.556	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1604S	0.00016	0.00003	0.006	No	18	0.000105	0.00006998	0	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1605D	0.00005	0.00003	0.006	No	18	0.00003722	0.000008948	11.11	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1605S	0.00007	0.00004	0.006	No	18	0.00005778	0.0000304	0	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1606D	0.00019	0.00014	0.006	No	18	0.0001656	0.00002833	0	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1606S	0.000158	0.000142	0.006	No	18	0.00015	0.00001328	0	None	No	0.01	Param.
Antimony, total (mg/L)	MW-1607D	0.00004	0.00003	0.006	No	18	0.000035	0.00001098	5.556	None	No	0.01	NP (normality)
Antimony, total (mg/L)	MW-1607S	0.0004751	0.0004261	0.006	No	17	0.0004506	0.00003913	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1604D	0.0004514	0.0003183	0.01	No	18	0.0003894	0.0001124	0	None	sqrt(x)	0.01	Param.
Arsenic, total (mg/L)	MW-1604S	0.0004243	0.0003302	0.01	No	18	0.0003772	0.00007775	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1605D	0.00274	0.002325	0.01	No	18	0.002533	0.0003433	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1605S	0.0008005	0.0005269	0.01	No	18	0.000675	0.0002449	0	None	sqrt(x)	0.01	Param.
Arsenic, total (mg/L)	MW-1606D	0.00063	0.00035	0.01	No	18	0.0005172	0.0002612	0	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	MW-1606S	0.0008181	0.0006897	0.01	No	18	0.0007539	0.0001062	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1607D	0.001516	0.001135	0.01	No	18	0.001326	0.000315	0	None	No	0.01	Param.
Arsenic, total (mg/L)	MW-1607S	0.00119	0.00091	0.01	No	17	0.001094	0.0002787	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	MW-1604D	0.037	0.0273	2	No	18	0.03293	0.008925	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	MW-1604S	0.02954	0.0275	2	No	18	0.02852	0.001685	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1605D	0.02898	0.0256	2	No	18	0.02729	0.00279	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1605S	0.03425	0.02565	2	No	18	0.02995	0.007115	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1606D	0.05613	0.04855	2	No	18	0.05244	0.006376	0	None	sqrt(x)	0.01	Param.
Barium, total (mg/L)	MW-1606S	0.07269	0.06279	2	No	18	0.06774	0.008176	0	None	No	0.01	Param.
Barium, total (mg/L)	MW-1607D	0.133	0.0735	2	No	18	0.1033	0.0336	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	MW-1607S	0.07181	0.06335	2	No	17	0.06758	0.006753	0	None	No	0.01	Param.
Beryllium, total (mg/L)	MW-1604S	0.00005	0.000024	0.004	No	16	0.00004837	0.0000065	93.75	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1605S	0.00005	0.00002	0.004	No	16	0.00004287	0.00001553	81.25	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1606D	0.00005	0.00001	0.004	No	16	0.00004062	0.00001769	75	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1606S	0.00005	0.000005	0.004	No	16	0.00004719	0.00001125	93.75	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1607D	0.00005	0.000008	0.004	No	16	0.00004737	0.0000105	93.75	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	MW-1607S	0.000123	0.00001	0.004	No	16	0.00004687	0.0000261	75	None	No	0.01	NP (NDs)
Cadmium, total (mg/L)	MW-1604D	0.00014	0.000022	0.005	No	18	0.00007733	0.00005674	0	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1604S	0.0002	0.00004	0.005	No	18	0.0001213	0.0000831	0	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1605D	0.00004	0.000014	0.005	No	18	0.00002383	0.00001111	5.556	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	MW-1605S	0.00007529	0.00004739	0.005	No	18	0.00006261	0.00002431	0	None	sqrt(x)	0.01	Param.
Cadmium, total (mg/L)	MW-1606D	0.00007781	0.00006463	0.005	No	18	0.00007122	0.00001089	0	None	No	0.01	Param.
Cadmium, total (mg/L)	MW-1606S	0.00007608	0.00006469	0.005	No	18	0.00007039	0.000009413	0	None	No	0.01	Param.
Cadmium, total (mg/L)	MW-1607D	0.000025	0.00001	0.005	No	18	0.00002078	0.000007841	61.11	None	No	0.01	NP (NDs)
Cadmium, total (mg/L)	MW-1607S	0.00005	0.00003	0.005	No	17	0.00004341	0.00001957	0	None	No	0.01	NP (normality)
Chromium, total (mg/L)	MW-1604D	0.0004806	0.0002182	0.1	No	18	0.0003696	0.0002481	0	None	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	MW-1604S	0.0003291	0.0001321	0.1	No	17	0.0002708	0.0002154	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	MW-1605D	0.0002142	0.00008909	0.1	No	17	0.0001611	0.0001221	0	None	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	MW-1605S	0.0004623	0.0002229	0.1	No	17	0.0003426	0.000191	0	None	No	0.01	Param.
Chromium, total (mg/L)	MW-1606D	0.0004144	0.0001548	0.1	No	18	0.0003208	0.0002657	0	None	x^(1/3)	0.01	Param.
Chromium, total (mg/L)	MW-1606S	0.0003236	0.0001131	0.1	No	18	0.0002832	0.0003032	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	MW-1607D	0.0002345	0.0000881	0.1	No	17	0.0001975	0.000187	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	MW-1607S	0.00045	0.0002395	0.1	No	17	0.0003448	0.000168	0	None	No	0.01	Param.
Cobalt, total (mg/L)	MW-1604D	0.00178	0.000138	0.006	No	18	0.0008931	0.0008185	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1604S	0.00214	0.000317	0.006	No	18	0.001413	0.00117	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1605D	0.001753	0.001582	0.006	No	18	0.001667	0.0001411	0	None	No	0.01	Param.
Cobalt, total (mg/L)	MW-1605S	0.0008515	0.0003623	0.006	No	18	0.0007224	0.000677	0	None	ln(x)	0.01	Param.
Cobalt, total (mg/L)	MW-1606D	0.0016	0.00117	0.006	No	18	0.001579	0.0007284	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1606S	0.0003459	0.0002313	0.006	No	18	0.0002886	0.00009468	0	None	No	0.01	Param.
Cobalt, total (mg/L)	MW-1607D	0.000848	0.000439	0.006	No	18	0.0006722	0.0002121	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	MW-1607S	0.00142	0.000936	0.006	No	17	0.001278	0.0005361	0	None	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-1604D	1.222	0.432	5	No	18	0.9061	0.7806	0	None	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1604S	1.662	0.722	5	No	17	1.712	2.202	0	None	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-1605D	1.505	0.6649	5	No	18	1.261	0.9628	0	None	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1605S	1.039	0.477	5	No	18	0.8819	0.7244	0	None	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1606D	1.755	0.8398	5	No	17	1.382	0.8823	0	None	x^(1/3)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1606S	1.333	0.6298	5	No	18	1.033	0.6447	0	None	sqrt(x)	0.01	Param.

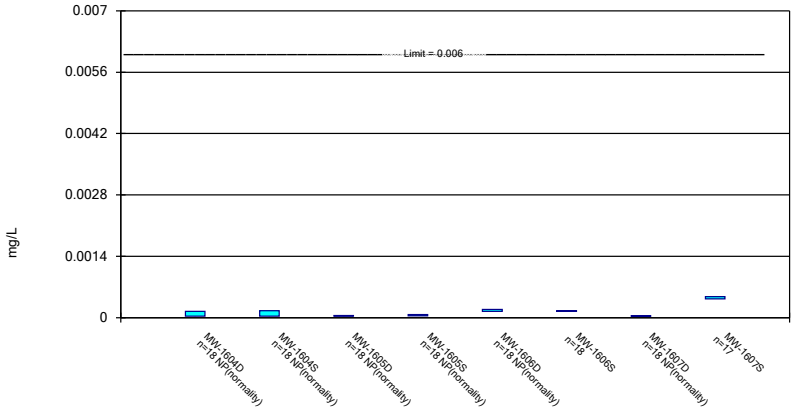
Confidence Interval - All Results

Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP Printed 8/30/2021, 2:17 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Combined Radium 226 + 228 (pCi/L)	MW-1607D	1.793	1.099	5	No	18	1.531	0.7585	0	None	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1607S	1.9	0.9561	5	No	18	1.428	0.7803	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1604D	0.2123	0.1782	4	No	19	0.1953	0.02913	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1604S	0.2309	0.1963	4	No	19	0.2142	0.03024	0	None	sqrt(x)	0.01	Param.
Fluoride, total (mg/L)	MW-1605D	0.208	0.1867	4	No	19	0.1974	0.01821	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1605S	0.2899	0.2491	4	No	19	0.2695	0.03488	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1606D	0.27	0.24	4	No	19	0.2595	0.06737	0	None	No	0.01	NP (normality)
Fluoride, total (mg/L)	MW-1606S	0.4762	0.3928	4	No	20	0.4345	0.07352	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1607D	0.5371	0.4799	4	No	20	0.5085	0.0504	0	None	No	0.01	Param.
Fluoride, total (mg/L)	MW-1607S	0.2923	0.2529	4	No	19	0.2726	0.03364	0	None	No	0.01	Param.
Lead, total (mg/L)	MW-1604D	0.00008509	0.00002751	0.015	No	18	0.0001398	0.0001428	33.33	Kaplan-Meier	ln(x)	0.01	Param.
Lead, total (mg/L)	MW-1604S	0.0002	0.000051	0.015	No	18	0.0001306	0.00007552	38.89	None	No	0.01	NP (normality)
Lead, total (mg/L)	MW-1605D	0.0002	0.00002	0.015	No	18	0.00008639	0.00008421	33.33	None	No	0.01	NP (normality)
Lead, total (mg/L)	MW-1605S	0.0005065	0.0001349	0.015	No	18	0.0003954	0.0004955	5.556	None	x^(1/3)	0.01	Param.
Lead, total (mg/L)	MW-1606D	0.0002162	0.00004669	0.015	No	18	0.0002882	0.0004569	38.89	Kaplan-Meier	ln(x)	0.01	Param.
Lead, total (mg/L)	MW-1606S	0.000123	0.00005963	0.015	No	18	0.0001294	0.00006971	27.78	Kaplan-Meier	sqrt(x)	0.01	Param.
Lead, total (mg/L)	MW-1607D	0.0002	0.000043	0.015	No	18	0.0001353	0.0001412	27.78	None	No	0.01	NP (normality)
Lead, total (mg/L)	MW-1607S	0.000264	0.00008	0.015	No	17	0.0002772	0.0004002	0	None	No	0.01	NP (normality)
Lithium, total (mg/L)	MW-1604D	0.057	0.019	0.04	No	18	0.03639	0.01773	5.556	None	No	0.01	NP (normality)
Lithium, total (mg/L)	MW-1604S	0.04509	0.03448	0.04	No	18	0.03978	0.008772	0	None	No	0.01	Param.
Lithium, total (mg/L)	**MW-1605D**	**0.07313**	**0.05164**	**0.04**	**Yes**	**18**	**0.06238**	**0.01776**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1605S**	**0.07165**	**0.05424**	**0.04**	**Yes**	**18**	**0.06294**	**0.01439**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1606D**	**0.124**	**0.0666**	**0.04**	**Yes**	**18**	**0.09952**	**0.02726**	**0**	**None**	**No**	**0.01**	**NP (normality)**
Lithium, total (mg/L)	**MW-1606S**	**0.1085**	**0.0809**	**0.04**	**Yes**	**18**	**0.09469**	**0.0228**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607D**	**0.09993**	**0.07958**	**0.04**	**Yes**	**18**	**0.08976**	**0.01682**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium, total (mg/L)	**MW-1607S**	**0.1094**	**0.09154**	**0.04**	**Yes**	**18**	**0.1005**	**0.01474**	**0**	**None**	**No**	**0.01**	**Param.**
Mercury, total (mg/L)	MW-1604D	0.000036	0.000003	0.002	No	17	0.000006706	0.000007564	88.24	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1604S	0.000005	0.000003	0.002	No	17	0.000004882	4.9e-7	94.12	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1605D	0.000005	0.000002	0.002	No	17	0.000004824	7.3e-7	94.12	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1605S	0.000005	0.000003	0.002	No	17	0.000004882	4.9e-7	94.12	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1606D	0.000005	0.000004	0.002	No	17	0.000004941	2.4e-7	94.12	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1606S	0.000005	0.000002	0.002	No	17	0.000004824	7.3e-7	94.12	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1607D	0.000005	0.000002	0.002	No	17	0.000004647	1.0e-6	88.24	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	MW-1607S	0.000012	0.000003	0.002	No	17	0.000005176	0.000001879	82.35	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	MW-1604D	0.0183	0.0014	0.1	No	18	0.009334	0.008749	5.556	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	MW-1604S	0.0162	0.00252	0.1	No	17	0.01012	0.006619	0	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	MW-1605D	0.04734	0.03768	0.1	No	18	0.04251	0.007983	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1605S	0.01921	0.01403	0.1	No	18	0.01662	0.00428	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1606D	0.07589	0.06803	0.1	No	18	0.07196	0.006495	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1606S	0.0885	0.06356	0.1	No	18	0.07712	0.02102	0	None	x^(1/3)	0.01	Param.
Molybdenum, total (mg/L)	MW-1607D	0.08789	0.08101	0.1	No	18	0.08445	0.005685	0	None	No	0.01	Param.
Molybdenum, total (mg/L)	MW-1607S	0.04399	0.03652	0.1	No	18	0.04026	0.00618	0	None	No	0.01	Param.
Selenium, total (mg/L)	MW-1604D	0.003	0.0007	0.05	No	18	0.001505	0.00107	0	None	No	0.01	NP (normality)
Selenium, total (mg/L)	MW-1604S	0.0025	0.001	0.05	No	18	0.00162	0.0007437	0	None	No	0.01	NP (normality)
Selenium, total (mg/L)	MW-1605D	0.0003	0.00014	0.05	No	18	0.0002183	0.00006845	0	None	No	0.01	NP (normality)
Selenium, total (mg/L)	MW-1605S	0.001341	0.000632	0.05	No	18	0.001038	0.0006772	0	None	sqrt(x)	0.01	Param.
Selenium, total (mg/L)	MW-1606D	0.005575	0.002483	0.05	No	18	0.004029	0.002555	0	None	No	0.01	Param.
Selenium, total (mg/L)	MW-1606S	0.002509	0.001098	0.05	No	18	0.001966	0.00137	0	None	x^(1/3)	0.01	Param.
Selenium, total (mg/L)	MW-1607D	0.00025	0.00004	0.05	No	18	0.0001239	0.0001263	22.22	None	No	0.01	NP (normality)
Selenium, total (mg/L)	MW-1607S	0.008561	0.005644	0.05	No	18	0.007103	0.002411	0	None	No	0.01	Param.
Thallium, total (mg/L)	MW-1604D	0.000261	0.0002	0.002	No	18	0.0002068	0.00007775	44.44	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1604S	0.000251	0.00003	0.002	No	18	0.0001511	0.0001105	5.556	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1605D	0.0002	0.00005	0.002	No	18	0.0001227	0.00007463	44.44	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1605S	0.0002	0.00005	0.002	No	18	0.0001259	0.0000747	44.44	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1606D	0.0002	0.00009	0.002	No	18	0.0001254	0.00004956	27.78	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1606S	0.0002	0.000062	0.002	No	18	0.0001107	0.00005892	27.78	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1607D	0.0002	0.00004	0.002	No	18	0.0001096	0.00008384	44.44	None	No	0.01	NP (normality)
Thallium, total (mg/L)	MW-1607S	0.0002	0.000052	0.002	No	18	0.0001129	0.00006724	33.33	None	No	0.01	NP (normality)

Parametric and Non-Parametric (NP) Confidence Interval

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

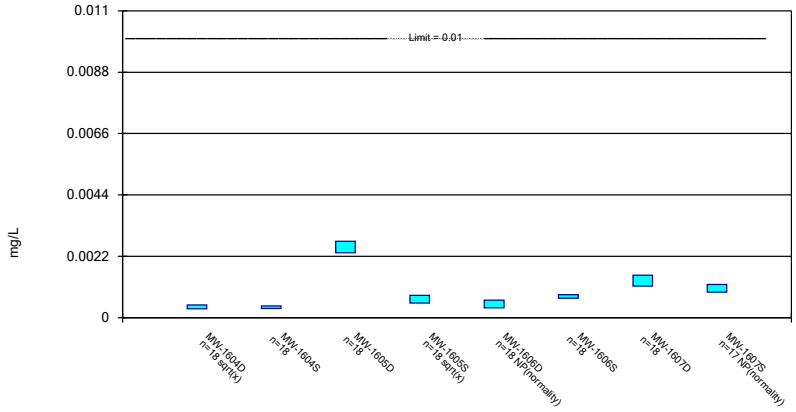


Constituent: Antimony, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

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

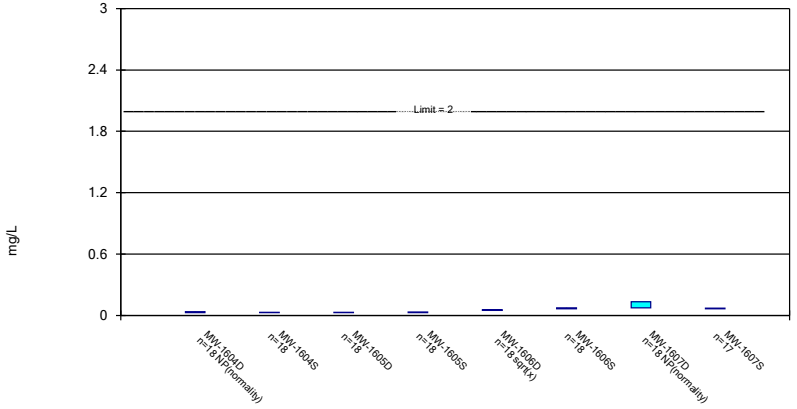


Constituent: Arsenic, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

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

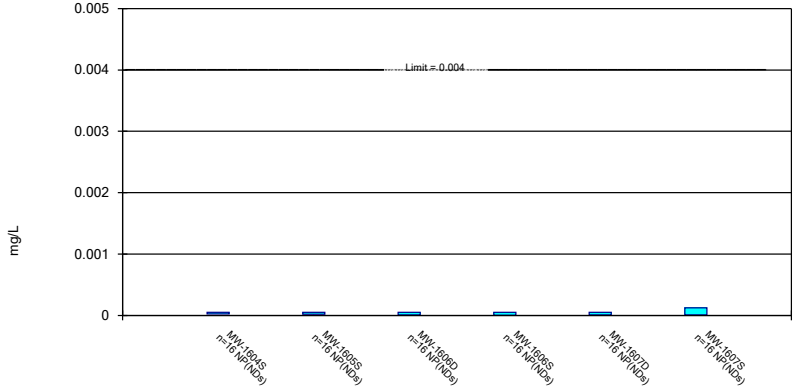


Constituent: Barium, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

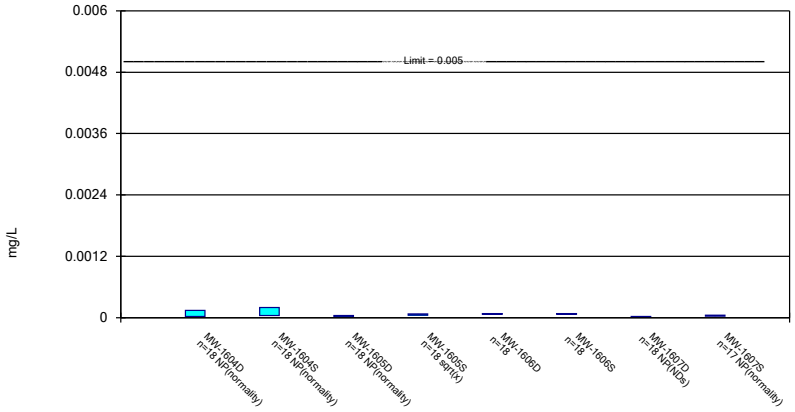
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Beryllium, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

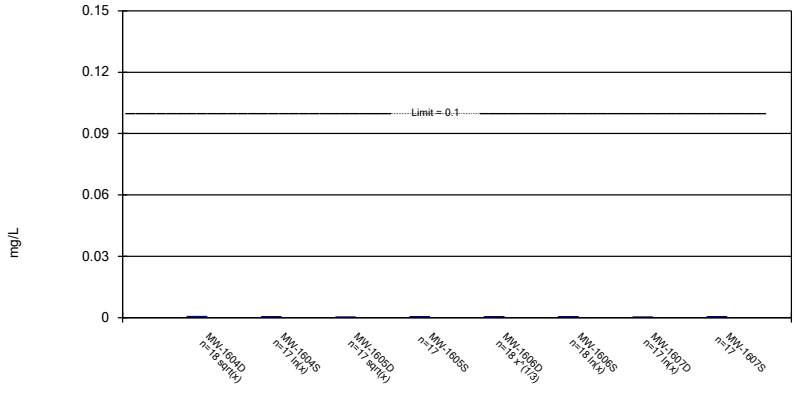
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cadmium, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric Confidence Interval

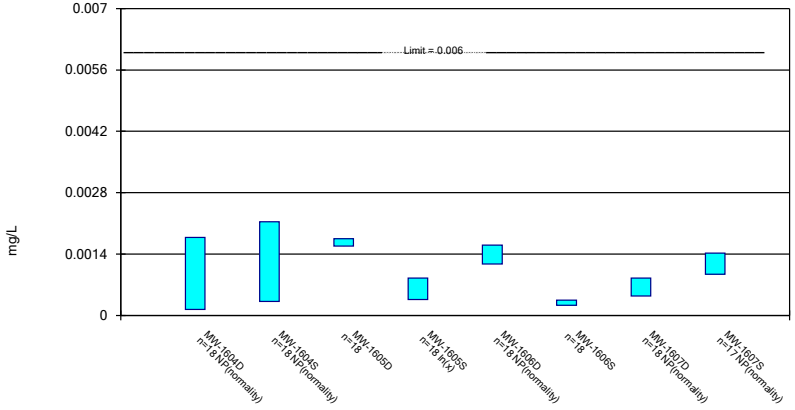
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

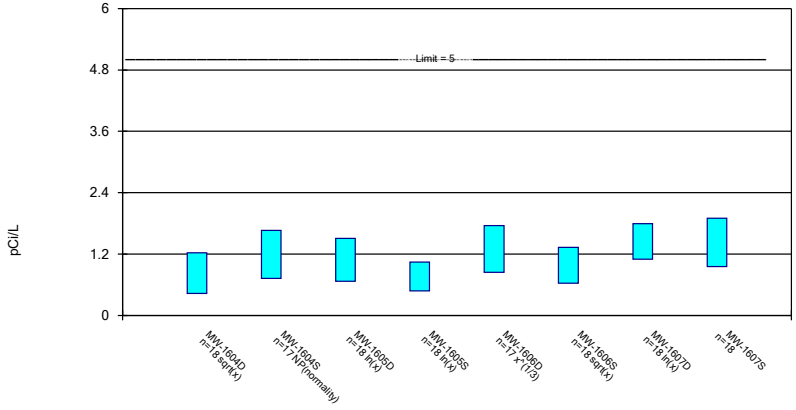
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

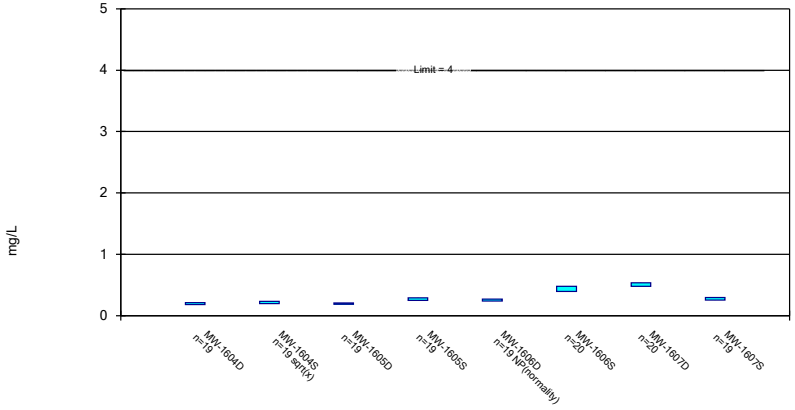
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

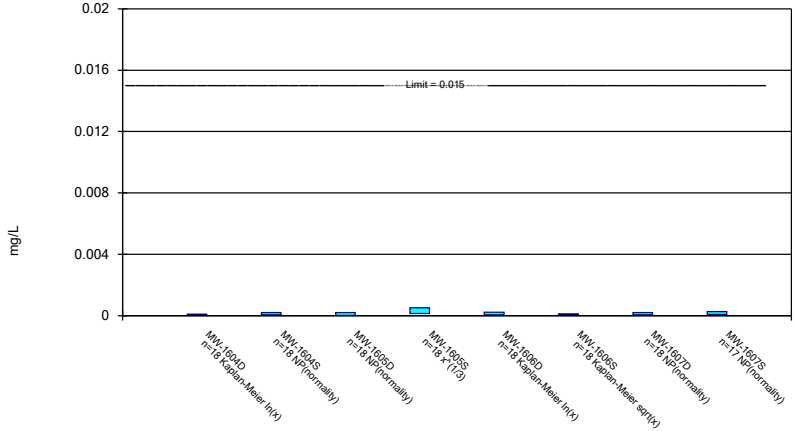
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

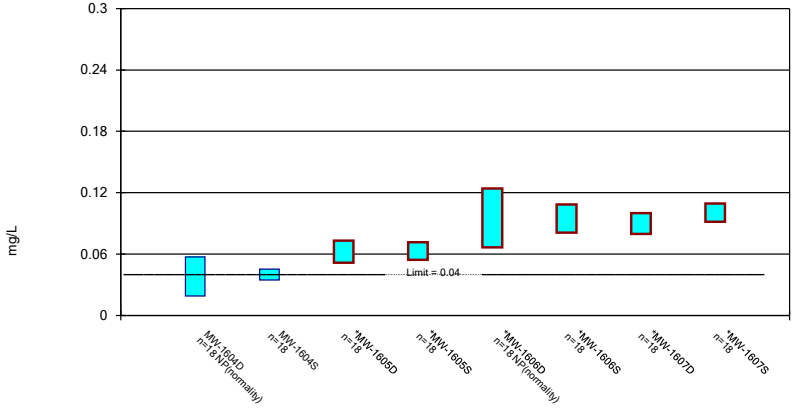
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

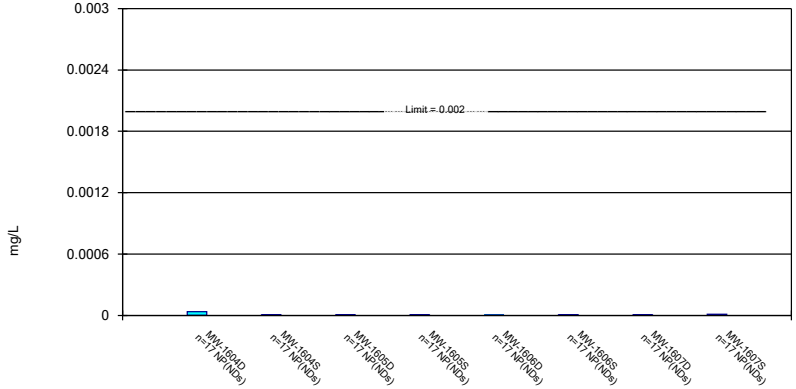
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Non-Parametric Confidence Interval

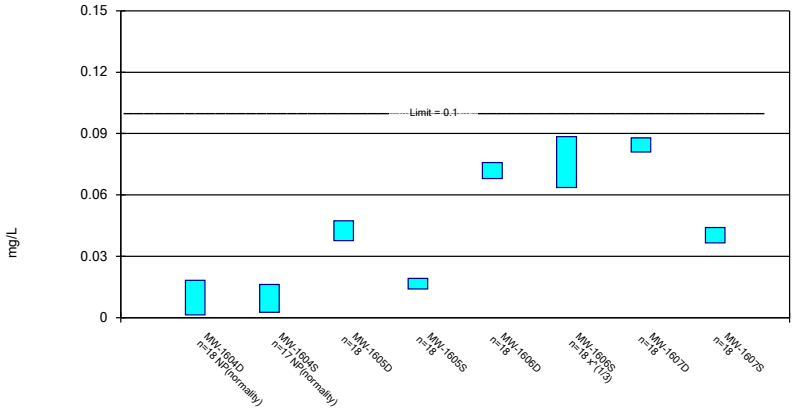
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Mercury, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Parametric and Non-Parametric (NP) Confidence Interval

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



Constituent: Molybdenum, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

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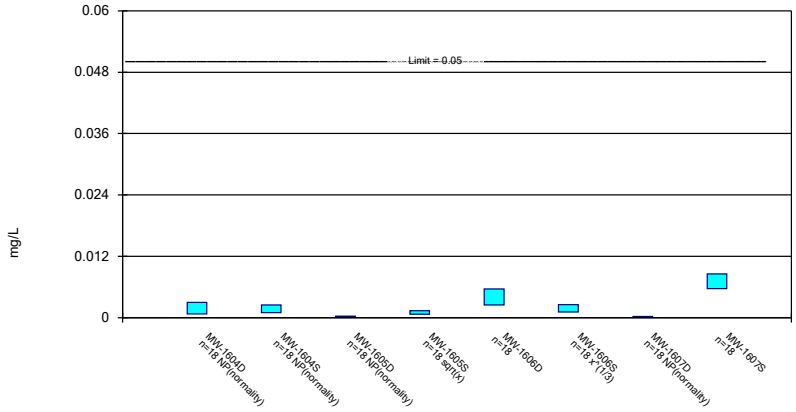
Parametric and Non-Parametric (NP) Confidence Interval

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

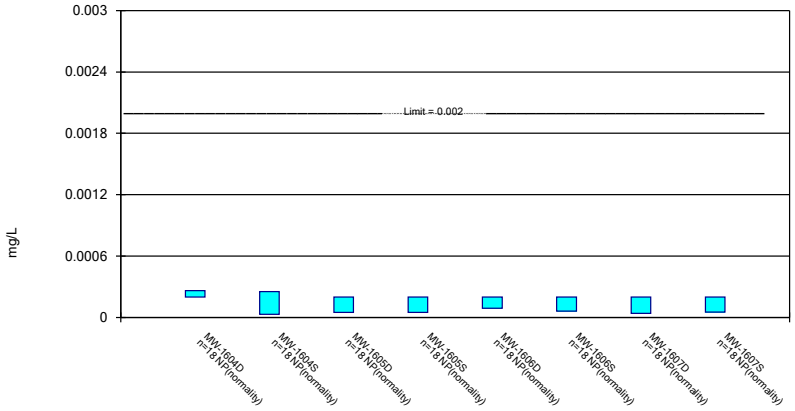


Constituent: Selenium, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Sanitas™ v.9.6.30f Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Thallium, total Analysis Run 8/30/2021 2:14 PM View: Confidence Intervals
Mountaineer BAP Client: Geosyntec Data: Mountaineer BAP

Appendix 3

No alternative source demonstrations were completed in 2021.

Appendix 4

The notifications of an SSL above a GWPS that were posted in 2021, as determined by statistical analysis following each assessment monitoring event, and the notice of initiating the assessment monitoring program and subsequently the Assessment of Corrective Measures program follow.

Mountaineer Plant

Notice of Assessment Monitoring Program Establishment

Bottom Ash Pond

On January 15, 2018, it was determined that Mountaineer Plant's Bottom Ash Pond had statistically significant increases over background for Boron, Calcium, Chloride, Fluoride, Sulfate, and Total Dissolved Solids (TDS). An alternative source demonstration was not successful within the 90 day period as allowed for in 257.94(e)(2) prompting the initiation of an assessment monitoring program, which was established on April 13, 2018. Therefore this notice is being placed in the operating record in accordance with the requirement of 257.94(e)(3).

Mountaineer Plant

Notice for Initiating an Assessment of Corrective Measures

CCR Unit – Bottom Ash Pond

This notice is being provided, as required by 40 CFR 257.95(g)(5), that an Assessment of Corrective Measures was initiated on March 26, 2019 for Mountaineer Plant's Bottom Ash Pond due to the statistically significant concentrations detected above the established groundwater protection standard for lithium.

Mountaineer Plant

Notice of Statistically Significant Levels (SSLs) above the Groundwater Protection Standard (GWPS)

CCR Unit – Bottom Ash Pond

As required by 40 CFR 257.95(g), this is a notification that on February 9, 2021 lithium was detected at SSL's above the GWPS's. This notification is being placed in the operating record, as required by 40 CRF 257.105(h)(8).

Mountaineer Plant

Notice of Statistically Significant Levels (SSLs) above the Groundwater Protection Standard (GWPS)

CCR Unit – Bottom Ash Pond

As required by 40 CFR 257.95(g), this is a notification that on September 19, 2021 lithium was detected at SSL's above the GWPS's. This notification is being placed in the operating record, as required by 40 CRF 257.105(h)(8).

Appendix 5

No monitoring wells were installed or decommissioned in 2021.