2023 Annual Groundwater Monitoring Report
Per EPA CCR Rule (CFR § 257.90-.98)

Asbury Power Plant CCR Impoundment
Jasper County, MO

January 2024

Prepared For:
The Empire District Electric Company
602 S. Joplin Avenue
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Midwest Environmental CONSULTANTS

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CERTIFICATE OF COMPLIANCE

Annual Groundwater Monitoring Report for Existing CCR Surface Impoundments
EPA CCR Rule Section 40 CFR 257.90 (e)
Empire District Electric Company – Asbury Power Plant
Asbury, Missouri

The following presents the Annual Groundwater Monitoring Report for the Empire District Electric Company's CCR Impoundment at the Asbury Power Plant. This serves as certification that the facility is in compliance with 40 CFR 257.90 (e) of the EPA CCR Rule.

40 CFR 257.90 (e) states:
(e) Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report.

CERTIFICATION 257.90 (e)
The undersigned Professional Engineer (P.E.) is familiar with the requirements of 40 CFR Part 257. The above summarizes the status of the Groundwater Monitoring for the Empire District Electric Company's CCR Impoundment at the Asbury Power Plant. I hereby certify that the facility is in compliance with 40 CFR 257.90 (e) and all information has been placed in the Operating Record. Notification of availability of this document should be provided to the State Director as required in section 257.107(h).

Name: Anika Careaga, P.E.

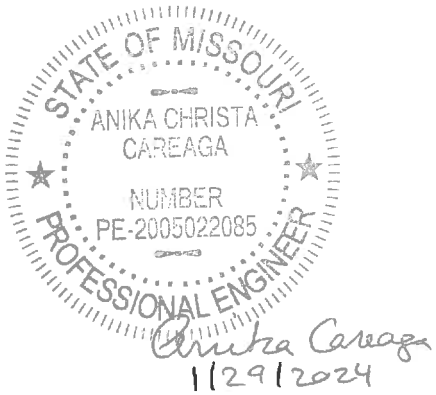
Signature: Anika Careaga

Date: January 29, 2024

Registration Number: 2005022085

State: Missouri

Seal:



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STATE OF MISSOURI
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Anika Careaga
1/29/2024

1.0 INTRODUCTION

The EPA Coal Combustion Residual Regulations (40 CFR Part 257) (CCR Rule) require groundwater monitoring of CCR impoundments. This Asbury Power Plant CCR impoundment groundwater monitoring sampling report is in accordance with the EPA CCR Rule.

In accordance with the EPA CCR Rule (§ 257.90-.98) the status of the Groundwater Monitoring was placed on-line October 17, 2017, as required by the EPA CCR rule. Background data of Appendix III and Appendix IV was collected from January 2016 to August 2017. After review of the first semi-annual groundwater sampling event analytical results completed in October 2017, the constituents listed in Appendix IV were eliminated from the overall semi-annual detection monitoring plan in accordance with the EPA CCR Rule.

The Asbury Power Plant was retired on March 1, 2020. Residual fly ash, bottom ash, and other related wastes were placed in the impoundment area until April 1, 2021, as part of the decommissioning activities. On April 1, 2021, a Notification of Intent to Close CCR Surface Impoundment was posted to the facility's website and the State Director (MDNR) was notified. Dewatering of the impoundment was occurring during the first part of 2022. CCR grading, excavation and relocation activities began in June of 2022. Construction Closure of the final cap of the CCR impoundment was completed on January 23, 2023.

On May 16 and 17, 2023, and November 28 and 29, 2023, semi-annual detection monitoring sampling events was conducted per the EPA CCR Rule (§ 257.94). The original nine (9) groundwater-monitoring wells were sampled and analyzed for the EPA Appendix III. In addition, MW-5AR sampling began in May 2023. MW-5AR was installed in April 2023 in response to the Alternative Source Demonstration (ASD) which was completed in April 2021. The ASD was placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed baseline samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease. Based on the results of the 2023 statistical analysis, the site will continue with detection monitoring for the 2024 sampling events per the EPA CCR Rule (§ 257.94).

The EPA CCR Rule requires the annual groundwater report to be completed by January 31st of the following year. This report serves as the annual groundwater report for the 2023 sampling events that will be completed by January 31, 2024 and posted on-line within 30 days. This report was prepared in general accordance with the EPA CCR Rule for groundwater requirements. These regulations outline groundwater monitoring requirements and data evaluation methods. The Empire District will notify the MDNR "State Director" via e-mail when this document is posted on-line, as required in the CCR rule.

2.0 BACKGROUND DATA

The purpose of the groundwater monitoring plan is to monitor the groundwater quality surrounding the facility and to evaluate potential impacts and/or releases from facility operations. The groundwater monitoring system for the site consists of the following monitoring wells:

- MW-1 Sidegradient (water level only)
- MW-2 Upgradient
- MW-3 Upgradient
- MW-4 Downgradient
- MW-5 Downgradient
- MW-5A Downgradient
- MW-5AR Downgradient (background sampling)
- MW-6 Downgradient
- MW-6A Downgradient
- MW-7 Sidegradient

Background groundwater data was collected from January 2016 to August 2017. After the background data plus the first semi-annual sampling events, a reduced sampling frequency replaced the quarterly events to semi-annual events. This lessened sampling frequency will be completed during the months of April/May/June and October/November/December. Statistical analysis for EPA Appendix III began after the first semi-annual sampling event was collected on October 4, 2017. MW-5AR baseline monitoring started in May 2023 and will be completed semi-annually until eight (8) rounds of background sampling data are obtained.

Four more sets of background data were available to add to the background data set for the November 2019 sampling event and then four more sets for the November 2021 sampling event for a total of sixteen (16) background sets for the May 2023 sampling event. Four more sets for the November 2023 sampling event for a total of twenty (20) background sets for the November 2023 sampling event. The analysis of the additional data for the background data set was conducted. No trending was found in the additional four sets of data, so they were added to the baseline data set to increase the statistical power of the background data.

3.0 MAY 2023 SAMPLING EVENT

On May 16 and 17, 2023, a semi-annual sampling event was conducted per the EPA CCR Rule (§ 257.90-.98). The original nine (9) groundwater-monitoring wells were sampled and analyzed for the EPA Appendix III. In addition, MW-5AR was also sampled for Appendix III and Appendix IV parameters. For quality assurance and quality control measures, a duplicate sample at MW-5 was taken.

Table 1 – Constituents During May 2023 Sampling Event

Constituent	Units	MCL	MW-2 (up)	MW-3 (up)	MW-4 (down)	MW-5 (down)	MW-5A (down)	MW-5AR (down)	MW-6 (down)	MW-6A (down)	MW-7 (side)
Appendix III											
Boron	mg/L	NA	150	80	<80	250	1800	370	350	350	290
Calcium	mg/L	NA	28	94	240	91	400	77	250	180	470
Chloride	mg/L	NA	110	59	6.5	6.2	180	77	19	37	38
Fluoride	mg/L	4.0	0.2	0.16	0.11	0.3	0.26	0.51	0.29	0.27	0.17
pH	SU	NA	5.93	5.82	6.88	7.43	6.94	7.46	7.02	6.85	6.51
Sulfate	mg/L	NA	98	490	560	150	1700	190	950	830	1600
Total Dissolved Solids	mg/L	NA	410	890	1500	590	3200	650	1900	1600	2900

NA = Not Applicable

<x = Less than reporting limit (nondetectable)

J = Trace value seen above minimum detection limit but below reporting limit (trace)

No constituents were detected above the Federal Safe Drinking Water maximum contaminant level (MCL) during the sampling event. There was one initial interwell prediction limit exceedance for Total Dissolved Solids (MW-5A) in the listed monitoring well during May 2023 sampling event. During the May 2023 sampling event, interwell prediction exceedances in boron (MW-5A) and pH (MW-5) were confirmed. There are no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility was resampled as part of the November 2023 sampling event. **Appendix A** contains the complete report for the May 2023 sampling event.

The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022 and November 2022 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and

MW-5AR will continue until the eight needed baseline samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

Based upon these findings the site will not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

In April 2023, monitoring well MW-5AR was installed as proposed in the Alternative Source Demonstration completed April 2021. As part of this well installation maintenance of the entire groundwater monitoring well system was also completed. This included the installation of new concrete well pads, protective covers, and protective bollards. The well riser pipe was also modified for well cap installation. New as-built survey data was obtained and will be utilized in this and future reports. MW-5A will not be removed until after the eight (8) background samples have been collected for MW-5AR.

4.0 NOVEMBER 2023 SAMPLING EVENT

On November 28 and 29, 2023, a semi-annual detection monitoring sampling event was conducted per the EPA CCR Rule (§ 257.94). The original nine (9) groundwater-monitoring wells were sampled and analyzed for the EPA Appendix III. In addition, MW-5AR was also sampled for Appendix III and Appendix IV parameters. For quality assurance and quality control measures, a duplicate sample at MW-5 was taken.

Table 2 – Constituents During November 2023 Sampling Event

Constituent	Units	MCL	MW-2 (up)	MW-3 (up)	MW-4 (down)	MW-5 (down)	MW-5A (down)	MW-5AR (down)	MW-6 (down)	MW-6A (down)	MW-7 (side)
Appendix III											
Boron	mg/L	NA	110	52	<50J	300	2400	400	400	360	300
Calcium	mg/L	NA	26	93	260	93	430	120	270	240	490
Chloride	mg/L	NA	150	57	4.6	6	230	28	30	86	44
Fluoride	mg/L	4.0	<1J	<1J	<1	<1J	<1	<1J	<1J	<1	<1
pH	SU	NA	5.76	5.77	6.65	7.16	6.59	7.31	6.79	6.33	6.18
Sulfate	mg/L	NA	96	480	630	170	1400	370	1100	1100	2000
Total Dissolved Solids	mg/L	NA	380	850	1500	590	3300	920	1900	2000	2800

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

No constituents were detected above the Federal Safe Drinking Water maximum contaminant level (MCL) during the sampling event. There was one initial interwell prediction limit exceedance for chloride (MW-5A) in the listed monitoring well during November 2023 sampling event. During the November 2023 sampling event, interwell prediction exceedances in boron (MW-5A) and total dissolved solids (MW-5A) were confirmed from the May 2023 sampling event. There are no current primary (health based) MCLs for boron or total dissolved solids. The facility will resample as part of the May 2024 sampling event. **Appendix B** contains the full report for the November 2023 sampling event.

It was noted during sampling that water levels were significantly lower than normally seen due to drought conditions. The drought should be considered excessive. Governor Mike Parson declared at state of emergency in Missouri for drought conditions starting on July 21, 2022. **Table 3** shows the drop in elevation between the May 2022 and November 2023 sampling events.

Table 3 - Groundwater Sampling Comparison

WELL ID	NOVEMBER 2023 STATIC WATER LEVEL (ft-BTOC)		PRE-DROUGHT MAY 2022 STATIC WATER LEVEL (ft-BTOC)		DIFFERENCE IN INTIAL LEVELS (ft-BTOC)
	Initial	Final	Initial	Final	
MW-1*	8.85	NA	5.41	NA	3.44
MW-2	4.33	6.35	3.07	4.87	1.26
MW-3	2.87	2.90	0.5	0.7	2.37
MW-4	9.37	14.48	5.83	12.93	3.54
MW-5	0.5	9.77	1.82	13.39	-1.32

MW-5A	9.88	17.57	9.50	19.43	0.38
MW-5AR	1.72	9.68	NA	NA	NA
MW-6	9.99	17.78	8.86	18.07	1.13
MW-6A	9.17	16.89	7.93	18.20	1.24
MW-7	6.15	7.80	3.15	3.32	3.00

The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, November 2022, and May 2023 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed baseline samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

Based upon these findings the site will not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

5.0 EXCUTIVE SUMMARY

This report is a summary of the 2023 sampling events and the findings of the statistical analysis of the results of the groundwater detection monitoring program at the Asbury Power Plant CCR Impoundment. Specific information about each sampling event can be obtained from the individual reports which are included as appendices and have been placed in the Asbury Operating Record. Statistical analysis will continue utilizing interwell prediction limits per EPA's request. The site continues with the detection monitoring program on a semi-annual basis per the EPA CCR Rule (§ 257.94).

APPENDIX A

May 2023 Sampling Event

Groundwater Monitoring, Sampling & Statistics Per EPA CCR Rule (CFR § 257.90-.98)

May 2023 Sampling Event

Asbury Power Plant CCR Impoundment
Jasper County, MO

August 2023

Prepared For:
The Empire District Electric Company
602 S. Joplin Avenue
Joplin, Missouri 64801

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1.0 INTRODUCTION

The EPA Coal Combustion Residual Regulations (40 CFR Part 257) (CCR Rule) require groundwater monitoring of CCR impoundments. This Asbury Power Plant CCR impoundment groundwater monitoring sampling report is in accordance with the EPA CCR Rule. In accordance with the EPA CCR Rule (§ 257.90-.98) the status of the Groundwater Monitoring was placed on-line October 17, 2017, as required by the EPA CCR rule. Empire notified the Missouri Department of Natural Resources (MDNR) "State Director" via e-mail when this document was posted on-line, as required in the CCR rule.

The EPA CCR Rule requires the annual groundwater report to be prepared by January 31st of the following year. The first report was due January 31, 2018. This report was prepared in general accordance with the EPA CCR Rule for groundwater requirements. These regulations outline groundwater monitoring requirements and data evaluation methods. The annual groundwater report for the 2023 sampling events will be posted on-line within 30 days of placement in the operating record and the State Director will be notified.

A Site Characterization Workplan was submitted to the MDNR. On November 2, 2017, the facility received approval from MDNR that the site had been properly characterized and the facility could begin groundwater monitoring (included in **Appendix 1**).

The purpose of the groundwater monitoring system is to monitor the ground water quality surrounding the facility and to evaluate potential impacts and/or releases from facility operations. Eight rounds of background groundwater data were collected from January 2016 to August 2017. After the background data is obtained and after the first semi-annual sampling event, a reduced sampling frequency replaced the quarterly events to semi-annual events. This reduced sampling frequency will generally be completed during the months of May and November. Statistical analysis for EPA Appendix III results began after the first semi-annual sampling event which was collected on October 4, 2017. This analysis was to determine if a statistically significant increase (SSI) has occurred. If an SSI is verified, additional evaluation is required to determine if the SSI was caused by the CCR impoundment.

The Asbury Power Plant was retired on March 1, 2020. Residual fly ash, bottom ash, and other related wastes were placed in the impoundment area until April 1, 2021, as part of the decommissioning activities. On April 1, 2021, a Notification of Intent to Close CCR Surface Impoundment was posted to the facility's website and the State Director (MDNR) was notified. Dewatering of the impoundment was occurring during the first part of 2022. CCR grading, excavation and relocation activities began in June of 2022. Closure of the CCR impoundment was completed on January 23, 2023.

On May 16 and 17, 2023, a semi-annual sampling event was conducted per the EPA CCR Rule (§ 257.90-.98). The original nine (9) groundwater-monitoring wells were sampled and analyzed for the EPA Appendix III. In addition, MW-5AR was sampled for the first time. MW-5AR was installed in April 2023 in response to the Alternative Source Demonstration (ASD) which was completed in April 2021. The ASD was placed in the operating record. After review of the first semi-annual groundwater sampling event analytical results completed in October 2017, the constituents listed in Appendix IV were eliminated from the overall semi-annual detection monitoring plan in accordance with the EPA CCR Rule. For quality assurance and quality control measures, a

duplicate sample at MW-5 was taken. These samples were preserved and submitted directly to the laboratory.

This report is a summary of the May 2023 sampling event and the findings of the statistical analysis of the results of the groundwater monitoring program at the Asbury Power Plant CCR Impoundment. Specific information about each sampling event can be obtained from the individual report which is part of the Asbury Operating Record.

2.0 SITE LOCATION

The site occupies the north half of Section 17, Township 30 North, and Range 33 West on the Asbury 7.5-Minute Quadrangle Map as seen in **Figure 1**. The site is located approximately 5.5 miles north-northeast of Asbury, Missouri, about 14 miles north-northwest of Joplin, Missouri. A map showing the locations of the monitoring wells is in **Figure 2**.

2.1 History

In March 1996, five (5) groundwater monitoring wells, MW-1 through MW-5, were installed around the perimeter of the Asbury Power Plant CCR impoundment. Monitoring wells MW-1, MW-2 and MW-3 were installed to a total depth of between 27.0 to 28.5 feet below ground surface (bgs). Monitoring wells MW-4 and MW-5 were installed to a total depth of 48 feet bgs. Each of the five monitoring wells was equipped with 10.0-foot well screens. The five wells were then developed, purged, and sampled in 1996.

In 2003, two (2) additional groundwater monitoring wells were installed and identified as MW-6 and MW-7. Both wells had 2-inch diameter PVC well casings installed to an approximate total depth of 44 feet below ground surface. Both wells were installed with an above ground steel protective cover. No other construction details such as well screen lengths were available for these two (2) wells. In December 2015, two (2) additional groundwater monitoring wells were installed and identified as MW-5A and MW-6A.

In April 2023, monitoring well MW-5AR was installed as proposed in the Alternative Source Demonstration completed April 2021. As part of this well installation maintenance of the entire groundwater monitoring well system was also completed. This included the installation of new concrete well pads, protective covers, and protective bollards. The well riser pipe was also modified for well cap installation. New as-built survey data was obtained and will be utilized in this and future reports. MW-5A will not be removed until after the eight (8) background samples have been collected for MW-5AR.

All wells are registered with MDNR – Missouri Geological Survey Program.

The Asbury Power Plant was retired on March 1, 2020, but residual fly ash, bottom ash, and other related wastes were placed in the impoundment area as part of the decommissioning activities. The facility is now known as the Asbury Renewable Operations Center. On April 1, 2021, a Notification of Intent to Close CCR Surface Impoundment was posted to the facility's website and the State Director (MDNR) was notified. Dewatering of the impoundment was occurring during the first part of 2022. CCR grading, excavation and relocation activities began in June of 2022. Closure of the CCR impoundment was completed on January 23, 2023.

2.2 Site Geology

Drilling and subsurface investigation activities at the Site and as part of the MDNR approved CCR landfill Detailed Site Investigation (DSI) for the adjacent landfill area identified three (3) primary geologic units at the Site. These geologic units include the surficial soil layer, Warner Sandstone (uppermost aquifer), and Riverton Shale (confining unit). The information presented herein includes the primary elements of a site characterization work plan consistent with the MDNR guidance.

Surficial Soil. Soils at the site consist of a surficial unit of cohesive soils (e.g., CL, SC, ML, and CH) underlain by Pennsylvanian-age bedrock. Soil thickness at the Site ranges from approximately 15-25 feet.

Warner Sandstone. The Warner Sandstone (Sandstone) is the uppermost bedrock unit in the south portion of the Site. In the north area of the Site, the Sandstone is overlain by the Riverton Shale (Shale). Based on the DSI information, the Sandstone and Shale can occur as alternating layers. The Sandstone and Shale are gradational in places and transition from shaley sandstone to sandy shale. According to the MDNR publication on the Pennsylvanian Subsystem in Missouri, the Warner Sandstone formation is described as follows: "Generally, the lower part is interbedded, very fine-grained sandstone and claystone. The upper part is largely medium bedded to massive channel fill sandstone. In places, the Warner consists primarily of shale and claystone, with only minor amounts of sandstone" and "ranges in thickness from 0 to 15m (49.2 ft.)."

The Sandstone is more than 25-30 feet thick in places and is generally medium hard and thin to medium bedded with occasional shale partings. The degree of induration of the Sandstone varies and generally increases with depth. Slug tests performed at selected DSI piezometers screened in the Sandstone exhibited hydraulic conductivities ranging from approximately 1.3x10-4 cm/sec to 5.9x10-6 cm/sec. The slug test results are consistent with values for sandstone and shaley sandstone. The groundwater gradient is towards the east and Blackberry Creek.

Riverton Shale. Layers of the Riverton Shale (Shale) exhibited thicknesses ranging from approximately one foot to more than 10 feet. The Shale is generally dark gray to light gray. The Shale is mainly thin bedded with hardness ranging from soft to hard. Six packer tests were performed during the DSI to assess the hydraulic conductivity of the Shale. The packer test results ranged from approximately $3.2x10^{-6}$ cm/sec to $4.9x10^{-8}$ cm/sec. The packer test data indicates that the Shale is an effective confining unit.

According to the MDNR publication on the Pennsylvanian Subsystem in Missouri, the Riverton Shale formation is described as "dark gray to black, fine-grained, relatively brittle shale and contains as many as three coal beds, each of which is underlain by underclay" and "varies in thickness from a featheredge to more than 90 feet".

Unnamed Coal. The Shale includes coal seams in places that range in thickness from a few inches to approximately 1.5 feet. The coal is generally black to dark gray.

2.3 Groundwater Monitoring Network Design

The groundwater monitoring system for the CCR impoundment consists of nine (9) groundwater monitoring wells plus the recently installed MW-5AR. Two (2) wells are considered upgradient. Two (2) wells are considered sidegradient; one well is only monitored for groundwater elevation. The remaining five (5) wells are considered downgradient along with the recently installed MW-5AR.

The groundwater monitoring wells (MWs) at the Asbury Power Plant is equipped with individual dedicated poly tubing to be connected to a peristaltic pump/controller at the surface. Low-flow, micro-purge and sampling techniques and technology are utilized to collect groundwater samples from the subject wells. The groundwater sampling procedures are discussed in further detail below.

2.4 Groundwater Monitoring Network

The locations of the monitoring wells are shown in **Figure 2**. The groundwater monitoring system for the site consists of the following monitoring wells:

- MW-1 Sidegradient (water level only)
- MW-2 Upgradient
- MW-3 Upgradient
- MW-4 Downgradient
- MW-5 Downgradient
- MW-5A Downgradient
- MW-5AR Downgradient (background sampling)
- MW-6 Downgradient
- MW-6A Downgradient
- MW-7 Sidegradient

2.5 Seasonal Variation

Historical groundwater elevation data has been limited. However, adequate lengths of well screen have been utilized during the construction of the wells to accommodate typical seasonal groundwater elevation variations seen in southwest Missouri.

2.6 Groundwater Flow Direction

Historically, the seasonally high potentiometric surface indicated the groundwater flow direction to the east. **Figure 3** is a potentiometric map for this sampling event.

Originally MW-7 was thought to be a downgradient well but review of the potentiometric mapping from the eight background sampling events revealed that the well is a sidegradient well. Therefore, the designation for MW-7 has been changed from a downgradient to a sidegradient well for compliance monitoring.

3.0 BASELINE GROUNDWATER DATA

3.1 Baseline Data Collection

Per EPA CCR Rule § 257.94(b), the site initiated the detection monitoring program in January 2016 to include obtaining a minimum of eight (8) independent samples for each background and downgradient well. The eight (8) independent groundwater samples were obtained and analyzed as required by the CCR Rule per the baseline groundwater monitoring plan. Background groundwater data was collected from January 2016 to August 2017.

Groundwater Monitoring Reports were completed for each sampling event and have been placed in the Operating Record. Summary tables of the results from each event are included in **Appendix 2**. A listing of each event is below:

- January 2016
- March 2016
- May 2016
- August 2016
- October 2016
- March 2017
- June 2017
- August 2017

Initial baseline monitoring was required at all monitoring wells. The sampling frequency was quarterly or more frequently for the first two (2) years. After the background data plus the first semi-annual sampling events, a reduced lower sampling frequency replaced the quarterly events to semi-annual events. This lessened sampling frequency will be completed during the months of April/May/June and October/November/December. MW-5AR baseline monitoring started in May 2023 and will be completed semi-annually until eight (8) rounds of background sampling data are obtained.

The initial two (2) years of baseline and the first semi-annual detection monitoring included parameters listed in Appendix III and Appendix IV of the EPA CCR Rule. The constituents listed in Appendix IV were eliminated from the overall semi-annual detection monitoring plan after review of the first semi-annual groundwater sampling event analytical results in January 2018, according to the EPA CCR Rule. **Appendix 2** contains the list of constituents.

3.2 Background Data Analysis

Sanitas™ for Groundwater was used to run the statistical analyses with settings used as recommended by the Sanitas™ training course and user manual. The background data consisted of eight sampling events between January 2016 and August 2017 for both the Appendix III and IV constituents. Eight background events are needed for statistical analysis. An analysis of the Appendix III background data was conducted and is included in **Appendix 5**. Trending was found in Boron (MW-3) and Total Dissolved Solids (MW-3). MW-3 is an up-gradient well. Trending was not removed at that time; otherwise, the site would be below the minimum of eight background samples needed to run statistics.

Four more sets of background data were available to add to the background data set for the November 2019 sampling event and then four more sets for the November 2021 sampling event for a total of sixteen (16) background sets. The analysis of the additional data for the background

data sets was conducted and is included in **Appendix 5**. No trending was found in any of the additional sets of data, so they were added to the baseline data set to increase the statistical power of the background data.

4.0 GROUNDWATER SAMPLING EVENT

On May 16 and 17, 2023, nine (9) groundwater monitoring wells were sampled by Midwest Environmental Consultants (MEC) for the EPA CCR Rule Appendix III parameters. In addition, MW-5AR was also sampled for Appendix III and Appendix IV parameters. For quality assurance and quality control measures, a duplicate sample was taken at MW-5. The sampling protocol and methodology was to be conducted in accordance with the facility's Sampling and Analysis Plan. **Table 1** provides a list of the analytical methods employed by the subcontracted laboratory.

Table 1 – Analytical Methods	
Method	**Description**
9056A	Anions, Ion Chromatography
6020A	Metals (ICP/MS)
SM 2540C	Solids, Total Dissolved (TDS)
Field Sampling	Field Sampling

Appendix 3 includes Monitoring Well Field Inspection sheets and field notes. The physical integrity of the wells was good. During sample collection each of the wells was monitored for pump discharge and formation recharge. Initially, a static water level for each well was recorded (**Table 2**). To ensure sufficient recharge while sampling, static water levels were collected during pumping. Prior to sample collection, field parameters for each well were measured with a flow-through meter. When the field parameters stabilized, samples for analytical testing were collected and placed on ice for hand delivery to the laboratory. At the conclusion of sample collection from each well, a final static water level measurement was obtained. The samples were collected in the appropriately pre-preserved sample containers and placed on ice for delivery.

Table 2 - Groundwater Sampling Field Parameters Summary During May 2023 Sampling Event				
WELL ID	**STATIC WATER LEVEL (ft-BTOC)**		**PURGE RATE (mL/min)**	**STABILIZED pH**
	Initial	**Final**		
MW-1*	7.11	NA	NA	NA
MW-2	3.68	6.13	200	5.93
MW-3	2.06	20.9	200	5.82
MW-4	8.42	11.88	200	6.88
MW-5	2.66	11.30	200	7.43
MW-5A	10.68	18.12	200	6.94
MW-5AR	4.28	12.04	200	7.46
MW-6	14.06	21.90	200	7.02
MW-6A	8.67	16.18	200	6.85
MW-7	3.82	4.22	200	6.51

* Water Level Only NA – Not Applicable

Appendix 4 includes the initial analytical results for the sampling event. Included with this analytical report are sample information; chain of custody; wet chemistry data; and volatile data.

5.0 DATA VALIDATION PROCEDURES FOR GROUNDWATER MONITORING DATA

Midwest Environmental Consultants receives Data Packages from the analytical laboratory (Eurofins). The internal quality control/quality assurance case narratives and reported data are then reviewed. Generally, the data validation procedures established by the U.S. Environmental Protection Agency *Contract Laboratory Program Functional Guidelines for Organic Data Review* and *Functional Guidelines for Inorganic Data Review* is followed. These guidelines are used to assign data qualifiers to the data. A formal data validation report for the site is not prepared; however, any significant issues are noted in the groundwater monitoring report.

MEC evaluates the data set for precision, accuracy, representativeness, comparability, and completeness (PARCC).

5.1 Precision

Laboratory Precision. Laboratory quality control procedures to measure precision consist of laboratory control sample (LCS) analysis and analysis of matrix spike/matrix spike duplicates (MS/MSD). These analyses are used to define analytical variability.

Field Precision. Analyses of duplicate samples are used to define the total variability (replicability) of the sampling/analytical system. Field replicates are collected at a rate of one per sampling event.

5.2 Accuracy

Accuracy is determined by calculating the percent recoveries for analyses of surrogate compounds, LCSs, continuing calibration check standards, and matrix spike samples. Acceptable percent recoveries are established for SW-846 and EPA methods. Field and laboratory blank analysis are also used to address measurement bias.

Field Blanks. Field blanks consisted of a trip blank and a field blank. One trip blank per cooler accompanies samples for volatile organic analyses.

Laboratory Blanks. Method blanks, artificial, matrix-less samples, are analyzed to monitor the laboratory analysis system for interferences and contamination from glassware, reagents, etc. Method blanks are taken through the entire sample preparation process. They are included with each batch of extractions or digestion prepared, or with each 20 samples, whichever is more frequent.

5.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely reflects site condition. Representativeness of the data is determined by comparing actual sampling procedures to those delineated in the field sampling plan, comparing results from field replicate samples, and reviewing the results of field blanks. Field notes are reviewed as part of our data validation process.

5.4 Comparability

Comparability expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability is ensured by using established and approved sample collection techniques and analytical methods, consistent basis of analysis, consistent reporting units, and analyzing standard reference materials.

5.5 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected under controlled laboratory conditions. Completeness is defined as the valid data percentage of the total tests requested. Valid data are defined as those where the sample arrived at the laboratory intact, properly preserved, in sufficient quantity to perform the requested analyses, and accompanied by a completed chain-of-custody form. Furthermore, the sample must have been analyzed within the specified holding time and in such a manner that analytical QC acceptance criteria were met.

6.0 STATISTICAL ANALYSIS

6.1 Sampling Results

The constituents with results above the laboratory reporting limits are included in **Table 3**. This table also includes the recently installed MW-5AR. The Appendix IV results for MW-5AR are included in **Appendix 2**. The Eurofins laboratory analytical results are included in **Appendix 4**.

Table 3 – Constituents During May 2023 Sampling Event

Constituent	Units	MCL	MW-2 (up)	MW-3 (up)	MW-4 (down)	MW-5 (down)	MW-5A (down)	MW-5AR (down)	MW-6 (down)	MW-6A (down)	MW-7 (side)
Appendix III											
Boron	ug/L	NA	150	80	<80	250	1800	370	350	350	290
Calcium	mg/L	NA	28	94	240	91	400	77	250	180	470
Chloride	mg/L	NA	110	59	6.5	6.2	180	77	19	37	38
Fluoride	mg/L	4.0	0.2	0.16	0.11	0.3	0.26	0.51	0.29	0.27	0.17
pH	SU	NA	5.93	5.82	6.88	7.43	6.94	7.46	7.02	6.85	6.51
Sulfate	mg/L	NA	98	490	560	150	1700	190	950	830	1600
Total Dissolved Solids	mg/L	NA	410	890	1500	590	3200	650	1900	1600	2900

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

No constituents were detected above the Federal Safe Drinking Water maximum contaminant level (MCL) during the sampling event.

6.2 Statistical Analysis

Prediction interval analyses compare one or more observations to a limit set by background data. Interwell analyses compare observations from background wells, which include upgradient and sidegradient wells per EPA Unified Guidance definitions, and their relation to the observations for the downgradient wells. Intrawell analyses compare background observations to current observations of the same well. To appropriately characterize the groundwater beneath the site, the statistical methods utilized at the facility consider the following facts as they relate to site:

- Potential differences in geochemical characteristics of the groundwater caused by the differing lithologies in contact with the screened interval from well to well.
- Potential impacts of surface infiltration into the groundwater environment.

Due to varying geology in the state of Missouri, intrawell analyses had initially been deemed a more appropriate method. Municipal and demolition waste landfills in Missouri typically utilize intrawell prediction limits per MDNR. However, it was noted that the power curve for these analyses was not considered strong yet. The data set consisted of only 13 sampling events from January 2016 to November 2019. EPA Unified Guidance recommends 20 or more sampling events for background data for intrawell prediction limits. A small data set triggers an SSI when there is even a slight increase in concentration. Sanitas also note to each exceedance "*Insufficient data to test for seasonality: data were not deseasonalized.*" Minor increases in concentration noted in the May and November 2019 sampling events did not result in any primary MCLs to be exceeded by any of the prediction limit exceedances during the sampling event, demonstrating that the groundwater has not been contaminated.

The EPA Unified Guidance Chapter 5.2.3 states "*In groundwater data collection and testing, background conditions may not be static over time. Caution should be observed in removing observations which may signal a change in natural groundwater quality. Even when conditions have not changed, an apparently extreme measurement may represent nothing more than a portion of the background distribution that has yet to be observed. This is particularly true if the background data set contains fewer than 20 samples.*" Chapter 5.2.4 states "*With such a small background sample, it can be difficult to develop an adequately powerful intrawell prediction level or control chart, even when retesting is employed (Chapter 19). Thus, additional background data will be needed to augment compliance well samples*". Minor increases in concentrations did not result in any primary MCLs to be exceeded by any of the prediction limit exceedances during the sampling event, demonstrating that the groundwater has not been contaminated.

MDNR made several requests per EPA in the correspondence located in **Appendix 1** which included the EPA review of the groundwater reports as seen in **Table 4**.

Table 4 – EPA Review of Groundwater Reports	
Facility	Asbury Power Plant
Location	Asbury, MO
Owner	Empire District Electric Company
Units	Upper Pond-unlined, South Pond-unlined, Lower Pond-unlined
Geology	Surficial unit of clay, clayey sand, and silt approximately 15 to 25 feet thick underlain by Warner Sandstone approximately 25-30 feet thick in the southern portion of the site and the Riverton Shale in the northern area of the site
Problematic Use of Intra Well Comparisons	Analytical results indicate consistent differences in contaminant concentrations between upgradient and downgradient wells. Consequently, interwell comparisons are feasible and would be preferable in the absence of compelling reasons to use intra well analysis
Problematic Alternate Source Determination	
Conclusions	While there are no boring logs in the documents to confirm that the wells are screened in the same geologic unit, consistency in the field parameters and the description of the geology suggest that the wells are screened in the sandstone. The analytical results indicate consistent differences in contaminant concentrations between upgradient and downgradient wells, consequently, interwell comparisons are feasible and would be preferable in the absence of compelling reasons to use intra wells analyses

Sanitas™ for Groundwater was used to run the statistical analyses with settings used as recommended by the Sanitas™ training course and user manual. Interwell prediction intervals were run per EPA's request. The Sanitas™ output is included in **Appendix 5**.

The November 2019 sampling event report indicated confirmed intrawell prediction limits exceedances. Intrawell prediction limits were utilized per the facility's 2018 Groundwater Statistical Analysis Plan. The Annual Report recommending the site move into assessment monitoring was stamped on January 23, 2020, and submitted to the facility. However, in February

MEC received an email from the facility. MDNR had forwarded EPA correspondence requesting that the site change their statistical evaluation method to interwell prediction limits. EPA CCR Rule 40 CFR § 257.94(e)(2) allows at alternative source demonstration to be completed if the statistically significant increases are result of the statistical evaluation rather than from a release from the facility. Appendix 1 contains the MDNR/EPA correspondence.

Statistical analysis was performed on the Appendix III constituents from the sampling event compared to the updated background dataset. Prediction interval analyses compare one or more observations to a limit set by background data. Interwell analyses compare observations from upgradient background wells and their relation to the observations for the downgradient wells. Intrawell analyses compare background observations to current observations of the same well. Due to varying geology in the state of Missouri, intrawell analyses had initially been deemed a more appropriate method. However, EPA has requested the site utilize interwell prediction limits.

Statistical analysis results are presented below for those constituents determined to have exceeded a prediction limit. However, EPA's "*Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities*," March 2009, EPA 530/R-09-007 is referenced multiple times in the preamble of the EPA CCR regulations for groundwater sampling and analysis requirements. According to the EPA Unified Guidance, a prediction limit exceedance is not considered a statistically significant increase (SSI) until it is confirmed through retesting. SSIs generated by non-detectable results or with less than eight background events are considered statistically invalid.

Table 5 lists the parameters with exceedances of prediction limits during the sampling event, the associated monitoring wells, if the exceedance is initial versus confirmed, the predicted limit, the measured concentration, and the MCL set forth in the National Drinking Water Regulations. The MCL is the highest level of a contaminant that is allowed in drinking water.

Recently install MW-5AR is still gathering background data and no statistics were completed on this well.

Table 5 – Interwell Prediction Limit Exceedances Observed During May 2023 Sampling Event

Constituent	Monitoring Well	Initial vs. Confirmed	Predicted Limit	Measured Concentration	Drinking Water MCLs
Boron (mg/L)	MW-5A	Confirmed	0.9	1.8	NA
pH* (SU)	MW-5	Confirmed	7.127	7.43	NA
Total Dissolved Solids (mg/L)	MW-5A	Initial	3100	3200	NA

NA = Not Applicable

*Field Sampled (less precise but within the required hold time)

6.3 Results Interpretation

May 2023

There was one initial interwell prediction limit exceedance for Total Dissolved Solids (MW-5A) in the listed monitoring well during May 2023 sampling event. During the May 2023 sampling event, interwell prediction exceedances in boron (MW-5A) and pH (MW-5) were confirmed. There are

no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility will resample as part of the November 2023 sampling event.

The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, November 2022, and May 2023 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed baseline samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

Based upon these findings the site will not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

As part of this well installation maintenance of the entire groundwater monitoring well system was also completed. This included the installation of new concrete well pads, protective covers, and protective bollards. The well riser pipe was also modified for well cap installation. New as-built survey data was obtained and will be utilized in this and future reports.

Below is a discussion of the previous results for comparison.

November 2022

There was no initial interwell prediction limit exceedances for the listed monitoring well during November 2022 sampling event. During the November 2022 sampling event, interwell prediction exceedances in boron (MW-5A) and pH (MW-5) were confirmed. There are no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility will resample as part of the May 2023 sampling event. It was noted during sampling that water levels were significantly lower than normally seen due to drought conditions. The drought should be considered excessive. Governor Mike Parson declared at state of emergency in Missouri for drought conditions on July 21, 2022. **Table 6** shows the drop in elevation between the May 2022 and November 2022 sampling events.

Table 6 - Groundwater Sampling Comparison					
WELL ID	NOVEMBER 2022 STATIC WATER LEVEL (ft-BTOC)		MAY 2022 STATIC WATER LEVEL (ft-BTOC)		DIFFERENCE IN INTIAL LEVELS (ft-BTOC)
	Initial	Final	Initial	Final	
MW-1*	9.72	NA	5.41	NA	4.31
MW-2	3.76	6.43	3.07	4.87	0.69
MW-3	3.57	3.64	0.5	0.7	3.07
MW-4	8.39	13.98	5.83	12.93	2.56
MW-5	1.31	11.17	1.82	13.39	-0.51
MW-5A	11.22	20.88	9.50	19.43	1.72
MW-6	10.66	19.86	8.86	18.07	1.8
MW-6A	9.40	18.30	7.93	18.20	1.47
MW-7	6.42	6.50	3.15	3.32	3.27

The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, and November 2022 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater. The ASD theorizes that this SSI is an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirms that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposes a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well will be monitored and compared to the existing MW-5A to determine if the theory is correct. Based upon these findings the site did not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

May 2022

There was no initial interwell prediction limit exceedances for the listed monitoring well during May 2022 sampling event. During the May 2022 sampling event, interwell prediction exceedances in boron (MW-5A) and pH (MW-5, MW-6 and MW-6A) were confirmed. There are no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility will resample as part of the November 2022 sampling event. The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, and May 2022 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural

variation in groundwater quality instead of a release to groundwater. The ASD theorizes that this SSI is an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirms that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposes a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well will be monitored and compared to the existing MW-5A to determine if the theory is correct. Based upon these findings the site did not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

November 2021

There was no initial interwell prediction limit exceedances for the listed monitoring well during November 2021 sampling event. During the November 2021 sampling event, interwell prediction exceedances in boron (MW-5A) and pH (MW-5, MW-6 and MW-6A) were confirmed. There are no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility will resample as part of the May 2022 sampling event. The results of the interwell prediction limit statistical analysis of the November 2020, May 2021 and November 2021 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater. The ASD theorizes that this SSI is an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirms that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposes a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well will be monitored and compared to the existing MW-5A to determine if the theory is correct. Based upon these findings the site did not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

May 2021

There was no initial interwell prediction limit exceedances for the listed monitoring well during May 2021 sampling event. During the November 2020 sampling event, Initial interwell prediction exceedances in pH (MW-5, MW-6 and MW-6A) and total dissolved solids (MW-5A) were noted. However, the initial prediction limit exceedance of total dissolved solids (MW-5A) was not confirmed during the May 2020 sampling event. There are no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility plans to resample as part of the November 2021 sampling event. The results of the interwell prediction limit statistical analysis of the November 2020 and May 2021 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a

release to groundwater. The ASD theorizes that this SSI is an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirms that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposes a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well will be monitored and compared to the existing MW-5A to determine if the theory is correct. Based upon these findings the site did not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

November 2020

The results of the EPA requested interwell prediction limit statistical analysis of the November 2020 sampling event indicate a confirmed exceedance for Boron (MW-5A). Boron does not have a MCL. The facility will conduct an alternative source demonstration in the next 90 days per the EPA CCR Rule (§ 257.94). The results for pH (MW-5, MW-6 and MW-6A) and total dissolved solids (MW-5A) indicated initial interwell prediction limit exceedances for the listed monitoring well during November 2020 sampling event. There are no current primary (health based) MCLs for pH or total dissolved solids. The facility plans to resample as part of the May 2021 sampling event. During the May 2020 sampling event, Initial interwell prediction exceedances in boron (MW-5A and MW-6A) and fluoride (MW-5A) were noted. However, the initial prediction limit exceedances of boron (MW-6A) and fluoride (MW-5A) were not confirmed during the November 2020 sampling event.

May 2020

The results of the EPA requested interwell prediction limit statistical analysis of the May 2020 sampling event indicate that the site is in compliance. The results for boron (MW-5A and MW-6A) and fluoride (MW-5A) indicated an initial interwell prediction limit exceedance for the listed monitoring well during May 2020 sampling event. There is a current primary (health based) MCL for fluoride of 4.0 mg/L but the result is below the limit. Boron does not have a MCL but does have an EPA proposed groundwater protection standard of 4.0 mg/L but all results were below that limit. Trending was found to be significant for boron (MW-5A) but not significant in boron (MW-6A) and fluoride (MW-5A). Boron is also trending upward in MW-2 which is an up-gradient well. The facility plans to resample as part of the November 2020 sampling event. During the November 2019 sampling event, Initial interwell prediction exceedances in pH (MW-4, MW-5, MW-5A, MW-6 and MW-6A) were noted. However, these initial prediction limit exceedances were not confirmed during the May 2020 sampling event.

November 2019

The result for Chloride (MW-5A), pH (MW-4) and Sulfate (MW-5A) indicated an initial intrawell prediction limit exceedance for the listed monitoring well during the November 2019 sampling event. There is no current primary (health based) MCL for chloride, pH, or sulfate. During May 2019, the result for Boron (MW-5A) indicated an initial intrawell prediction limit exceedance and Total Dissolved Solids (MW-5A) indicated a confirmed intrawell prediction limit exceedance. There is no current primary (health based) MCL for boron and total dissolved solids. These prediction limit exceedances were confirmed during the November 2019 sampling event. A resample of MW-5A was conducted on December 11, 2019. The results of the resampling confirmed the exceedances and the site planned to move into assessment monitoring. However, in February MEC received an email from the facility. MDNR had forwarded EPA correspondence

requesting that the site change their statistical evaluation method to interwell prediction limits. EPA CCR Rule 40 CFR § 257.94(e)(2) allows at alternative source demonstration to be completed if the statistically significant increases are result of the statistical evaluation rather than from a release from the facility. **Appendix 1** contains the MDNR/EPA correspondence. The results of the EPA requested interwell prediction limit statistical analysis of the November 2019 sampling event indicate that the site is in compliance. Initial interwell prediction exceedances in pH (MW-4, MW-5, MW-5A, MW-6 and MW-6A) were noted but have not been confirmed. There is no current primary (health based) Maximum Contamination Level (MCL) for pH. Trending was not found to be significant for pH in any well during the analysis of the background data set.

May 2019

The result for Boron (MW-5A) and pH (MW-3(u), MW-5A, MW-6 and MW-6A) indicated an initial intrawell prediction limit exceedance for the listed monitoring well during the May 2019 sampling event. There is no current primary (health based) MCL boron or pH. The facility plans to resample as part of the November 2019 sampling event. During November 2018, the result for Total Dissolved Solids (MW-5A) indicated an initial intrawell prediction limit exceedance. There is no current primary (health based) MCL for total dissolved solids. This initial prediction limit exceedances were confirmed during the May 2019 sampling event. However, it should be noted that the power curve for these analyses is not considered strong. A small data set triggers an SSI when there is even a slight increase in concentration. The EPA Unified Guidance Chapter 5.2.4 states “With such a small background sample, it can be difficult to develop an adequately powerful intrawell prediction level or control chart, even when retesting is employed (Chapter 19). Thus, additional background data will be needed to augment compliance well samples”. Minor increases in concentrations did not result in any primary MCLs to be exceeded by any of the prediction limit exceedances during the sampling event, demonstrating that the groundwater has not been contaminated. It was also noted that higher levels of total dissolved solids were seen in the side-gradient well MW-7 demonstrating that there was likely not a release from the facility. Therefore, the site will continue with detection monitoring on a semi-annual basis at this time.

November 2018

The result for Total Dissolved Solids (MW-5A) indicated an initial intrawell prediction limit exceedance for the listed monitoring well during the November 2018 sampling event. There is no current primary (health based) MCL for total dissolved solids. The facility plans to resample MW-5A for Total Dissolved Solids as part of the May 2019 sampling event. During May 2018, no intrawell prediction limits were exceeded. Therefore, there were no initial prediction limit exceedances to confirm during the November 2018 sampling event.

May 2018

No intrawell prediction limits were exceeded during the May 2018 sampling event. The October 2017 results for Total Dissolved Solids (MW-7) indicated an exceedance of the predicted limit for the listed monitoring wells. However, this initial prediction limit exceedance was not confirmed during the May 2018 sampling event.

October 2017

The result for Total Dissolved Solids (MW-7) indicated an initial intrawell prediction limit exceedance for the listed monitoring wells during the October 2017 sampling event. However, the result was below the tolerance limit. There is no current primary (health based) MCL for total dissolved solids. Review of the Total Dissolved Solids in the duplicate sample taken from the same

well (MW-7) shows a result of 3,000 mg/L, which would not be an exceedance of the intrawell prediction limit of 3,069 mg/L. Due to the variances between the sample and the duplicate, the site will re-evaluate MW-7 for Total Dissolved Solids during the next sampling event. MW-7 is considered a sidegradient well, therefore no further action is needed for exceedances in sidegradient or upgradient wells.

6.4 Proposed Actions

Statistical analysis will continue to be completed with interwell prediction limits per EPA's request. The results of the EPA requested interwell prediction limit statistical analysis of the November 2020, May 2021 and November 2021 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

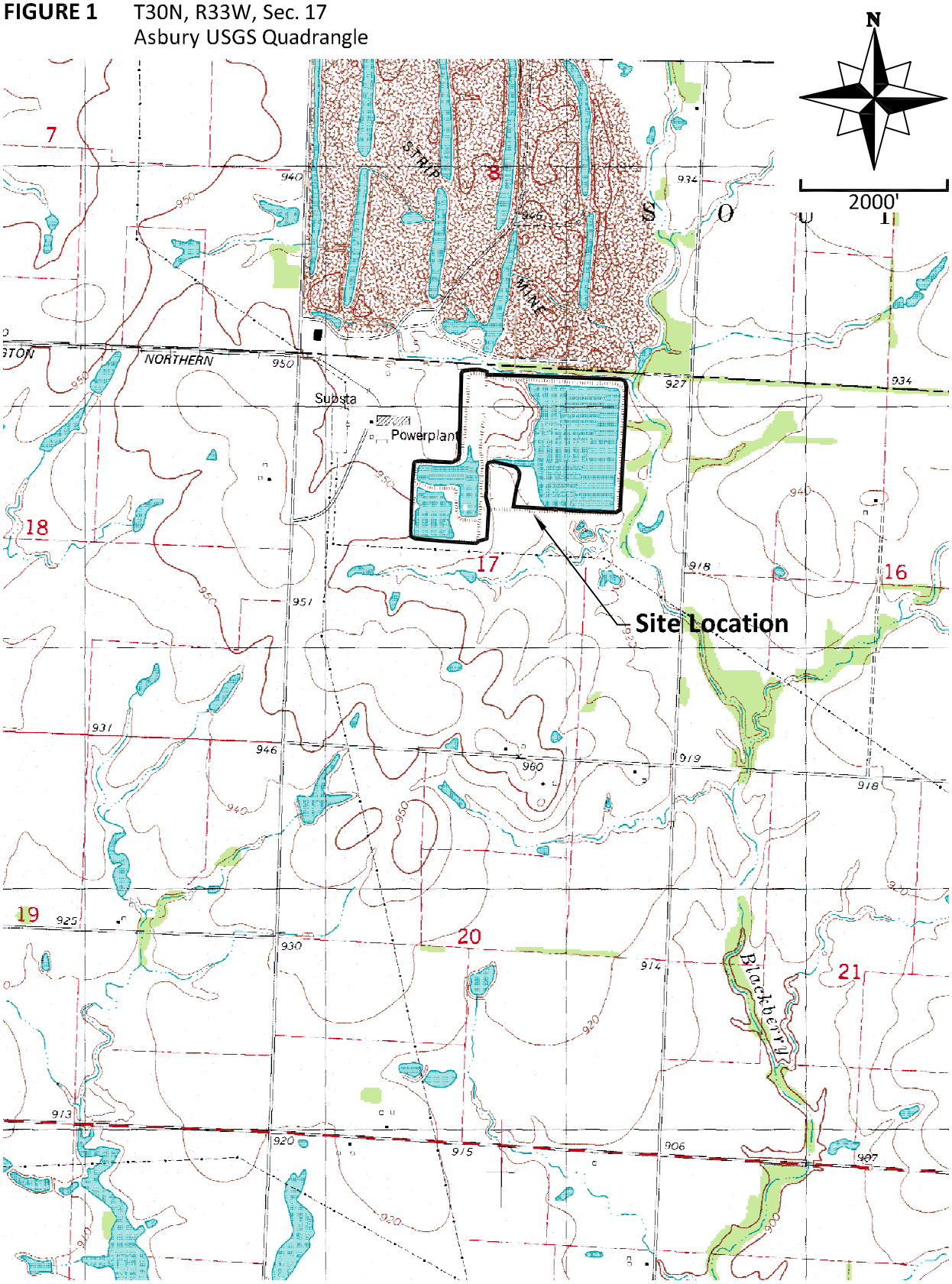
The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed baseline samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

Based upon these findings the site does not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

FIGURES

Asbury Generating Station CCR Impoundment
Groundwater Sampling Event - May 2023
Site Location Map

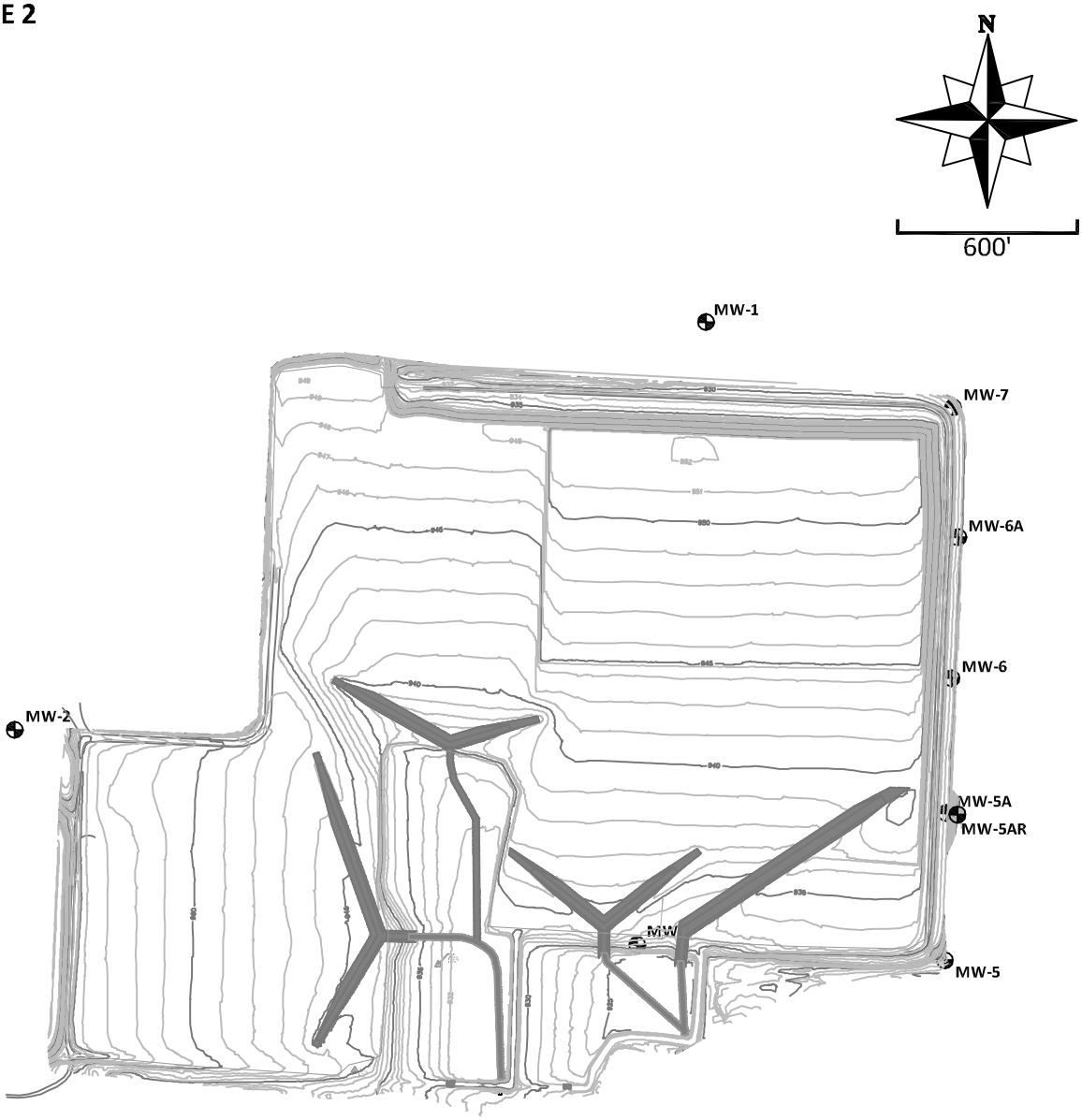
FIGURE 1 T30N, R33W, Sec. 17
Asbury USGS Quadrangle



August 2023

Asbury Generating Station CCR Impoundment
Groundwater Sampling Event - May 2023
Groundwater Monitoring System

FIGURE 2



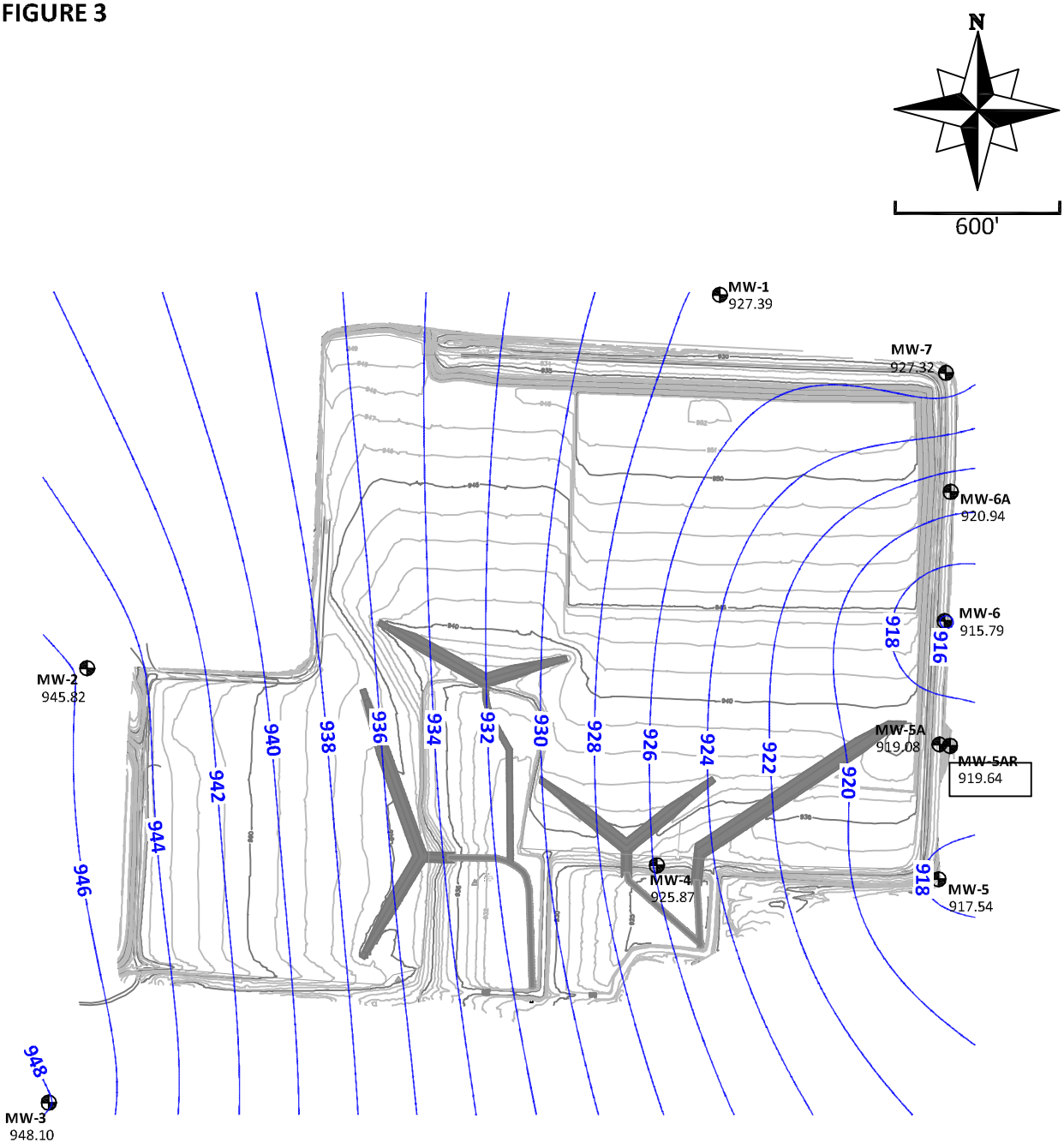
Well ID	Northing	Easting
MW-1	435789.71	2765168.83
MW-2	434428.56	2762861.43
MW-3	432844.71	2762721.27
MW-4	433709.70	2764938.79
MW-5	433659.19	2765966.39
MW-5A	434150.39	2765969.77
MW-5AR	434145.71	2766008.17
MW-6	434600.94	2765988.47
MW-6A	435071.72	2766010.58
MW-7	435505.31	2765993.01

Legend

Monitoring Well

Asbury Generating Station CCR Impoundment
Groundwater Sampling Event - May 2023
Groundwater Piezometric Surface Map

FIGURE 3



Well ID	Northing	Easting	Top Of Casing	Static Water Level (BTOC)	Static Water Level
MW-1	435789.71	2765168.83	934.50	7.11	927.39
MW-2	434428.56	2762861.43	949.50	3.68	945.82
MW-3	432844.71	2762721.27	950.16	2.06	948.10
MW-4	433709.70	2764938.76	934.29	8.42	925.87
MW-5	433659.19	2765966.39	920.20	2.66	917.54
MW-5A	434150.39	2765969.77	929.76	10.68	919.08
MW-5AR	434145.71	2766008.17	923.92	4.28	919.64
MW-6	434600.94	2765988.47	929.85	14.06	915.79
MW-6A	435071.72	2766010.58	929.61	8.67	920.94
MW-7	435505.31	2765993.01	931.14	3.82	927.32

Legend

Monitoring Well

APPENDIX 1

EPA/MDNR Correspondence

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Eric R. Greitens, Governor
Carol S. Comer, Director

NOV 02 2017

Mr. Kavan Stull, Senior Environmental Coordinator
Empire District
602 South Joplin Avenue
Joplin, MO 64802

RE: Site Characterization Workplan

Dear Mr. Stull:

The Missouri Department of Natural Resources has reviewed the document "Site Characterization Workplan" dated May 16, 2017. The site has undergone extensive characterization regarding construction of a coal combustion residual (CCR) landfill near the CCR impoundments. The department's Water Protection Program has determined, through consulting with the Missouri Geological Survey, this characterization is sufficient and may be used in whole to complete the required monitoring of the sub-surface conditions at the site. Additional submittal of site characterization is not necessary, as the previous submittal meets the requirement for special condition 19(b) of the Missouri State Operating Permit MO-0095362. The facility may proceed with the next step laid out in the permit; special condition 19(c). Enclosed is the Missouri Geological Survey concurrence.

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to 10 CSR 20 1.020 and Section 621.250, RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Contact information for the AHC is by mail at Administrative Hearing Commission, United States Post Office Building, Third Floor, 131 West High Street, P.O. Box 1557, Jefferson City, MO 65102, by phone at 573-751-2422, by fax at 573-751-5018, and by website at www.oa.mo.gov/ahc.

If you have any questions, please do not hesitate to contact Ms. Pam Hackler by mail at Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102-0176, by phone at 573-526-3386; or by email at pam.hackler@dnr.mo.gov. Thank you.

Sincerely,

WATER PROTECTION PROGRAM

Michael J. Abbott, Chief
Operating Permits Section

MJA/php

Enclosure

c: Mr. Randall Willoughby, Southwest Regional Office

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Eric R. Greitens, Governor
Carol S. Comer, Director

MEMORANDUM

SWR18011
Jasper County

DATE: October 18, 2017

TO: Pam Hackler- WPP- Industrial Wastewater Unit

FROM: Fletcher N. Bone, Geologist, Environmental Geology Section, Geological Survey Program, MGS

Fletcher N. Bone

STATE OF MISSOURI
REGISTERED GEOLOGIST
2014000148
October 18, 2017

SUBJECT: Site characterization for existing CCR impoundments
Asbury Power Plant Site Characterization Work Plan- CCR
37 21 22.66 Latitude, -94 35 4.79 Longitude,
Jasper County, Missouri

The Missouri Geological Survey (MGS) has reviewed the documents titled, 'NPDES Permit MO-0095362 Asbury Power Plant, Jasper County, Missouri, Site Characterization Work Plan', prepared by Empire District Electric Company, dated September 8, 2017 and 'Site Characterization Work Plan, Coal Combustion Residuals Impoundments, Empire Electric Facility - Permit MO-0095362, Jasper County, Missouri, Geotechnology Project No. J021738.03', prepared by Geotechnology Inc., dated May 16, 2017. The MGS offers the following comment.

General Comment:

The MGS agrees that the existing Coal Combustion Residuals (CCR) impoundments (site 1) do not need further site characterization, at this time. The site characterization performed, as described in the Detailed Site Investigation Report (DSI), dated January 21, 2015, at the proposed CCR impoundment (site 2) that is approximately 1,000 feet south of the existing CCR impoundments (site 1), coupled with the geologic and hydrologic data provided that pertains to the existing CCR impoundments (site 1) (1996 to present data), provides adequate characterization of the geology and hydrology of the site 1. The geologic and hydrologic settings of both sites are similar, with geologic boring logs and potentiometric data of both sites being compared. The hydraulic conductivity testing conducted at the proposed CCR site (site 2) has demonstrated that there is a low potential for groundwater contamination for this area.

If you are in need of further assistance from our office or have questions regarding this evaluation please feel free to contact me at (573) 368-2161.

APPENDIX 2

Baseline Sampling Information

EPA CCR Rule

Appendix III to Part 257—Constituents for Detection Monitoring

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

Appendix IV to Part 257—Constituents for Assessment Monitoring

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

1st Baseline Event –
January 2016 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.33	<0.5 J	<0.05 J	<0.5 J	<0.5 J	<0.5 J	<0.5 J	<0.5 J
Calcium	mg/L	NA	57	74	220	84	200	250	140	570
Chloride	mg/L	NA	140	83	120	4.7	28	10	38	38
Fluoride	mg/L	4	0.43	0.47	0.31	0.28	0.30	0.24	0.35	<0.2 J
pH	SU	NA	6.33	5.81	6.31	7.33	7.09	6.97	7.09	6.51
Sulfate	mg/L	NA	260	360	1100	140	800	1000	600	1800
Total Dissolved Solids	mg/L	NA	690	790	1900	590	1500	1800	1300	2800
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J
Arsenic	mg/L	0.01	<0.002 J	0.01	<0.01 J	<0.02 J	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	2	0.044	0.0099	0.065	0.086	0.036	0.02	0.042	0.011
Beryllium	mg/L	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium	mg/L	0.005	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002 J	<0.002 J	<0.01 J	<0.01 J	<0.01 J	<0.01 J	<0.01	<0.01
Cobalt	mg/L	NA	<0.01 J	<0.01 J	0.046	<0.002 J	0.018	0.0022	0.02	0.014
Lead	mg/L	0.015	<0.002 J	<0.002	<0.01 J	<0.002 J	<0.002	<0.002	<0.002	<0.002 J
Lithium	mg/L	NA	0.057	0.15	<0.05 J	<0.5 J	<0.5 J	<0.5 J	<0.5 J	<0.5 J
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.002	<0.002 J	<0.002 J	<0.002 J	<0.01 J	<0.002	<0.01 J	<0.002
Selenium	mg/L	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Combined Radium	pCi/L	5	<0.477 J	<0.427 J	<2.08	<0.563 J	<0.392 J	<0.446 J	<0.306 J	<0.279 J

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

2nd Baseline Event –
March 2016 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.90	0.060	<0.25	0.29	0.29	0.34	0.34	0.29
Calcium	mg/L	NA	120	92	260	94	190	250	160	620
Chloride	mg/L	NA	180	70	15	4.4	23	9.0	36	34
Fluoride	mg/L	4	0.28	0.28	0.10	0.38	0.31	0.23	0.31	0.16
pH	SU	NA	5.82	5.68	6.72	7.15	6.94	6.79	6.98	6.22
Sulfate	mg/L	NA	570	400	570	140	710	970	550	1800
Total Dissolved Solids	mg/L	NA	1300	840	1600	590	1500	1800	1200	2900
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.002	<0.002	<0.002	<0.002 J	<0.002	<0.002 J	<0.002
Arsenic	mg/L	0.01	<0.002 J	0.024	0.0038	<0.002 J	0.0038	0.0026	0.0025	0.004
Barium	mg/L	2	0.060	0.012	0.034	0.047	0.042	0.026	0.051	0.0089
Beryllium	mg/L	0.004	<0.002	<0.002 J	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium	mg/L	0.005	0.0028	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002	<0.002 J	0.0034	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	NA	0.017	0.0095	0.021	<0.002 J	0.02	0.0061	0.0063	0.016
Lead	mg/L	0.015	<0.002 J	<0.002 J	<0.002 J	<0.002	<0.002	<0.002	<0.002	<0.002
Lithium	mg/L	NA	0.20	0.15	0.074	0.074	0.14	0.22	0.14	0.30
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.002	<0.002 J	<0.002	<0.002 J	0.0041	<0.002 J	0.0038	<0.002
Selenium	mg/L	0.05	<0.002	<0.002	<0.002	0.0021	0.0028	0.0031	0.0031	<0.002
Thallium	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Combined Radium	pCi/L	5	<0.337 J	<0.389 J	<0.84 J	<0.315 J	<0.336 J	<0.319 J	<0.348 J	<0.329 J

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

3rd Baseline Event –
May 2016 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.21	0.044	0.027	0.24	0.26	0.25	0.23	0.29
Calcium	mg/L	NA	130	100	91	5	59	11	90	36
Chloride	mg/L	NA	140	83	120	4.7	28	10	38	38
Fluoride	mg/L	4	0.28	0.27	0.22	0.55	0.35	0.26	0.43	0.18
pH	SU	NA	5.30	4.37	5.97	6.43	6.60	6.51	6.64	5.82
Sulfate	mg/L	NA	160	540	820	150	920	1400	620	2400
Total Dissolved Solids	mg/L	NA	500	800	1700	590	1500	1800	1100	2900
Appendix IV										
Antimony	mg/L	0.006	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J
Arsenic	mg/L	0.01	0.0013	0.027	0.01	0.0043	0.01	0.007	0.0037	0.0082
Barium	mg/L	2	0.021	0.01	0.025	0.045	0.037	0.041	0.04	0.021
Beryllium	mg/L	0.004	<0.001	<0.001 J	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.005	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002 J	<0.002 J	0.0025	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J
Cobalt	mg/L	NA	0.0072	0.0073	0.0071	<0.0005J	0.00081	0.0035	<0.0005J	0.0037
Lead	mg/L	0.015	<0.001 J	<0.001 J	<0.001 J	<0.001 J	<0.001	<0.001	<0.001 J	<0.001 J
Lithium	mg/L	NA	<0.05 J	0.15	<0.05 J	0.074	0.16	0.31	0.12	0.22
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005	<0.005	<0.005	<0.005	<0.005 J	0.0052	<0.005	<0.005
Selenium	mg/L	0.05	<0.005	<0.005	<0.005 J	<0.005	<0.005 J	<0.005 J	<0.005	<0.005
Thallium	mg/L	0.002	<0.001 J	<0.001	<0.001	<0.001	<0.001 J	<0.001 J	<0.001	<0.001
Combined Radium	pCi/L	5	<0.355	<0.427 J	<0.386 J	<0.402 J	<0.377 J	<0.357 J	<0.334 J	<0.333 J

NA = Not Applicable

<x = Less than reporting limit (nondetectable)

J = Trace value seen above minimum detection limit but below reporting limit (trace)

4th Baseline Event –
August 2016 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.19	0.057	0.067	0.27	0.27	0.29	0.27	0.22
Calcium	mg/L	NA	38	79	110	74	180	220	130	430
Chloride	mg/L	NA	120	77	35	6	35	12	65	49
Fluoride	mg/L	4	0.25	0.15	0.3	0.26	0.31	0.23	0.37	0.22
pH	SU	NA	6.04	5.73	7	7.17	7.04	6.88	7.14	6.29
Sulfate	mg/L	NA	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005	<0.005 J	<0.005 J
Total Dissolved Solids	mg/L	NA	460	850	730	540	1500	1800	1100	2900
Appendix IV										
Antimony	mg/L	0.006	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J
Arsenic	mg/L	0.01	<0.001 J	0.013	<0.001 J	<0.001 J	0.001	<0.001 J	<0.001 J	<0.001 J
Barium	mg/L	2	0.023	<0.01 J	0.012	0.035	0.031	0.014	0.037	<0.01 J
Beryllium	mg/L	0.004	<0.001	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.005	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002	<0.002	<0.002 J	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	NA	0.0052	0.0088	0.0038	<0.0005J	0.00075	<0.0005J	<0.0005J	0.015
Lead	mg/L	0.015	<0.001 J	<0.001 J	<0.001 J	<0.001 J	<0.001	<0.001	<0.001 J	<0.001
Lithium	mg/L	NA	<0.05 J	0.16	<0.05 J	0.078	0.16	0.22	0.11	0.34
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005	<0.005	<0.005	<0.005	<0.005 J	<0.005	0.0067	<0.005
Selenium	mg/L	0.05	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005	<0.005 J	<0.005 J
Thallium	mg/L	0.002	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Radium	pCi/L	5	<0.424 J	<0.465 J	<0.833	<0.441 J	<0.435 J	<0.45 J	<0.484 J	<0.418 J

NA = Not Applicable

<x = Less than reporting limit (nondetectable)

J = Trace value seen above minimum detection limit but below reporting limit (trace)

5th Baseline Event –
October 2016 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.2	0.053	0.047	0.24	0.33	0.34	0.31	0.26
Calcium	mg/L	NA	43	91	100	94	220	260	130	490
Chloride	mg/L	NA	130	65	74	6	29	13	65	56
Fluoride	mg/L	4	0.28	0.18	0.28	0.31	0.39	0.25	0.41	0.28
pH	SU	NA	6.59	5.95	7.21	7.51	8.00	6.98	7.85	6.75
Sulfate	mg/L	NA	99	470	120	120	1100	1100	570	1400
Total Dissolved Solids	mg/L	NA	460	850	580	570	1500	1700	1100	2800
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.002	<0.002 J	<0.002	<0.002	<0.002	<0.002 J	<0.002
Arsenic	mg/L	0.01	<0.001	0.014	<0.001 J	<0.001 J	<0.001 J	<0.001	<0.001 J	<0.001 J
Barium	mg/L	2	0.028	<0.01 J	0.02	0.03	0.033	0.013	0.037	<0.01 J
Beryllium	mg/L	0.004	<0.001	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.005	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002	<0.002	<0.002 J	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	NA	0.0051	0.0095	0.0013	0.00073	0.0072	<0.0005J	<0.0005J	0.014
Lead	mg/L	0.015	<0.001 J	<0.001	<0.001 J	<0.001 J	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NA	<0.05 J	0.17	<0.05	0.078	0.17	0.24	0.12	0.32
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005	<0.005	<0.005	<0.005	<0.005 J	0.0066	<0.005	<0.005
Selenium	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005J	<0.005
Thallium	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Radium	pCi/L	5	<0.436J	<0.478J	<0.535J	<0.503J	<0.498J	<0.464J	<0.453J	<0.424J

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

6th Baseline Event –
March 2017 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.22	0.052	0.057	0.23	0.29	0.33	0.36	0.26
Calcium	mg/L	NA	38	93	250	86	200	260	170	500
Chloride	mg/L	NA	130	52	19	5.3	29	11	19	39
Fluoride	mg/L	4	0.21	0.12	<0.1 J	0.29	0.29	0.19	0.3	0.12
pH	SU	NA	6.07	5.84	6.67	7.32	7.38	7.15	7.21	6.40
Sulfate	mg/L	NA	130	540	630	150	1100	1000	720	1900
Total Dissolved Solids	mg/L	NA	500	940	1600	620	1700	1900	1400	3000
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Arsenic	mg/L	0.01	<0.001	0.037	0.0022	0.0013	0.0014	<0.001 J	0.0043	<0.001 J
Barium	mg/L	2	0.021	0.011	0.021	0.033	0.026	0.015	0.027	<0.01 J
Beryllium	mg/L	0.004	<0.001 J	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001 J
Cadmium	mg/L	0.005	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J
Cobalt	mg/L	NA	0.0071	0.0097	0.0096	<0.0005J	0.0022	0.0024	0.0017	0.014
Lead	mg/L	0.015	<0.001	<0.001	<0.001 J	<0.001 J	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NA	<0.05 J	0.17	0.072	0.076	0.16	0.23	0.14	0.32
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005 J	<0.005 J	<0.005	<0.005	<0.005 J	<0.005	<0.005 J	<0.005
Selenium	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	mg/L	0.002	<0.001 J	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Radium	pCi/L	5	0.575	1.63	0.287	1.50	0.803	2.68	1.73	1.62

NA = Not Applicable

<x = Less than reporting limit (nondetectable)

J = Trace value seen above minimum detection limit but below reporting limit (trace)

7th Baseline Event –
June 2017 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	<0.08J	<0.08J	0.034	0.27	0.31	0.37	0.36	0.26
Calcium	mg/L	NA	42	100	300	89	200	260	160	470
Chloride	mg/L	NA	130	54	110	5.4	23	12	26	48
Fluoride	mg/L	4	0.43	0.19	0.18	0.35	0.42	0.3	0.42	0.21
pH	SU	NA	6.35	5.78	6.62	7.22	7.04	6.93	7.09	6.41
Sulfate	mg/L	NA	78	650	1400	180	940	1300	780	2400
Total Dissolved Solids	mg/L	NA	450	950	2000	610	1600	1800	1400	2900
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Arsenic	mg/L	0.01	<0.001J	0.1	0.0032	<0.001J	0.0037	<0.001	0.0018	<0.001
Barium	mg/L	2	0.03	0.016	0.048	0.04	0.026	0.017	0.025	<0.01J
Beryllium	mg/L	0.004	<0.001	0.0031	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.005	<0.001J	<0.001	<0.001J	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002	<0.002	<0.002J	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	NA	0.004	0.0088	0.0042	<0.0005J	0.0045	0.00087	0.0059	0.0015
Lead	mg/L	0.015	0.0033	0.001	0.0074	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NA	<0.05J	0.18	0.053	0.085	0.18	0.25	0.15	0.34
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005	<0.005J	<0.005	<0.005	<0.005J	<0.005	<0.005J	<0.005
Selenium	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	mg/L	0.002	<0.001	<0.001	<0.001J	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Radium	pCi/L	5	<0.397J	<0.337J	<0.403	<0.291J	<0.343J	<0.414J	<0.33J	<0.314J

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

8th Baseline Event –
August 2017 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.16	<0.08J	<0.08J	0.28	0.33	0.34	0.38	0.27
Calcium	mg/L	NA	43	98	83	57	220	250	180	510
Chloride	mg/L	NA	130	45	8.1	5.3	23	12	26	38
Fluoride	mg/L	4	0.26	0.17	0.32	0.27	0.45	0.25	0.4	0.22
pH	SU	NA	6.2	5.7	6.7	7.3	7.0	7.2	7.1	6.3
Sulfate	mg/L	NA	82	550	63	140	920	1100	730	2200
Total Dissolved Solids	mg/L	NA	450	960	450	530	1600	1800	1400	2900
Appendix IV										
Antimony	mg/L	0.006	<0.002J	<0.002J	<0.002J	<0.002J	<0.002J	<0.002J	<0.002J	<0.002
Arsenic	mg/L	0.01	<0.001J	0.013	<0.001J	0.002	<0.001J	<0.001J	<0.001J	<0.001J
Barium	mg/L	2	0.024	0.01	0.018	0.027	0.023	0.018	0.021	<0.01J
Beryllium	mg/L	0.004	<0.001	<0.001J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001J
Cadmium	mg/L	0.005	<0.001J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002J	<0.002	0.0026	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	NA	0.0036	0.01	0.00067	<0.0005J	0.0023	<0.0005J	0.0051	0.014
Lead	mg/L	0.015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NA	<0.05J	0.17	<0.05J	0.073	0.18	0.22	0.15	0.32
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005	<0.005J	<0.005	<0.005J	<0.005J	<0.005J	<0.005J	<0.005
Selenium	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	mg/L	0.002	<0.001J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Radium	pCi/L	5	<0.42J	<0.417J	<0.473	<0.476J	<0.383J	<0.389J	<0.291J	<0.346J

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

MW-5AR
Baseline Events

Constituent	Units	MCL	1st May 2023	2nd Nov 2023	3rd May 2024	4th Nov 2024	5th May 2025	6th Nov 2025	7th May 2026	8th Nov 2026
Appendix III										
Boron	mg/L	NA	0.370							
Calcium	mg/L	NA	77							
Chloride	mg/L	NA	77							
Fluoride	mg/L	4	0.51							
pH	SU	NA	7.46							
Sulfate	mg/L	NA	190							
Total Dissolved Solids	mg/L	NA	650							
Appendix IV										
Antimony	mg/L	0.006	<0.002							
Arsenic	mg/L	0.01	0.0019							
Barium	mg/L	2	0.046							
Beryllium	mg/L	0.004	<0.001							
Cadmium	mg/L	0.005	<0.001							
Chromium	mg/L	0.1	<0.002							
Cobalt	mg/L	NA	0.0013							
Lead	mg/L	0.015	<0.001							
Lithium	mg/L	NA	0.1							
Mercury	mg/L	0.002	<0.0002							
Molybdenum	mg/L	NA	<0.005J							
Selenium	mg/L	0.05	<0.005							
Thallium	mg/L	0.002	<0.001							
Combined Radium	pCi/L	5	1.98J							

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

APPENDIX 3

Monitoring Well Field Inspection Sheets and Field Notes

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 2

Sample [X] Blind Duplicate [ ] Field Blank [X]

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: ~~1400~~ 1800 mL post pump calibration.

Date / Time Initiated: 5 17 -23 @ 11:27 Date / Time Completed: 5 – 17 -23

Well Purged To Dryness?: Y / (N) Gas Detected? Y / (N)

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
11:31	200	600	18.9	5.93	0.864	0.26	248.8		Clear
:33	↓	1000	18.2	5.91	0.857	0.17	237.7		↓
:35		1400	18.1	5.91	0.854	0.15	233.7		
:37		1800	18.0	5.93	0.853	0.13	229.3		

Time sampled 11:40 / 11:50 Field Blank

Weather Conditions Mostly Sunny, 70°F

Water Level Start 3.68'

Water Level Finish 6.13'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature Ryan

Field Inspection	Good	Fair	Poor
Access	(G)	F	P
Pad Condition	(G)	F	P
Casing Condition	(G)	F	P
Locking Cap & Lock	(G)	F	P
Riser Condition	(G)	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	(Y)	N	N/A
Standing Water	Y	(N)	N/A
Clear of Weeds	(Y)	N	N/A
Measuring Point	(Y)	N	N/A
Split sample with MDNR	Y	(N)	N/A
Maintenance Performed	Y	(N)	N/A
Decontamination Normal	(Y)	N	N/A
Equipment Calibration Normal	(Y)	N	N/A
Redevelopment Needed	Y	(N)	N/A
Any deviations from SAP	Y	(N)	N/A
Sediment Thickness Checked	Y	(N)	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	~~5.83~~	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

2023 Field Sampling Log

Facility: Asbury CCR (Permit #)

Monitoring Well ID: MW- 3

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: 1600 mL post pump calibration.

Date / Time Initiated: 5 17 -23 @ 12:07 Date / Time Completed: 5 – 17 -23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
12:09	200	400	18.1	5.81	1.274	0.59	142.7		clear
:11	↓	800	17.5	5.81	1.279	0.28	109.9		↓
:13		1200	17.3	5.81	1.277	0.23	95.0		
:15	↓	1600	17.2	5.82	1.280	0.20	85.0		✓

Time sampled 12:15

Weather Conditions Partly Sunny, 70°F

Water Level Start 2.06'

Water Level Finish 2.09'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature Ryan Ortbals

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 17

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: 1800 mL post pump calibration.

Date / Time Initiated: 5 17 -23 @ 10:30 Date / Time Completed: 5 – 17 -23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
10:39	200	600	18.0	6.86	1.911	0.36	241.9		Clear
:41	↓	1000	17.7	6.88	1.904	0.25	235.7		↓
:43		1400	17.7	6.86	1.903	0.23	233.3		
:45	✓	1800	17.5	6.88	1.903	0.13	229.4		✓

Time sampled 10:45

Weather Conditions Mostly, Sunny, 70°F

Water Level Start 8.42'

Water Level Finish 11.88'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature Ryan

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

2023 Field Sampling Log

Facility: Asbury CCR (Permit #)

Monitoring Well ID: MW- 5

Sample [X] Blind Duplicate [X] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: 1600 mL post pump calibration.

Date / Time Initiated: 5 16 -23 @ 3:22 Date / Time Completed: 5 – 16 -23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
3:24	200	400	16.9	7.41	1.053	0.26	222.8		
:26	↓	800	16.7	7.40	1.050	0.15	218.2		
:28	↓	1200	16.6	7.42	1.048	0.10	209.6		
:30	↓	1600	16.5	7.43	1.047	0.09	205.8		

Time sampled 3:30 / 3:45 Duplicate

Weather Conditions Cloudy, 65°F

Water Level Start 2.66'

Water Level Finish 11.230'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

2023 Field Sampling Log

Facility: Asbury CCR (Permit #)

Monitoring Well ID: MW- 5A

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: 2200 mL post pump calibration.

Date / Time Initiated: 5 17 -23 @ 9:51

Date / Time Completed: 5 – 17 -23

Well Purged To Dryness?: Y / N

Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
9:56	200	1000	16.5	6.95	3.465	0.47	231.6		clear
:58	↓	1400	16.3	6.91	3.476	0.26	232.9		↓
10:00		1800	16.2	6.95	3.477	0.18	252.0		
:02	↓	2200	16.2	6.94	3.481	0.17	231.2		↓

Time sampled 10:05

Weather Conditions Partly Cloudy, 65°F

Water Level Start 10.68

Water Level Finish 18.12'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 5AR

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: 1600 mL post pump calibration.

Date / Time Initiated: 5 17 -23 @ 9:26 Date / Time Completed: 5 - 17 -23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
9:29	200	400	16.4	7.40	1.190	1.13	160.4		Clear
:30		800	16.5	7.42	1.176	1.22	123.9		
:32		1200	16.3	7.44	1.160	1.31	97.1		
:34	↓	1600	16.2	7.46	1.131	1.55	88.0		↓

Time sampled 9:35

Weather Conditions Partly Cloudy, 65°F

Water Level Start 4.28'

Water Level Finish 12.04'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature Ryan

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

5-16-23 3:34

2023 Field Sampling Log

Facility: Asbury CCR (Permit #)

Monitoring Well ID: MW- 6

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: 1800 mL post pump calibration.

Date / Time Initiated: 5 – 18-23 @ 8:35 Date / Time Completed: 5 – 18-223

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (ml)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
8:38	200	600	18.7	6.98	1.907	2.43	311.8		clear
0:40		1000	18.6	7.00	1.927	2.13	311.5		
:42		1400	18.6	7.00	1.933	1.98	309.3		
:44		1800	18.3	7.02	1.937	1.84	306.0		

Time sampled 8:45

Weather Conditions Partly Cloudy, 65°F

Water Level Start ~~27.21~~ 14.06'

Water Level Finish 21.90'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature Ryan

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A Purged
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Total Depth TOC 39.95'

Historical Data: Average of sampling events

Constituent	Units	MW- 6	MW- 6A	MW-7					
pH	S.U.	6.72	6.87	6.12					
Specific Conductance	umhos/cm	1.900	1.601	2.699					
Total Well Depth	ft								
Average GW Depth	ft	7.86	7.28	3.04					
Average GW Drop	ft								
2 System Volumes (Min Purged Amount)	mL	800	800	800					

(x2) Radium Liter bottles - no nitric acid

2023 Field Sampling Log

Facility: Asbury CCR (Permit #)

Monitoring Well ID: MW- 6A

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: 1800 mL post pump calibration.

Date / Time Initiated: 5 – 16 -23 @ 2:47 Date / Time Completed: 5 – 16 -223

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (ml)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
2:50	200	600	17.4	6.86	1.902	0.44	188.5		
0:52	↓	1000	17.0	6.85	1.902	0.27	182.1		
:54		1400	16.0	6.85	1.965	0.18	177.3		
:56	↓	1800	15.8	6.85	1.966	0.14	172.9		

Time sampled 3:00

Weather Conditions Cloudy, 65°F

Water Level Start 8.67

Water Level Finish 16.18'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events

Constituent	Units	MW- 6	MW- 6A	MW-7					
pH	S.U.	6.72	6.87	6.12					
Specific Conductance	umhos/cm	1.900	1.601	2.699					
Total Well Depth	ft								
Average GW Depth	ft	7.86	7.28	3.04					
Average GW Drop	ft								
2 System Volumes (Min Purged Amount)	mL	800	800	800					

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 7

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: 1400 mL post pump calibration.

Date / Time Initiated: 5 – 16 -23 @ 2:16 Date / Time Completed: 5 – 16 -223

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (ml)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
2:17	200	200	16.9	6.51	2.780	0.46	39.8		clear
0:19	↓	600	16.7	6.51	2.779	0.29	32.2		↓
:21		1000	16.5	6.50	2.780	0.22	27.6		
:23	↓	1400	16.5	6.51	2.782	0.17	24.4		

Time sampled 2:25

Weather Conditions Cloudy low 70°F

Water Level Start 3.82'

Water Level Finish 4.22'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

X Muddy

Historical Data: Average of sampling events

Constituent	Units	MW- 6	MW- 6A	MW-7					
pH	S.U.	6.72	6.87	6.12					
Specific Conductance	umhos/cm	1.900	1.601	2.699					
Total Well Depth	ft								
Average GW Depth	ft	7.86	7.28	3.04					
Average GW Drop	ft								
2 System Volumes (Min Purged Amount)	mL	800	800	800					

APPENDIX 4

Analytical Results from Lab

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Rick Elgin
Midwest Environmental Consultants
2009 East McCarty Street
Suite 2
Jefferson City, Missouri 65101

Generated 7/28/2023 4:42:30 PM

JOB DESCRIPTION

Asbury Pond CCR

JOB NUMBER

180-156848-4

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh PA 15238

See page two for job notes and contact information.

myEOL

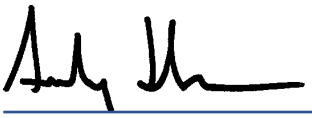
Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

PA Lab ID: 02-00416

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Pittsburgh Project Manager.

Authorization



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Authorized for release by
Andy Johnson, Senior Project Manager
Andy.Johnson@et.eurofinsus.com
(615)301-5045

Table of Contents

Job ID: 180-156848-4

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative
180-156848-4

Comments
No additional comments.

Receipt
The samples were received on 5/19/2023 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 6 coolers at receipt time were 3.1º C, 3.8º C, 4.1º C, 5.6º C, 10.4º C and 12.4º C.

Receipt Exceptions
The following samples were received at the laboratory outside the required temperature criteria: MW-1 (180-156848-1), MW-11 (180-156848-11), FIELD BLANK (180-156848-13), MW-5A (180-156848-18) and MW-5AR (180-156848-19). This does not meet regulatory requirements.

The following sample was received with insufficient preservation: MW-6 (180-156848-20). The laboratory adjusted the pH and proceeded with the analysis.

GC Semi VOA
Methods 300.0, 9056A: The following samples were diluted due to the nature of the sample matrix: MW-4 (180-156848-16), MW-5A (180-156848-18), MW-6 (180-156848-20), MW-6A (180-156848-21) and MW-7 (180-156848-22) at 2.5, 2.5, 2.5, 2.5 and 2.5. Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RAD
Methods 903.0, 9315: Radium-226 batch 613848 Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-5AR (180-156848-19), (LCS 160-613848/2-A), (LCSD 160-613848/3-A) and (MB 160-613848/1-A)

Methods 904.0, 9320: Radium-228 batch 613850 Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-5AR (180-156848-19), (LCS 160-613850/2-A), (LCSD 160-613850/3-A) and (MB 160-613850/1-A)

Method PrecSep_0: Radium-228 Prep Batch 160-613850 The following sample was prepared at a reduced aliquot due to Matrix: MW-5AR (180-156848-19). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

Method PrecSep-21: Radium-226 Prep Batch 160-613848 The following sample was prepared at a reduced aliquot due to Matrix: MW-5AR (180-156848-19). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
Method 6020A: The serial dilution performed for the following sample associated with batch 180-441752 was outside control limits: DUPLICATE (180-156848-23)

Method 6020A: The initial calibration verification (ICVL) and continuing calibration verification (CCV) associated with batch 180-441752 recovered outside of control limits for boron. Results are being reported as-is. The associated samples are impacted: MW-3 (180-156848-15), MW-4 (180-156848-16), MW-5 (180-156848-17), MW-5A (180-156848-18), MW-6 (180-156848-20), MW-6A (180-156848-21), MW-7 (180-156848-22), DUPLICATE (180-156848-23), (CCB 180-441752/89), (CCV 180-441752/88) and (MB

Job ID: 180-156848-4 (Continued)

Laboratory: Eurofins Pittsburgh (Continued)

180-439774/1-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Field Service / Mobile Lab
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method SM 2540C: Sample did not achieve a stable weight following 4 cycles of heating, cooling, and desiccating. Sample result from cycle 3 was used to calculate analyte result for the method. MW-5 (180-156848-17)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
^-	Continuing Calibration Verification (CCV) is outside acceptance limits, low biased.
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
^2	Calibration Blank (ICB and/or CCB) is outside acceptance limits.
^6-	Interference Check Standard (ICSA and/or ICSAB) is outside acceptance limits, low biased.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
cn	Refer to Case Narrative for further detail

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: Midwest Environmental Consultants
Job ID: 180-156848-4
Project/Site: Asbury Pond CCR

Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-24
California	State	2891	04-30-24
Connecticut	State	PH-0688	09-30-24
Florida	NELAP	E871008	06-30-24
Georgia	State	PA 02-00416	04-30-24
Illinois	NELAP	004375	06-30-24
Kansas	NELAP	E-10350	01-31-24
Kentucky (UST)	State	162013	04-30-23 *
Kentucky (WW)	State	KY98043	12-31-23
Louisiana	NELAP	04041	06-30-22 *
Louisiana (All)	NELAP	04041	06-30-24
Maine	State	PA00164	03-06-24
Minnesota	NELAP	042-999-482	12-31-23
New Hampshire	NELAP	2030	04-04-24
New Jersey	NELAP	PA005	06-30-24
New York	NELAP	11182	04-01-24
North Carolina (WW/SW)	State	434	12-31-23
North Dakota	State	R-227	04-30-24
Oregon	NELAP	PA-2151	02-06-24
Pennsylvania	NELAP	02-00416	04-30-24
Rhode Island	State	LAO00362	12-31-22 *
South Carolina	State	89014	04-30-23 *
Texas	NELAP	T104704528	03-31-24
US Fish & Wildlife	US Federal Programs	058448	03-31-24
USDA	US Federal Programs	P330-16-00211	06-21-24
Utah	NELAP	PA001462019-8	05-31-24
Virginia	NELAP	10043	09-14-23
West Virginia DEP	State	142	01-31-24
Wisconsin	State	998027800	08-31-23

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-06-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-23
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-23
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-23
HI - RadChem Recognition	State	n/a	06-30-23
Illinois	NELAP	200023	11-30-23
Iowa	State	373	12-01-24
Kansas	NELAP	E-10236	10-31-23
Kentucky (DW)	State	KY90125	12-31-23
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Midwest Environmental Consultants
Job ID: 180-156848-4
Project/Site: Asbury Pond CCR

Laboratory: Eurofins St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-23
Louisiana (DW)	State	LA011	12-31-23
Maryland	State	310	09-30-23
MI - RadChem Recognition	State	9005	06-30-23
Missouri	State	780	06-30-25
Nevada	State	MO000542020-1	07-31-23
New Jersey	NELAP	MO002	06-30-23
New Mexico	State	MO00054	06-30-23
New York	NELAP	11616	03-31-24
North Carolina (DW)	State	29700	07-31-23
North Dakota	State	R-207	06-30-23
Oklahoma	NELAP	9997	08-31-23
Oregon	NELAP	4157	09-01-23
Pennsylvania	NELAP	68-00540	02-28-24
South Carolina	State	85002001	06-30-23
Texas	NELAP	T104704193	07-31-23
US Fish & Wildlife	US Federal Programs	058448	07-31-23
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO000542021-14	07-31-23
Virginia	NELAP	10310	06-29-23
Washington	State	C592	08-30-23
West Virginia DEP	State	381	10-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-156848-14	MW-2	Water	05/17/23 11:40	05/19/23 09:35
180-156848-15	MW-3	Water	05/17/23 12:15	05/19/23 09:35
180-156848-16	MW-4	Water	05/17/23 10:45	05/19/23 09:35
180-156848-17	MW-5	Water	05/17/23 03:30	05/19/23 09:35
180-156848-18	MW-5A	Water	05/17/23 10:05	05/20/23 09:30
180-156848-19	MW-5AR	Water	05/17/23 00:00	05/20/23 09:30
180-156848-20	MW-6	Water	05/17/23 08:45	05/19/23 09:35
180-156848-21	MW-6A	Water	05/17/23 03:00	05/19/23 09:35
180-156848-22	MW-7	Water	05/17/23 02:25	05/19/23 09:35
180-156848-23	DUPLICATE	Water	05/17/23 03:45	05/19/23 09:35

Method Summary

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Method	Method Description	Protocol	Laboratory
EPA 9056A	Anions, Ion Chromatography	SW846	EET PIT
EPA 6020A	Metals (ICP/MS)	SW846	EET PIT
EPA 7470A	Mercury (CVAA)	SW846	EET PIT
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET PIT
9315	Radium-226 (GFPC)	SW846	EET SL
9320	Radium-228 (GFPC)	SW846	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
Field Sampling	Field Sampling	EPA	EET PIT
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET PIT
7470A	Preparation, Mercury	SW846	EET PIT
PrecSep_0	Preparation, Precipitate Separation	None	EET SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency
None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058
EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Chronicle

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-2

Date Collected: 05/17/23 11:40
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-14

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1	1 mL	1 mL	435928	05/23/23 22:48	SNL	EET PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			25 mL	25 mL	439774	07/07/23 09:40	S1Z	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			440797	07/14/23 19:21	MRG	EET PIT
	Instrument ID: NEMO									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435872	05/22/23 17:04	LWM	EET PIT
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Field Sampling		1			436880	05/17/23 12:40	FDS	EET PIT
	Instrument ID: NOEQUIP									

Client Sample ID: MW-3

Date Collected: 05/17/23 12:15
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1	1 mL	1 mL	435928	05/23/23 23:03	SNL	EET PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			25 mL	25 mL	439774	07/07/23 09:40	S1Z	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			441752	07/27/23 16:35	KED	EET PIT
	Instrument ID: DORY									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435872	05/22/23 17:04	LWM	EET PIT
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Field Sampling		1			436880	05/17/23 13:15	FDS	EET PIT
	Instrument ID: NOEQUIP									

Client Sample ID: MW-4

Date Collected: 05/17/23 10:45
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-16

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5	1 mL	1 mL	435928	05/23/23 23:18	SNL	EET PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			25 mL	25 mL	439774	07/07/23 09:40	S1Z	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			441752	07/27/23 16:38	KED	EET PIT
	Instrument ID: DORY									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435872	05/22/23 17:04	LWM	EET PIT
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Field Sampling		1			436880	05/17/23 11:45	FDS	EET PIT
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-5

Date Collected: 05/17/23 03:30
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1	1 mL	1 mL	435928	05/23/23 23:33	SNL	EET PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			25 mL	25 mL	439774	07/07/23 09:40	S1Z	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			441752	07/27/23 16:42	KED	EET PIT
	Instrument ID: DORY									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435872	05/22/23 17:04	LWM	EET PIT
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Field Sampling		1			436880	05/17/23 04:30	FDS	EET PIT
	Instrument ID: NOEQUIP									

Client Sample ID: MW-5A

Date Collected: 05/17/23 10:05
Date Received: 05/20/23 09:30

Lab Sample ID: 180-156848-18

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5	1 mL	1 mL	435928	05/23/23 23:48	SNL	EET PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			25 mL	25 mL	439774	07/07/23 09:40	S1Z	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			441752	07/27/23 16:45	KED	EET PIT
	Instrument ID: DORY									
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	435991	05/23/23 20:17	LWM	EET PIT
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Field Sampling		1			436880	05/17/23 11:05	FDS	EET PIT
	Instrument ID: NOEQUIP									

Client Sample ID: MW-5AR

Date Collected: 05/17/23 00:00
Date Received: 05/20/23 09:30

Lab Sample ID: 180-156848-19

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1	1 mL	1 mL	435928	05/24/23 00:02	SNL	EET PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			25 mL	25 mL	440414	07/14/23 10:15	S1Z	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			441632	07/26/23 23:25	MRG	EET PIT
	Instrument ID: NEMO									
Total/NA	Prep	7470A			25 mL	25 mL	437479	06/09/23 10:00	MTW	EET PIT
Total/NA	Analysis	EPA 7470A		1			437591	06/10/23 11:58	MTW	EET PIT
	Instrument ID: HGZ									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435991	05/23/23 20:17	LWM	EET PIT
	Instrument ID: NOEQUIP									
Total/NA	Prep	PrecSep-21			754.15 mL	1.0 g	613848	05/31/23 09:34	KAC	EET SL
Total/NA	Analysis	9315		1			617353	06/22/23 08:22	FLC	EET SL
	Instrument ID: GFPCRED									

Client Sample ID: MW-5AR
Lab Sample ID: 180-156848-19
Date Collected: 05/17/23 00:00
Matrix: Water
Date Received: 05/20/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			754.15 mL	1.0 g	613850	05/31/23 09:38	KAC	EET SL
Total/NA	Analysis	9320		1			617160	06/21/23 11:31	FLC	EET SL
	Instrument ID: GFPCORANGE									
Total/NA	Analysis	Ra226_Ra228		1			617517	06/23/23 13:17	EMH	EET SL
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Field Sampling		1			436880	05/17/23 01:00	FDS	EET PIT
	Instrument ID: NOEQUIP									

Client Sample ID: MW-6
Lab Sample ID: 180-156848-20
Date Collected: 05/17/23 08:45
Matrix: Water
Date Received: 05/19/23 09:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5	1 mL	1 mL	435928	05/24/23 00:17	SNL	EET PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			25 mL	25 mL	439774	07/07/23 09:40	S1Z	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			441752	07/27/23 16:56	KED	EET PIT
	Instrument ID: DORY									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435991	05/23/23 20:17	LWM	EET PIT
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Field Sampling		1			436880	05/17/23 09:45	FDS	EET PIT
	Instrument ID: NOEQUIP									

Client Sample ID: MW-6A
Lab Sample ID: 180-156848-21
Date Collected: 05/17/23 03:00
Matrix: Water
Date Received: 05/19/23 09:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5	1 mL	1 mL	435928	05/24/23 01:01	SNL	EET PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			25 mL	25 mL	439774	07/07/23 09:40	S1Z	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			441752	07/27/23 17:00	KED	EET PIT
	Instrument ID: DORY									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435991	05/23/23 20:17	LWM	EET PIT
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Field Sampling		1			436880	05/17/23 04:00	FDS	EET PIT
	Instrument ID: NOEQUIP									

Client Sample ID: MW-7
Lab Sample ID: 180-156848-22
Date Collected: 05/17/23 02:25
Matrix: Water
Date Received: 05/19/23 09:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5	1 mL	1 mL	435928	05/24/23 01:16	SNL	EET PIT
	Instrument ID: CHICS2100B									

Lab Chronicle

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-7

Date Collected: 05/17/23 02:25
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-22

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			25 mL	25 mL	439774	07/07/23 09:40	S1Z	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			441752	07/27/23 17:04	KED	EET PIT
	Instrument ID: DORY									
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	435991	05/23/23 20:17	LWM	EET PIT
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Field Sampling		1			436880	05/17/23 03:25	FDS	EET PIT
	Instrument ID: NOEQUIP									

Client Sample ID: DUPLICATE

Date Collected: 05/17/23 03:45
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-23

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1	1 mL	1 mL	435928	05/24/23 01:31	SNL	EET PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			25 mL	25 mL	439774	07/07/23 09:40	S1Z	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			441752	07/27/23 17:07	KED	EET PIT
	Instrument ID: DORY									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435991	05/23/23 20:17	LWM	EET PIT
	Instrument ID: NOEQUIP									

Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058
EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Analyst References:

Lab: EET PIT
- Batch Type: Prep
  - MTW = Michael Wesoloski
  - S1Z = Sage Ziviello
- Batch Type: Analysis
  - FDS = Sampler Field
  - KED = Katie Dacko
  - LWM = Leslie McIntire
  - MRG = Mismel Garcia
  - MTW = Michael Wesoloski
  - SNL = Sean Lordo

Lab: EET SL
- Batch Type: Prep
  - KAC = Kevin Cox
- Batch Type: Analysis
  - EMH = Elizabeth Hoerchler
  - FLC = Fernando Cruz

Client Sample Results

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-2

Date Collected: 05/17/23 11:40
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-14

Matrix: Water

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110		1.0	0.71	mg/L			05/23/23 22:48	1
Fluoride	0.20		0.10	0.026	mg/L			05/23/23 22:48	1
Sulfate	98		1.0	0.76	mg/L			05/23/23 22:48	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	28000		500	130	ug/L		07/07/23 09:40	07/14/23 19:21	1
Boron	150		80	60	ug/L		07/07/23 09:40	07/14/23 19:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	410		10	10	mg/L			05/22/23 17:04	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.93				SU			05/17/23 12:40	1

Client Sample Results

Client: Midwest Environmental Consultants
Job ID: 180-156848-4
Project/Site: Asbury Pond CCR

Client Sample ID: MW-3
Lab Sample ID: 180-156848-15
Date Collected: 05/17/23 12:15
Matrix: Water
Date Received: 05/19/23 09:35

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	59		1.0	0.71	mg/L			05/23/23 23:03	1
Fluoride	0.16		0.10	0.026	mg/L			05/23/23 23:03	1
Sulfate	490		1.0	0.76	mg/L			05/23/23 23:03	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	94000		500	130	ug/L		07/07/23 09:40	07/27/23 16:35	1
Boron	80	^1+ ^- ^+ ^2	80	60	ug/L		07/07/23 09:40	07/27/23 16:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	890		10	10	mg/L			05/22/23 17:04	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.82				SU			05/17/23 13:15	1

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-4

Date Collected: 05/17/23 10:45
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-16

Matrix: Water

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6.5		2.5	1.8	mg/L			05/23/23 23:18	2.5
Fluoride	0.11	J	0.25	0.065	mg/L			05/23/23 23:18	2.5
Sulfate	560		2.5	1.9	mg/L			05/23/23 23:18	2.5

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	240000		500	130	ug/L		07/07/23 09:40	07/27/23 16:38	1
Boron	ND	^1+ ^- ^+	80	60	ug/L		07/07/23 09:40	07/27/23 16:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	1500		10	10	mg/L			05/22/23 17:04	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.88				SU			05/17/23 11:45	1

Client Sample Results

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-5

Date Collected: 05/17/23 03:30
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-17

Matrix: Water

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6.2		1.0	0.71	mg/L			05/23/23 23:33	1
Fluoride	0.30		0.10	0.026	mg/L			05/23/23 23:33	1
Sulfate	150		1.0	0.76	mg/L			05/23/23 23:33	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	91000		500	130	ug/L		07/07/23 09:40	07/27/23 16:42	1
Boron	250	^1+ ^- ^+ ^2	80	60	ug/L		07/07/23 09:40	07/27/23 16:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	590		10	10	mg/L			05/22/23 17:04	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.43				SU			05/17/23 04:30	1

Client Sample Results

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-5A

Date Collected: 05/17/23 10:05
Date Received: 05/20/23 09:30

Lab Sample ID: 180-156848-18

Matrix: Water

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	180		2.5	1.8	mg/L			05/23/23 23:48	2.5
Fluoride	0.26		0.25	0.065	mg/L			05/23/23 23:48	2.5
Sulfate	1700		2.5	1.9	mg/L			05/23/23 23:48	2.5

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	400000		500	130	ug/L		07/07/23 09:40	07/27/23 16:45	1
Boron	1800	^1+ ^- ^+ ^2	80	60	ug/L		07/07/23 09:40	07/27/23 16:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	3200	cn	40	40	mg/L			05/23/23 20:17	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.94				SU			05/17/23 11:05	1

Client Sample ID: MW-5AR

Date Collected: 05/17/23 00:00
Date Received: 05/20/23 09:30

Lab Sample ID: 180-156848-19

Matrix: Water

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**77**		1.0	0.71	mg/L			05/24/23 00:02	1
Fluoride	**0.51**		0.10	0.026	mg/L			05/24/23 00:02	1
Sulfate	**190**		1.0	0.76	mg/L			05/24/23 00:02	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.97	ug/L		07/14/23 10:15	07/26/23 23:25	1
Arsenic	**1.9**		1.0	0.28	ug/L		07/14/23 10:15	07/26/23 23:25	1
Barium	**46**		10	3.1	ug/L		07/14/23 10:15	07/26/23 23:25	1
Beryllium	ND		1.0	0.27	ug/L		07/14/23 10:15	07/26/23 23:25	1
Boron	**370**	**B ^+ ^2 ^6**	80	60	ug/L		07/14/23 10:15	07/26/23 23:25	1
Cadmium	ND		1.0	0.22	ug/L		07/14/23 10:15	07/26/23 23:25	1
Calcium	**77000**		500	130	ug/L		07/14/23 10:15	07/26/23 23:25	1
Chromium	ND		2.0	1.5	ug/L		07/14/23 10:15	07/26/23 23:25	1
Cobalt	**1.3**		0.50	0.26	ug/L		07/14/23 10:15	07/26/23 23:25	1
Lead	ND		1.0	0.38	ug/L		07/14/23 10:15	07/26/23 23:25	1
Lithium	**100**		5.0	1.3	ug/L		07/14/23 10:15	07/26/23 23:25	1
Molybdenum	**1.7**	**J**	5.0	0.61	ug/L		07/14/23 10:15	07/26/23 23:25	1
Selenium	ND		5.0	0.74	ug/L		07/14/23 10:15	07/26/23 23:25	1
Thallium	ND		1.0	0.47	ug/L		07/14/23 10:15	07/26/23 23:25	1

Method: SW846 EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00013	mg/L		06/09/23 10:00	06/10/23 11:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	**650**	**cn**	10	10	mg/L			05/23/23 20:17	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.738**		0.302	0.309	1.00	0.281	pCi/L	05/31/23 09:34	06/22/23 08:22	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.3*		*30 - 110*	*05/31/23 09:34*	*06/22/23 08:22*	*1*

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.24**		0.585	0.596	1.00	0.785	pCi/L	05/31/23 09:38	06/21/23 11:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.3*		*30 - 110*	*05/31/23 09:38*	*06/21/23 11:31*	*1*
Y Carrier	*81.1*		*30 - 110*	*05/31/23 09:38*	*06/21/23 11:31*	*1*

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-5AR
Date Collected: 05/17/23 00:00
Date Received: 05/20/23 09:30

Lab Sample ID: 180-156848-19
Matrix: Water

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.98		0.658	0.671	5.00	0.785	pCi/L		06/23/23 13:17	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.46				SU			05/17/23 01:00	1

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-6

Date Collected: 05/17/23 08:45
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-20

Matrix: Water

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19		2.5	1.8	mg/L			05/24/23 00:17	2.5
Fluoride	0.29		0.25	0.065	mg/L			05/24/23 00:17	2.5
Sulfate	950		2.5	1.9	mg/L			05/24/23 00:17	2.5

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	250000		500	130	ug/L		07/07/23 09:40	07/27/23 16:56	1
Boron	350	^1+ ^+ ^2	80	60	ug/L		07/07/23 09:40	07/27/23 16:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	1900	cn	10	10	mg/L			05/23/23 20:17	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.02				SU			05/17/23 09:45	1

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-6A

Date Collected: 05/17/23 03:00
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-21

Matrix: Water

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	37		2.5	1.8	mg/L			05/24/23 01:01	2.5
Fluoride	0.27		0.25	0.065	mg/L			05/24/23 01:01	2.5
Sulfate	830		2.5	1.9	mg/L			05/24/23 01:01	2.5

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	180000		500	130	ug/L		07/07/23 09:40	07/27/23 17:00	1
Boron	350	^1+ ^+ ^2	80	60	ug/L		07/07/23 09:40	07/27/23 17:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	1600		10	10	mg/L			05/23/23 20:17	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.85				SU			05/17/23 04:00	1

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: MW-7

Date Collected: 05/17/23 02:25
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-22

Matrix: Water

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	38		2.5	1.8	mg/L			05/24/23 01:16	2.5
Fluoride	0.17	J	0.25	0.065	mg/L			05/24/23 01:16	2.5
Sulfate	1600		2.5	1.9	mg/L			05/24/23 01:16	2.5

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	470000		500	130	ug/L		07/07/23 09:40	07/27/23 17:04	1
Boron	290	^1+ ^+ ^2	80	60	ug/L		07/07/23 09:40	07/27/23 17:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	2900		20	20	mg/L			05/23/23 20:17	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.51				SU			05/17/23 03:25	1

Client: Midwest Environmental Consultants
Project/Site: Asbury Pond CCR

Job ID: 180-156848-4

Client Sample ID: DUPLICATE

Date Collected: 05/17/23 03:45
Date Received: 05/19/23 09:35

Lab Sample ID: 180-156848-23

Matrix: Water

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	68		1.0	0.71	mg/L			05/24/23 01:31	1
Fluoride	0.38		0.10	0.026	mg/L			05/24/23 01:31	1
Sulfate	170		1.0	0.76	mg/L			05/24/23 01:31	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	89000		500	130	ug/L		07/07/23 09:40	07/27/23 17:07	1
Boron	280	^1+ ^+ ^2	80	60	ug/L		07/07/23 09:40	07/27/23 17:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	600		10	10	mg/L			05/23/23 20:17	1

Method: EPA 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 180-435928/41
Matrix: Water
Analysis Batch: 435928

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			05/23/23 19:06	1
Fluoride	ND		0.10	0.026	mg/L			05/23/23 19:06	1
Sulfate	ND		1.0	0.76	mg/L			05/23/23 19:06	1

Lab Sample ID: LCS 180-435928/42
Matrix: Water
Analysis Batch: 435928

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	50.0	50.1		mg/L		100	80 - 120
Fluoride	2.50	2.57		mg/L		103	80 - 120
Sulfate	50.0	49.6		mg/L		99	80 - 120

Lab Sample ID: 180-156848-B-3 MS
Matrix: Water
Analysis Batch: 435928

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	18		50.0	67.0		mg/L		99	80 - 120
Fluoride	0.11		2.50	2.67		mg/L		102	80 - 120
Sulfate	38		50.0	87.0		mg/L		97	80 - 120

Lab Sample ID: 180-156848-B-3 MSD
Matrix: Water
Analysis Batch: 435928

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	18		50.0	62.2		mg/L		89	80 - 120	7	15
Fluoride	0.11		2.50	2.49		mg/L		95	80 - 120	7	15
Sulfate	38		50.0	80.9		mg/L		85	80 - 120	7	15

Method: EPA 6020A - Metals (ICP/MS)

Lab Sample ID: MB 180-439774/1-A
Matrix: Water
Analysis Batch: 440797

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 439774

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		80	60	ug/L		07/07/23 09:40	07/14/23 19:00	1
Calcium	ND		500	130	ug/L		07/07/23 09:40	07/14/23 19:00	1

Lab Sample ID: MB 180-439774/1-A
Matrix: Water
Analysis Batch: 440914

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 439774

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		80	60	ug/L		07/07/23 09:40	07/20/23 00:06	1
Calcium	134	J	500	130	ug/L		07/07/23 09:40	07/20/23 00:06	1

Method: EPA 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 180-439774/1-A
Matrix: Water
Analysis Batch: 441752

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 439774

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND	^1+ ^- ^+	80	60	ug/L		07/07/23 09:40	07/27/23 16:24	1
Calcium	ND		500	130	ug/L		07/07/23 09:40	07/27/23 16:24	1

Lab Sample ID: LCS 180-439774/2-A
Matrix: Water
Analysis Batch: 440797

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 439774

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	1250	1230		ug/L		98	80 - 120
Calcium	25000	26600		ug/L		106	80 - 120

Lab Sample ID: LCS 180-439774/2-A
Matrix: Water
Analysis Batch: 441752

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 439774

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	1250	1030	^1+ ^+	ug/L		82	80 - 120
Calcium	25000	27000		ug/L		108	80 - 120

Lab Sample ID: 180-156848-E-19-C MS
Matrix: Water
Analysis Batch: 440797

Client Sample ID: 180-156848-E-19-C MS
Prep Type: Total Recoverable
Prep Batch: 439774

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	260		1250	1630		ug/L		109	75 - 125
Calcium	77000		25000	106000		ug/L		115	75 - 125

Lab Sample ID: 180-156848-E-19-D MSD
Matrix: Water
Analysis Batch: 440797

Client Sample ID: 180-156848-E-19-D MSD
Prep Type: Total Recoverable
Prep Batch: 439774

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Boron	260		1250	1680		ug/L		113	75 - 125	3	20
Calcium	77000		25000	106000		ug/L		118	75 - 125	1	20

Lab Sample ID: LCSD 180-440414/3-A
Matrix: Water
Analysis Batch: 441632

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 440414

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	250	272		ug/L					
Arsenic	1000	930		ug/L					
Barium	1000	1030		ug/L					
Beryllium	500	533		ug/L					
Cadmium	500	508		ug/L					
Calcium	25000	25300		ug/L					
Chromium	500	509		ug/L					
Cobalt	500	452		ug/L					
Lead	500	533		ug/L					
Lithium	500	521		ug/L					

Method: EPA 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 180-440414/3-A
Matrix: Water
Analysis Batch: 441632

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 440414

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Molybdenum			500	516		ug/L					
Selenium			1000	977		ug/L					
Thallium			1000	1080		ug/L					

Method: EPA 7470A - Mercury (CVAA)

Lab Sample ID: MB 180-437479/1-A
Matrix: Water
Analysis Batch: 437591

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 437479

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00013	mg/L		06/09/23 10:00	06/10/23 11:30	1

Lab Sample ID: LCS 180-437479/2-A
Matrix: Water
Analysis Batch: 437591

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 437479

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.00250	0.00249		mg/L		100	80 - 120		

Lab Sample ID: 180-156848-D-1-E MS
Matrix: Water
Analysis Batch: 437591

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 437479

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury	ND		0.00100	0.000827		mg/L		83	75 - 125		

Lab Sample ID: 180-156848-D-1-F MSD
Matrix: Water
Analysis Batch: 437591

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 437479

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	ND		0.00100	0.000828		mg/L		83	75 - 125	0	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 180-435872/1
Matrix: Water
Analysis Batch: 435872

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	10	mg/L			05/22/23 17:04	1

Lab Sample ID: LCS 180-435872/2
Matrix: Water
Analysis Batch: 435872

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Dissolved Solids			580	584		mg/L		101	85 - 115		

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 180-156761-A-5 DU
Matrix: Water
Analysis Batch: 435872

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	1300		1290		mg/L		0.8	10

Lab Sample ID: 180-156848-A-1 DU
Matrix: Water
Analysis Batch: 435872

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	810		816		mg/L		0.5	10

Lab Sample ID: MB 180-435991/1
Matrix: Water
Analysis Batch: 435991

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	10	mg/L			05/23/23 20:17	1

Lab Sample ID: LCS 180-435991/2
Matrix: Water
Analysis Batch: 435991

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	580	572		mg/L		99	85 - 115

Lab Sample ID: 180-156823-A-2 DU
Matrix: Water
Analysis Batch: 435991

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	480		471		mg/L		0.8	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-613848/1-A
Matrix: Water
Analysis Batch: 617353

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 613848

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.2086	U	0.191	0.192	1.00	0.299	pCi/L	05/31/23 09:34	06/22/23 08:16	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*30 - 110*	*05/31/23 09:34*	*06/22/23 08:16*	*1*

Lab Sample ID: LCS 160-613848/2-A
Matrix: Water
Analysis Batch: 617353

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 613848

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226	11.3	9.175		1.14	1.00	0.205	pCi/L	81	75 - 125

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	92.6		30 - 110

Lab Sample ID: LCSD 160-613848/3-A
Matrix: Water
Analysis Batch: 617353

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 613848

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-226			11.3	9.974		1.25	1.00	0.269	pCi/L	88	75 - 125	0.33	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	85.2		30 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-613850/1-A
Matrix: Water
Analysis Batch: 617160

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 613850

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1072	U	0.275	0.275	1.00	0.485	pCi/L	05/31/23 09:38	06/21/23 11:30	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		30 - 110	05/31/23 09:38	06/21/23 11:30	1
Y Carrier	82.2		30 - 110	05/31/23 09:38	06/21/23 11:30	1

Lab Sample ID: LCS 160-613850/2-A
Matrix: Water
Analysis Batch: 617000

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 613850

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228			8.10	8.673		1.24	1.00	0.566	pCi/L	107	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	92.6		30 - 110
Y Carrier	80.7		30 - 110

Lab Sample ID: LCSD 160-613850/3-A
Matrix: Water
Analysis Batch: 617160

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 613850

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-228			8.10	9.754		1.36	1.00	0.576	pCi/L	120	75 - 125	0.42	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	85.2		30 - 110
Y Carrier	78.9		30 - 110

HPLC/IC

Analysis Batch: 435928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-14	MW-2	Total/NA	Water	EPA 9056A	
180-156848-15	MW-3	Total/NA	Water	EPA 9056A	
180-156848-16	MW-4	Total/NA	Water	EPA 9056A	
180-156848-17	MW-5	Total/NA	Water	EPA 9056A	
180-156848-18	MW-5A	Total/NA	Water	EPA 9056A	
180-156848-19	MW-5AR	Total/NA	Water	EPA 9056A	
180-156848-20	MW-6	Total/NA	Water	EPA 9056A	
180-156848-21	MW-6A	Total/NA	Water	EPA 9056A	
180-156848-22	MW-7	Total/NA	Water	EPA 9056A	
180-156848-23	DUPLICATE	Total/NA	Water	EPA 9056A	
MB 180-435928/41	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-435928/42	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-156848-B-3 MS	Matrix Spike	Total/NA	Water	EPA 9056A	
180-156848-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 9056A	

Metals

Prep Batch: 437479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-19	MW-5AR	Total/NA	Water	7470A	
MB 180-437479/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-437479/2-A	Lab Control Sample	Total/NA	Water	7470A	
180-156848-D-1-E MS	Matrix Spike	Total/NA	Water	7470A	
180-156848-D-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	

Analysis Batch: 437591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-19	MW-5AR	Total/NA	Water	EPA 7470A	437479
MB 180-437479/1-A	Method Blank	Total/NA	Water	EPA 7470A	437479
LCS 180-437479/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	437479
180-156848-D-1-E MS	Matrix Spike	Total/NA	Water	EPA 7470A	437479
180-156848-D-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 7470A	437479

Prep Batch: 439774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-14	MW-2	Total Recoverable	Water	3005A	
180-156848-15	MW-3	Total Recoverable	Water	3005A	
180-156848-16	MW-4	Total Recoverable	Water	3005A	
180-156848-17	MW-5	Total Recoverable	Water	3005A	
180-156848-18	MW-5A	Total Recoverable	Water	3005A	
180-156848-20	MW-6	Total Recoverable	Water	3005A	
180-156848-21	MW-6A	Total Recoverable	Water	3005A	
180-156848-22	MW-7	Total Recoverable	Water	3005A	
180-156848-23	DUPLICATE	Total Recoverable	Water	3005A	
MB 180-439774/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-439774/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-156848-E-19-C MS	180-156848-E-19-C MS	Total Recoverable	Water	3005A	
180-156848-E-19-D MSD	180-156848-E-19-D MSD	Total Recoverable	Water	3005A	

Metals

Prep Batch: 440414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-19	MW-5AR	Total Recoverable	Water	3005A	
LCSD 180-440414/3-A	Lab Control Sample Dup	Total Recoverable	Water	3005A	

Analysis Batch: 440797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-14	MW-2	Total Recoverable	Water	EPA 6020A	439774
MB 180-439774/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	439774
LCS 180-439774/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	439774
180-156848-E-19-C MS	180-156848-E-19-C MS	Total Recoverable	Water	EPA 6020A	439774
180-156848-E-19-D MSD	180-156848-E-19-D MSD	Total Recoverable	Water	EPA 6020A	439774

Analysis Batch: 440914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 180-439774/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	439774

Analysis Batch: 441632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-19	MW-5AR	Total Recoverable	Water	EPA 6020A	440414
LCSD 180-440414/3-A	Lab Control Sample Dup	Total Recoverable	Water	EPA 6020A	440414

Analysis Batch: 441752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-15	MW-3	Total Recoverable	Water	EPA 6020A	439774
180-156848-16	MW-4	Total Recoverable	Water	EPA 6020A	439774
180-156848-17	MW-5	Total Recoverable	Water	EPA 6020A	439774
180-156848-18	MW-5A	Total Recoverable	Water	EPA 6020A	439774
180-156848-20	MW-6	Total Recoverable	Water	EPA 6020A	439774
180-156848-21	MW-6A	Total Recoverable	Water	EPA 6020A	439774
180-156848-22	MW-7	Total Recoverable	Water	EPA 6020A	439774
180-156848-23	DUPLICATE	Total Recoverable	Water	EPA 6020A	439774
MB 180-439774/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	439774
LCS 180-439774/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	439774

General Chemistry

Analysis Batch: 435872

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-14	MW-2	Total/NA	Water	SM 2540C	
180-156848-15	MW-3	Total/NA	Water	SM 2540C	
180-156848-16	MW-4	Total/NA	Water	SM 2540C	
180-156848-17	MW-5	Total/NA	Water	SM 2540C	
MB 180-435872/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-435872/2	Lab Control Sample	Total/NA	Water	SM 2540C	
180-156761-A-5 DU	Duplicate	Total/NA	Water	SM 2540C	
180-156848-A-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 435991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-18	MW-5A	Total/NA	Water	SM 2540C	
180-156848-19	MW-5AR	Total/NA	Water	SM 2540C	
180-156848-20	MW-6	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 435991 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-21	MW-6A	Total/NA	Water	SM 2540C	
180-156848-22	MW-7	Total/NA	Water	SM 2540C	
180-156848-23	DUPLICATE	Total/NA	Water	SM 2540C	
MB 180-435991/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-435991/2	Lab Control Sample	Total/NA	Water	SM 2540C	
180-156823-A-2 DU	Duplicate	Total/NA	Water	SM 2540C	

Rad

Prep Batch: 613848

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-19	MW-5AR	Total/NA	Water	PrecSep-21	
MB 160-613848/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-613848/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-613848/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 613850

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-19	MW-5AR	Total/NA	Water	PrecSep_0	
MB 160-613850/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-613850/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-613850/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Field Service / Mobile Lab

Analysis Batch: 436880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-156848-14	MW-2	Total/NA	Water	Field Sampling	
180-156848-15	MW-3	Total/NA	Water	Field Sampling	
180-156848-16	MW-4	Total/NA	Water	Field Sampling	
180-156848-17	MW-5	Total/NA	Water	Field Sampling	
180-156848-18	MW-5A	Total/NA	Water	Field Sampling	
180-156848-19	MW-5AR	Total/NA	Water	Field Sampling	
180-156848-20	MW-6	Total/NA	Water	Field Sampling	
180-156848-21	MW-6A	Total/NA	Water	Field Sampling	
180-156848-22	MW-7	Total/NA	Water	Field Sampling	

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Pittsburgh, PA 15238
Phone (412) 963-7058 Phone (412) 963-2468

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Rick Elgin & Ryan Ortbals	Lab PM: Johnson, Andy	Carrier Tracking No(s):	COC No: 180-91658-16873.1
Client Contact: Anika Careaga	Phone: 573-636-9454	E-Mail: Andy.Johnson@et.eurofinsus.com	State of Origin:	Page: Page 1 of 2
Company: Midwest Environmental Consultants	PWSID:			Job #:
Address: 2009 East McCarty Street Suite 2	Due Date Requested:			
City: Jefferson City	TAT Requested (days):			
State, Zip: MO, 65101	Compliance Project: Δ Yes Δ No			
Phone: 573-636-9454(Tel)	PO #: Purchase Order not required			
Email: acareaga@mecpc.com	WO #:			
Project Name: Asbury Pond - CCR	Project #: 18023389			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	9056A_ORGFM_28D - (MOD)Chloride, Fluoride & Sulfate	6020 - Boron/Calcium	2540C_Calcd - (MOD) TDS	6020/7470 - CCR Appiii/iv metals (sample MW-5AR)	9315_Ra226 - Standard Target List (sample MW-5AR)	9320_Ra228 - Standard Target List (sample MW-5AR)	Total Number of containers	Special Instructions/Note:
	Preservation Code:				X	N	D	N	D	D	D	X	pH / spec cond.
MW-2	5- 17 -23	11:40	Grab	Water		X	X	X					5.93 / 0.864
MW-3	5- 17 -23	12:15	Grab	Water		X	X	X					5.82 / 1.280
MW-4	5- 17 -23	10:45	Grab	Water		X	X	X					6.88 / 1.903
MW-5	5- 16 -23	3:30	Grab	Water		X	X	X					7.43 / 1.047
MW-5A	5- 17 -23	10:05	Grab	Water		X	X	X					6.94 / 3.481
MW-5AR	5- 17 -23		Grab	Water		X	X	X	X	X	X		7.46 / 1.131

180-156848 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Ryan Ortbals	9-18-23 / 12:30	MEC	FedEx	9-18-23 / 12:30	FedEx
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
				Regulk	9-19-23 0935	EPTWE
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

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9/20/2023

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Phone (412) 963-7058 Phone (412) 963-2468

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Rick Elgin & Ryan Ortbals	Lab PM: Johnson, Andy	Carrier Tracking No(s):	COC No: 180-91658-16873.1
Client Contact: Anika Careaga	Phone: 573-636-9454	E-Mail: Andy.Johnson@et.eurofinsus.com	State of Origin.	Page: Page 2 of 2
Company: Midwest Environmental Consultants	PWSID:			Job #:
Address: 2009 East McCarty Street Suite 2	Due Date Requested:			
City: Jefferson City	TAT Requested (days):			
State, Zip: MO, 65101	Compliance Project: Δ Yes Δ No			
Phone: 573-636-9454(Tel)	PO #: Purchase Order not required			
Email: acareaga@mecpc.com	WO #:			
Project Name: Asbury Pond - CCR	Project #: 18023389			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	9056A_ORGFM_28D - (MOD)Chloride, Fluoride & Sulfate	6020 - Boron/Calcium	2540C_Calcd - (MOD) TDS	6020/7470 - CCR Appiii/IV metals (sample MW-5AR)	9315_Ra226 - Standard Target List (sample MW-5AR)	9320_Ra228 - Standard Target List (sample MW-5AR)	Total Number of containers	Special Instructions/Note:
			Preservation Code:			N	D	N	D	D	D		pH / spec. cond.
MW-6	5- 18 -23	8:45	Grab	Water		X	X	X					7.02 / 1.937
MW-6A	5- 16 -23	3:00	Grab	Water		X	X	X					6.85 / 1.966
MW-7	5- 16 -23	2:25	Grab	Water		X	X	X					6.51 / 2.782
Duplicate taken at MW- 5	5- 16 -23	3:45	Grab	Water		X	X	X					— / —
Field Blank	5- -23		Grab	Water		X	X	X					No bottles

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time	Company	Received by:	Date/Time:	Company
1	Ryan Ortbals	5-18-23 / 12:30	MEC	FedEx	5-18-23 / 12:30	FedEx
2		Date/Time	Company	Received by:	Date/Time: 5-19-23 0935	Company TESTAMERICA
3		Date/Time	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

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* No bottles were supplied for field blank

* (x2) 1 Liter bottles for radium analysis for MW-6 do not have preservative

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Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Andy	Carrier Tracking No(s):	COC No: 180-487721.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Andy.Johnson@et.eurofinsus.com	State of Origin: Missouri	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 180-156848-3
Address: 13715 Rider Trail North, ,	Due Date Requested: 5/29/2023			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Asbury Pond NPDES	Project #: 18023389			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Ra226Ra228_GFPC	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-2 (180-156848-14)	5/17/23	11:40 Central		Water			X	X	X	2	Historical Review required; Run once, upload twice
MW-3 (180-156848-15)	5/17/23	12:15 Central		Water			X	X	X	2	Historical Review required; Run once, upload twice
MW-4 (180-156848-16)	5/17/23	10:45 Central		Water			X	X	X	2	Historical Review required; Run once, upload twice
MW-5 (180-156848-17)	5/17/23	03:30 Central		Water			X	X	X	2	Historical Review required; Run once, upload twice
MW-5A (180-156848-18)	5/17/23	10:05 Central		Water			X	X	X	2	Historical Review required; Run once, upload twice
MW-5AR (180-156848-19)	5/17/23	Central		Water			X	X	X	3	Historical Review required; Run once, upload twice
MW-6 (180-156848-20)	5/17/23	08:45 Central		Water			X	X	X	2	Historical Review required; Run once, upload twice
MW-6A (180-156848-21)	5/17/23	03:00 Central		Water			X	X	X	2	Historical Review required; Run once, upload twice
MW-7 (180-156848-22)	5/17/23	02:25 Central		Water			X	X	X	2	Historical Review required; Run once, upload twice

Note: Since laboratory accreditations are subject to change, Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Pittsburgh.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	5/25/23 1700	Eurofins	FED EX		
2	FED EX			Sierra Worthington	MAY 26 2023 0850	Eurofins
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Eurofins Pittsburgh
301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Andy	Carrier Tracking No(s):	COC No: 180-487721.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: Andy.Johnson@et.eurofinsus.com	State of Origin: Missouri	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 180-156848-3
Address: 13715 Rider Trail North, ,	Due Date Requested: 5/29/2023			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Asbury Pond NPDES	Project #: 18023389			
Site:	SSOW#:			

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Ra226Ra228_GFPC	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
DUPLICATE (180-156848-23)	5/17/23	03:45 Central		Water			X	X	X	2	Historical Review required; Run once, upload twice

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Y - Trizma
Z - other (specify)

Other:

Note: Since laboratory accreditations are subject to change, Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Pittsburgh.

Possible Hazard Identification
Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:	

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	5/25/23 1700	EETNR	FED EX		
FED EX			Sierra Worthington	MAY 26 2023 0850	ETBR

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Eurofins Pittsburgh
301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Andy	Carrier Tracking No(s):	COC No: 180-487721.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Andy.Johnson@et.eurofinsus.com	State of Origin: Missouri	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 180-156848-4
Address: 13715 Rider Trail North, ,	Due Date Requested: 5/29/2023			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Asbury Pond CCR	Project #: 18023389			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Ra226Ra228_GFPC	Total Number of containers	Special Instructions/Note:
Preservation Code:											
MW-5AR (180-156848-19)	5/17/23	Central		Water			X	X	X	3	Historical Review required; Run once, upload twice

Note: Since laboratory accreditations are subject to change, Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Pittsburgh.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature] FED EX	5/25/23 1100	EQ PITT	FED EX		
2	Relinquished by:	Date/Time:	Company	Received by: Sierra Worthington	Date/Time: MAY 26 2023 0850	Company ETPIT
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

7/28/2023

Login Sample Receipt Checklist

Client: Midwest Environmental Consultants

Job Number: 180-156848-4

Login Number: 156848
List Number: 1
Creator: Abernathy, Eric L

List Source: Eurofins Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Midwest Environmental Consultants

Job Number: 180-156848-4

Login Number: 156848
List Number: 2
Creator: Watson, Debbie

List Source: Eurofins Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Midwest Environmental Consultants

Job Number: 180-156848-4

Login Number: 156848
List Number: 4
Creator: Worthington, Sierra M

List Source: Eurofins St. Louis
List Creation: 05/26/23 03:38 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	Preserved upon arrival
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Midwest Environmental Consultants

Job Number: 180-156848-4

Login Number: 156848
List Number: 5
Creator: Sharkey-Gonzalez, Briana L

List Source: Eurofins St. Louis
List Creation: 06/01/23 12:58 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX 5

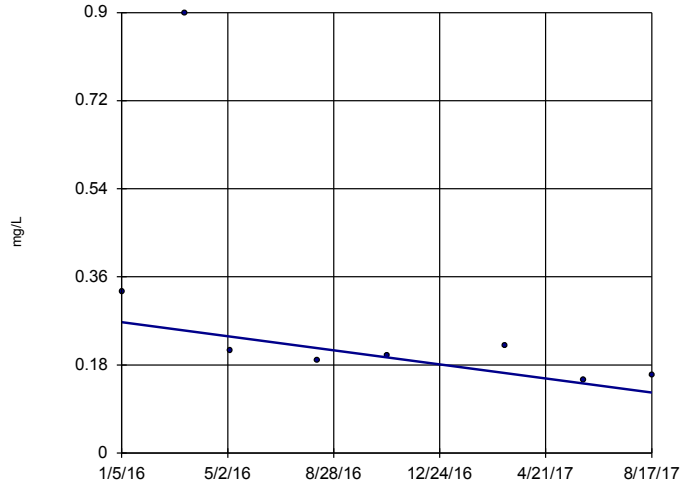
Statistical Analysis

Sanitas™ Output – Background

Trending Analysis

Boron

MW-2 (bg)



n = 8

Slope = -0.08868 units per year.

Mann-Kendall statistic = -16
critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

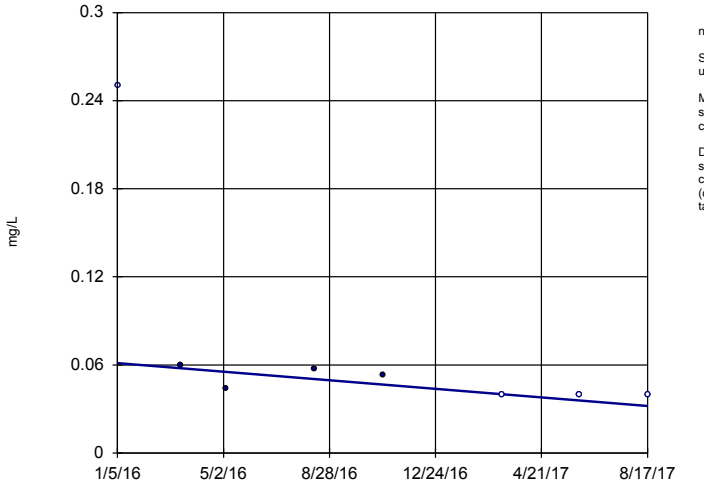
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Hollow symbols indicate censored values.

Boron

MW-3 (bg)



n = 8

Slope = -0.01797 units per year.

Mann-Kendall statistic = -21
critical = -20

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

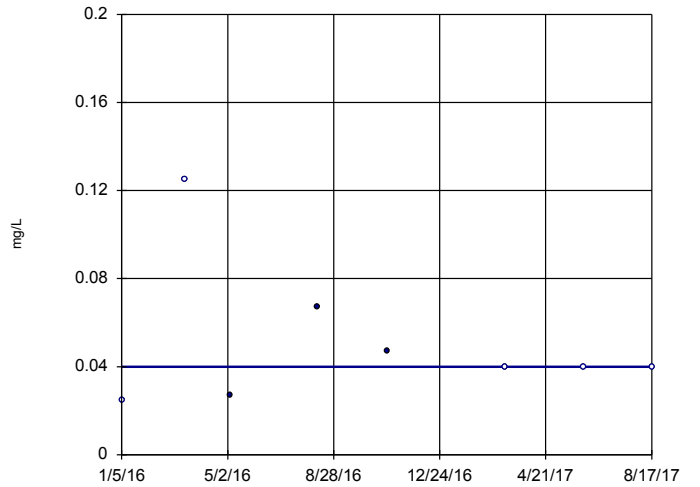
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Hollow symbols indicate censored values.

Boron

MW-4



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = -1
critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

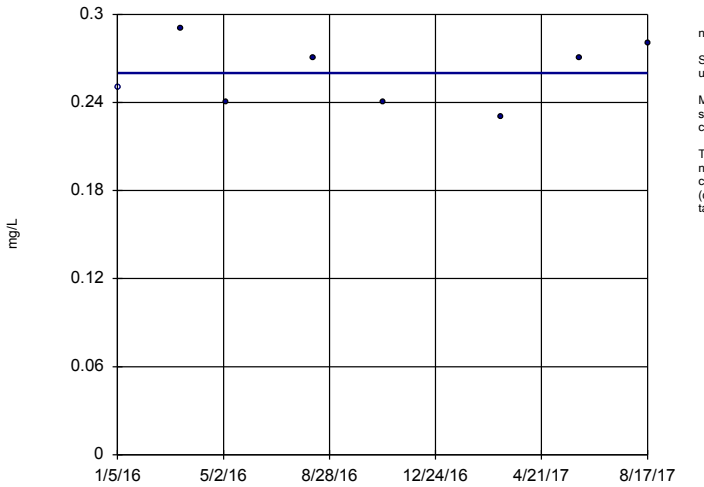
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Hollow symbols indicate censored values.

Boron

MW-5



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 0
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

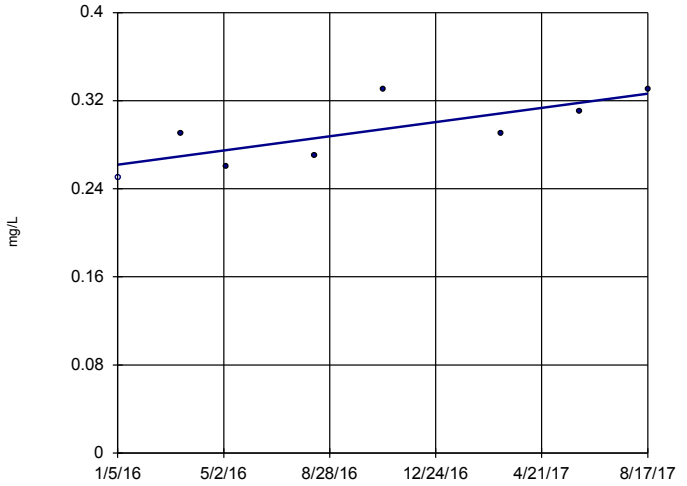
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Boron

MW-5A



n = 8

Slope = 0.03993 units per year.

Mann-Kendall statistic = 18 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

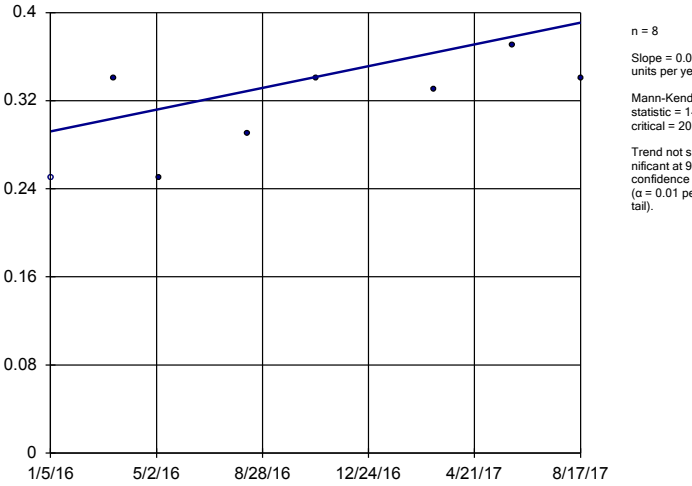
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Boron

MW-6



n = 8

Slope = 0.06117 units per year.

Mann-Kendall statistic = 14 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

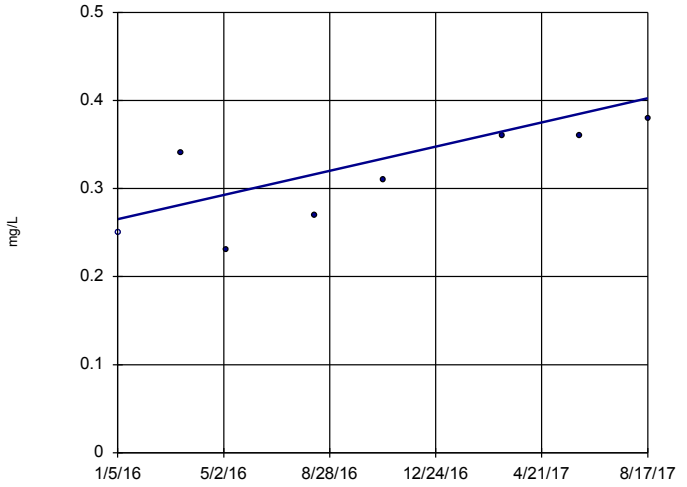
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Boron

MW-6A



n = 8

Slope = 0.08497 units per year.

Mann-Kendall statistic = 19 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

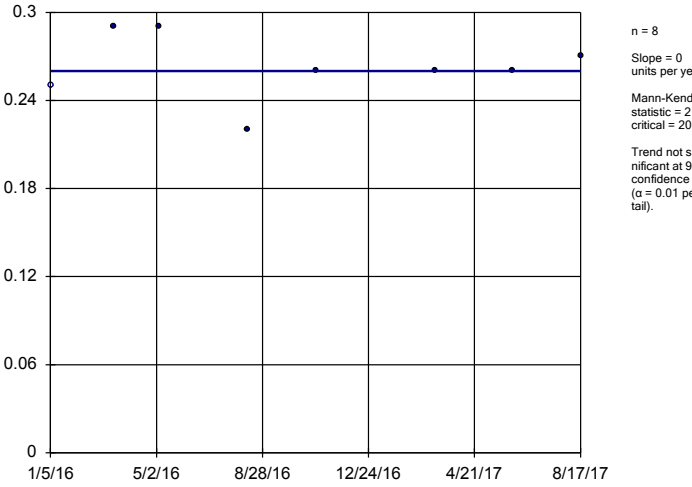
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Boron

MW-7



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 2 critical = 20

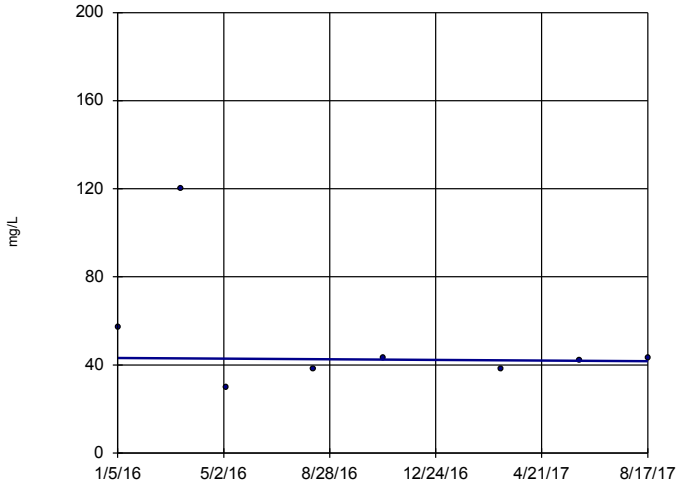
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Calcium

MW-2 (bg)



n = 8

Slope = -0.8333 units per year.

Mann-Kendall statistic = -2 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

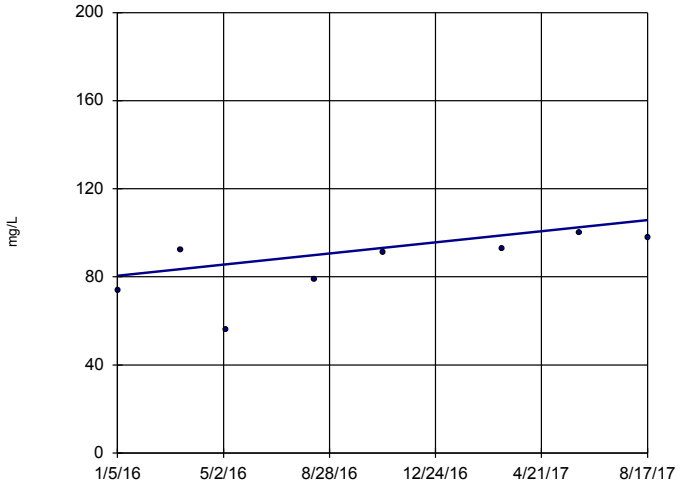
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

MW-3 (bg)



n = 8

Slope = 15.6 units per year.

Mann-Kendall statistic = 18 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

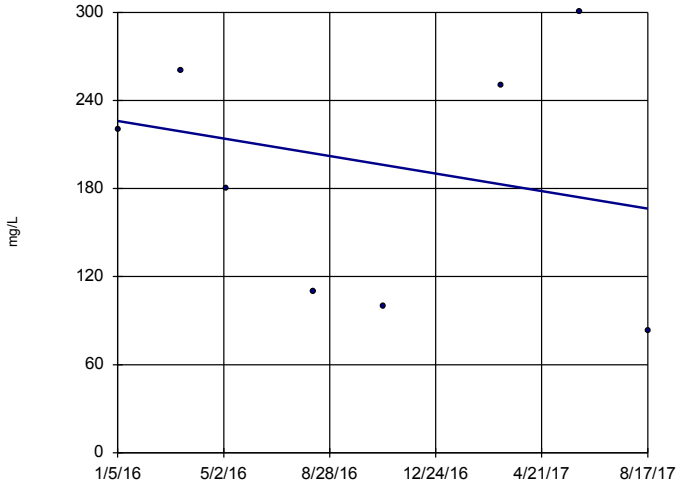
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

MW-4



n = 8

Slope = -36.95 units per year.

Mann-Kendall statistic = -6 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

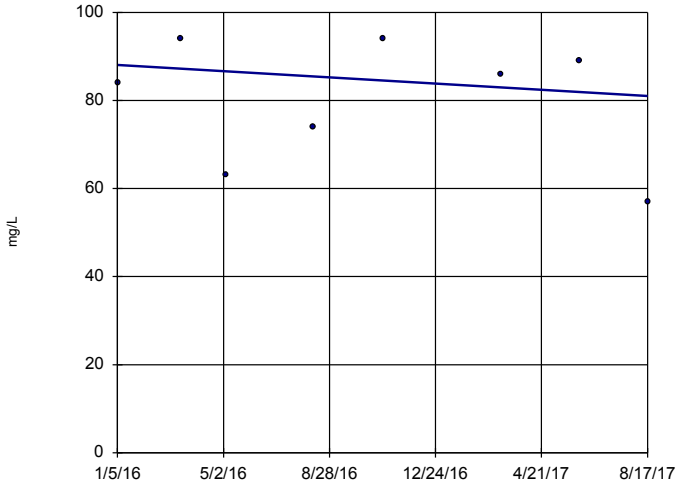
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

MW-5



n = 8

Slope = -4.395 units per year.

Mann-Kendall statistic = -3 critical = -20

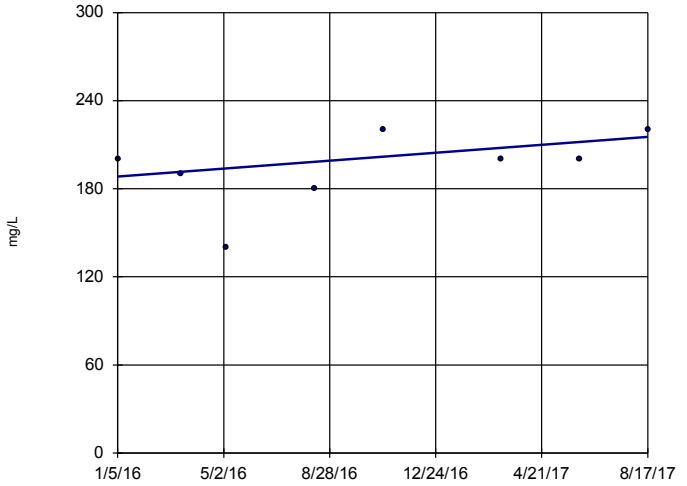
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Calcium

MW-5A



n = 8

Slope = 16.74 units per year.

Mann-Kendall statistic = 10
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

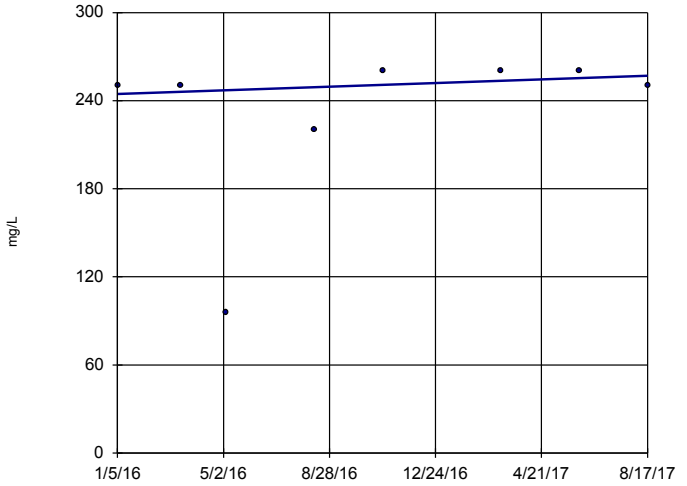
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

MW-6



n = 8

Slope = 7.67 units per year.

Mann-Kendall statistic = 8
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

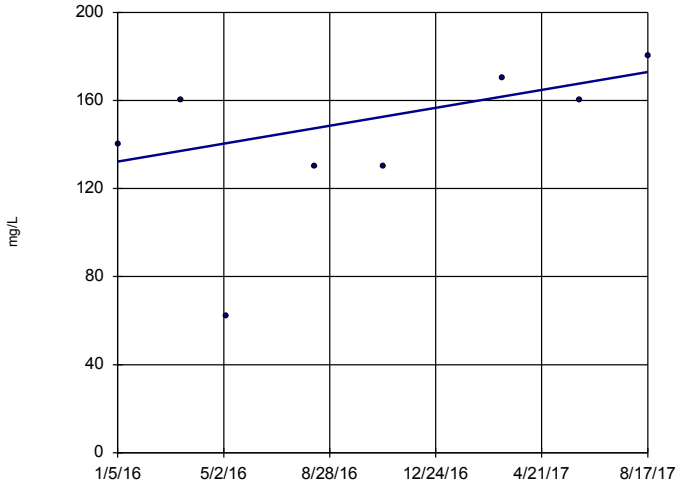
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

MW-6A



n = 8

Slope = 25.16 units per year.

Mann-Kendall statistic = 12
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

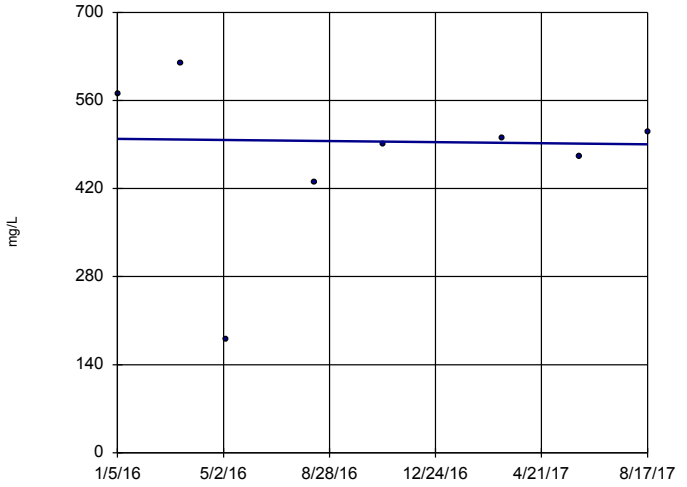
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

MW-7



n = 8

Slope = -5.401 units per year.

Mann-Kendall statistic = 0
critical = 20

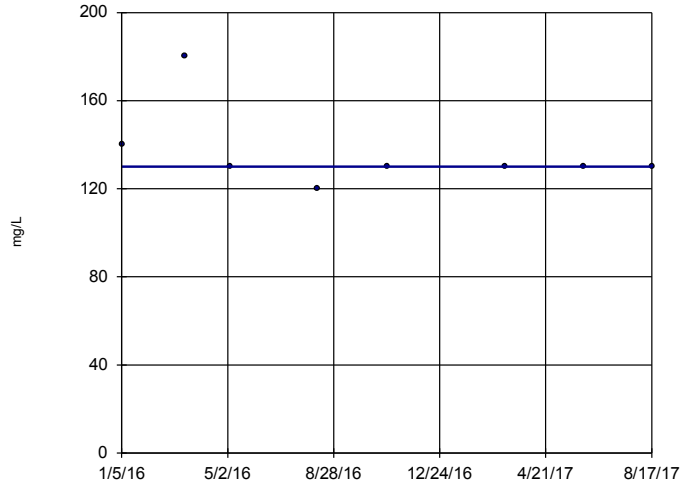
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Chloride

MW-2 (bg)



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = -8 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

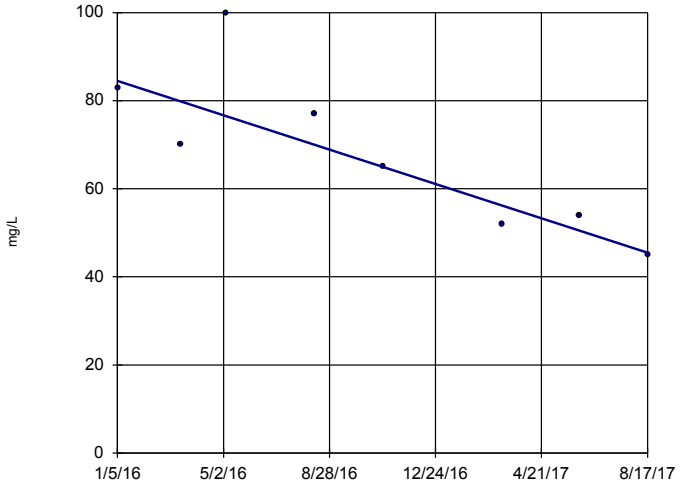
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-3 (bg)



n = 8

Slope = -24.13 units per year.

Mann-Kendall statistic = -20 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

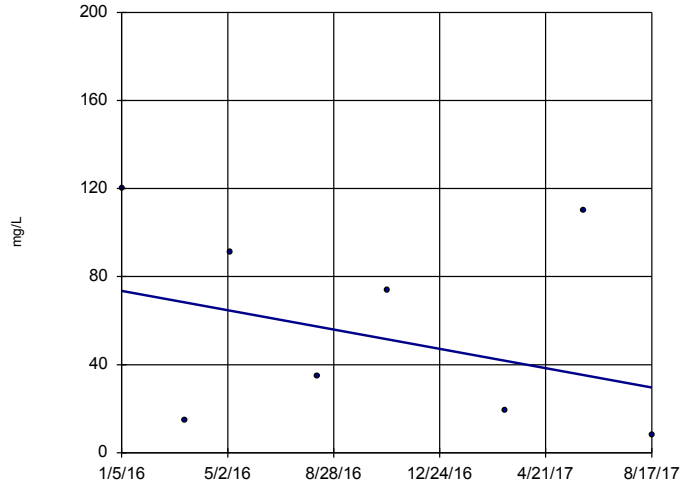
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-4



n = 8

Slope = -27.17 units per year.

Mann-Kendall statistic = -8 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

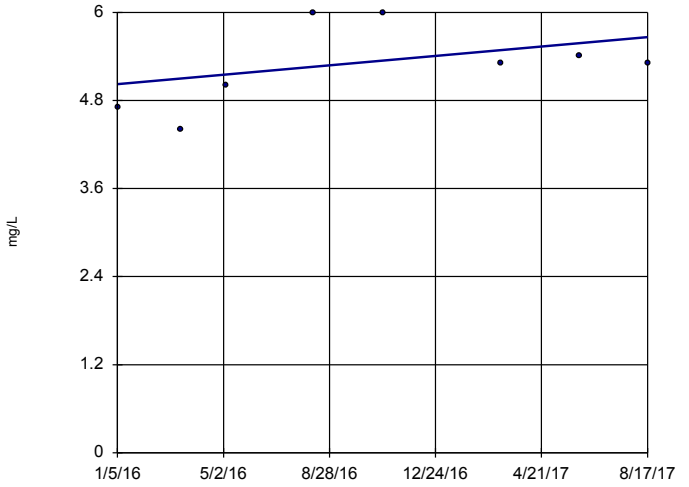
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-5



n = 8

Slope = 0.3955 units per year.

Mann-Kendall statistic = 10 critical = 20

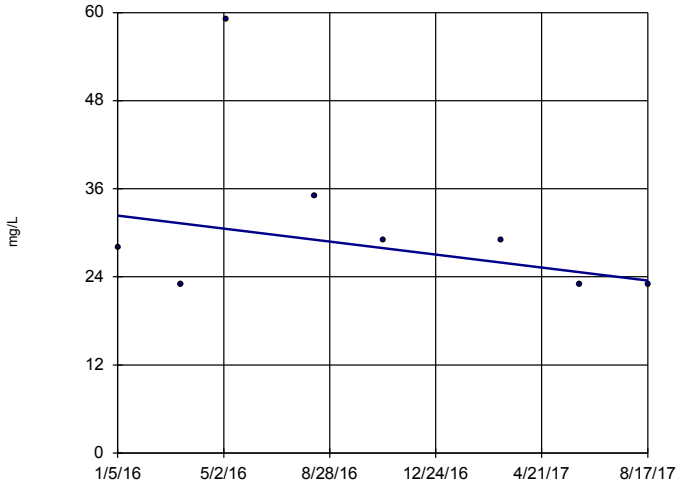
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Chloride

MW-5A



n = 8

Slope = -5.487 units per year.

Mann-Kendall statistic = -8 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

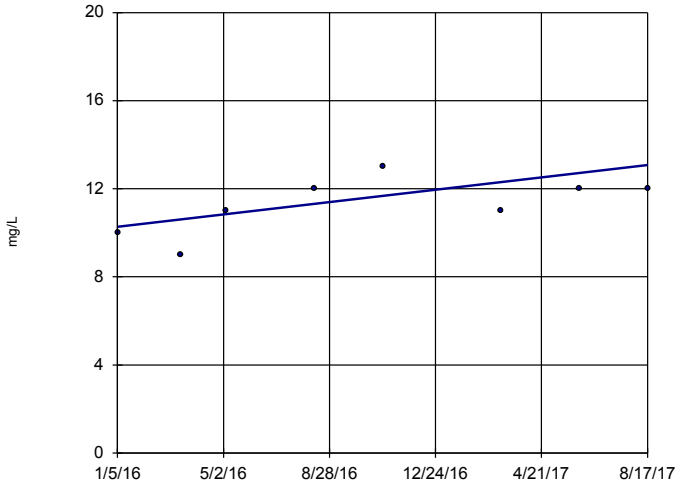
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-6



n = 8

Slope = 1.735 units per year.

Mann-Kendall statistic = 14 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

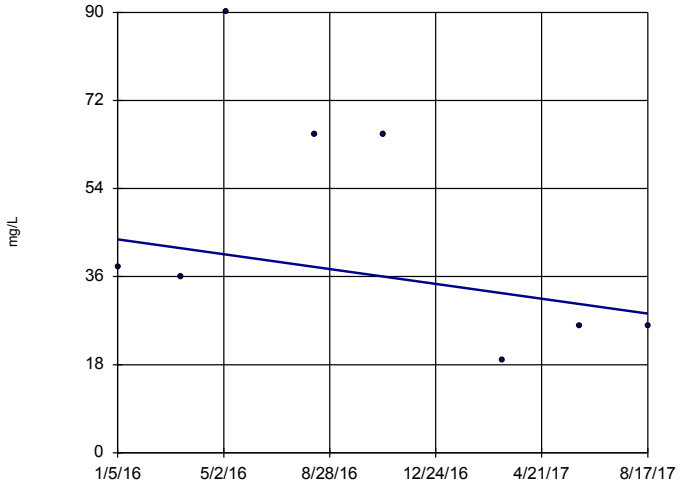
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-6A



n = 8

Slope = -9.402 units per year.

Mann-Kendall statistic = -10 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

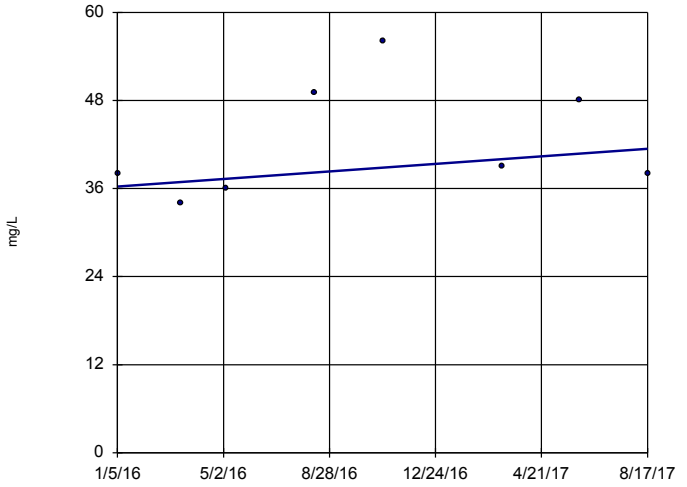
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-7



n = 8

Slope = 3.19 units per year.

Mann-Kendall statistic = 7 critical = 20

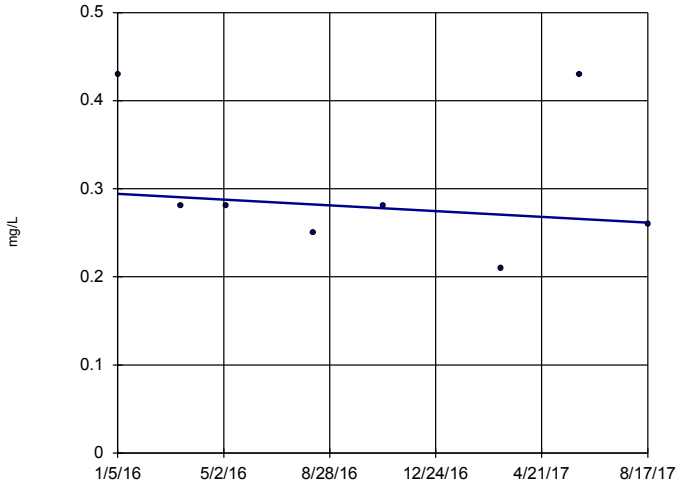
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Fluoride

MW-2 (bg)



n = 8

Slope = -0.02016 units per year.

Mann-Kendall statistic = -8 critical = -20

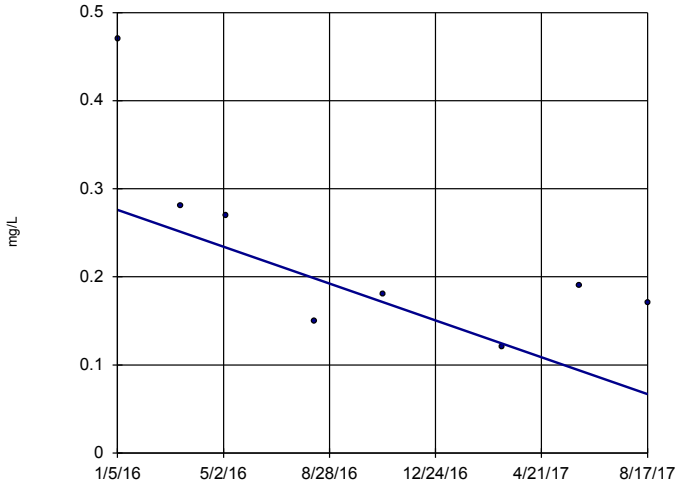
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Fluoride

MW-3 (bg)



n = 8

Slope = -0.1295 units per year.

Mann-Kendall statistic = -16 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

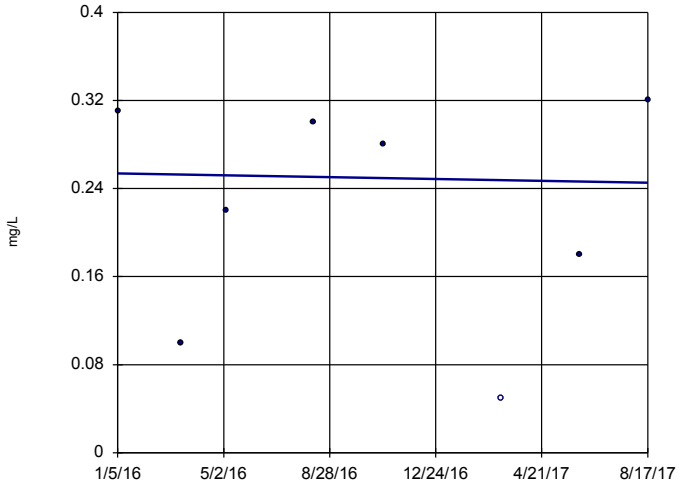
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Hollow symbols indicate censored values.

Fluoride

MW-4



n = 8

Slope = -0.005278 units per year.

Mann-Kendall statistic = 0 critical = 20

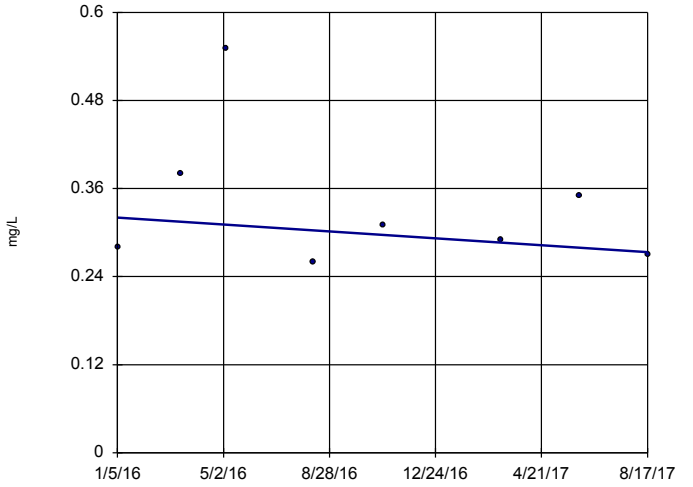
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Fluoride

MW-5



n = 8

Slope = -0.0291 units per year.

Mann-Kendall statistic = -4 critical = -20

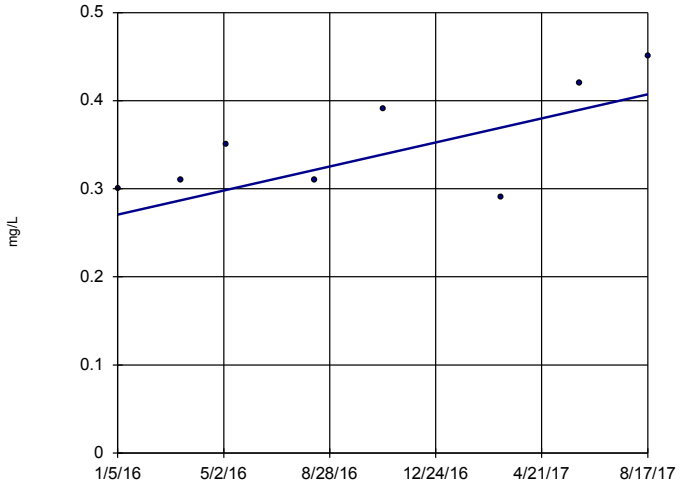
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Fluoride

MW-5A



n = 8

Slope = 0.08456 units per year.

Mann-Kendall statistic = 15 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

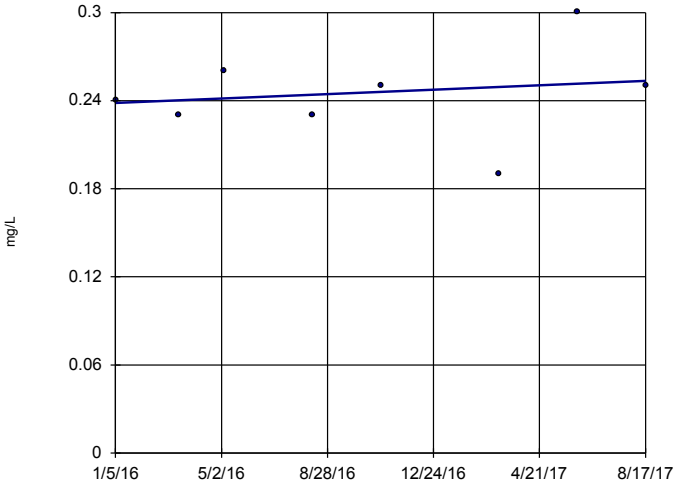
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Fluoride

MW-6



n = 8

Slope = 0.00928 units per year.

Mann-Kendall statistic = 4 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

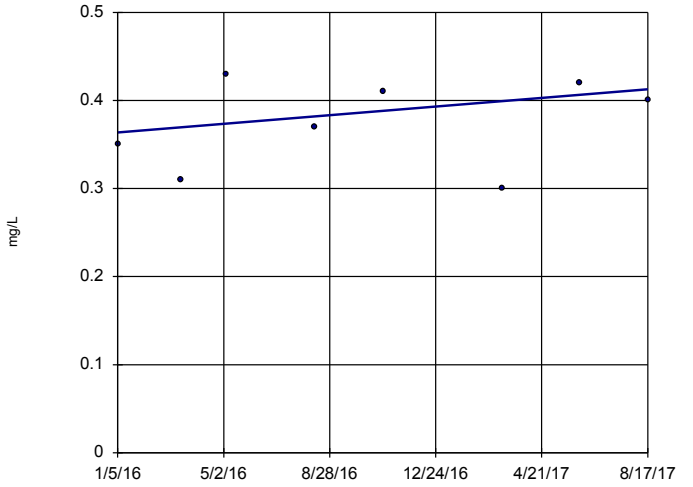
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Fluoride

MW-6A



n = 8

Slope = 0.03022 units per year.

Mann-Kendall statistic = 4 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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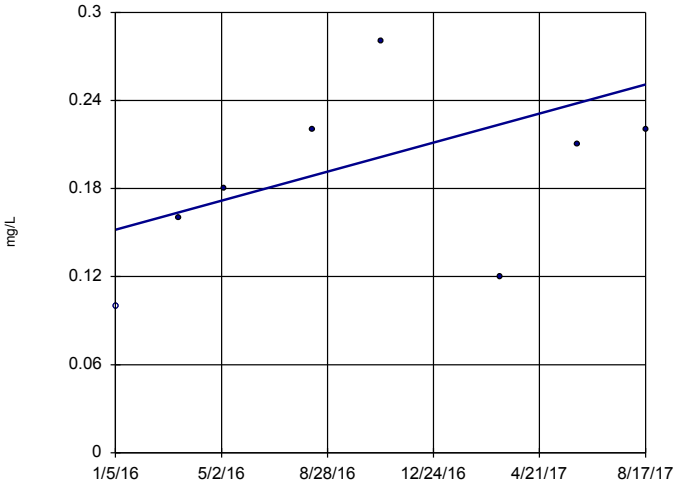
Hollow symbols indicate censored values.

Fluoride

MW-7



n = 8

Slope = 0.06113 units per year.

Mann-Kendall statistic = 13 critical = 20

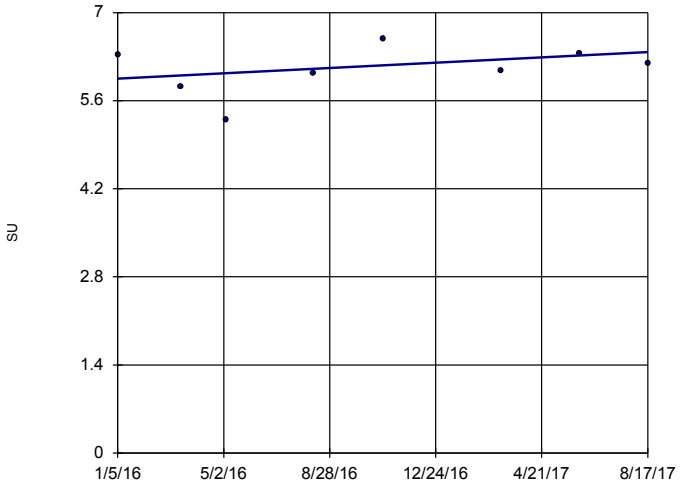
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

pH

MW-2 (bg)



n = 8

Slope = 0.2618 units per year.

Mann-Kendall statistic = 8 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

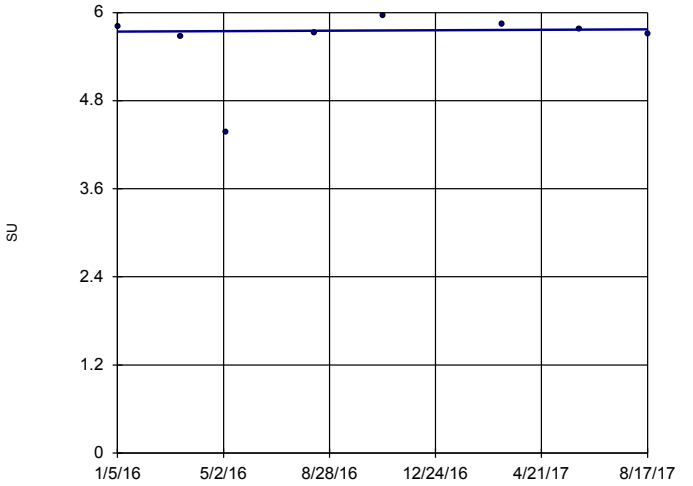
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-3 (bg)



n = 8

Slope = 0.01982 units per year.

Mann-Kendall statistic = 2 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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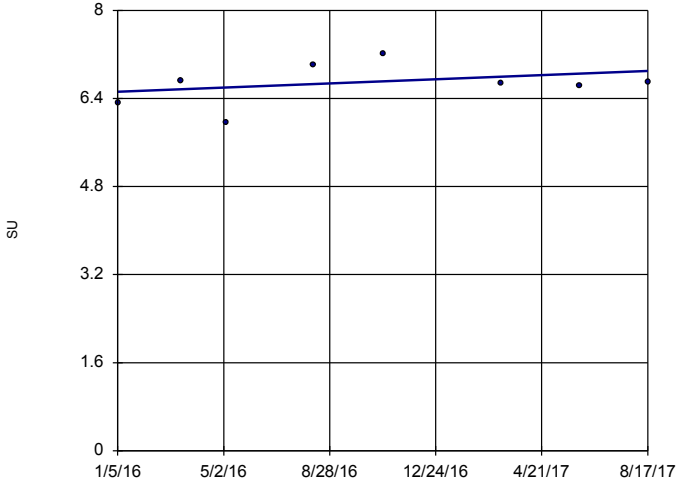
pH

MW-4



n = 8

Slope = 0.2307 units per year.

Mann-Kendall statistic = 4 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

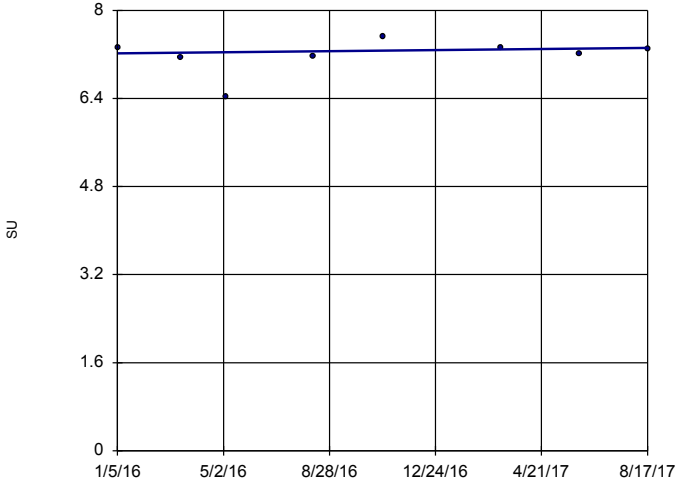
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-5



n = 8

Slope = 0.05967 units per year.

Mann-Kendall statistic = 4 critical = 20

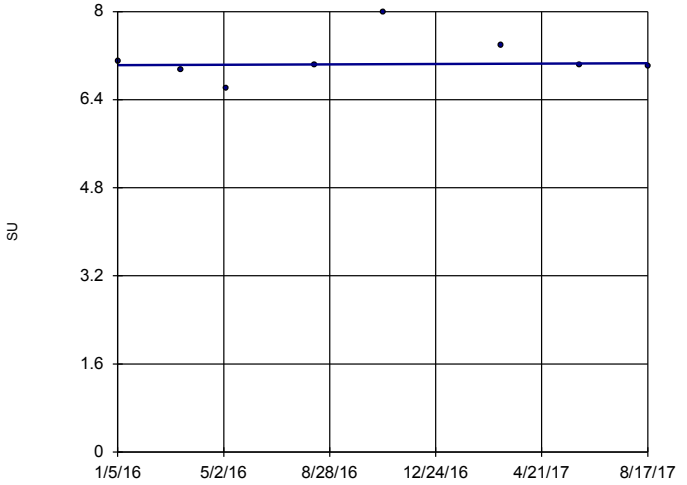
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

pH

MW-5A



n = 8

Slope = 0.0211 units per year.

Mann-Kendall statistic = 1
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

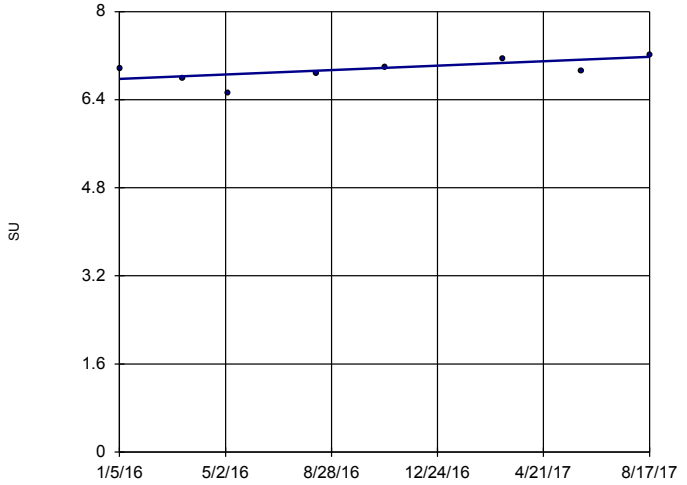
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-6



n = 8

Slope = 0.2471 units per year.

Mann-Kendall statistic = 14
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

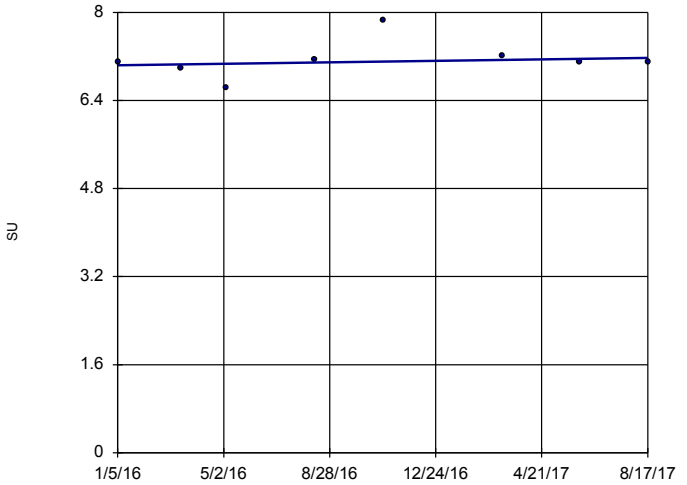
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-6A



n = 8

Slope = 0.08386 units per year.

Mann-Kendall statistic = 7
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

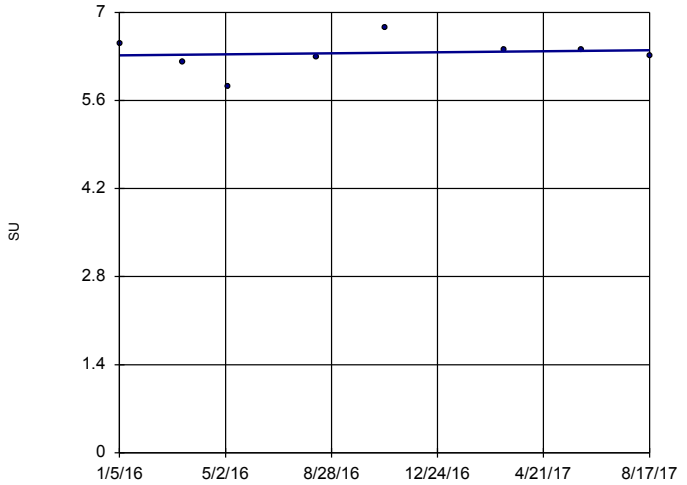
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-7



n = 8

Slope = 0.04935 units per year.

Mann-Kendall statistic = 4
critical = 20

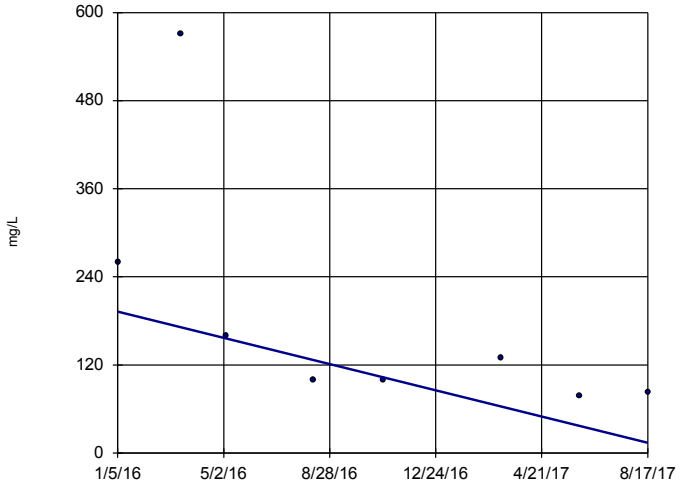
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sulfate

MW-2 (bg)



n = 8

Slope = -110.6 units per year.

Mann-Kendall statistic = -20 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

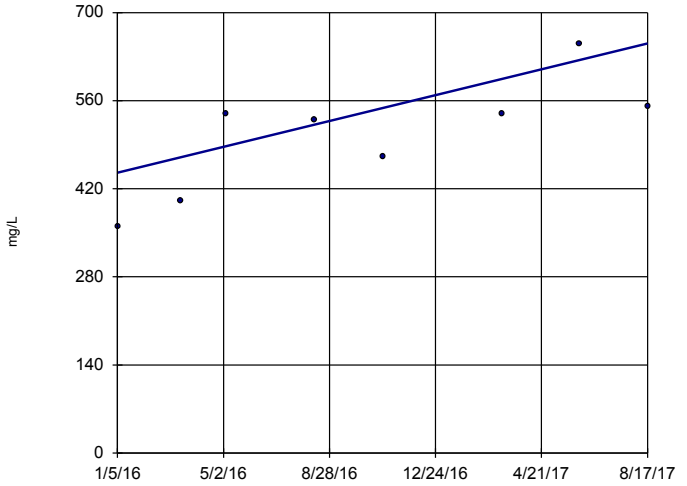
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-3 (bg)



n = 8

Slope = 126.8 units per year.

Mann-Kendall statistic = 19 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

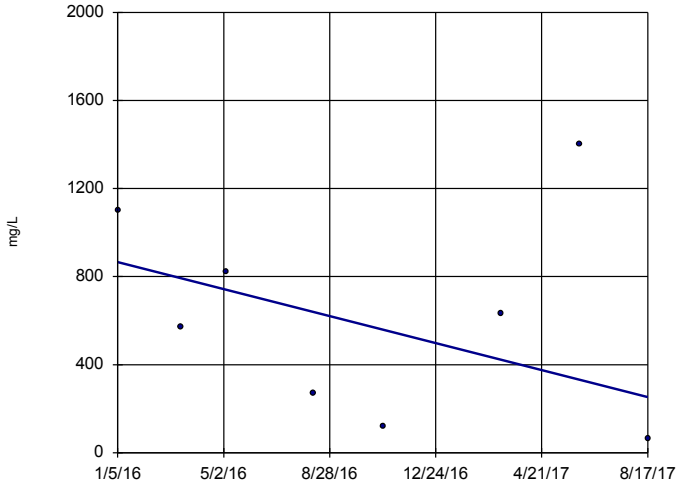
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-4



n = 8

Slope = -379.2 units per year.

Mann-Kendall statistic = -8 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

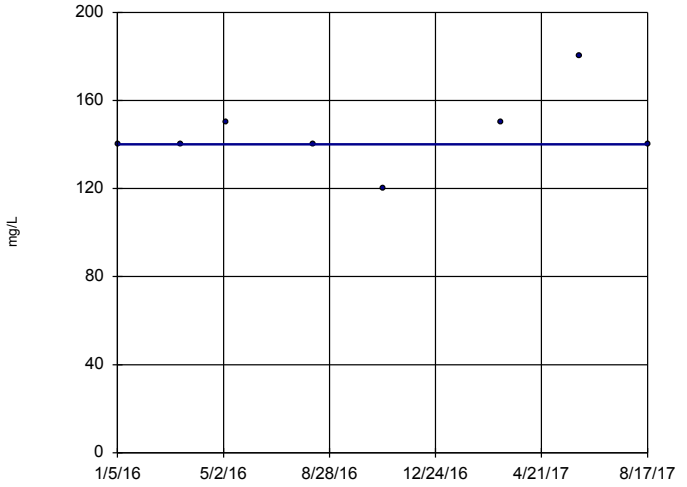
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-5



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 5 critical = 20

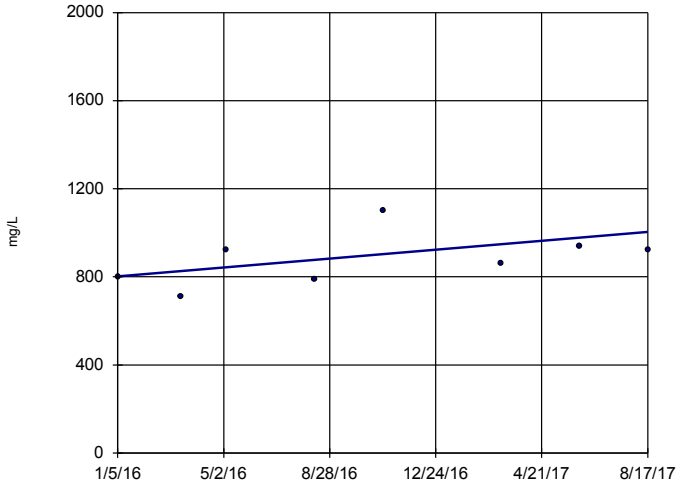
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sulfate

MW-5A



n = 8

Slope = 125.4 units per year.

Mann-Kendall statistic = 11 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

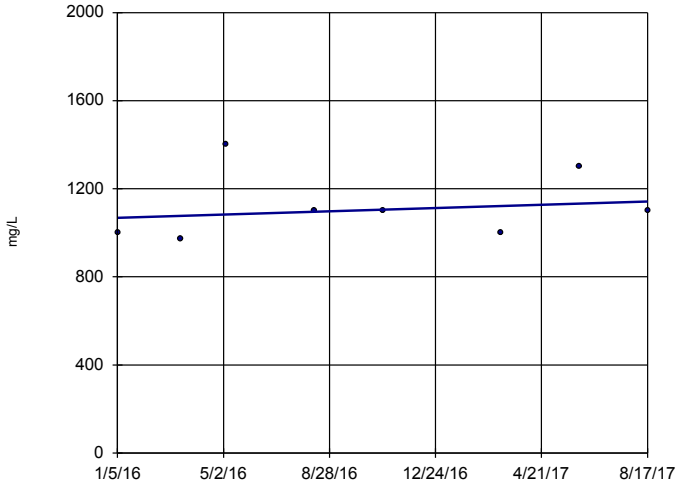
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6



n = 8

Slope = 46.31 units per year.

Mann-Kendall statistic = 6 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

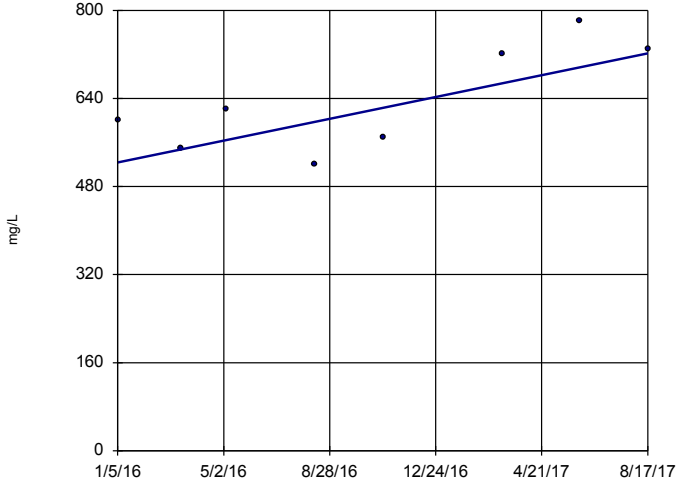
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6A



n = 8

Slope = 122.7 units per year.

Mann-Kendall statistic = 14 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

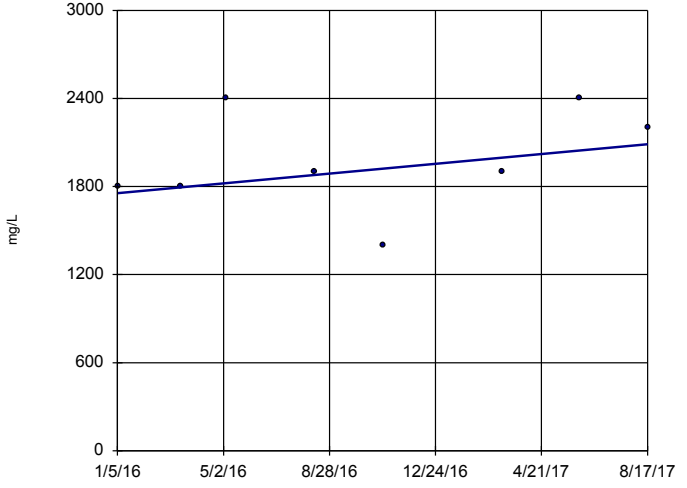
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-7



n = 8

Slope = 206.6 units per year.

Mann-Kendall statistic = 9 critical = 20

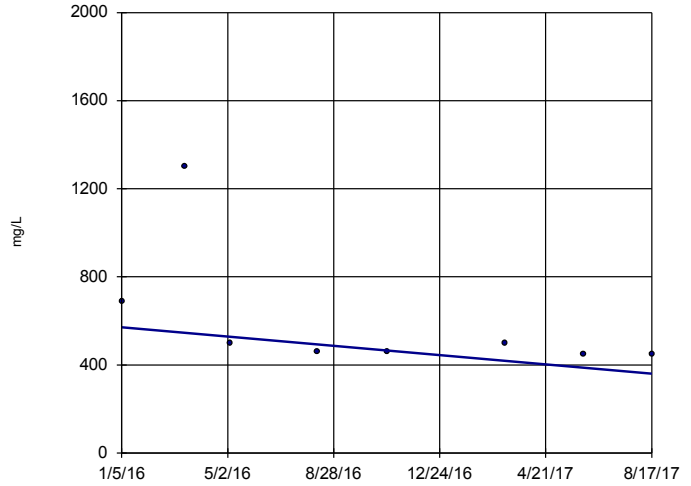
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Total Dissolved Solids

MW-2 (bg)



n = 8

Slope = -130.2 units per year.

Mann-Kendall statistic = -19 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

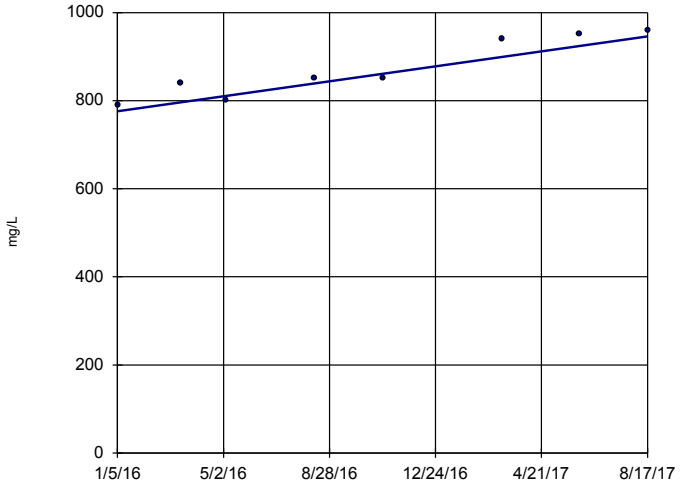
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-3 (bg)



n = 8

Slope = 105 units per year.

Mann-Kendall statistic = 25 critical = 20

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

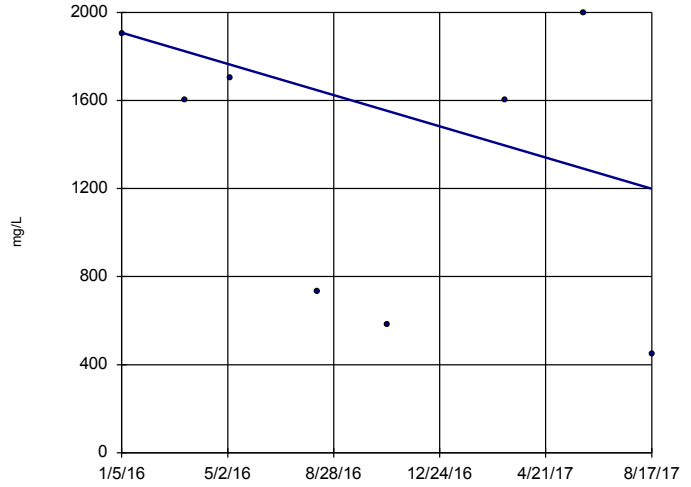
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-4



n = 8

Slope = -439 units per year.

Mann-Kendall statistic = -9 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

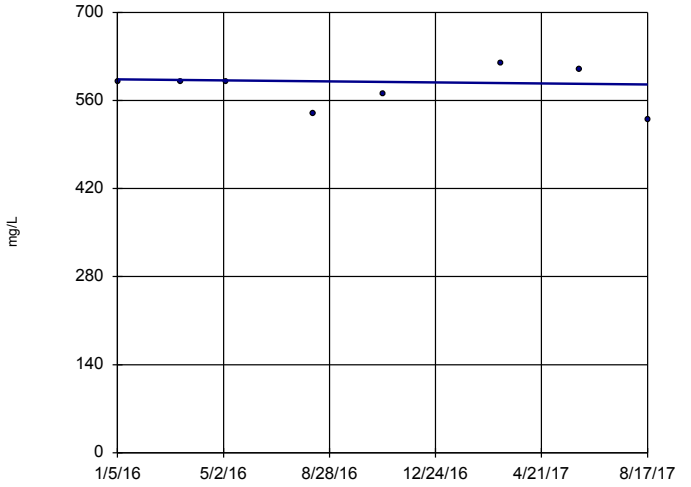
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-5



n = 8

Slope = -4.906 units per year.

Mann-Kendall statistic = -3 critical = -20

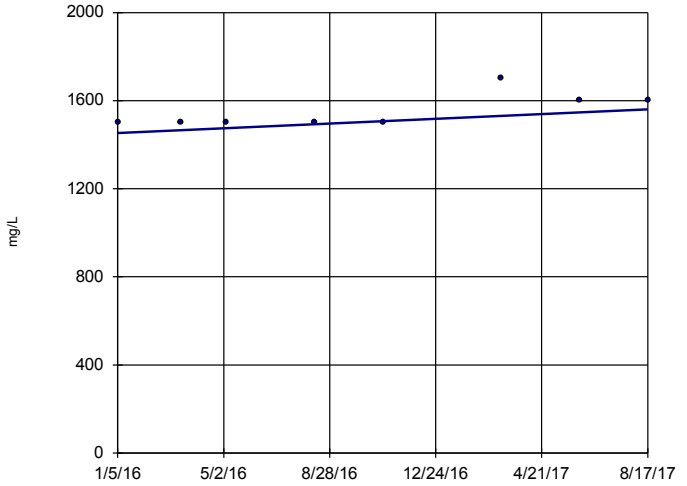
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Total Dissolved Solids

MW-5A



n = 8

Slope = 66.1 units per year.

Mann-Kendall statistic = 13 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

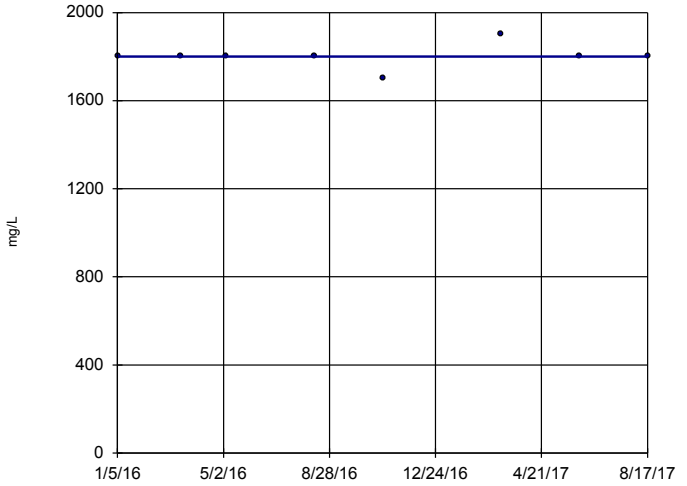
Sen's Slope Estimator Analysis Run 1/23/2018 3:09 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-6



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 1 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

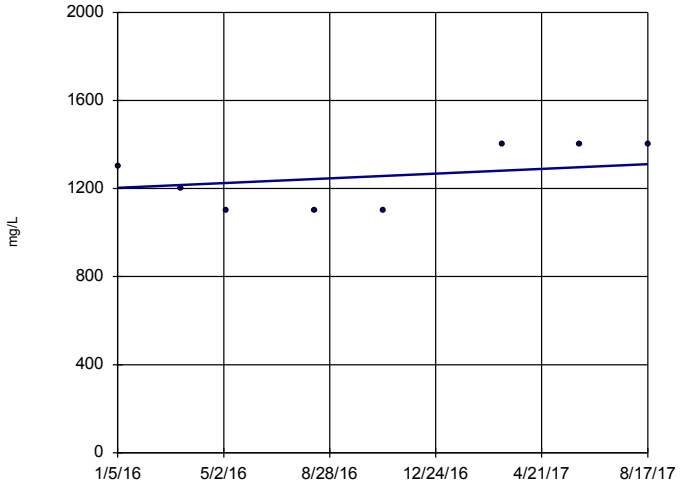
Sen's Slope Estimator Analysis Run 1/23/2018 3:09 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-6A



n = 8

Slope = 66.44 units per year.

Mann-Kendall statistic = 8 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

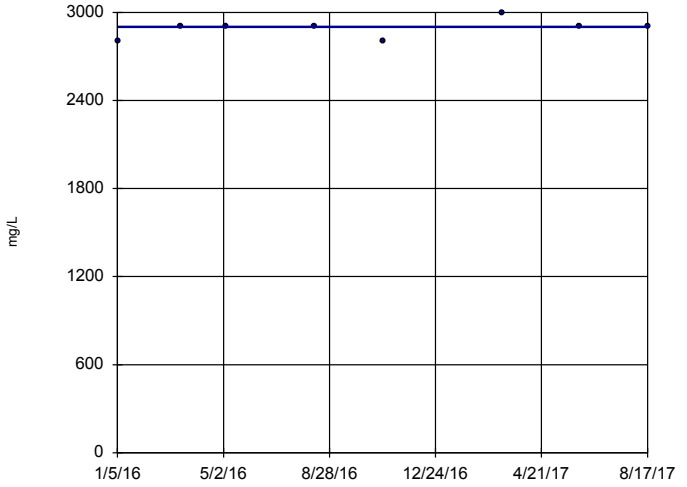
Sen's Slope Estimator Analysis Run 1/23/2018 3:09 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-7



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 7 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:09 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Trend Test

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3 only Printed 1/23/2018, 3:10 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-2 (bg)	-0.08868	-16	-20	No	8	0	n/a	n/a	0.02	NP
Boron (mg/L)	**MW-3 (bg)**	**-0.01797**	**-21**	**-20**	**Yes**	**8**	**50**	**n/a**	**n/a**	**0.02**	**NP**
Boron (mg/L)	MW-4	0	-1	-20	No	8	62.5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5	0	0	20	No	8	12.5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5A	0.03993	18	20	No	8	12.5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6	0.06117	14	20	No	8	12.5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6A	0.08497	19	20	No	8	12.5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-7	0	2	20	No	8	12.5	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2 (bg)	-0.8333	-2	-20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3 (bg)	15.6	18	20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4	-36.95	-6	-20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	-4.395	-3	-20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5A	16.74	10	20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	7.67	8	20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6A	25.16	12	20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7	-5.401	0	20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2 (bg)	0	-8	-20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3 (bg)	-24.13	-20	-20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4	-27.17	-8	-20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	0.3955	10	20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5A	-5.487	-8	-20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	1.735	14	20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6A	-9.402	-10	-20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7	3.19	7	20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2 (bg)	-0.02016	-8	-20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3 (bg)	-0.1295	-16	-20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4	-0.00...	0	20	No	8	12.5	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	-0.0291	-4	-20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5A	0.08456	15	20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.00928	4	20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6A	0.03022	4	20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7	0.06113	13	20	No	8	12.5	n/a	n/a	0.02	NP
pH (SU)	MW-2 (bg)	0.2618	8	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-3 (bg)	0.01982	2	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-4	0.2307	4	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-5	0.05967	4	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-5A	0.0211	1	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-6	0.2471	14	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-6A	0.08386	7	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-7	0.04935	4	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2 (bg)	-110.6	-20	-20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3 (bg)	126.8	19	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4	-379.2	-8	-20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	0	5	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5A	125.4	11	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	46.31	6	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6A	122.7	14	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7	206.6	9	20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2 (bg)	-130.2	-19	-20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	**MW-3 (bg)**	**105**	**25**	**20**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.02**	**NP**

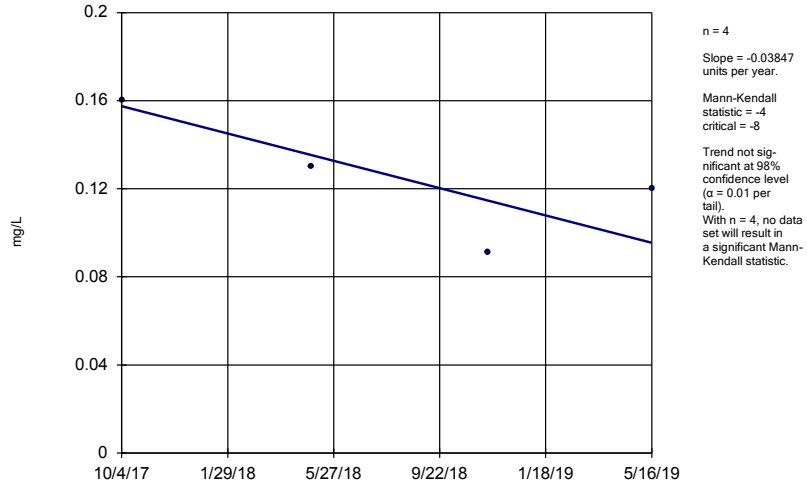
Trend Test

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3 only Printed 1/23/2018, 3:10 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Total Dissolved Solids (mg/L)	MW-4	-439	-9	-20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-4.906	-3	-20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5A	66.1	13	20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	0	1	20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6A	66.44	8	20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7	0	7	20	No	8	0	n/a	n/a	0.02	NP

Boron

MW-2 (bg)



n = 4

Slope = -0.03847 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

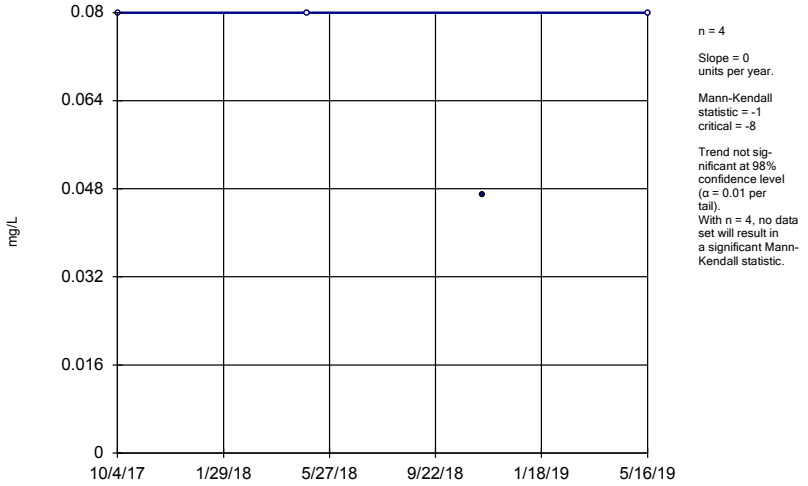
Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Boron

MW-3 (bg)



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Boron

MW-4

n = 4

Slope = 0 units per year.

Mann-Kendall statistic = -1
critical = -8

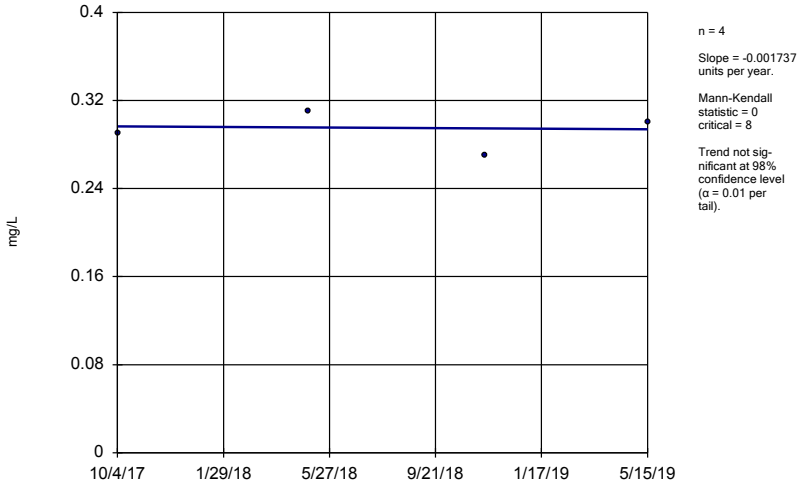
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Boron

MW-5



n = 4

Slope = -0.001737 units per year.

Mann-Kendall statistic = 0
critical = 8

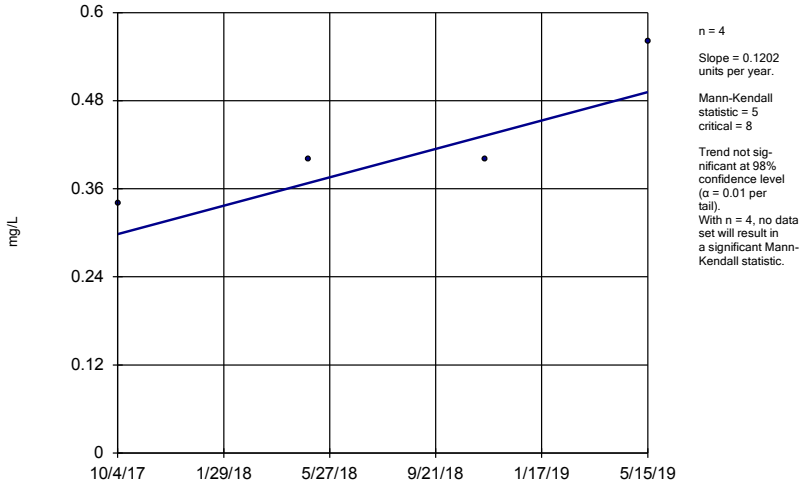
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Boron

MW-5A



n = 4

Slope = 0.1202 units per year.

Mann-Kendall statistic = 5
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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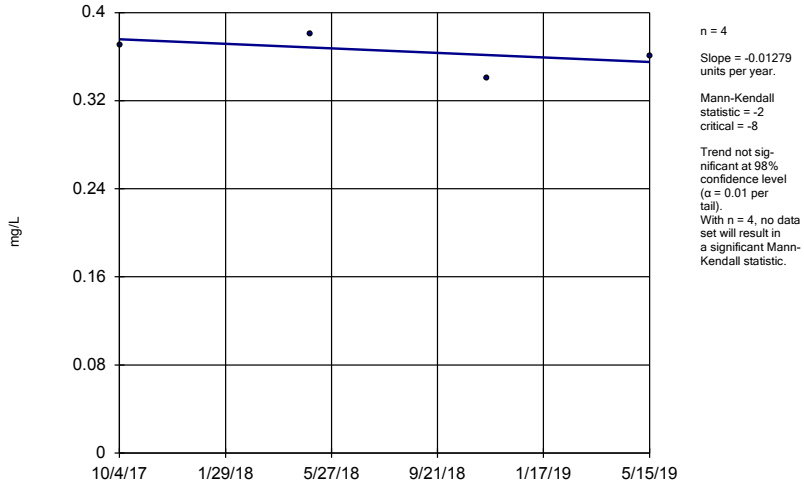
Boron

MW-6



n = 4

Slope = -0.01279 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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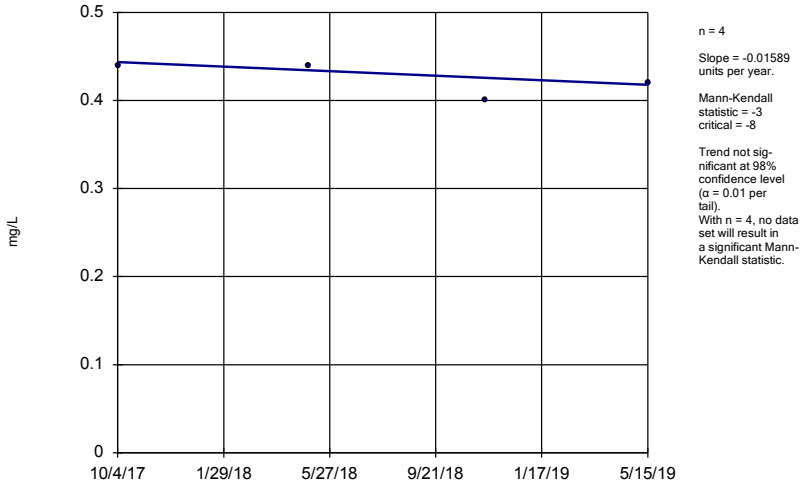
Boron

MW-6A



n = 4

Slope = -0.01589 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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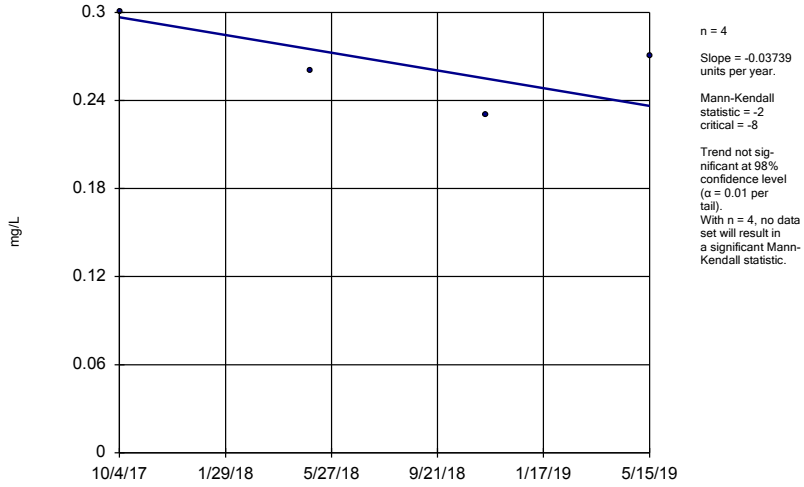
Boron

MW-7 (bg)



n = 4

Slope = -0.03739 units per year.

Mann-Kendall statistic = -2
critical = -8

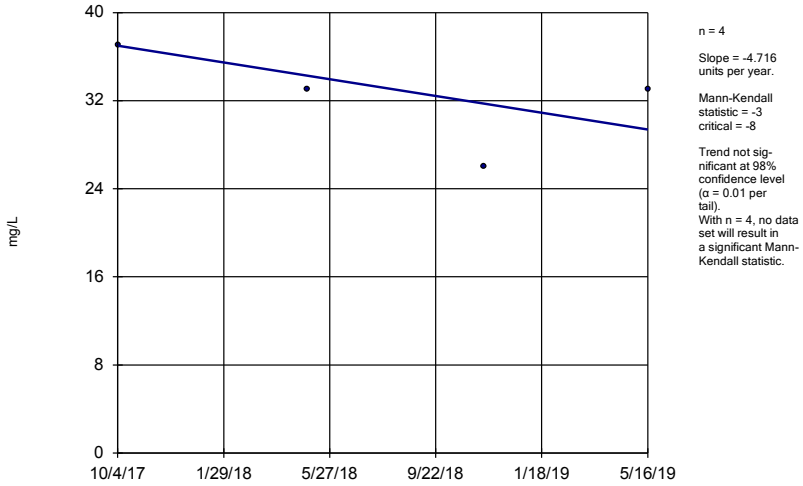
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Calcium

MW-2 (bg)



n = 4

Slope = -4.716 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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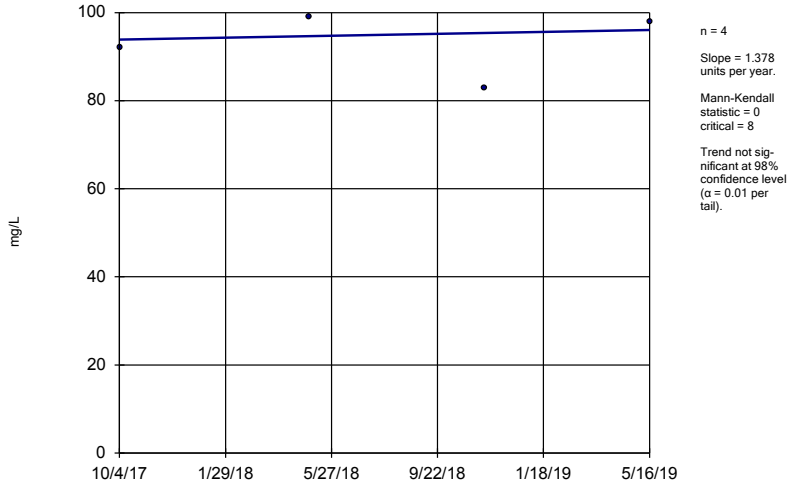
Calcium

MW-3 (bg)



n = 4

Slope = 1.378 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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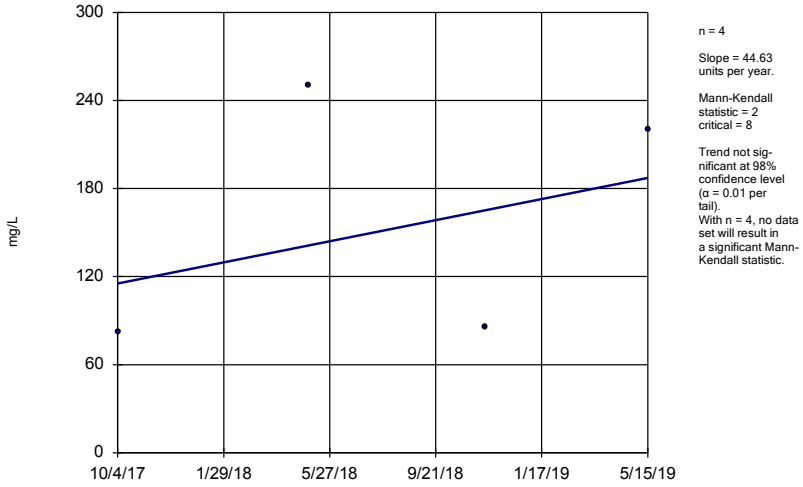
Calcium

MW-4



n = 4

Slope = 44.63 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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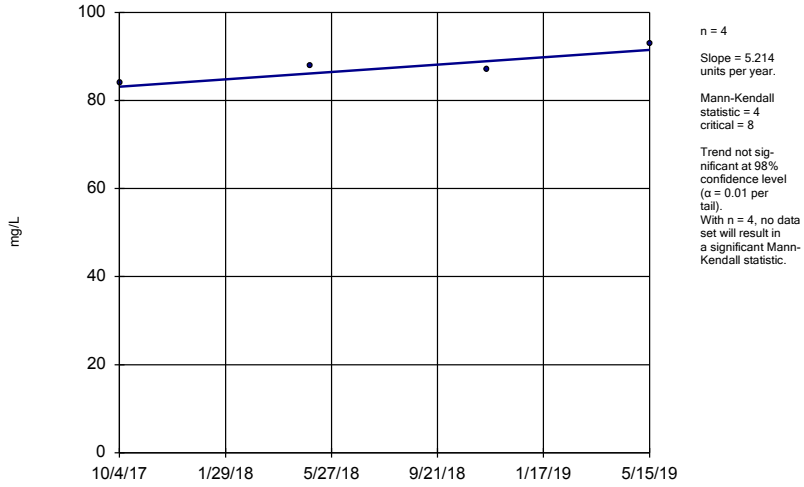
Calcium

MW-5



n = 4

Slope = 5.214 units per year.

Mann-Kendall statistic = 4
critical = 8

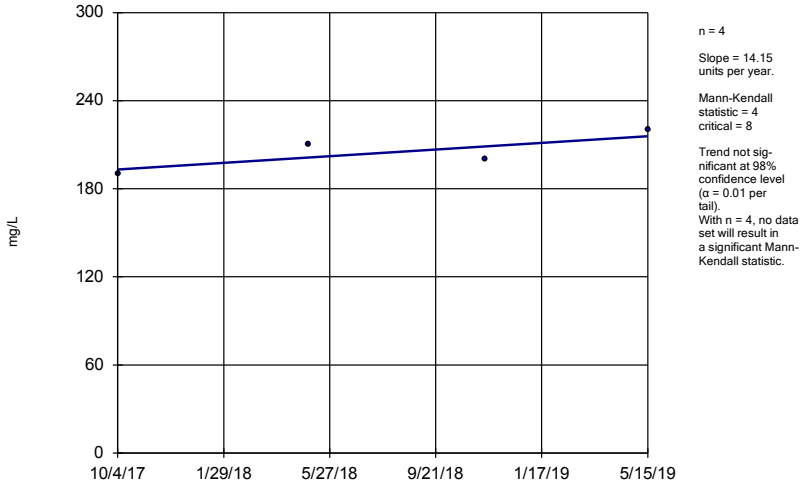
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Calcium

MW-5A



n = 4

Slope = 14.15 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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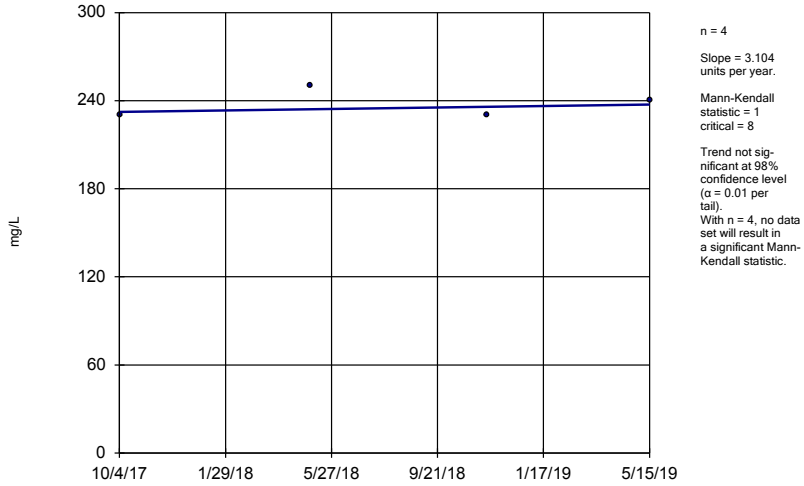
Calcium

MW-6



n = 4

Slope = 3.104 units per year.

Mann-Kendall statistic = 1
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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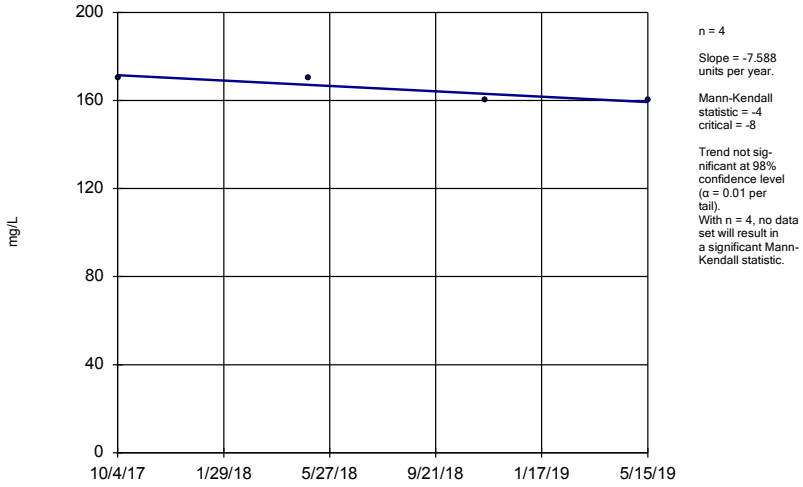
Calcium

MW-6A



n = 4

Slope = -7.588 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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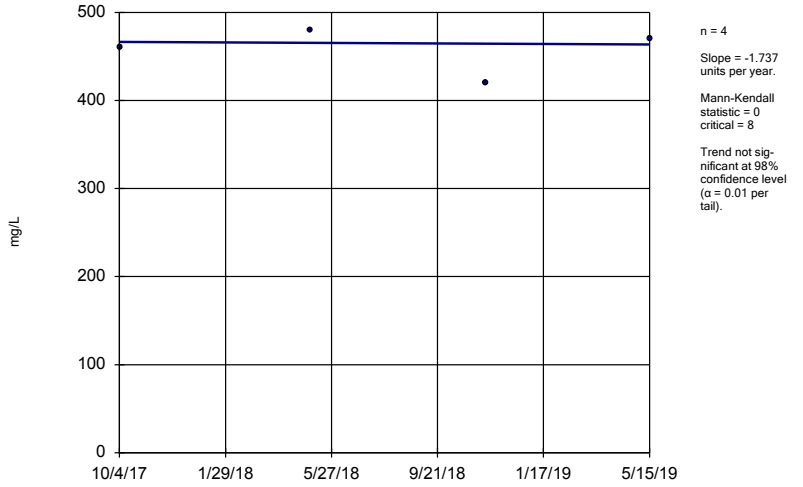
Calcium

MW-7 (bg)



n = 4

Slope = -1.737 units per year.

Mann-Kendall statistic = 0
critical = 8

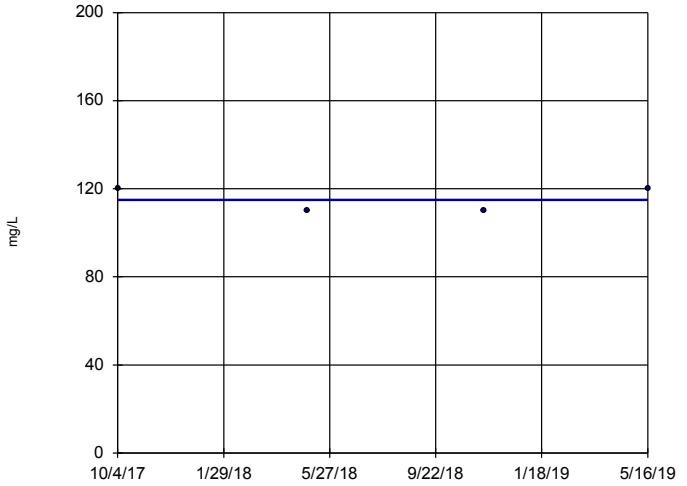
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Chloride

MW-2 (bg)



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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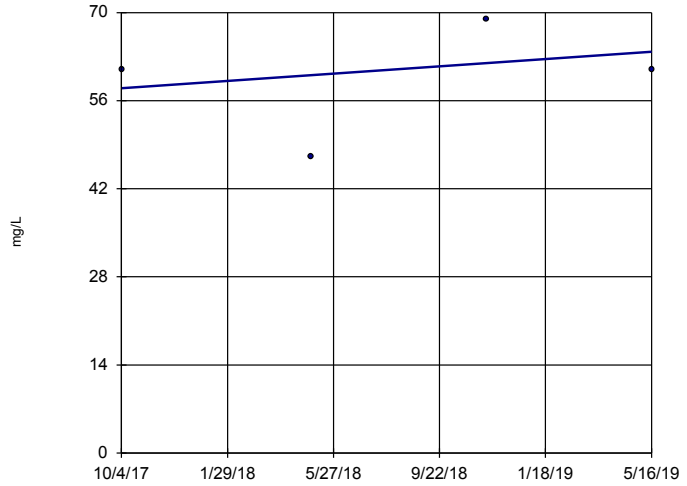
Chloride

MW-3 (bg)



n = 4

Slope = 3.596 units per year.

Mann-Kendall statistic = 1 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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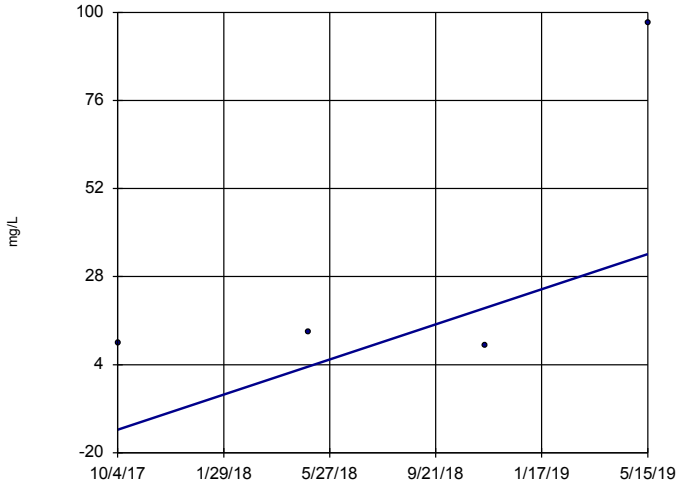
Chloride

MW-4



n = 4

Slope = 29.71 units per year.

Mann-Kendall statistic = 2 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

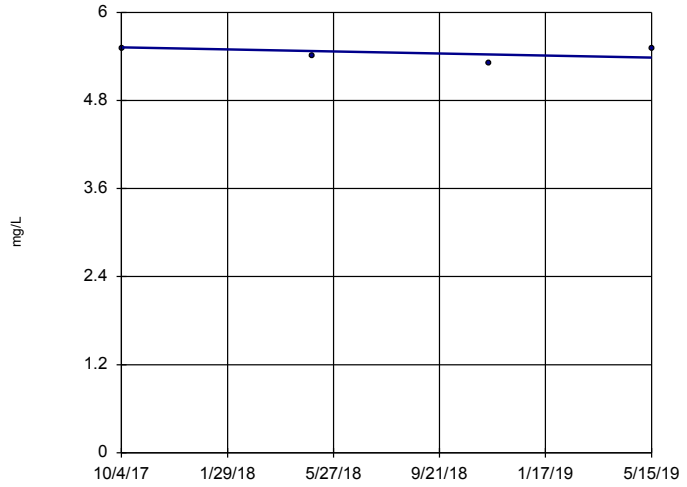
Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-5



n = 4

Slope = -0.08649 units per year.

Mann-Kendall statistic = -1 critical = -8

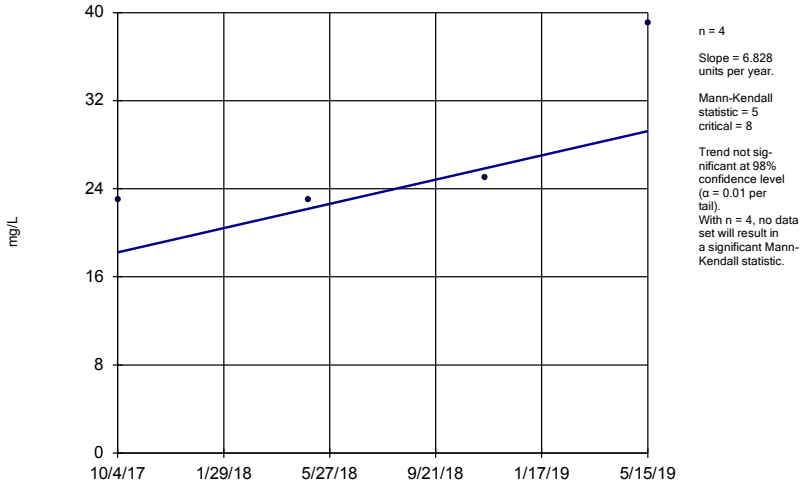
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Chloride

MW-5A



n = 4

Slope = 6.828 units per year.

Mann-Kendall statistic = 5 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

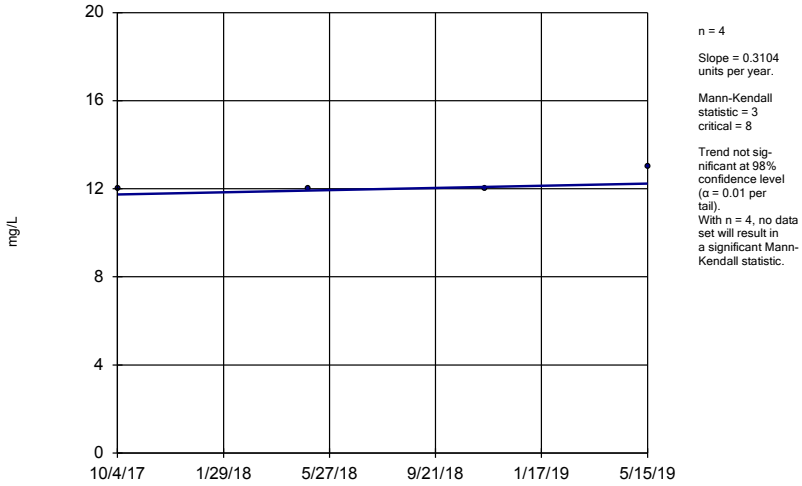
Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-6



n = 4

Slope = 0.3104 units per year.

Mann-Kendall statistic = 3 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

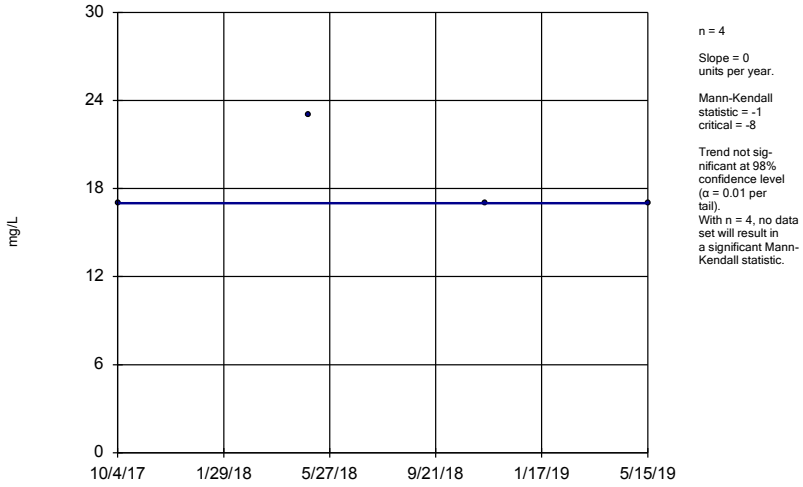
Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-6A



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = -1 critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

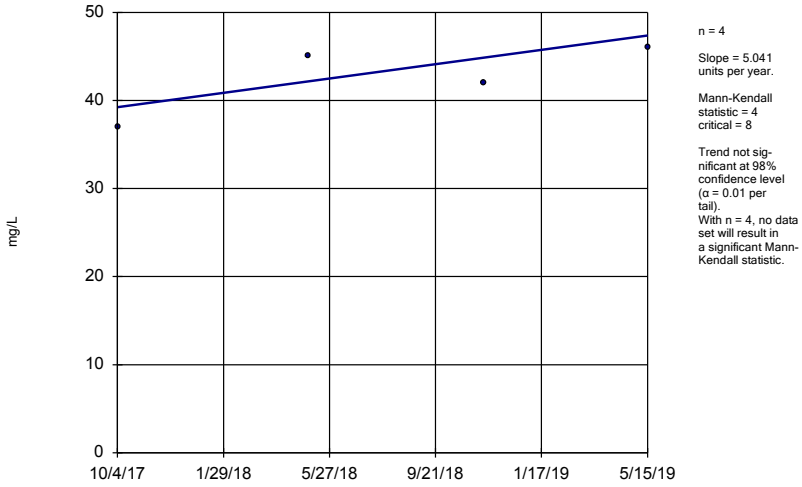
Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-7 (bg)



n = 4

Slope = 5.041 units per year.

Mann-Kendall statistic = 4 critical = 8

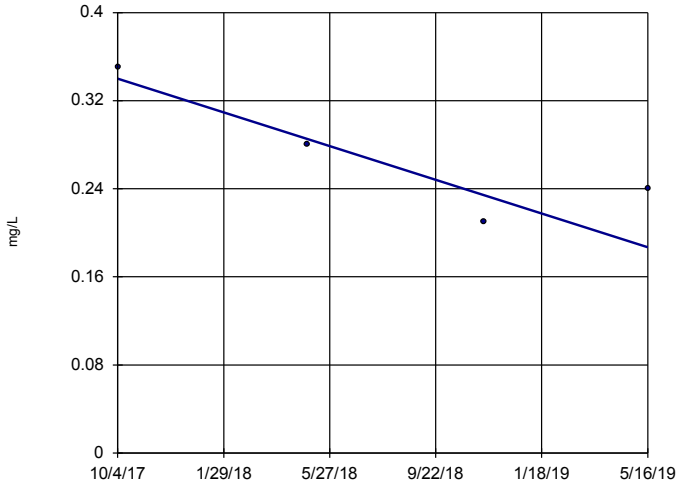
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Fluoride

MW-2 (bg)



n = 4

Slope = -0.09492 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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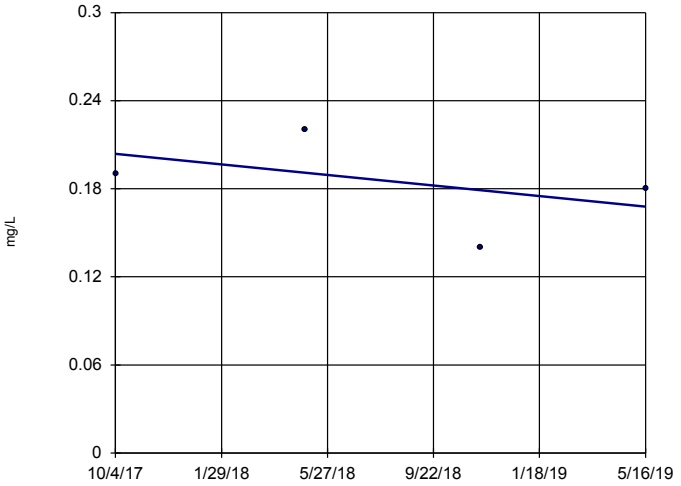
Fluoride

MW-3 (bg)



n = 4

Slope = -0.02236 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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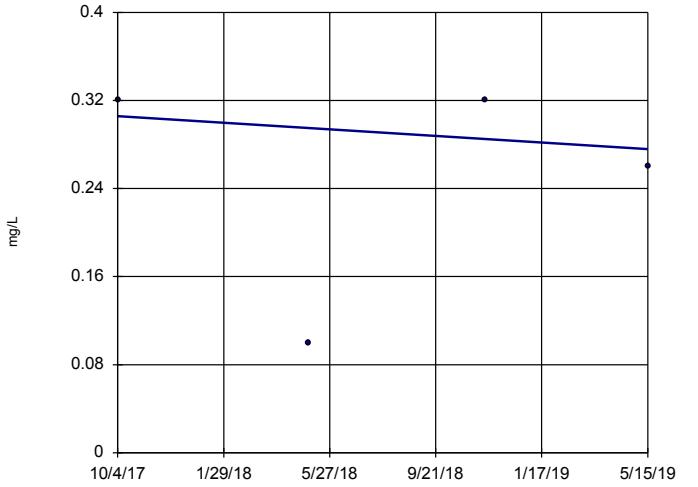
Fluoride

MW-4



n = 4

Slope = -0.01862 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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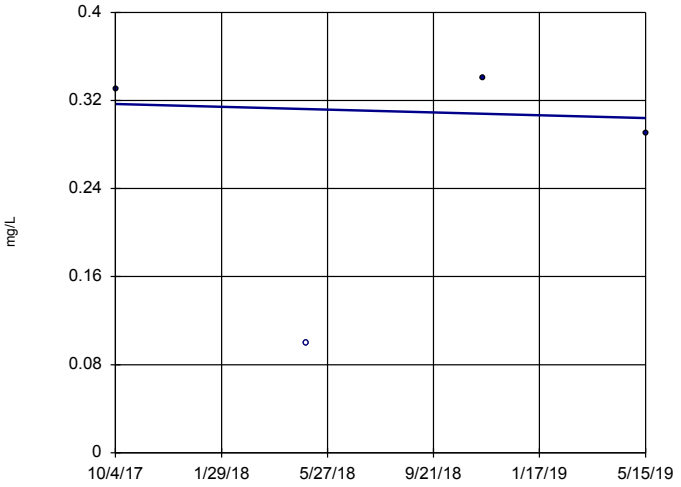
Hollow symbols indicate censored values.

Fluoride

MW-5



n = 4

Slope = -0.007931 units per year.

Mann-Kendall statistic = 0
critical = 8

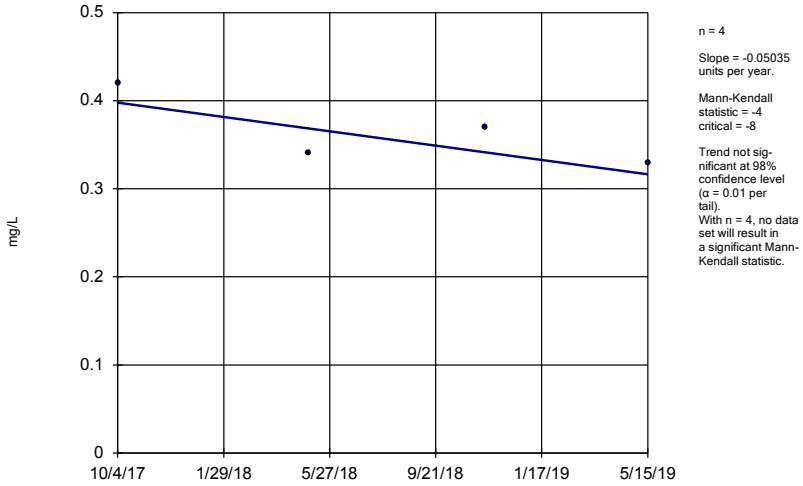
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Fluoride

MW-5A



n = 4

Slope = -0.05035 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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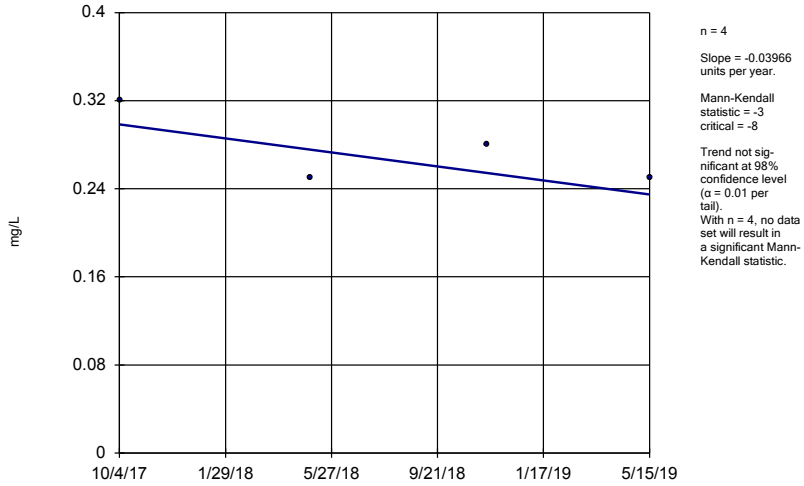
Fluoride

MW-6



n = 4

Slope = -0.03966 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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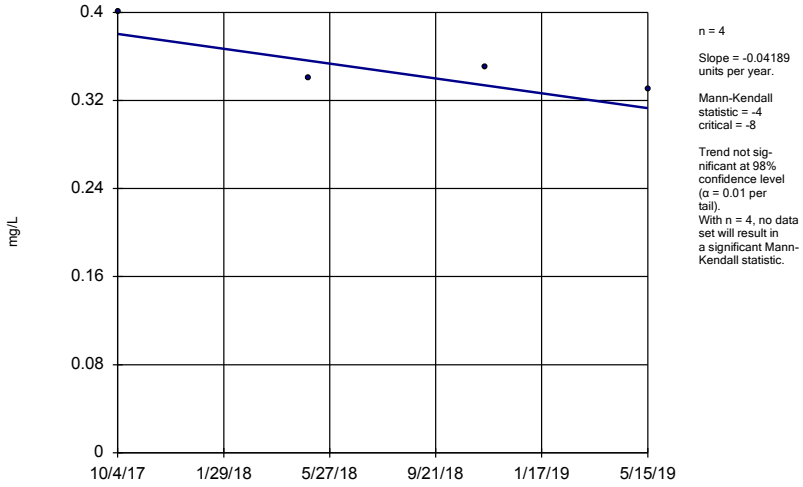
Fluoride

MW-6A



n = 4

Slope = -0.04189 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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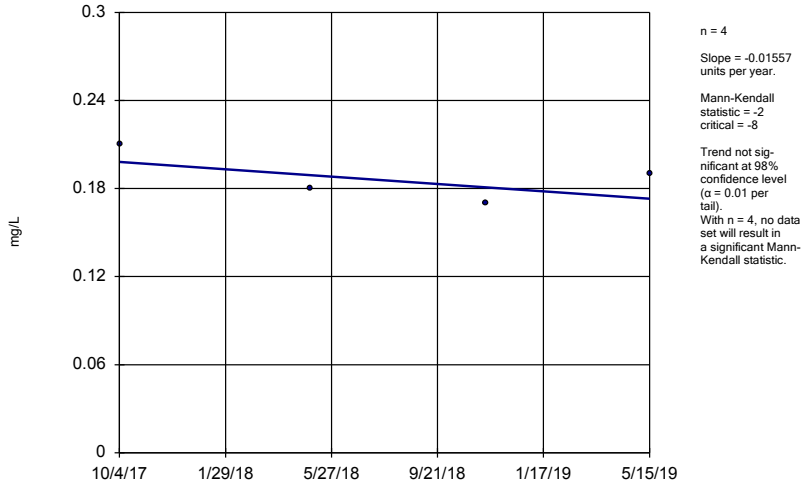
Fluoride

MW-7 (bg)



n = 4

Slope = -0.01557 units per year.

Mann-Kendall statistic = -2
critical = -8

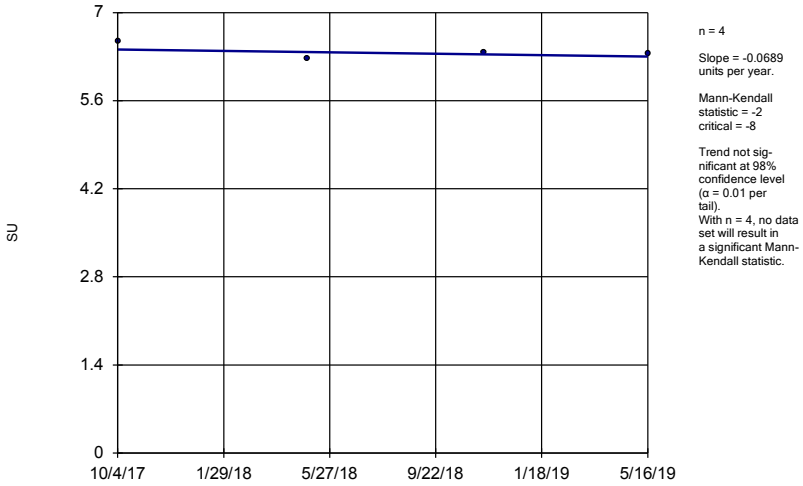
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

pH

MW-2 (bg)



n = 4

Slope = -0.0689 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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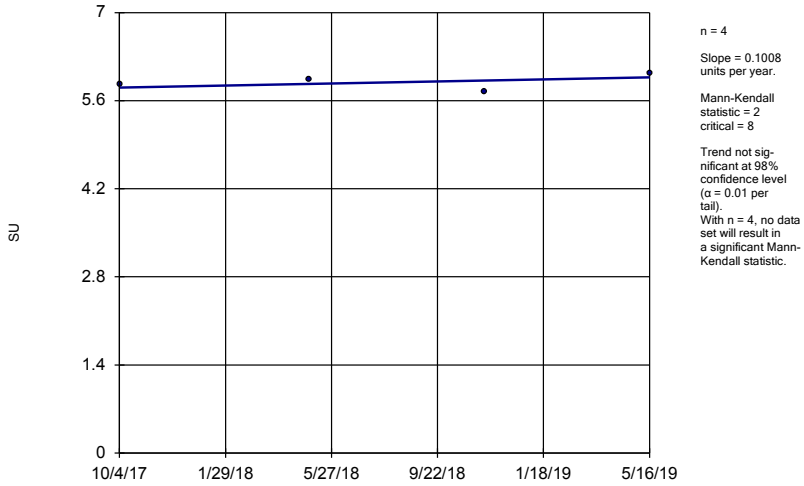
pH

MW-3 (bg)



n = 4

Slope = 0.1008 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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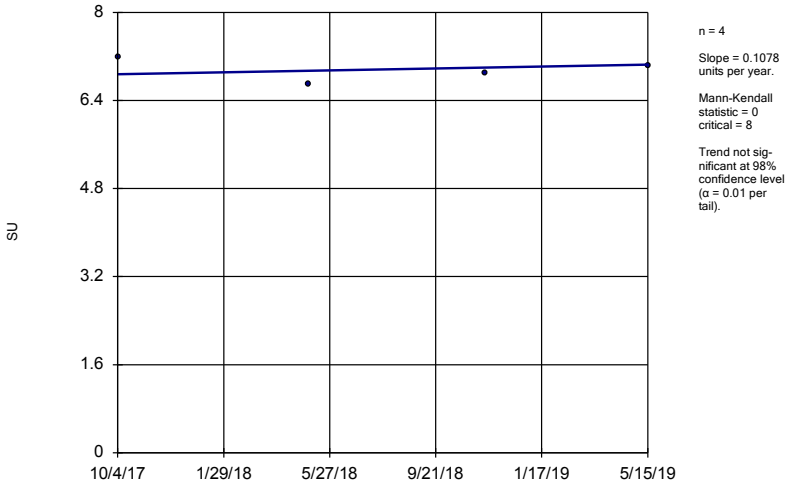
pH

MW-4



n = 4

Slope = 0.1078 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

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The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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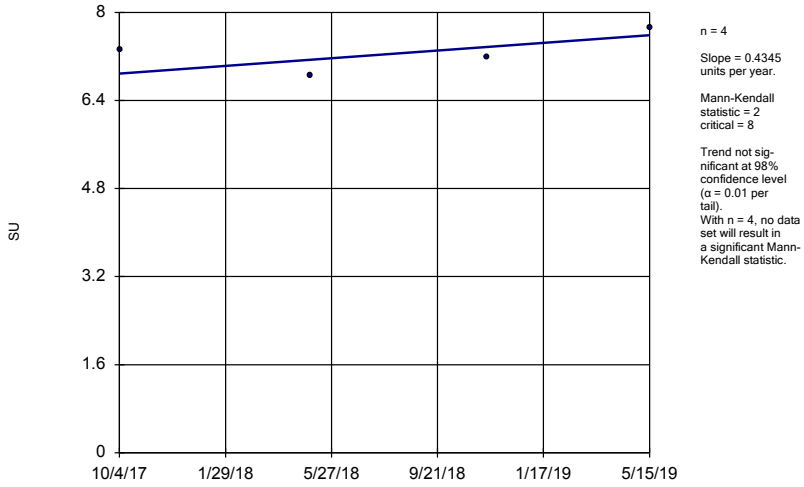
pH

MW-5



n = 4

Slope = 0.4345 units per year.

Mann-Kendall statistic = 2
critical = 8

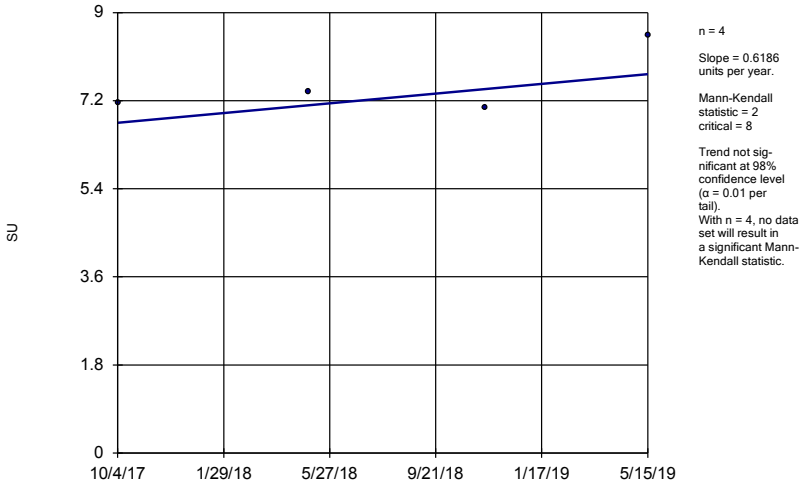
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

pH

MW-5A



n = 4

Slope = 0.6186 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

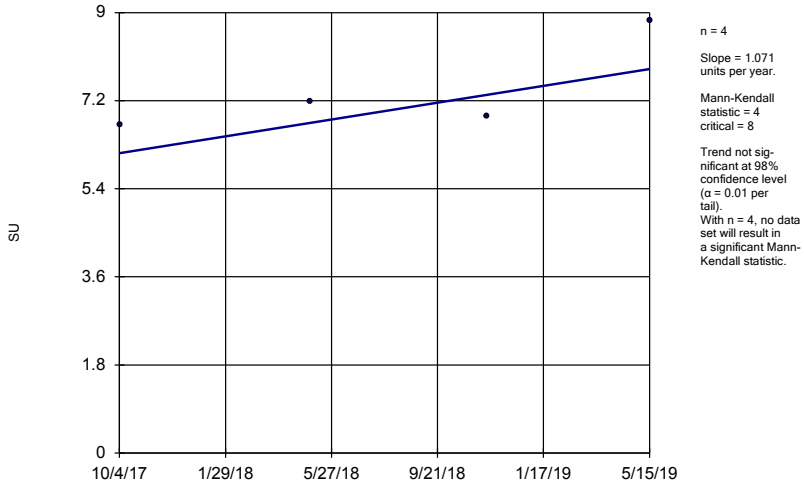
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-6



n = 4

Slope = 1.071 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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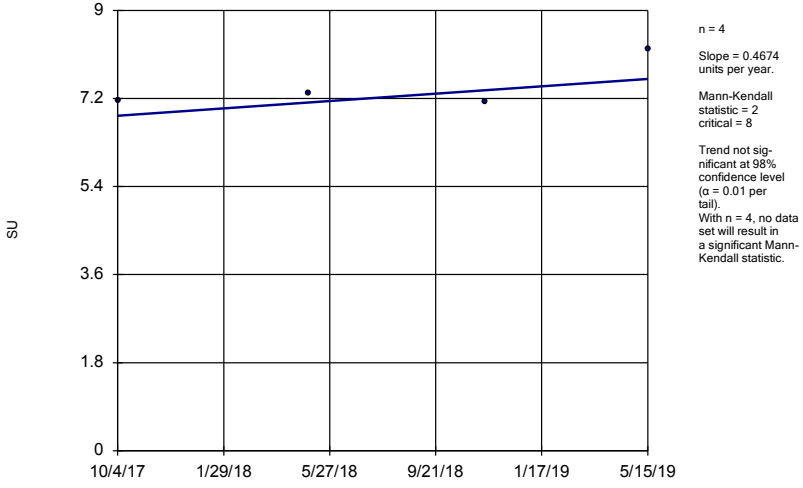
pH

MW-6A



n = 4

Slope = 0.4674 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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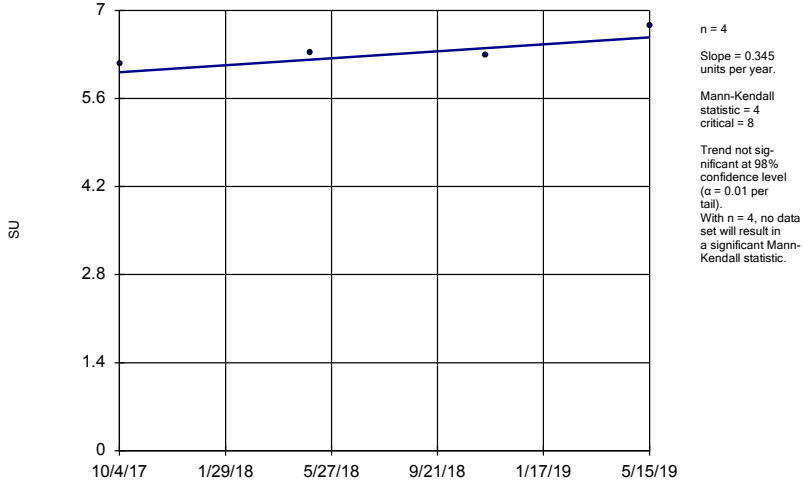
pH

MW-7 (bg)



n = 4

Slope = 0.345 units per year.

Mann-Kendall statistic = 4
critical = 8

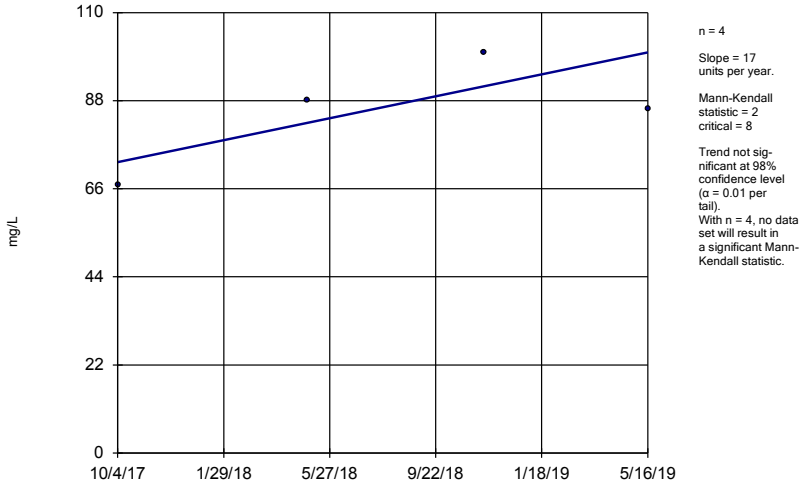
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sulfate

MW-2 (bg)



n = 4

Slope = 17 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

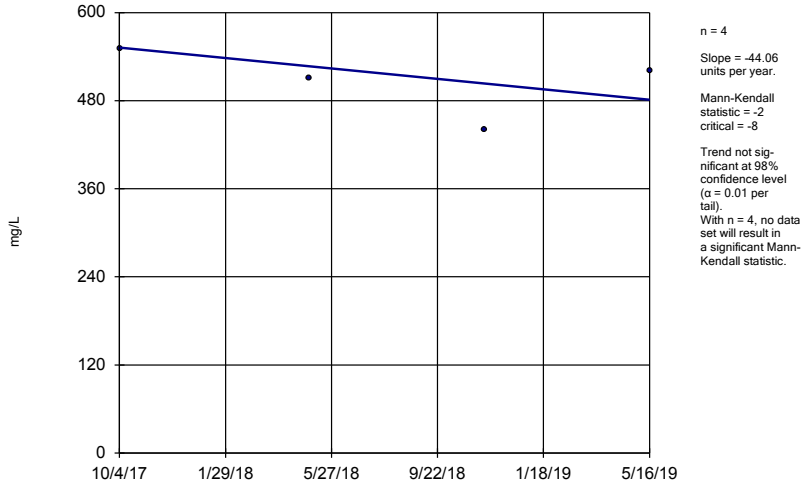
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-3 (bg)



n = 4

Slope = -44.06 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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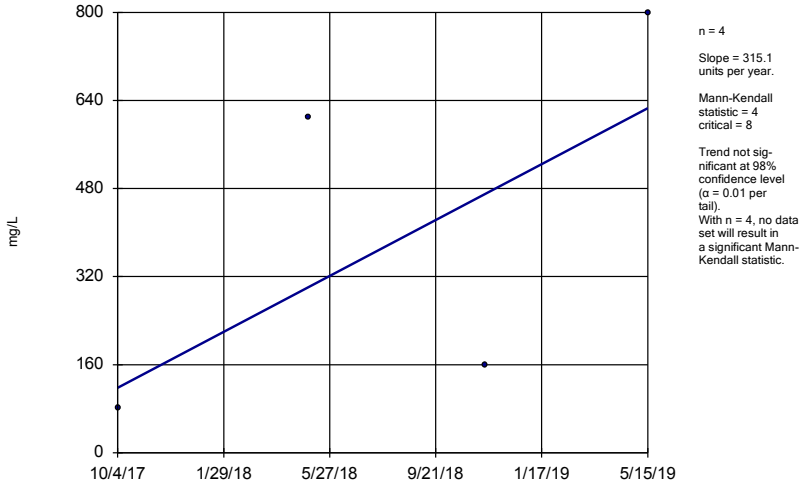
Sulfate

MW-4



n = 4

Slope = 315.1 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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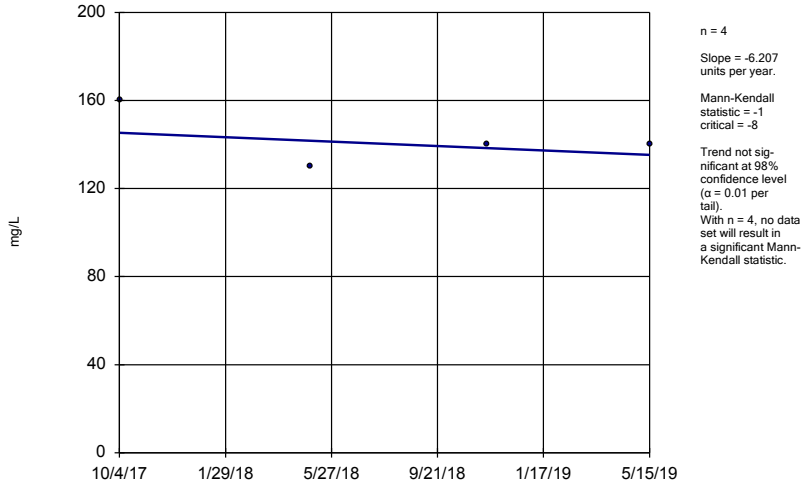
Sulfate

MW-5



n = 4

Slope = -6.207 units per year.

Mann-Kendall statistic = -1
critical = -8

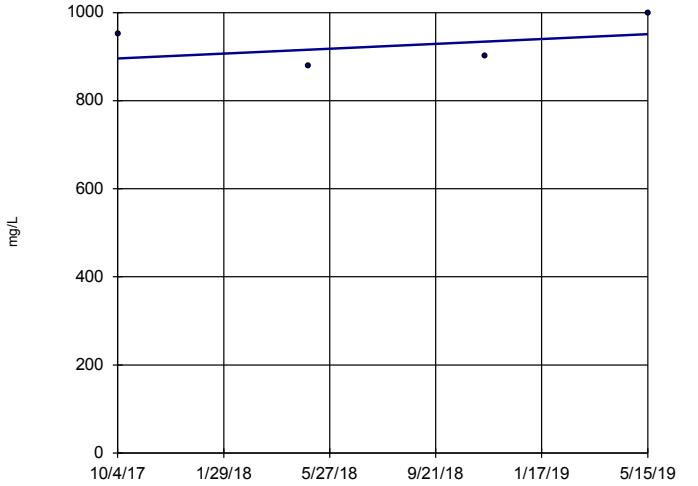
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sulfate

MW-5A



n = 4

Slope = 34.14 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

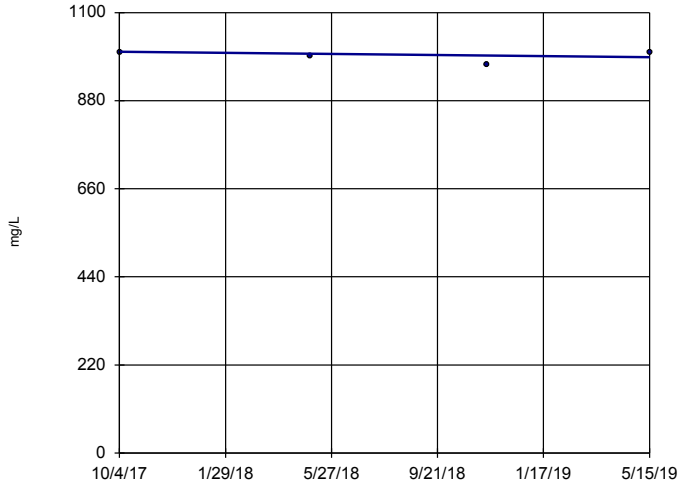
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6



n = 4

Slope = -8.649 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

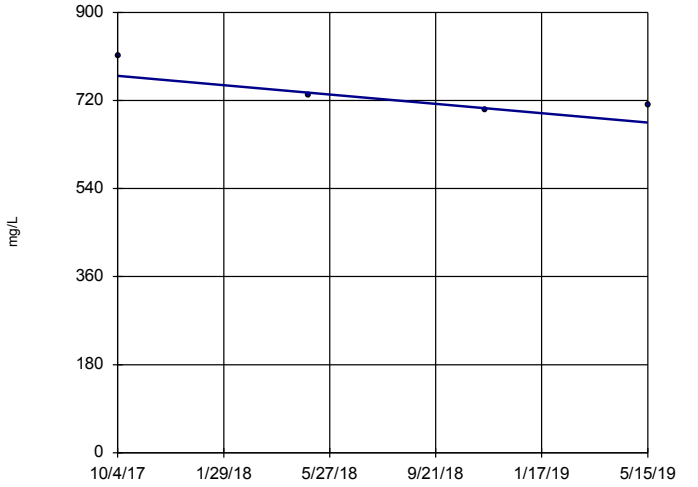
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6A



n = 4

Slope = -58.97 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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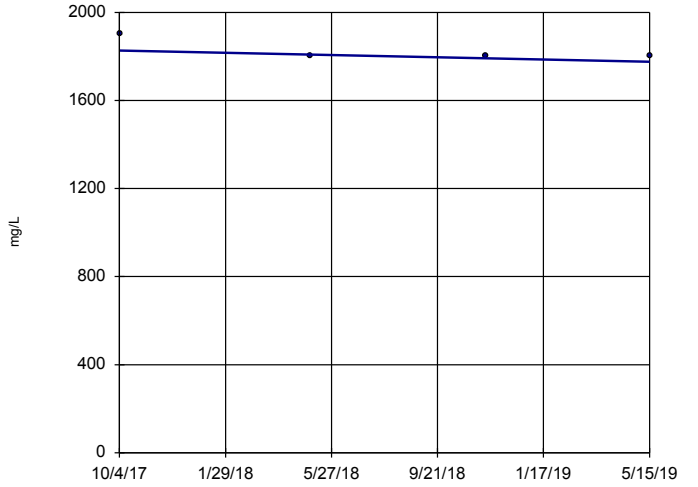
Sulfate

MW-7 (bg)



n = 4

Slope = -31.04 units per year.

Mann-Kendall statistic = -3
critical = -8

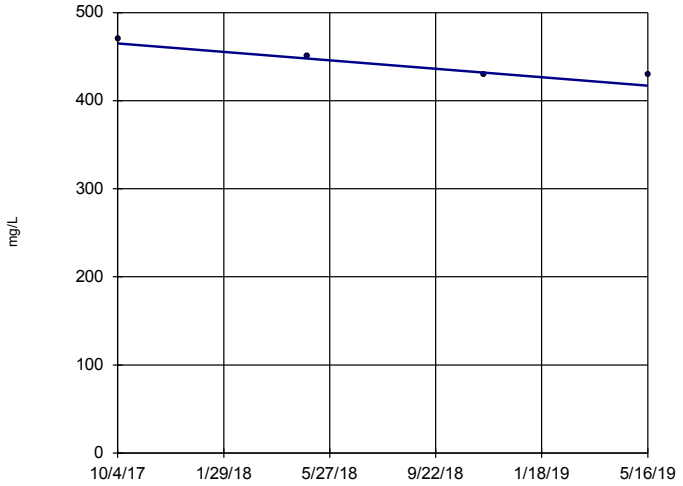
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Total Dissolved Solids

MW-2 (bg)



n = 4

Slope = -29.77 units per year.

Mann-Kendall statistic = -5
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

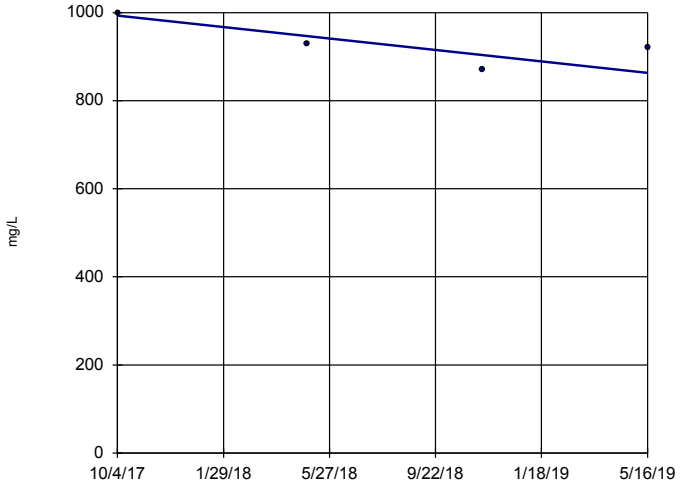
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-3 (bg)



n = 4

Slope = -80.66 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

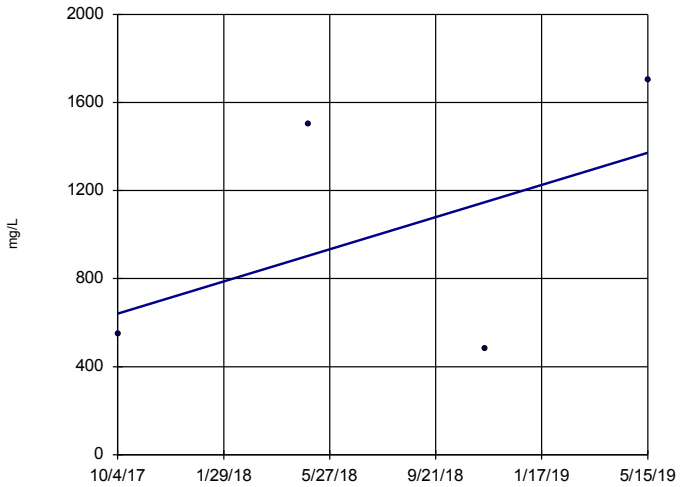
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-4



n = 4

Slope = 453.7 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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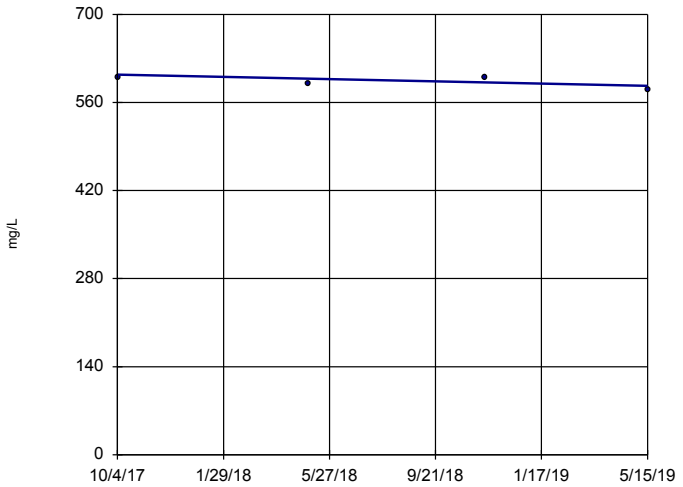
Total Dissolved Solids

MW-5



n = 4

Slope = -11.05 units per year.

Mann-Kendall statistic = -3
critical = -8

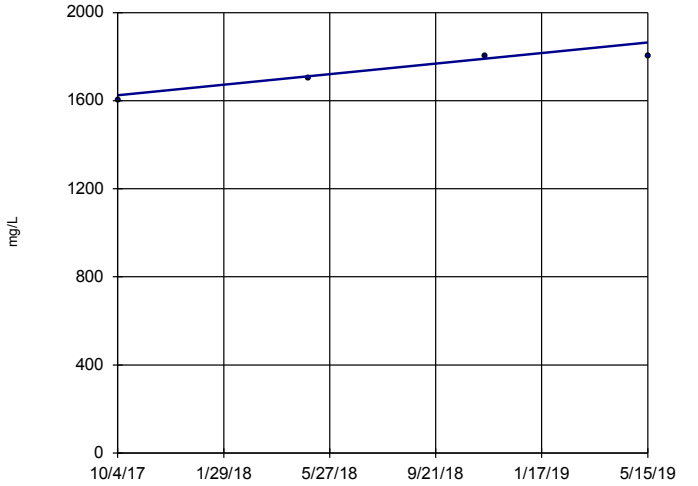
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Total Dissolved Solids

MW-5A



n = 4

Slope = 148.6 units per year.

Mann-Kendall statistic = 5 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail). With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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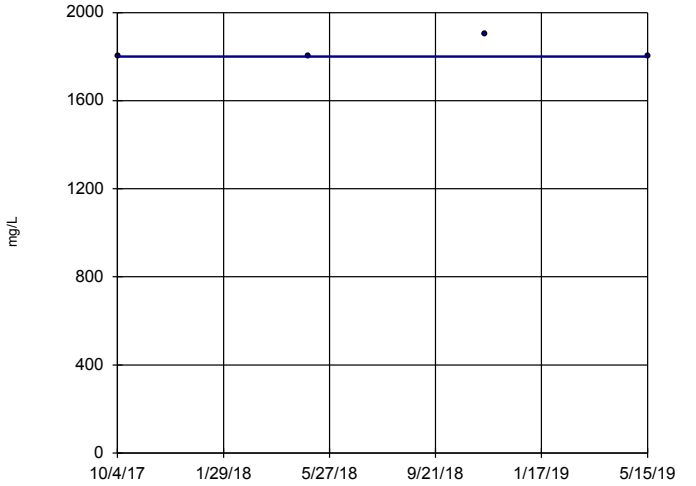
Total Dissolved Solids

MW-6



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 1 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail). With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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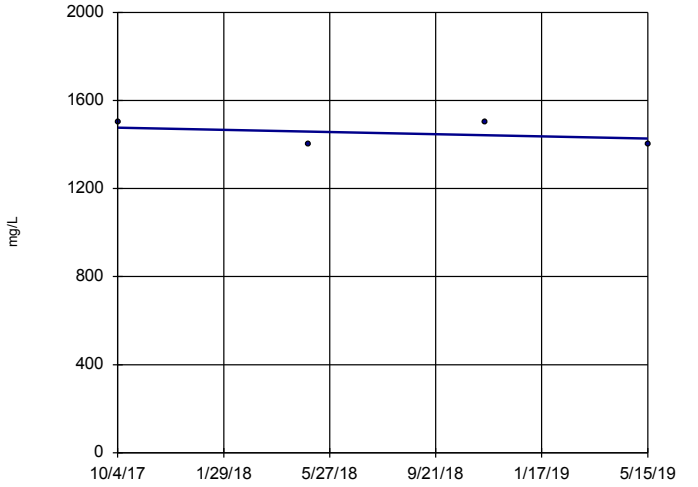
Total Dissolved Solids

MW-6A



n = 4

Slope = -31.04 units per year.

Mann-Kendall statistic = -2 critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail). With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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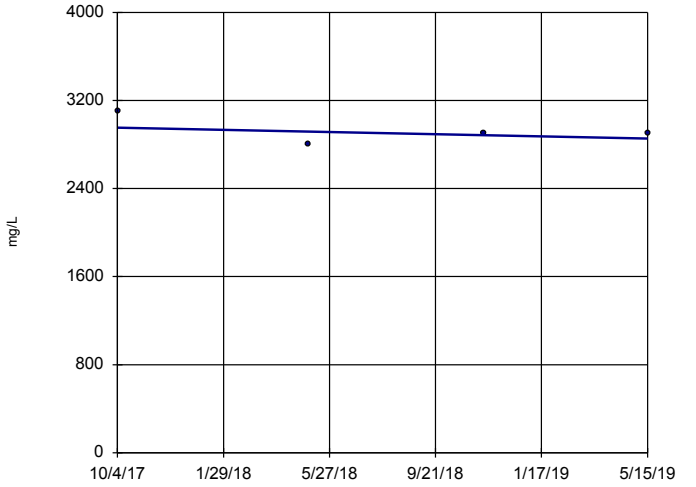
Total Dissolved Solids

MW-7 (bg)



n = 4

Slope = -62.07 units per year.

Mann-Kendall statistic = -1 critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail). With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Trend Test

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background Printed 12/4/2019, 2:13 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-2 (bg)	-0.03847	-4	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-3 (bg)	0	-1	-8	No	4	75	n/a	n/a	0.02	NP
Boron (mg/L)	MW-4	0	-1	-8	No	4	75	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5	-0.00...	0	8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5A	0.1202	5	8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6	-0.01279	-2	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6A	-0.01589	-3	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-7 (bg)	-0.03739	-2	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2 (bg)	-4.716	-3	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3 (bg)	1.378	0	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4	44.63	2	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	5.214	4	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5A	14.15	4	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	3.104	1	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6A	-7.588	-4	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7 (bg)	-1.737	0	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2 (bg)	0	0	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3 (bg)	3.596	1	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4	29.71	2	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	-0.08649	-1	-8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5A	6.828	5	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	0.3104	3	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6A	0	-1	-8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7 (bg)	5.041	4	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2 (bg)	-0.09492	-4	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3 (bg)	-0.02236	-2	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4	-0.01862	-1	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	-0.00...	0	8	No	4	25	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5A	-0.05035	-4	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	-0.03966	-3	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6A	-0.04189	-4	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7 (bg)	-0.01557	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-2 (bg)	-0.0689	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-3 (bg)	0.1008	2	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-4	0.1078	0	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-5	0.4345	2	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-5A	0.6186	2	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-6	1.071	4	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-6A	0.4674	2	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-7 (bg)	0.345	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2 (bg)	17	2	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3 (bg)	-44.06	-2	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4	315.1	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	-6.207	-1	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5A	34.14	2	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	-8.649	-1	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6A	-58.97	-4	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7 (bg)	-31.04	-3	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2 (bg)	-29.77	-5	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-3 (bg)	-80.66	-4	-8	No	4	0	n/a	n/a	0.02	NP

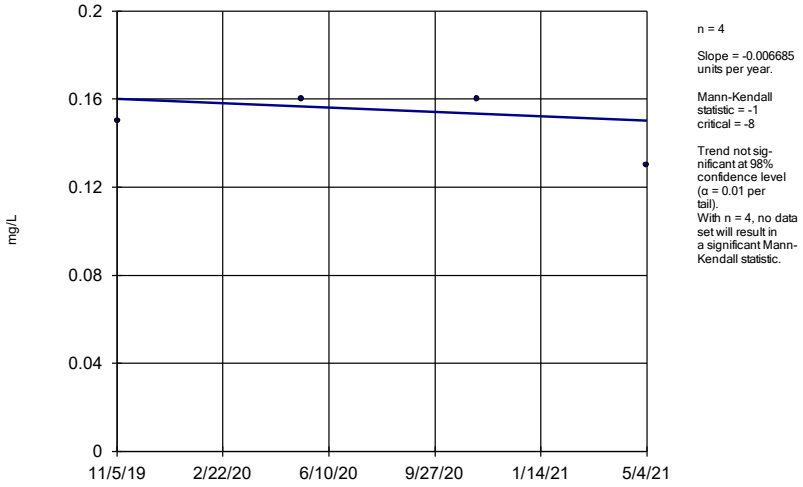
Trend Test

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background Printed 12/4/2019, 2:13 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Total Dissolved Solids (mg/L)	MW-4	453.7	2	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-11.05	-3	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5A	148.6	5	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	0	1	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6A	-31.04	-2	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7 (bg)	-62.07	-1	-8	No	4	0	n/a	n/a	0.02	NP

Boron

MW-2 (bg)



n = 4

Slope = -0.006685 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

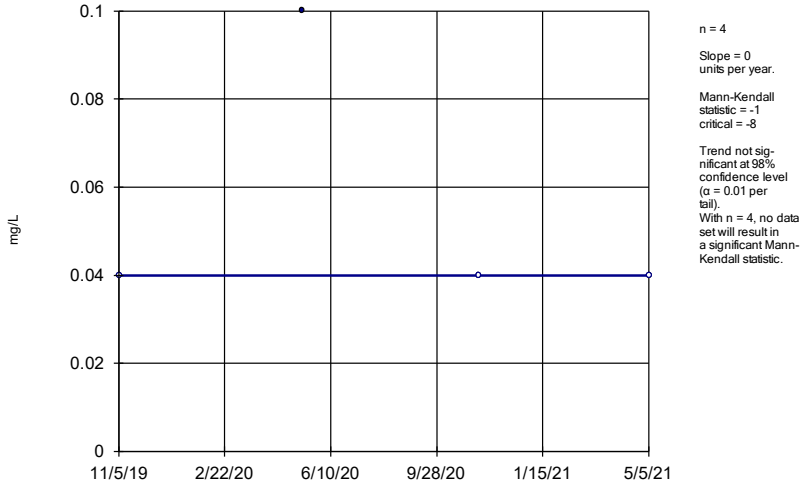
Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Boron

MW-3 (bg)



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

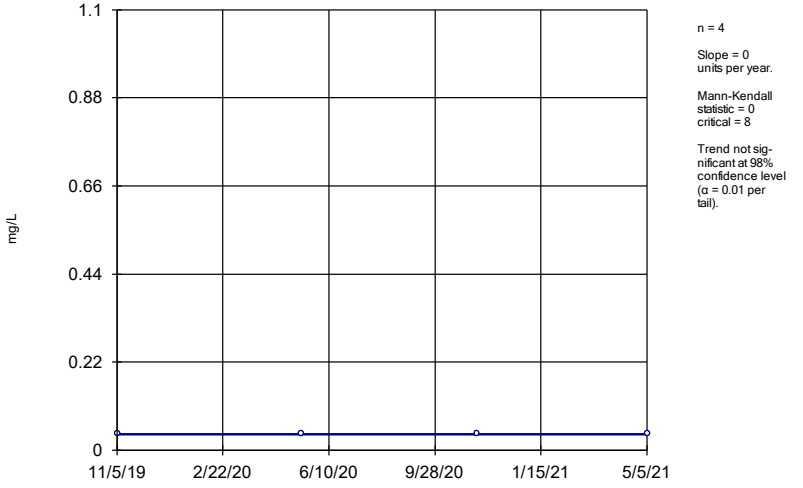
Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Boron

MW-4



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 0
critical = 8

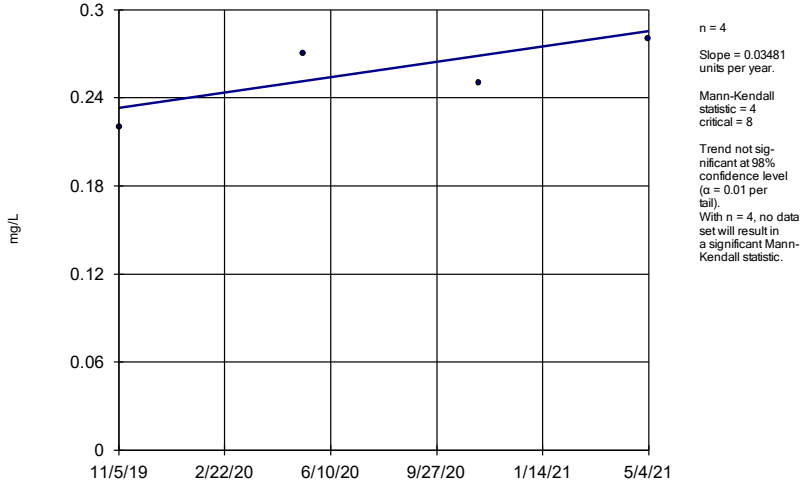
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Boron

MW-5



n = 4

Slope = 0.03481 units per year.

Mann-Kendall statistic = 4
critical = 8

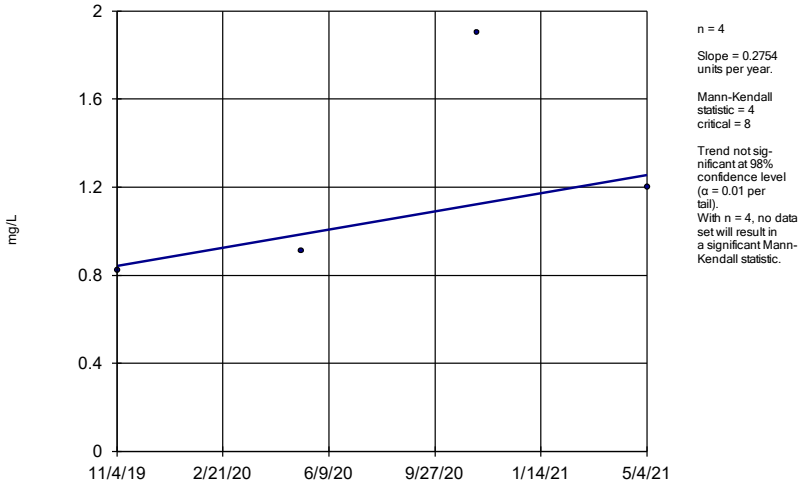
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Boron

MW-5A



n = 4

Slope = 0.2754 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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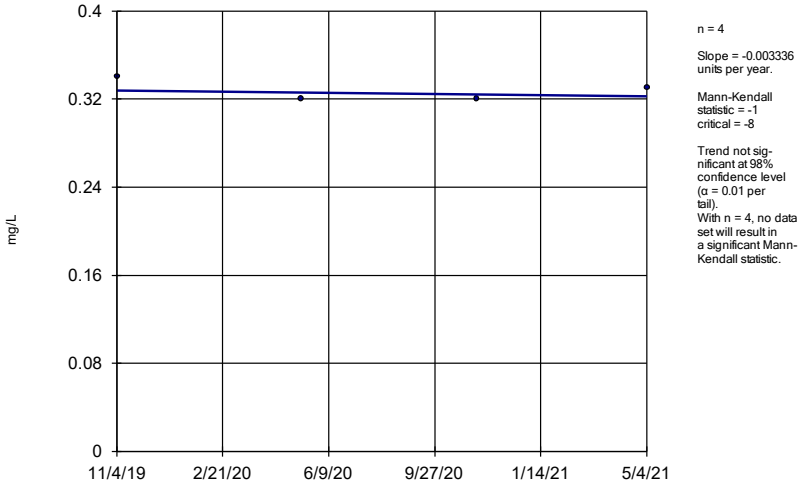
Boron

MW-6



n = 4

Slope = -0.003336 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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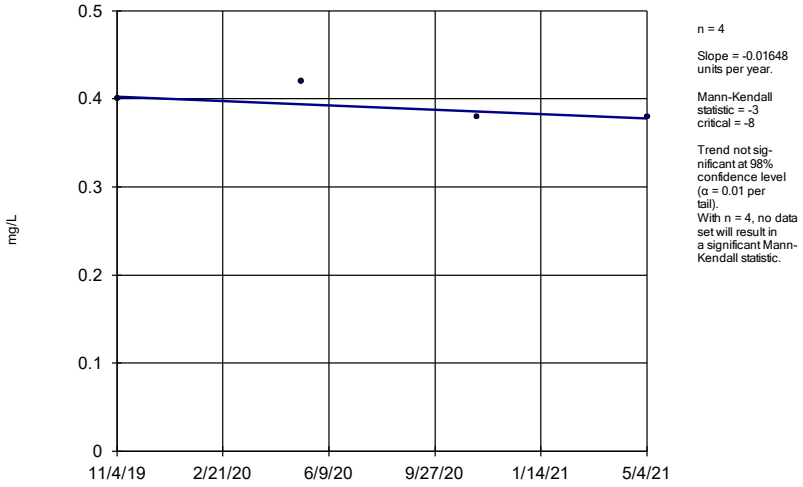
Boron

MW-6A



n = 4

Slope = -0.01648 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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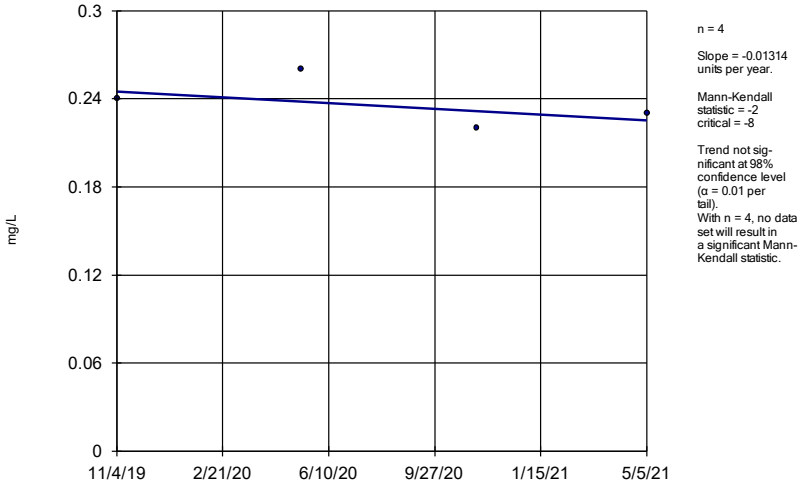
Boron

MW-7 (bg)



n = 4

Slope = -0.01314 units per year.

Mann-Kendall statistic = -2
critical = -8

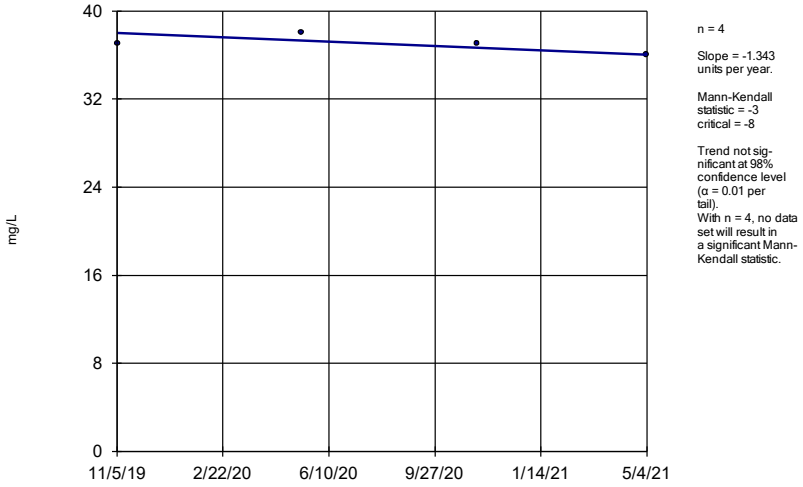
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Calcium

MW-2 (bg)



n = 4

Slope = -1.343 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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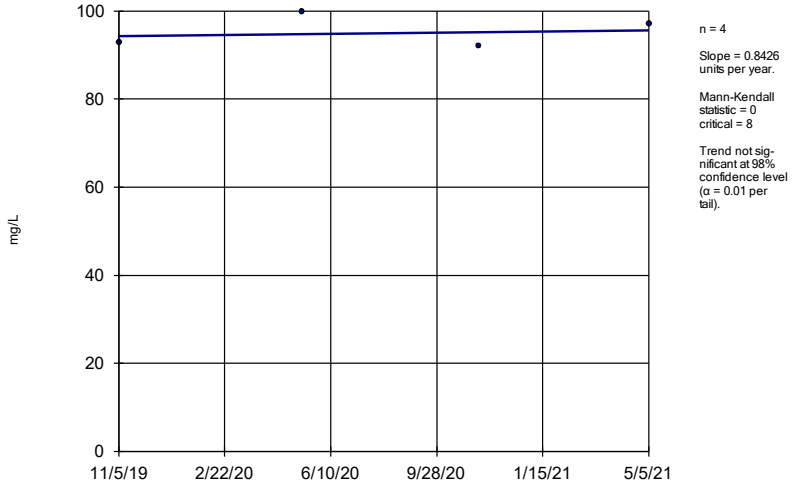
Calcium

MW-3 (bg)



n = 4

Slope = 0.8426 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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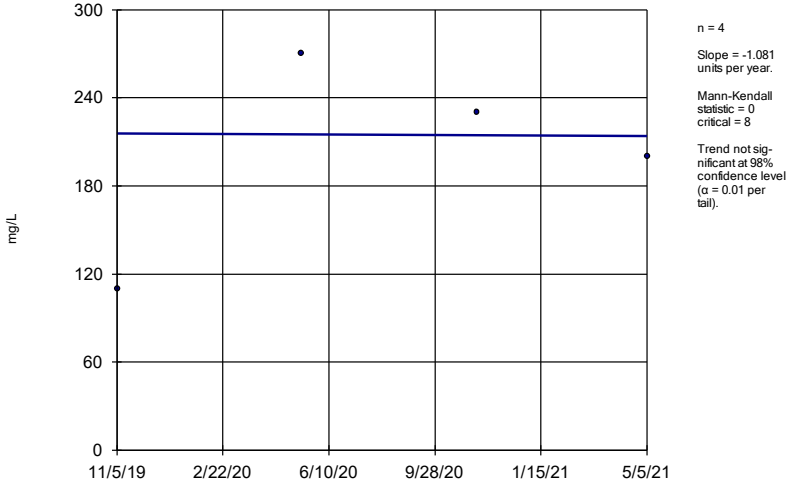
Calcium

MW-4



n = 4

Slope = -1.081 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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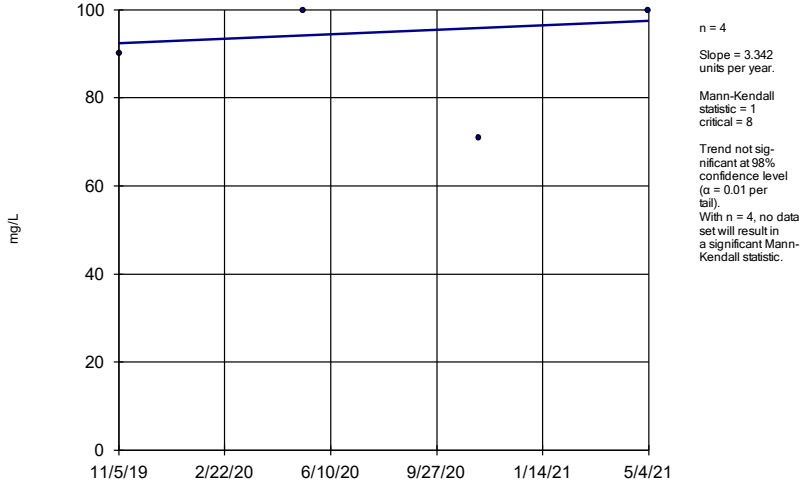
Calcium

MW-5



n = 4

Slope = 3.342 units per year.

Mann-Kendall statistic = 1
critical = 8

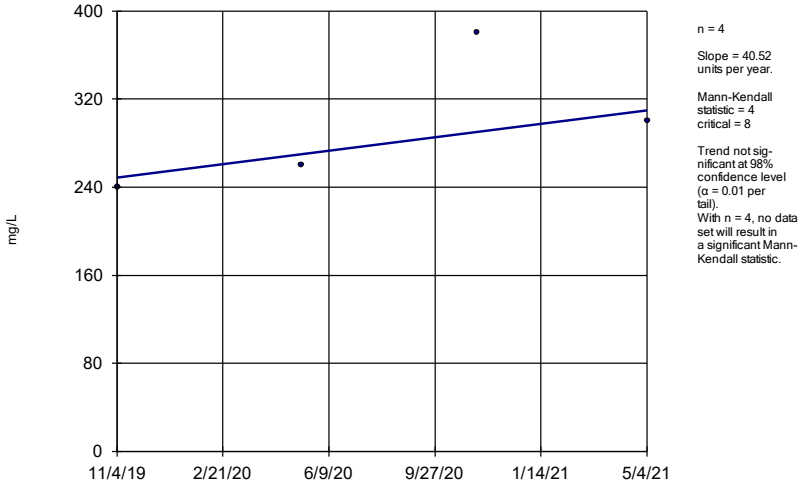
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Calcium

MW-5A



n = 4

Slope = 40.52 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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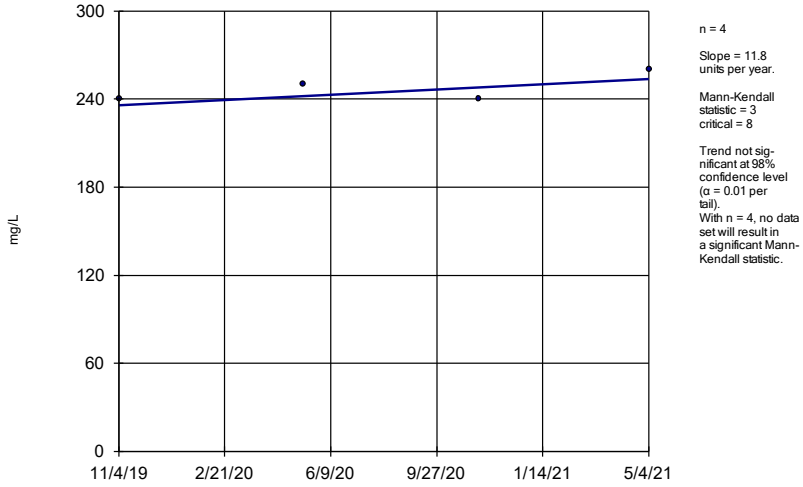
Calcium

MW-6



n = 4

Slope = 11.8 units per year.

Mann-Kendall statistic = 3
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

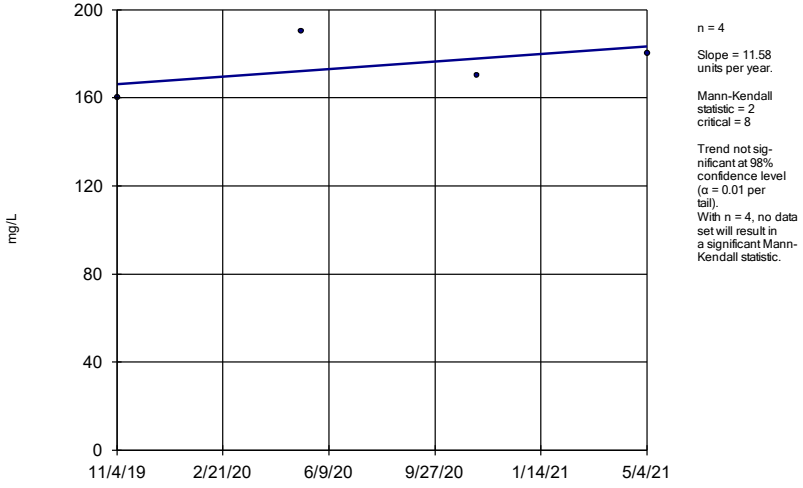
Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

MW-6A



n = 4

Slope = 11.58 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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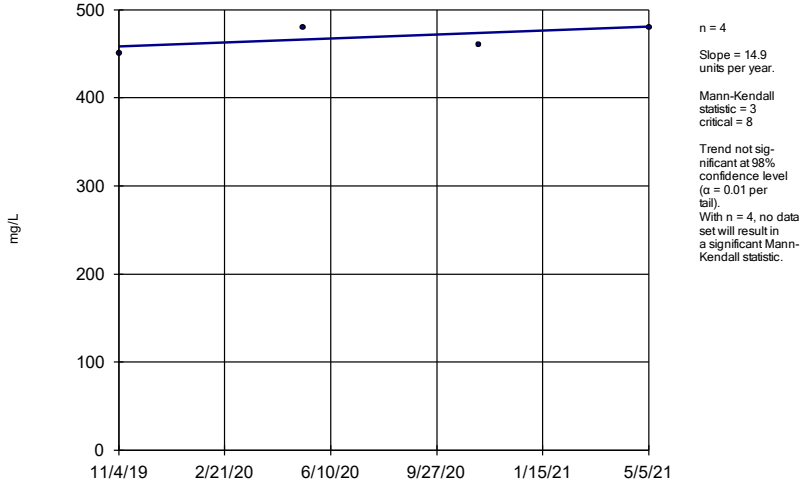
Calcium

MW-7 (bg)



n = 4

Slope = 14.9 units per year.

Mann-Kendall statistic = 3
critical = 8

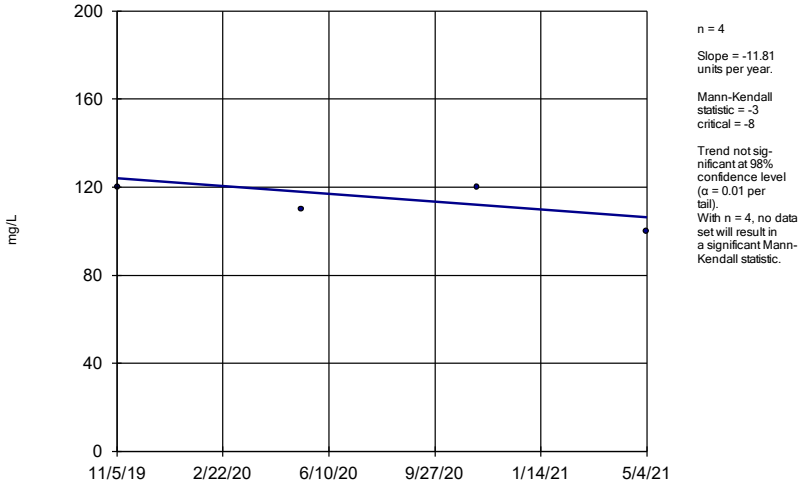
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Chloride

MW-2 (bg)



n = 4

Slope = -11.81 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

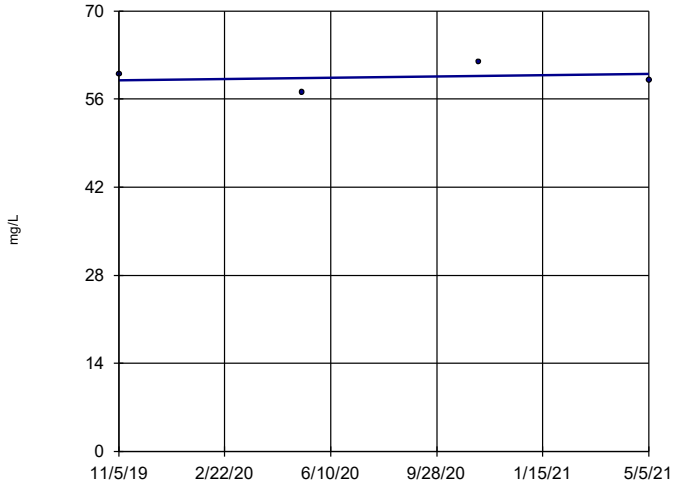
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-3 (bg)



n = 4

Slope = 0.6502 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

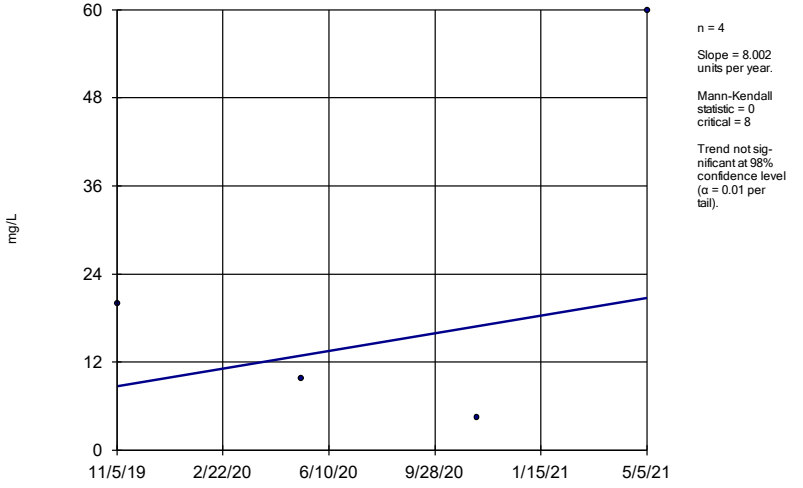
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-4



n = 4

Slope = 8.002 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

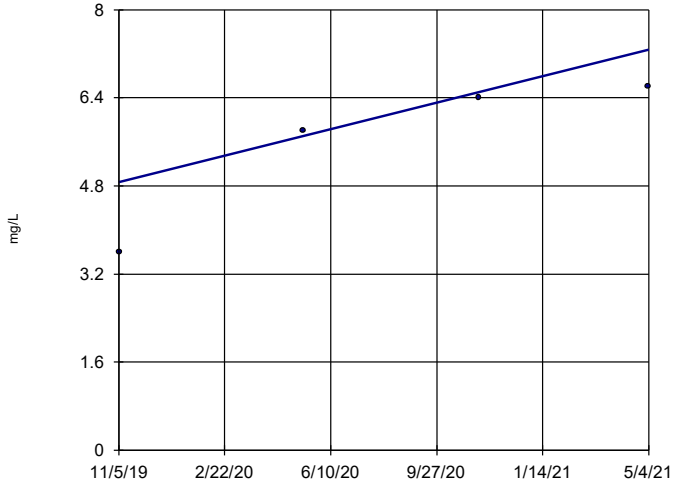
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-5



n = 4

Slope = 1.608 units per year.

Mann-Kendall statistic = 6
critical = 8

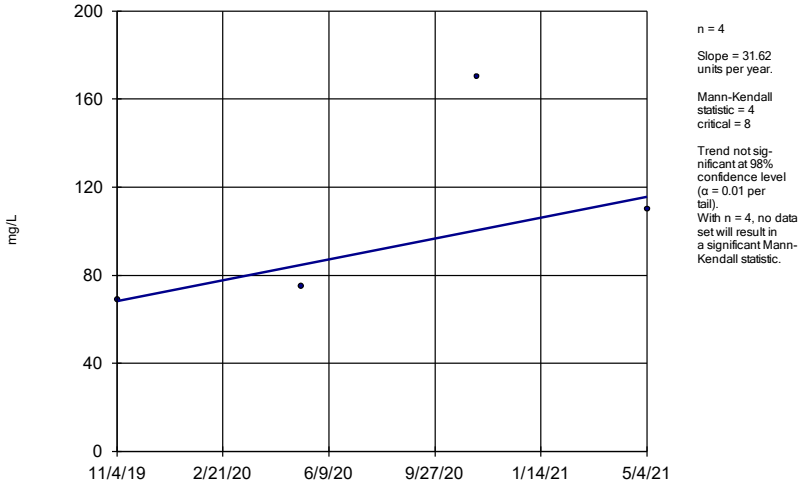
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Chloride

MW-5A



n = 4

Slope = 31.62 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

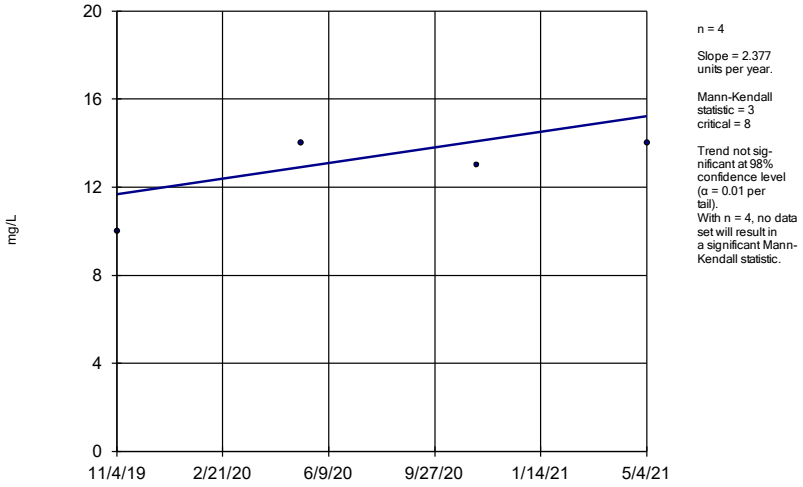
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-6



n = 4

Slope = 2.377 units per year.

Mann-Kendall statistic = 3
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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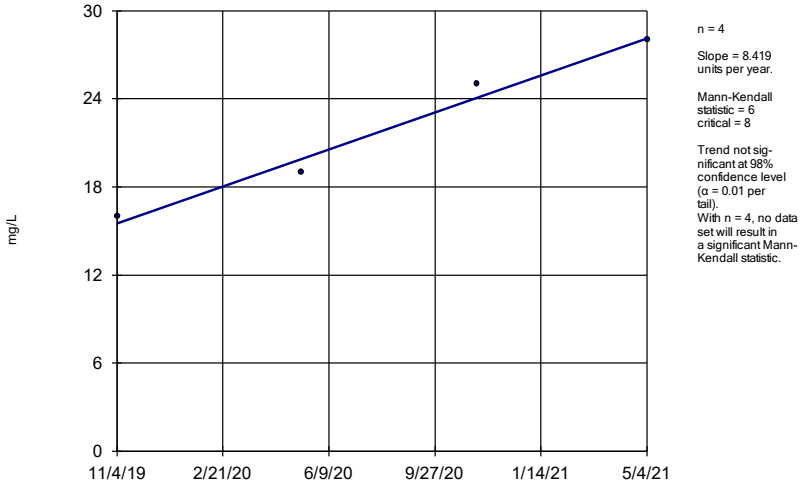
Chloride

MW-6A



n = 4

Slope = 8.419 units per year.

Mann-Kendall statistic = 6
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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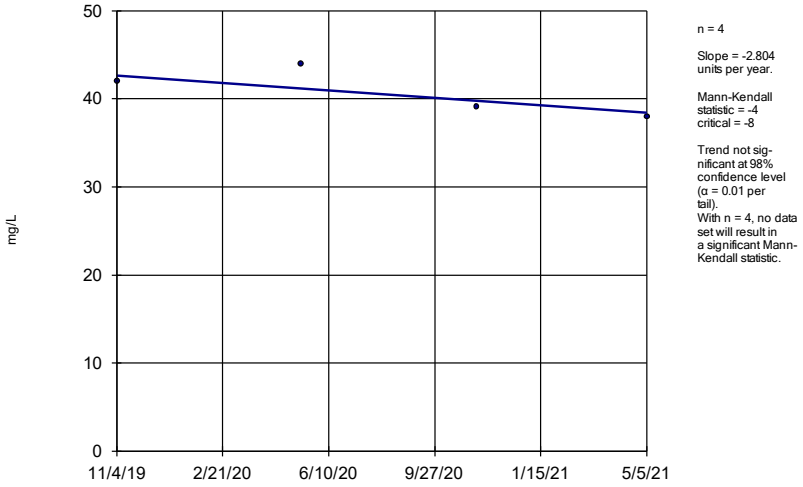
Chloride

MW-7 (bg)



n = 4

Slope = -2.804 units per year.

Mann-Kendall statistic = -4
critical = -8

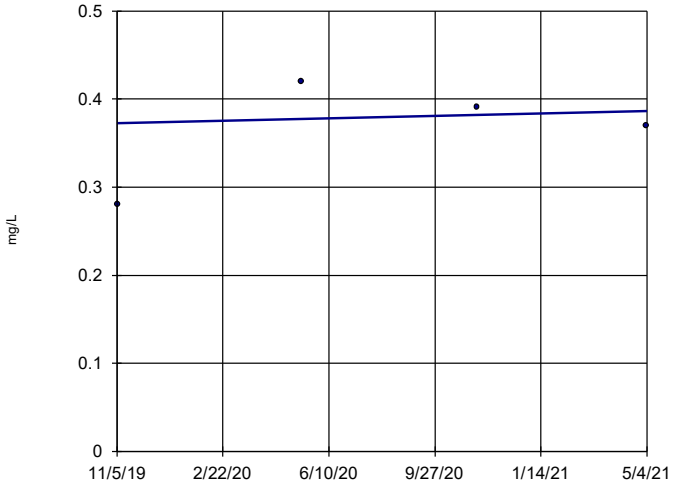
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Fluoride

MW-2 (bg)



n = 4

Slope = 0.009225 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

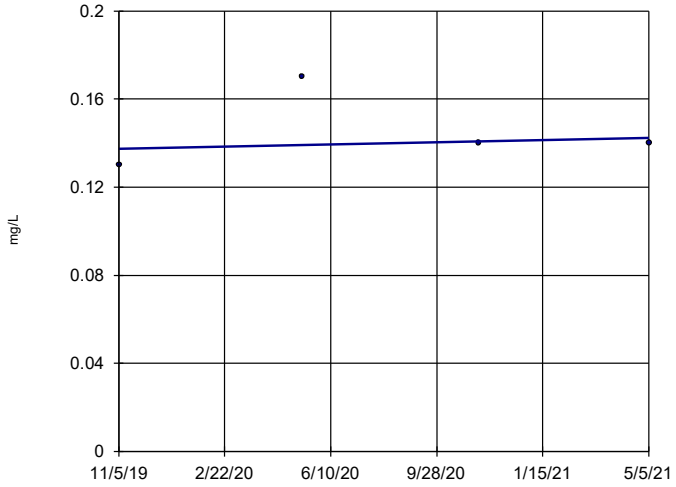
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Fluoride

MW-3 (bg)



n = 4

Slope = 0.003336 units per year.

Mann-Kendall statistic = 1
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

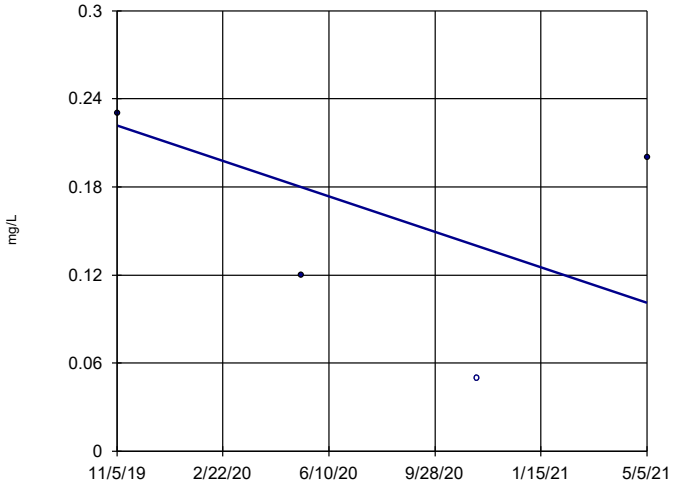
The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Hollow symbols indicate censored values.

Fluoride

MW-4



n = 4

Slope = -0.08059 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

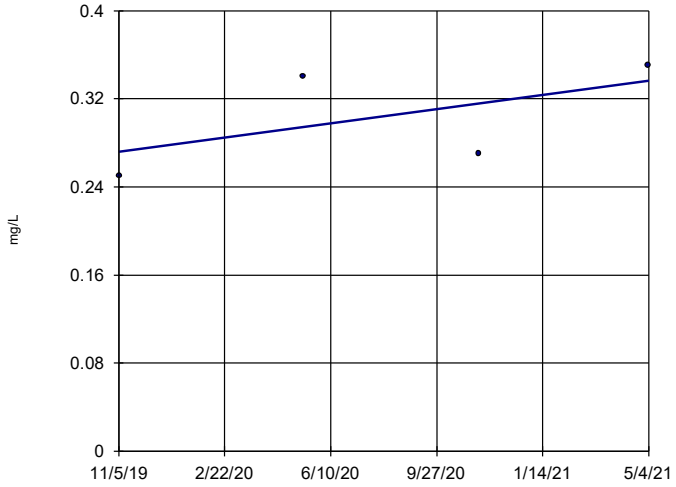
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Fluoride

MW-5



n = 4

Slope = 0.04326 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

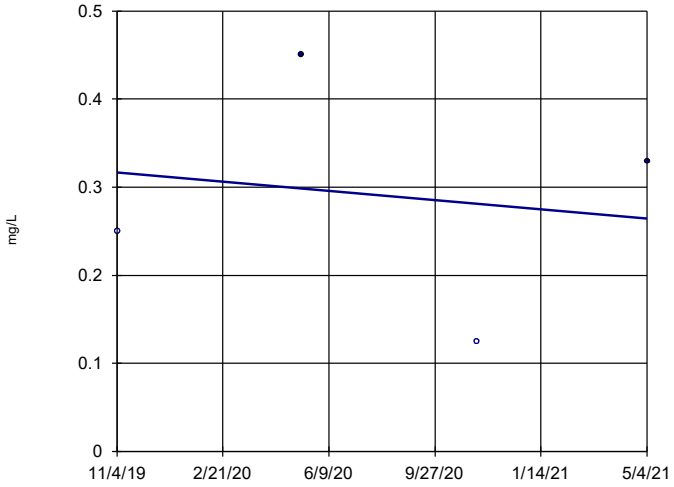
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Fluoride

MW-5A



n = 4

Slope = -0.03463 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

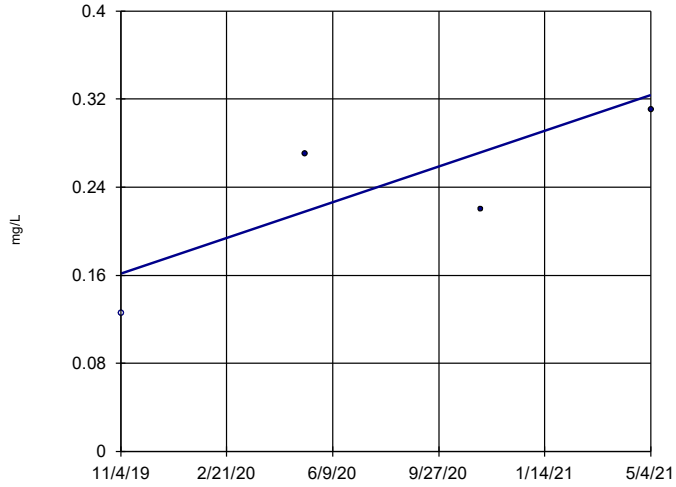
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Fluoride

MW-6



n = 4

Slope = 0.1083 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

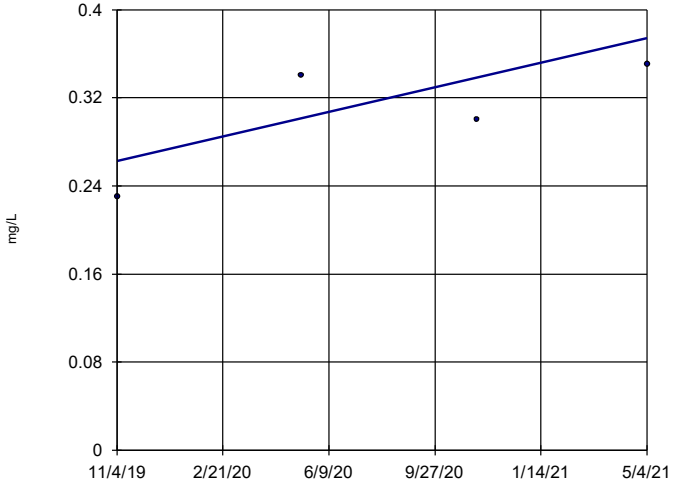
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Fluoride

MW-6A



n = 4

Slope = 0.07438 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

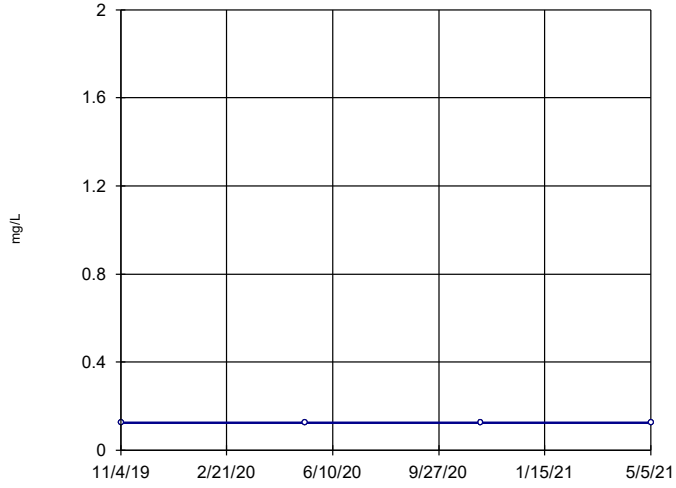
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Fluoride

MW-7 (bg)



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 0
critical = 8

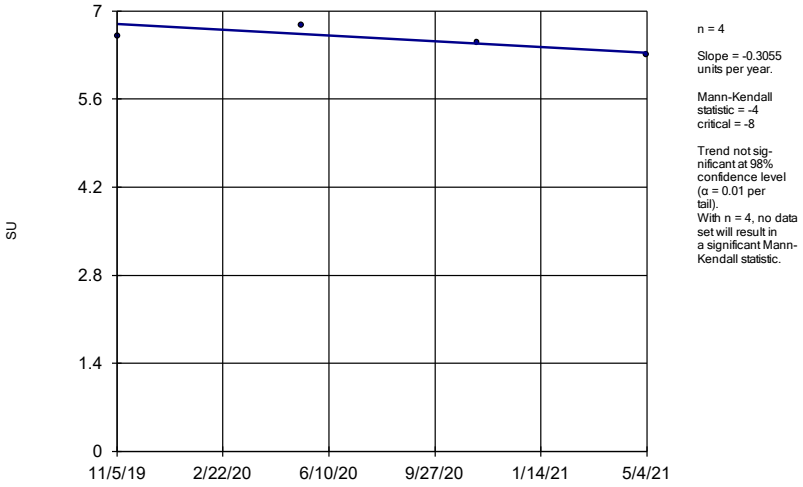
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

pH

MW-2 (bg)



n = 4

Slope = -0.3055 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

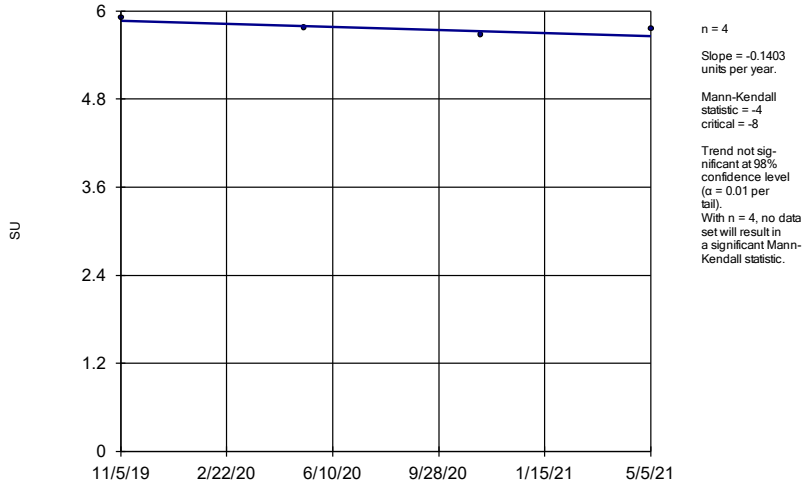
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-3 (bg)



n = 4

Slope = -0.1403 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

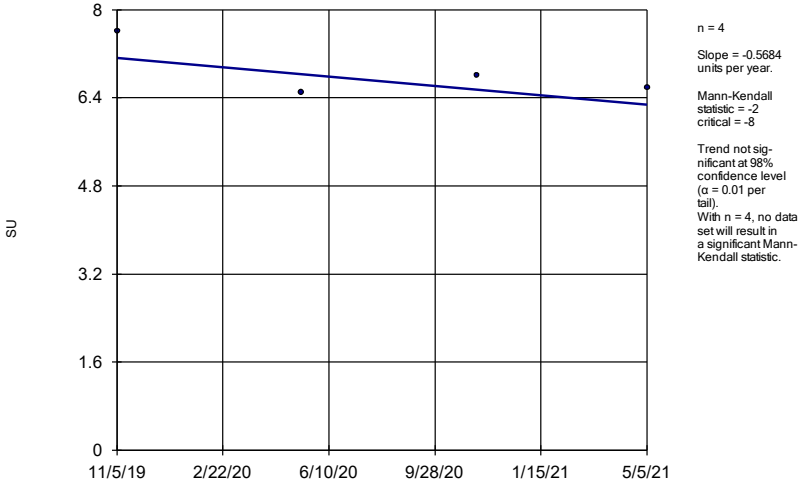
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-4



n = 4

Slope = -0.5684 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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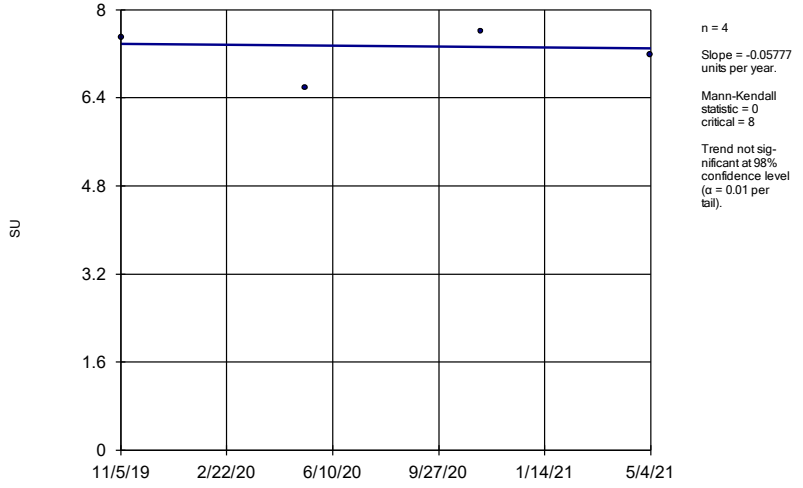
pH

MW-5



n = 4

Slope = -0.05777 units per year.

Mann-Kendall statistic = 0
critical = 8

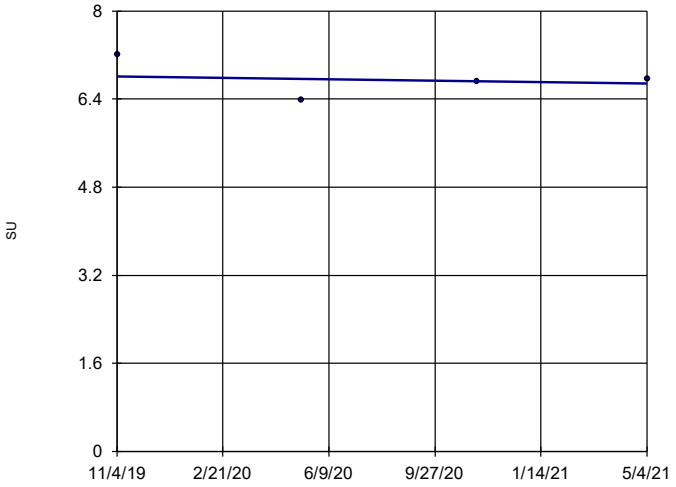
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

pH

MW-5A



n = 4

Slope = -0.09132 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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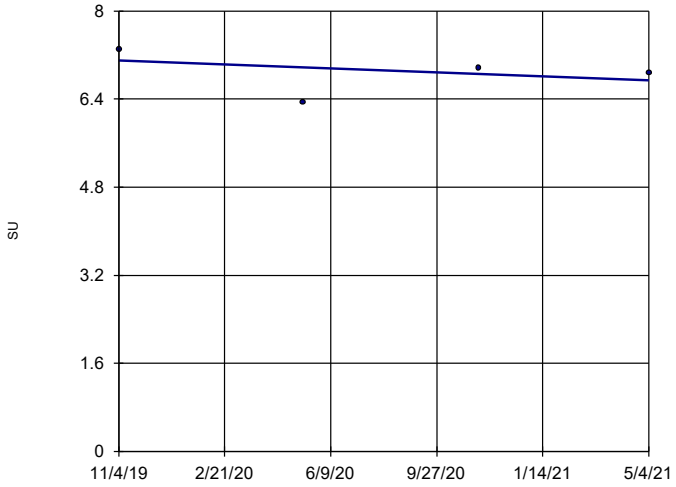
pH

MW-6



n = 4

Slope = -0.2373 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

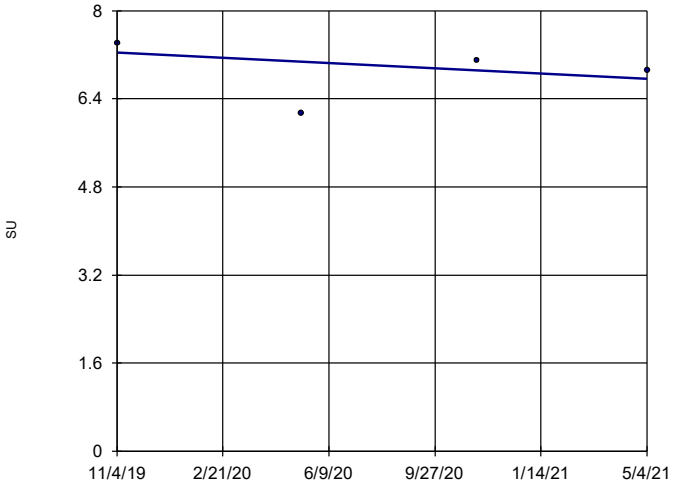
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-6A



n = 4

Slope = -0.3156 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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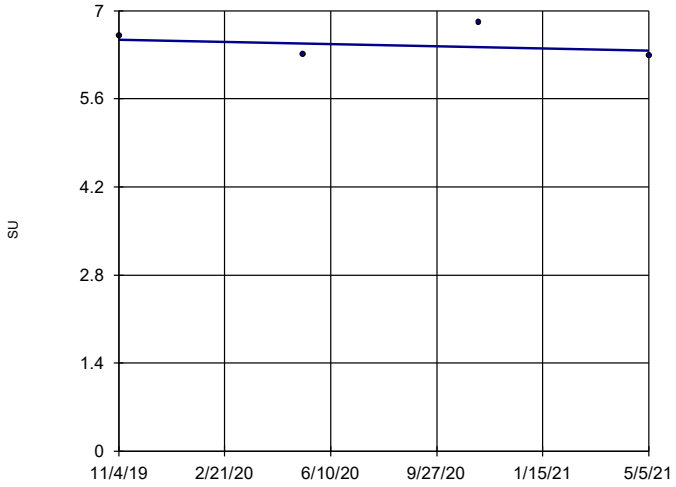
pH

MW-7 (bg)



n = 4

Slope = -0.1168 units per year.

Mann-Kendall statistic = -2
critical = -8

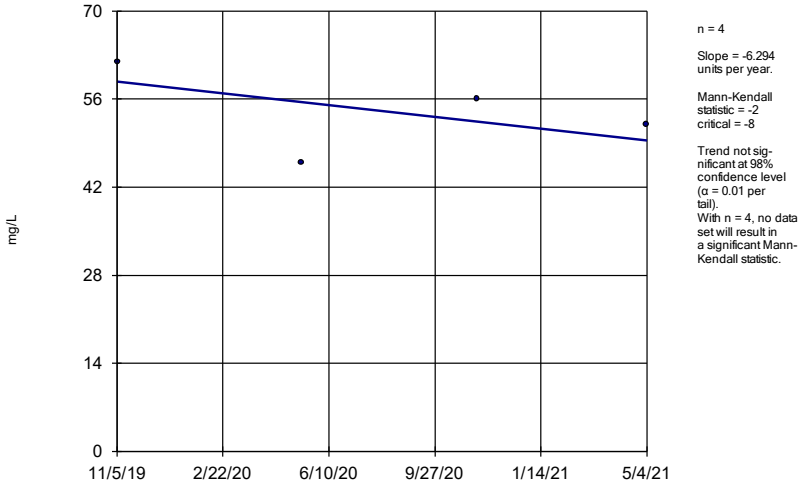
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sulfate

MW-2 (bg)



n = 4

Slope = -6.294 units per year.

Mann-Kendall statistic = -2 critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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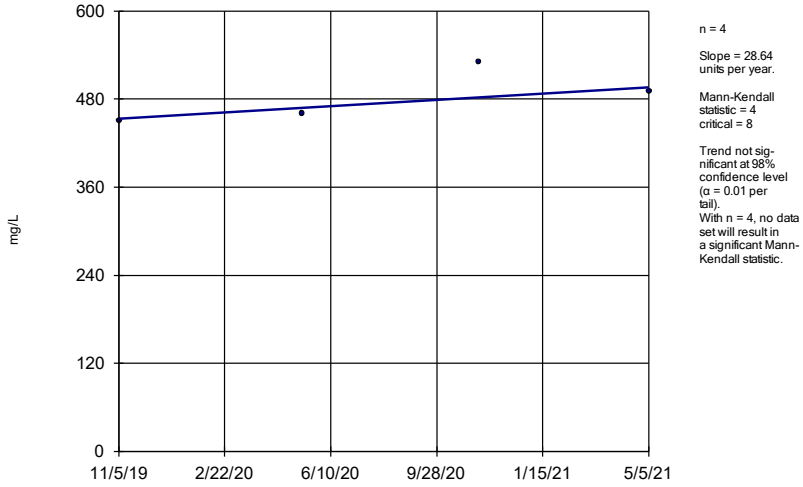
Sulfate

MW-3 (bg)



n = 4

Slope = 28.64 units per year.

Mann-Kendall statistic = 4 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

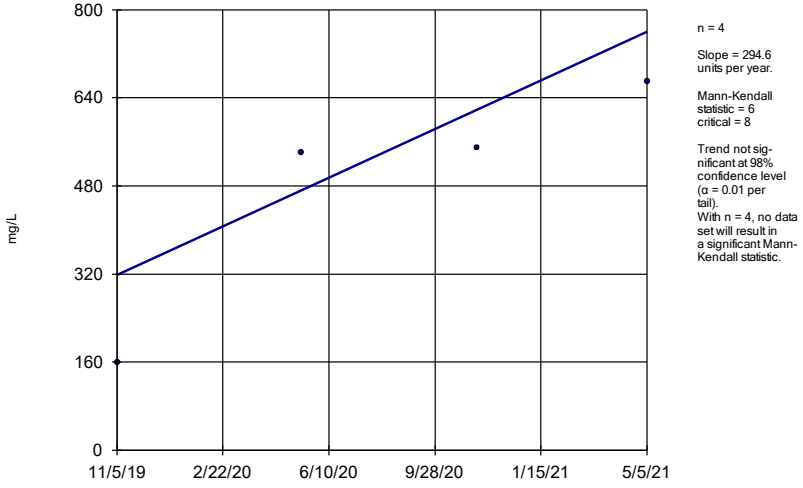
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-4



n = 4

Slope = 294.6 units per year.

Mann-Kendall statistic = 6 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

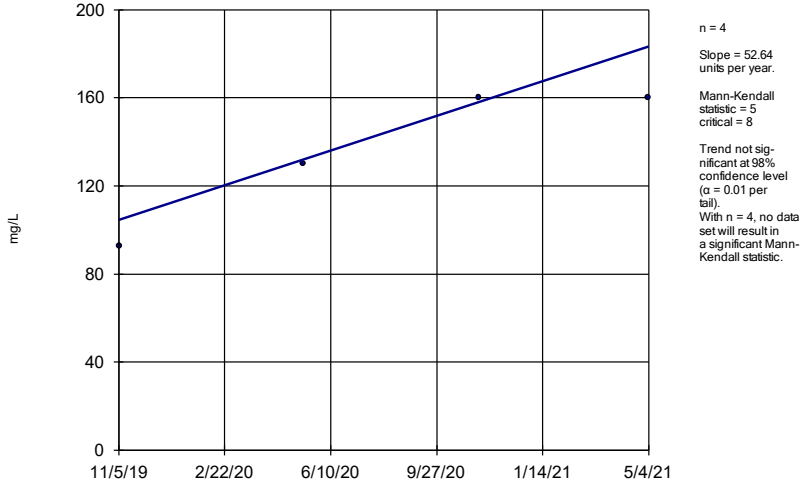
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-5



n = 4

Slope = 52.64 units per year.

Mann-Kendall statistic = 5 critical = 8

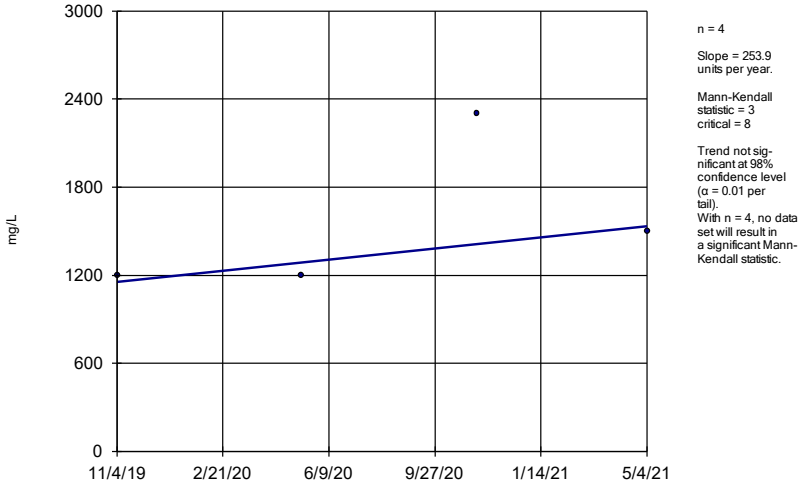
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sulfate

MW-5A



n = 4

Slope = 253.9 units per year.

Mann-Kendall statistic = 3
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

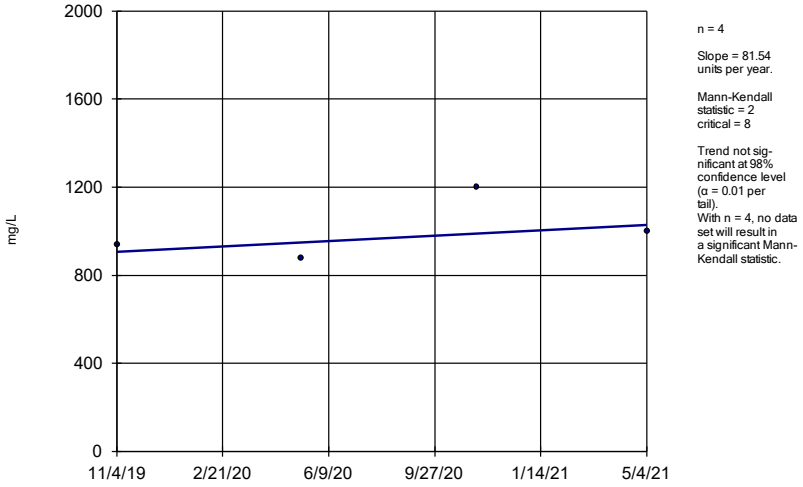
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6



n = 4

Slope = 81.54 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

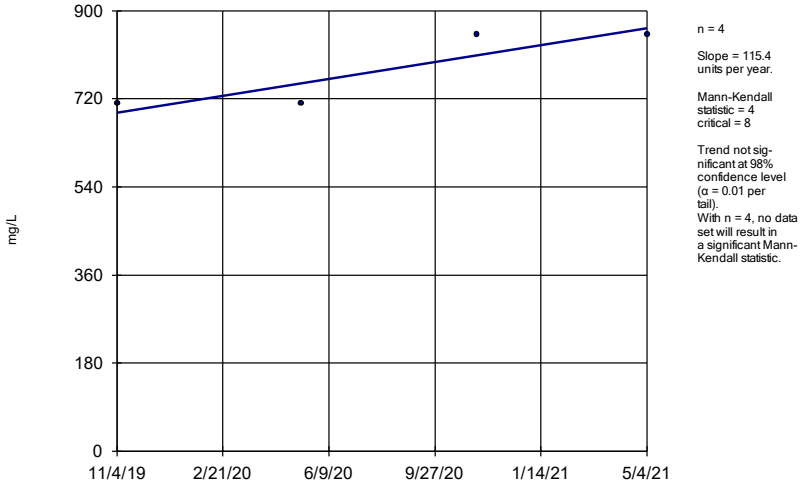
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6A



n = 4

Slope = 115.4 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

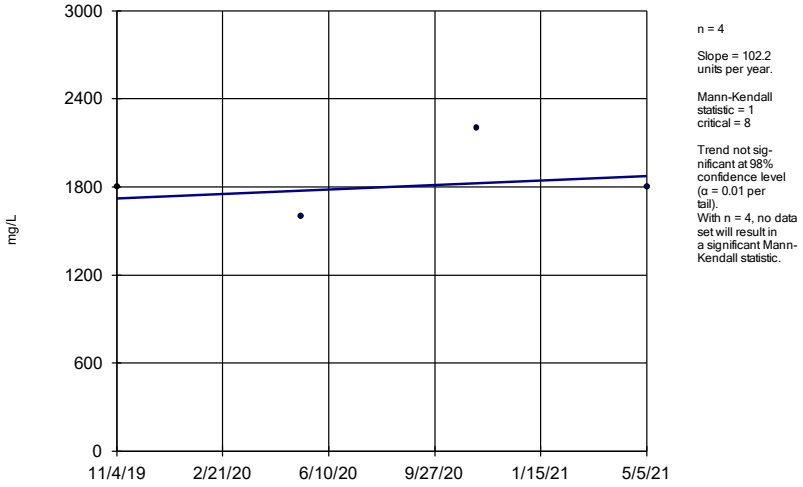
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-7 (bg)



n = 4

Slope = 102.2 units per year.

Mann-Kendall statistic = 1
critical = 8

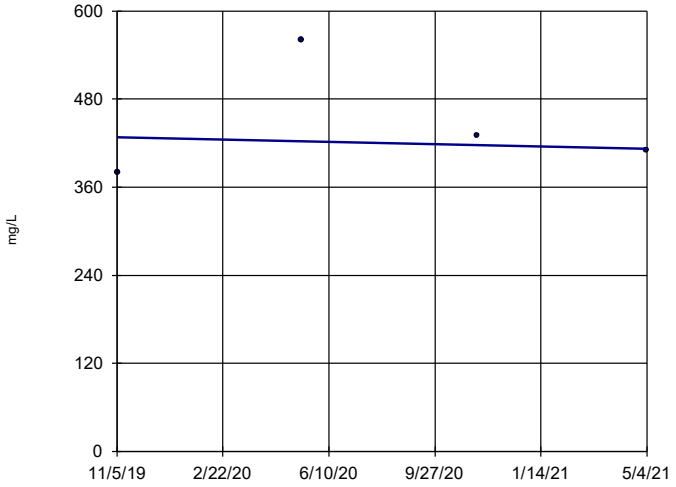
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Total Dissolved Solids

MW-2 (bg)



n = 4

Slope = -10.83 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

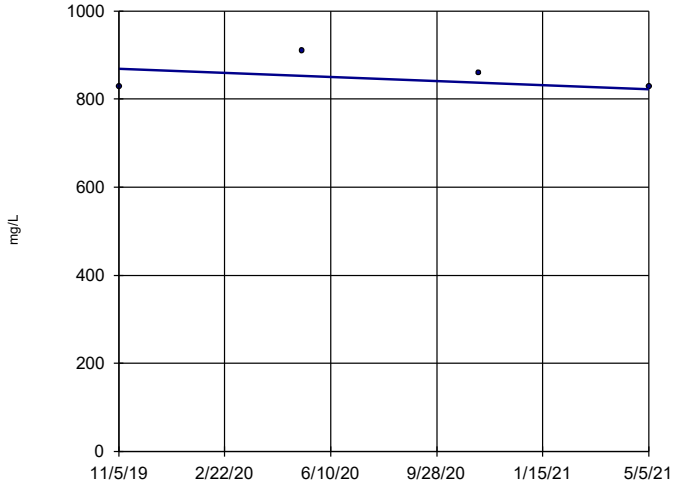
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-3 (bg)



n = 4

Slope = -31.11 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

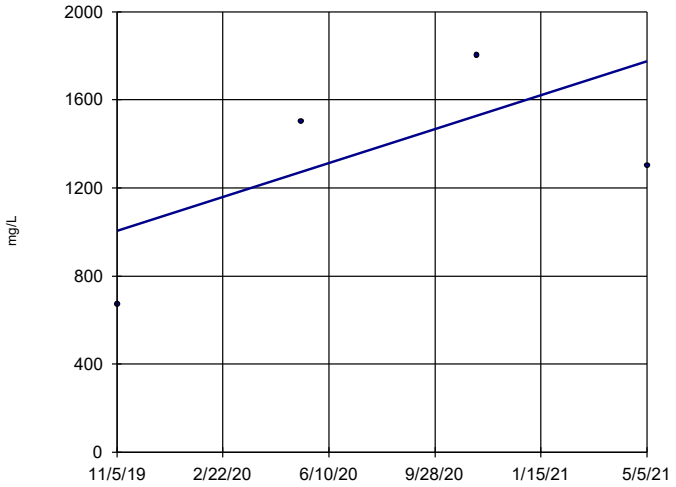
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-4



n = 4

Slope = 512.7 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

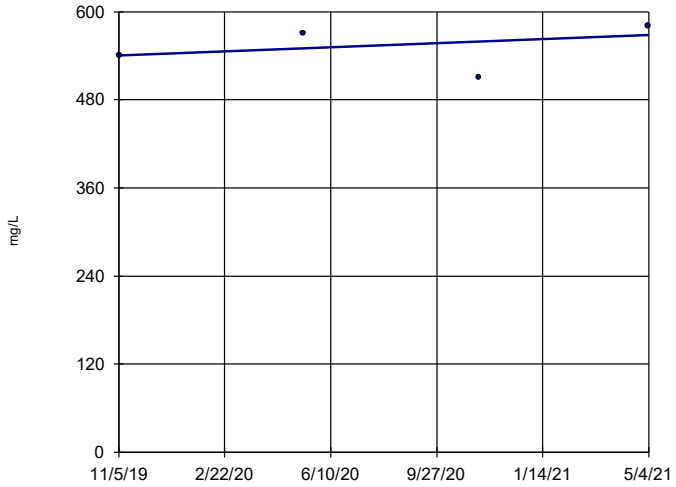
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-5



n = 4

Slope = 18.5 units per year.

Mann-Kendall statistic = 2
critical = 8

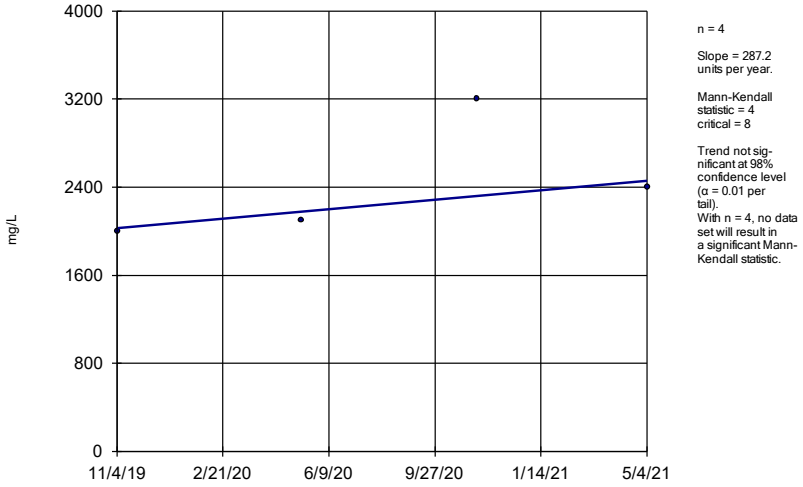
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Total Dissolved Solids

MW-5A



n = 4

Slope = 287.2 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

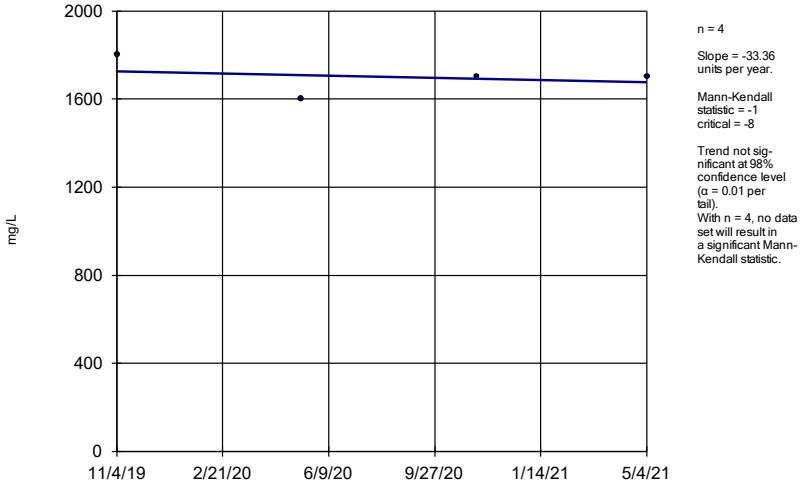
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-6



n = 4

Slope = -33.36 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

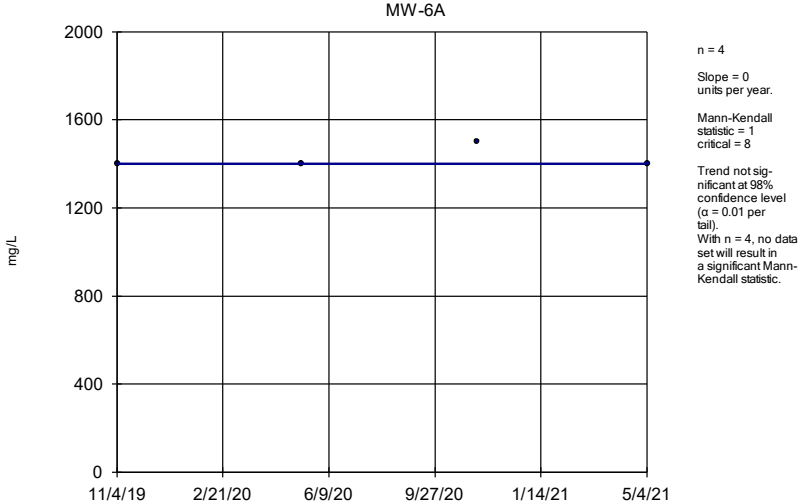
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-6A



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 1
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

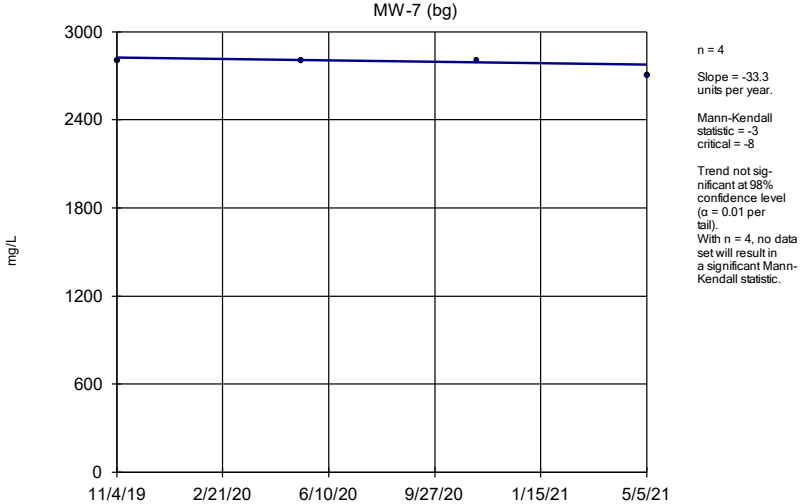
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-7 (bg)



n = 4

Slope = -33.3 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Trend Test

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background Printed 11/18/2021, 4:28 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-2 (bg)	-0.00...	-1	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-3 (bg)	0	-1	-8	No	4	75	n/a	n/a	0.02	NP
Boron (mg/L)	MW-4	0	0	8	No	4	100	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5	0.03481	4	8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5A	0.2754	4	8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6	-0.00...	-1	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6A	-0.01648	-3	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-7 (bg)	-0.01314	-2	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2 (bg)	-1.343	-3	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3 (bg)	0.8426	0	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4	-1.081	0	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	3.342	1	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5A	40.52	4	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	11.8	3	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6A	11.58	2	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7 (bg)	14.9	3	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2 (bg)	-11.81	-3	-8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3 (bg)	0.6502	0	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4	8.002	0	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	1.608	6	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5A	31.62	4	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	2.377	3	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6A	8.419	6	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7 (bg)	-2.804	-4	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2 (bg)	0.009225	0	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3 (bg)	0.003336	1	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4	-0.08059	-2	-8	No	4	25	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	0.04326	4	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5A	-0.03463	0	8	No	4	50	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.1083	4	8	No	4	25	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6A	0.07438	4	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7 (bg)	0	0	8	No	4	100	n/a	n/a	0.02	NP
pH (SU)	MW-2 (bg)	-0.3055	-4	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-3 (bg)	-0.1403	-4	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-4	-0.5684	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-5	-0.05777	0	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-5A	-0.09132	0	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-6	-0.2373	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-6A	-0.3156	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-7 (bg)	-0.1168	-2	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2 (bg)	-6.294	-2	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3 (bg)	28.64	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4	294.6	6	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	52.64	5	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5A	253.9	3	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	81.54	2	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6A	115.4	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7 (bg)	102.2	1	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2 (bg)	-10.83	0	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-3 (bg)	-31.11	-1	-8	No	4	0	n/a	n/a	0.02	NP

Trend Test

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background Printed 11/18/2021, 4:28 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Total Dissolved Solids (mg/L)	MW-4	512.7	2	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	18.5	2	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5A	287.2	4	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	-33.36	-1	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6A	0	1	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7 (bg)	-33.3	-3	-8	No	4	0	n/a	n/a	0.02	NP

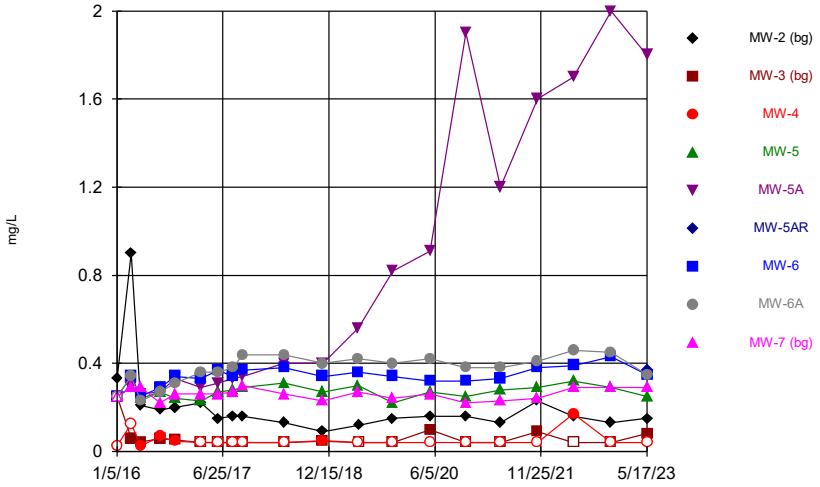
Midwest Environmental CONSULTANTS

Sanitas™ Output – Sampling Event

Time Series Analysis

Sanitas™ v.9.6.37 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Boron

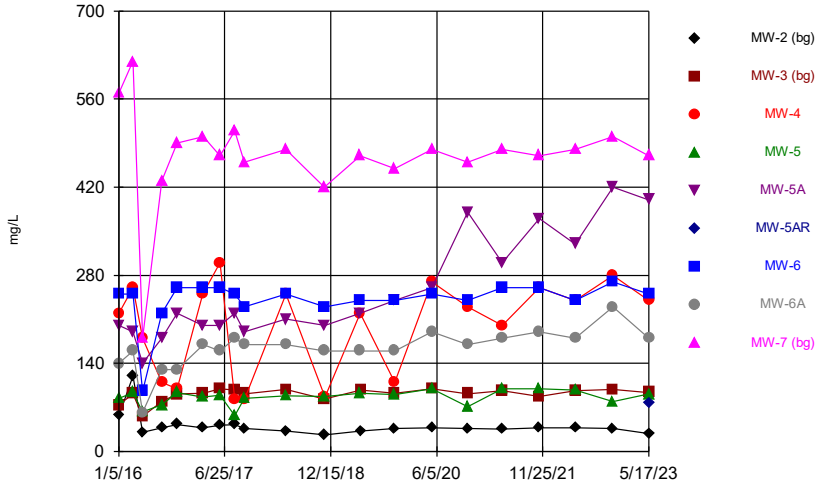


Time Series Analysis Run 8/17/2023 3:34 PM

The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Sanitas™ v.9.6.37 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

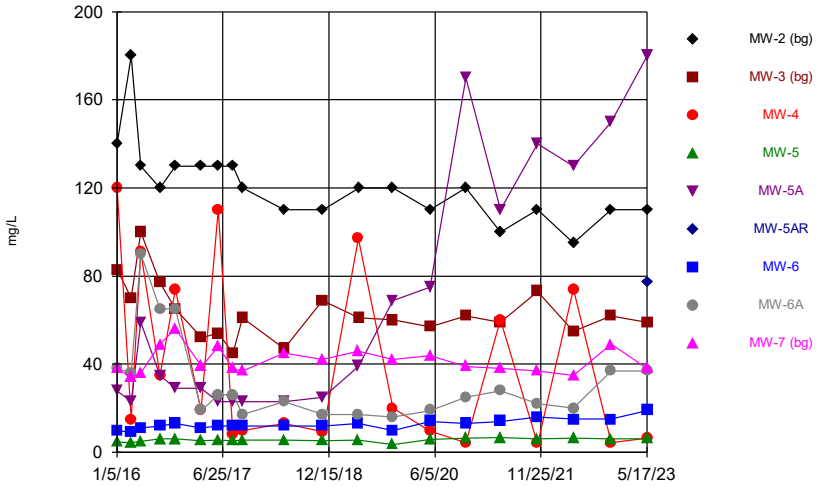


Time Series Analysis Run 8/17/2023 3:34 PM

The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Sanitas™ v.9.6.37 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

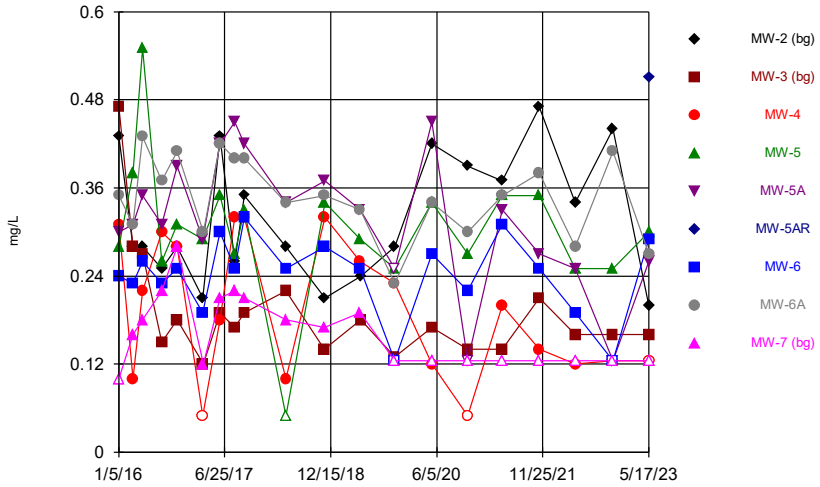


Time Series Analysis Run 8/17/2023 3:34 PM

The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Sanitas™ v.9.6.37 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

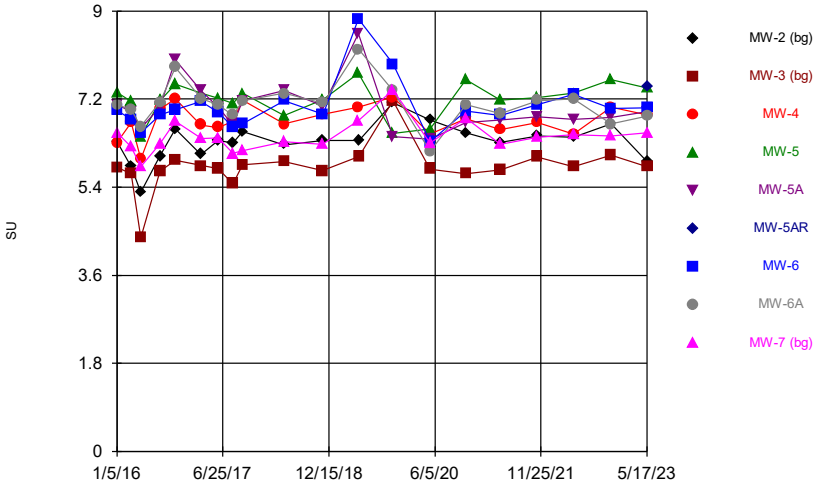
Fluoride



Time Series Analysis Run 8/17/2023 3:34 PM

The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

pH

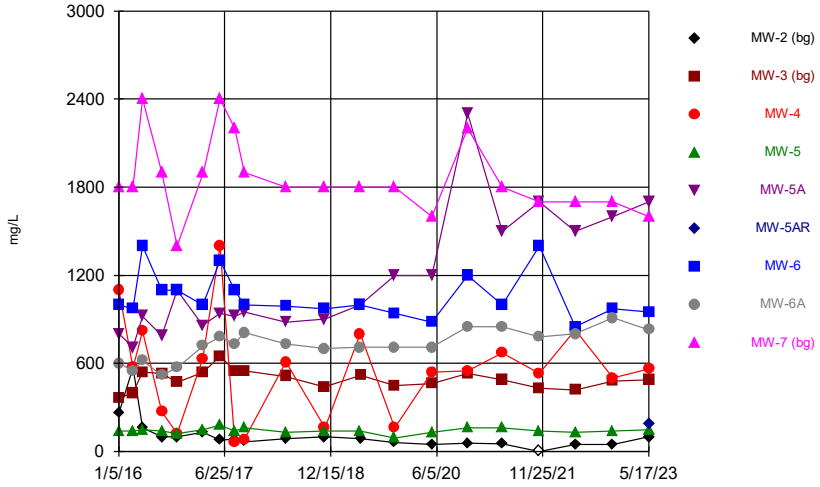


Time Series Analysis Run 8/17/2023 3:34 PM

The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

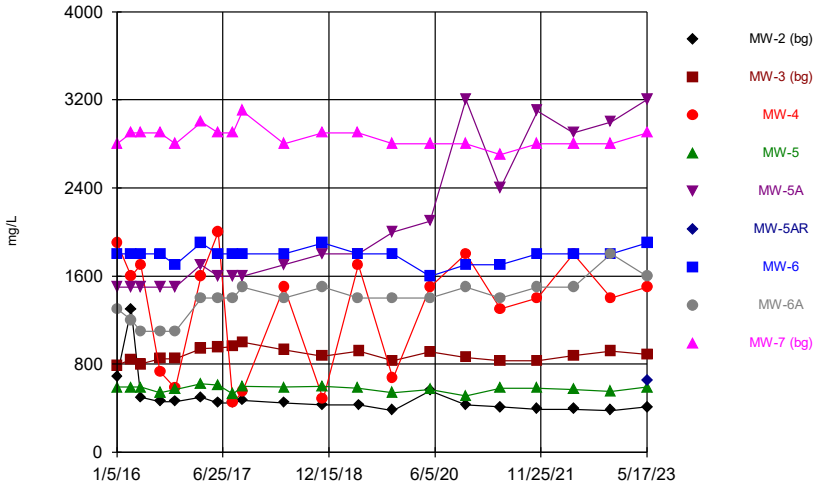
Sulfate



Time Series Analysis Run 8/17/2023 3:34 PM

The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Total Dissolved Solids



Time Series Analysis Run 8/17/2023 3:34 PM

The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Sanitas™ Output – Sampling Event

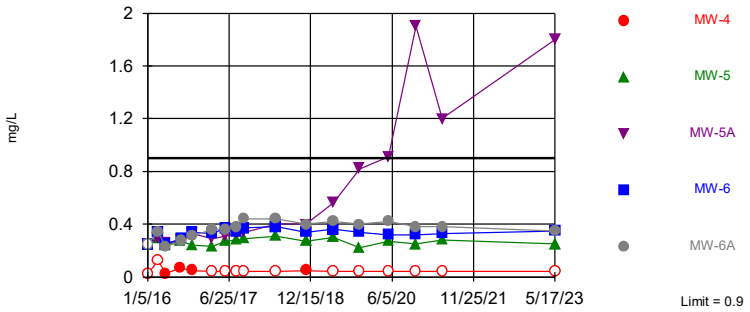
Prediction Limits

Hollow symbols indicate censored values.

Exceeds Limit: MW-5A

Boron

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 51 background values. 21.57% NDs. Annual per-constituent alpha = 0.004342. Individual comparison alpha = 0.000725 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 8/17/2023 3:51 PM

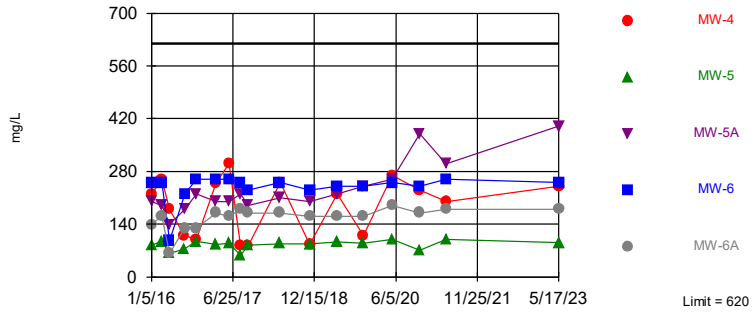
The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Sanitas™ v.9.6.37 Sanitas software licensed to Midwest Environmental Consultants. UG

Within Limit

Calcium

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 51 background values. Annual per-constituent alpha = 0.004342. Individual comparison alpha = 0.000725 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 8/17/2023 3:51 PM

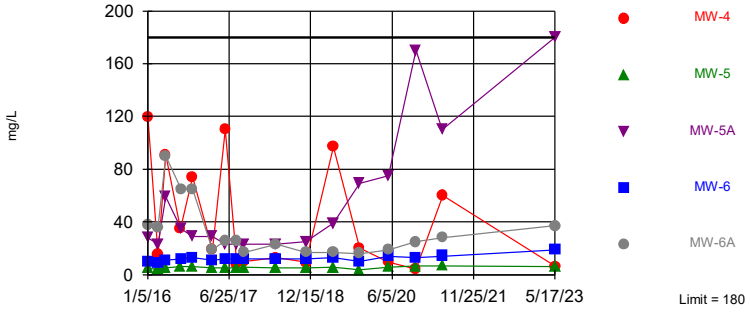
The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Sanitas™ v.9.6.37 Sanitas software licensed to Midwest Environmental Consultants. UG

Within Limit

Chloride

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 51 background values. Annual per-constituent alpha = 0.004342. Individual comparison alpha = 0.000725 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 8/17/2023 3:51 PM

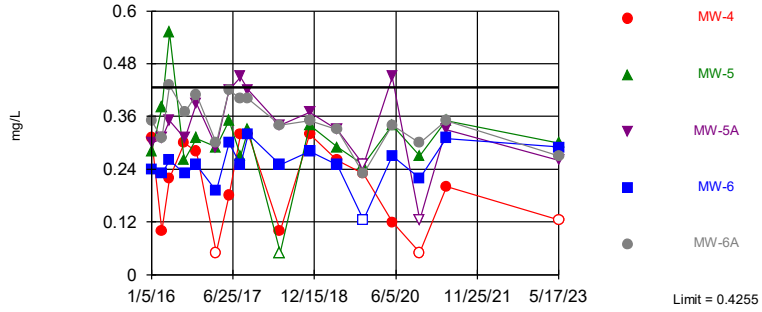
The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Sanitas™ v.9.6.37 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Within Limit

Fluoride

Interwell Parametric



Background Data Summary (based on square root transformation): Mean=0.4621, Std. Dev.=0.09303, n=51, 11.76% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9449, critical = 0.935. Kappa = 2.044 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 5 points to limit.

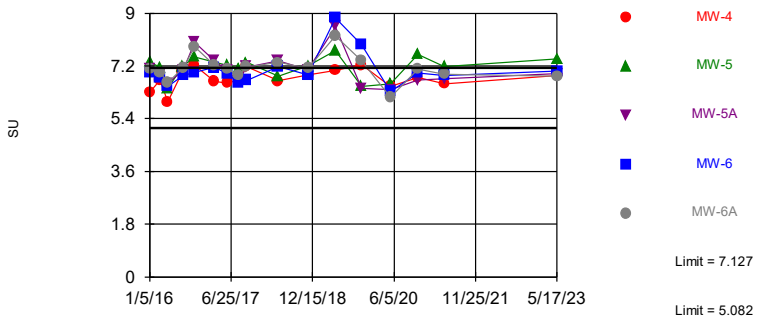
Prediction Limit Analysis Run 8/17/2023 3:51 PM

The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Exceeds Limits: MW-5

pH

Interwell Parametric



Background Data Summary (based on square transformation): Mean=38.31, Std. Dev.=6.108, n=51. Seasonality was not detected with 95% confidence. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9427, critical = 0.935. Kappa = 2.044 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0003816. Comparing 5 points to limit.

Prediction Limit Analysis Run 8/17/2023 3:51 PM

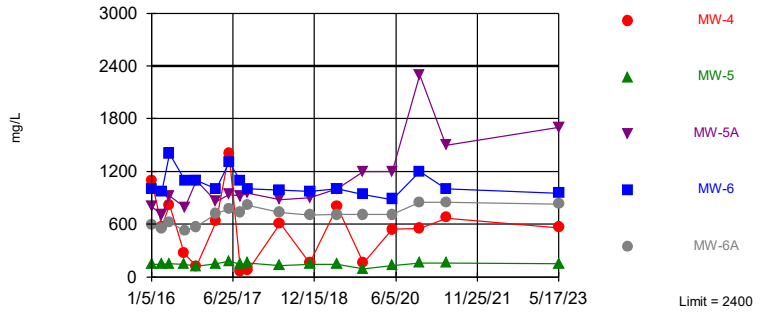
The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Sanitas™ v.9.6.37 Sanitas software licensed to Midwest Environmental Consultants. UG

Within Limit

Sulfate

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 51 background values. Annual per-constituent alpha = 0.004342. Individual comparison alpha = 0.000725 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 8/17/2023 3:51 PM

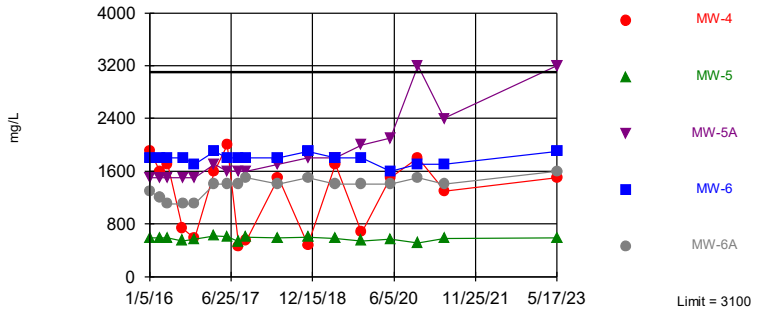
The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Sanitas™ v.9.6.37 Sanitas software licensed to Midwest Environmental Consultants. UG

Exceeds Limit: MW-5A

Total Dissolved Solids

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 51 background values. Annual per-constituent alpha = 0.004342. Individual comparison alpha = 0.000725 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 8/17/2023 3:51 PM

The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

Prediction Limit

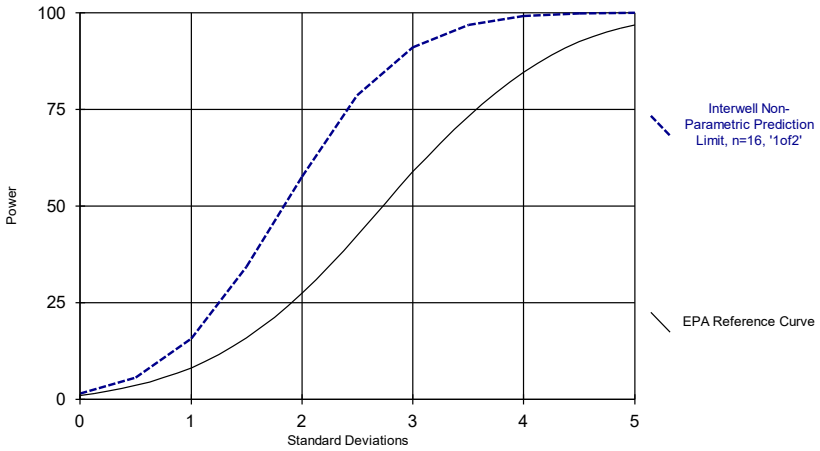
The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background Printed 8/17/2023, 3:59 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	MW-4	0.9	n/a	5/17/2023	0.04ND	No	51	21.57	n/a	0.000725	NP Inter (normality) ...
Boron (mg/L)	MW-5	0.9	n/a	5/17/2023	0.25	No	51	21.57	n/a	0.000725	NP Inter (normality) ...
Boron (mg/L)	**MW-5A**	**0.9**	**n/a**	**5/17/2023**	**1.8**	**Yes**	**51**	**21.57**	**n/a**	**0.000725**	**NP Inter (normality) ...**
Boron (mg/L)	MW-6	0.9	n/a	5/17/2023	0.35	No	51	21.57	n/a	0.000725	NP Inter (normality) ...
Boron (mg/L)	MW-6A	0.9	n/a	5/17/2023	0.35	No	51	21.57	n/a	0.000725	NP Inter (normality) ...
Calcium (mg/L)	MW-4	620	n/a	5/17/2023	240	No	51	0	n/a	0.000725	NP Inter (normality) ...
Calcium (mg/L)	MW-5	620	n/a	5/17/2023	91	No	51	0	n/a	0.000725	NP Inter (normality) ...
Calcium (mg/L)	MW-5A	620	n/a	5/17/2023	400	No	51	0	n/a	0.000725	NP Inter (normality) ...
Calcium (mg/L)	MW-6	620	n/a	5/17/2023	250	No	51	0	n/a	0.000725	NP Inter (normality) ...
Calcium (mg/L)	MW-6A	620	n/a	5/17/2023	180	No	51	0	n/a	0.000725	NP Inter (normality) ...
Chloride (mg/L)	MW-4	180	n/a	5/17/2023	6.5	No	51	0	n/a	0.000725	NP Inter (normality) ...
Chloride (mg/L)	MW-5	180	n/a	5/17/2023	6.2	No	51	0	n/a	0.000725	NP Inter (normality) ...
Chloride (mg/L)	MW-5A	180	n/a	5/17/2023	180	No	51	0	n/a	0.000725	NP Inter (normality) ...
Chloride (mg/L)	MW-6	180	n/a	5/17/2023	19	No	51	0	n/a	0.000725	NP Inter (normality) ...
Chloride (mg/L)	MW-6A	180	n/a	5/17/2023	37	No	51	0	n/a	0.000725	NP Inter (normality) ...
Fluoride (mg/L)	MW-4	0.4255	n/a	5/17/2023	0.125ND	No	51	11.76	sqrt(x)	0.000...	Param Inter 1 of 2
Fluoride (mg/L)	MW-5	0.4255	n/a	5/17/2023	0.3	No	51	11.76	sqrt(x)	0.000...	Param Inter 1 of 2
Fluoride (mg/L)	MW-5A	0.4255	n/a	5/17/2023	0.26	No	51	11.76	sqrt(x)	0.000...	Param Inter 1 of 2
Fluoride (mg/L)	MW-6	0.4255	n/a	5/17/2023	0.29	No	51	11.76	sqrt(x)	0.000...	Param Inter 1 of 2
Fluoride (mg/L)	MW-6A	0.4255	n/a	5/17/2023	0.27	No	51	11.76	sqrt(x)	0.000...	Param Inter 1 of 2
pH (SU)	MW-4	7.127	5.082	5/17/2023	6.88	No	51	0	x^2	0.000...	Param Inter 1 of 2
pH (SU)	**MW-5**	**7.127**	**5.082**	**5/17/2023**	**7.43**	**Yes**	**51**	**0**	**x^2**	**0.000...**	**Param Inter 1 of 2**
pH (SU)	MW-5A	7.127	5.082	5/17/2023	6.94	No	51	0	x^2	0.000...	Param Inter 1 of 2
pH (SU)	MW-6	7.127	5.082	5/17/2023	7.02	No	51	0	x^2	0.000...	Param Inter 1 of 2
pH (SU)	MW-6A	7.127	5.082	5/17/2023	6.85	No	51	0	x^2	0.000...	Param Inter 1 of 2
Sulfate (mg/L)	MW-4	2400	n/a	5/17/2023	560	No	51	0	n/a	0.000725	NP Inter (normality) ...
Sulfate (mg/L)	MW-5	2400	n/a	5/17/2023	150	No	51	0	n/a	0.000725	NP Inter (normality) ...
Sulfate (mg/L)	MW-5A	2400	n/a	5/17/2023	1700	No	51	0	n/a	0.000725	NP Inter (normality) ...
Sulfate (mg/L)	MW-6	2400	n/a	5/17/2023	950	No	51	0	n/a	0.000725	NP Inter (normality) ...
Sulfate (mg/L)	MW-6A	2400	n/a	5/17/2023	830	No	51	0	n/a	0.000725	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	MW-4	3100	n/a	5/17/2023	1500	No	51	0	n/a	0.000725	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	MW-5	3100	n/a	5/17/2023	590	No	51	0	n/a	0.000725	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	**MW-5A**	**3100**	**n/a**	**5/17/2023**	**3200**	**Yes**	**51**	**0**	**n/a**	**0.000725**	**NP Inter (normality) ...**
Total Dissolved Solids (mg/L)	MW-6	3100	n/a	5/17/2023	1900	No	51	0	n/a	0.000725	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	MW-6A	3100	n/a	5/17/2023	1600	No	51	0	n/a	0.000725	NP Inter (normality) ...

Sanitas™ Output – Sampling Event

Power Curve

Power Curve



This report reflects annual total based on two evaluations per year.

Analysis Run 8/17/2023 4:01 PM

The Empire District Client: Midwest Environmental Consultants Data: 5-23 App 3 Asbury ponds with background

APPENDIX B

November 2023 Sampling Event

Groundwater Monitoring, Sampling & Statistics Per EPA CCR Rule (CFR § 257.90-.98)

November 2023 Sampling Event

Asbury Power Plant CCR Impoundment
Jasper County, MO

January 2024

Prepared For:
The Empire District Electric Company
602 S. Joplin Avenue
Joplin, Missouri 64801

Midwest Environmental CONSULTANTS

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1.0 INTRODUCTION

The EPA Coal Combustion Residual Regulations (40 CFR Part 257) (CCR Rule) require groundwater monitoring of CCR impoundments. This Asbury Power Plant CCR impoundment groundwater monitoring sampling report is in accordance with the EPA CCR Rule. In accordance with the EPA CCR Rule (§ 257.90-.98) the status of the Groundwater Monitoring was placed on-line October 17, 2017, as required by the EPA CCR rule. Empire notified the Missouri Department of Natural Resources (MDNR) "State Director" via e-mail when this document was posted on-line, as required in the CCR rule.

The EPA CCR Rule requires the annual groundwater report to be prepared by January 31st of the following year. The first report was due January 31, 2018. This report was prepared in general accordance with the EPA CCR Rule for groundwater requirements. These regulations outline groundwater monitoring requirements and data evaluation methods. The annual groundwater report for the 2023 sampling events will be posted on-line within 30 days of placement in the operating record and the State Director will be notified.

A Site Characterization Workplan was submitted to the MDNR. On November 2, 2017, the facility received approval from MDNR that the site had been properly characterized and the facility could begin groundwater monitoring (included in **Appendix 1**).

The purpose of the groundwater monitoring system is to monitor the ground water quality surrounding the facility and to evaluate potential impacts and/or releases from facility operations. Eight rounds of background groundwater data were collected from January 2016 to August 2017. After the background data is obtained and after the first semi-annual sampling event, a reduced sampling frequency replaced the quarterly events to semi-annual events. This reduced sampling frequency will generally be completed during the months of May and November. Statistical analysis for EPA Appendix III results began after the first semi-annual sampling event which was collected on October 4, 2017. This analysis was to determine if a statistically significant increase (SSI) has occurred. If an SSI is verified, additional evaluation is required to determine if the SSI was caused by the CCR impoundment.

The Asbury Power Plant was retired on March 1, 2020. Residual fly ash, bottom ash, and other related wastes were placed in the impoundment area until April 1, 2021, as part of the decommissioning activities. On April 1, 2021, a Notification of Intent to Close CCR Surface Impoundment was posted to the facility's website and the State Director (MDNR) was notified. Dewatering of the impoundment was occurring during the first part of 2022. CCR grading, excavation and relocation activities began in June of 2022. Closure of the CCR impoundment was completed on January 23, 2023.

On November 28 and 29, 2023, a semi-annual sampling event was conducted per the EPA CCR Rule (§ 257.90-.98). The original nine (9) groundwater-monitoring wells were sampled and analyzed for the EPA Appendix III. In addition, MW-5AR sampling began in May 2023. MW-5AR was installed in April 2023 in response to the Alternative Source Demonstration (ASD) which was completed in April 2021. The ASD was placed in the operating record. After review of the first semi-annual groundwater sampling event analytical results completed in October 2017, the constituents listed in Appendix IV were eliminated from the overall semi-annual detection monitoring plan in accordance with the EPA CCR Rule. For quality assurance and quality control

measures, a duplicate sample at MW-5 was taken. These samples were preserved and submitted directly to the laboratory.

This report is a summary of the November 2023 sampling event and the findings of the statistical analysis of the results of the groundwater monitoring program at the Asbury Power Plant CCR Impoundment. Specific information about each sampling event can be obtained from the individual report which is part of the Asbury Operating Record.

2.0 SITE LOCATION

The site occupies the north half of Section 17, Township 30 North, and Range 33 West on the Asbury 7.5-Minute Quadrangle Map as seen in **Figure 1**. The site is located approximately 5.5 miles north-northeast of Asbury, Missouri, about 14 miles north-northwest of Joplin, Missouri. A map showing the locations of the monitoring wells is in **Figure 2**.

2.1 History

In March 1996, five (5) groundwater monitoring wells, MW-1 through MW-5, were installed around the perimeter of the Asbury Power Plant CCR impoundment. Monitoring wells MW-1, MW-2 and MW-3 were installed to a total depth of between 27.0 to 28.5 feet below ground surface (bgs). Monitoring wells MW-4 and MW-5 were installed to a total depth of 48 feet bgs. Each of the five monitoring wells was equipped with 10.0-foot well screens. The five wells were then developed, purged, and sampled in 1996.

In 2003, two (2) additional groundwater monitoring wells were installed and identified as MW-6 and MW-7. Both wells had 2-inch diameter PVC well casings installed to an approximate total depth of 44 feet below ground surface. Both wells were installed with an above ground steel protective cover. No other construction details such as well screen lengths were available for these two (2) wells. In December 2015, two (2) additional groundwater monitoring wells were installed and identified as MW-5A and MW-6A.

In April 2023, monitoring well MW-5AR was installed as proposed in the Alternative Source Demonstration completed April 2021. As part of this well installation maintenance of the entire groundwater monitoring well system was also completed. This included the installation of new concrete well pads, protective covers, and protective bollards. The well riser pipe was also modified for well cap installation. New as-built survey data was obtained and will be utilized in this and future reports. MW-5A will not be removed until after the eight (8) background samples have been collected for MW-5AR.

All wells are registered with MDNR – Missouri Geological Survey Program.

The Asbury Power Plant was retired on March 1, 2020, but residual fly ash, bottom ash, and other related wastes were placed in the impoundment area as part of the decommissioning activities. The facility is now known as the Asbury Renewable Operations Center. On April 1, 2021, a Notification of Intent to Close CCR Surface Impoundment was posted to the facility's website and the State Director (MDNR) was notified. Dewatering of the impoundment was occurring during the first part of 2022. CCR grading, excavation and relocation activities began in June of 2022. Closure of the CCR impoundment was completed on January 23, 2023.

2.2 Site Geology

Drilling and subsurface investigation activities at the Site and as part of the MDNR approved CCR landfill Detailed Site Investigation (DSI) for the adjacent landfill area identified three (3) primary geologic units at the Site. These geologic units include the surficial soil layer, Warner Sandstone (uppermost aquifer), and Riverton Shale (confining unit). The information presented herein includes the primary elements of a site characterization work plan consistent with the MDNR guidance.

Surficial Soil. Soils at the site consist of a surficial unit of cohesive soils (e.g., CL, SC, ML, and CH) underlain by Pennsylvanian-age bedrock. Soil thickness at the Site ranges from approximately 15-25 feet.

Warner Sandstone. The Warner Sandstone (Sandstone) is the uppermost bedrock unit in the south portion of the Site. In the north area of the Site, the Sandstone is overlain by the Riverton Shale (Shale). Based on the DSI information, the Sandstone and Shale can occur as alternating layers. The Sandstone and Shale are gradational in places and transition from shaley sandstone to sandy shale. According to the MDNR publication on the Pennsylvanian Subsystem in Missouri, the Warner Sandstone formation is described as follows: "Generally, the lower part is interbedded, very fine-grained sandstone and claystone. The upper part is largely medium bedded to massive channel fill sandstone. In places, the Warner consists primarily of shale and claystone, with only minor amounts of sandstone" and "ranges in thickness from 0 to 15m (49.2 ft.)."

The Sandstone is more than 25-30 feet thick in places and is generally medium hard and thin to medium bedded with occasional shale partings. The degree of induration of the Sandstone varies and generally increases with depth. Slug tests performed at selected DSI piezometers screened in the Sandstone exhibited hydraulic conductivities ranging from approximately 1.3x10-4 cm/sec to 5.9x10-6 cm/sec. The slug test results are consistent with values for sandstone and shaley sandstone. The groundwater gradient is towards the east and Blackberry Creek.

Riverton Shale. Layers of the Riverton Shale (Shale) exhibited thicknesses ranging from approximately one foot to more than 10 feet. The Shale is generally dark gray to light gray. The Shale is mainly thin bedded with hardness ranging from soft to hard. Six packer tests were performed during the DSI to assess the hydraulic conductivity of the Shale. The packer test results ranged from approximately $3.2x10^{-6}$ cm/sec to $4.9x10^{-8}$ cm/sec. The packer test data indicates that the Shale is an effective confining unit.

According to the MDNR publication on the Pennsylvanian Subsystem in Missouri, the Riverton Shale formation is described as "dark gray to black, fine-grained, relatively brittle shale and contains as many as three coal beds, each of which is underlain by underclay" and "varies in thickness from a featheredge to more than 90 feet".

Unnamed Coal. The Shale includes coal seams in places that range in thickness from a few inches to approximately 1.5 feet. The coal is generally black to dark gray.

2.3 Groundwater Monitoring Network Design

The groundwater monitoring system for the CCR impoundment consists of nine (9) groundwater monitoring wells plus the recently installed MW-5AR. Two (2) wells are considered upgradient. Two (2) wells are considered sidegradient; one well is only monitored for groundwater elevation. The remaining five (5) wells are considered downgradient along with the recently installed MW-5AR.

The groundwater monitoring wells (MWs) at the Asbury Power Plant is equipped with individual dedicated poly tubing to be connected to a peristaltic pump/controller at the surface. Low-flow, micro-purge and sampling techniques and technology are utilized to collect groundwater samples from the subject wells. The groundwater sampling procedures are discussed in further detail below.

2.4 Groundwater Monitoring Network

The locations of the monitoring wells are shown in **Figure 2**. The groundwater monitoring system for the site consists of the following monitoring wells:

- MW-1 Sidegradient (water level only)
- MW-2 Upgradient
- MW-3 Upgradient
- MW-4 Downgradient
- MW-5 Downgradient
- MW-5A Downgradient
- MW-5AR Downgradient (background sampling)
- MW-6 Downgradient
- MW-6A Downgradient
- MW-7 Sidegradient

2.5 Seasonal Variation

Historical groundwater elevation data has been limited. However, adequate lengths of well screen have been utilized during the construction of the wells to accommodate typical seasonal groundwater elevation variations seen in southwest Missouri.

2.6 Groundwater Flow Direction

Historically, the seasonally high potentiometric surface indicated the groundwater flow direction to the east. **Figure 3** is a potentiometric map for this sampling event.

Originally MW-7 was thought to be a downgradient well but review of the potentiometric mapping from the eight background sampling events revealed that the well is a sidegradient well. Therefore, the designation for MW-7 has been changed from a downgradient to a sidegradient well for compliance monitoring.

3.0 BASELINE GROUNDWATER DATA

3.1 Baseline Data Collection

Per EPA CCR Rule § 257.94(b), the site initiated the detection monitoring program in January 2016 to include obtaining a minimum of eight (8) independent samples for each background and downgradient well. The eight (8) independent groundwater samples were obtained and analyzed as required by the CCR Rule per the baseline groundwater monitoring plan. Background groundwater data was collected from January 2016 to August 2017.

Groundwater Monitoring Reports were completed for each sampling event and have been placed in the Operating Record. Summary tables of the results from each event are included in **Appendix 2**. A listing of each event is below:

- January 2016
- March 2016
- May 2016
- August 2016
- October 2016
- March 2017
- June 2017
- August 2017

Initial baseline monitoring was required at all monitoring wells. The sampling frequency was quarterly or more frequently for the first two (2) years. After the background data plus the first semi-annual sampling events, a reduced lower sampling frequency replaced the quarterly events to semi-annual events. This lessened sampling frequency will be completed during the months of April/May/June and October/November/December. MW-5AR baseline monitoring started in May 2023 and will be completed semi-annually until eight (8) rounds of background sampling data are obtained.

The initial two (2) years of baseline and the first semi-annual detection monitoring included parameters listed in Appendix III and Appendix IV of the EPA CCR Rule. The constituents listed in Appendix IV were eliminated from the overall semi-annual detection monitoring plan after review of the first semi-annual groundwater sampling event analytical results in January 2018, according to the EPA CCR Rule. **Appendix 2** contains the list of constituents.

3.2 Background Data Analysis

Sanitas™ for Groundwater was used to run the statistical analyses with settings used as recommended by the Sanitas™ training course and user manual. The background data consisted of eight sampling events between January 2016 and August 2017 for both the Appendix III and IV constituents. Eight background events are needed for statistical analysis. An analysis of the Appendix III background data was conducted and is included in **Appendix 5**. Trending was found in Boron (MW-3) and Total Dissolved Solids (MW-3). MW-3 is an up-gradient well. Trending was not removed at that time; otherwise, the site would be below the minimum of eight background samples needed to run statistics.

Four more sets of background data were available to add to the background data set for the November 2019 sampling event and then four more sets for the November 2021 sampling event for a total of sixteen (16) background sets. Four more sets for the November 2023 sampling event

for a total of twenty (20) background sets for the November 2023 sampling event. The analysis of the additional data for the background data sets was conducted and is included in **Appendix 5**. No trending was found in any of the additional sets of data, so they were added to the baseline data set to increase the statistical power of the background data.

4.0 GROUNDWATER SAMPLING EVENT

On November 28 and 29, 2023, nine (9) groundwater monitoring wells were sampled by Midwest Environmental Consultants (MEC) for the EPA CCR Rule Appendix III parameters. In addition, MW-5AR was also sampled for Appendix III and Appendix IV parameters. For quality assurance and quality control measures, a duplicate sample was taken at MW-5. The sampling protocol and methodology was to be conducted in accordance with the facility's Sampling and Analysis Plan. **Table 1** provides a list of the analytical methods employed by the subcontracted laboratory.

Table 1 – Analytical Methods	
Method	**Description**
9056A	Anions, Ion Chromatography
6020A	Metals (ICP/MS)
SM 2540C	Solids, Total Dissolved (TDS)
Field Sampling	Field Sampling

Appendix 3 includes Monitoring Well Field Inspection sheets and field notes. The physical integrity of the wells was good. During sample collection each of the wells was monitored for pump discharge and formation recharge. Initially, a static water level for each well was recorded (**Table 2**). To ensure sufficient recharge while sampling, static water levels were collected during pumping. Prior to sample collection, field parameters for each well were measured with a flow-through meter. When the field parameters stabilized, samples for analytical testing were collected and placed on ice for hand delivery to the laboratory. At the conclusion of sample collection from each well, a final static water level measurement was obtained. The samples were collected in the appropriately pre-preserved sample containers and placed on ice for delivery.

Table 2 - Groundwater Sampling Field Parameters Summary During November 2023 Sampling Event				
WELL ID	**STATIC WATER LEVEL (ft-BTOC)**		**PURGE RATE (mL/min)**	**STABILIZED pH**
	Initial	**Final**		
MW-1*	8.85	NA	NA	NA
MW-2	4.33	6.35	200	5.76
MW-3	2.87	2.90	200	5.77
MW-4	9.37	14.48	200	6.65
MW-5	0.5	9.77	200	7.16
MW-5A	9.88	17.57	200	6.59
MW-5AR	1.72	9.68	200	7.31
MW-6	9.99	17.78	200	6.79
MW-6A	9.17	16.89	200	6.33
MW-7	6.15	7.80	200	6.18

* Water Level Only NA – Not Applicable

Appendix 4 includes the initial analytical results for the sampling event. Included with this analytical report are sample information; chain of custody; wet chemistry data; and volatile data.

5.0 DATA VALIDATION PROCEDURES FOR GROUNDWATER MONITORING DATA

Midwest Environmental Consultants receives Data Packages from the analytical laboratory (Eurofins). The internal quality control/quality assurance case narratives and reported data are then reviewed. Generally, the data validation procedures established by the U.S. Environmental Protection Agency *Contract Laboratory Program Functional Guidelines for Organic Data Review* and *Functional Guidelines for Inorganic Data Review* is followed. These guidelines are used to assign data qualifiers to the data. A formal data validation report for the site is not prepared; however, any significant issues are noted in the groundwater monitoring report.

MEC evaluates the data set for precision, accuracy, representativeness, comparability, and completeness (PARCC).

5.1 Precision

Laboratory Precision. Laboratory quality control procedures to measure precision consist of laboratory control sample (LCS) analysis and analysis of matrix spike/matrix spike duplicates (MS/MSD). These analyses are used to define analytical variability.

Field Precision. Analyses of duplicate samples are used to define the total variability (replicability) of the sampling/analytical system. Field replicates are collected at a rate of one per sampling event.

5.2 Accuracy

Accuracy is determined by calculating the percent recoveries for analyses of surrogate compounds, LCSs, continuing calibration check standards, and matrix spike samples. Acceptable percent recoveries are established for SW-846 and EPA methods. Field and laboratory blank analysis are also used to address measurement bias.

Field Blanks. Field blanks consisted of a trip blank and a field blank. One trip blank per cooler accompanies samples for volatile organic analyses.

Laboratory Blanks. Method blanks, artificial, matrix-less samples, are analyzed to monitor the laboratory analysis system for interferences and contamination from glassware, reagents, etc. Method blanks are taken through the entire sample preparation process. They are included with each batch of extractions or digestion prepared, or with each 20 samples, whichever is more frequent.

5.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely reflects site condition. Representativeness of the data is determined by comparing actual sampling procedures to those delineated in the field sampling plan, comparing results from field replicate samples, and reviewing the results of field blanks. Field notes are reviewed as part of our data validation process.

5.4 Comparability

Comparability expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability is ensured by using established and approved sample collection techniques and analytical methods, consistent basis of analysis, consistent reporting units, and analyzing standard reference materials.

5.5 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected under controlled laboratory conditions. Completeness is defined as the valid data percentage of the total tests requested. Valid data are defined as those where the sample arrived at the laboratory intact, properly preserved, in sufficient quantity to perform the requested analyses, and accompanied by a completed chain-of-custody form. Furthermore, the sample must have been analyzed within the specified holding time and in such a manner that analytical QC acceptance criteria were met.

6.0 STATISTICAL ANALYSIS

6.1 Sampling Results

The constituents with results above the laboratory reporting limits are included in **Table 3**. This table also includes the recently installed MW-5AR. The Appendix IV results for MW-5AR are included in **Appendix 2**. The Eurofins laboratory analytical results are included in **Appendix 4**.

Table 3 – Constituents During November 2023 Sampling Event

Constituent	Units	MCL	MW-2 (up)	MW-3 (up)	MW-4 (down)	MW-5 (down)	MW-5A (down)	MW-5AR (down)	MW-6 (down)	MW-6A (down)	MW-7 (side)
Appendix III											
Boron	ug/L	NA	110	52	<50J	300	2400	400	400	360	300
Calcium	mg/L	NA	26	93	260	93	430	120	270	240	490
Chloride	mg/L	NA	150	57	4.6	6	230	28	30	86	44
Fluoride	mg/L	4.0	<1J	<1J	<1	<1J	<1	<1J	<1J	<1	<1
pH	SU	NA	5.76	5.77	6.65	7.16	6.59	7.31	6.79	6.33	6.18
Sulfate	mg/L	NA	96	480	630	170	1400	370	1100	1100	2000
Total Dissolved Solids	mg/L	NA	380	850	1500	590	3300	920	1900	2000	2800

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

No constituents were detected above the Federal Safe Drinking Water maximum contaminant level (MCL) during the sampling event.

6.2 Statistical Analysis

Prediction interval analyses compare one or more observations to a limit set by background data. Interwell analyses compare observations from background wells, which include upgradient and sidegradient wells per EPA Unified Guidance definitions, and their relation to the observations for the downgradient wells. Intrawell analyses compare background observations to current observations of the same well. To appropriately characterize the groundwater beneath the site, the statistical methods utilized at the facility consider the following facts as they relate to site:

- Potential differences in geochemical characteristics of the groundwater caused by the differing lithologies in contact with the screened interval from well to well.
- Potential impacts of surface infiltration into the groundwater environment.

Due to varying geology in the state of Missouri, intrawell analyses had initially been deemed a more appropriate method. Municipal and demolition waste landfills in Missouri typically utilize intrawell prediction limits per MDNR. However, it was noted that the power curve for these analyses was not considered strong yet. The data set consisted of only 13 sampling events from January 2016 to November 2019. EPA Unified Guidance recommends 20 or more sampling events for background data for intrawell prediction limits. A small data set triggers an SSI when there is even a slight increase in concentration. Sanitas also note to each exceedance "*Insufficient data to test for seasonality: data were not deseasonalized.*" Minor increases in concentration noted in the May and November 2019 sampling events did not result in any primary MCLs to be exceeded by any of the prediction limit exceedances during the sampling event, demonstrating that the groundwater has not been contaminated.

The EPA Unified Guidance Chapter 5.2.3 states "*In groundwater data collection and testing, background conditions may not be static over time. Caution should be observed in removing observations which may signal a change in natural groundwater quality. Even when conditions have not changed, an apparently extreme measurement may represent nothing more than a portion of the background distribution that has yet to be observed. This is particularly true if the background data set contains fewer than 20 samples.*" Chapter 5.2.4 states "*With such a small background sample, it can be difficult to develop an adequately powerful intrawell prediction level or control chart, even when retesting is employed (Chapter 19). Thus, additional background data will be needed to augment compliance well samples*". Minor increases in concentrations did not result in any primary MCLs to be exceeded by any of the prediction limit exceedances during the sampling event, demonstrating that the groundwater has not been contaminated.

MDNR made several requests per EPA in the correspondence located in **Appendix 1** which included the EPA review of the groundwater reports as seen in **Table 4**.

Table 4 – EPA Review of Groundwater Reports	
Facility	Asbury Power Plant
Location	Asbury, MO
Owner	Empire District Electric Company
Units	Upper Pond-unlined, South Pond-unlined, Lower Pond-unlined
Geology	Surficial unit of clay, clayey sand, and silt approximately 15 to 25 feet thick underlain by Warner Sandstone approximately 25-30 feet thick in the southern portion of the site and the Riverton Shale in the northern area of the site
Problematic Use of Intra Well Comparisons	Analytical results indicate consistent differences in contaminant concentrations between upgradient and downgradient wells. Consequently, interwell comparisons are feasible and would be preferable in the absence of compelling reasons to use intra well analysis
Problematic Alternate Source Determination	
Conclusions	While there are no boring logs in the documents to confirm that the wells are screened in the same geologic unit, consistency in the field parameters and the description of the geology suggest that the wells are screened in the sandstone. The analytical results indicate consistent differences in contaminant concentrations between upgradient and downgradient wells, consequently, interwell comparisons are feasible and would be preferable in the absence of compelling reasons to use intra wells analyses

Sanitas™ for Groundwater was used to run the statistical analyses with settings used as recommended by the Sanitas™ training course and user manual. Interwell prediction intervals were run per EPA's request. The Sanitas™ output is included in **Appendix 5**.

The November 2019 sampling event report indicated confirmed intrawell prediction limits exceedances. Intrawell prediction limits were utilized per the facility's 2018 Groundwater Statistical Analysis Plan. The Annual Report recommending the site move into assessment monitoring was stamped on January 23, 2020, and submitted to the facility. However, in February

MEC received an email from the facility. MDNR had forwarded EPA correspondence requesting that the site change their statistical evaluation method to interwell prediction limits. EPA CCR Rule 40 CFR § 257.94(e)(2) allows at alternative source demonstration to be completed if the statistically significant increases are result of the statistical evaluation rather than from a release from the facility. Appendix 1 contains the MDNR/EPA correspondence.

Statistical analysis was performed on the Appendix III constituents from the sampling event compared to the updated background dataset. Prediction interval analyses compare one or more observations to a limit set by background data. Interwell analyses compare observations from upgradient background wells and their relation to the observations for the downgradient wells. Intrawell analyses compare background observations to current observations of the same well. Due to varying geology in the state of Missouri, intrawell analyses had initially been deemed a more appropriate method. However, EPA has requested the site utilize interwell prediction limits.

Statistical analysis results are presented below for those constituents determined to have exceeded a prediction limit. However, EPA's "*Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities*," March 2009, EPA 530/R-09-007 is referenced multiple times in the preamble of the EPA CCR regulations for groundwater sampling and analysis requirements. According to the EPA Unified Guidance, a prediction limit exceedance is not considered a statistically significant increase (SSI) until it is confirmed through retesting. SSIs generated by non-detectable results or with less than eight background events are considered statistically invalid.

Table 5 lists the parameters with exceedances of prediction limits during the sampling event, the associated monitoring wells, if the exceedance is initial versus confirmed, the predicted limit, the measured concentration, and the MCL set forth in the National Drinking Water Regulations. The MCL is the highest level of a contaminant that is allowed in drinking water.

Recently install MW-5AR is still gathering background data and no statistics were completed on this well.

Table 5 – Interwell Prediction Limit Exceedances Observed During November 2023 Sampling Event

Constituent	Monitoring Well	Initial vs. Confirmed	Predicted Limit	Measured Concentration	Drinking Water MCLs
Boron (mg/L)	MW-5A	Confirmed	0.9	2.4	NA
Chloride (mg/L)	MW-5A	Initial	180	230	NA
Total Dissolved Solids (mg/L)	MW-5A	Confirmed	3100	3300	NA

NA = Not Applicable

*Field Sampled (less precise but within the required hold time)

6.3 Results Interpretation

November 2023

There was one initial interwell prediction limit exceedance for chloride (MW-5A) in the listed monitoring well during November 2023 sampling event. During the November 2023 sampling event, interwell prediction exceedances in boron (MW-5A) and total dissolved solids (MW-5A)

were confirmed from the May 2023 sampling event. There are no current primary (health based) MCLs for boron or total dissolved solids. The facility will resample as part of the May 2024 sampling event.

It was noted during sampling that water levels were significantly lower than normally seen due to drought conditions. The drought should be considered excessive. Governor Mike Parson declared at state of emergency in Missouri for drought conditions starting on July 21, 2022. **Table 6** shows the drop in elevation between the May 2022 and November 2023 sampling events.

Table 6 - Groundwater Sampling Comparison

WELL ID	NOVEMBER 2023 STATIC WATER LEVEL (ft-BTOC)		PRE-DROUGHT MAY 2022 STATIC WATER LEVEL (ft-BTOC)		DIFFERENCE IN INTIAL LEVELS (ft-BTOC)
	Initial	Final	Initial	Final	
MW-1*	8.85	NA	5.41	NA	3.44
MW-2	4.33	6.35	3.07	4.87	1.26
MW-3	2.87	2.90	0.5	0.7	2.37
MW-4	9.37	14.48	5.83	12.93	3.54
MW-5	0.5	9.77	1.82	13.39	-1.32
MW-5A	9.88	17.57	9.50	19.43	0.38
MW-5AR	1.72	9.68	NA	NA	NA
MW-6	9.99	17.78	8.86	18.07	1.13
MW-6A	9.17	16.89	7.93	18.20	1.24
MW-7	6.15	7.80	3.15	3.32	3.00

The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, November 2022, and May 2023 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed baseline samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

Based upon these findings the site will not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

Below is a discussion of the previous results for comparison.

May 2023

There was one initial interwell prediction limit exceedance for Total Dissolved Solids (MW-5A) in the listed monitoring well during May 2023 sampling event. During the May 2023 sampling event, interwell prediction exceedances in boron (MW-5A) and pH (MW-5) were confirmed. There are no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility will resample as part of the November 2023 sampling event. The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, November 2022, and May 2023 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater. The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed baseline samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease. Based upon these findings the site will not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis. As part of this well installation maintenance of the entire groundwater monitoring well system was also completed. This included the installation of new concrete well pads, protective covers, and protective bollards. The well riser pipe was also modified for well cap installation. New as-built survey data was obtained and will be utilized in this and future reports.

November 2022

There was no initial interwell prediction limit exceedances for the listed monitoring well during November 2022 sampling event. During the November 2022 sampling event, interwell prediction exceedances in boron (MW-5A) and pH (MW-5) were confirmed. There are no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility will resample as part of the May 2023 sampling event. It was noted during sampling that water levels were significantly lower than normally seen due to drought conditions. The drought should be considered excessive. Governor Mike Parson declared at state of emergency in Missouri for drought conditions on July 21, 2022. **Table 7** shows the drop in elevation between the May 2022 and November 2022 sampling events.

Table 7 - Groundwater Sampling Comparison					
WELL ID	NOVEMBER 2022 STATIC WATER LEVEL (ft-BTOC)		MAY 2022 STATIC WATER LEVEL (ft-BTOC)		DIFFERENCE IN INTIAL LEVELS (ft-BTOC)
	Initial	Final	Initial	Final	
MW-1*	9.72	NA	5.41	NA	4.31
MW-2	3.76	6.43	3.07	4.87	0.69
MW-3	3.57	3.64	0.5	0.7	3.07
MW-4	8.39	13.98	5.83	12.93	2.56
MW-5	1.31	11.17	1.82	13.39	-0.51
MW-5A	11.22	20.88	9.50	19.43	1.72
MW-6	10.66	19.86	8.86	18.07	1.8
MW-6A	9.40	18.30	7.93	18.20	1.47
MW-7	6.42	6.50	3.15	3.32	3.27

The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, and November 2022 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater. The ASD theorizes that this SSI is an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirms that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposes a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well will be monitored and compared to the existing MW-5A to determine if the theory is correct. Based upon these findings the site did not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

May 2022

There was no initial interwell prediction limit exceedances for the listed monitoring well during May 2022 sampling event. During the May 2022 sampling event, interwell prediction exceedances in boron (MW-5A) and pH (MW-5, MW-6 and MW-6A) were confirmed. There are no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility will resample as part of the November 2022 sampling event. The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, and May 2022 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural

variation in groundwater quality instead of a release to groundwater. The ASD theorizes that this SSI is an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirms that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposes a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well will be monitored and compared to the existing MW-5A to determine if the theory is correct. Based upon these findings the site did not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

November 2021

There was no initial interwell prediction limit exceedances for the listed monitoring well during November 2021 sampling event. During the November 2021 sampling event, interwell prediction exceedances in boron (MW-5A) and pH (MW-5, MW-6 and MW-6A) were confirmed. There are no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility will resample as part of the May 2022 sampling event. The results of the interwell prediction limit statistical analysis of the November 2020, May 2021 and November 2021 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater. The ASD theorizes that this SSI is an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirms that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposes a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well will be monitored and compared to the existing MW-5A to determine if the theory is correct. Based upon these findings the site did not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

May 2021

There was no initial interwell prediction limit exceedances for the listed monitoring well during May 2021 sampling event. During the November 2020 sampling event, Initial interwell prediction exceedances in pH (MW-5, MW-6 and MW-6A) and total dissolved solids (MW-5A) were noted. However, the initial prediction limit exceedance of total dissolved solids (MW-5A) was not confirmed during the May 2020 sampling event. There are no current primary (health based) MCLs for pH, but the confirmed pH results are still within the acceptable range of 6.5 to 9 SU. The facility plans to resample as part of the November 2021 sampling event. The results of the interwell prediction limit statistical analysis of the November 2020 and May 2021 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a

release to groundwater. The ASD theorizes that this SSI is an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirms that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposes a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well will be monitored and compared to the existing MW-5A to determine if the theory is correct. Based upon these findings the site did not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

November 2020

The results of the EPA requested interwell prediction limit statistical analysis of the November 2020 sampling event indicate a confirmed exceedance for Boron (MW-5A). Boron does not have a MCL. The facility will conduct an alternative source demonstration in the next 90 days per the EPA CCR Rule (§ 257.94). The results for pH (MW-5, MW-6 and MW-6A) and total dissolved solids (MW-5A) indicated initial interwell prediction limit exceedances for the listed monitoring well during November 2020 sampling event. There are no current primary (health based) MCLs for pH or total dissolved solids. The facility plans to resample as part of the May 2021 sampling event. During the May 2020 sampling event, Initial interwell prediction exceedances in boron (MW-5A and MW-6A) and fluoride (MW-5A) were noted. However, the initial prediction limit exceedances of boron (MW-6A) and fluoride (MW-5A) were not confirmed during the November 2020 sampling event.

May 2020

The results of the EPA requested interwell prediction limit statistical analysis of the May 2020 sampling event indicate that the site is in compliance. The results for boron (MW-5A and MW-6A) and fluoride (MW-5A) indicated an initial interwell prediction limit exceedance for the listed monitoring well during May 2020 sampling event. There is a current primary (health based) MCL for fluoride of 4.0 mg/L but the result is below the limit. Boron does not have a MCL but does have an EPA proposed groundwater protection standard of 4.0 mg/L but all results were below that limit. Trending was found to be significant for boron (MW-5A) but not significant in boron (MW-6A) and fluoride (MW-5A). Boron is also trending upward in MW-2 which is an up-gradient well. The facility plans to resample as part of the November 2020 sampling event. During the November 2019 sampling event, Initial interwell prediction exceedances in pH (MW-4, MW-5, MW-5A, MW-6 and MW-6A) were noted. However, these initial prediction limit exceedances were not confirmed during the May 2020 sampling event.

November 2019

The result for Chloride (MW-5A), pH (MW-4) and Sulfate (MW-5A) indicated an initial intrawell prediction limit exceedance for the listed monitoring well during the November 2019 sampling event. There is no current primary (health based) MCL for chloride, pH, or sulfate. During May 2019, the result for Boron (MW-5A) indicated an initial intrawell prediction limit exceedance and Total Dissolved Solids (MW-5A) indicated a confirmed intrawell prediction limit exceedance. There is no current primary (health based) MCL for boron and total dissolved solids. These prediction limit exceedances were confirmed during the November 2019 sampling event. A resample of MW-5A was conducted on December 11, 2019. The results of the resampling confirmed the exceedances and the site planned to move into assessment monitoring. However, in February MEC received an email from the facility. MDNR had forwarded EPA correspondence

requesting that the site change their statistical evaluation method to interwell prediction limits. EPA CCR Rule 40 CFR § 257.94(e)(2) allows at alternative source demonstration to be completed if the statistically significant increases are result of the statistical evaluation rather than from a release from the facility. **Appendix 1** contains the MDNR/EPA correspondence. The results of the EPA requested interwell prediction limit statistical analysis of the November 2019 sampling event indicate that the site is in compliance. Initial interwell prediction exceedances in pH (MW-4, MW-5, MW-5A, MW-6 and MW-6A) were noted but have not been confirmed. There is no current primary (health based) Maximum Contamination Level (MCL) for pH. Trending was not found to be significant for pH in any well during the analysis of the background data set.

May 2019

The result for Boron (MW-5A) and pH (MW-3(u), MW-5A, MW-6 and MW-6A) indicated an initial intrawell prediction limit exceedance for the listed monitoring well during the May 2019 sampling event. There is no current primary (health based) MCL boron or pH. The facility plans to resample as part of the November 2019 sampling event. During November 2018, the result for Total Dissolved Solids (MW-5A) indicated an initial intrawell prediction limit exceedance. There is no current primary (health based) MCL for total dissolved solids. This initial prediction limit exceedances were confirmed during the May 2019 sampling event. However, it should be noted that the power curve for these analyses is not considered strong. A small data set triggers an SSI when there is even a slight increase in concentration. The EPA Unified Guidance Chapter 5.2.4 states "With such a small background sample, it can be difficult to develop an adequately powerful intrawell prediction level or control chart, even when retesting is employed (Chapter 19). Thus, additional background data will be needed to augment compliance well samples". Minor increases in concentrations did not result in any primary MCLs to be exceeded by any of the prediction limit exceedances during the sampling event, demonstrating that the groundwater has not been contaminated. It was also noted that higher levels of total dissolved solids were seen in the side-gradient well MW-7 demonstrating that there was likely not a release from the facility. Therefore, the site will continue with detection monitoring on a semi-annual basis at this time.

November 2018

The result for Total Dissolved Solids (MW-5A) indicated an initial intrawell prediction limit exceedance for the listed monitoring well during the November 2018 sampling event. There is no current primary (health based) MCL for total dissolved solids. The facility plans to resample MW-5A for Total Dissolved Solids as part of the May 2019 sampling event. During May 2018, no intrawell prediction limits were exceeded. Therefore, there were no initial prediction limit exceedances to confirm during the November 2018 sampling event.

May 2018

No intrawell prediction limits were exceeded during the May 2018 sampling event. The October 2017 results for Total Dissolved Solids (MW-7) indicated an exceedance of the predicted limit for the listed monitoring wells. However, this initial prediction limit exceedance was not confirmed during the May 2018 sampling event.

October 2017

The result for Total Dissolved Solids (MW-7) indicated an initial intrawell prediction limit exceedance for the listed monitoring wells during the October 2017 sampling event. However, the result was below the tolerance limit. There is no current primary (health based) MCL for total dissolved solids. Review of the Total Dissolved Solids in the duplicate sample taken from the same

well (MW-7) shows a result of 3,000 mg/L, which would not be an exceedance of the intrawell prediction limit of 3,069 mg/L. Due to the variances between the sample and the duplicate, the site will re-evaluate MW-7 for Total Dissolved Solids during the next sampling event. MW-7 is considered a sidegradient well, therefore no further action is needed for exceedances in sidegradient or upgradient wells.

6.4 Proposed Actions

Statistical analysis will continue to be completed with interwell prediction limits per EPA's request. The results of the EPA requested interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, November 2022 and May 2023 sampling events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

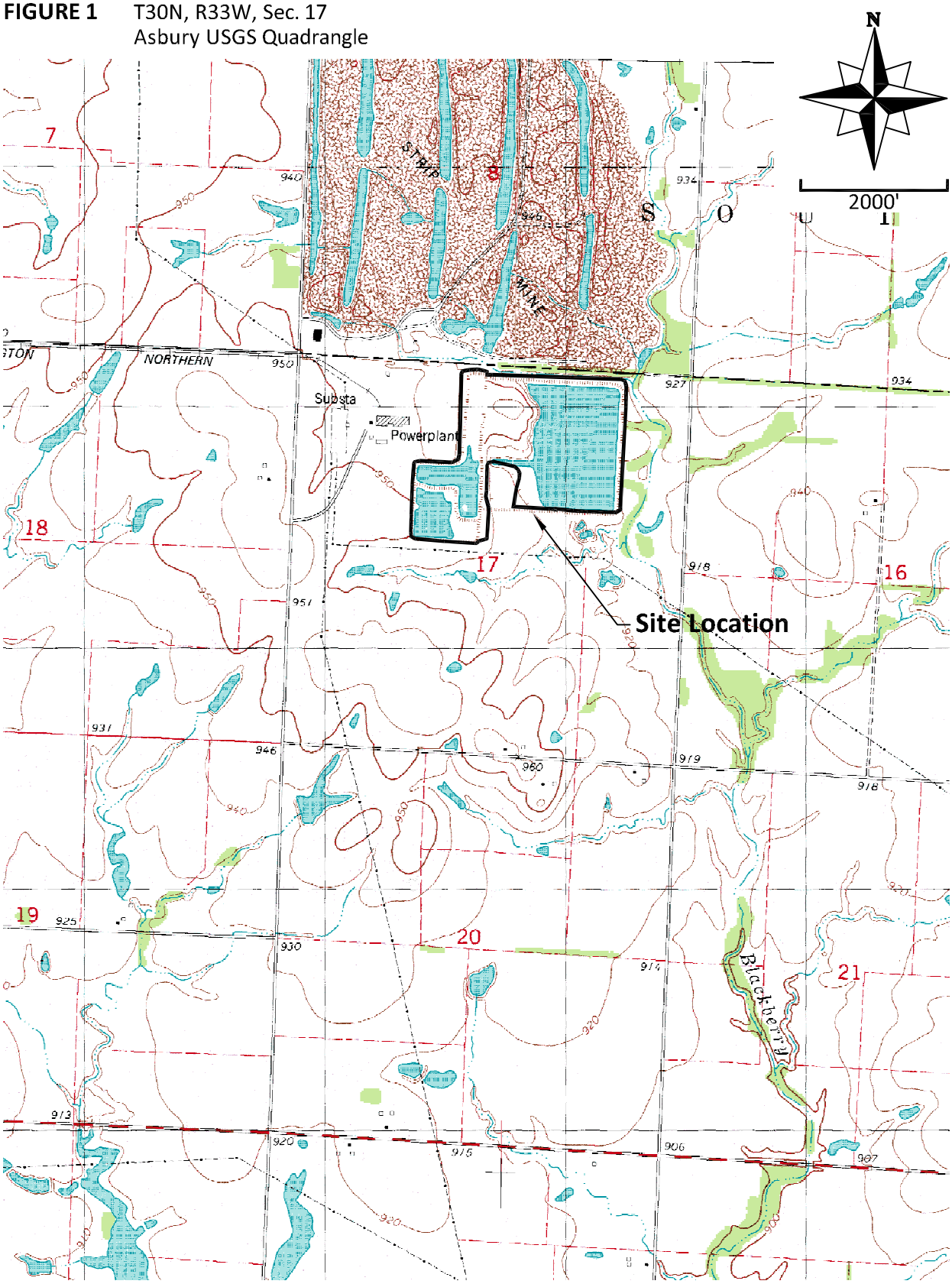
The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed baseline samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

Based upon these findings the site does not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

FIGURES

Asbury Generating Station CCR Impoundment
Groundwater Sampling Event - November 2023
Site Location Map

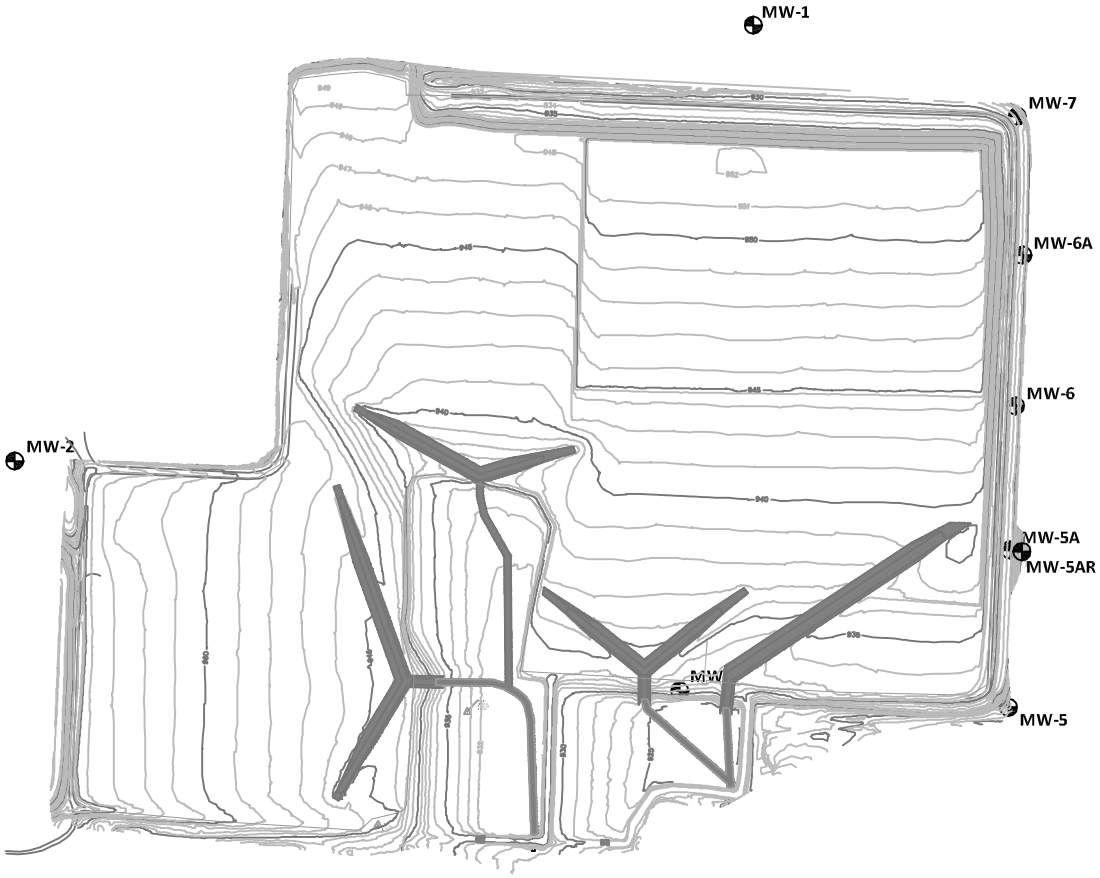
FIGURE 1 T30N, R33W, Sec. 17
Asbury USGS Quadrangle



January 2024

Asbury Generating Station CCR Impoundment
Groundwater Sampling Event - November 2023
Groundwater Monitoring System

FIGURE 2



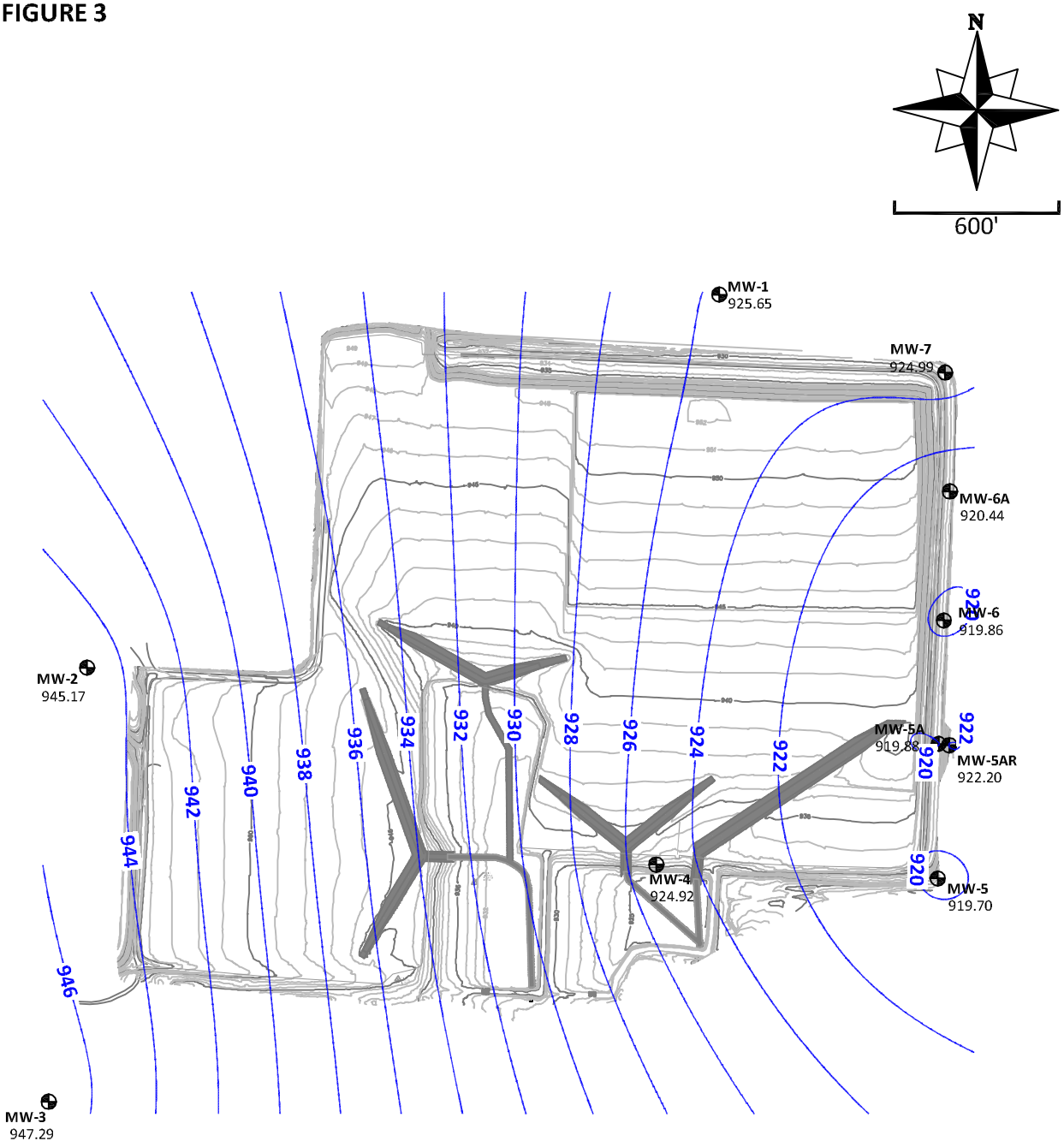
Well ID	Northing	Easting
MW-1	435789.71	2765168.83
MW-2	434428.56	2762861.43
MW-3	432844.71	2762721.27
MW-4	433709.70	2764938.79
MW-5	433659.19	2765966.39
MW-5A	434150.39	2765969.77
MW-5AR	434145.71	2766008.17
MW-6	434600.94	2765988.47
MW-6A	435071.72	2766010.58
MW-7	435505.31	2765993.01

Legend

Monitoring Well

Asbury Generating Station CCR Impoundment
Groundwater Sampling Event - November 2023
Groundwater Piezometric Surface Map

FIGURE 3



Well ID	Northing	Easting	Top Of Casing	Static Water Level (BTOC)	Static Water Level
MW-1	435789.71	2765168.83	934.50	8.85	925.65
MW-2	434428.56	2762861.43	949.50	4.33	945.17
MW-3	432844.71	2762721.27	950.16	2.87	947.29
MW-4	433709.70	2764938.76	934.29	9.37	924.92
MW-5	433659.19	2765966.39	920.20	0.50	919.70
MW-5A	434150.39	2765969.77	929.76	9.88	919.88
MW-5AR	434145.71	2766008.17	923.92	1.72	922.20
MW-6	434600.94	2765988.47	929.85	9.99	919.86
MW-6A	435071.72	2766010.58	929.61	9.17	920.44
MW-7	435505.31	2765993.01	931.14	6.15	924.99

Legend

⊕ **Monitoring Well**

APPENDIX 1

EPA/MDNR Correspondence

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Eric R. Greitens, Governor
Carol S. Comer, Director

NOV 02 2017

Mr. Kavan Stull, Senior Environmental Coordinator
Empire District
602 South Joplin Avenue
Joplin, MO 64802

RE: Site Characterization Workplan

Dear Mr. Stull:

The Missouri Department of Natural Resources has reviewed the document "Site Characterization Workplan" dated May 16, 2017. The site has undergone extensive characterization regarding construction of a coal combustion residual (CCR) landfill near the CCR impoundments. The department's Water Protection Program has determined, through consulting with the Missouri Geological Survey, this characterization is sufficient and may be used in whole to complete the required monitoring of the sub-surface conditions at the site. Additional submittal of site characterization is not necessary, as the previous submittal meets the requirement for special condition 19(b) of the Missouri State Operating Permit MO-0095362. The facility may proceed with the next step laid out in the permit; special condition 19(c). Enclosed is the Missouri Geological Survey concurrence.

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to 10 CSR 20 1.020 and Section 621.250, RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Contact information for the AHC is by mail at Administrative Hearing Commission, United States Post Office Building, Third Floor, 131 West High Street, P.O. Box 1557, Jefferson City, MO 65102, by phone at 573-751-2422, by fax at 573-751-5018, and by website at www.oa.mo.gov/ahc.

If you have any questions, please do not hesitate to contact Ms. Pam Hackler by mail at Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102-0176, by phone at 573-526-3386; or by email at pam.hackler@dnr.mo.gov. Thank you.

Sincerely,

WATER PROTECTION PROGRAM

Michael J. Abbott, Chief
Operating Permits Section

MJA/php

Enclosure

c: Mr. Randall Willoughby, Southwest Regional Office

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Eric R. Greitens, Governor
Carol S. Comer, Director

MEMORANDUM

SWR18011
Jasper County

DATE: October 18, 2017

TO: Pam Hackler- WPP- Industrial Wastewater Unit

FROM: Fletcher N. Bone, Geologist, Environmental Geology Section, Geological Survey Program, MGS

Fletcher N. Bone

STATE OF MISSOURI
REGISTERED GEOLOGIST
2014000148
October 18, 2017

SUBJECT: Site characterization for existing CCR impoundments
Asbury Power Plant Site Characterization Work Plan- CCR
37 21 22.66 Latitude, -94 35 4.79 Longitude,
Jasper County, Missouri

The Missouri Geological Survey (MGS) has reviewed the documents titled, 'NPDES Permit MO-0095362 Asbury Power Plant, Jasper County, Missouri, Site Characterization Work Plan', prepared by Empire District Electric Company, dated September 8, 2017 and 'Site Characterization Work Plan, Coal Combustion Residuals Impoundments, Empire Electric Facility - Permit MO-0095362, Jasper County, Missouri, Geotechnology Project No. J021738.03', prepared by Geotechnology Inc., dated May 16, 2017. The MGS offers the following comment.

General Comment:

The MGS agrees that the existing Coal Combustion Residuals (CCR) impoundments (site 1) do not need further site characterization, at this time. The site characterization performed, as described in the Detailed Site Investigation Report (DSI), dated January 21, 2015, at the proposed CCR impoundment (site 2) that is approximately 1,000 feet south of the existing CCR impoundments (site 1), coupled with the geologic and hydrologic data provided that pertains to the existing CCR impoundments (site 1) (1996 to present data), provides adequate characterization of the geology and hydrology of the site 1. The geologic and hydrologic settings of both sites are similar, with geologic boring logs and potentiometric data of both sites being compared. The hydraulic conductivity testing conducted at the proposed CCR site (site 2) has demonstrated that there is a low potential for groundwater contamination for this area.

If you are in need of further assistance from our office or have questions regarding this evaluation please feel free to contact me at (573) 368-2161.

APPENDIX 2

Baseline Sampling Information

EPA CCR Rule

Appendix III to Part 257—Constituents for Detection Monitoring

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

Appendix IV to Part 257—Constituents for Assessment Monitoring

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

1st Baseline Event –
January 2016 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.33	<0.5 J	<0.05 J	<0.5 J	<0.5 J	<0.5 J	<0.5 J	<0.5 J
Calcium	mg/L	NA	57	74	220	84	200	250	140	570
Chloride	mg/L	NA	140	83	120	4.7	28	10	38	38
Fluoride	mg/L	4	0.43	0.47	0.31	0.28	0.30	0.24	0.35	<0.2 J
pH	SU	NA	6.33	5.81	6.31	7.33	7.09	6.97	7.09	6.51
Sulfate	mg/L	NA	260	360	1100	140	800	1000	600	1800
Total Dissolved Solids	mg/L	NA	690	790	1900	590	1500	1800	1300	2800
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J
Arsenic	mg/L	0.01	<0.002 J	0.01	<0.01 J	<0.02 J	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	2	0.044	0.0099	0.065	0.086	0.036	0.02	0.042	0.011
Beryllium	mg/L	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium	mg/L	0.005	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002 J	<0.002 J	<0.01 J	<0.01 J	<0.01 J	<0.01 J	<0.01	<0.01
Cobalt	mg/L	NA	<0.01 J	<0.01 J	0.046	<0.002 J	0.018	0.0022	0.02	0.014
Lead	mg/L	0.015	<0.002 J	<0.002	<0.01 J	<0.002 J	<0.002	<0.002	<0.002	<0.002 J
Lithium	mg/L	NA	0.057	0.15	<0.05 J	<0.5 J	<0.5 J	<0.5 J	<0.5 J	<0.5 J
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.002	<0.002 J	<0.002 J	<0.002 J	<0.01 J	<0.002	<0.01 J	<0.002
Selenium	mg/L	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Combined Radium	pCi/L	5	<0.477 J	<0.427 J	<2.08	<0.563 J	<0.392 J	<0.446 J	<0.306 J	<0.279 J

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

2nd Baseline Event –
March 2016 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.90	0.060	<0.25	0.29	0.29	0.34	0.34	0.29
Calcium	mg/L	NA	120	92	260	94	190	250	160	620
Chloride	mg/L	NA	180	70	15	4.4	23	9.0	36	34
Fluoride	mg/L	4	0.28	0.28	0.10	0.38	0.31	0.23	0.31	0.16
pH	SU	NA	5.82	5.68	6.72	7.15	6.94	6.79	6.98	6.22
Sulfate	mg/L	NA	570	400	570	140	710	970	550	1800
Total Dissolved Solids	mg/L	NA	1300	840	1600	590	1500	1800	1200	2900
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.002	<0.002	<0.002	<0.002 J	<0.002	<0.002 J	<0.002
Arsenic	mg/L	0.01	<0.002 J	0.024	0.0038	<0.002 J	0.0038	0.0026	0.0025	0.004
Barium	mg/L	2	0.060	0.012	0.034	0.047	0.042	0.026	0.051	0.0089
Beryllium	mg/L	0.004	<0.002	<0.002 J	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium	mg/L	0.005	0.0028	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002	<0.002 J	0.0034	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	NA	0.017	0.0095	0.021	<0.002 J	0.02	0.0061	0.0063	0.016
Lead	mg/L	0.015	<0.002 J	<0.002 J	<0.002 J	<0.002	<0.002	<0.002	<0.002	<0.002
Lithium	mg/L	NA	0.20	0.15	0.074	0.074	0.14	0.22	0.14	0.30
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.002	<0.002 J	<0.002	<0.002 J	0.0041	<0.002 J	0.0038	<0.002
Selenium	mg/L	0.05	<0.002	<0.002	<0.002	0.0021	0.0028	0.0031	0.0031	<0.002
Thallium	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Combined Radium	pCi/L	5	<0.337 J	<0.389 J	<0.84 J	<0.315 J	<0.336 J	<0.319 J	<0.348 J	<0.329 J

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

3rd Baseline Event –
May 2016 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.21	0.044	0.027	0.24	0.26	0.25	0.23	0.29
Calcium	mg/L	NA	130	100	91	5	59	11	90	36
Chloride	mg/L	NA	140	83	120	4.7	28	10	38	38
Fluoride	mg/L	4	0.28	0.27	0.22	0.55	0.35	0.26	0.43	0.18
pH	SU	NA	5.30	4.37	5.97	6.43	6.60	6.51	6.64	5.82
Sulfate	mg/L	NA	160	540	820	150	920	1400	620	2400
Total Dissolved Solids	mg/L	NA	500	800	1700	590	1500	1800	1100	2900
Appendix IV										
Antimony	mg/L	0.006	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J
Arsenic	mg/L	0.01	0.0013	0.027	0.01	0.0043	0.01	0.007	0.0037	0.0082
Barium	mg/L	2	0.021	0.01	0.025	0.045	0.037	0.041	0.04	0.021
Beryllium	mg/L	0.004	<0.001	<0.001 J	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.005	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002 J	<0.002 J	0.0025	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J
Cobalt	mg/L	NA	0.0072	0.0073	0.0071	<0.0005J	0.00081	0.0035	<0.0005J	0.0037
Lead	mg/L	0.015	<0.001 J	<0.001 J	<0.001 J	<0.001 J	<0.001	<0.001	<0.001 J	<0.001 J
Lithium	mg/L	NA	<0.05 J	0.15	<0.05 J	0.074	0.16	0.31	0.12	0.22
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005	<0.005	<0.005	<0.005	<0.005 J	0.0052	<0.005	<0.005
Selenium	mg/L	0.05	<0.005	<0.005	<0.005 J	<0.005	<0.005 J	<0.005 J	<0.005	<0.005
Thallium	mg/L	0.002	<0.001 J	<0.001	<0.001	<0.001	<0.001 J	<0.001 J	<0.001	<0.001
Combined Radium	pCi/L	5	<0.355	<0.427 J	<0.386 J	<0.402 J	<0.377 J	<0.357 J	<0.334 J	<0.333 J

NA = Not Applicable

<x = Less than reporting limit (nondetectable)

J = Trace value seen above minimum detection limit but below reporting limit (trace)

4th Baseline Event –
August 2016 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.19	0.057	0.067	0.27	0.27	0.29	0.27	0.22
Calcium	mg/L	NA	38	79	110	74	180	220	130	430
Chloride	mg/L	NA	120	77	35	6	35	12	65	49
Fluoride	mg/L	4	0.25	0.15	0.3	0.26	0.31	0.23	0.37	0.22
pH	SU	NA	6.04	5.73	7	7.17	7.04	6.88	7.14	6.29
Sulfate	mg/L	NA	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005	<0.005 J	<0.005 J
Total Dissolved Solids	mg/L	NA	460	850	730	540	1500	1800	1100	2900
Appendix IV										
Antimony	mg/L	0.006	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J
Arsenic	mg/L	0.01	<0.001 J	0.013	<0.001 J	<0.001 J	0.001	<0.001 J	<0.001 J	<0.001 J
Barium	mg/L	2	0.023	<0.01 J	0.012	0.035	0.031	0.014	0.037	<0.01 J
Beryllium	mg/L	0.004	<0.001	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.005	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002	<0.002	<0.002 J	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	NA	0.0052	0.0088	0.0038	<0.0005J	0.00075	<0.0005J	<0.0005J	0.015
Lead	mg/L	0.015	<0.001 J	<0.001 J	<0.001 J	<0.001 J	<0.001	<0.001	<0.001 J	<0.001
Lithium	mg/L	NA	<0.05 J	0.16	<0.05 J	0.078	0.16	0.22	0.11	0.34
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005	<0.005	<0.005	<0.005	<0.005 J	<0.005	0.0067	<0.005
Selenium	mg/L	0.05	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005	<0.005 J	<0.005 J
Thallium	mg/L	0.002	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Radium	pCi/L	5	<0.424 J	<0.465 J	<0.833	<0.441 J	<0.435 J	<0.45 J	<0.484 J	<0.418 J

NA = Not Applicable

<x = Less than reporting limit (nondetectable)

J = Trace value seen above minimum detection limit but below reporting limit (trace)

5th Baseline Event –
October 2016 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.2	0.053	0.047	0.24	0.33	0.34	0.31	0.26
Calcium	mg/L	NA	43	91	100	94	220	260	130	490
Chloride	mg/L	NA	130	65	74	6	29	13	65	56
Fluoride	mg/L	4	0.28	0.18	0.28	0.31	0.39	0.25	0.41	0.28
pH	SU	NA	6.59	5.95	7.21	7.51	8.00	6.98	7.85	6.75
Sulfate	mg/L	NA	99	470	120	120	1100	1100	570	1400
Total Dissolved Solids	mg/L	NA	460	850	580	570	1500	1700	1100	2800
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.002	<0.002 J	<0.002	<0.002	<0.002	<0.002 J	<0.002
Arsenic	mg/L	0.01	<0.001	0.014	<0.001 J	<0.001 J	<0.001 J	<0.001	<0.001 J	<0.001 J
Barium	mg/L	2	0.028	<0.01 J	0.02	0.03	0.033	0.013	0.037	<0.01 J
Beryllium	mg/L	0.004	<0.001	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.005	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002	<0.002	<0.002 J	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	NA	0.0051	0.0095	0.0013	0.00073	0.0072	<0.0005J	<0.0005J	0.014
Lead	mg/L	0.015	<0.001 J	<0.001	<0.001 J	<0.001 J	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NA	<0.05 J	0.17	<0.05	0.078	0.17	0.24	0.12	0.32
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005	<0.005	<0.005	<0.005	<0.005 J	0.0066	<0.005	<0.005
Selenium	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005J	<0.005
Thallium	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Radium	pCi/L	5	<0.436J	<0.478J	<0.535J	<0.503J	<0.498J	<0.464J	<0.453J	<0.424J

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

6th Baseline Event –
March 2017 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.22	0.052	0.057	0.23	0.29	0.33	0.36	0.26
Calcium	mg/L	NA	38	93	250	86	200	260	170	500
Chloride	mg/L	NA	130	52	19	5.3	29	11	19	39
Fluoride	mg/L	4	0.21	0.12	<0.1 J	0.29	0.29	0.19	0.3	0.12
pH	SU	NA	6.07	5.84	6.67	7.32	7.38	7.15	7.21	6.40
Sulfate	mg/L	NA	130	540	630	150	1100	1000	720	1900
Total Dissolved Solids	mg/L	NA	500	940	1600	620	1700	1900	1400	3000
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Arsenic	mg/L	0.01	<0.001	0.037	0.0022	0.0013	0.0014	<0.001 J	0.0043	<0.001 J
Barium	mg/L	2	0.021	0.011	0.021	0.033	0.026	0.015	0.027	<0.01 J
Beryllium	mg/L	0.004	<0.001 J	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001 J
Cadmium	mg/L	0.005	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J	<0.002 J
Cobalt	mg/L	NA	0.0071	0.0097	0.0096	<0.0005J	0.0022	0.0024	0.0017	0.014
Lead	mg/L	0.015	<0.001	<0.001	<0.001 J	<0.001 J	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NA	<0.05 J	0.17	0.072	0.076	0.16	0.23	0.14	0.32
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005 J	<0.005 J	<0.005	<0.005	<0.005 J	<0.005	<0.005 J	<0.005
Selenium	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	mg/L	0.002	<0.001 J	<0.001 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Radium	pCi/L	5	0.575	1.63	0.287	1.50	0.803	2.68	1.73	1.62

NA = Not Applicable

<x = Less than reporting limit (nondetectable)

J = Trace value seen above minimum detection limit but below reporting limit (trace)

7th Baseline Event –
June 2017 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	<0.08J	<0.08J	0.034	0.27	0.31	0.37	0.36	0.26
Calcium	mg/L	NA	42	100	300	89	200	260	160	470
Chloride	mg/L	NA	130	54	110	5.4	23	12	26	48
Fluoride	mg/L	4	0.43	0.19	0.18	0.35	0.42	0.3	0.42	0.21
pH	SU	NA	6.35	5.78	6.62	7.22	7.04	6.93	7.09	6.41
Sulfate	mg/L	NA	78	650	1400	180	940	1300	780	2400
Total Dissolved Solids	mg/L	NA	450	950	2000	610	1600	1800	1400	2900
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Arsenic	mg/L	0.01	<0.001J	0.1	0.0032	<0.001J	0.0037	<0.001	0.0018	<0.001
Barium	mg/L	2	0.03	0.016	0.048	0.04	0.026	0.017	0.025	<0.01J
Beryllium	mg/L	0.004	<0.001	0.0031	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.005	<0.001J	<0.001	<0.001J	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002	<0.002	<0.002J	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	NA	0.004	0.0088	0.0042	<0.0005J	0.0045	0.00087	0.0059	0.0015
Lead	mg/L	0.015	0.0033	0.001	0.0074	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NA	<0.05J	0.18	0.053	0.085	0.18	0.25	0.15	0.34
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005	<0.005J	<0.005	<0.005	<0.005J	<0.005	<0.005J	<0.005
Selenium	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	mg/L	0.002	<0.001	<0.001	<0.001J	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Radium	pCi/L	5	<0.397J	<0.337J	<0.403	<0.291J	<0.343J	<0.414J	<0.33J	<0.314J

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

8th Baseline Event –
August 2017 Sampling Event

Constituent	Units	MCL	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-6	MW-6A	MW-7
Appendix III										
Boron	mg/L	NA	0.16	<0.08J	<0.08J	0.28	0.33	0.34	0.38	0.27
Calcium	mg/L	NA	43	98	83	57	220	250	180	510
Chloride	mg/L	NA	130	45	8.1	5.3	23	12	26	38
Fluoride	mg/L	4	0.26	0.17	0.32	0.27	0.45	0.25	0.4	0.22
pH	SU	NA	6.2	5.7	6.7	7.3	7.0	7.2	7.1	6.3
Sulfate	mg/L	NA	82	550	63	140	920	1100	730	2200
Total Dissolved Solids	mg/L	NA	450	960	450	530	1600	1800	1400	2900
Appendix IV										
Antimony	mg/L	0.006	<0.002J	<0.002J	<0.002J	<0.002J	<0.002J	<0.002J	<0.002J	<0.002
Arsenic	mg/L	0.01	<0.001J	0.013	<0.001J	0.002	<0.001J	<0.001J	<0.001J	<0.001J
Barium	mg/L	2	0.024	0.01	0.018	0.027	0.023	0.018	0.021	<0.01J
Beryllium	mg/L	0.004	<0.001	<0.001J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001J
Cadmium	mg/L	0.005	<0.001J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.1	<0.002J	<0.002	0.0026	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	NA	0.0036	0.01	0.00067	<0.0005J	0.0023	<0.0005J	0.0051	0.014
Lead	mg/L	0.015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NA	<0.05J	0.17	<0.05J	0.073	0.18	0.22	0.15	0.32
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	NA	<0.005	<0.005J	<0.005	<0.005J	<0.005J	<0.005J	<0.005J	<0.005
Selenium	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	mg/L	0.002	<0.001J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Radium	pCi/L	5	<0.42J	<0.417J	<0.473	<0.476J	<0.383J	<0.389J	<0.291J	<0.346J

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

MW-5AR
Baseline Events

Constituent	Units	MCL	1st May 2023	2nd Nov 2023	3rd May 2024	4th Nov 2024	5th May 2025	6th Nov 2025	7th May 2026	8th Nov 2026
Appendix III										
Boron	mg/L	NA	0.370	0.400						
Calcium	mg/L	NA	77	120						
Chloride	mg/L	NA	77	28						
Fluoride	mg/L	4	0.51	<1J						
pH	SU	NA	7.46	7.31						
Sulfate	mg/L	NA	190	370						
Total Dissolved Solids	mg/L	NA	650	920						
Appendix IV										
Antimony	mg/L	0.006	<0.002	<0.0025						
Arsenic	mg/L	0.01	0.0019	<0.0013						
Barium	mg/L	2	0.046	0.028						
Beryllium	mg/L	0.004	<0.001	<0.0025						
Cadmium	mg/L	0.005	<0.001	<0.0025						
Chromium	mg/L	0.1	<0.002	<0.0025						
Cobalt	mg/L	NA	0.0013	<0.0025						
Lead	mg/L	0.015	<0.001	<0.0013						
Lithium	mg/L	NA	0.1	0.12						
Mercury	mg/L	0.002	<0.0002	<0.0002						
Molybdenum	mg/L	NA	<0.005J	<0.015J						
Selenium	mg/L	0.05	<0.005	<0.0013						
Thallium	mg/L	0.002	<0.001	<0.0005						
Combined Radium	pCi/L	5	1.98J	1.94J						

NA = Not Applicable
<x = Less than reporting limit (nondetectable)
J = Trace value seen above minimum detection limit but below reporting limit (trace)

APPENDIX 3

Monitoring Well Field Inspection Sheets and Field Notes

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 2

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: mL post pump calibration .

Date / Time Initiated: 11 08 -23 @ Date / Time Completed: 11 – 08 -23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
1:14	200		15.1	5.74	0.608	2.60	71.9	3.40	clear
:16	↓		15.5	5.69	0.620	2.68	75.0	4.09	↓
:18			15.5	5.76	0.625	3.53	76.2	3.32	
:20	↓		15.6	5.76	0.628	3.45	77.5	2.84	

800 - 706 - 1300

Time sampled 1:20

Weather Conditions Sunny, 45°F

Water Level Start 4.33'

Water Level Finish 6.35'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 3

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: mL post pump calibration.

Date / Time Initiated: 11 – 29 -23 @ Date / Time Completed: 11 – -23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
11:33	200		14.2	6.52	1.133	3.54	-69.1	33.68	clear
:35	↓		14.2	6.10	1.130	2.17	-52.8	8.84	
:37			14.3	5.89	1.130	1.57	-36.6	119.18	
:39	↓		14.4	5.77	1.134	1.25	-20.2	402.60	↓

Time sampled 11:40

Weather Conditions Sunny, 40°F

Water Level Start 2.[redacted]87'

Water Level Finish 1.90'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature Ryan

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 4

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: mL post pump calibration.

Date / Time Initiated: 11-28-23 @ Date / Time Completed: 11-28-23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (ml)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
1:56	200		15.9	6.61	1.715	1.65	31.5	15.11	Clear
0 :58	↓		16.1	6.63	1.719	1.10	18.6	15.32	↓
2:00			16.0	6.64	1.721	0.86	7.0	16.93	
:02	↓		16.1	6.65	1.721	0.73	0.3	17.03	

Time sampled 2:05

Weather Conditions Sunny, 45°F

Water Level Start 9.37'

Water Level Finish 14.48'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events

Constituent	Units	MW- 6	MW- 6A	MW-7					
pH	S.U.	6.72	6.87	6.12					
Specific Conductance	umhos/cm	1.900	1.601	2.699					
Total Well Depth	ft								
Average GW Depth	ft	7.86	7.28	3.04					
Average GW Drop	ft								
2 System Volumes (Min Purged Amount)	mL	800	800	800					

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 5

Sample [X] Blind Duplicate [X] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: mL post pump calibration.

Date / Time Initiated: 5-11-23 @ Date / Time Completed: 5-11-23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (ml)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
10:42	200		14.5	7.42	0.897	2.43	-1.1	3.85	Clay
0 :44			14.3	7.27	0.889	1.87	3.6	5.77	
:46			14.5	7.19	0.887	1.57	5.3	6.20	
:48			14.5	7.16	0.886	1.41	9.7	6.81	

Time sampled 10:50 / 11:05 / 11:15 Duplicate FB

Weather Conditions Sunny, 40°F

Water Level Start 0.5'

Water Level Finish 9.77'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature Ryan

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events

Constituent	Units	MW- 6	MW- 6A	MW-7					
pH	S.U.	6.72	6.87	6.12					
Specific Conductance	umhos/cm	1.900	1.601	2.699					
Total Well Depth	ft								
Average GW Depth	ft	7.86	7.28	3.04					
Average GW Drop	ft								
2 System Volumes (Min Purged Amount)	mL	800	800	800					

2023 Field Sampling Log

Facility: Asbury CCR (**Permit #**) Monitoring Well ID: **MW-** 5A

Sample [X] **Blind Duplicate** [ ] **Field Blank** [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: mL post pump calibration .

Date / Time Initiated: 11-29-23 @ Date / Time Completed: 11 – -23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
9:37	200		15.7	6.78	3.433	1.78	29.4	5.44	Clear
:39	↓		15.7	6.69	3.419	1.22	30.2	5.98	↓
:41			15.8	6.62	3.406	0.76	31.1	7.47	
:43			16.0	6.59	3.424	0.49	31.7	9.22	

Time sampled 9:45

Weather Conditions Sunny, 35°F

Water Level Start 9.88'

Water Level Finish 17.57'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 5AR

Sample ☐ Blind Duplicate ☐ Field Blank ☐.

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: mL post pump calibration.

Date / Time Initiated: 11-29-23 @ Date / Time Completed: 11-29-23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
10:07	200		15.0	7.63	1.262	6.34	-3.6	3.82	Clear
:09			14.8	7.40	1.044	5.88	4.7	4.02	
:11			14.5	7.34	1.238	5.74	9.5	5.94	
:13	↓		14.5	7.31	1.237	5.66	13.0	5.59	↓

Time sampled @ 10:15

Weather Conditions Sunny, 75°F

Water Level Start 1.72'

Water Level Finish 9.68'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature Ryan Ortbals

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 6

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: mL post pump calibration.

Date / Time Initiated: 11-29-23 @ Date / Time Completed: 11-29-23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (ml)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
8:56	200		13.8	7.06	2.118	1.74	4.4	15.63	clear
8:58	↓		14.0	6.83	2.104	0.70	13.6	6.63	↓
9:00			13.9	6.81	2.103	0.55	14.0	8.44	
:02	↓		14.0	6.79	2.097	0.45	14.9	7.66	↓

Time sampled 9:05

Weather Conditions Sunny, 30°F

Water Level Start 9.99'

Water Level Finish 17.78'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events

Constituent	Units	MW- 6	MW- 6A	MW-7					
pH	S.U.	6.72	6.87	6.12					
Specific Conductance	umhos/cm	1.900	1.601	2.699					
Total Well Depth	ft								
Average GW Depth	ft	7.86	7.28	3.04					
Average GW Drop	ft								
2 System Volumes (Min Purged Amount)	mL	800	800	800					

2023 Field Sampling Log

Facility: Asbury CCR (**Permit #**) Monitoring Well ID: **MW-** 6A

Sample [X] **Blind Duplicate** [ ] **Field Blank** [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: mL post pump calibration.

Date / Time Initiated: 11-28-23 @ Date / Time Completed: 11-28-23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (ml)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
3:21	200		14.9	6.69	2,165	2.08	0.2	23.60	Cloudy
0:23	↓		14.8	6.51	2,166	1.16	0.9	34.17	↓
:25	↓		14.9	6.38	2,172	0.69	4.3	36.13	
:27	↓		15.0	6.33	2,181	0.51	7.3	33.80	↓

Time sampled 3:30

Weather Conditions Sunny, 40°F

Water Level Start 9.17'

Water Level Finish 16.89'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events

Constituent	Units	MW- 6	MW- 6A	MW-7					
pH	S.U.	6.72	6.87	6.12					
Specific Conductance	umhos/cm	1.900	1.601	2.699					
Total Well Depth	ft								
Average GW Depth	ft	7.86	7.28	3.04					
Average GW Drop	ft								
2 System Volumes (Min Purged Amount)	mL	800	800	800					

MW-1 8.85'

2023 Field Sampling Log

Facility: Asbury CCR (Permit #) Monitoring Well ID: MW- 7

Sample [X] Blind Duplicate [ ] Field Blank [ ].

Purge Information:

Method of Well Purge: **Peristaltic Pump with 3/8 - inch Diameter Tubing**

Actual Purge Volume Removed: mL post pump calibration .

Date / Time Initiated: 11 29 -23 @ Date / Time Completed: 11 – -23

Well Purged To Dryness?: Y / N Gas Detected? Y / N

Purge Data:

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (MV)	Turbidity ( )	Other (Color, Clarity, Odor)
2:40	200		15.8	6.59	2.490	2.34	-70.0	27.86	Clear
:42	↓		15.3	6.34	2.469	0.97	-61.3	12.84	↓
:44			15.1	6.22	2.461	0.75	-46.1	10.69	
:46	↓		15.1	6.18	2.461	0.67	-37.3	7.26	↓

Time sampled 2:50

Weather Conditions Sunny, 45°F

Water Level Start 6.15'

Water Level Finish 7.80'

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Field Inspection	Good	Fair	Poor
Access	G	F	P
Pad Condition	G	F	P
Casing Condition	G	F	P
Locking Cap & Lock	G	F	P
Riser Condition	G	F	P

Field Inspection	Yes	No	N/A
Well ID Visible	Y	N	N/A
Standing Water	Y	N	N/A
Clear of Weeds	Y	N	N/A
Measuring Point	Y	N	N/A
Split sample with MDNR	Y	N	N/A
Maintenance Performed	Y	N	N/A
Decontamination Normal	Y	N	N/A
Equipment Calibration Normal	Y	N	N/A
Redevelopment Needed	Y	N	N/A
Any deviations from SAP	Y	N	N/A
Sediment Thickness Checked	Y	N	N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes (Min Purged Amount)	mL	DON'T SAMPLE	800	800	800	800	800	

APPENDIX 4

Analytical Results from Lab

ANALYTICAL REPORT

PREPARED FOR

Attn: Anika Careaga
Midwest Environmental Consultants
2009 East McCarty Street
Suite 2
Jefferson City, Missouri 65101

Generated 1/30/2024 5:12:52 PM

JOB DESCRIPTION

Asbury Pond - CCR Rule Appendix III & IV

JOB NUMBER

400-247488-3

Eurofins Pensacola
3355 McLemore Drive
Pensacola FL 32514

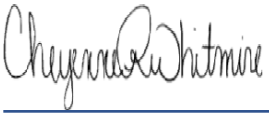
See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Southeast, LLC Project Manager.

Authorization



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Authorized for release by
Cheyenne Whitmire, Project Manager II
Cheyenne.Whitmire@et.eurofinsus.com
(850)471-6222

Table of Contents

Job ID: 400-247488-3 Eurofins Pensacola

Job Narrative
400-247488-3

Receipt
The samples were received on 11/30/2023 9:28 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.0º C, 3.8º C and 5.7º C.

Metals
Method 7470A: The matrix spike (MS) recoveries for preparation batch 400-652452 and analytical batch 400-652536 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) and matrix spike duplicate (MSD) recovery is within acceptance limits.

Method 6020B: The method blank for preparation batch 400-653203 and analytical batch 400-653473 contained Molybdenum and Selenium above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-2 — Lab Sample ID: 400-247488-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	150		5.0	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.24	J	1.0	0.22	mg/L	1		9056A	Total/NA
Sulfate	96		2.0	0.78	mg/L	2		9056A	Total/NA
Boron	0.11		0.050	0.029	mg/L	5		6020B	Total Recoverable
Calcium	26		0.25	0.13	mg/L	5		6020B	Total Recoverable
Total Dissolved Solids	380		5.0	5.0	mg/L	1		SM 2540C	Total/NA
Field pH	5.76				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-3 — Lab Sample ID: 400-247488-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	57		10	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.26	J	1.0	0.22	mg/L	1		9056A	Total/NA
Sulfate	480		10	3.9	mg/L	10		9056A	Total/NA
Boron	0.052		0.050	0.029	mg/L	5		6020B	Total Recoverable
Calcium	94		0.25	0.13	mg/L	5		6020B	Total Recoverable
Total Dissolved Solids	850		10	10	mg/L	1		SM 2540C	Total/NA
Field pH	5.77				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-4 — Lab Sample ID: 400-247488-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	4.6		1.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	630		20	7.8	mg/L	20		9056A	Total/NA
Boron	0.046	J	0.050	0.029	mg/L	5		6020B	Total Recoverable
Calcium	270		0.25	0.13	mg/L	5		6020B	Total Recoverable
Total Dissolved Solids	1500		10	10	mg/L	1		SM 2540C	Total/NA
Field pH	6.65				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-5 — Lab Sample ID: 400-247488-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	6.0		1.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.36	J	1.0	0.22	mg/L	1		9056A	Total/NA
Sulfate	170		5.0	2.0	mg/L	5		9056A	Total/NA
Boron	0.30		0.050	0.029	mg/L	5		6020B	Total Recoverable
Calcium	93		0.25	0.13	mg/L	5		6020B	Total Recoverable
Total Dissolved Solids	590		5.0	5.0	mg/L	1		SM 2540C	Total/NA
Field pH	7.16				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-5A — Lab Sample ID: 400-247488-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	230		5.0	1.3	mg/L	5		9056A	Total/NA
Sulfate	1400		200	78	mg/L	200		9056A	Total/NA
Boron	2.4		0.050	0.029	mg/L	5		6020B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-5A (Continued)
Lab Sample ID: 400-247488-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	440		0.25	0.13	mg/L	5		6020B	Total Recoverable
Total Dissolved Solids	3300		25	25	mg/L	1		SM 2540C	Total/NA
Field pH	6.59				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-5AR
Lab Sample ID: 400-247488-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	28		1.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.34	J	1.0	0.22	mg/L	1		9056A	Total/NA
Sulfate	370		10	3.9	mg/L	10		9056A	Total/NA
Boron	0.40		0.050	0.029	mg/L	5		6020B	Total Recoverable
Calcium	120		0.25	0.13	mg/L	5		6020B	Total Recoverable
Barium	26		2.5	1.8	ug/L	5		6020B	Total Recoverable
Lithium	120		5.0	4.9	ug/L	5		6020B	Total Recoverable
Molybdenum	2.2	J	15	0.46	ug/L	5		6020B	Total Recoverable
Total Dissolved Solids	920		10	10	mg/L	1		SM 2540C	Total/NA
Field pH	7.31				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-6
Lab Sample ID: 400-247488-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	30		1.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.24	J	1.0	0.22	mg/L	1		9056A	Total/NA
Sulfate	1100		50	20	mg/L	50		9056A	Total/NA
Boron	0.40		0.050	0.029	mg/L	5		6020B	Total Recoverable
Calcium	270		0.25	0.13	mg/L	5		6020B	Total Recoverable
Total Dissolved Solids	1900		25	25	mg/L	1		SM 2540C	Total/NA
Field pH	6.79				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-6A
Lab Sample ID: 400-247488-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	86		2.0	0.50	mg/L	2		9056A	Total/NA
Sulfate	1100		50	20	mg/L	50		9056A	Total/NA
Boron	0.36		0.050	0.029	mg/L	5		6020B	Total Recoverable
Calcium	240		0.25	0.13	mg/L	5		6020B	Total Recoverable
Total Dissolved Solids	2000		25	25	mg/L	1		SM 2540C	Total/NA
Field pH	6.33				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-7
Lab Sample ID: 400-247488-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	44		1.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	2000		50	20	mg/L	50		9056A	Total/NA
Boron	0.30		0.050	0.029	mg/L	5		6020B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins Pensacola

Client Sample ID: MW-7 (Continued)
Lab Sample ID: 400-247488-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	490		0.25	0.13	mg/L	5		6020B	Total Recoverable
Total Dissolved Solids	2800		25	25	mg/L	1		SM 2540C	Total/NA
Field pH	6.18				SU	1		Field Sampling	Total/NA

Client Sample ID: DUPLCIATE
Lab Sample ID: 400-247488-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	6.0		1.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.36	J	1.0	0.22	mg/L	1		9056A	Total/NA
Sulfate	140		10	3.9	mg/L	10		9056A	Total/NA
Boron	0.31		0.050	0.029	mg/L	5		6020B	Total Recoverable
Calcium	89		0.25	0.13	mg/L	5		6020B	Total Recoverable
Total Dissolved Solids	590		5.0	5.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: FIELD BLANK
Lab Sample ID: 400-247488-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	140		5.0	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.58	J F1	1.0	0.22	mg/L	1		9056A	Total/NA
Boron	0.035	J	0.050	0.029	mg/L	5		6020B	Total Recoverable
Calcium	0.46		0.25	0.13	mg/L	5		6020B	Total Recoverable
Total Dissolved Solids	170		5.0	5.0	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET PEN
6020B	Metals (ICP/MS)	SW846	EET PEN
7470A	Mercury (CVAA)	SW846	EET PEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET PEN
9315	Radium-226 (GFPC)	SW846	EET SL
9320	Radium-228 (GFPC)	SW846	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
Field Sampling	Field Sampling	EPA	EET PEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET PEN
7470A	Preparation, Mercury	SW846	EET PEN
PrecSep_0	Preparation, Precipitate Separation	None	EET SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET PEN = Eurofins Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-247488-1	MW-2	Water	11/28/23 13:20	11/30/23 09:28
400-247488-2	MW-3	Water	11/28/23 11:40	11/30/23 09:28
400-247488-3	MW-4	Water	11/28/23 14:05	11/30/23 09:28
400-247488-4	MW-5	Water	11/28/23 10:50	11/30/23 09:28
400-247488-5	MW-5A	Water	11/28/23 09:45	11/30/23 09:28
400-247488-6	MW-5AR	Water	11/28/23 10:15	11/30/23 09:28
400-247488-7	MW-6	Water	11/28/23 09:05	11/30/23 09:28
400-247488-8	MW-6A	Water	11/28/23 15:30	11/30/23 09:28
400-247488-9	MW-7	Water	11/28/23 14:50	11/30/23 09:28
400-247488-10	DUPLCIATE	Water	11/28/23 11:05	11/30/23 09:28
400-247488-11	FIELD BLANK	Water	11/28/23 11:15	11/30/23 09:28

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-2
Lab Sample ID: 400-247488-1
Date Collected: 11/28/23 13:20
Matrix: Water
Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	150		5.0	1.3	mg/L			12/04/23 15:57	5
Fluoride	0.24	J	1.0	0.22	mg/L			12/01/23 15:47	1
Sulfate	96		2.0	0.78	mg/L			12/01/23 15:55	2

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.11		0.050	0.029	mg/L		12/07/23 08:30	12/07/23 19:44	5
Calcium	26		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 19:44	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	380		5.0	5.0	mg/L			12/04/23 23:18	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	5.76				SU			11/28/23 13:20	1

Client Sample Results

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-3
Lab Sample ID: 400-247488-2
Date Collected: 11/28/23 11:40
Matrix: Water
Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	57		10	2.5	mg/L			12/01/23 16:10	10
Fluoride	0.26	J	1.0	0.22	mg/L			12/01/23 16:02	1
Sulfate	480		10	3.9	mg/L			12/01/23 16:10	10

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.052		0.050	0.029	mg/L		12/07/23 08:30	12/07/23 19:36	5
Calcium	94		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 19:36	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	850		10	10	mg/L			12/04/23 23:18	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	5.77				SU			11/28/23 11:40	1

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-4
Lab Sample ID: 400-247488-3
Date Collected: 11/28/23 14:05
Matrix: Water
Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.6		1.0	0.25	mg/L			12/01/23 16:33	1
Fluoride	ND		1.0	0.22	mg/L			12/01/23 16:33	1
Sulfate	630		20	7.8	mg/L			12/04/23 16:04	20

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.046	J	0.050	0.029	mg/L		12/07/23 08:30	12/07/23 19:39	5
Calcium	270		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 19:39	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	1500		10	10	mg/L			12/04/23 23:18	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	6.65				SU			11/28/23 14:05	1

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-5
Lab Sample ID: 400-247488-4
Date Collected: 11/28/23 10:50
Matrix: Water
Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6.0		1.0	0.25	mg/L			12/01/23 16:48	1
Fluoride	0.36	J	1.0	0.22	mg/L			12/01/23 16:48	1
Sulfate	170		5.0	2.0	mg/L			12/04/23 16:12	5

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.30		0.050	0.029	mg/L		12/07/23 08:30	12/07/23 19:42	5
Calcium	93		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 19:42	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	590		5.0	5.0	mg/L			12/04/23 23:18	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	7.16				SU			11/28/23 10:50	1

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-5A
Lab Sample ID: 400-247488-5
Date Collected: 11/28/23 09:45
Matrix: Water
Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	230		5.0	1.3	mg/L			12/04/23 16:34	5
Fluoride	ND		1.0	0.22	mg/L			12/01/23 17:03	1
Sulfate	1400		200	78	mg/L			12/01/23 17:10	200

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.4		0.050	0.029	mg/L		12/07/23 08:30	12/07/23 19:46	5
Calcium	440		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 19:46	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	3300		25	25	mg/L			12/04/23 23:18	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	6.59				SU			11/28/23 09:45	1

Client Sample ID: MW-5AR
Lab Sample ID: 400-247488-6
Date Collected: 11/28/23 10:15
Matrix: Water
Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**28**		1.0	0.25	mg/L			12/01/23 17:18	1
Fluoride	**0.34**	**J**	1.0	0.22	mg/L			12/01/23 17:18	1
Sulfate	**370**		10	3.9	mg/L			12/01/23 17:25	10

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.5	0.50	ug/L		12/07/23 08:30	12/07/23 19:49	5
Boron	**0.40**		0.050	0.029	mg/L		12/07/23 08:30	12/07/23 19:49	5
Arsenic	ND		1.3	1.2	ug/L		12/07/23 08:30	12/07/23 19:49	5
Calcium	**120**		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 19:49	5
Barium	**26**		2.5	1.8	ug/L		12/07/23 08:30	12/07/23 19:49	5
Beryllium	ND		2.5	0.28	ug/L		12/07/23 08:30	12/07/23 19:49	5
Cadmium	ND		2.5	0.65	ug/L		12/07/23 08:30	12/07/23 19:49	5
Chromium	ND		2.5	2.1	ug/L		12/07/23 08:30	12/07/23 19:49	5
Cobalt	ND		2.5	0.56	ug/L		12/07/23 08:30	12/07/23 19:49	5
Lead	ND		1.3	0.81	ug/L		12/07/23 08:30	12/07/23 19:49	5
Lithium	**120**		5.0	4.9	ug/L		12/07/23 08:30	12/07/23 20:06	5
Molybdenum	**2.2**	**J**	15	0.46	ug/L		12/07/23 08:30	12/07/23 19:49	5
Selenium	ND		1.3	0.82	ug/L		12/07/23 08:30	12/07/23 19:49	5
Thallium	ND		0.50	0.11	ug/L		12/07/23 08:30	12/07/23 19:49	5

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.15	ug/L		12/01/23 07:58	12/01/23 12:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	**920**		10	10	mg/L			12/04/23 23:18	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.604**		0.220	0.226	1.00	0.205	pCi/L	12/06/23 09:19	01/05/24 09:24	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.3*		*30 - 110*	*12/06/23 09:19*	*01/05/24 09:24*	*1*

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.34**		0.404	0.423	1.00	0.440	pCi/L	12/06/23 09:25	01/04/24 12:03	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.3*		*30 - 110*	*12/06/23 09:25*	*01/04/24 12:03*	*1*
Y Carrier	*81.5*		*30 - 110*	*12/06/23 09:25*	*01/04/24 12:03*	*1*

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-5AR
Lab Sample ID: 400-247488-6
Date Collected: 11/28/23 10:15
Matrix: Water
Date Received: 11/30/23 09:28

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.94		0.460	0.480	5.00	0.440	pCi/L		01/08/24 11:54	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	7.31				SU			11/28/23 10:15	1

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-6
Lab Sample ID: 400-247488-7
Date Collected: 11/28/23 09:05
Matrix: Water
Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	30		1.0	0.25	mg/L			12/01/23 17:33	1
Fluoride	0.24	J	1.0	0.22	mg/L			12/01/23 17:33	1
Sulfate	1100		50	20	mg/L			12/04/23 16:42	50

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.40		0.050	0.029	mg/L		12/07/23 08:30	12/07/23 19:52	5
Calcium	270		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 19:52	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	1900		25	25	mg/L			12/04/23 23:18	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	6.79				SU			11/28/23 09:05	1

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-6A
Lab Sample ID: 400-247488-8
Date Collected: 11/28/23 15:30
Matrix: Water
Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	86		2.0	0.50	mg/L			12/05/23 16:53	2
Fluoride	ND		1.0	0.22	mg/L			12/01/23 18:03	1
Sulfate	1100		50	20	mg/L			12/05/23 17:23	50

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.36		0.050	0.029	mg/L		12/07/23 08:30	12/07/23 19:56	5
Calcium	240		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 19:56	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	2000		25	25	mg/L			12/04/23 23:18	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	6.33				SU			11/28/23 15:30	1

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: MW-7
Lab Sample ID: 400-247488-9

Date Collected: 11/28/23 14:50
Matrix: Water

Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	44		1.0	0.25	mg/L			12/01/23 18:18	1
Fluoride	ND		1.0	0.22	mg/L			12/01/23 18:18	1
Sulfate	2000		50	20	mg/L			12/04/23 16:57	50

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.30		0.050	0.029	mg/L		12/07/23 08:30	12/07/23 19:59	5
Calcium	490		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 19:59	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	2800		25	25	mg/L			12/04/23 23:18	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	6.18				SU			11/28/23 14:50	1

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: DUPLCIATE
Lab Sample ID: 400-247488-10
Date Collected: 11/28/23 11:05
Matrix: Water
Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6.0		1.0	0.25	mg/L			12/01/23 19:10	1
Fluoride	0.36	J	1.0	0.22	mg/L			12/01/23 19:10	1
Sulfate	140		10	3.9	mg/L			12/01/23 19:18	10

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.31		0.050	0.029	mg/L		12/07/23 08:30	12/07/23 20:02	5
Calcium	89		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 20:02	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	590		5.0	5.0	mg/L			12/04/23 23:18	1

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: FIELD BLANK
Lab Sample ID: 400-247488-11
Date Collected: 11/28/23 11:15
Matrix: Water
Date Received: 11/30/23 09:28

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	140		5.0	1.3	mg/L			12/04/23 15:49	5
Fluoride	0.58	J F1	1.0	0.22	mg/L			12/01/23 15:25	1
Sulfate	ND	F1	1.0	0.39	mg/L			12/01/23 15:25	1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.035	J	0.050	0.029	mg/L		12/07/23 08:30	12/07/23 20:05	5
Calcium	0.46		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 20:05	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	170		5.0	5.0	mg/L			12/04/23 23:18	1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample ID: MW-2

Lab Sample ID: 400-247488-1

Date Collected: 11/28/23 13:20

Matrix: Water

Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652597	12/01/23 15:47	JN	EET PEN
Total/NA	Analysis	9056A		2			652597	12/01/23 15:55	JN	EET PEN
Total/NA	Analysis	9056A		5			652852	12/04/23 15:57	JN	EET PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
							Completed:	12/07/23 11:38 [1]		
Total Recoverable	Analysis	6020B		5			653473	12/07/23 19:44	NTH	EET PEN
Total/NA	Analysis	SM 2540C		1	50 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN
Total/NA	Analysis	Field Sampling		1			658367	11/28/23 13:20	C1H	EET PEN

Client Sample ID: MW-3

Lab Sample ID: 400-247488-2

Date Collected: 11/28/23 11:40

Matrix: Water

Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652597	12/01/23 16:02	JN	EET PEN
Total/NA	Analysis	9056A		10			652597	12/01/23 16:10	JN	EET PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
							Completed:	12/07/23 11:38 [1]		
Total Recoverable	Analysis	6020B		5			653454	12/07/23 19:36	NTH	EET PEN
Total/NA	Analysis	SM 2540C		1	25 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN
Total/NA	Analysis	Field Sampling		1			658367	11/28/23 11:40	C1H	EET PEN

Client Sample ID: MW-4

Lab Sample ID: 400-247488-3

Date Collected: 11/28/23 14:05

Matrix: Water

Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652597	12/01/23 16:33	JN	EET PEN
Total/NA	Analysis	9056A		20			652852	12/04/23 16:04	JN	EET PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
							Completed:	12/07/23 11:38 [1]		
Total Recoverable	Analysis	6020B		5			653454	12/07/23 19:39	NTH	EET PEN
Total/NA	Analysis	SM 2540C		1	25 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN
Total/NA	Analysis	Field Sampling		1			658367	11/28/23 14:05	C1H	EET PEN

Client Sample ID: MW-5

Lab Sample ID: 400-247488-4

Date Collected: 11/28/23 10:50

Matrix: Water

Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652597	12/01/23 16:48	JN	EET PEN
Total/NA	Analysis	9056A		5			652852	12/04/23 16:12	JN	EET PEN

Client Sample ID: MW-5

Lab Sample ID: 400-247488-4

Date Collected: 11/28/23 10:50

Matrix: Water

Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
Total Recoverable	Analysis	6020B		5			653454	12/07/23 19:42	NTH	EET PEN
Total/NA	Analysis	SM 2540C		1	50 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN
Total/NA	Analysis	Field Sampling		1			658367	11/28/23 10:50	C1H	EET PEN

Client Sample ID: MW-5A

Lab Sample ID: 400-247488-5

Date Collected: 11/28/23 09:45

Matrix: Water

Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652597	12/01/23 17:03	JN	EET PEN
Total/NA	Analysis	9056A		200			652597	12/01/23 17:10	JN	EET PEN
Total/NA	Analysis	9056A		5			652852	12/04/23 16:34	JN	EET PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
							Completed:	12/07/23 11:38 [1]		
Total Recoverable	Analysis	6020B		5			653454	12/07/23 19:46	NTH	EET PEN
Total/NA	Analysis	SM 2540C		1	10 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN
Total/NA	Analysis	Field Sampling		1			658367	11/28/23 09:45	C1H	EET PEN

Client Sample ID: MW-5AR

Lab Sample ID: 400-247488-6

Date Collected: 11/28/23 10:15

Matrix: Water

Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652597	12/01/23 17:18	JN	EET PEN
Total/NA	Analysis	9056A		10			652597	12/01/23 17:25	JN	EET PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
							Completed:	12/07/23 11:38 [1]		
Total Recoverable	Analysis	6020B		5			653473	12/07/23 20:06	NTH	EET PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
							Completed:	12/07/23 11:38 [1]		
Total Recoverable	Analysis	6020B		5			653454	12/07/23 19:49	NTH	EET PEN
Total/NA	Prep	7470A			40 mL	40 mL	652452	12/01/23 07:58	JR	EET PEN
							Completed:	12/01/23 10:47 [1]		
Total/NA	Analysis	7470A		1			652536	12/01/23 12:01	JR	EET PEN
Total/NA	Analysis	SM 2540C		1	25 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN
Total/NA	Prep	PrecSep-21			990.95 mL	1.0 g	639652	12/06/23 09:19	KAC	EET SL
Total/NA	Analysis	9315		1			643079	01/05/24 09:24	EMH	EET SL
Total/NA	Prep	PrecSep_0			990.95 mL	1.0 g	639653	12/06/23 09:25	KAC	EET SL
Total/NA	Analysis	9320		1			643034	01/04/24 12:03	FLC	EET SL
Total/NA	Analysis	Ra226_Ra228		1			643247	01/08/24 11:54	EMH	EET SL
Total/NA	Analysis	Field Sampling		1			658367	11/28/23 10:15	C1H	EET PEN

Client Sample ID: MW-6
Lab Sample ID: 400-247488-7

Date Collected: 11/28/23 09:05
Matrix: Water
Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652597	12/01/23 17:33	JN	EET PEN
Total/NA	Analysis	9056A		50			652852	12/04/23 16:42	JN	EET PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
							Completed:	12/07/23 11:38 [1]		
Total Recoverable	Analysis	6020B		5			653454	12/07/23 19:52	NTH	EET PEN
Total/NA	Analysis	SM 2540C		1	10 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN
Total/NA	Analysis	Field Sampling		1			658367	11/28/23 09:05	C1H	EET PEN

Client Sample ID: MW-6A
Lab Sample ID: 400-247488-8

Date Collected: 11/28/23 15:30
Matrix: Water
Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652597	12/01/23 18:03	JN	EET PEN
Total/NA	Analysis	9056A		2			652984	12/05/23 16:53	JN	EET PEN
Total/NA	Analysis	9056A		50			652984	12/05/23 17:23	JN	EET PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
							Completed:	12/07/23 11:38 [1]		
Total Recoverable	Analysis	6020B		5			653454	12/07/23 19:56	NTH	EET PEN
Total/NA	Analysis	SM 2540C		1	10 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN
Total/NA	Analysis	Field Sampling		1			658367	11/28/23 15:30	C1H	EET PEN

Client Sample ID: MW-7
Lab Sample ID: 400-247488-9

Date Collected: 11/28/23 14:50
Matrix: Water
Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652597	12/01/23 18:18	JN	EET PEN
Total/NA	Analysis	9056A		50			652852	12/04/23 16:57	JN	EET PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
							Completed:	12/07/23 11:38 [1]		
Total Recoverable	Analysis	6020B		5			653454	12/07/23 19:59	NTH	EET PEN
Total/NA	Analysis	SM 2540C		1	10 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN
Total/NA	Analysis	Field Sampling		1			658367	11/28/23 14:50	C1H	EET PEN

Client Sample ID: DUPLCIATE
Lab Sample ID: 400-247488-10

Date Collected: 11/28/23 11:05
Matrix: Water
Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652605	12/01/23 19:10	JN	EET PEN
Total/NA	Analysis	9056A		10			652605	12/01/23 19:18	JN	EET PEN

Lab Chronicle

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Client Sample ID: DUPLCIATE
Lab Sample ID: 400-247488-10
Date Collected: 11/28/23 11:05
Matrix: Water
Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
Total Recoverable	Analysis	6020B		5			653454	12/07/23 20:02	NTH	EET PEN
Total/NA	Analysis	SM 2540C		1	50 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN

Client Sample ID: FIELD BLANK
Lab Sample ID: 400-247488-11
Date Collected: 11/28/23 11:15
Matrix: Water
Date Received: 11/30/23 09:28

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1			652597	12/01/23 15:25	JN	EET PEN
Total/NA	Analysis	9056A		5			652852	12/04/23 15:49	JN	EET PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	653203	12/07/23 08:30	MS	EET PEN
							Completed:	12/07/23 11:38 [1]		
Total Recoverable	Analysis	6020B		5			653454	12/07/23 20:05	NTH	EET PEN
Total/NA	Analysis	SM 2540C		1	50 mL	50 mL	652922	12/04/23 23:18	HA	EET PEN

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

EET PEN = Eurofins Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

HPLC/IC

Analysis Batch: 652597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-1	MW-2	Total/NA	Water	9056A	
400-247488-1	MW-2	Total/NA	Water	9056A	
400-247488-2	MW-3	Total/NA	Water	9056A	
400-247488-2	MW-3	Total/NA	Water	9056A	
400-247488-3	MW-4	Total/NA	Water	9056A	
400-247488-4	MW-5	Total/NA	Water	9056A	
400-247488-5	MW-5A	Total/NA	Water	9056A	
400-247488-5	MW-5A	Total/NA	Water	9056A	
400-247488-6	MW-5AR	Total/NA	Water	9056A	
400-247488-6	MW-5AR	Total/NA	Water	9056A	
400-247488-7	MW-6	Total/NA	Water	9056A	
400-247488-8	MW-6A	Total/NA	Water	9056A	
400-247488-9	MW-7	Total/NA	Water	9056A	
400-247488-11	FIELD BLANK	Total/NA	Water	9056A	
400-247488-11 MS	FIELD BLANK	Total/NA	Water	9056A	
400-247488-11 MSD	FIELD BLANK	Total/NA	Water	9056A	

Analysis Batch: 652605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-10	DUPLCIATE	Total/NA	Water	9056A	
400-247488-10	DUPLCIATE	Total/NA	Water	9056A	

Analysis Batch: 652852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-1	MW-2	Total/NA	Water	9056A	
400-247488-3	MW-4	Total/NA	Water	9056A	
400-247488-4	MW-5	Total/NA	Water	9056A	
400-247488-5	MW-5A	Total/NA	Water	9056A	
400-247488-7	MW-6	Total/NA	Water	9056A	
400-247488-9	MW-7	Total/NA	Water	9056A	
400-247488-11	FIELD BLANK	Total/NA	Water	9056A	

Analysis Batch: 652984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-8	MW-6A	Total/NA	Water	9056A	
400-247488-8	MW-6A	Total/NA	Water	9056A	

Metals

Prep Batch: 652452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-6	MW-5AR	Total/NA	Water	7470A	
MB 400-652452/14-A	Method Blank	Total/NA	Water	7470A	
LCS 400-652452/15-A	Lab Control Sample	Total/NA	Water	7470A	
400-247488-B-1-B MS	Matrix Spike	Total/NA	Water	7470A	
400-247488-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	

Analysis Batch: 652536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-6	MW-5AR	Total/NA	Water	7470A	652452
MB 400-652452/14-A	Method Blank	Total/NA	Water	7470A	652452

Metals (Continued)

Analysis Batch: 652536 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 400-652452/15-A	Lab Control Sample	Total/NA	Water	7470A	652452
400-247488-B-1-B MS	Matrix Spike	Total/NA	Water	7470A	652452
400-247488-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	652452

Prep Batch: 653203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-1	MW-2	Total Recoverable	Water	3005A	
400-247488-2	MW-3	Total Recoverable	Water	3005A	
400-247488-3	MW-4	Total Recoverable	Water	3005A	
400-247488-4	MW-5	Total Recoverable	Water	3005A	
400-247488-5	MW-5A	Total Recoverable	Water	3005A	
400-247488-6	MW-5AR	Total Recoverable	Water	3005A	
400-247488-7	MW-6	Total Recoverable	Water	3005A	
400-247488-8	MW-6A	Total Recoverable	Water	3005A	
400-247488-9	MW-7	Total Recoverable	Water	3005A	
400-247488-10	DUPLCIATE	Total Recoverable	Water	3005A	
400-247488-11	FIELD BLANK	Total Recoverable	Water	3005A	
MB 400-653203/1-A ^5	Method Blank	Total Recoverable	Water	3005A	
LCS 400-653203/2-A ^5	Lab Control Sample	Total Recoverable	Water	3005A	
680-243494-A-7-B MS ^5	Matrix Spike	Total Recoverable	Water	3005A	
680-243494-A-7-C MSD ^5	Matrix Spike Duplicate	Total Recoverable	Water	3005A	

Analysis Batch: 653454

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-2	MW-3	Total Recoverable	Water	6020B	653203
400-247488-3	MW-4	Total Recoverable	Water	6020B	653203
400-247488-4	MW-5	Total Recoverable	Water	6020B	653203
400-247488-5	MW-5A	Total Recoverable	Water	6020B	653203
400-247488-6	MW-5AR	Total Recoverable	Water	6020B	653203
400-247488-7	MW-6	Total Recoverable	Water	6020B	653203
400-247488-8	MW-6A	Total Recoverable	Water	6020B	653203
400-247488-9	MW-7	Total Recoverable	Water	6020B	653203
400-247488-10	DUPLCIATE	Total Recoverable	Water	6020B	653203
400-247488-11	FIELD BLANK	Total Recoverable	Water	6020B	653203
MB 400-653203/1-A ^5	Method Blank	Total Recoverable	Water	6020B	653203
LCS 400-653203/2-A ^5	Lab Control Sample	Total Recoverable	Water	6020B	653203

Analysis Batch: 653473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-1	MW-2	Total Recoverable	Water	6020B	653203
400-247488-6	MW-5AR	Total Recoverable	Water	6020B	653203
MB 400-653203/1-A ^5	Method Blank	Total Recoverable	Water	6020B	653203
LCS 400-653203/2-A ^5	Lab Control Sample	Total Recoverable	Water	6020B	653203
680-243494-A-7-B MS ^5	Matrix Spike	Total Recoverable	Water	6020B	653203
680-243494-A-7-C MSD ^5	Matrix Spike Duplicate	Total Recoverable	Water	6020B	653203

General Chemistry

Analysis Batch: 652922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-1	MW-2	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 652922 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-2	MW-3	Total/NA	Water	SM 2540C	
400-247488-3	MW-4	Total/NA	Water	SM 2540C	
400-247488-4	MW-5	Total/NA	Water	SM 2540C	
400-247488-5	MW-5A	Total/NA	Water	SM 2540C	
400-247488-6	MW-5AR	Total/NA	Water	SM 2540C	
400-247488-7	MW-6	Total/NA	Water	SM 2540C	
400-247488-8	MW-6A	Total/NA	Water	SM 2540C	
400-247488-9	MW-7	Total/NA	Water	SM 2540C	
400-247488-10	DUPLCIATE	Total/NA	Water	SM 2540C	
400-247488-11	FIELD BLANK	Total/NA	Water	SM 2540C	
MB 400-652922/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 400-652922/2	Lab Control Sample	Total/NA	Water	SM 2540C	
400-247488-10 DU	DUPLCIATE	Total/NA	Water	SM 2540C	

Rad

Prep Batch: 639652

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-6	MW-5AR	Total/NA	Water	PrecSep-21	
MB 160-639652/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-639652/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
280-185127-D-2-A DU	Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 639653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-6	MW-5AR	Total/NA	Water	PrecSep_0	
MB 160-639653/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-639653/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
280-185127-D-2-B DU	Duplicate	Total/NA	Water	PrecSep_0	

Field Service / Mobile Lab

Analysis Batch: 658367

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-247488-1	MW-2	Total/NA	Water	Field Sampling	
400-247488-2	MW-3	Total/NA	Water	Field Sampling	
400-247488-3	MW-4	Total/NA	Water	Field Sampling	
400-247488-4	MW-5	Total/NA	Water	Field Sampling	
400-247488-5	MW-5A	Total/NA	Water	Field Sampling	
400-247488-6	MW-5AR	Total/NA	Water	Field Sampling	
400-247488-7	MW-6	Total/NA	Water	Field Sampling	
400-247488-8	MW-6A	Total/NA	Water	Field Sampling	
400-247488-9	MW-7	Total/NA	Water	Field Sampling	

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: 400-247488-11 MS
Matrix: Water
Analysis Batch: 652597

Client Sample ID: FIELD BLANK
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	140	E	10.0	157	E 4	mg/L		147	80 - 120
Fluoride	0.58	J F1	10.0	15.2	F1	mg/L		146	80 - 120
Sulfate	ND	F1	10.0	16.8	F1	mg/L		168	80 - 120

Lab Sample ID: 400-247488-11 MSD
Matrix: Water
Analysis Batch: 652597

Client Sample ID: FIELD BLANK
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	140	E	10.0	152	E	mg/L					
Fluoride	0.58	J F1	10.0	9.80		mg/L					
Sulfate	ND	F1	10.0	9.51		mg/L					

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 400-653203/1-A ^5
Matrix: Water
Analysis Batch: 653454

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 653203

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.050	0.029	mg/L		12/07/23 08:30	12/07/23 19:03	5
Calcium	ND		0.25	0.13	mg/L		12/07/23 08:30	12/07/23 19:03	5

Lab Sample ID: MB 400-653203/1-A ^5
Matrix: Water
Analysis Batch: 653473

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 653203

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0025	0.00050	mg/L		12/07/23 08:30	12/07/23 19:16	5
Arsenic	ND		0.0013	0.0012	mg/L		12/07/23 08:30	12/07/23 19:16	5
Barium	ND		0.0025	0.0018	mg/L		12/07/23 08:30	12/07/23 19:16	5
Beryllium	ND		0.0025	0.00028	mg/L		12/07/23 08:30	12/07/23 19:16	5
Cadmium	ND		0.0025	0.00065	mg/L		12/07/23 08:30	12/07/23 19:16	5
Chromium	ND		0.0025	0.0021	mg/L		12/07/23 08:30	12/07/23 19:16	5
Cobalt	ND		0.0025	0.00056	mg/L		12/07/23 08:30	12/07/23 19:16	5
Lead	ND		0.0013	0.00081	mg/L		12/07/23 08:30	12/07/23 19:16	5
Lithium	ND		0.0050	0.0049	mg/L		12/07/23 08:30	12/07/23 19:16	5
Molybdenum	0.000460	J	0.015	0.00046	mg/L		12/07/23 08:30	12/07/23 19:16	5
Selenium	0.00105	J	0.0013	0.00082	mg/L		12/07/23 08:30	12/07/23 19:16	5
Thallium	ND		0.00050	0.00011	mg/L		12/07/23 08:30	12/07/23 19:16	5

Lab Sample ID: LCS 400-653203/2-A ^5
Matrix: Water
Analysis Batch: 653454

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 653203

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.100	0.108		mg/L		108	80 - 120
Calcium	5.00	5.11		mg/L		102	80 - 120

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 400-653203/2-A ^5
Matrix: Water
Analysis Batch: 653473

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 653203

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Antimony			0.0500	0.0526		mg/L		105	80 - 120		
Arsenic			0.0500	0.0484		mg/L		97	80 - 120		
Barium			0.0500	0.0497		mg/L		99	80 - 120		
Beryllium			0.0500	0.0482		mg/L		96	80 - 120		
Cadmium			0.0500	0.0499		mg/L		100	80 - 120		
Chromium			0.0500	0.0489		mg/L		98	80 - 120		
Cobalt			0.0500	0.0495		mg/L		99	80 - 120		
Lead			0.0500	0.0503		mg/L		101	80 - 120		
Lithium			0.0500	0.0485		mg/L		97	80 - 120		
Molybdenum			0.0500	0.0498		mg/L		100	80 - 120		
Selenium			0.0500	0.0523		mg/L		105	80 - 120		
Thallium			0.0100	0.00966		mg/L		97	80 - 120		

Lab Sample ID: 680-243494-A-7-B MS ^5
Matrix: Water
Analysis Batch: 653473

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 653203

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Antimony	ND		50.0	54.3		ug/L		109	75 - 125		
Boron	0.084		0.100	0.172		mg/L		88	75 - 125		
Arsenic	ND		50.0	52.2		ug/L		104	75 - 125		
Calcium	24		5.00	28.2	4	mg/L		94	75 - 125		
Barium	0.033	F1	50.0	81.1	F1	ug/L		162	75 - 125		
Beryllium	ND		50.0	51.0		ug/L		102	75 - 125		
Cadmium	ND		50.0	51.1		ug/L		102	75 - 125		
Chromium	ND		50.0	51.2		ug/L		102	75 - 125		
Cobalt	ND		50.0	50.4		ug/L		101	75 - 125		
Lead	ND		50.0	51.8		ug/L		104	75 - 125		
Lithium	ND		50.0	51.5		ug/L		103	75 - 125		
Molybdenum	ND		50.0	47.5		ug/L		95	75 - 125		
Selenium	ND	F2	50.0	39.5		ug/L		79	75 - 125		
Thallium	ND		10.0	10.3		ug/L		103	75 - 125		

Lab Sample ID: 680-243494-A-7-C MSD ^5
Matrix: Water
Analysis Batch: 653473

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 653203

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	ND		50.0	54.4		ug/L		109	75 - 125	0	20
Boron	0.084		0.100	0.196		mg/L		113	75 - 125	13	20
Arsenic	ND		50.0	47.2		ug/L		94	75 - 125	10	20
Calcium	24		5.00	29.1	4	mg/L		111	75 - 125	3	20
Barium	0.033	F1	50.0	82.4	F1	ug/L		165	75 - 125	2	20
Beryllium	ND		50.0	49.3		ug/L		99	75 - 125	3	20
Cadmium	ND		50.0	51.2		ug/L		102	75 - 125	0	20
Chromium	ND		50.0	50.4		ug/L		101	75 - 125	2	20
Cobalt	ND		50.0	50.1		ug/L		100	75 - 125	1	20
Lead	ND		50.0	52.2		ug/L		104	75 - 125	1	20
Lithium	ND		50.0	51.7		ug/L		103	75 - 125	0	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 680-243494-A-7-C MSD ^5
Matrix: Water
Analysis Batch: 653473

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 653203

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Molybdenum	ND		50.0	49.0		ug/L		98	75 - 125	3	20
Selenium	ND	F2	50.0	51.0	F2	ug/L		102	75 - 125	25	20
Thallium	ND		10.0	10.1		ug/L		101	75 - 125	2	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 400-652452/14-A
Matrix: Water
Analysis Batch: 652536

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 652452

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.15	ug/L		12/01/23 07:58	12/01/23 11:33	1

Lab Sample ID: LCS 400-652452/15-A
Matrix: Water
Analysis Batch: 652536

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 652452

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	1.00	1.00		ug/L		100	80 - 120

Lab Sample ID: 400-247488-B-1-B MS
Matrix: Water
Analysis Batch: 652536

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 652452

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	ND	F1	2.00	2.53	F1	ug/L		127	80 - 120

Lab Sample ID: 400-247488-B-1-C MSD
Matrix: Water
Analysis Batch: 652536

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 652452

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	ND	F1	2.00	2.51	F1	ug/L		126	80 - 120	1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 400-652922/1
Matrix: Water
Analysis Batch: 652922

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		5.0	5.0	mg/L			12/04/23 23:18	1

Lab Sample ID: LCS 400-652922/2
Matrix: Water
Analysis Batch: 652922

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	293	280		mg/L		96	78 - 122

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 400-247488-10 DU
Matrix: Water
Analysis Batch: 652922

Client Sample ID: DUPLCIATE
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	590		592		mg/L		0.3	5

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-639652/1-A
Matrix: Water
Analysis Batch: 643079

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 639652

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.06338	U	0.106	0.106	1.00	0.187	pCi/L	12/06/23 09:19	01/05/24 09:21	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.3*		*30 - 110*	*12/06/23 09:19*	*01/05/24 09:21*	*1*

Lab Sample ID: LCS 160-639652/2-A
Matrix: Water
Analysis Batch: 643079

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 639652

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226	11.3	11.32		1.34	1.00	0.215	pCi/L	100	75 - 125

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.5*		*30 - 110*

Lab Sample ID: 280-185127-D-2-A DU
Matrix: Water
Analysis Batch: 643226

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 639652

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.248		-0.00173 6	U	0.155	1.00	0.307	pCi/L	0.77	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Ba Carrier	*95.5*		*30 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-639653/1-A
Matrix: Water
Analysis Batch: 643034

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 639653

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2469	U	0.314	0.315	1.00	0.522	pCi/L	12/06/23 09:25	01/04/24 12:02	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: MB 160-639653/1-A
Matrix: Water
Analysis Batch: 643034

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 639653

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.3		30 - 110	12/06/23 09:25	01/04/24 12:02	1
Y Carrier	81.9		30 - 110	12/06/23 09:25	01/04/24 12:02	1

Lab Sample ID: LCS 160-639653/2-A
Matrix: Water
Analysis Batch: 643034

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 639653

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228			9.34	8.855		1.21	1.00	0.515	pCi/L	95	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	97.5		30 - 110
Y Carrier	84.5		30 - 110

Lab Sample ID: 280-185127-D-2-B DU
Matrix: Water
Analysis Batch: 643034

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 639653

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-228	1.34			1.020		0.432	1.00	0.545	pCi/L			0.35	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	95.5		30 - 110
Y Carrier	75.5		30 - 110

Eurofins Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone: 850-474-1001 Fax: 850-478-2671

Chain of Custody Record

eurofins | Environment Testing

400-247488 COC

Client Information	Sampler: Rick Elgin	Lab PM: Whitmire, Cheyenne R	COC No: 400-124667-42675.1
Client Contact: Anika Careaga	Phone: 573-636-9454	E-Mail: Cheyenne.Whitmire@et.eurofinsus.com	Page: Page 1 of 1
Company: Midwest Environmental Consultants	PWSID:		Job #:
Address: 2009 East McCarty Street Suite 2	Due Date Requested:		
City: Jefferson City	TAT Requested (days):		
State, Zip: MO, 65101	Compliance Project: Δ Yes Δ No		
Phone: 573-636-9454(Tel)	PO #: Purchase Order not required		
Email: acareaga@mecpc.com	WO #:		
Project Name: Asbury Pond - NPDES	Project #: 40011105		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	9315_Ra226 - Standard Target List	9320_Ra228 - Standard Target List	FieldSampling - Field pH	9056A_ORGFM_28D - Chloride, Fluoride & Sulfate	7470A - Mercury (CVAA)	6020B - TAL Metals	2540C - TDS	9020B - Total Organic Halides (TOX)	Total Number of containers	Special Instructions/Note: pH / spec cond.
			Preservation Code:			D	D	N	N	D	D	N	S		
MW-2	11-29-23	1:20	G	Water		X	X	X	X	X	X	X	X		5.76 / 0.628
MW-3	11-29-23	11:40		Water											5.77 / 1.134
MW-4	11-28-23	2:05		Water											6.65 / 1.721
MW-5	11-29-23	10:50		Water											7.16 / 0.886
MW-5A	11-29-23	9:45		Water											6.59 / 3.424
MW-5AR	11-29-23	10:15		Water											7.31 / 1.237
MW-6	11-29-23	9:05		Water											6.79 / 2.097
MW-6A	11-28-23	3:30		Water											6.33 / 2.181
MW-7	11-28-23	2:50		Water											6.18 / 2.461
DUPLICATE	11-29-23	11:05		Water											— / —
FIELD BLANK	11-29-23	11:15		Water											— / —

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Ryan Ortbals	Date/Time: 11-29-23 / 3:45	Company MEC	Received by: FedEx	Date/Time: 11-29-23 / 3:45	Company FedEx
Relinquished by:	Date/Time:	Company	Received by: [signature]	Date/Time: 11.30.23 9:28	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 3.8, 5.7, 0.0 IRs

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Midwest Environmental Consultants

Job Number: 400-247488-3

Login Number: 247488

List Source: Eurofins Pensacola

List Number: 1

Creator: Roberts, Alexis J

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.0°C, 3.8°C, 5.7°C IR8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Midwest Environmental Consultants

Job Number: 400-247488-3

Login Number: 247488
List Number: 3
Creator: Pinette, Meadow L

List Source: Eurofins St. Louis
List Creation: 12/05/23 01:01 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Laboratory: Eurofins Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alabama	State	40150	06-30-24
ANAB	ISO/IEC 17025	L2471	02-22-26
Arkansas DEQ	State	88-00689	08-01-24
California	State	2510	06-30-24
Florida	NELAP	E81010	06-30-24
Georgia	State	E81010(FL)	06-30-24
Illinois	NELAP	200041	10-09-24
Kansas	NELAP	E-10253	10-31-24
Kentucky (UST)	State	53	06-30-24
Louisiana (All)	NELAP	30976	06-30-24
Louisiana (DW)	State	LA017	12-31-23
North Carolina (WW/SW)	State	314	12-31-23
Oklahoma	NELAP	9810	08-31-24
Pennsylvania	NELAP	68-00467	01-31-24
South Carolina	State	96026	06-30-24
Tennessee	State	TN02907	06-30-24
Texas	NELAP	T104704286	09-30-24
US Fish & Wildlife	US Federal Programs	A22340	06-30-24
USDA	US Federal Programs	FLGNV23001	01-08-26
USDA	US Federal Programs	P330-21-00056	05-17-24
Virginia	NELAP	460166	06-14-24
West Virginia DEP	State	136	03-31-24
West Virginia DEP	State	136	03-31-24

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-06-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-24
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-24
HI - RadChem Recognition	State	n/a	06-30-24
Illinois	NELAP	200023	11-30-24
Iowa	State	373	12-01-24
Kansas	NELAP	E-10236	10-31-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-24
Louisiana (DW)	State	LA011	12-31-24
Maryland	State	310	09-30-24
Massachusetts	State	M-MO054	06-30-24
MI - RadChem Recognition	State	9005	06-30-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Midwest Environmental Consultants
Job ID: 400-247488-3
Project/Site: Asbury Pond - CCR Rule Appendix III & IV

Laboratory: Eurofins St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Missouri	State	780	06-30-25
Nevada	State	MO00054	07-31-24
New Jersey	NELAP	MO002	06-30-24
New Mexico	State	MO00054	06-30-24
New York	NELAP	11616	03-31-24
North Carolina (DW)	State	29700	07-31-24
North Dakota	State	R-207	06-30-24
Oklahoma	NELAP	9997	08-31-24
Oregon	NELAP	4157	09-01-24
Pennsylvania	NELAP	68-00540	02-28-24
South Carolina	State	85002001	06-30-24
Texas	NELAP	T104704193	07-31-24
US Fish & Wildlife	US Federal Programs	058448	07-31-24
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO00054	07-31-24
Virginia	NELAP	10310	06-15-25
Washington	State	C592	08-30-24
West Virginia DEP	State	381	01-31-24

APPENDIX 5

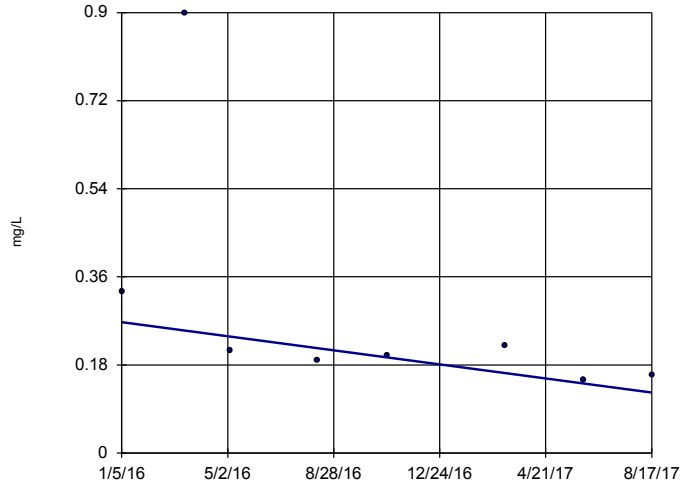
Statistical Analysis

Sanitas™ Output – Background

Trending Analysis

Boron

MW-2 (bg)



n = 8

Slope = -0.08868 units per year.

Mann-Kendall statistic = -16
critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

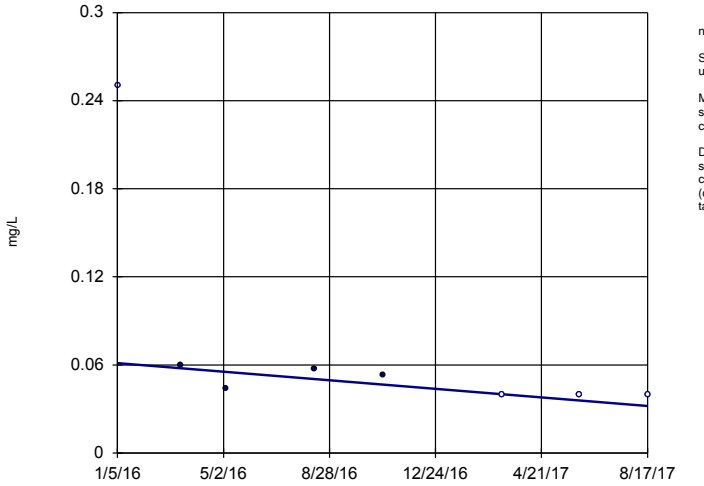
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Hollow symbols indicate censored values.

Boron

MW-3 (bg)



n = 8

Slope = -0.01797 units per year.

Mann-Kendall statistic = -21
critical = -20

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

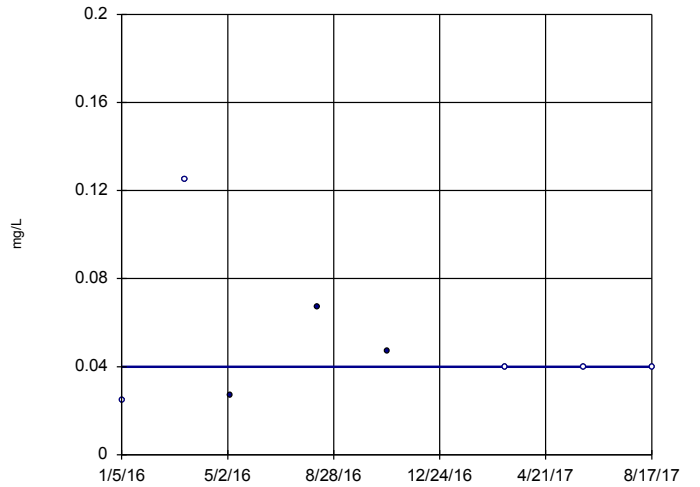
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Hollow symbols indicate censored values.

Boron

MW-4



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = -1
critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

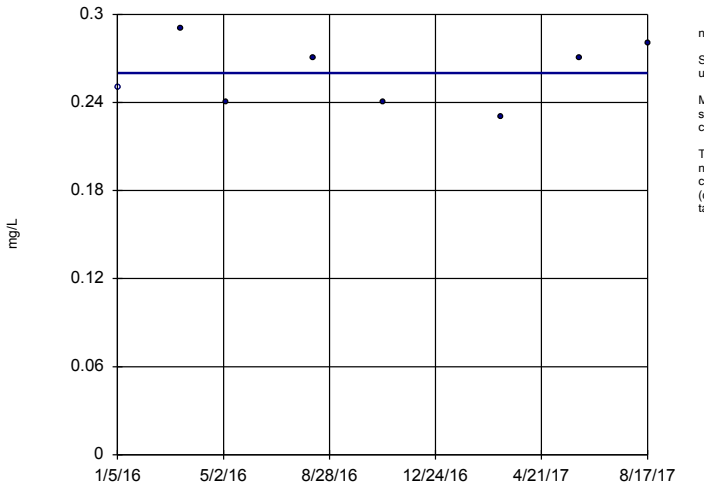
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Hollow symbols indicate censored values.

Boron

MW-5



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 0
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

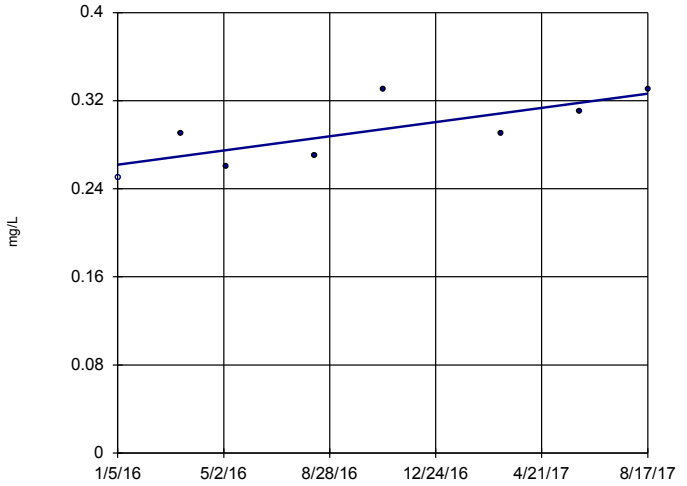
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Boron

MW-5A



n = 8

Slope = 0.03993 units per year.

Mann-Kendall statistic = 18 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

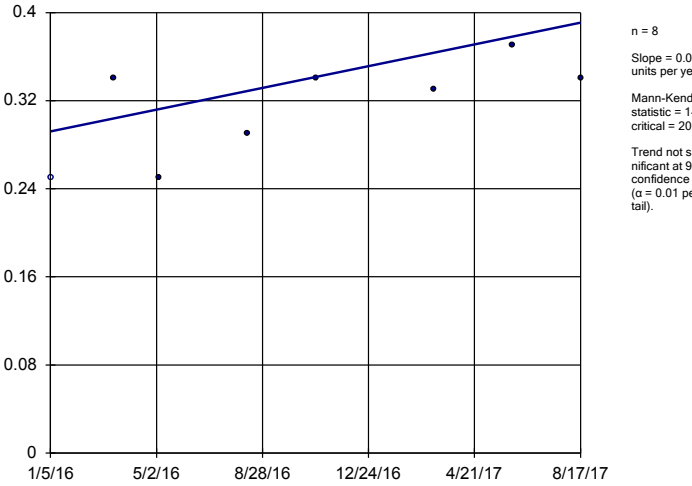
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Boron

MW-6



n = 8

Slope = 0.06117 units per year.

Mann-Kendall statistic = 14 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

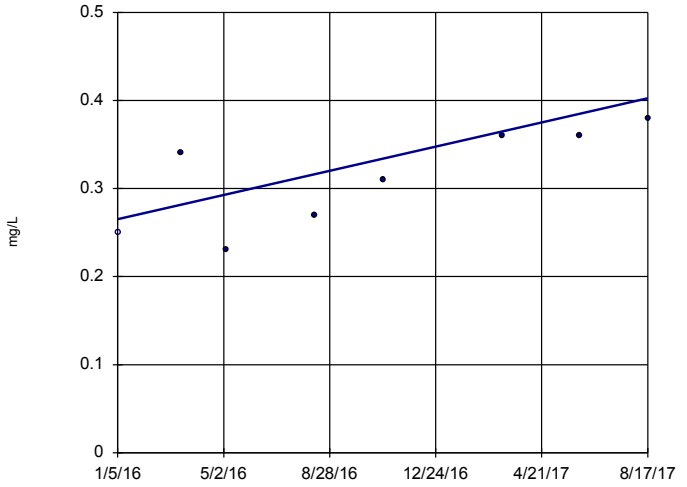
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Boron

MW-6A



n = 8

Slope = 0.08497 units per year.

Mann-Kendall statistic = 19 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

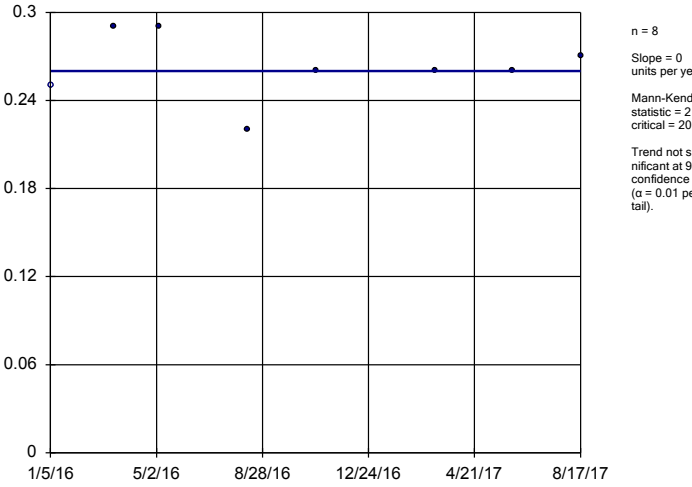
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Boron

MW-7



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 2 critical = 20

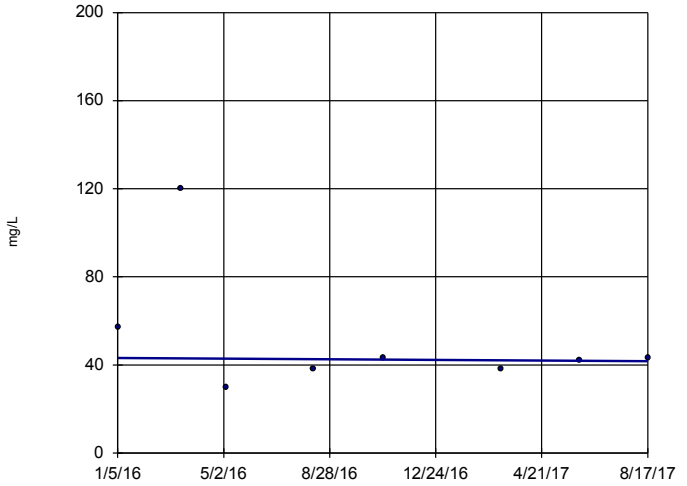
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Calcium

MW-2 (bg)



n = 8

Slope = -0.8333 units per year.

Mann-Kendall statistic = -2 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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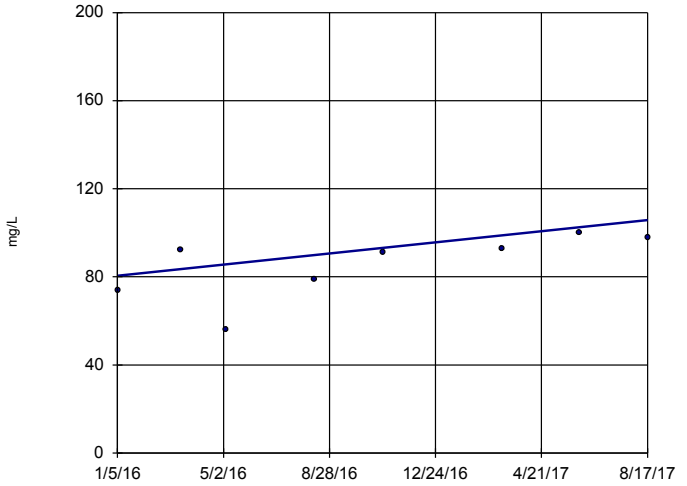
Calcium

MW-3 (bg)



n = 8

Slope = 15.6 units per year.

Mann-Kendall statistic = 18 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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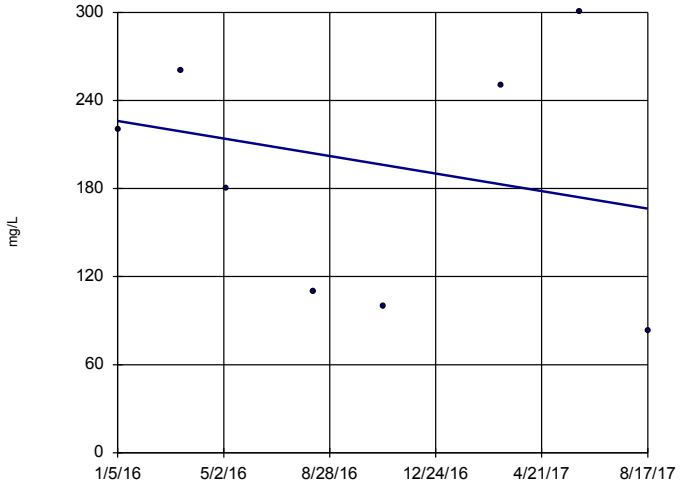
Calcium

MW-4



n = 8

Slope = -36.95 units per year.

Mann-Kendall statistic = -6 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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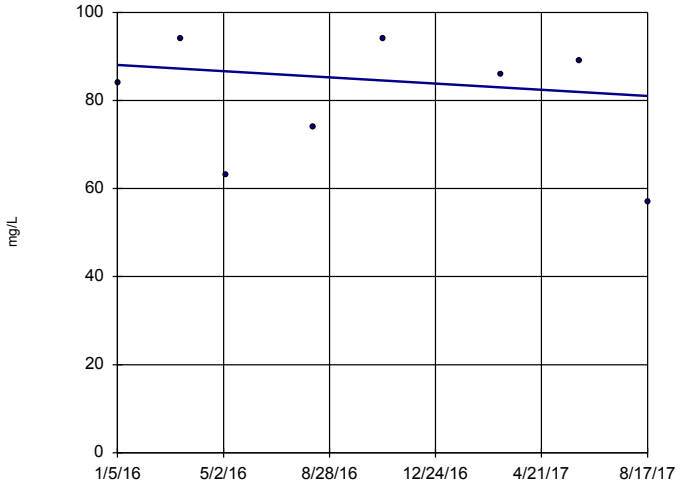
Calcium

MW-5



n = 8

Slope = -4.395 units per year.

Mann-Kendall statistic = -3 critical = -20

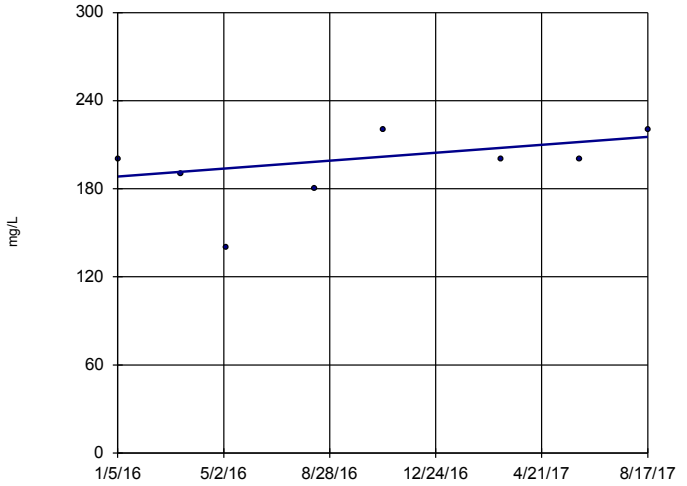
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Calcium

MW-5A



n = 8

Slope = 16.74 units per year.

Mann-Kendall statistic = 10
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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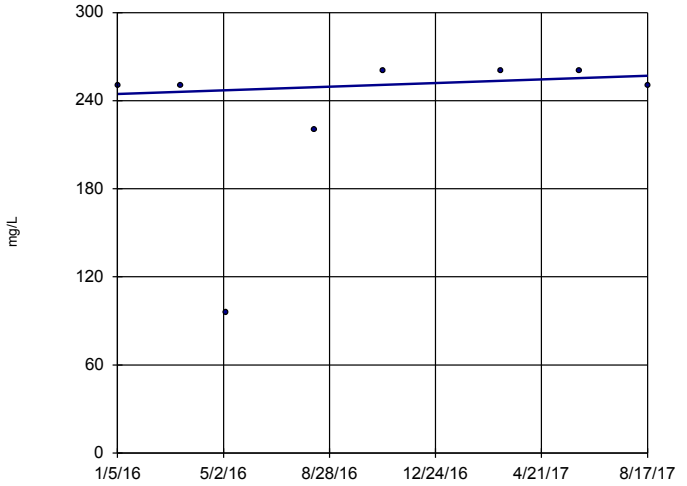
Calcium

MW-6



n = 8

Slope = 7.67 units per year.

Mann-Kendall statistic = 8
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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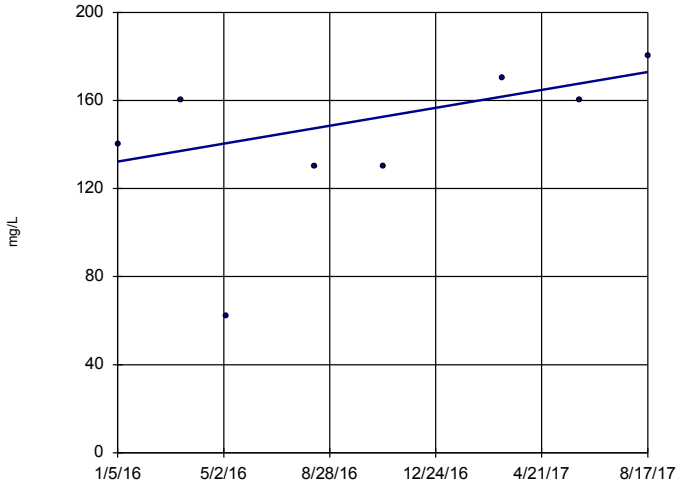
Calcium

MW-6A



n = 8

Slope = 25.16 units per year.

Mann-Kendall statistic = 12
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

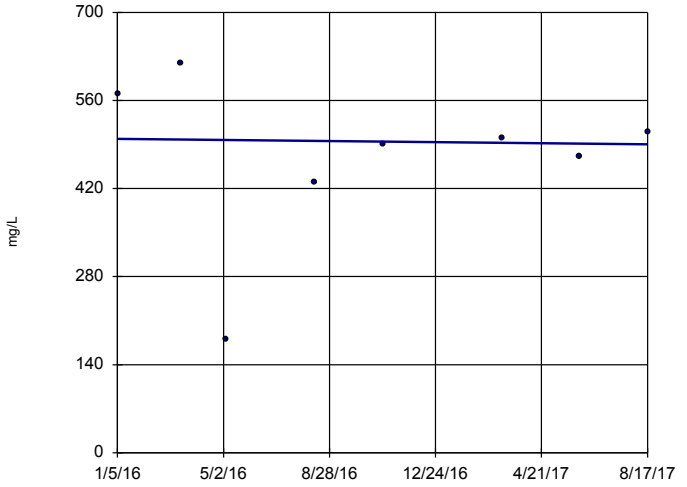
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

MW-7



n = 8

Slope = -5.401 units per year.

Mann-Kendall statistic = 0
critical = 20

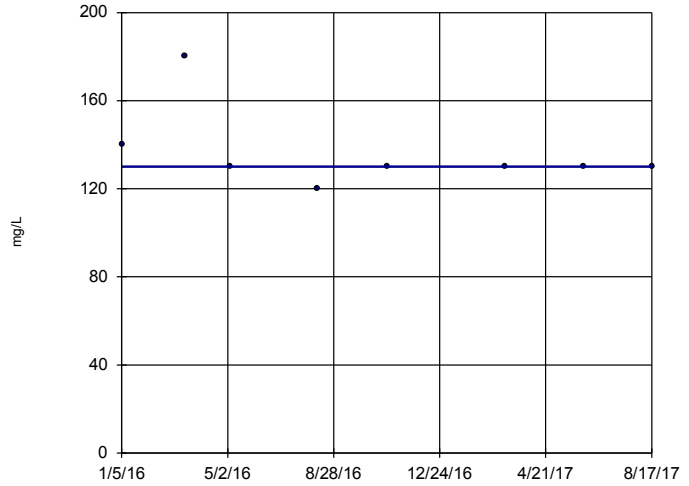
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Chloride

MW-2 (bg)



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = -8 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

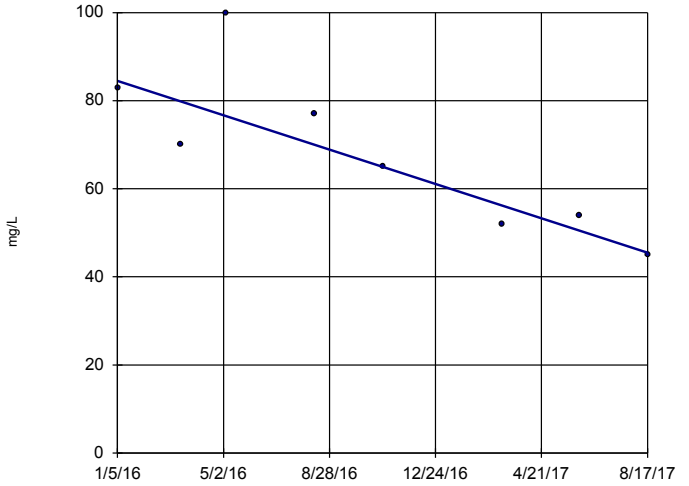
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-3 (bg)



n = 8

Slope = -24.13 units per year.

Mann-Kendall statistic = -20 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

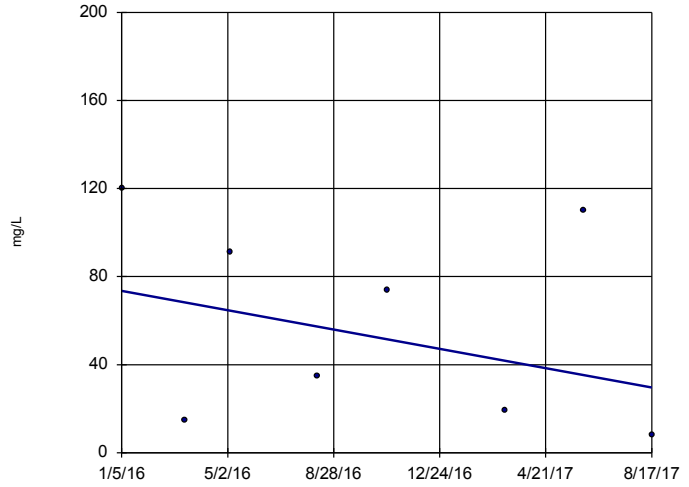
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-4



n = 8

Slope = -27.17 units per year.

Mann-Kendall statistic = -8 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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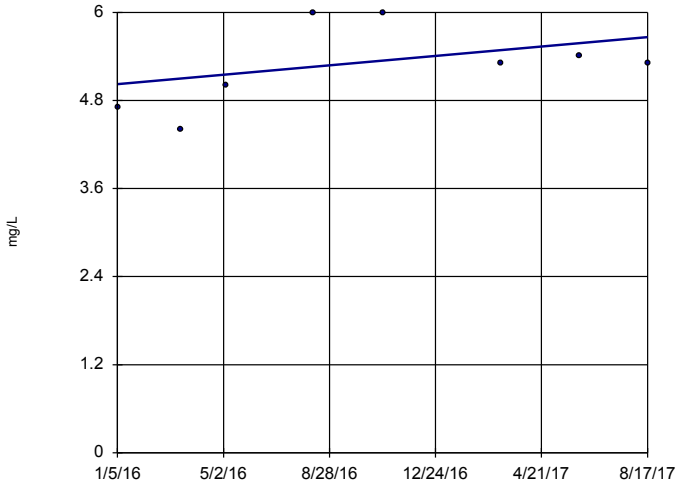
Chloride

MW-5



n = 8

Slope = 0.3955 units per year.

Mann-Kendall statistic = 10 critical = 20

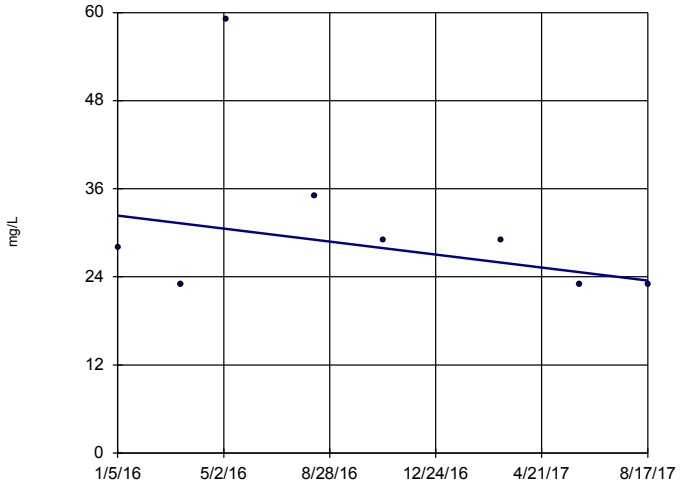
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Chloride

MW-5A



n = 8

Slope = -5.487 units per year.

Mann-Kendall statistic = -8 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

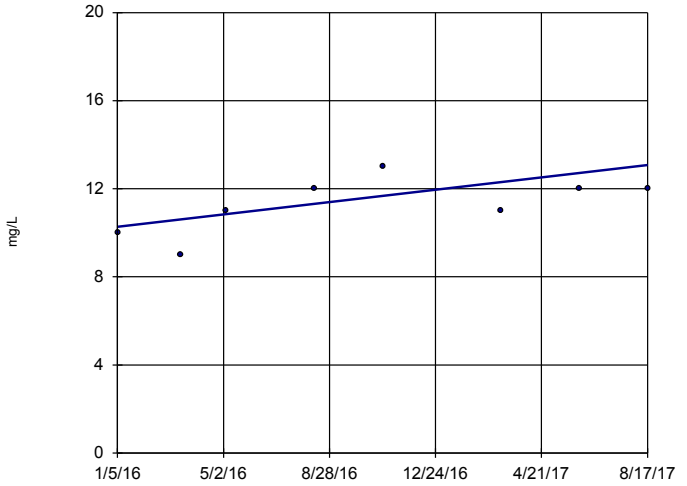
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-6



n = 8

Slope = 1.735 units per year.

Mann-Kendall statistic = 14 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

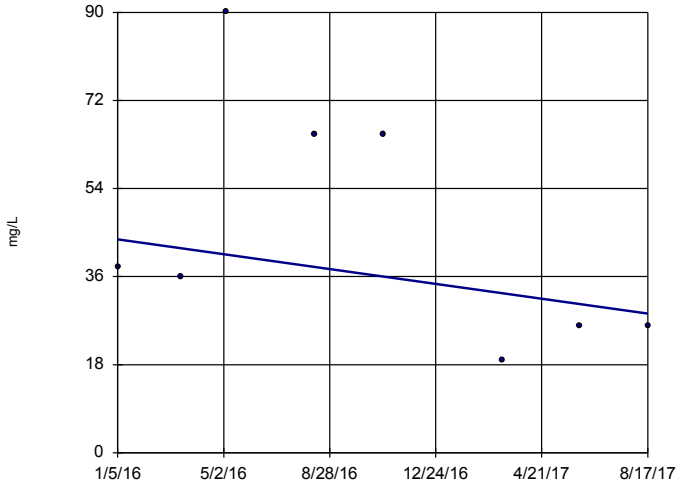
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-6A



n = 8

Slope = -9.402 units per year.

Mann-Kendall statistic = -10 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

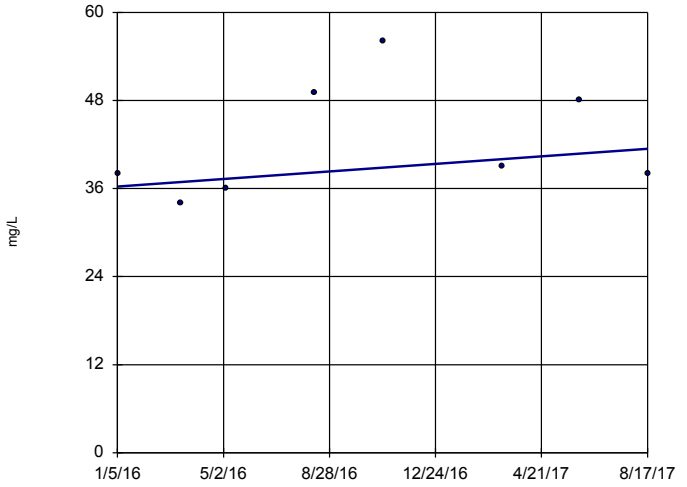
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-7



n = 8

Slope = 3.19 units per year.

Mann-Kendall statistic = 7 critical = 20

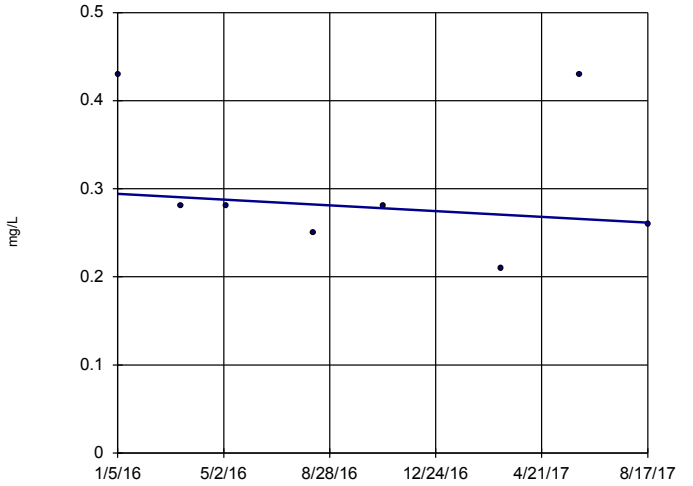
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Fluoride

MW-2 (bg)



n = 8

Slope = -0.02016 units per year.

Mann-Kendall statistic = -8 critical = -20

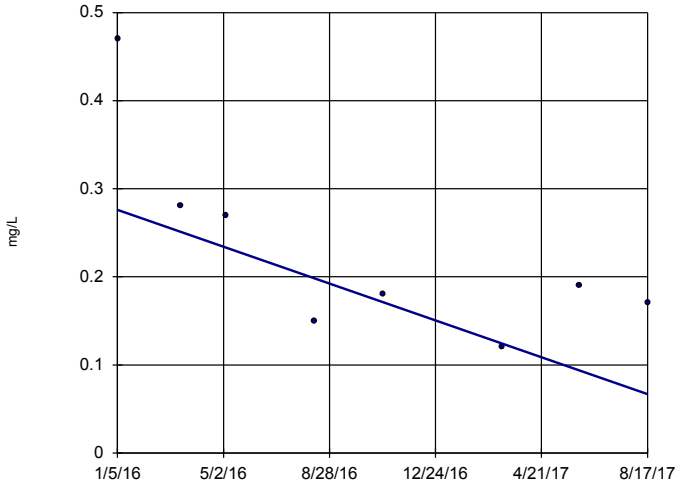
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Fluoride

MW-3 (bg)



n = 8

Slope = -0.1295 units per year.

Mann-Kendall statistic = -16 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

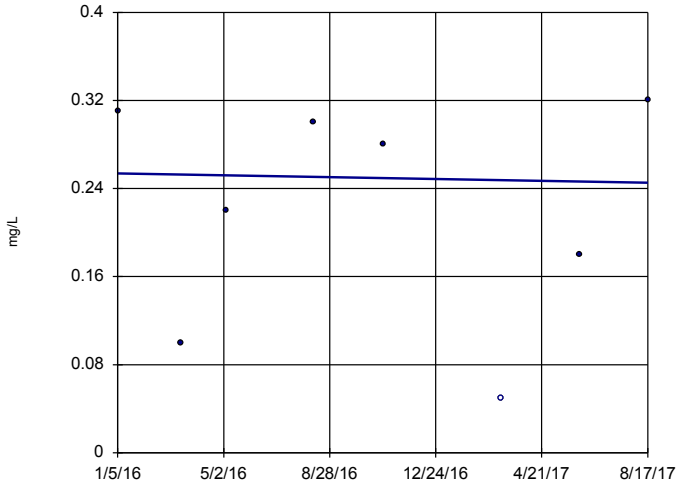
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Hollow symbols indicate censored values.

Fluoride

MW-4



n = 8

Slope = -0.005278 units per year.

Mann-Kendall statistic = 0 critical = 20

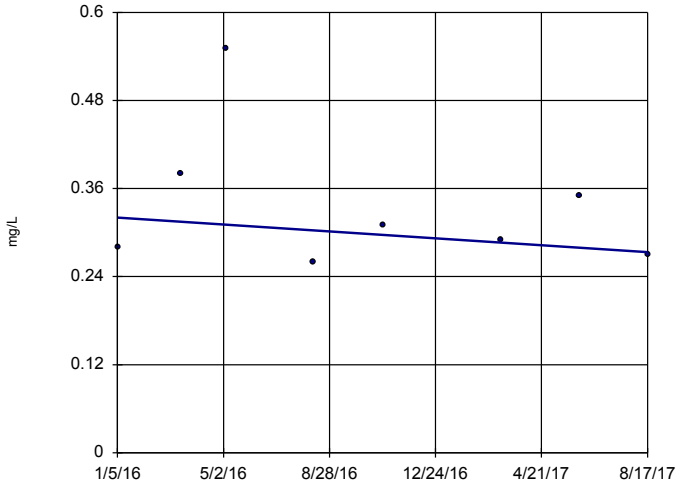
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Fluoride

MW-5



n = 8

Slope = -0.0291 units per year.

Mann-Kendall statistic = -4 critical = -20

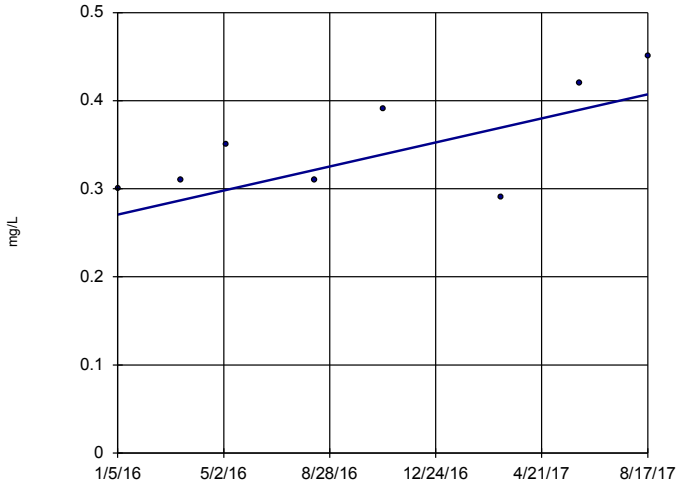
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Fluoride

MW-5A



n = 8

Slope = 0.08456 units per year.

Mann-Kendall statistic = 15 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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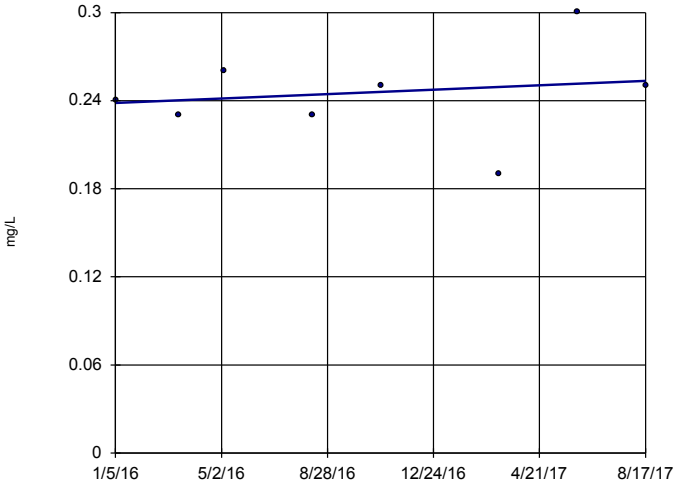
Fluoride

MW-6



n = 8

Slope = 0.00928 units per year.

Mann-Kendall statistic = 4 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

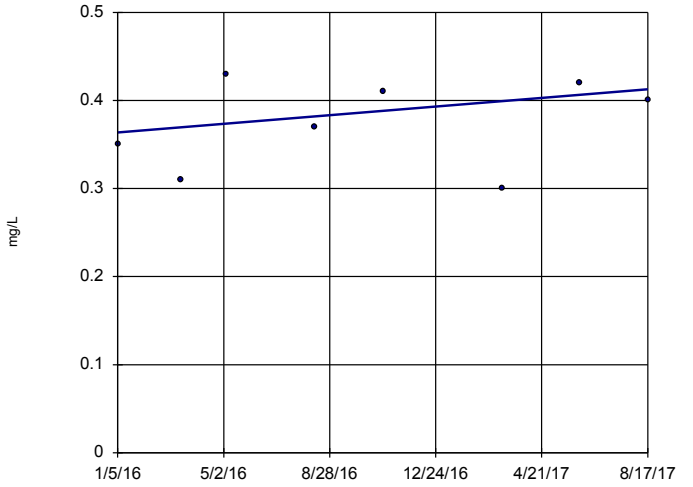
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Fluoride

MW-6A



n = 8

Slope = 0.03022 units per year.

Mann-Kendall statistic = 4 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

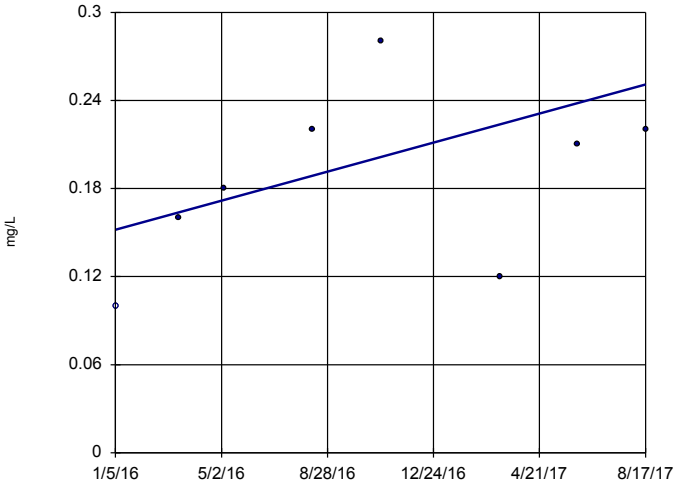
The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Hollow symbols indicate censored values.

Fluoride

MW-7



n = 8

Slope = 0.06113 units per year.

Mann-Kendall statistic = 13 critical = 20

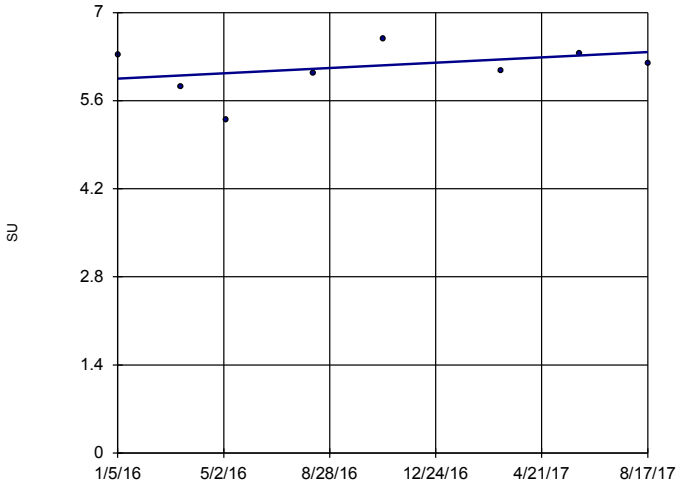
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

pH

MW-2 (bg)



n = 8

Slope = 0.2618 units per year.

Mann-Kendall statistic = 8 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

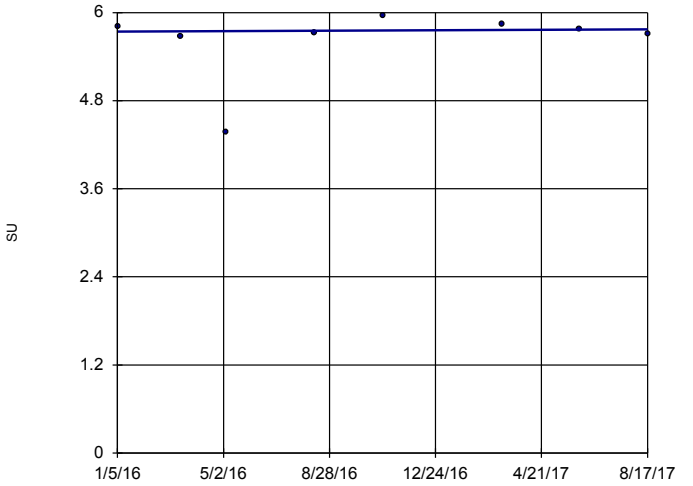
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-3 (bg)



n = 8

Slope = 0.01982 units per year.

Mann-Kendall statistic = 2 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

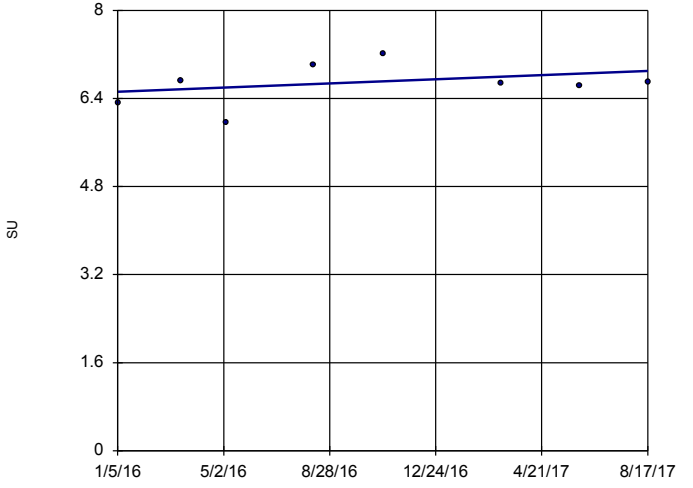
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-4



n = 8

Slope = 0.2307 units per year.

Mann-Kendall statistic = 4 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

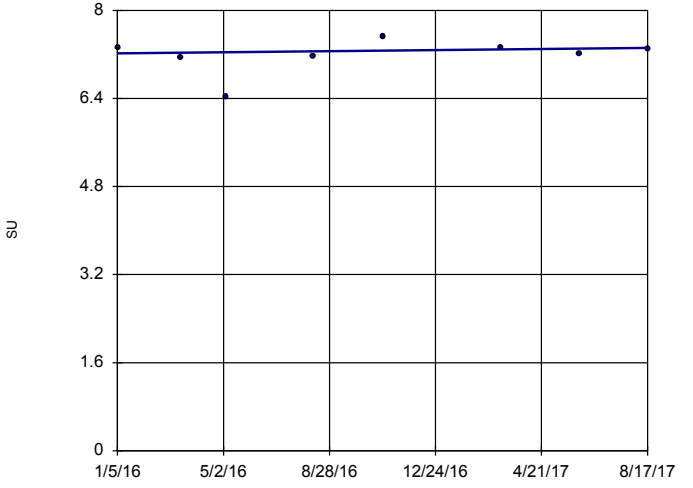
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-5



n = 8

Slope = 0.05967 units per year.

Mann-Kendall statistic = 4 critical = 20

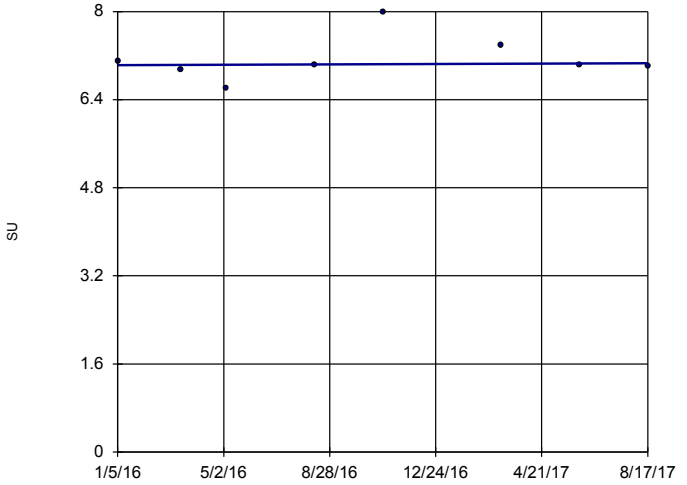
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

pH

MW-5A



n = 8

Slope = 0.0211 units per year.

Mann-Kendall statistic = 1
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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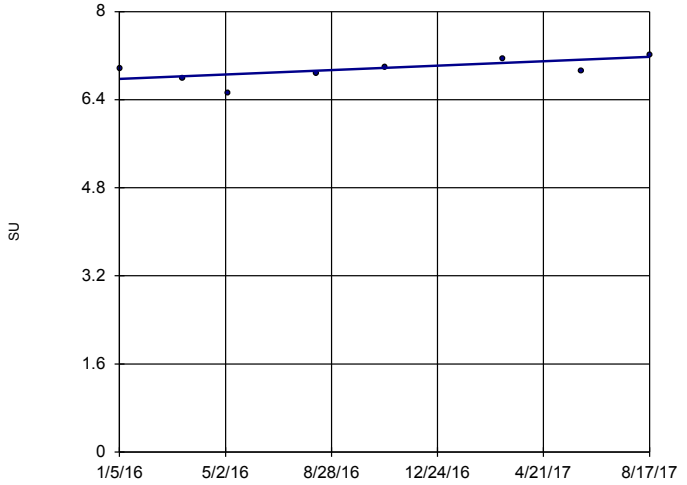
pH

MW-6



n = 8

Slope = 0.2471 units per year.

Mann-Kendall statistic = 14
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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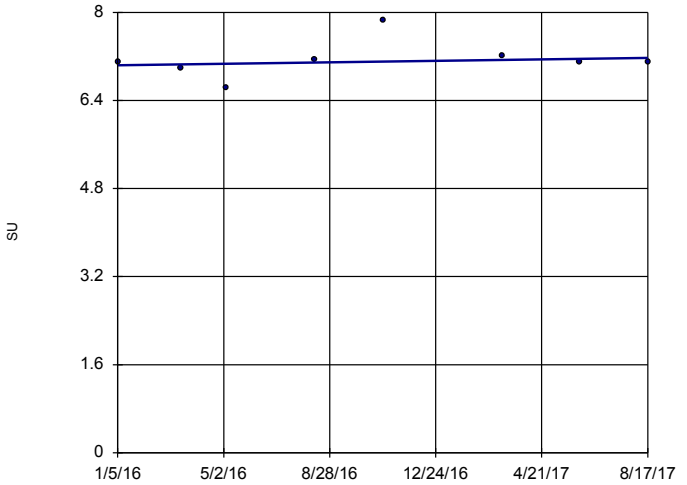
pH

MW-6A



n = 8

Slope = 0.08386 units per year.

Mann-Kendall statistic = 7
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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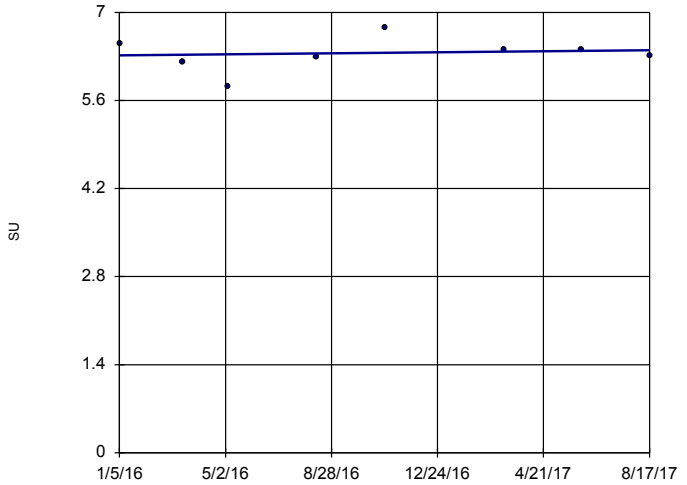
pH

MW-7



n = 8

Slope = 0.04935 units per year.

Mann-Kendall statistic = 4
critical = 20

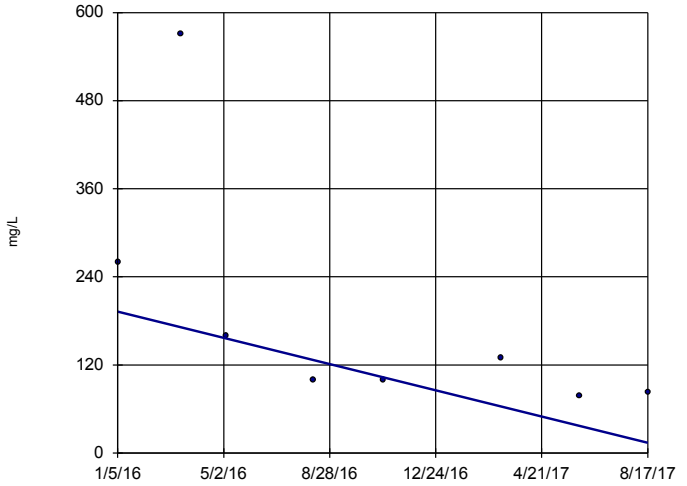
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sulfate

MW-2 (bg)



n = 8

Slope = -110.6 units per year.

Mann-Kendall statistic = -20 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

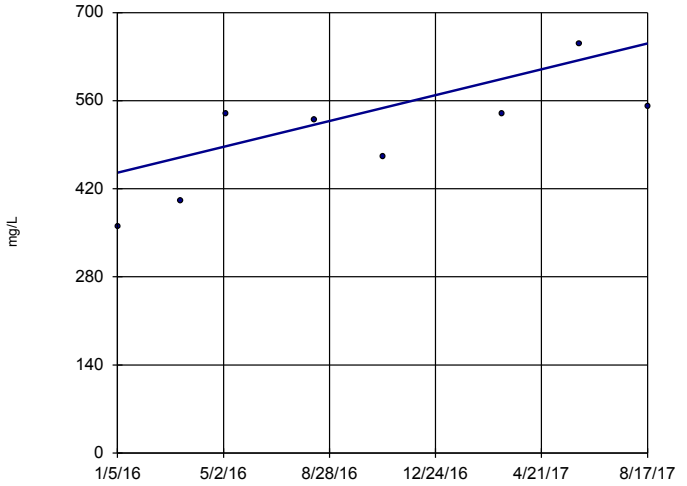
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-3 (bg)



n = 8

Slope = 126.8 units per year.

Mann-Kendall statistic = 19 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

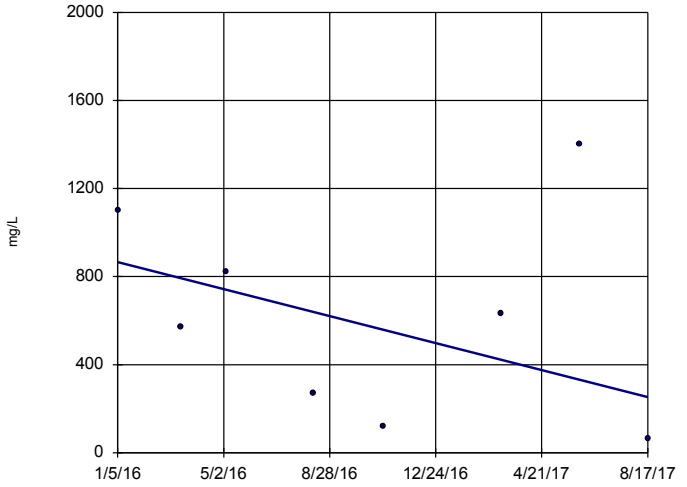
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-4



n = 8

Slope = -379.2 units per year.

Mann-Kendall statistic = -8 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

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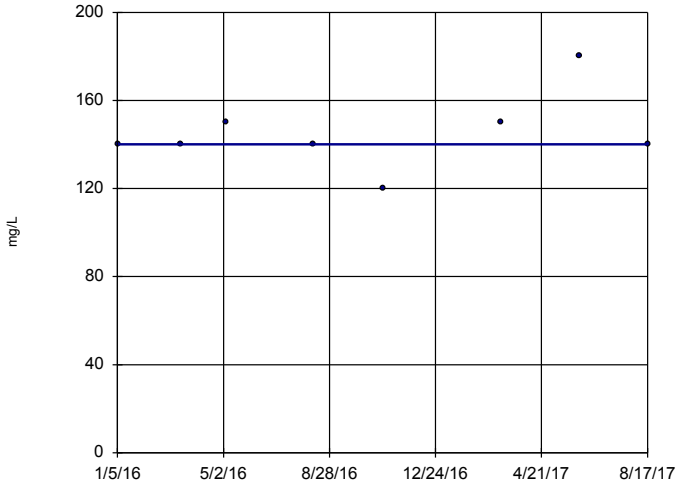
Sulfate

MW-5



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 5 critical = 20

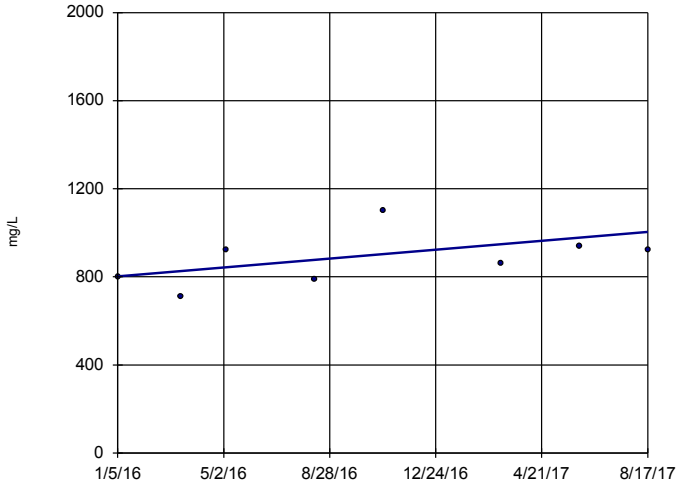
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sulfate

MW-5A



n = 8

Slope = 125.4 units per year.

Mann-Kendall statistic = 11 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

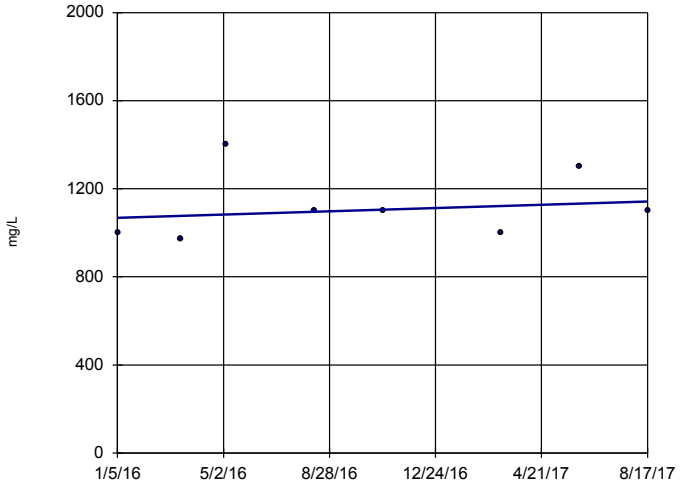
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6



n = 8

Slope = 46.31 units per year.

Mann-Kendall statistic = 6 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

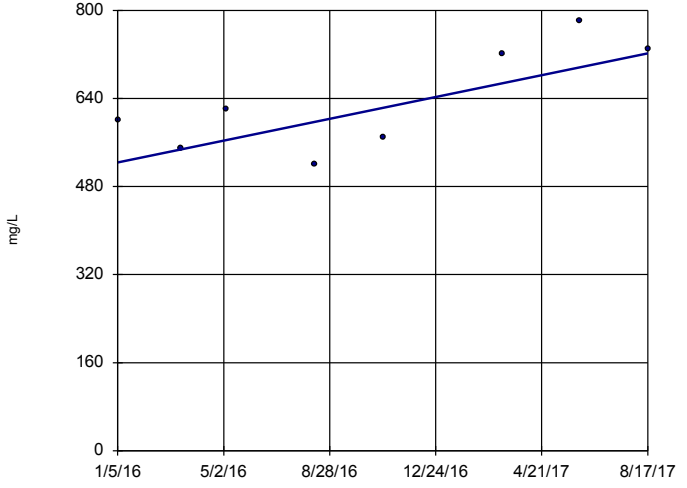
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6A



n = 8

Slope = 122.7 units per year.

Mann-Kendall statistic = 14 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

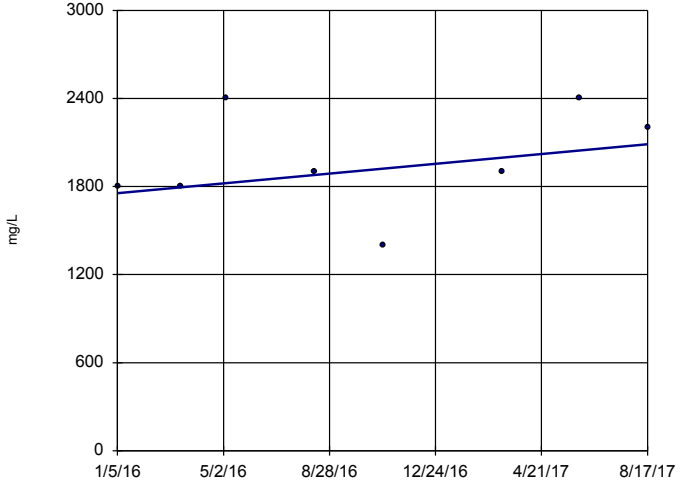
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-7



n = 8

Slope = 206.6 units per year.

Mann-Kendall statistic = 9 critical = 20

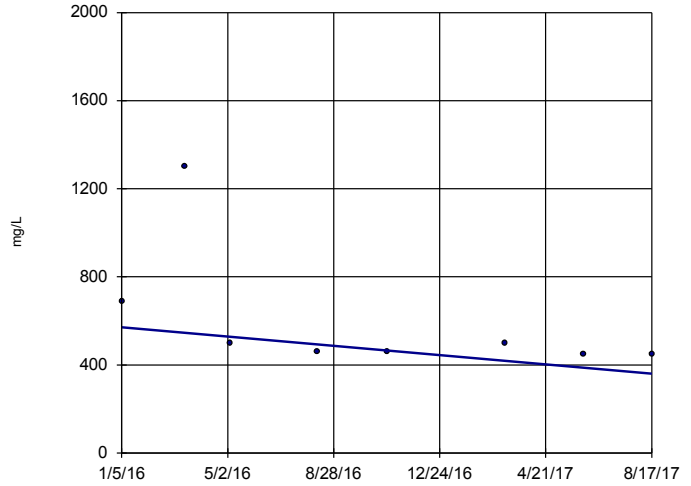
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Total Dissolved Solids

MW-2 (bg)



n = 8

Slope = -130.2 units per year.

Mann-Kendall statistic = -19 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

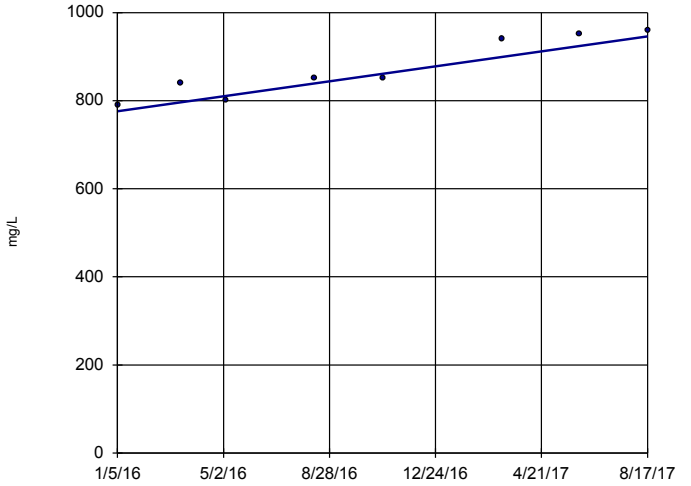
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-3 (bg)



n = 8

Slope = 105 units per year.

Mann-Kendall statistic = 25 critical = 20

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

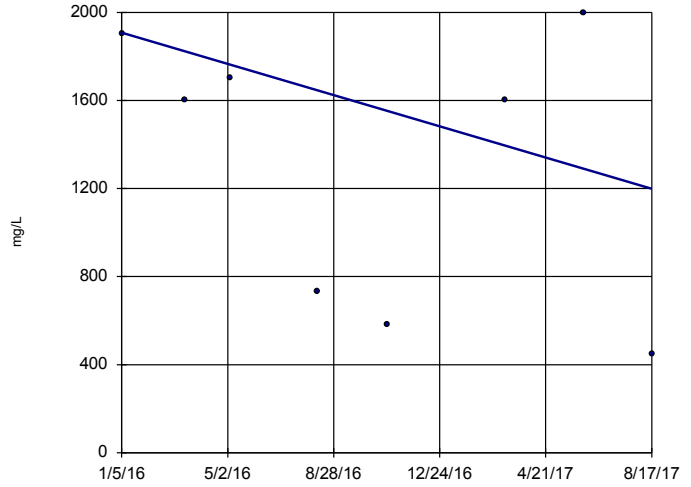
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-4



n = 8

Slope = -439 units per year.

Mann-Kendall statistic = -9 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

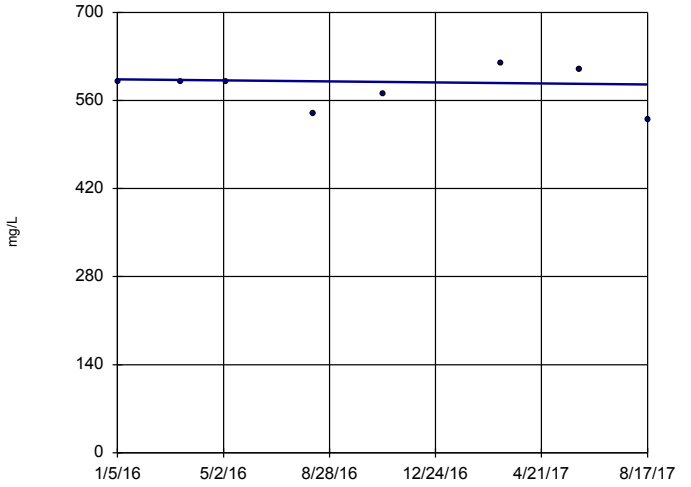
Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-5



n = 8

Slope = -4.906 units per year.

Mann-Kendall statistic = -3 critical = -20

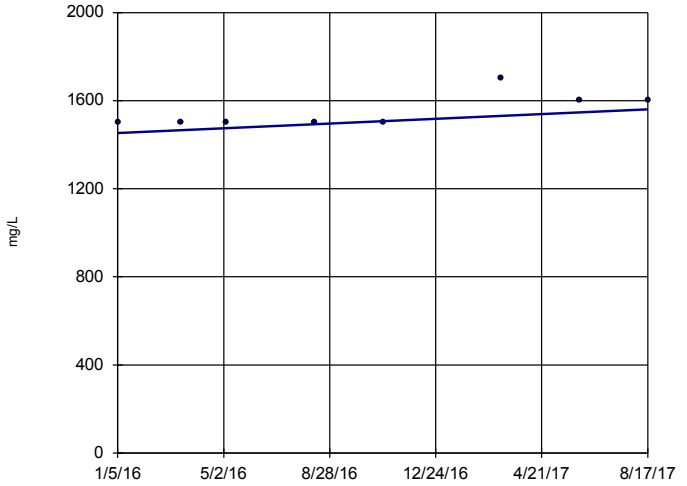
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:08 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Total Dissolved Solids

MW-5A



n = 8

Slope = 66.1 units per year.

Mann-Kendall statistic = 13 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

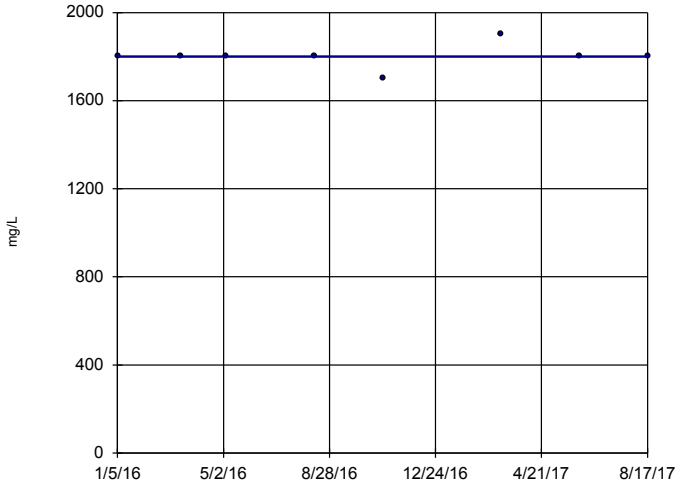
Sen's Slope Estimator Analysis Run 1/23/2018 3:09 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-6



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 1 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

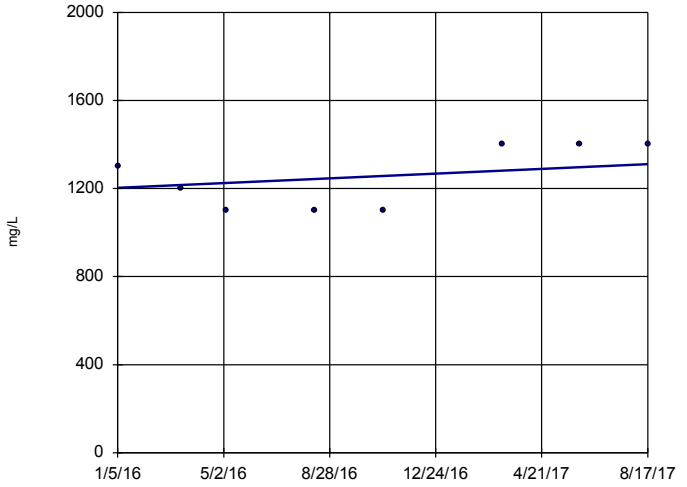
Sen's Slope Estimator Analysis Run 1/23/2018 3:09 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-6A



n = 8

Slope = 66.44 units per year.

Mann-Kendall statistic = 8 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

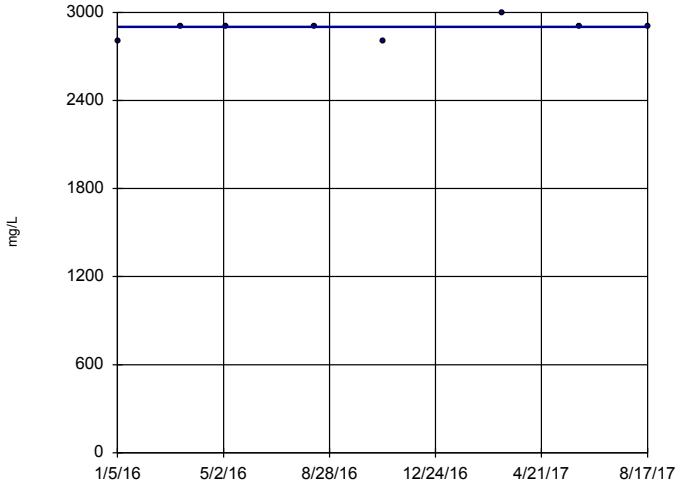
Sen's Slope Estimator Analysis Run 1/23/2018 3:09 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Sanitas™ v.9.5.32 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-7



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 7 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/23/2018 3:09 PM

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3

Trend Test

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3 only Printed 1/23/2018, 3:10 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-2 (bg)	-0.08868	-16	-20	No	8	0	n/a	n/a	0.02	NP
Boron (mg/L)	**MW-3 (bg)**	**-0.01797**	**-21**	**-20**	**Yes**	**8**	**50**	**n/a**	**n/a**	**0.02**	**NP**
Boron (mg/L)	MW-4	0	-1	-20	No	8	62.5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5	0	0	20	No	8	12.5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5A	0.03993	18	20	No	8	12.5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6	0.06117	14	20	No	8	12.5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6A	0.08497	19	20	No	8	12.5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-7	0	2	20	No	8	12.5	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2 (bg)	-0.8333	-2	-20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3 (bg)	15.6	18	20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4	-36.95	-6	-20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	-4.395	-3	-20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5A	16.74	10	20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	7.67	8	20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6A	25.16	12	20	No	8	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7	-5.401	0	20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2 (bg)	0	-8	-20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3 (bg)	-24.13	-20	-20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4	-27.17	-8	-20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	0.3955	10	20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5A	-5.487	-8	-20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	1.735	14	20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6A	-9.402	-10	-20	No	8	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7	3.19	7	20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2 (bg)	-0.02016	-8	-20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3 (bg)	-0.1295	-16	-20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4	-0.00...	0	20	No	8	12.5	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	-0.0291	-4	-20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5A	0.08456	15	20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.00928	4	20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6A	0.03022	4	20	No	8	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7	0.06113	13	20	No	8	12.5	n/a	n/a	0.02	NP
pH (SU)	MW-2 (bg)	0.2618	8	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-3 (bg)	0.01982	2	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-4	0.2307	4	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-5	0.05967	4	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-5A	0.0211	1	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-6	0.2471	14	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-6A	0.08386	7	20	No	8	0	n/a	n/a	0.02	NP
pH (SU)	MW-7	0.04935	4	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2 (bg)	-110.6	-20	-20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3 (bg)	126.8	19	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4	-379.2	-8	-20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	0	5	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5A	125.4	11	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	46.31	6	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6A	122.7	14	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7	206.6	9	20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2 (bg)	-130.2	-19	-20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	**MW-3 (bg)**	**105**	**25**	**20**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.02**	**NP**

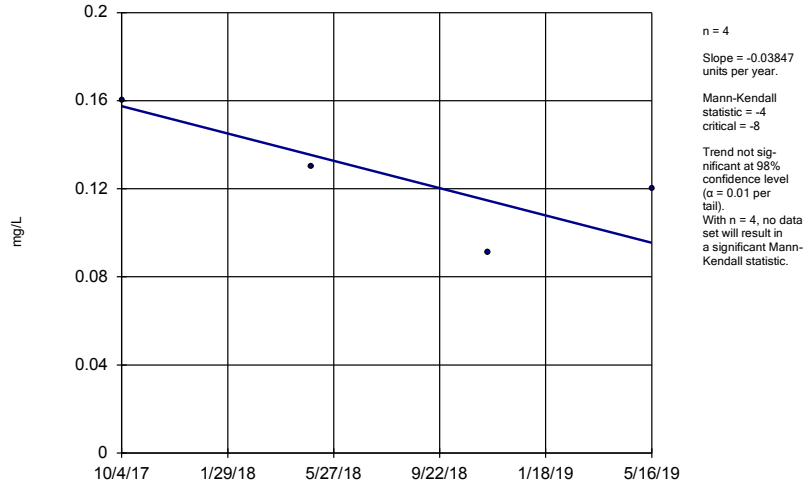
Trend Test

The Empire District Client: Midwest Environmental Consultants Data: Asbury CCR Impoundments GW Baseline Database - App 3 only Printed 1/23/2018, 3:10 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Total Dissolved Solids (mg/L)	MW-4	-439	-9	-20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-4.906	-3	-20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5A	66.1	13	20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	0	1	20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6A	66.44	8	20	No	8	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7	0	7	20	No	8	0	n/a	n/a	0.02	NP

Boron

MW-2 (bg)



n = 4

Slope = -0.03847 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

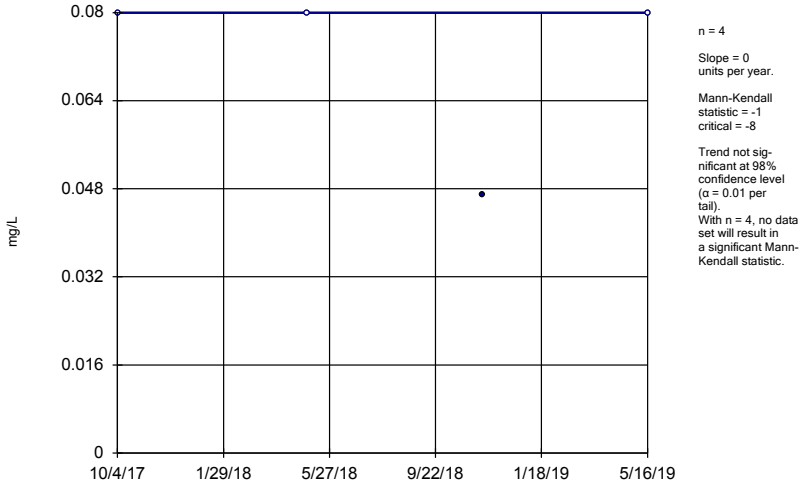
Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Boron

MW-3 (bg)



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Boron

MW-4

n = 4

Slope = 0 units per year.

Mann-Kendall statistic = -1
critical = -8

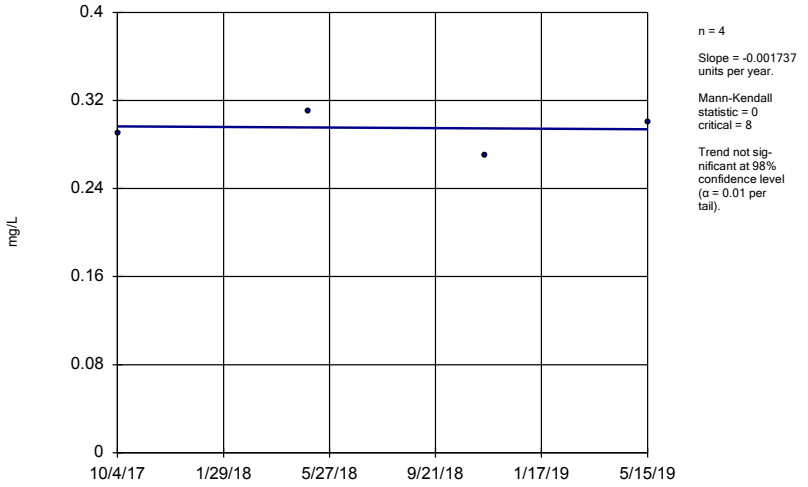
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Boron

MW-5



n = 4

Slope = -0.001737 units per year.

Mann-Kendall statistic = 0
critical = 8

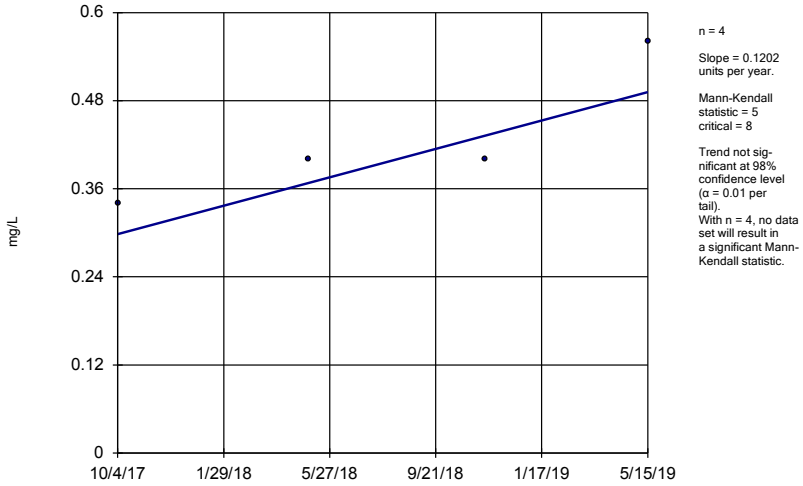
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Boron

MW-5A



n = 4

Slope = 0.1202 units per year.

Mann-Kendall statistic = 5
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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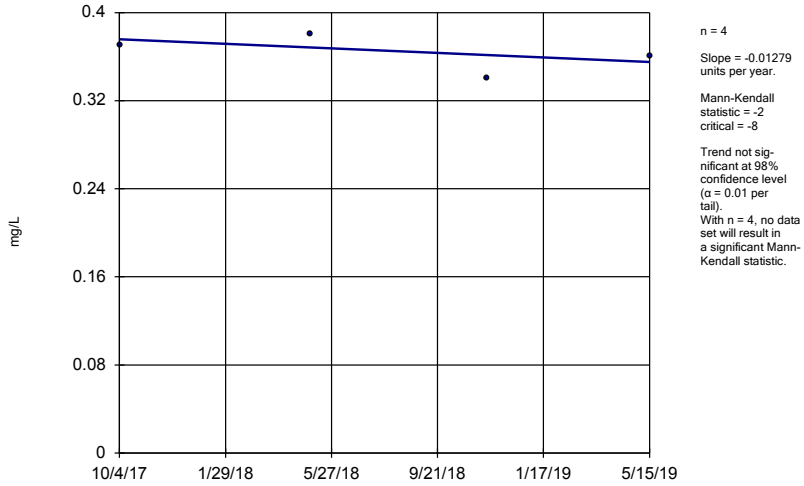
Boron

MW-6



n = 4

Slope = -0.01279 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

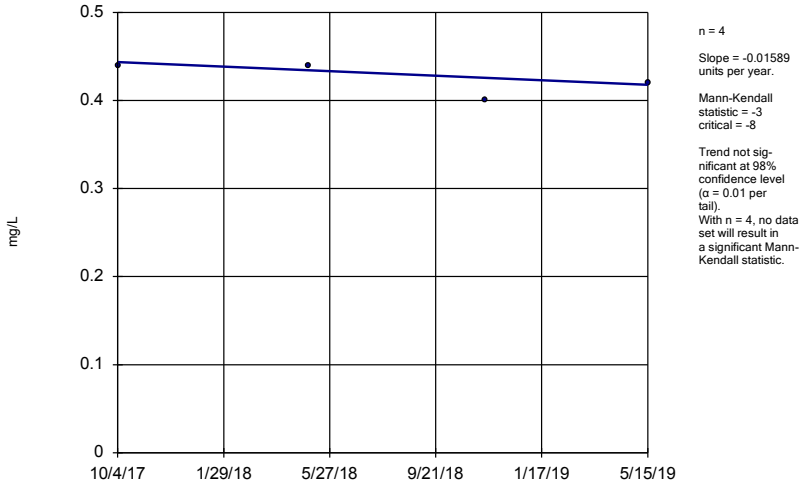
Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Boron

MW-6A



n = 4

Slope = -0.01589 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

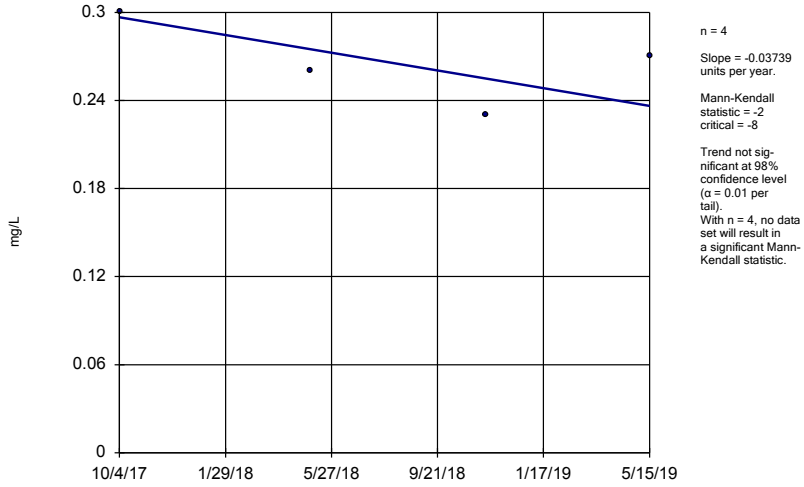
Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Boron

MW-7 (bg)



n = 4

Slope = -0.03739 units per year.

Mann-Kendall statistic = -2
critical = -8

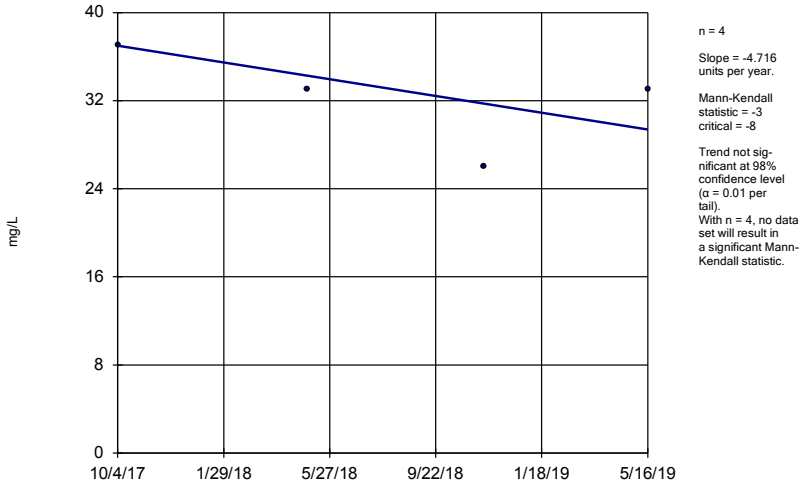
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Calcium

MW-2 (bg)



n = 4

Slope = -4.716 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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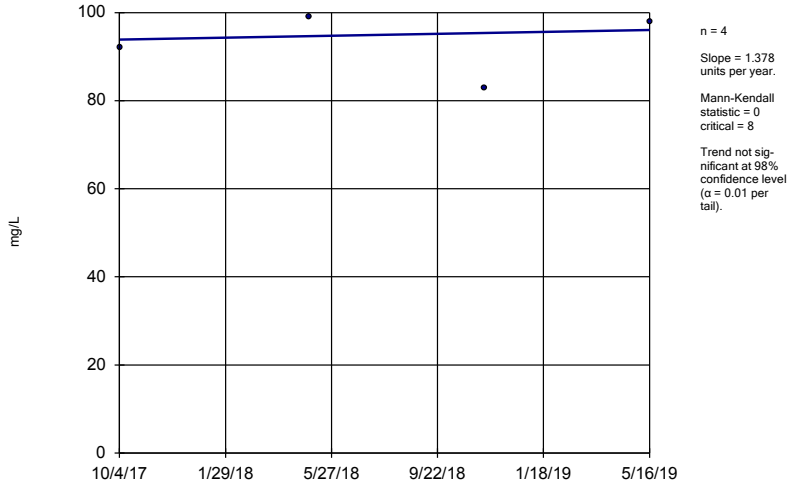
Calcium

MW-3 (bg)



n = 4

Slope = 1.378 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

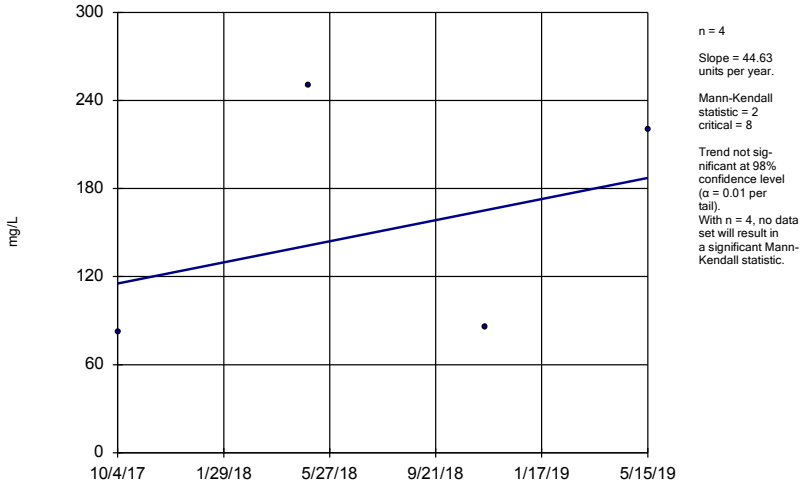
Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

MW-4



n = 4

Slope = 44.63 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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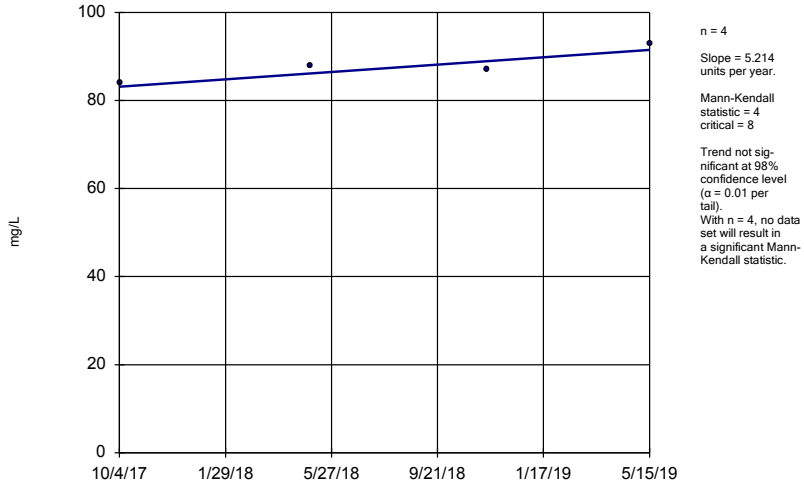
Calcium

MW-5



n = 4

Slope = 5.214 units per year.

Mann-Kendall statistic = 4
critical = 8

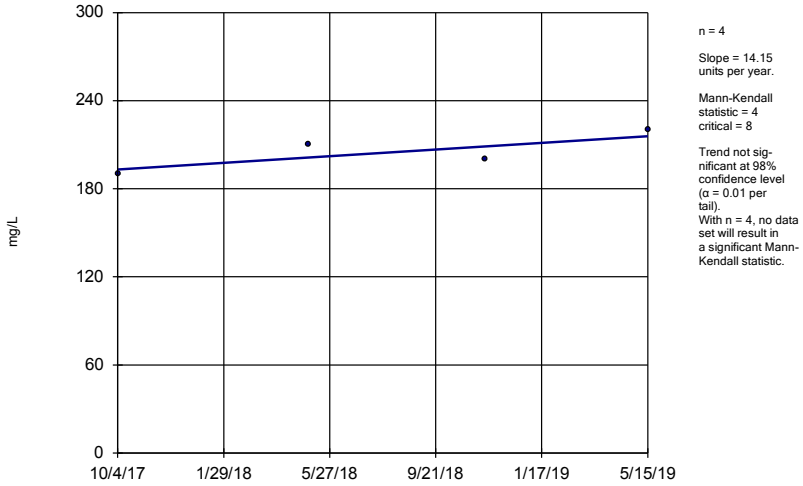
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Calcium

MW-5A



n = 4

Slope = 14.15 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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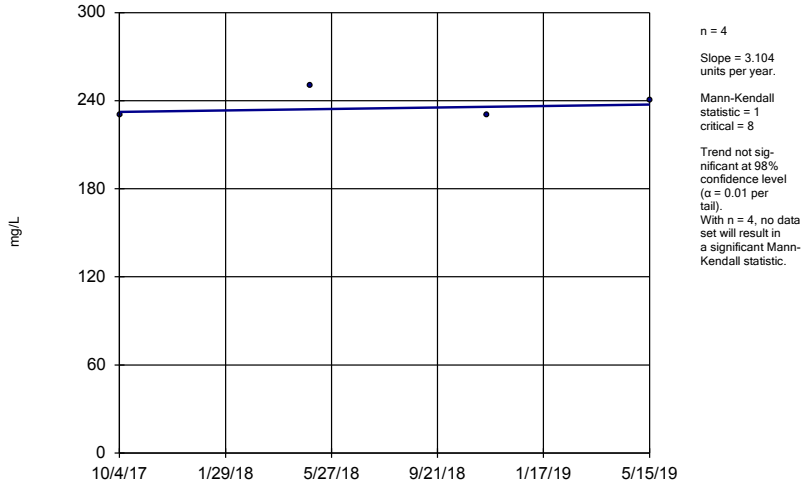
Calcium

MW-6



n = 4

Slope = 3.104 units per year.

Mann-Kendall statistic = 1
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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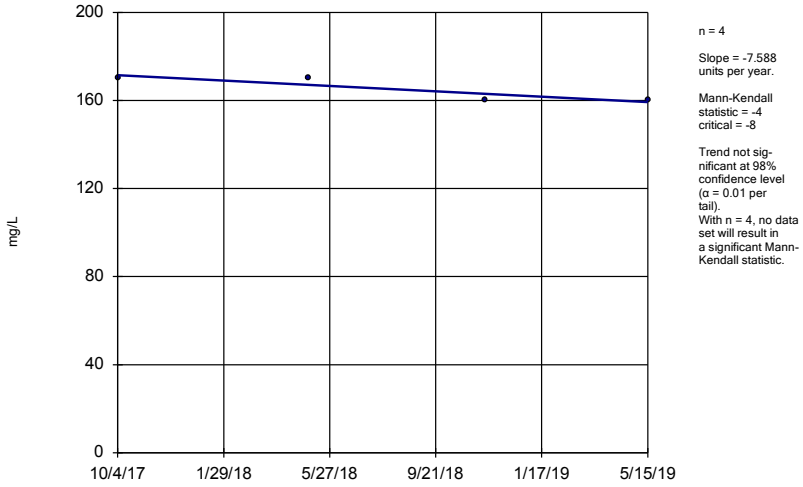
Calcium

MW-6A



n = 4

Slope = -7.588 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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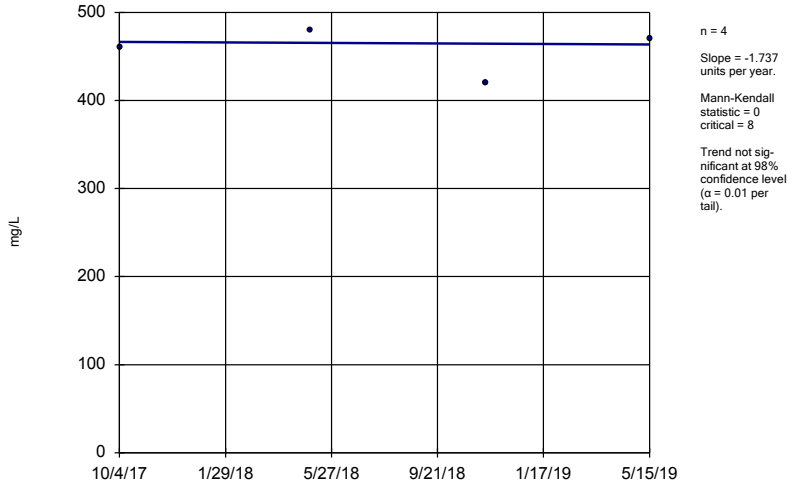
Calcium

MW-7 (bg)



n = 4

Slope = -1.737 units per year.

Mann-Kendall statistic = 0
critical = 8

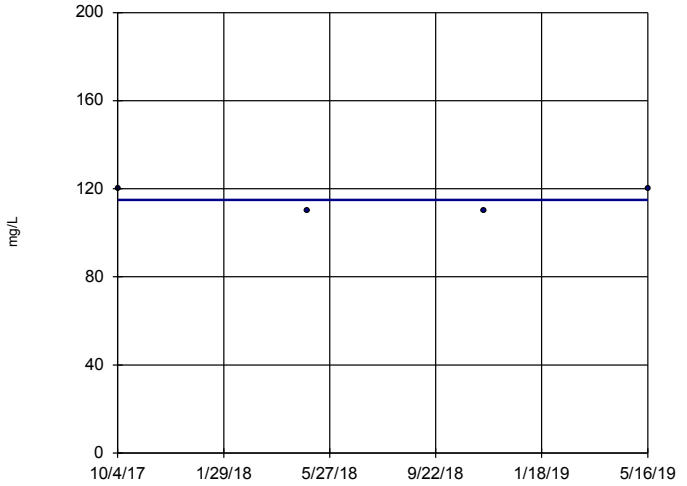
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Chloride

MW-2 (bg)



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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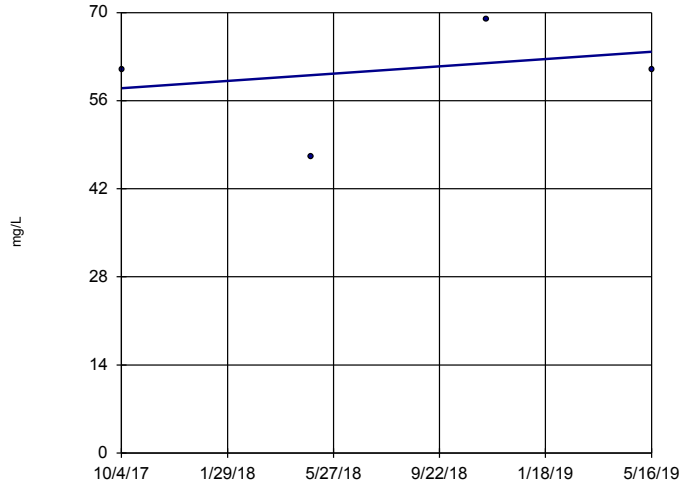
Chloride

MW-3 (bg)



n = 4

Slope = 3.596 units per year.

Mann-Kendall statistic = 1 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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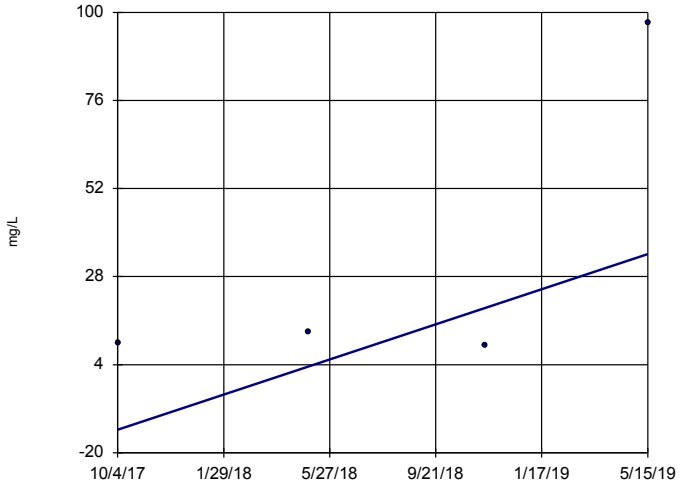
Chloride

MW-4



n = 4

Slope = 29.71 units per year.

Mann-Kendall statistic = 2 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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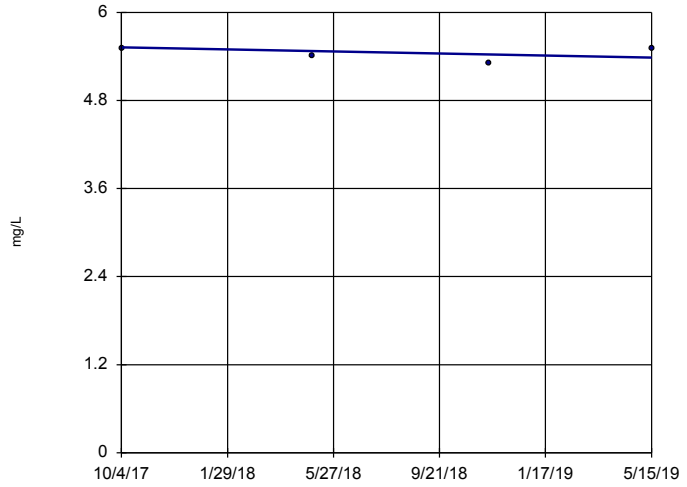
Chloride

MW-5



n = 4

Slope = -0.08649 units per year.

Mann-Kendall statistic = -1 critical = -8

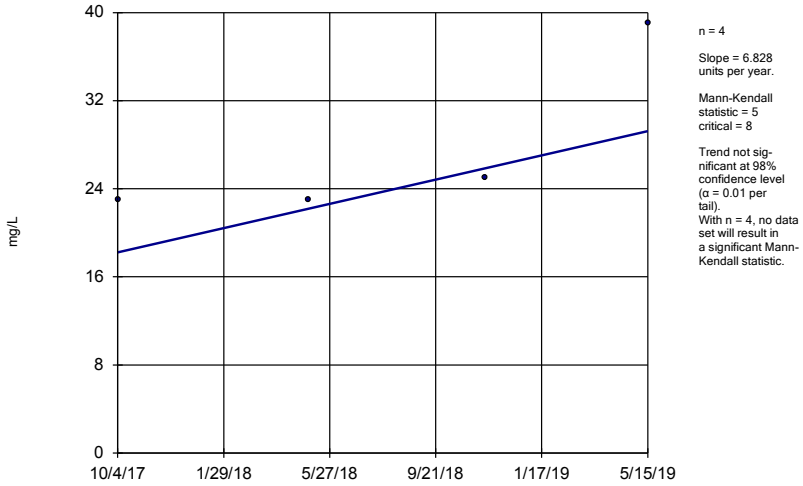
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Chloride

MW-5A



n = 4

Slope = 6.828 units per year.

Mann-Kendall statistic = 5 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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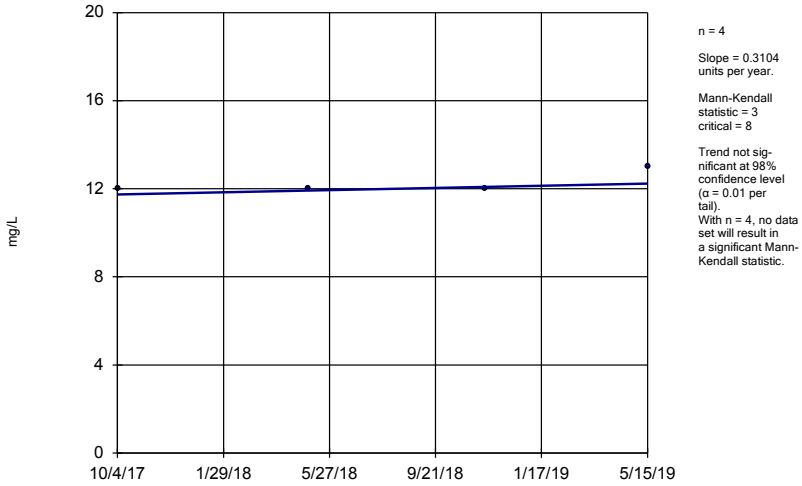
Chloride

MW-6



n = 4

Slope = 0.3104 units per year.

Mann-Kendall statistic = 3 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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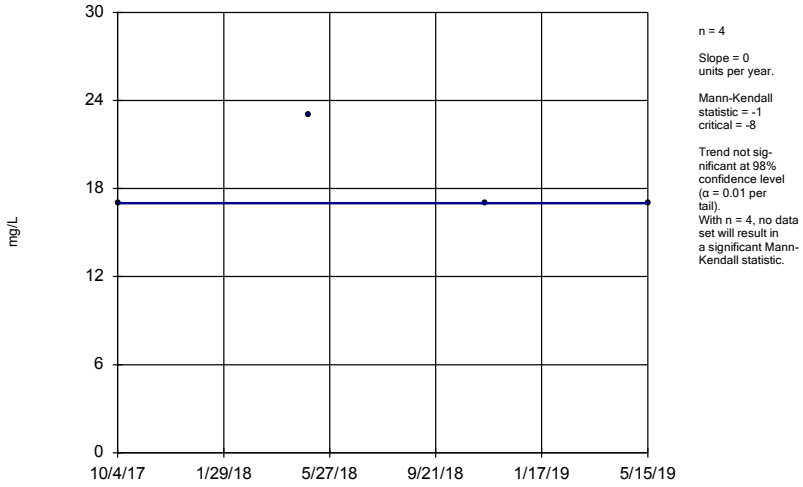
Chloride

MW-6A



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = -1 critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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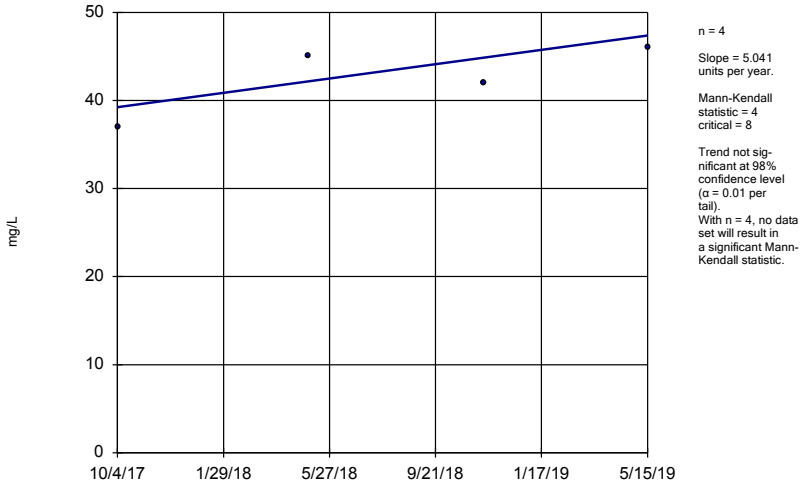
Chloride

MW-7 (bg)



n = 4

Slope = 5.041 units per year.

Mann-Kendall statistic = 4 critical = 8

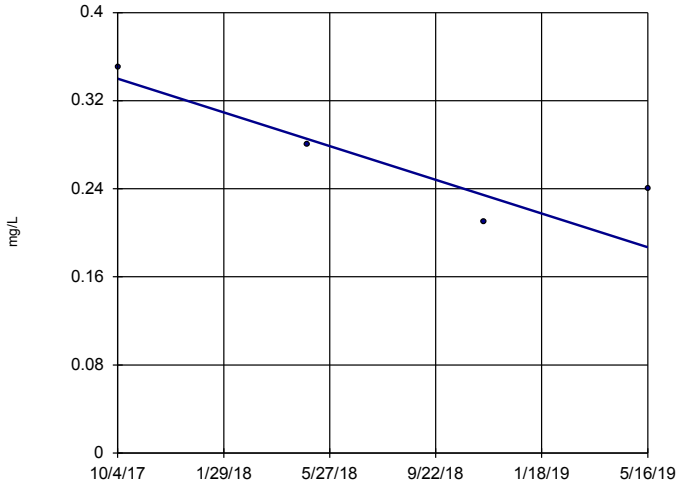
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Fluoride

MW-2 (bg)



n = 4

Slope = -0.09492 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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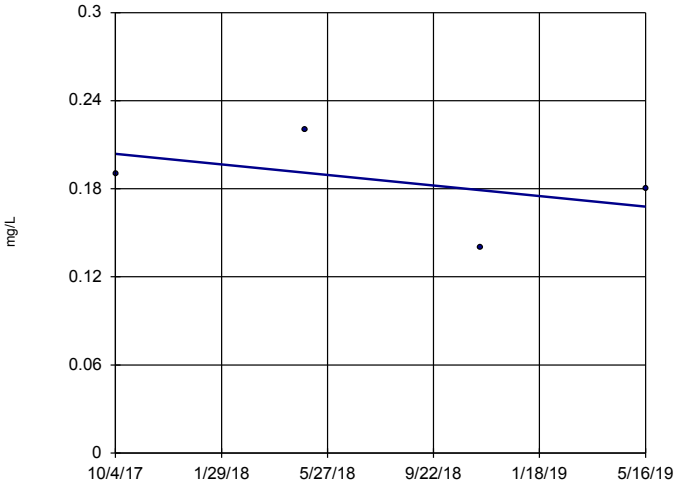
Fluoride

MW-3 (bg)



n = 4

Slope = -0.02236 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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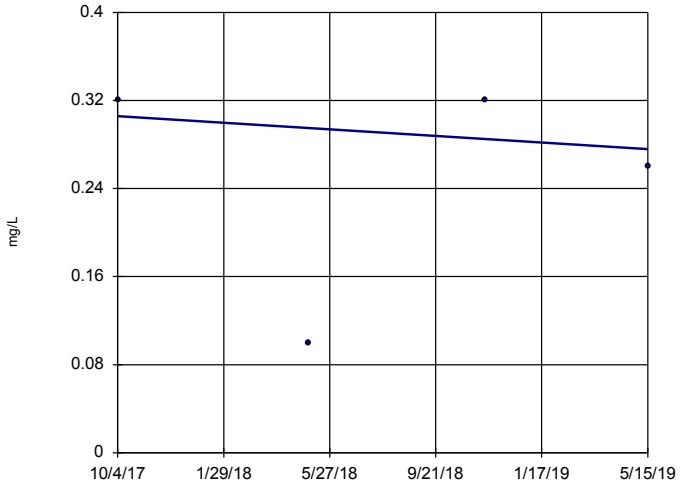
Fluoride

MW-4



n = 4

Slope = -0.01862 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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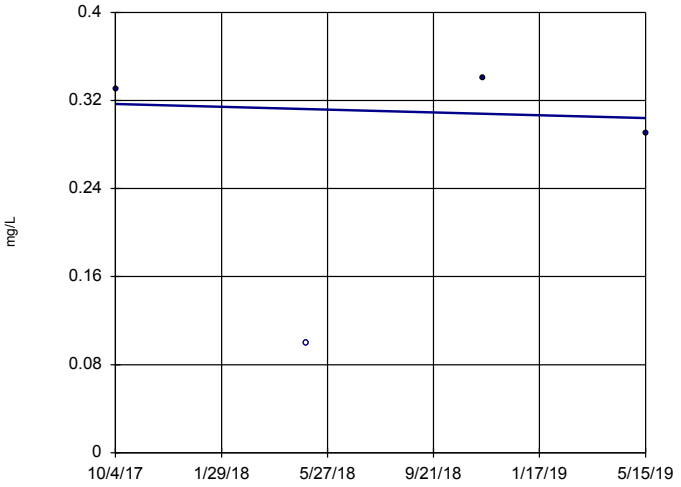
Hollow symbols indicate censored values.

Fluoride

MW-5



n = 4

Slope = -0.007931 units per year.

Mann-Kendall statistic = 0
critical = 8

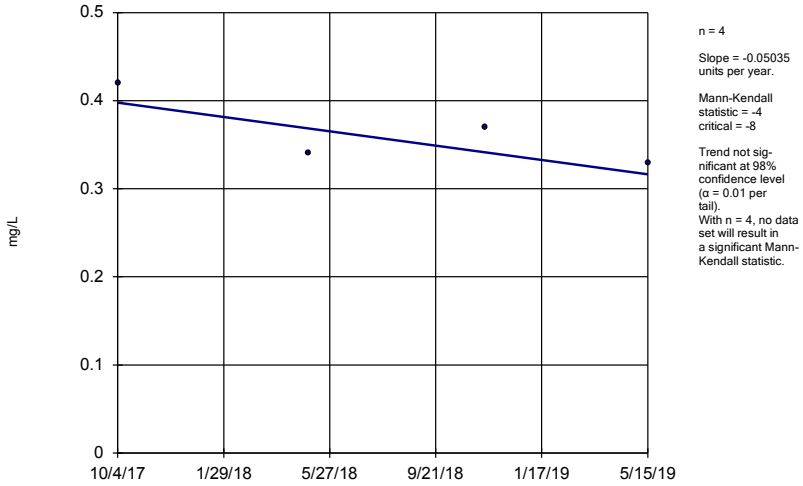
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 12/4/2019 2:11 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Fluoride

MW-5A



n = 4

Slope = -0.05035 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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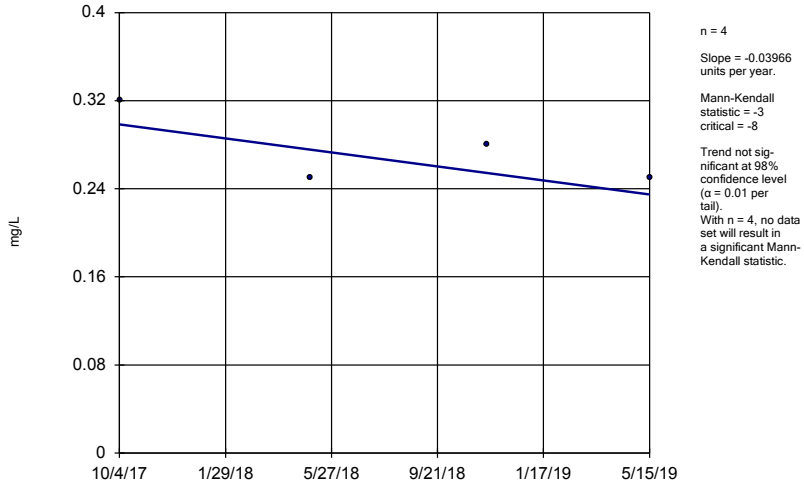
Fluoride

MW-6



n = 4

Slope = -0.03966 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

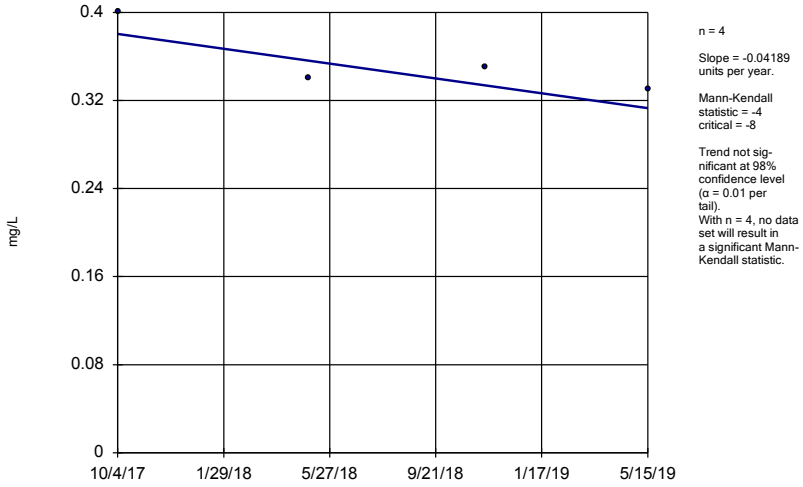
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Fluoride

MW-6A



n = 4

Slope = -0.04189 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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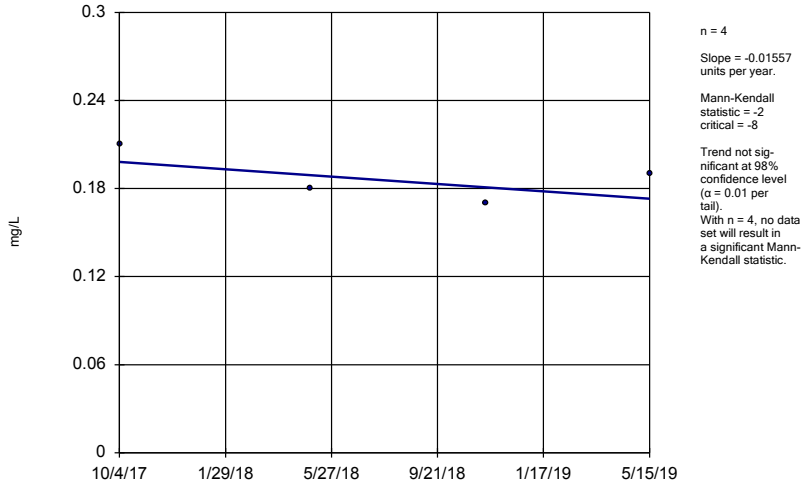
Fluoride

MW-7 (bg)



n = 4

Slope = -0.01557 units per year.

Mann-Kendall statistic = -2
critical = -8

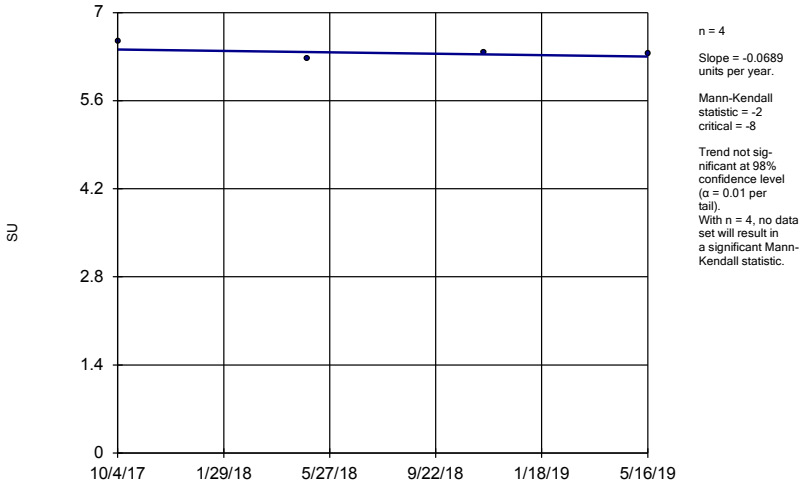
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

pH

MW-2 (bg)



n = 4

Slope = -0.0689 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

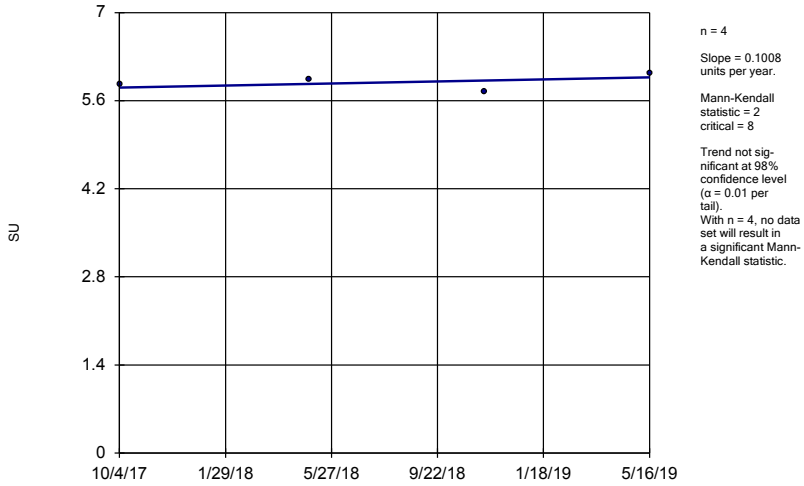
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-3 (bg)



n = 4

Slope = 0.1008 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

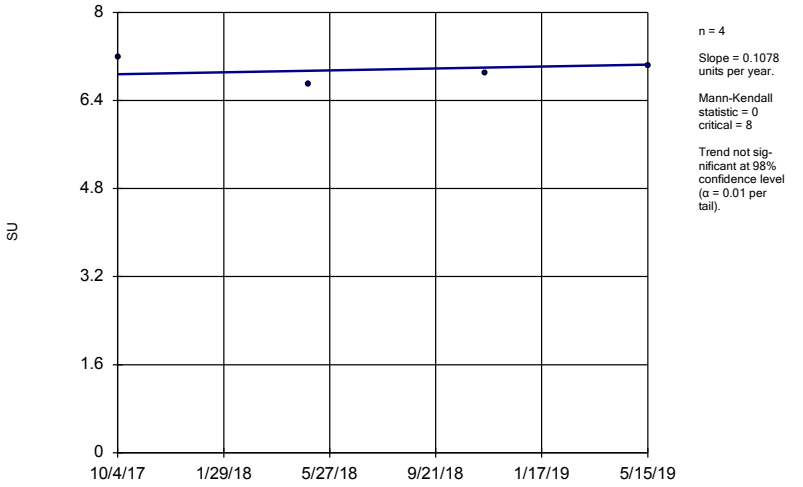
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-4



n = 4

Slope = 0.1078 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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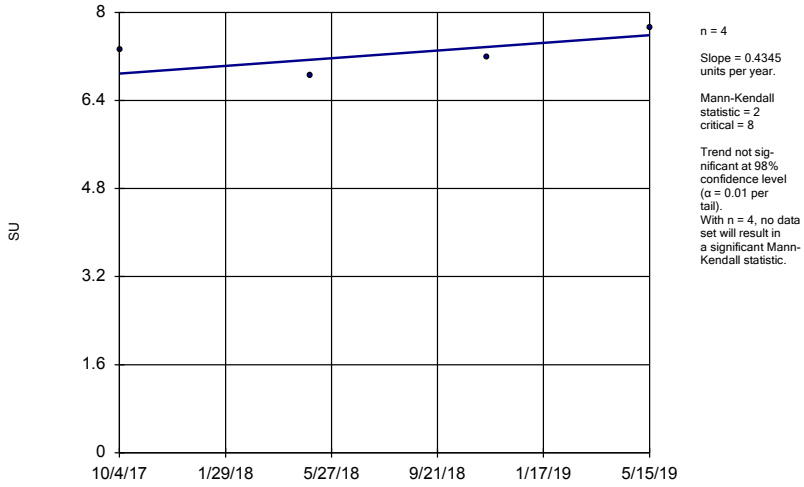
pH

MW-5



n = 4

Slope = 0.4345 units per year.

Mann-Kendall statistic = 2
critical = 8

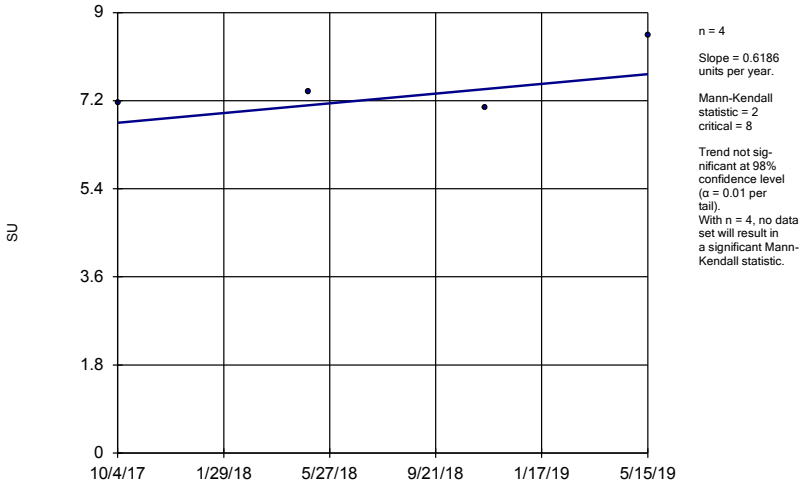
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

pH

MW-5A



n = 4

Slope = 0.6186 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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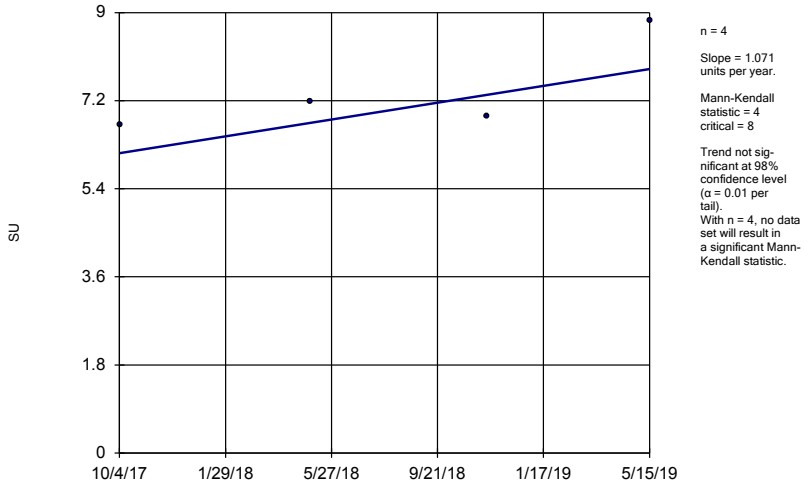
pH

MW-6



n = 4

Slope = 1.071 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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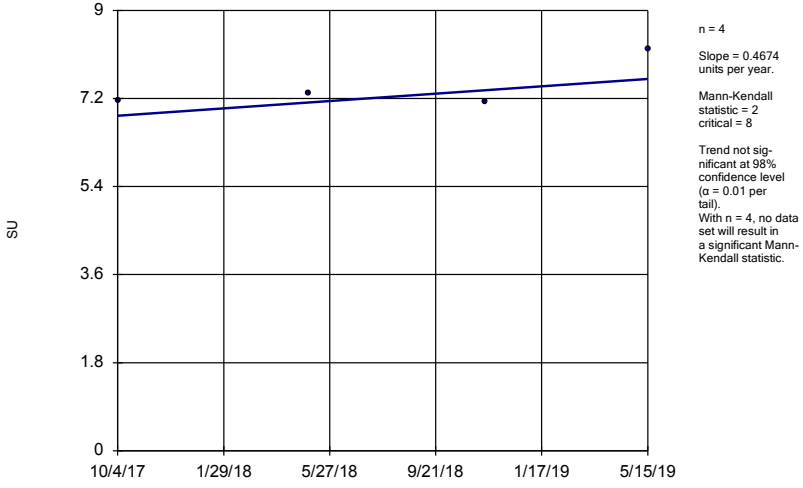
pH

MW-6A



n = 4

Slope = 0.4674 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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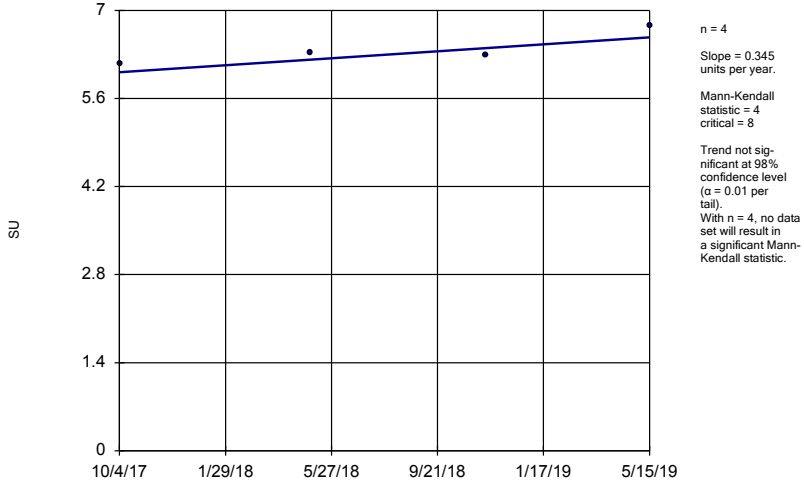
pH

MW-7 (bg)



n = 4

Slope = 0.345 units per year.

Mann-Kendall statistic = 4
critical = 8

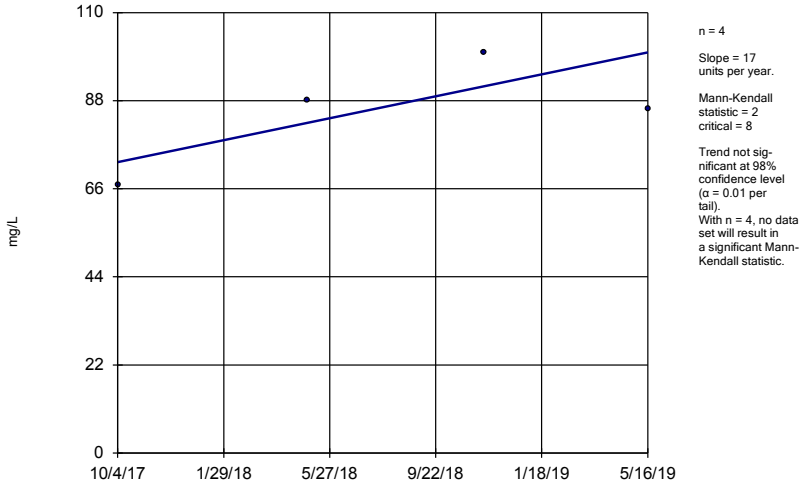
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sulfate

MW-2 (bg)



n = 4

Slope = 17 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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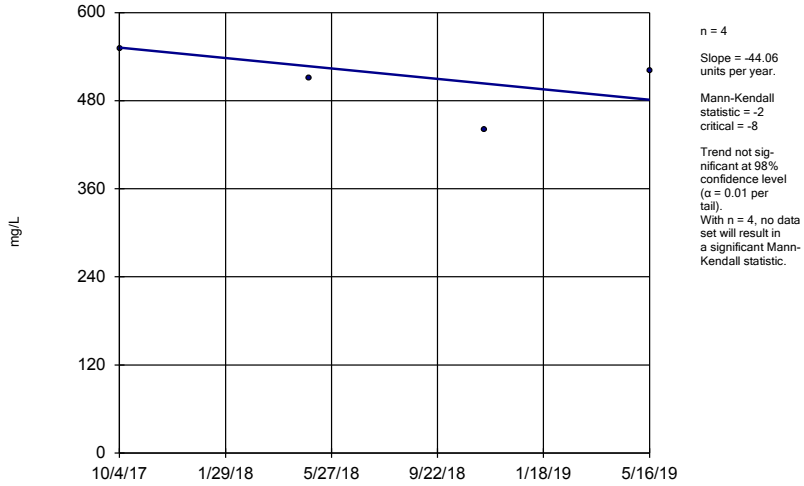
Sulfate

MW-3 (bg)



n = 4

Slope = -44.06 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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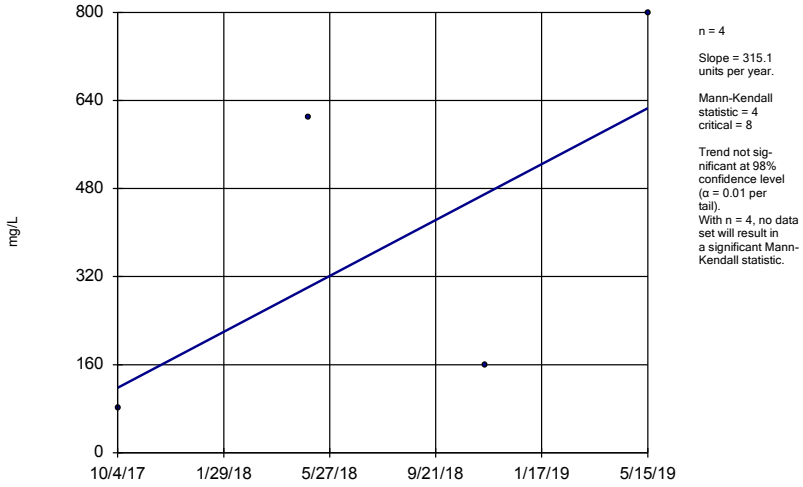
Sulfate

MW-4



n = 4

Slope = 315.1 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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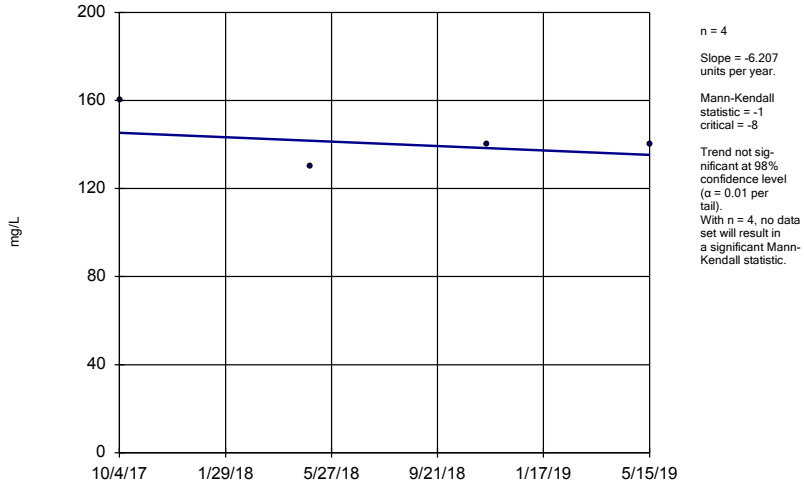
Sulfate

MW-5



n = 4

Slope = -6.207 units per year.

Mann-Kendall statistic = -1
critical = -8

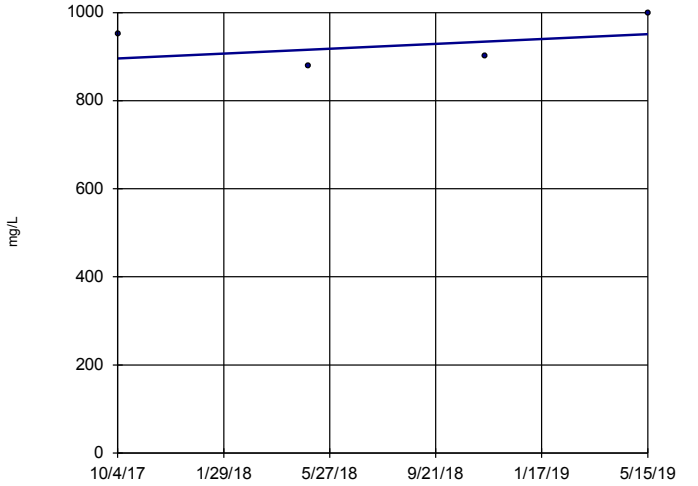
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sulfate

MW-5A



n = 4

Slope = 34.14 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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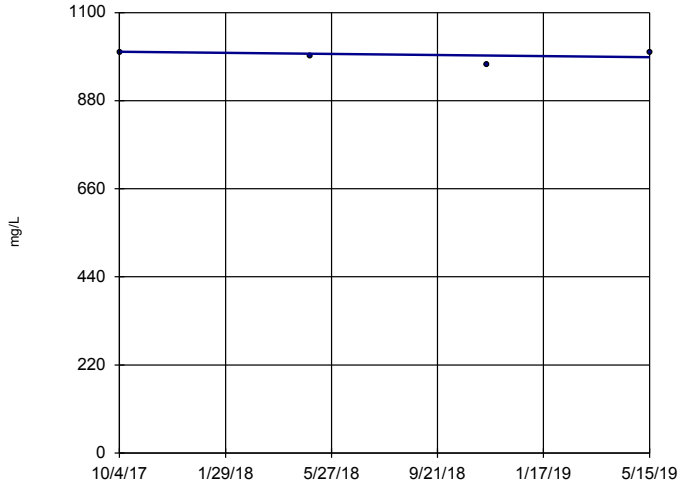
Sulfate

MW-6



n = 4

Slope = -8.649 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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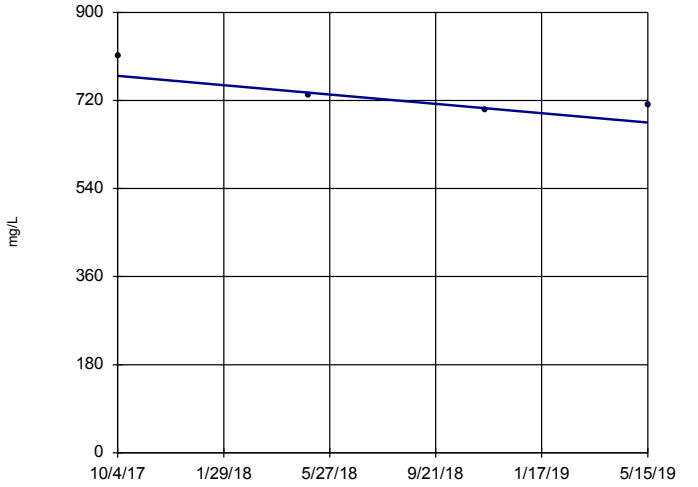
Sulfate

MW-6A



n = 4

Slope = -58.97 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

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The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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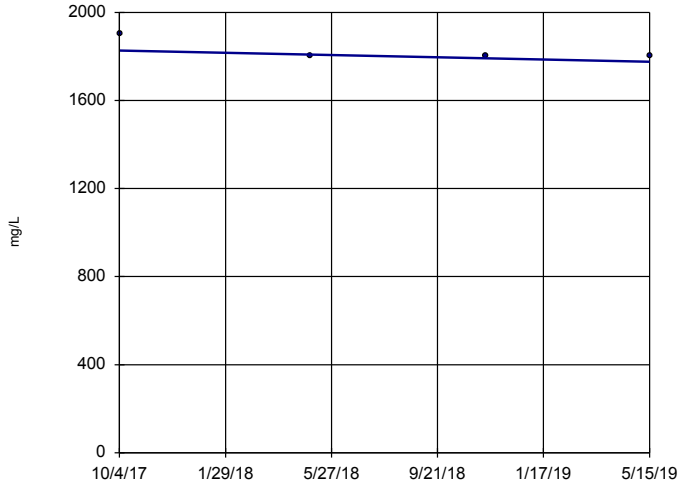
Sulfate

MW-7 (bg)



n = 4

Slope = -31.04 units per year.

Mann-Kendall statistic = -3
critical = -8

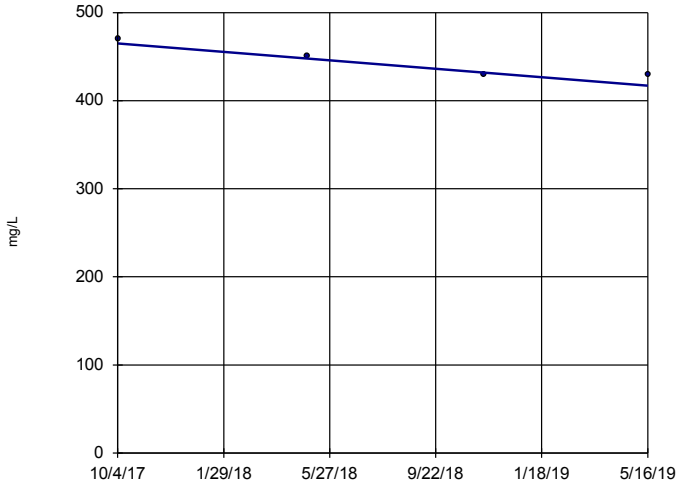
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Total Dissolved Solids

MW-2 (bg)



n = 4

Slope = -29.77 units per year.

Mann-Kendall statistic = -5
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

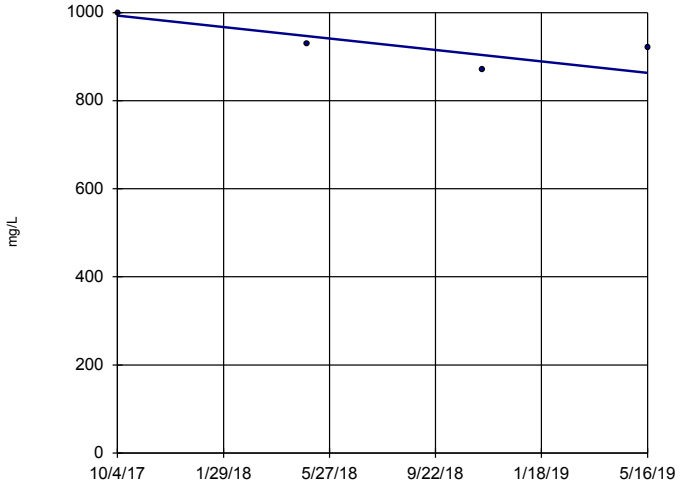
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-3 (bg)



n = 4

Slope = -80.66 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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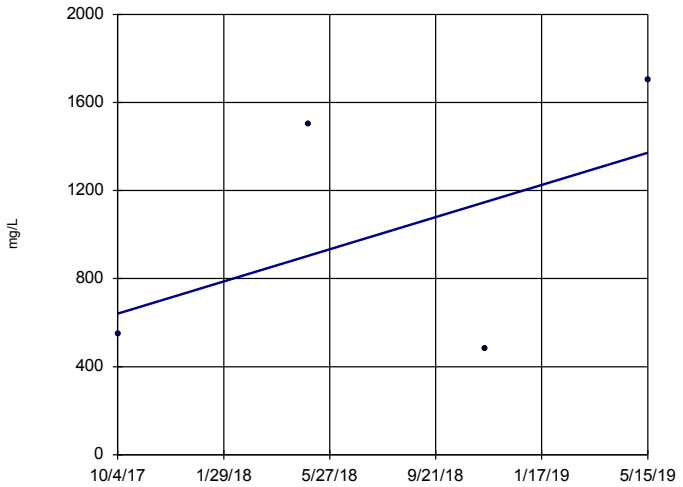
Total Dissolved Solids

MW-4



n = 4

Slope = 453.7 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

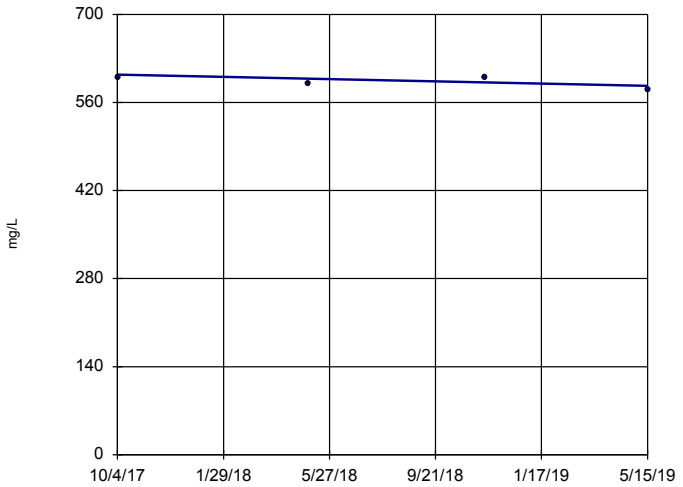
Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Sanitas™ v.9.6.23 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-5



n = 4

Slope = -11.05 units per year.

Mann-Kendall statistic = -3
critical = -8

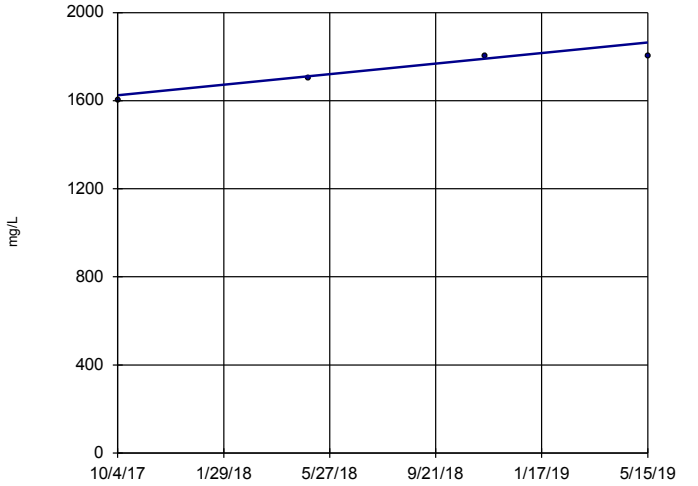
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Total Dissolved Solids

MW-5A



n = 4

Slope = 148.6 units per year.

Mann-Kendall statistic = 5 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail). With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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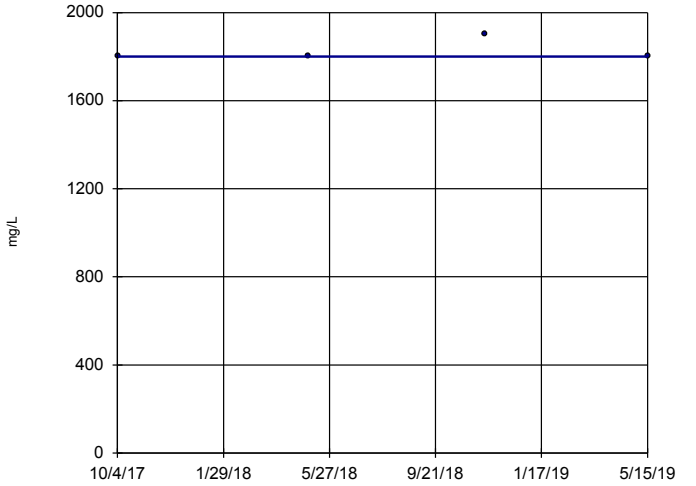
Total Dissolved Solids

MW-6



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 1 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail). With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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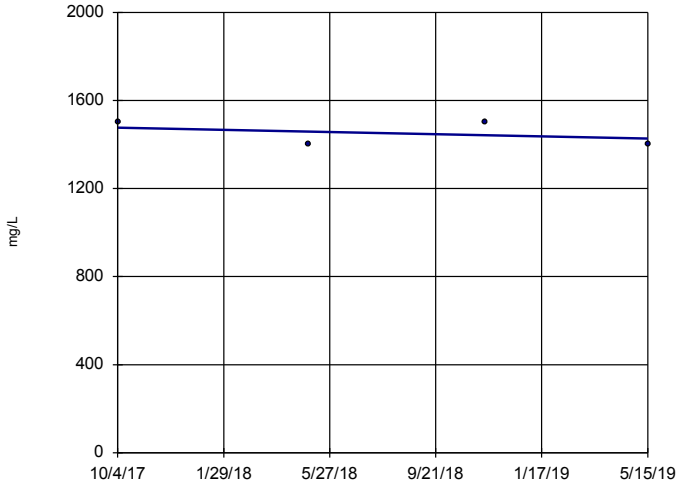
Total Dissolved Solids

MW-6A



n = 4

Slope = -31.04 units per year.

Mann-Kendall statistic = -2 critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail). With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

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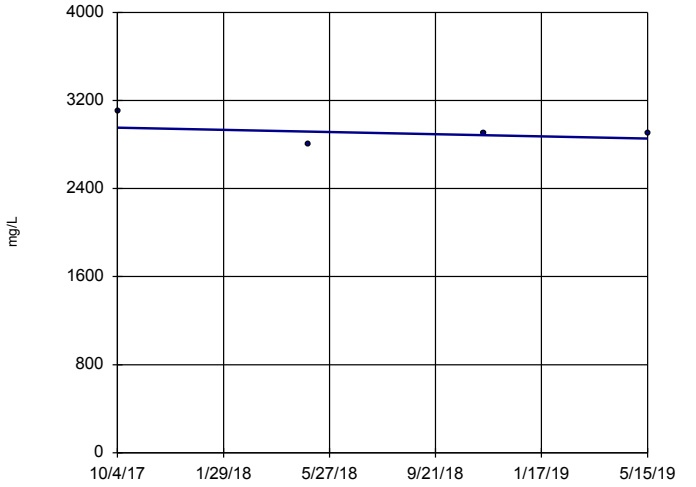
Total Dissolved Solids

MW-7 (bg)



n = 4

Slope = -62.07 units per year.

Mann-Kendall statistic = -1 critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail). With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 12/4/2019 2:12 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background

Trend Test

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background Printed 12/4/2019, 2:13 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-2 (bg)	-0.03847	-4	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-3 (bg)	0	-1	-8	No	4	75	n/a	n/a	0.02	NP
Boron (mg/L)	MW-4	0	-1	-8	No	4	75	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5	-0.00...	0	8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5A	0.1202	5	8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6	-0.01279	-2	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6A	-0.01589	-3	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-7 (bg)	-0.03739	-2	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2 (bg)	-4.716	-3	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3 (bg)	1.378	0	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4	44.63	2	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	5.214	4	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5A	14.15	4	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	3.104	1	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6A	-7.588	-4	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7 (bg)	-1.737	0	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2 (bg)	0	0	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3 (bg)	3.596	1	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4	29.71	2	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	-0.08649	-1	-8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5A	6.828	5	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	0.3104	3	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6A	0	-1	-8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7 (bg)	5.041	4	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2 (bg)	-0.09492	-4	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3 (bg)	-0.02236	-2	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4	-0.01862	-1	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	-0.00...	0	8	No	4	25	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5A	-0.05035	-4	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	-0.03966	-3	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6A	-0.04189	-4	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7 (bg)	-0.01557	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-2 (bg)	-0.0689	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-3 (bg)	0.1008	2	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-4	0.1078	0	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-5	0.4345	2	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-5A	0.6186	2	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-6	1.071	4	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-6A	0.4674	2	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-7 (bg)	0.345	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2 (bg)	17	2	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3 (bg)	-44.06	-2	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4	315.1	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	-6.207	-1	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5A	34.14	2	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	-8.649	-1	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6A	-58.97	-4	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7 (bg)	-31.04	-3	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2 (bg)	-29.77	-5	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-3 (bg)	-80.66	-4	-8	No	4	0	n/a	n/a	0.02	NP

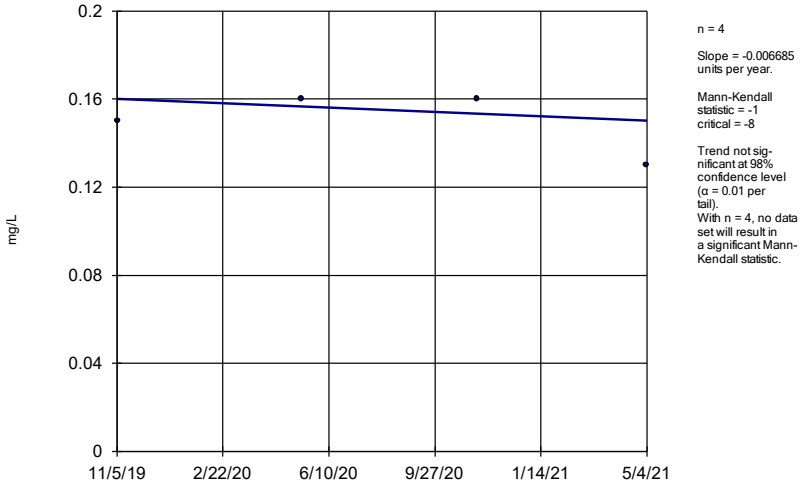
Trend Test

The Empire District Client: Midwest Environmental Consultants Data: 11-19 App 3 Asbury ponds with background Printed 12/4/2019, 2:13 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Total Dissolved Solids (mg/L)	MW-4	453.7	2	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-11.05	-3	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5A	148.6	5	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	0	1	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6A	-31.04	-2	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7 (bg)	-62.07	-1	-8	No	4	0	n/a	n/a	0.02	NP

Boron

MW-2 (bg)



n = 4

Slope = -0.006685 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

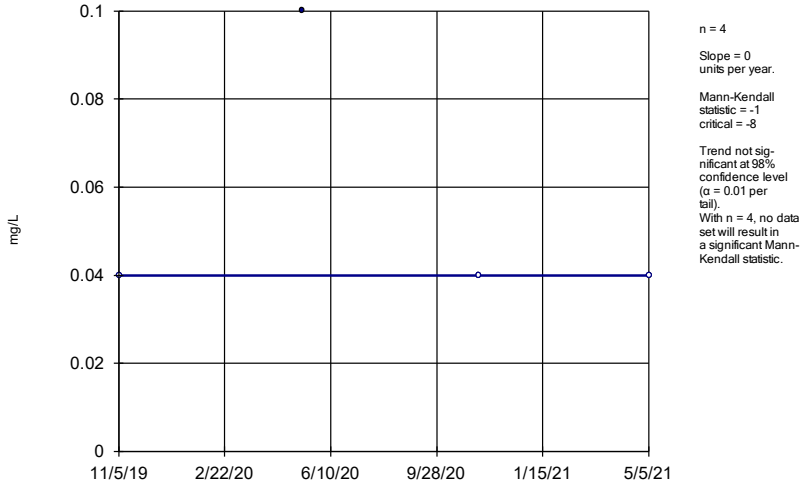
Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Boron

MW-3 (bg)



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

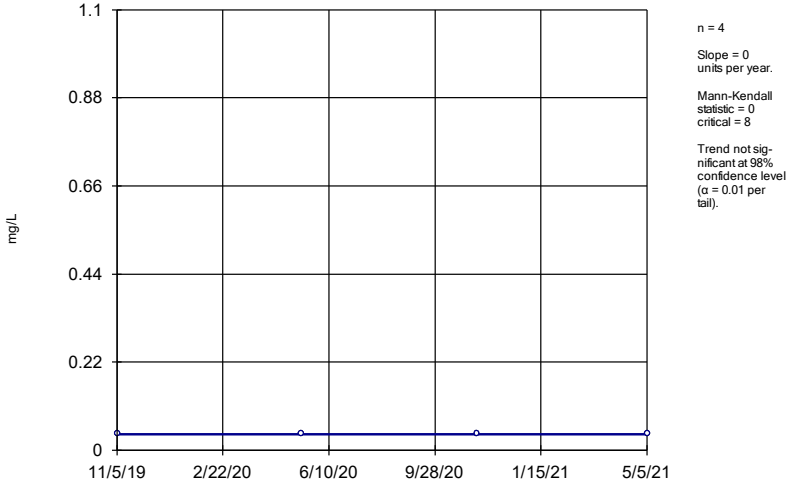
Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Boron

MW-4



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 0
critical = 8

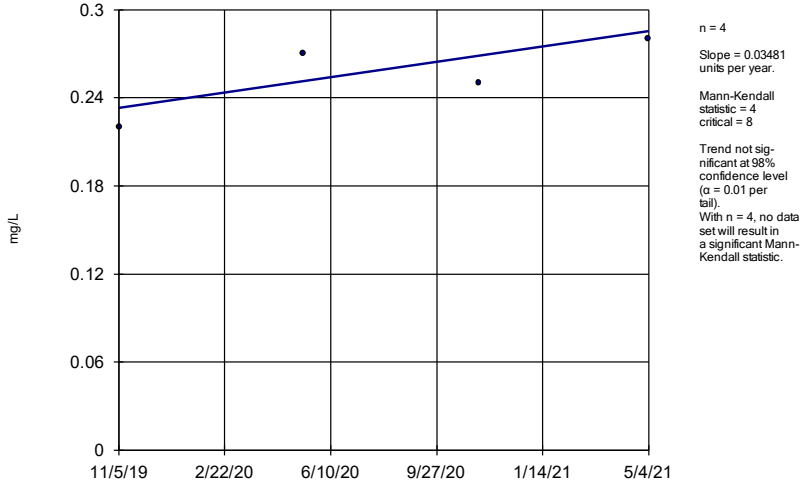
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Boron

MW-5



n = 4

Slope = 0.03481 units per year.

Mann-Kendall statistic = 4
critical = 8

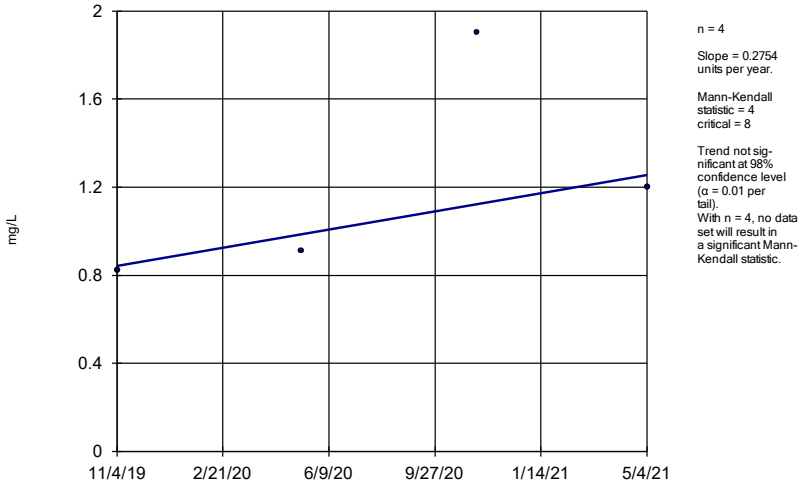
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Boron

MW-5A



n = 4

Slope = 0.2754 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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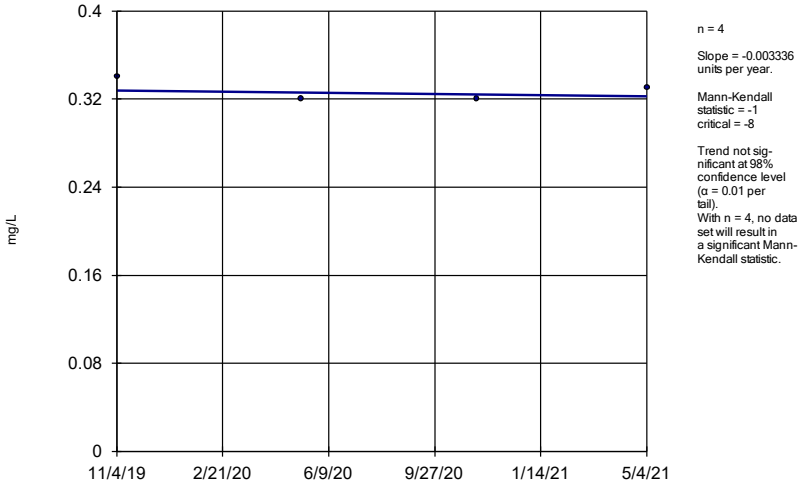
Boron

MW-6



n = 4

Slope = -0.003336 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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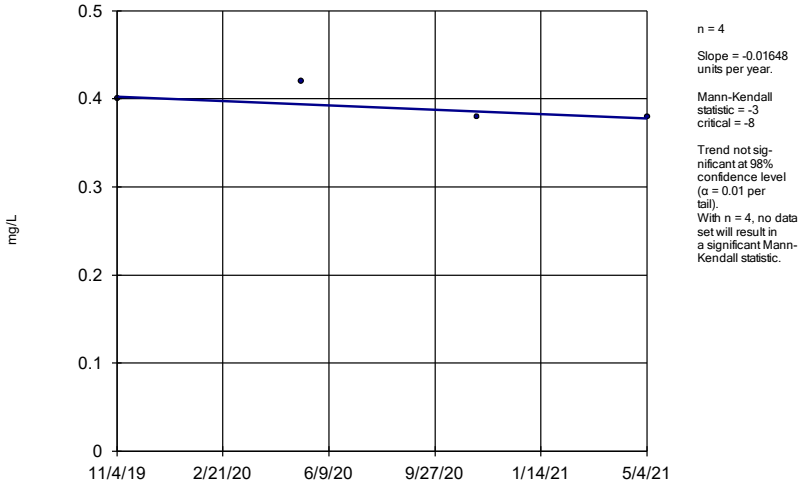
Boron

MW-6A



n = 4

Slope = -0.01648 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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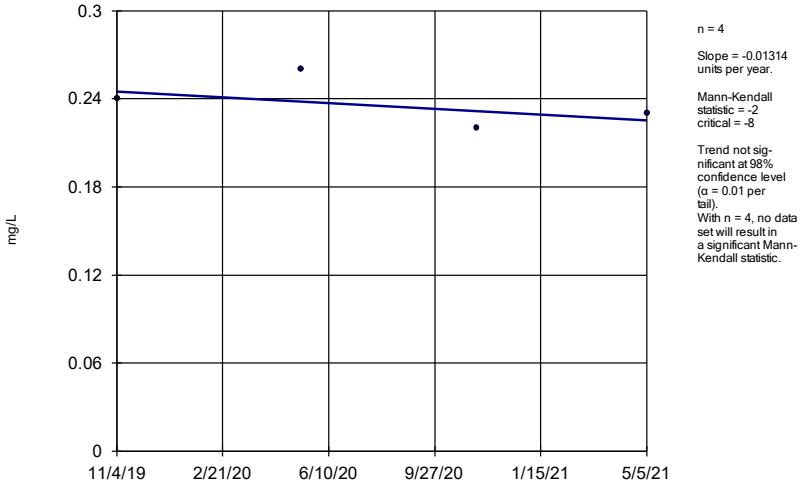
Boron

MW-7 (bg)



n = 4

Slope = -0.01314 units per year.

Mann-Kendall statistic = -2
critical = -8

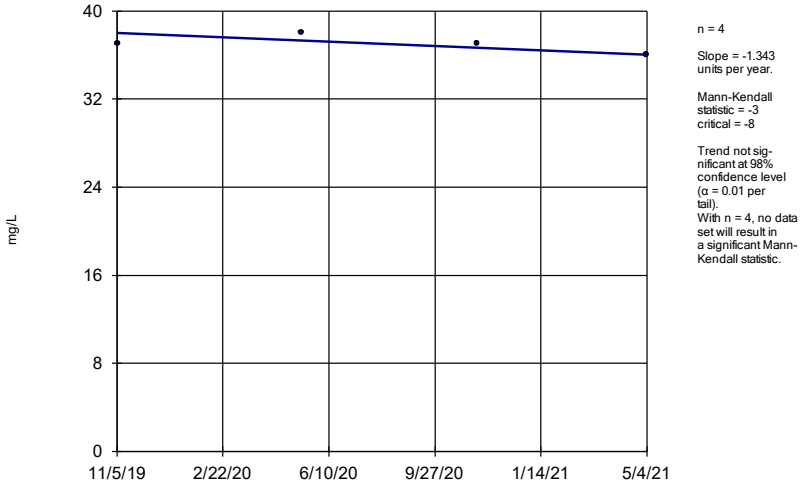
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Calcium

MW-2 (bg)



n = 4

Slope = -1.343 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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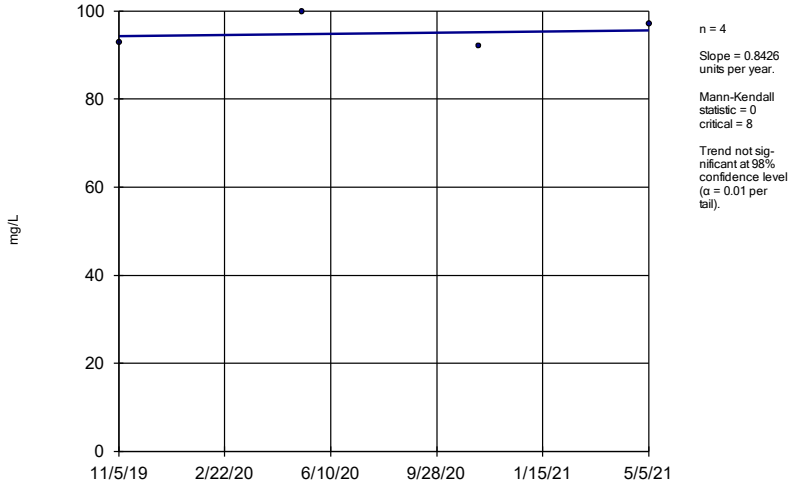
Calcium

MW-3 (bg)



n = 4

Slope = 0.8426 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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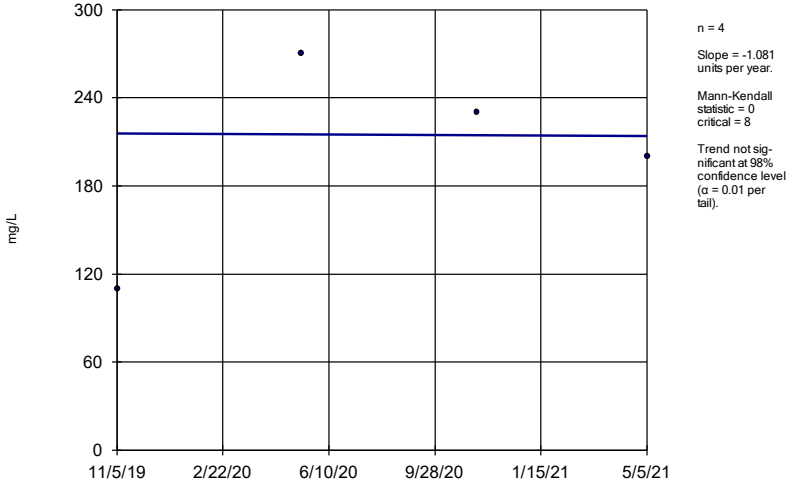
Calcium

MW-4



n = 4

Slope = -1.081 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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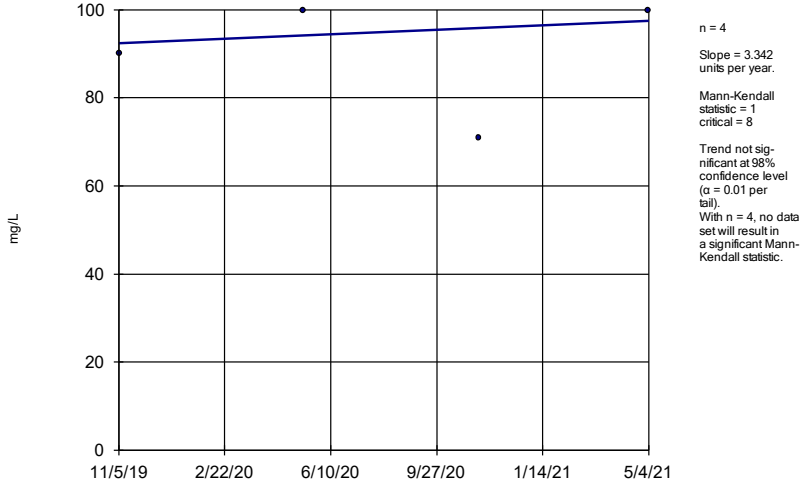
Calcium

MW-5



n = 4

Slope = 3.342 units per year.

Mann-Kendall statistic = 1
critical = 8

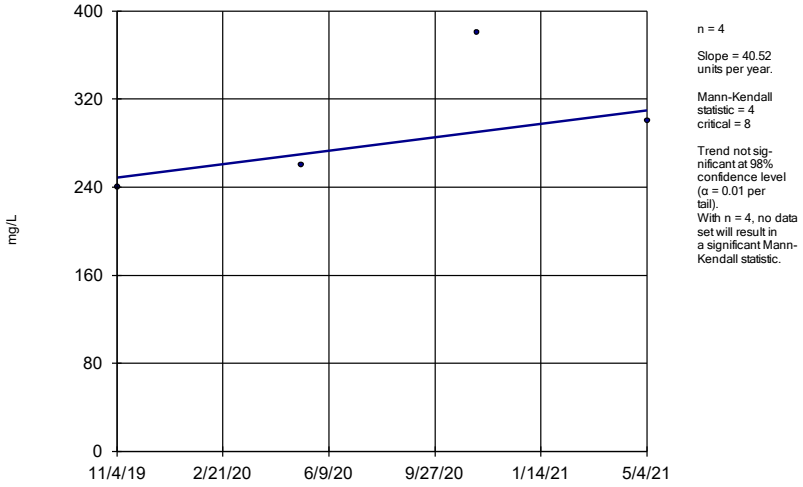
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Calcium

MW-5A



n = 4

Slope = 40.52 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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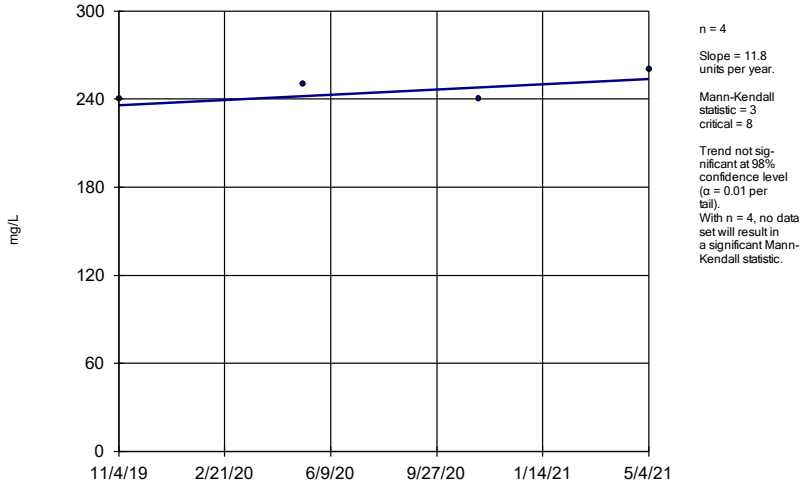
Calcium

MW-6



n = 4

Slope = 11.8 units per year.

Mann-Kendall statistic = 3
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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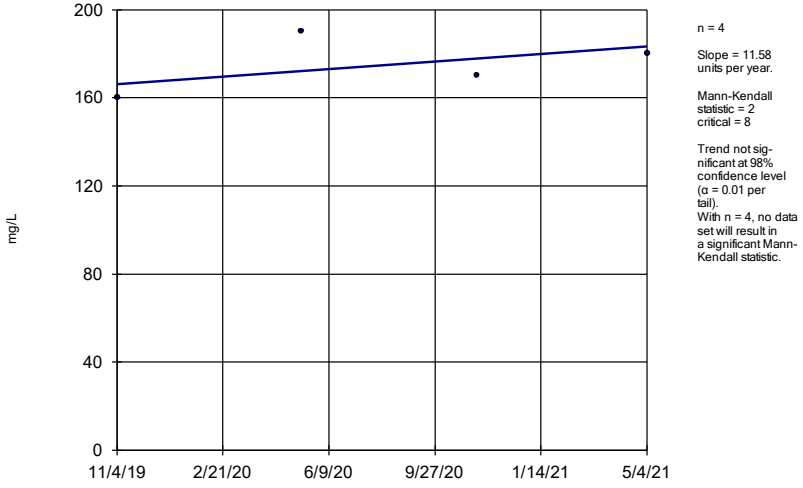
Calcium

MW-6A



n = 4

Slope = 11.58 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:27 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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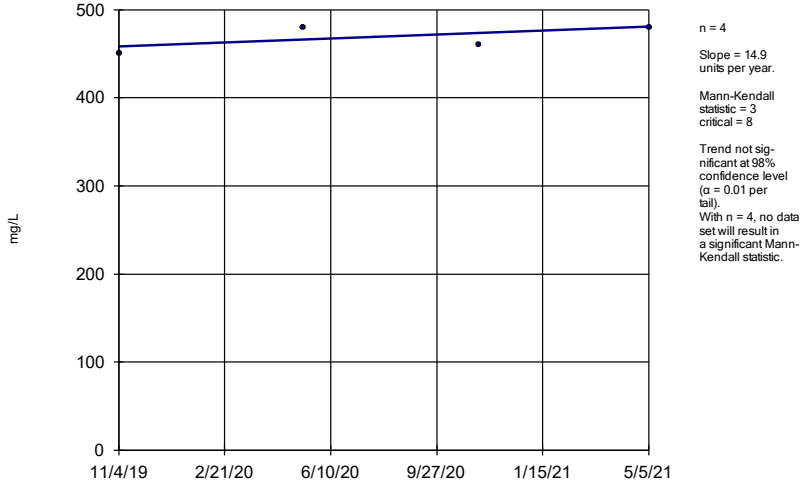
Calcium

MW-7 (bg)



n = 4

Slope = 14.9 units per year.

Mann-Kendall statistic = 3
critical = 8

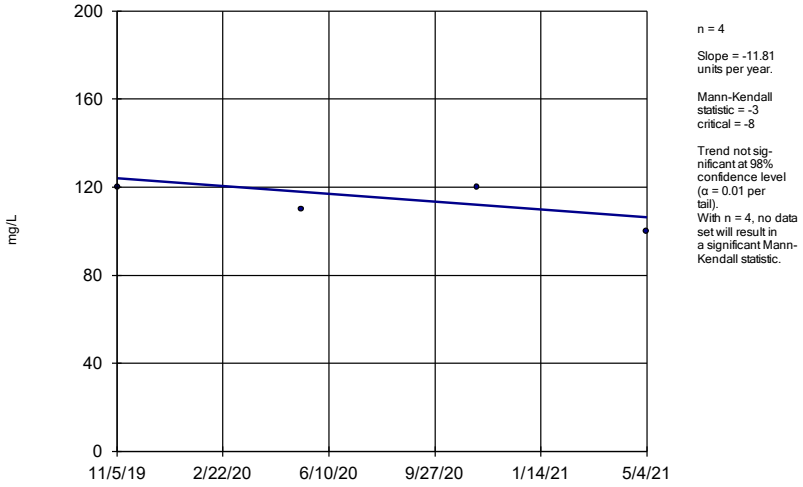
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Chloride

MW-2 (bg)



n = 4

Slope = -11.81 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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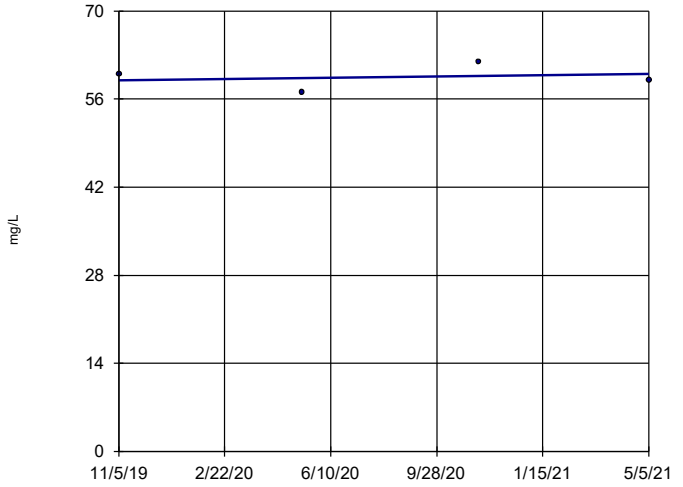
Chloride

MW-3 (bg)



n = 4

Slope = 0.6502 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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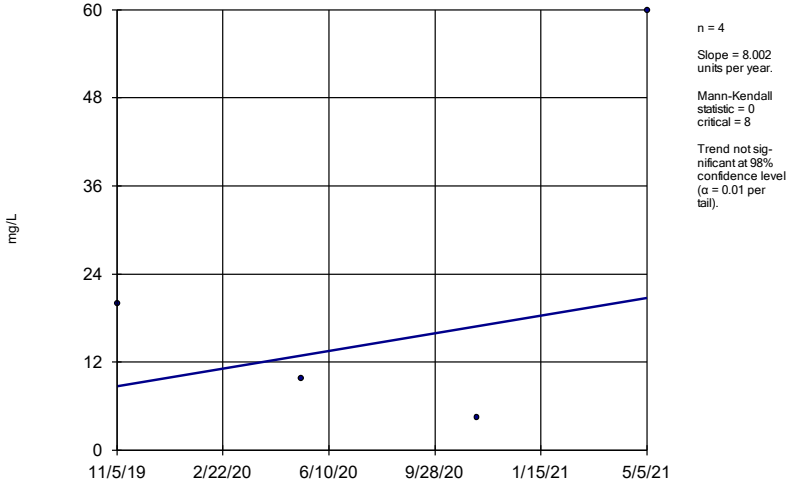
Chloride

MW-4



n = 4

Slope = 8.002 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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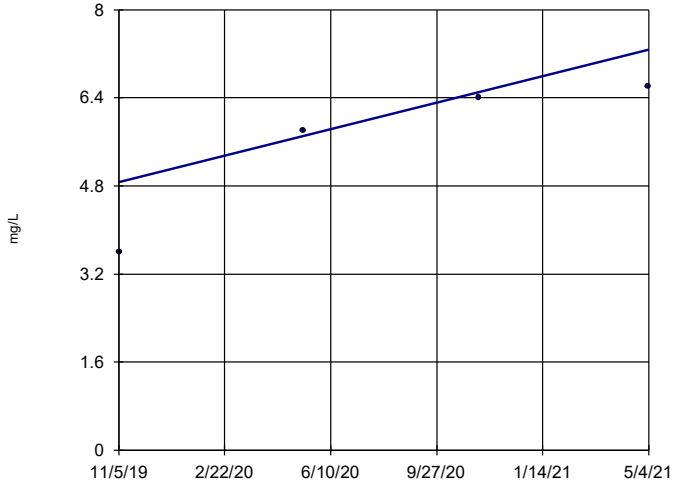
Chloride

MW-5



n = 4

Slope = 1.608 units per year.

Mann-Kendall statistic = 6
critical = 8

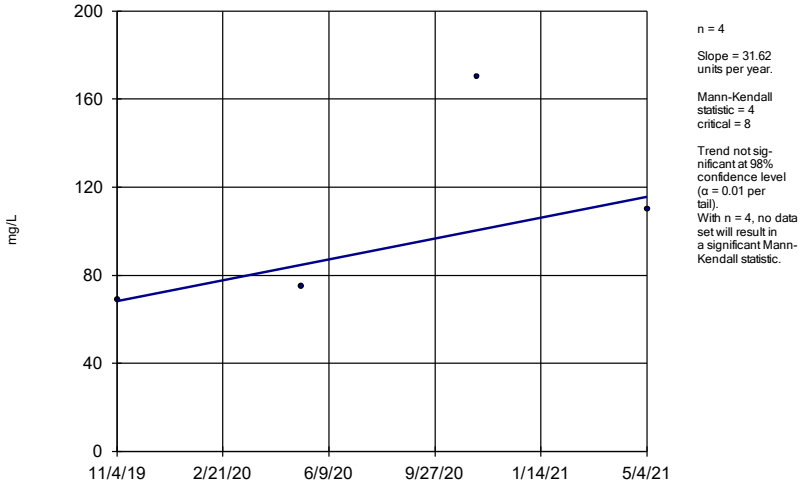
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Chloride

MW-5A



n = 4

Slope = 31.62 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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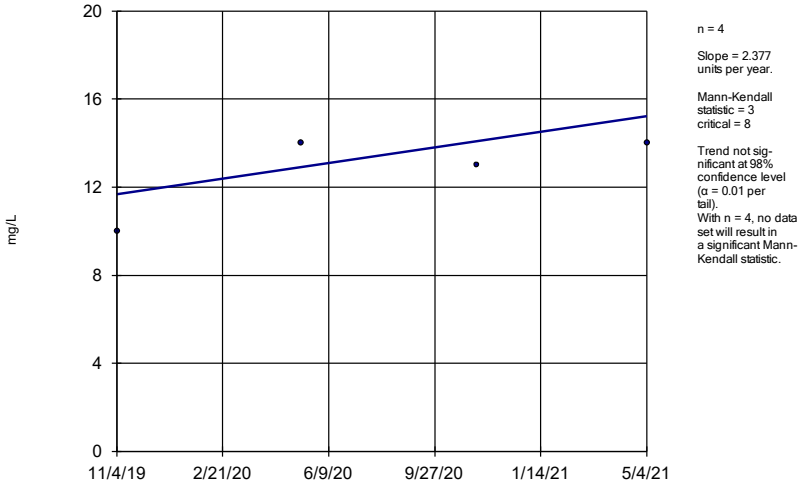
Chloride

MW-6



n = 4

Slope = 2.377 units per year.

Mann-Kendall statistic = 3
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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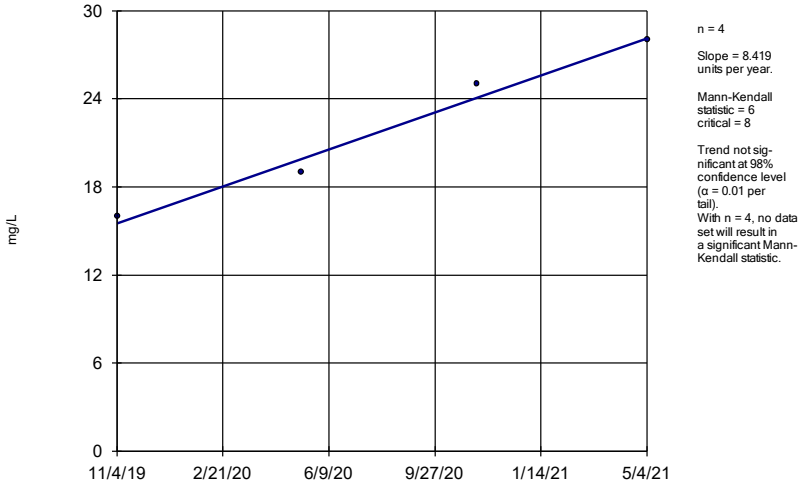
Chloride

MW-6A



n = 4

Slope = 8.419 units per year.

Mann-Kendall statistic = 6
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

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The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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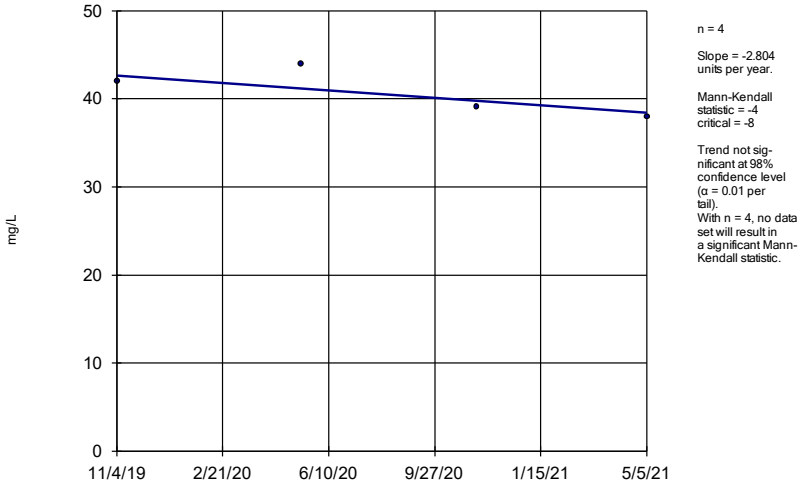
Chloride

MW-7 (bg)



n = 4

Slope = -2.804 units per year.

Mann-Kendall statistic = -4
critical = -8

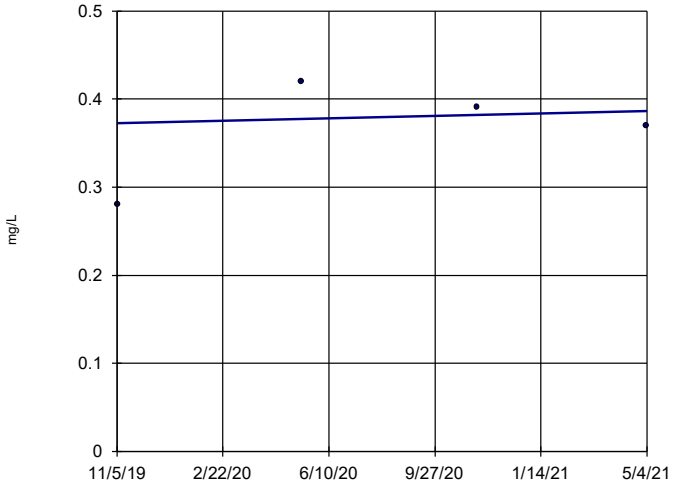
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Fluoride

MW-2 (bg)



n = 4

Slope = 0.009225 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

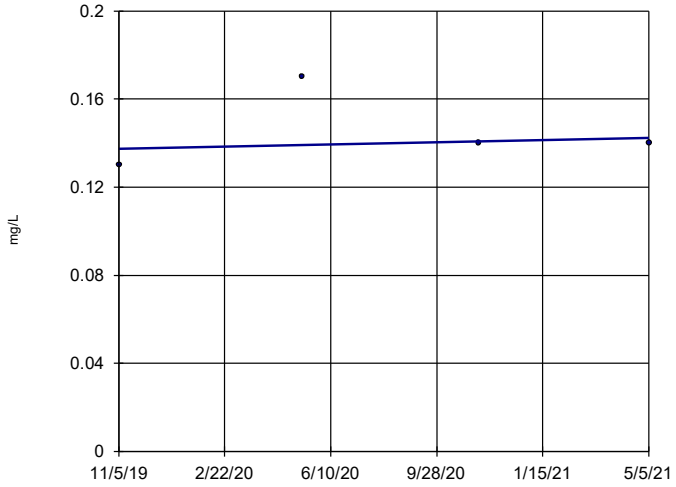
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Fluoride

MW-3 (bg)



n = 4

Slope = 0.003336 units per year.

Mann-Kendall statistic = 1
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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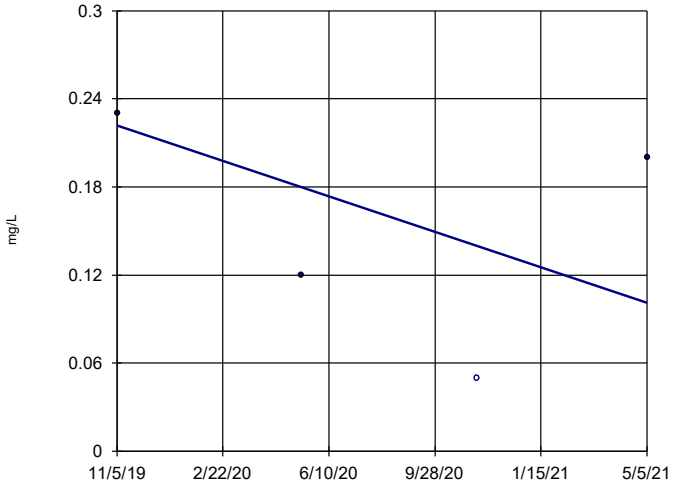
Hollow symbols indicate censored values.

Fluoride

MW-4



n = 4

Slope = -0.08059 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

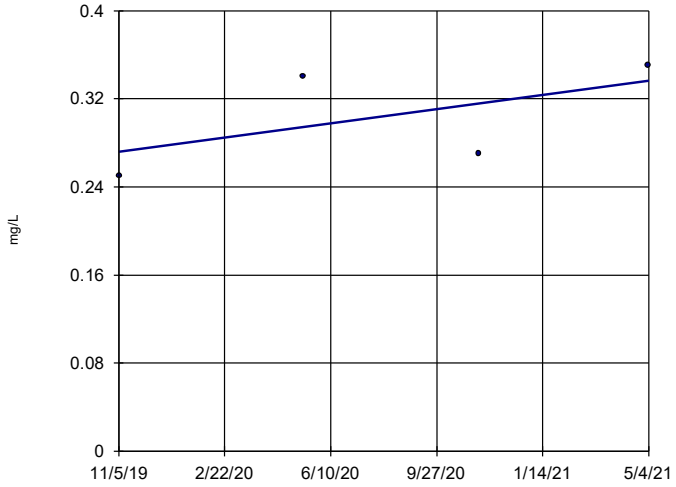
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Fluoride

MW-5



n = 4

Slope = 0.04326 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

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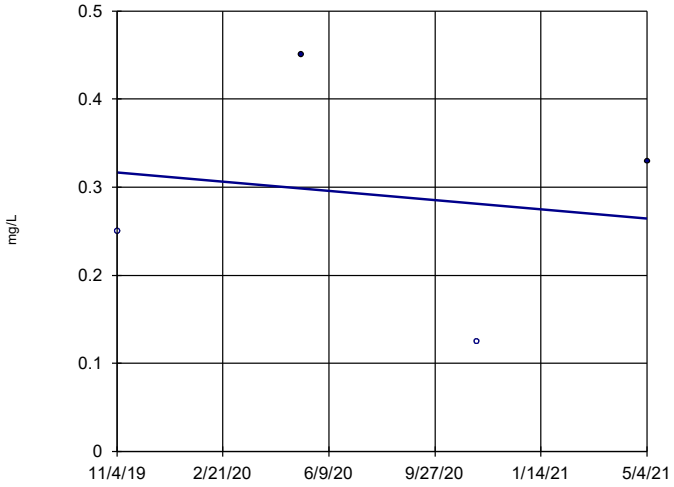
The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Fluoride

MW-5A



n = 4

Slope = -0.03463 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

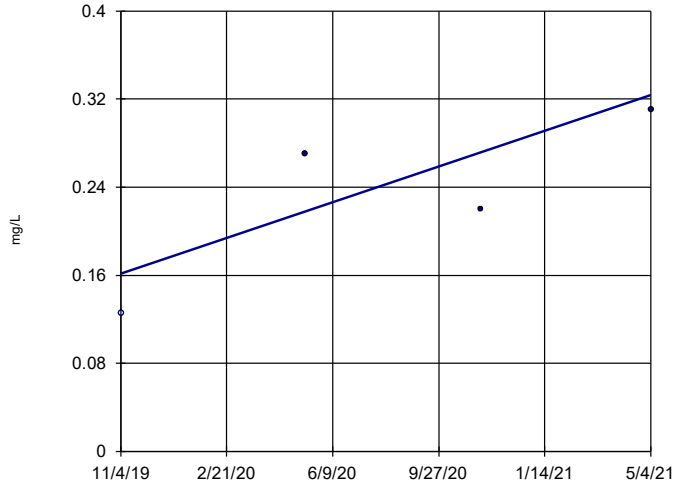
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Fluoride

MW-6



n = 4

Slope = 0.1083 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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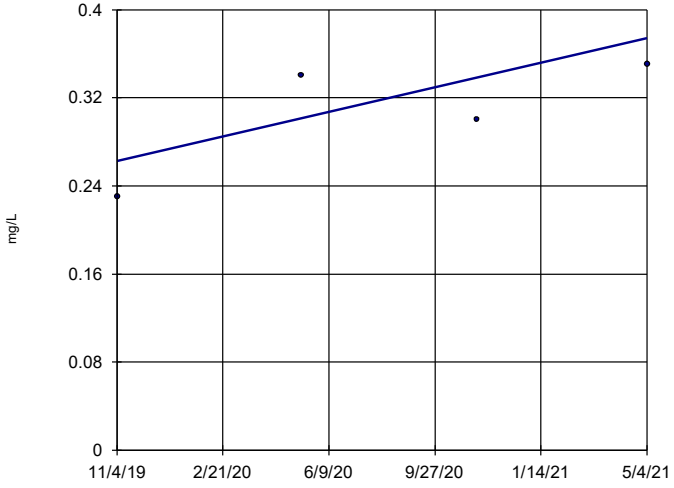
Fluoride

MW-6A



n = 4

Slope = 0.07438 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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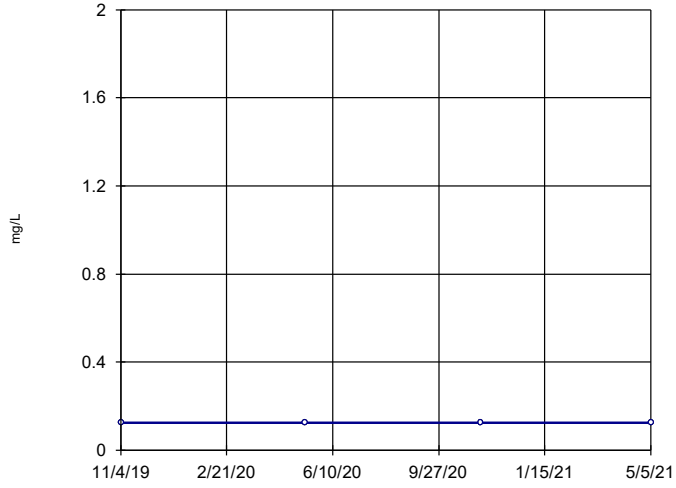
Hollow symbols indicate censored values.

Fluoride

MW-7 (bg)



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 0
critical = 8

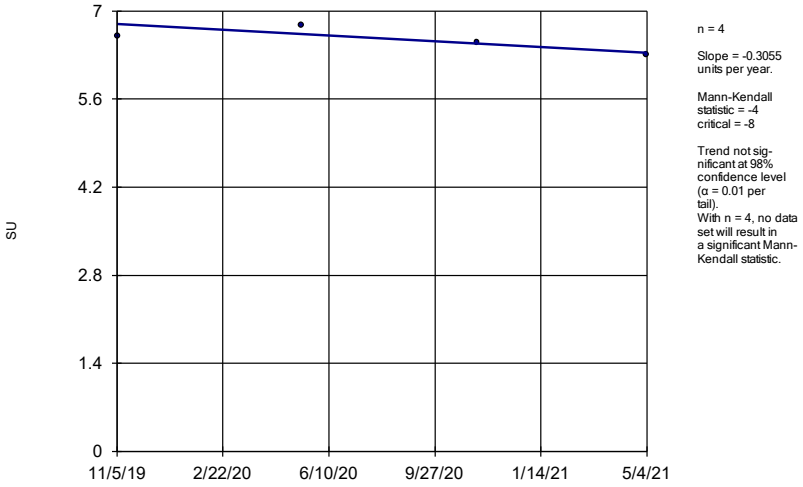
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

pH

MW-2 (bg)



n = 4

Slope = -0.3055 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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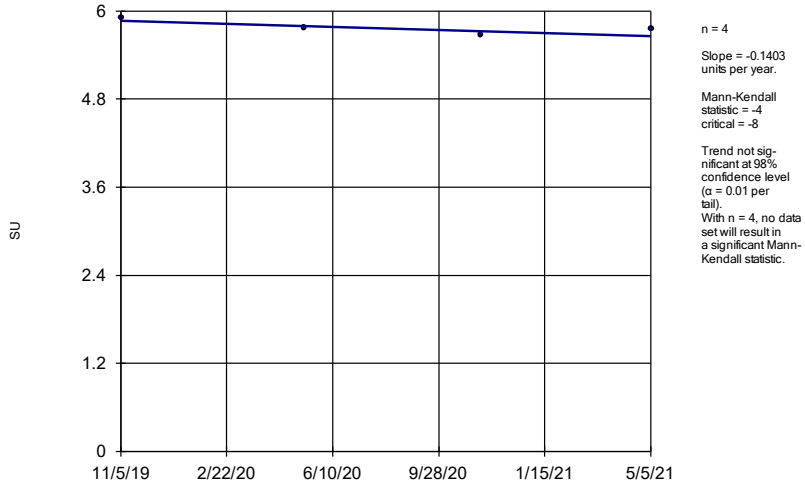
pH

MW-3 (bg)



n = 4

Slope = -0.1403 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

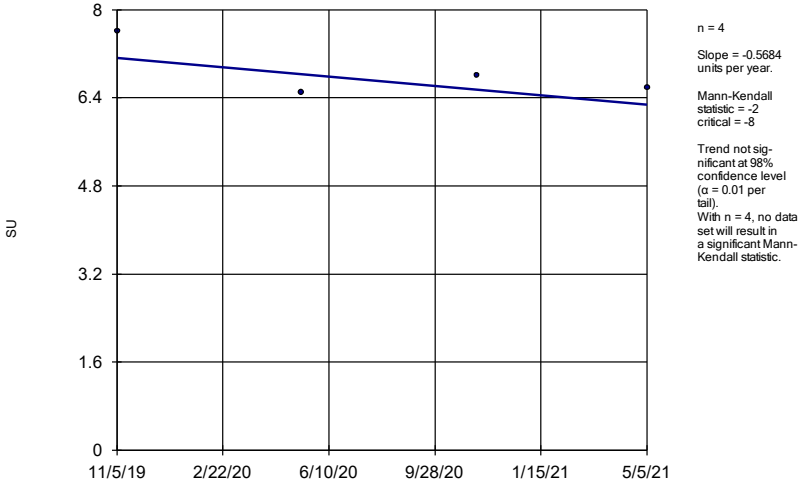
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-4



n = 4

Slope = -0.5684 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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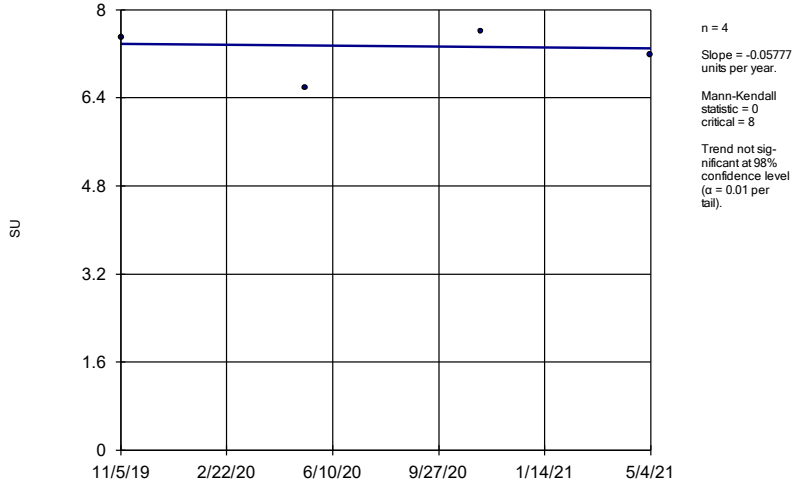
pH

MW-5



n = 4

Slope = -0.05777 units per year.

Mann-Kendall statistic = 0
critical = 8

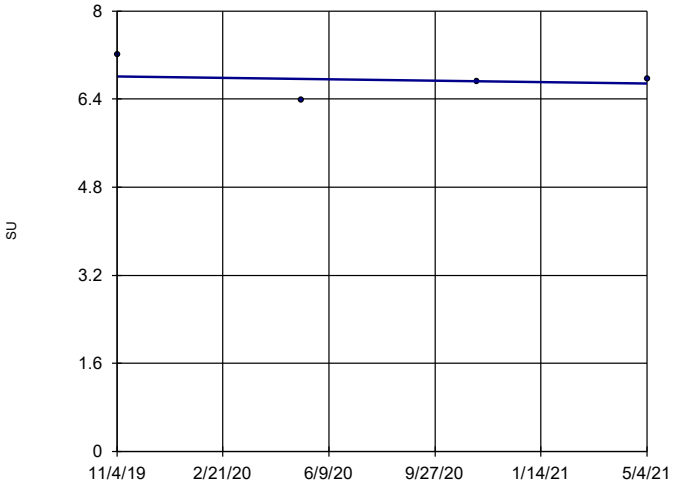
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

pH

MW-5A



n = 4

Slope = -0.09132 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

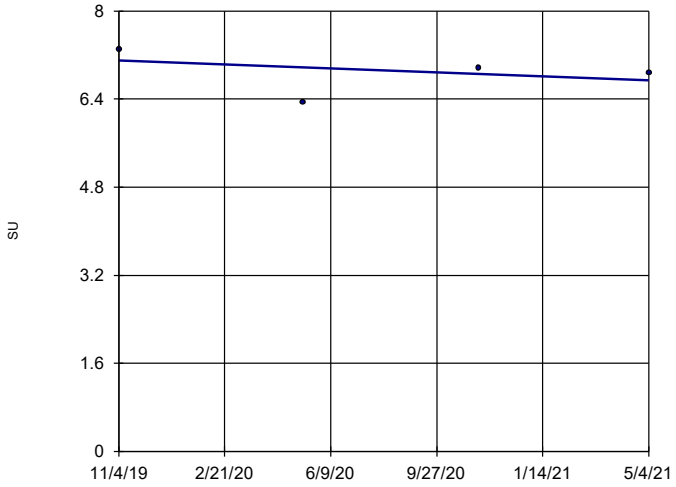
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-6



n = 4

Slope = -0.2373 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

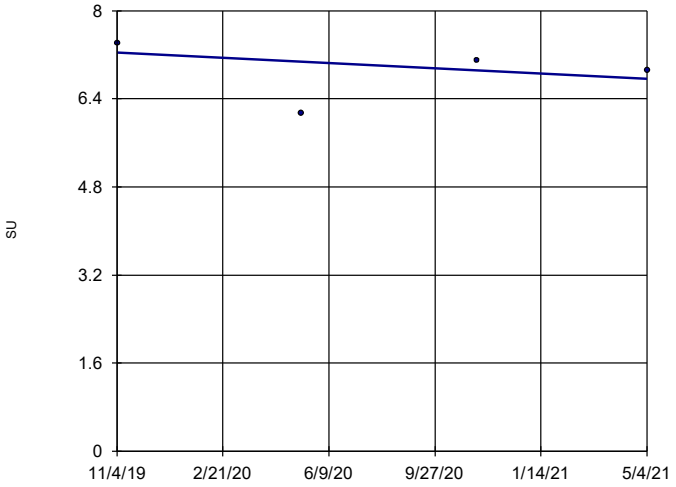
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-6A



n = 4

Slope = -0.3156 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

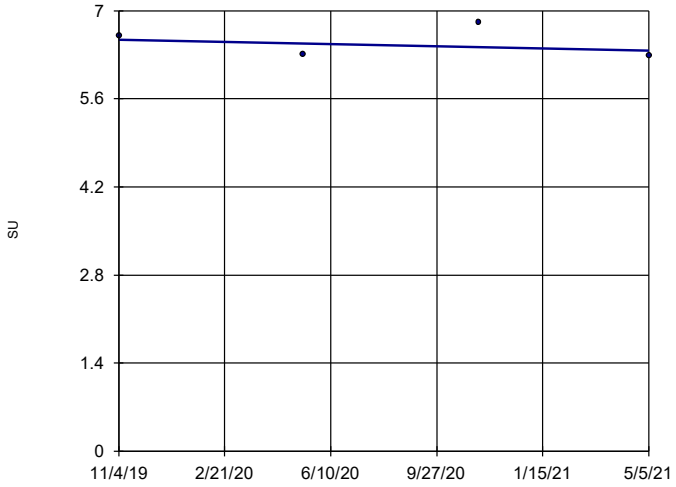
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-7 (bg)



n = 4

Slope = -0.1168 units per year.

Mann-Kendall statistic = -2
critical = -8

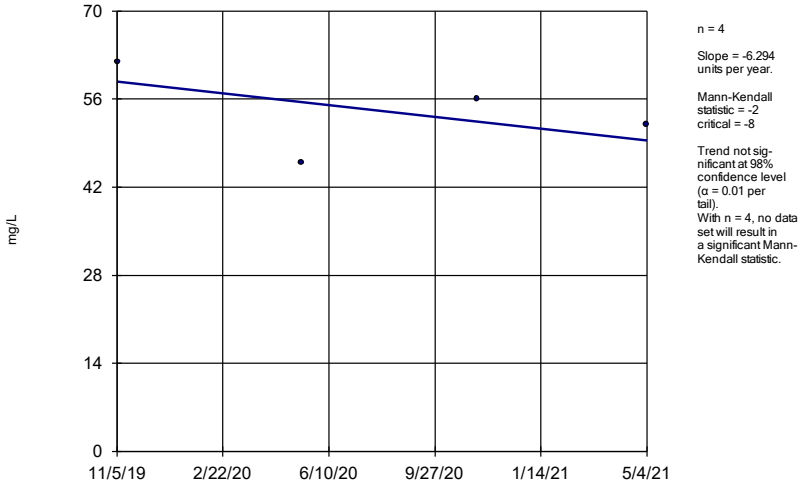
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sulfate

MW-2 (bg)



n = 4

Slope = -6.294 units per year.

Mann-Kendall statistic = -2 critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

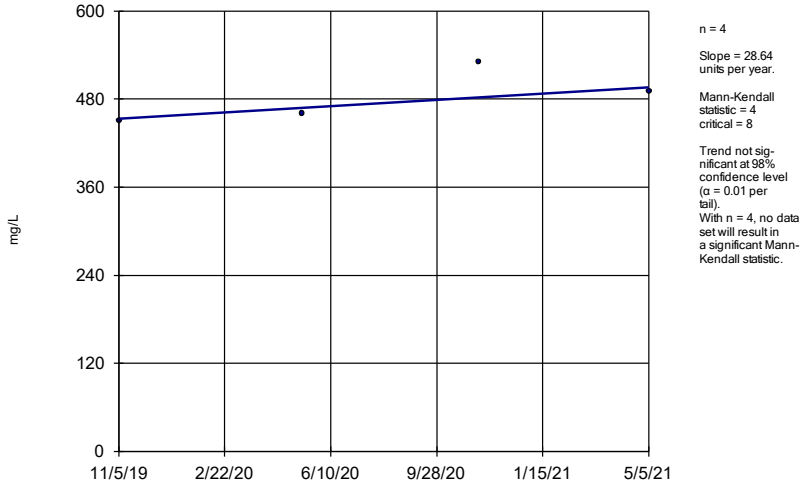
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-3 (bg)



n = 4

Slope = 28.64 units per year.

Mann-Kendall statistic = 4 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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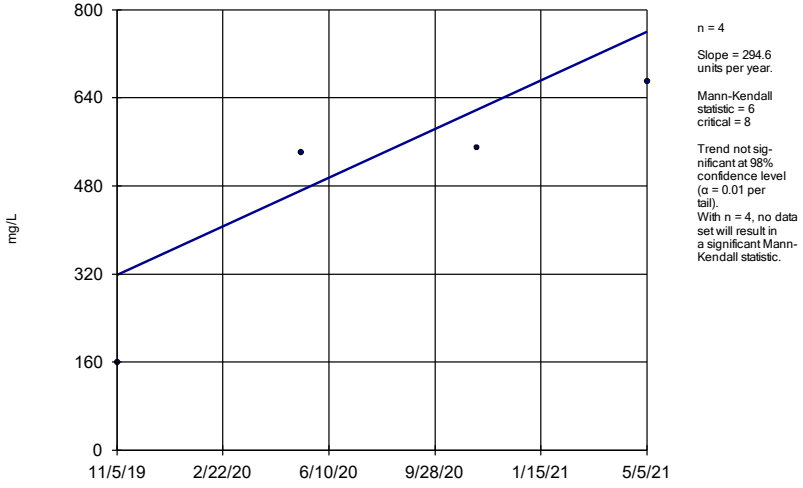
Sulfate

MW-4



n = 4

Slope = 294.6 units per year.

Mann-Kendall statistic = 6 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

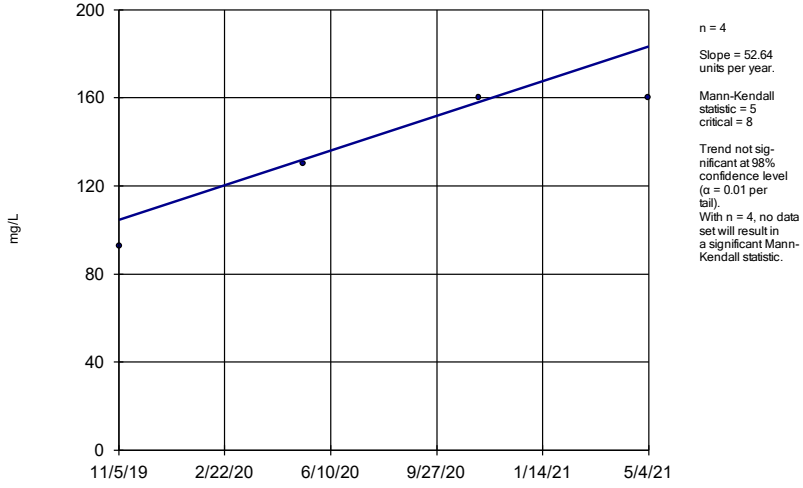
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-5



n = 4

Slope = 52.64 units per year.

Mann-Kendall statistic = 5 critical = 8

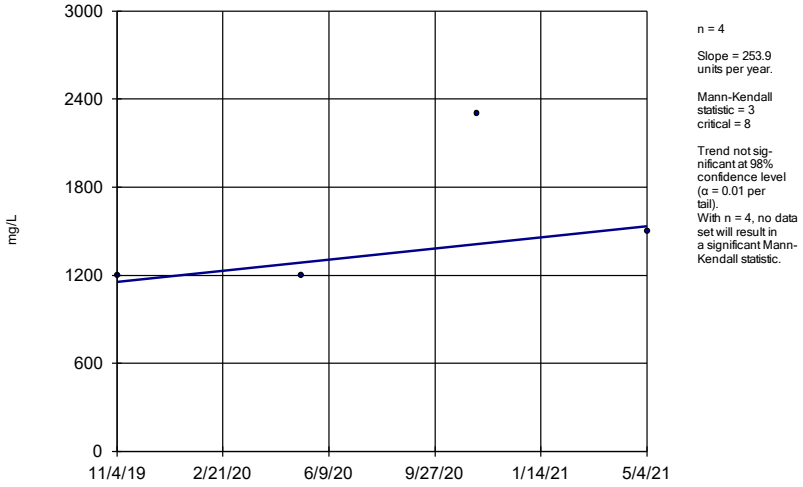
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sulfate

MW-5A



n = 4

Slope = 253.9 units per year.

Mann-Kendall statistic = 3
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

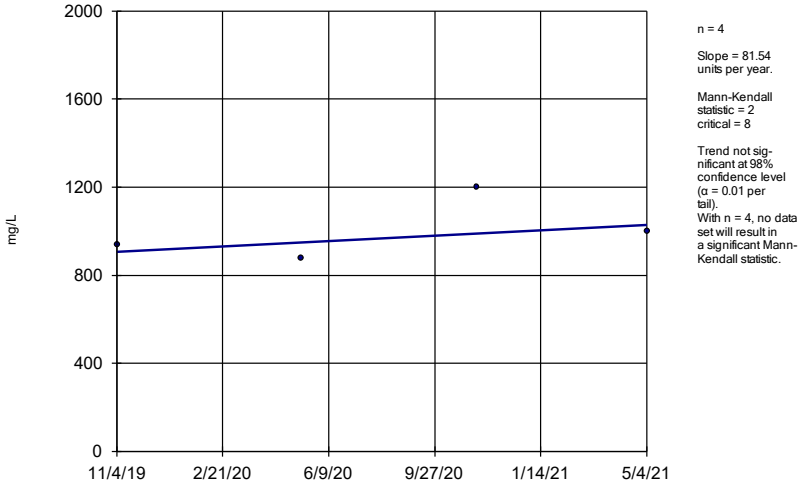
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6



n = 4

Slope = 81.54 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

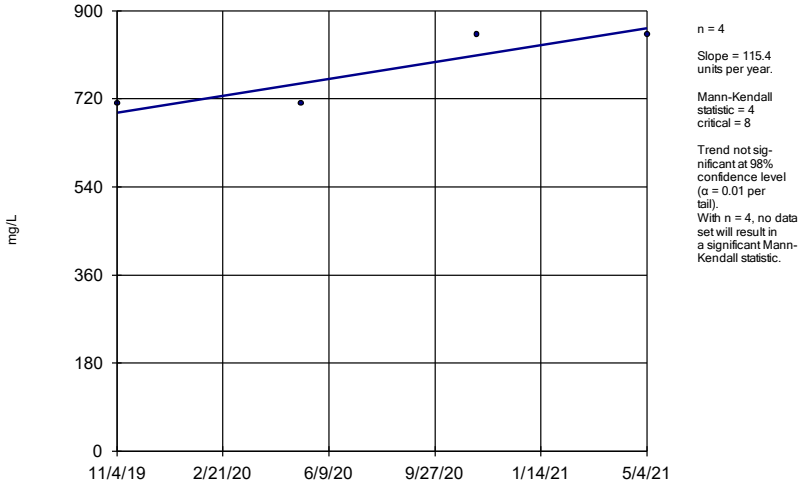
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6A



n = 4

Slope = 115.4 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

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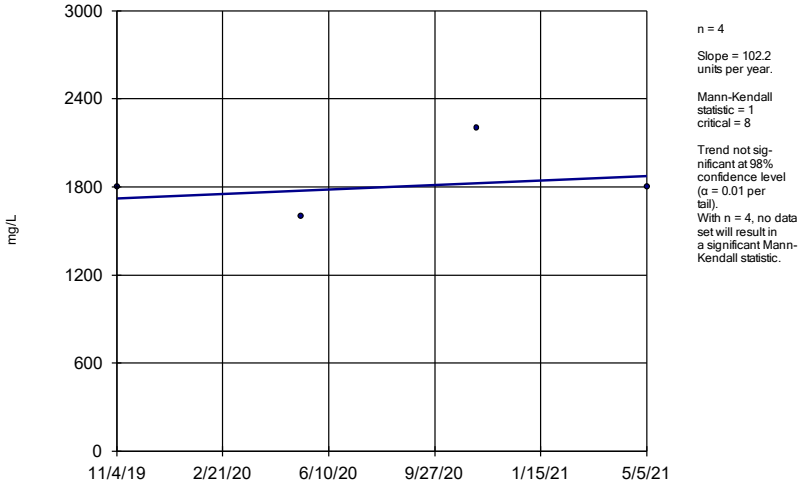
Sulfate

MW-7 (bg)



n = 4

Slope = 102.2 units per year.

Mann-Kendall statistic = 1
critical = 8

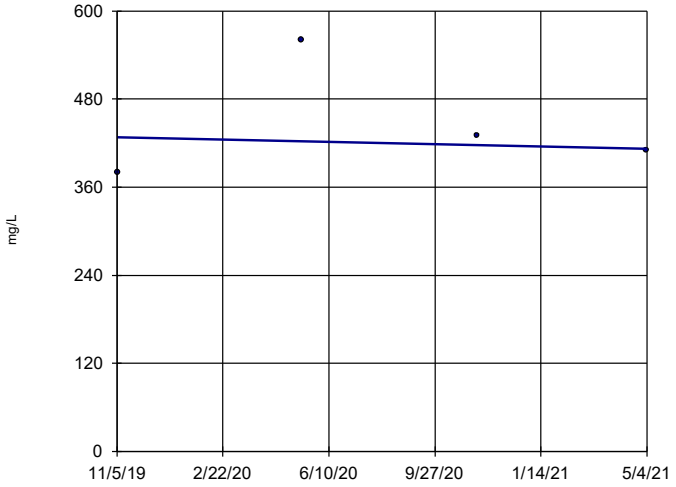
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Total Dissolved Solids

MW-2 (bg)



n = 4

Slope = -10.83 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

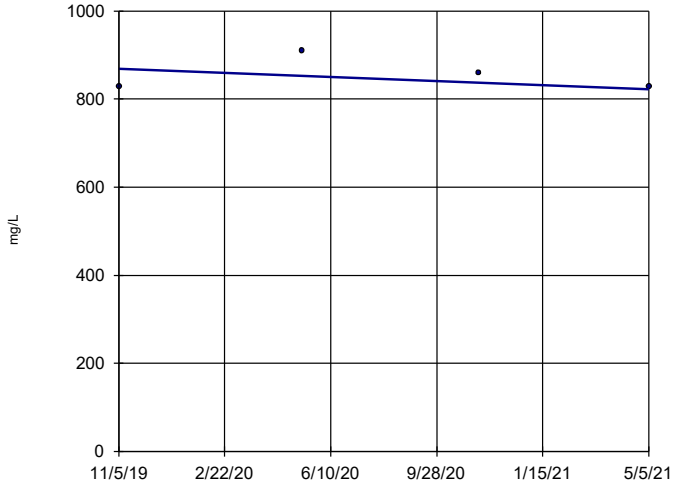
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-3 (bg)



n = 4

Slope = -31.11 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

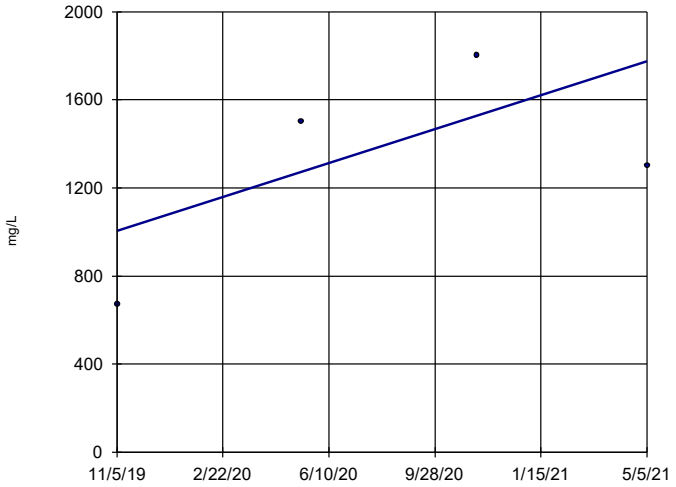
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-4



n = 4

Slope = 512.7 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

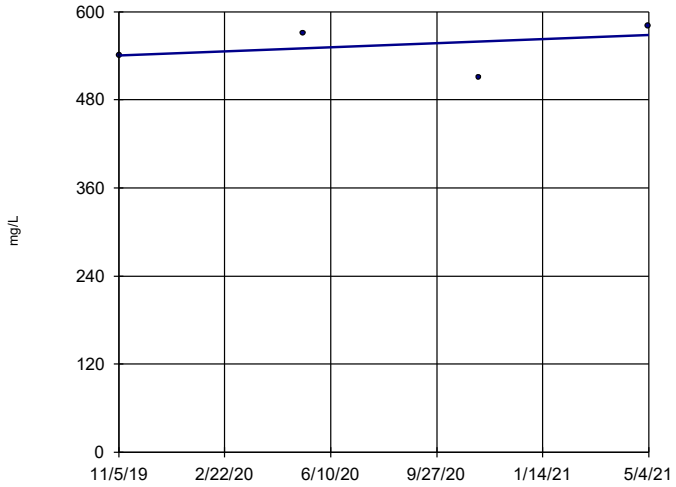
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-5



n = 4

Slope = 18.5 units per year.

Mann-Kendall statistic = 2
critical = 8

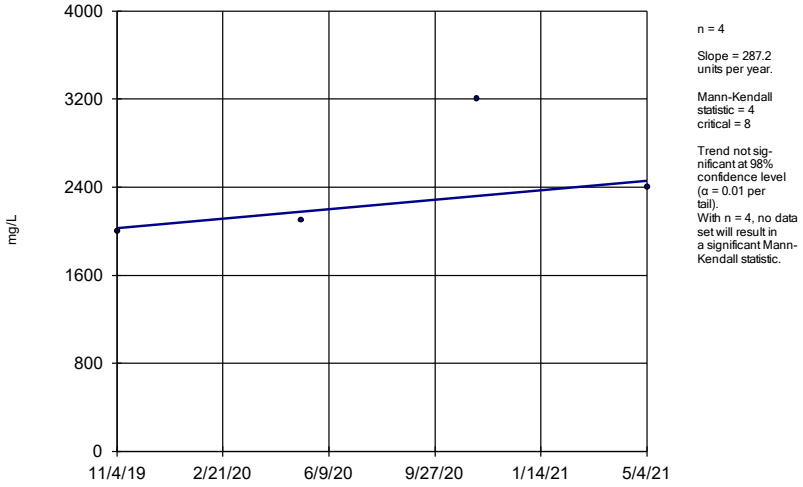
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Total Dissolved Solids

MW-5A



n = 4

Slope = 287.2 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

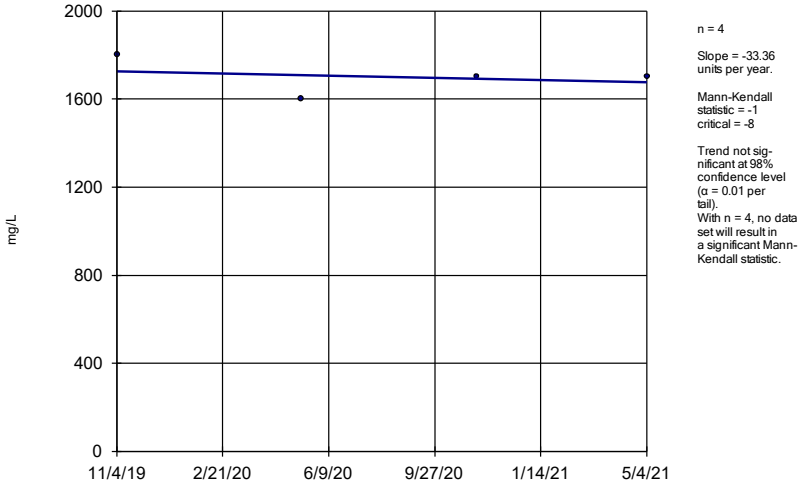
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-6



n = 4

Slope = -33.36 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

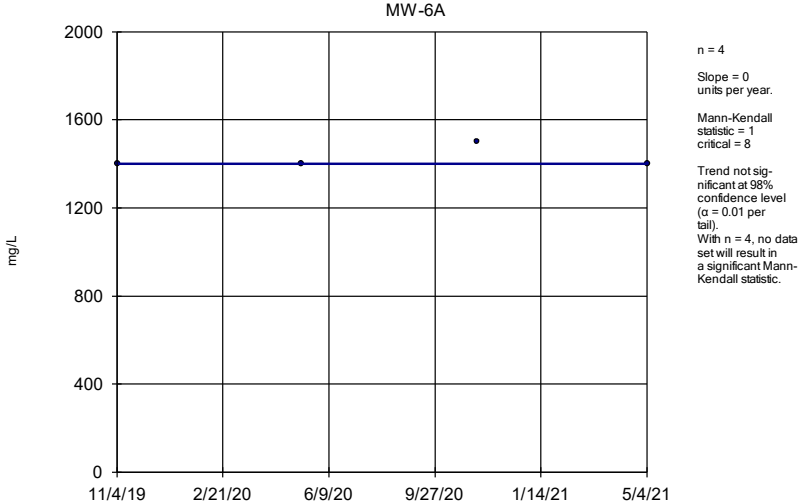
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-6A



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 1
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

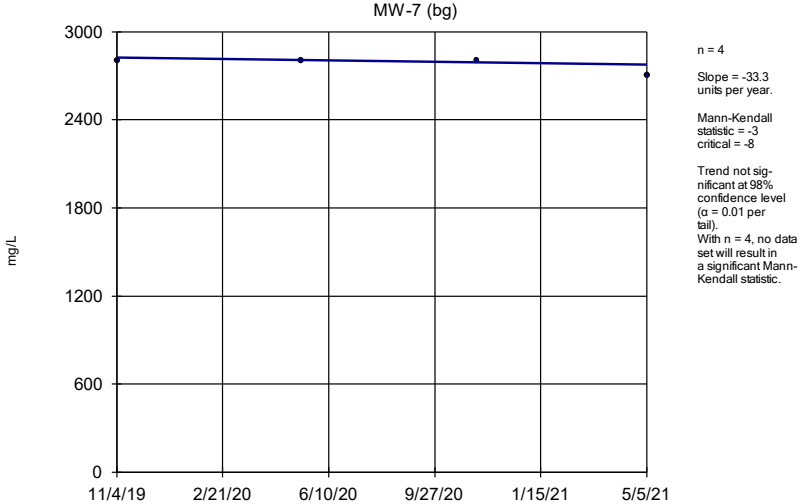
Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Sanitas™ v.9.6.31 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-7 (bg)



n = 4

Slope = -33.3 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 11/18/2021 4:28 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background

Trend Test

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background Printed 11/18/2021, 4:28 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-2 (bg)	-0.00...	-1	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-3 (bg)	0	-1	-8	No	4	75	n/a	n/a	0.02	NP
Boron (mg/L)	MW-4	0	0	8	No	4	100	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5	0.03481	4	8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5A	0.2754	4	8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6	-0.00...	-1	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6A	-0.01648	-3	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-7 (bg)	-0.01314	-2	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2 (bg)	-1.343	-3	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3 (bg)	0.8426	0	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4	-1.081	0	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	3.342	1	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5A	40.52	4	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	11.8	3	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6A	11.58	2	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7 (bg)	14.9	3	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2 (bg)	-11.81	-3	-8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3 (bg)	0.6502	0	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4	8.002	0	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	1.608	6	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5A	31.62	4	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	2.377	3	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6A	8.419	6	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7 (bg)	-2.804	-4	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2 (bg)	0.009225	0	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3 (bg)	0.003336	1	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4	-0.08059	-2	-8	No	4	25	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	0.04326	4	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5A	-0.03463	0	8	No	4	50	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.1083	4	8	No	4	25	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6A	0.07438	4	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7 (bg)	0	0	8	No	4	100	n/a	n/a	0.02	NP
pH (SU)	MW-2 (bg)	-0.3055	-4	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-3 (bg)	-0.1403	-4	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-4	-0.5684	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-5	-0.05777	0	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-5A	-0.09132	0	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-6	-0.2373	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-6A	-0.3156	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-7 (bg)	-0.1168	-2	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2 (bg)	-6.294	-2	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3 (bg)	28.64	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4	294.6	6	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	52.64	5	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5A	253.9	3	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	81.54	2	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6A	115.4	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7 (bg)	102.2	1	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2 (bg)	-10.83	0	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-3 (bg)	-31.11	-1	-8	No	4	0	n/a	n/a	0.02	NP

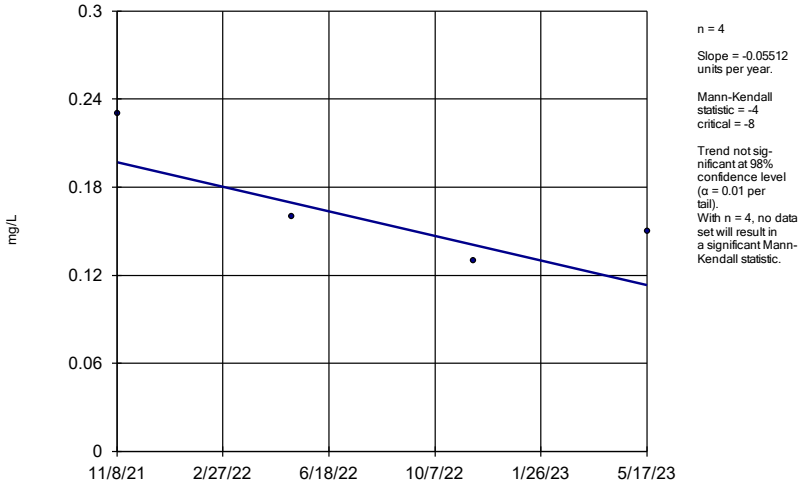
Trend Test

The Empire District Client: Midwest Environmental Consultants Data: 11-21 App 3 Asbury ponds with background Printed 11/18/2021, 4:28 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Total Dissolved Solids (mg/L)	MW-4	512.7	2	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	18.5	2	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5A	287.2	4	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	-33.36	-1	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6A	0	1	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7 (bg)	-33.3	-3	-8	No	4	0	n/a	n/a	0.02	NP

Boron

MW-2 (bg)



n = 4

Slope = -0.05512 units per year.

Mann-Kendall statistic = -4
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

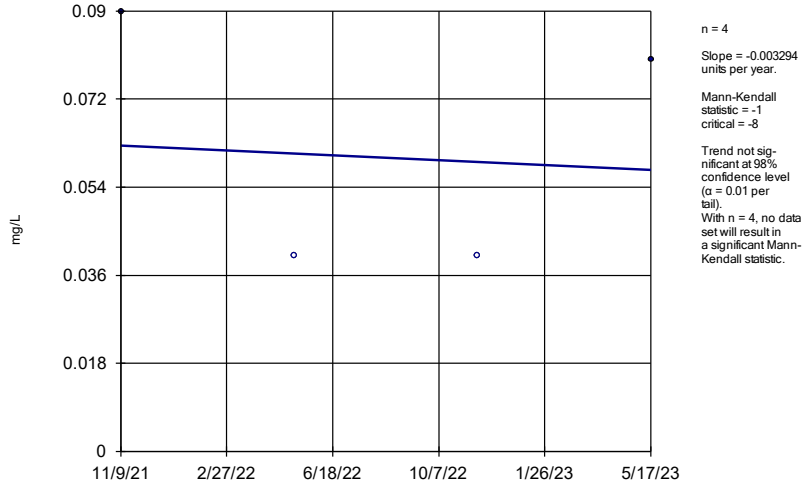
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Boron

MW-3 (bg)



n = 4

Slope = -0.003294 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

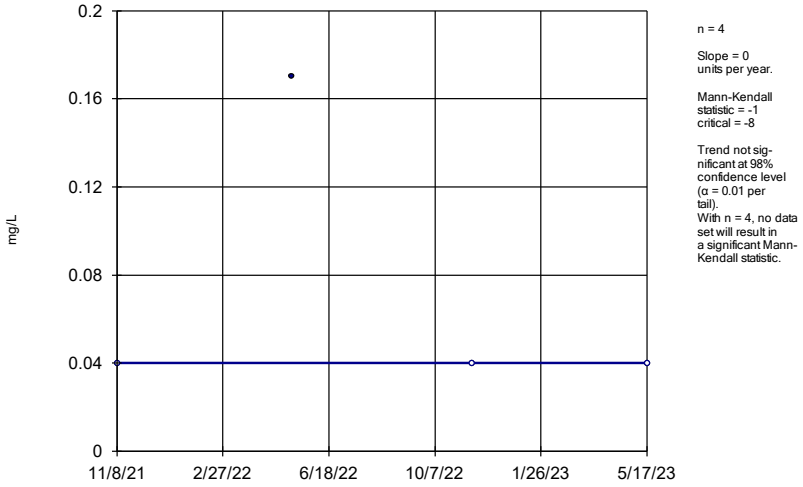
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Boron

MW-4



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = -1
critical = -8

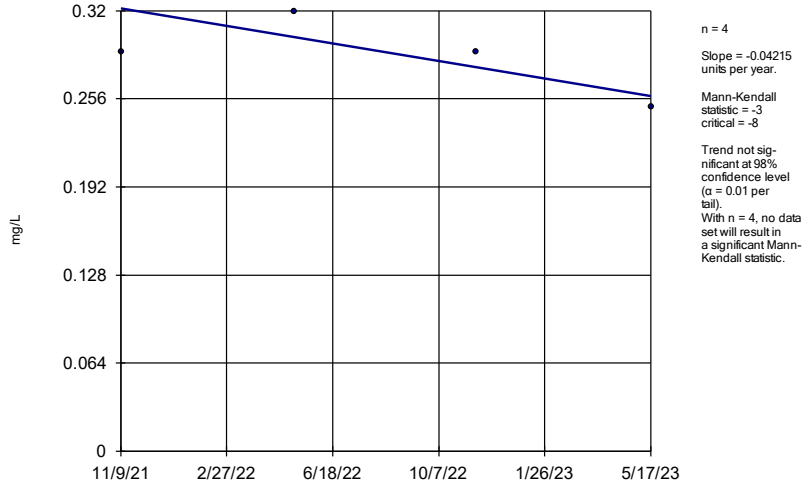
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Boron

MW-5



n = 4

Slope = -0.04215 units per year.

Mann-Kendall statistic = -3
critical = -8

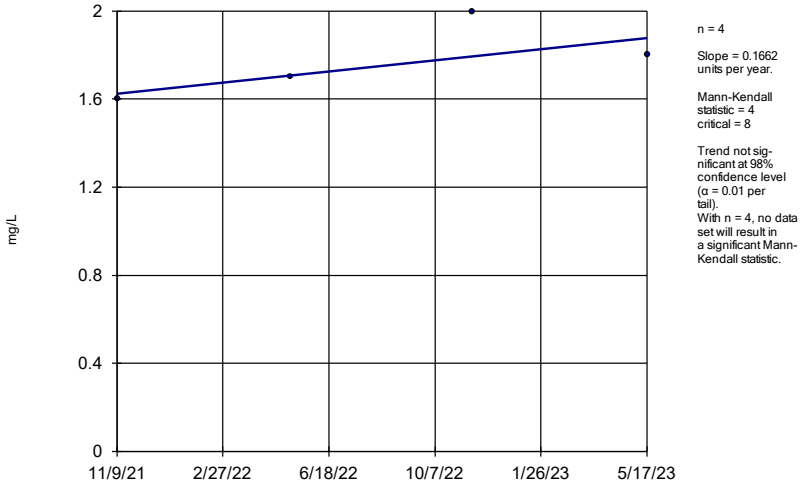
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Boron

MW-5A



n = 4

Slope = 0.1662 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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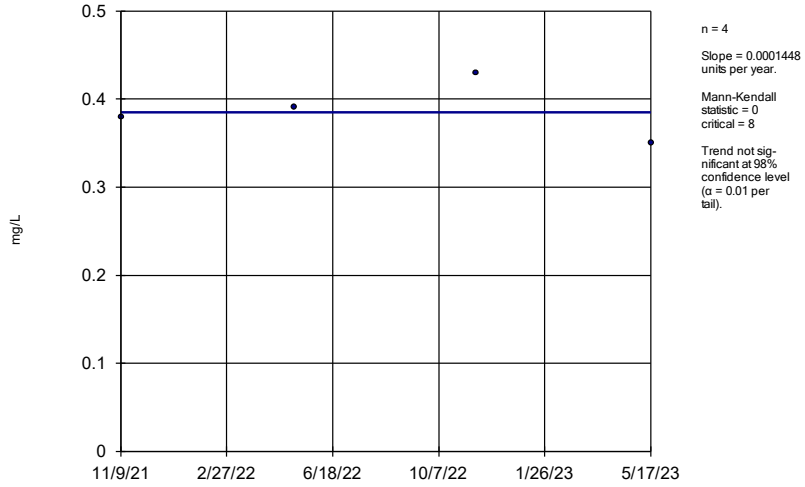
Boron

MW-6



n = 4

Slope = 0.0001448 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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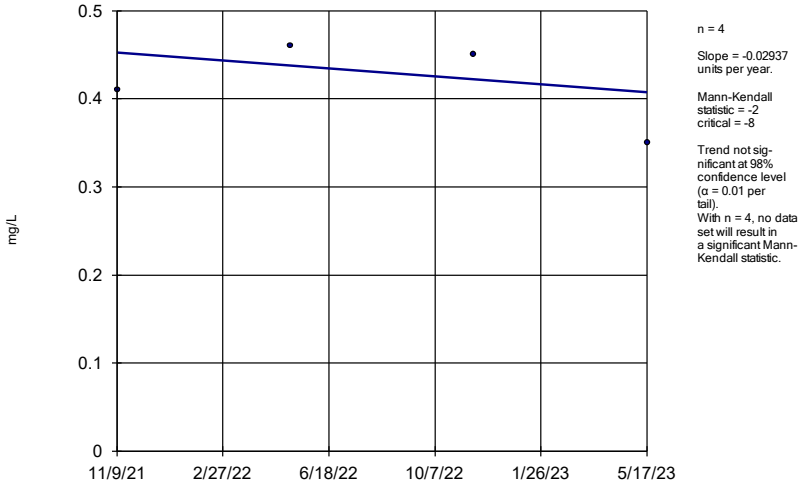
Boron

MW-6A



n = 4

Slope = -0.02937 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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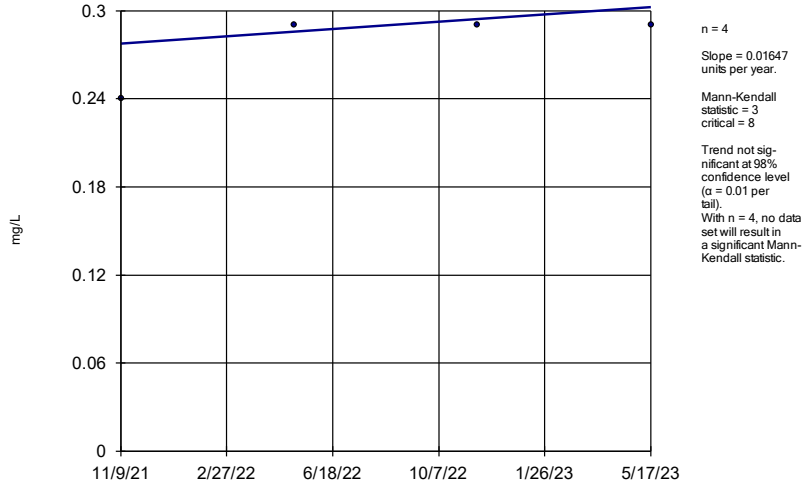
Boron

MW-7 (bg)



n = 4

Slope = 0.01647 units per year.

Mann-Kendall statistic = 3
critical = 8

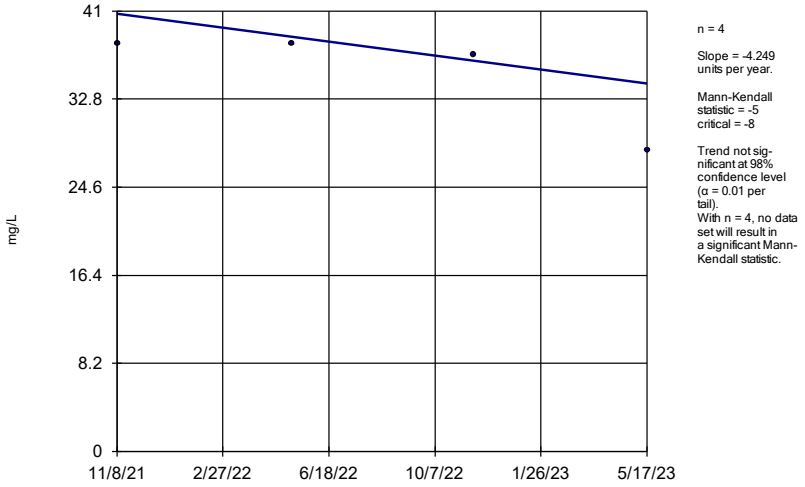
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Calcium

MW-2 (bg)



n = 4

Slope = -4.249 units per year.

Mann-Kendall statistic = -5
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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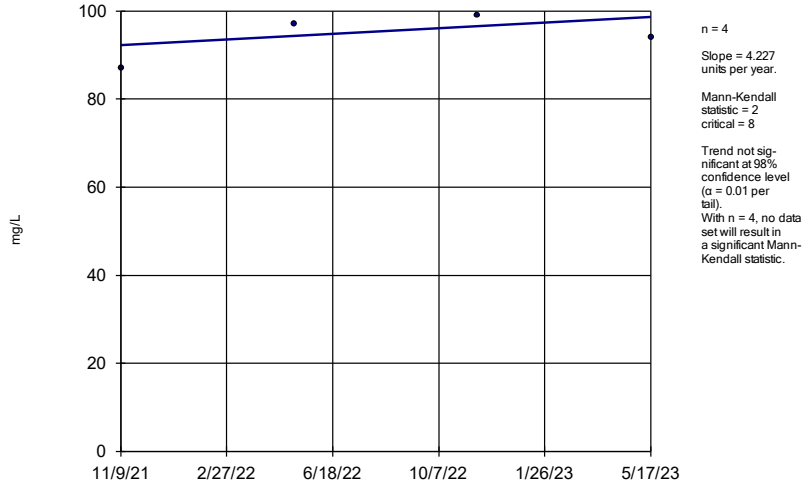
Calcium

MW-3 (bg)



n = 4

Slope = 4.227 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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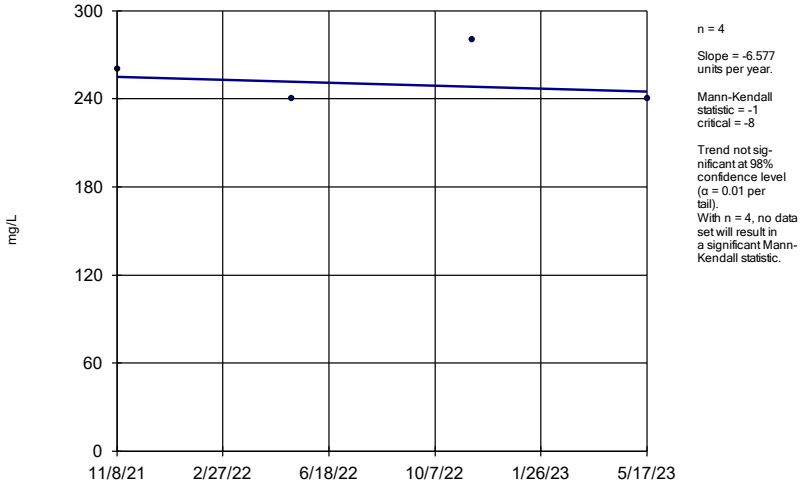
Calcium

MW-4



n = 4

Slope = -6.577 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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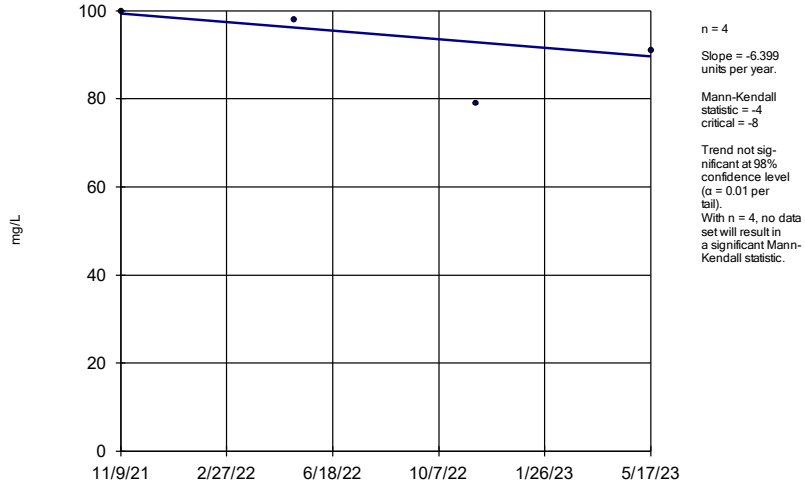
Calcium

MW-5



n = 4

Slope = -6.399 units per year.

Mann-Kendall statistic = -4
critical = -8

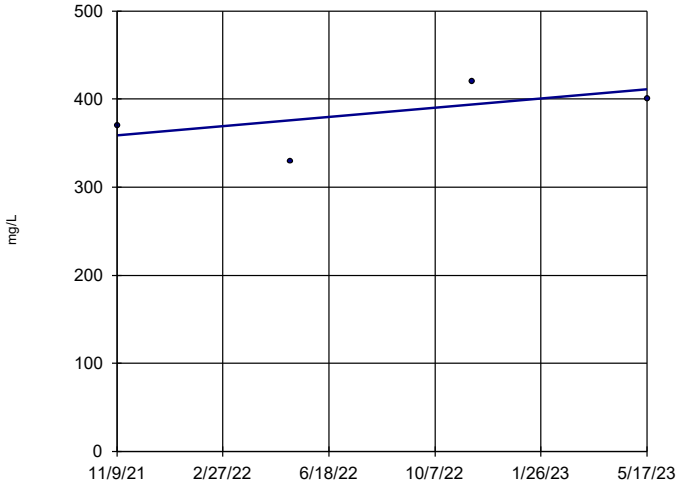
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Calcium

MW-5A



n = 4

Slope = 34.48 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

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The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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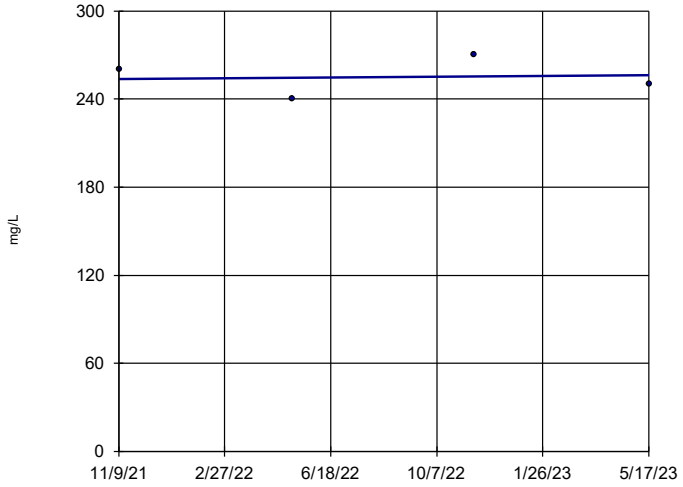
Calcium

MW-6



n = 4

Slope = 1.612 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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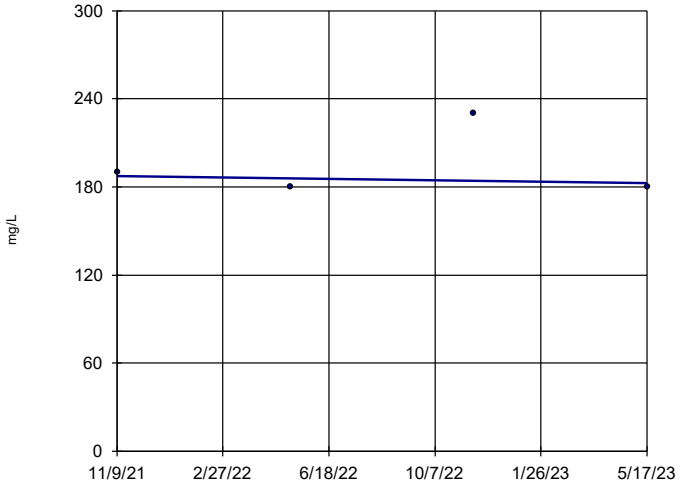
Calcium

MW-6A



n = 4

Slope = -3.294 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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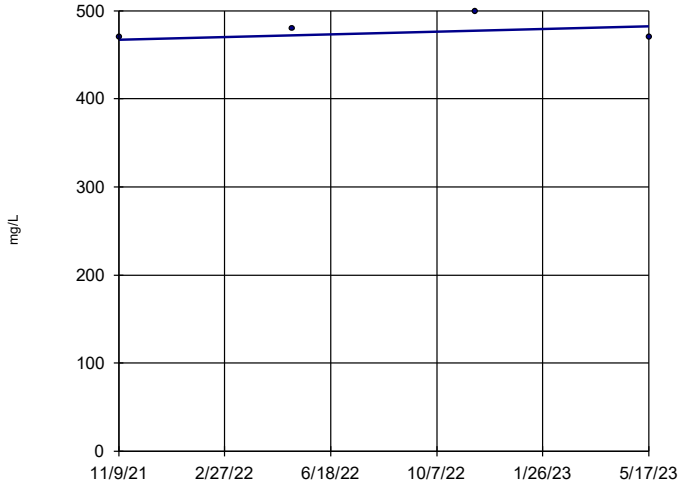
Calcium

MW-7 (bg)



n = 4

Slope = 10.03 units per year.

Mann-Kendall statistic = 1
critical = 8

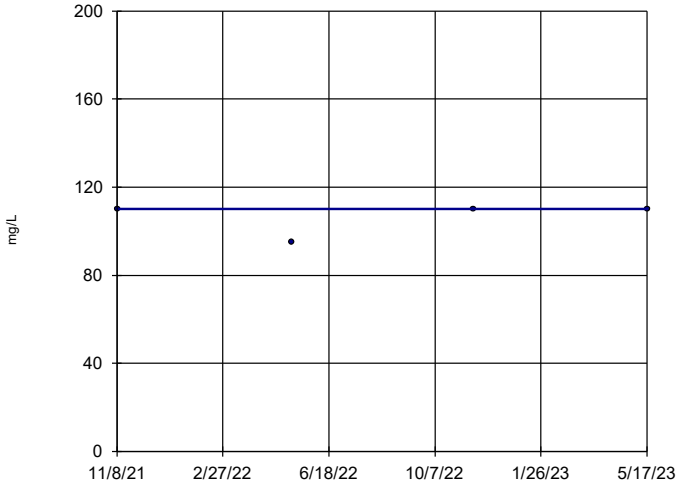
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Chloride

MW-2 (bg)



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 1 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

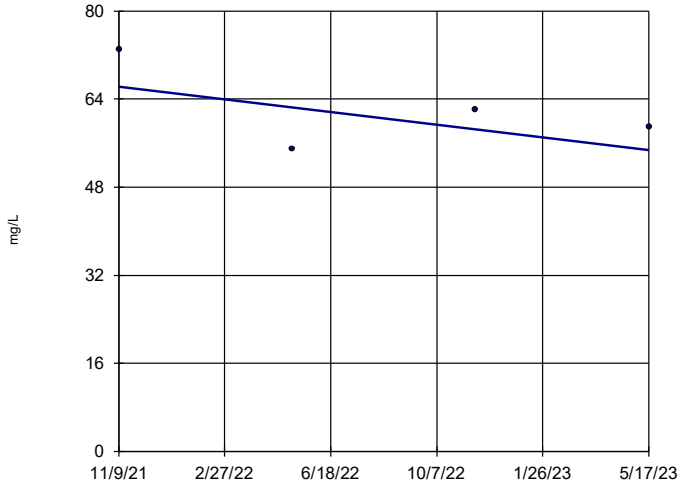
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-3 (bg)



n = 4

Slope = -7.62 units per year.

Mann-Kendall statistic = -2 critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

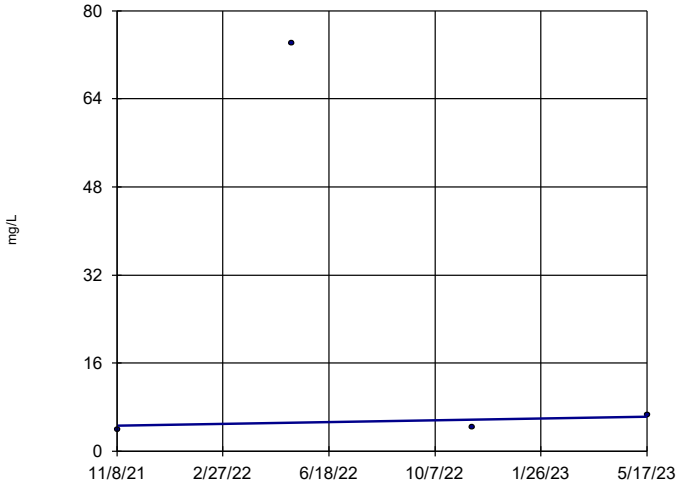
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-4



n = 4

Slope = 1.1 units per year.

Mann-Kendall statistic = 2 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

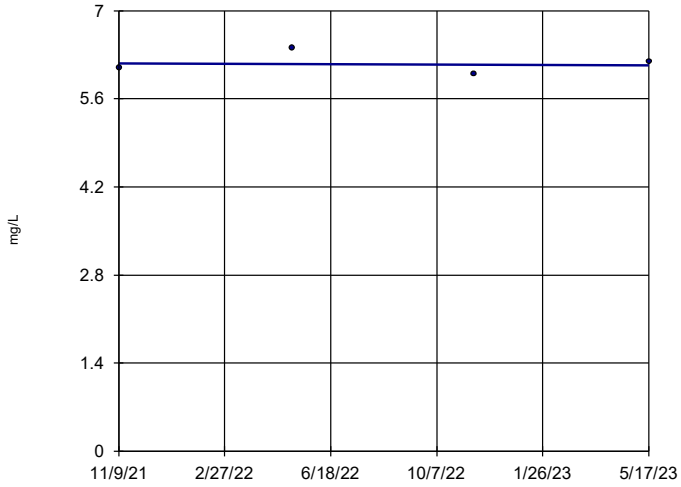
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-5



n = 4

Slope = -0.01625 units per year.

Mann-Kendall statistic = 0 critical = 8

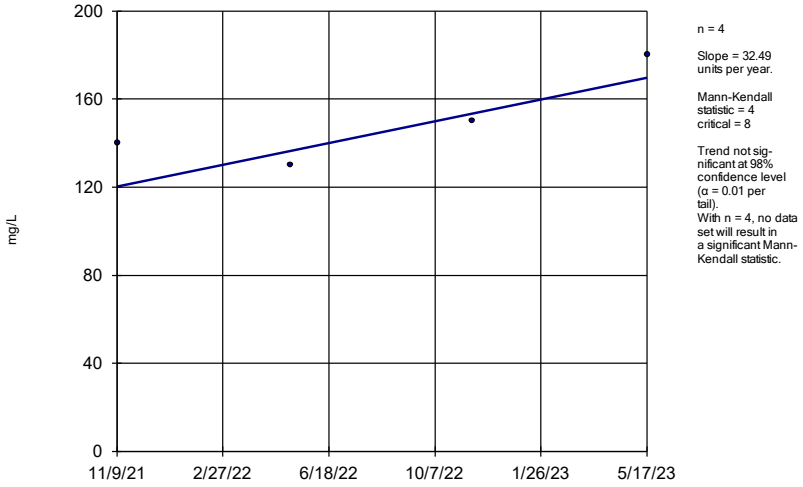
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Chloride

MW-5A



n = 4

Slope = 32.49 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

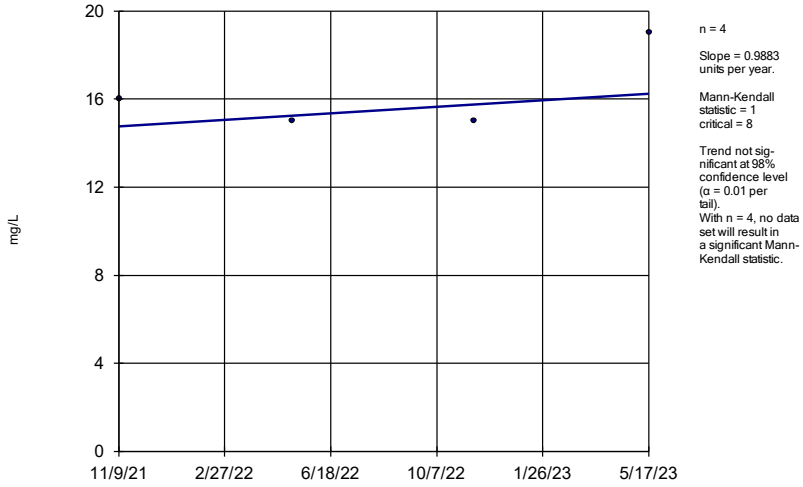
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-6



n = 4

Slope = 0.9883 units per year.

Mann-Kendall statistic = 1
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

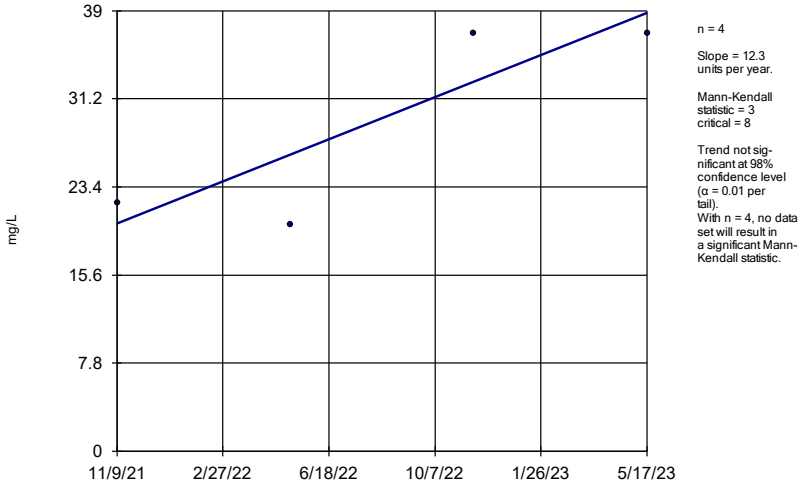
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-6A



n = 4

Slope = 12.3 units per year.

Mann-Kendall statistic = 3
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

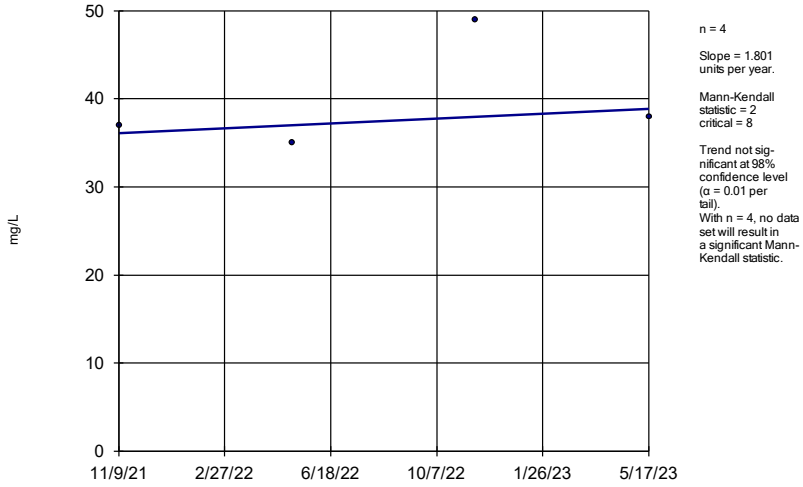
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

MW-7 (bg)



n = 4

Slope = 1.801 units per year.

Mann-Kendall statistic = 2
critical = 8

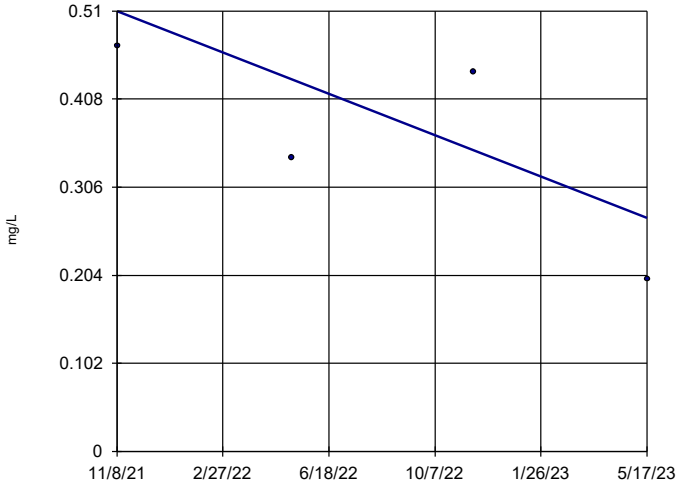
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Fluoride

MW-2 (bg)



n = 4

Slope = -0.1575 units per year.

Mann-Kendall statistic = -4
critical = -8

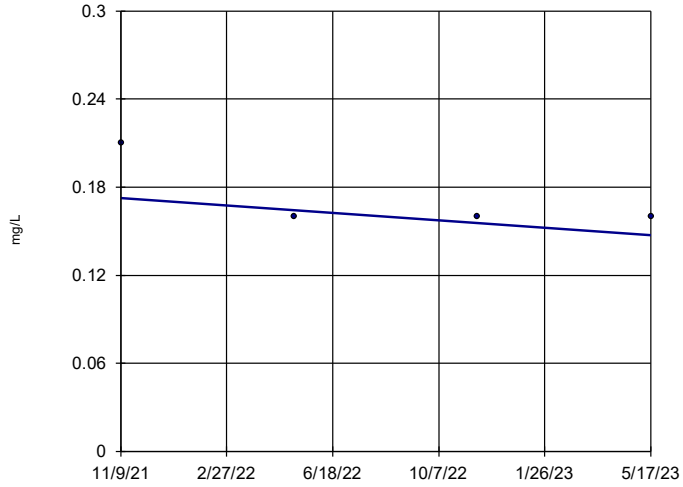
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Fluoride

MW-3 (bg)



n = 4

Slope = -0.01647 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

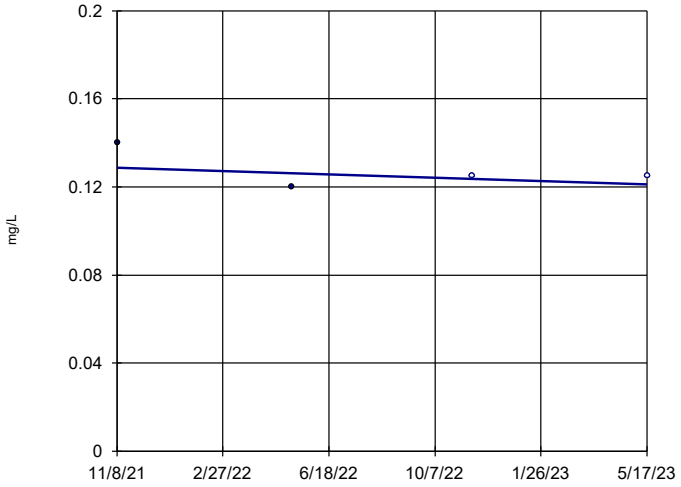
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Fluoride

MW-4



n = 4

Slope = -0.004932 units per year.

Mann-Kendall statistic = -1
critical = -8

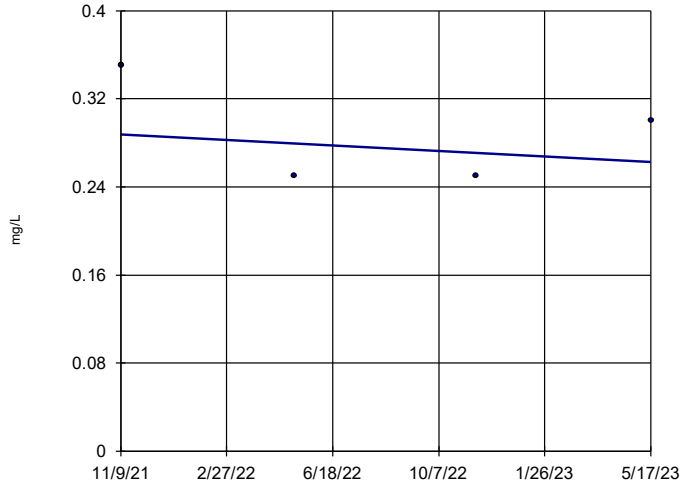
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Fluoride

MW-5



n = 4

Slope = -0.01647 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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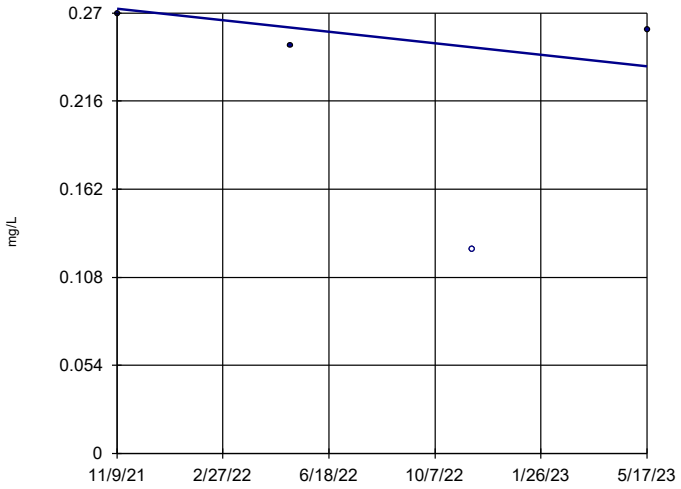
Hollow symbols indicate censored values.

Fluoride

MW-5A



n = 4

Slope = -0.02335 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

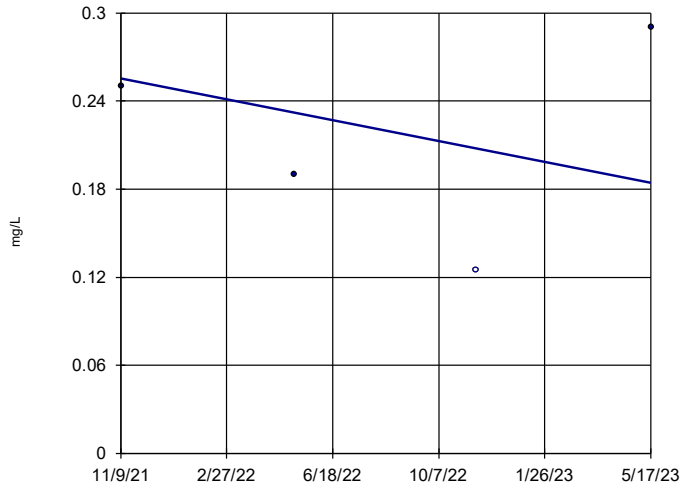
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Fluoride

MW-6



n = 4

Slope = -0.04699 units per year.

Mann-Kendall statistic = 0
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).

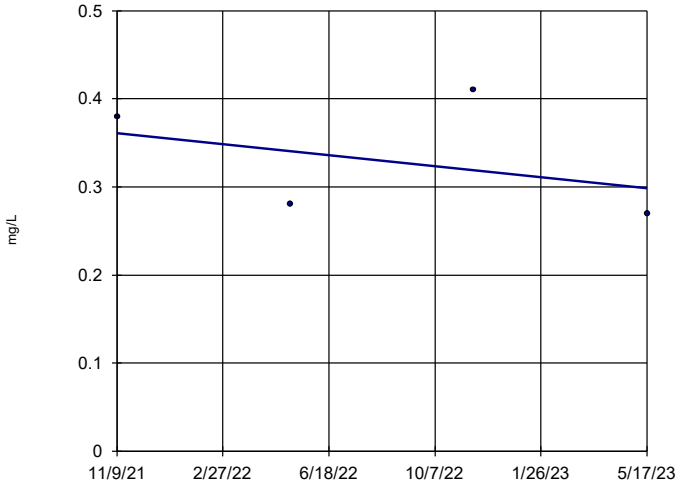
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Fluoride

MW-6A



n = 4

Slope = -0.04114 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

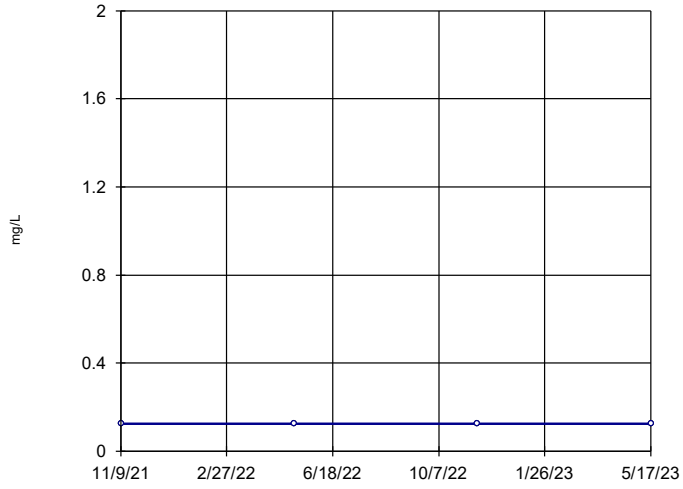
Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Fluoride

MW-7 (bg)



n = 4

Slope = 0 units per year.

Mann-Kendall statistic = 0
critical = 8

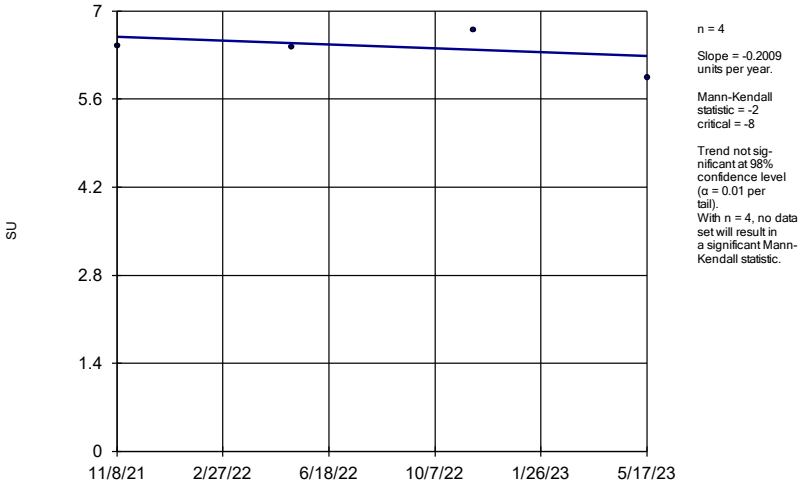
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/24/2024 6:13 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

pH

MW-2 (bg)



n = 4

Slope = -0.2009 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

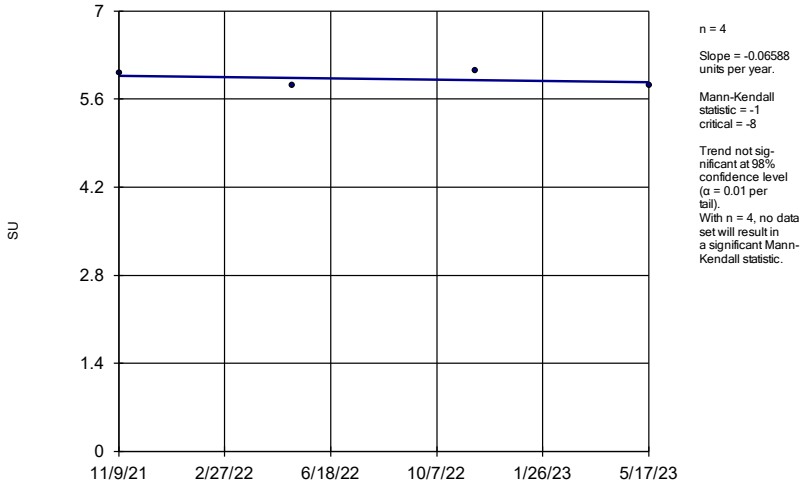
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-3 (bg)



n = 4

Slope = -0.06588 units per year.

Mann-Kendall statistic = -1
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

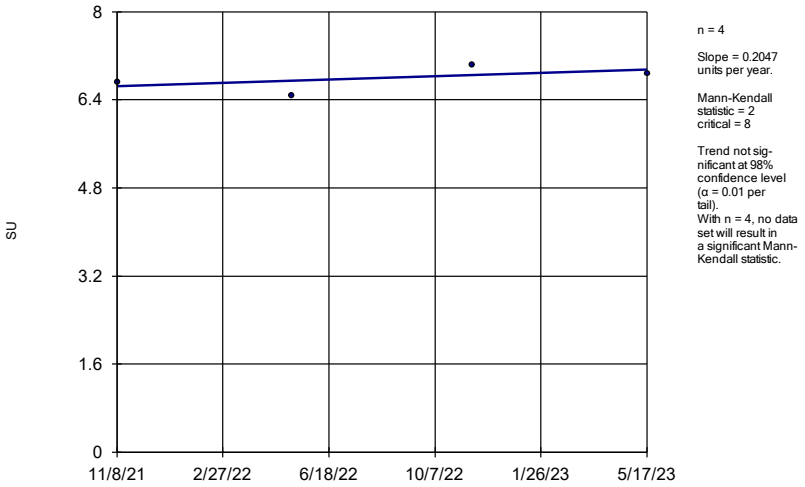
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-4



n = 4

Slope = 0.2047 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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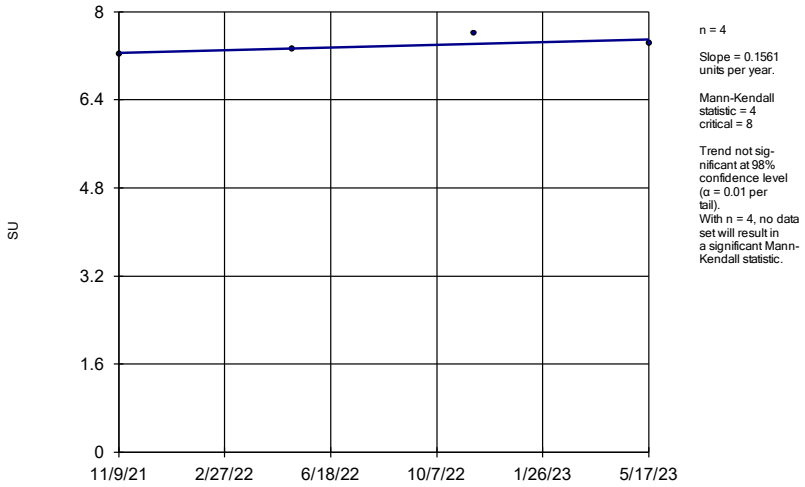
pH

MW-5



n = 4

Slope = 0.1561 units per year.

Mann-Kendall statistic = 4
critical = 8

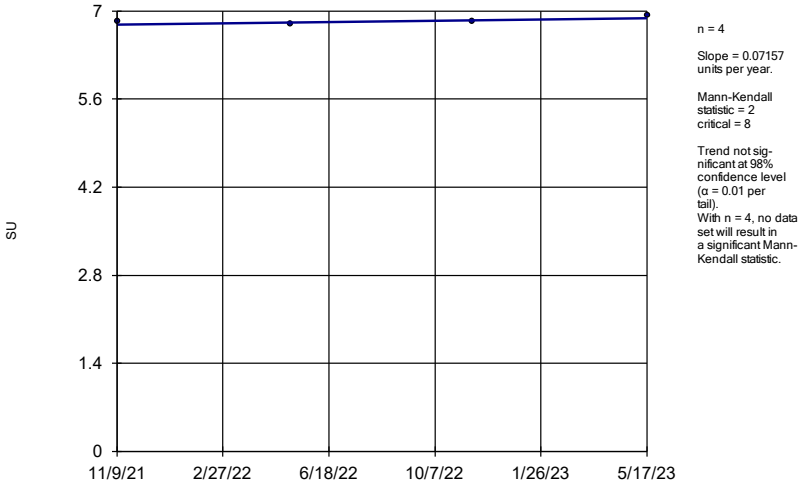
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

pH

MW-5A



n = 4

Slope = 0.07157 units per year.

Mann-Kendall statistic = 2
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

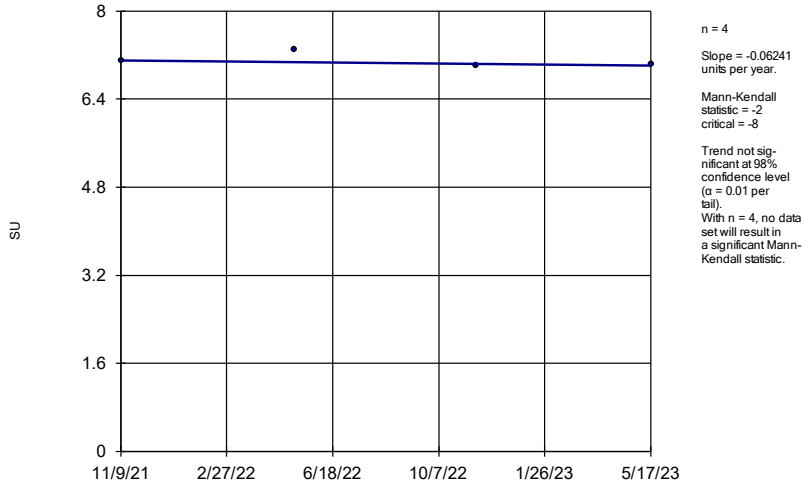
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

pH

MW-6



n = 4

Slope = -0.06241 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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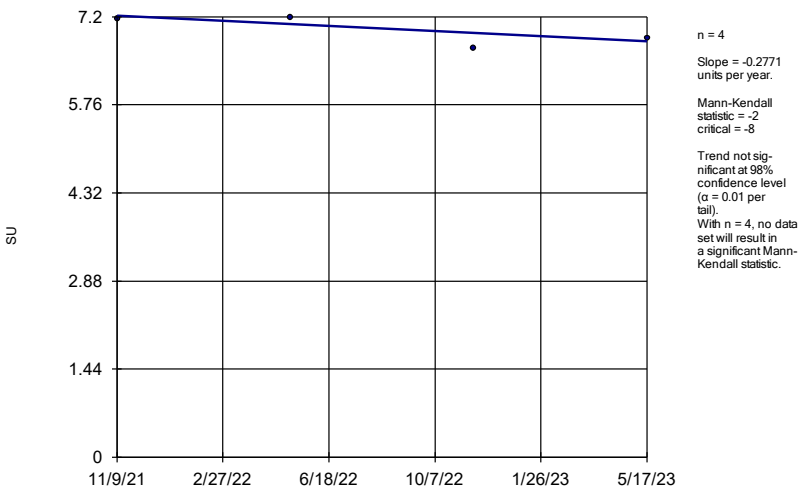
pH

MW-6A



n = 4

Slope = -0.2771 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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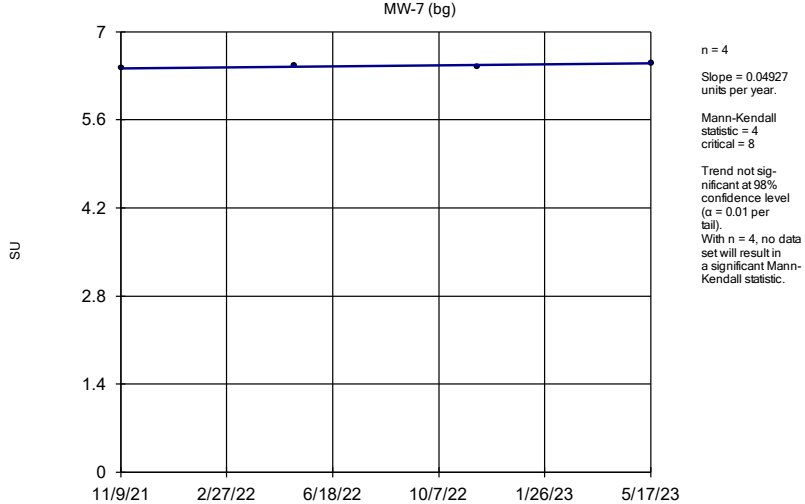
pH

MW-7 (bg)



n = 4

Slope = 0.04927 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

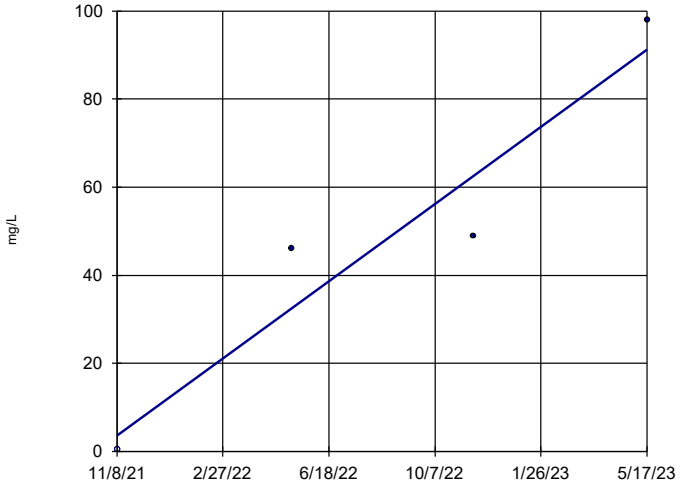
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

Sulfate

MW-2 (bg)



n = 4

Slope = 57.57 units per year.

Mann-Kendall statistic = 6
critical = 8

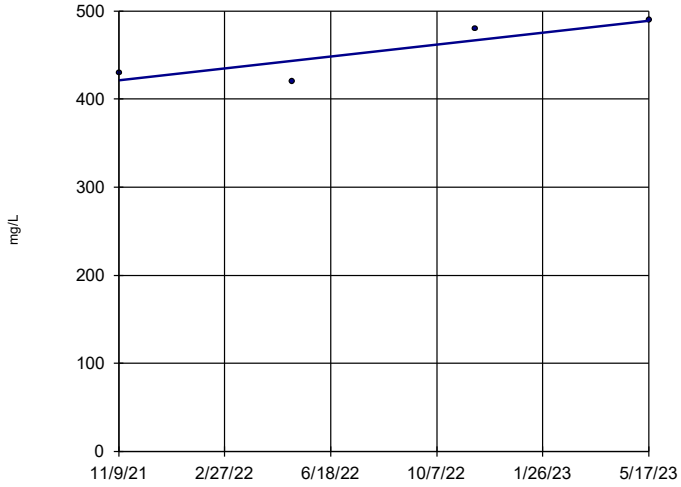
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sulfate

MW-3 (bg)



n = 4

Slope = 44.29 units per year.

Mann-Kendall statistic = 4
critical = 8

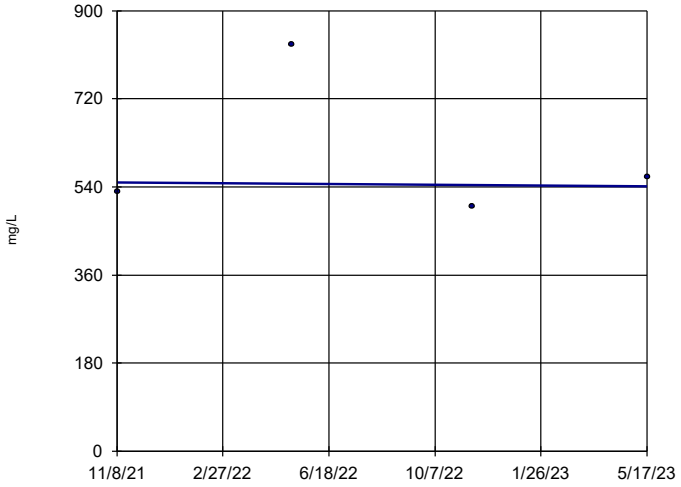
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sulfate

MW-4



n = 4

Slope = -4.853 units per year.

Mann-Kendall statistic = 0
critical = 8

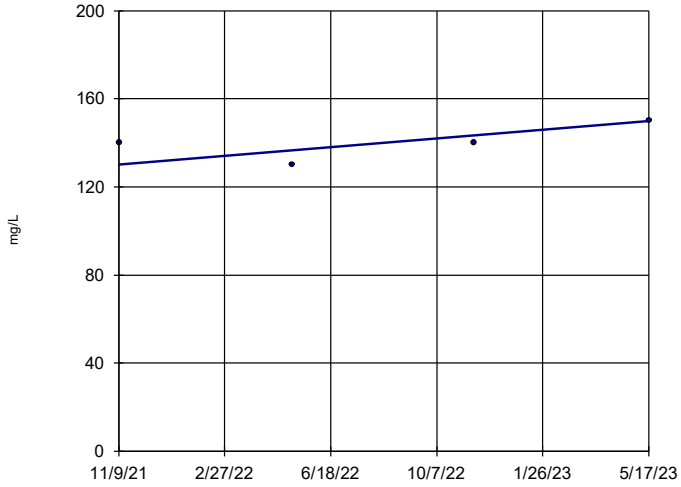
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sulfate

MW-5



n = 4

Slope = 12.95 units per year.

Mann-Kendall statistic = 3
critical = 8

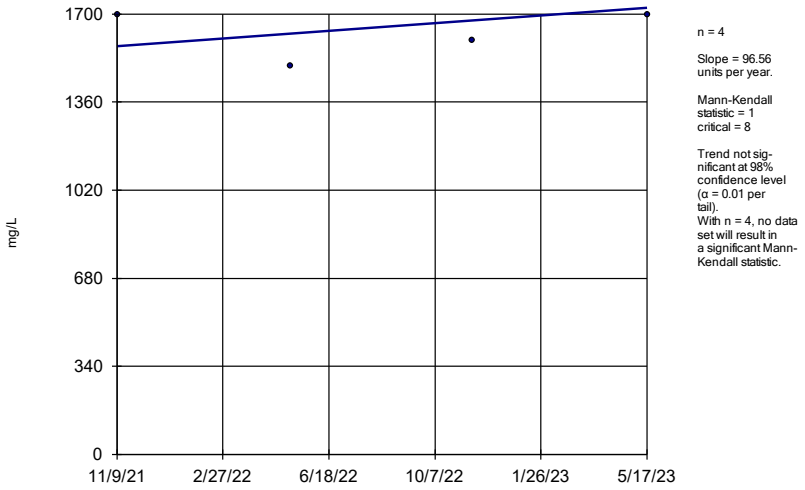
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sulfate

MW-5A



n = 4

Slope = 96.56 units per year.

Mann-Kendall statistic = 1
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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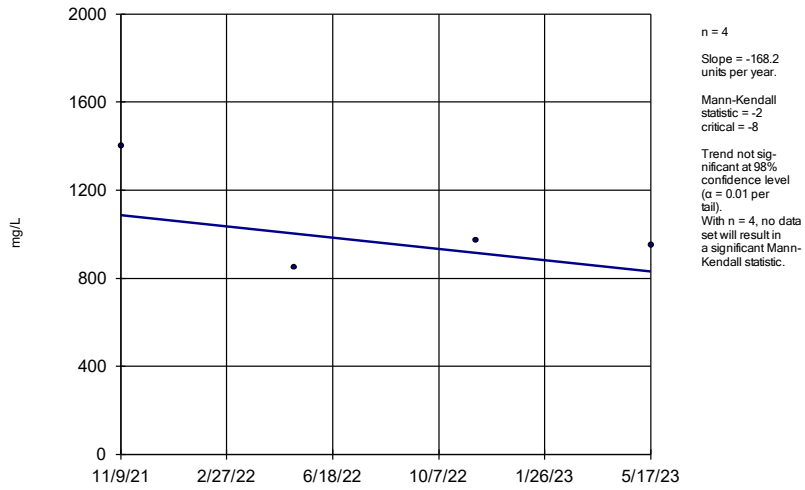
Sulfate

MW-6



n = 4

Slope = -168.2 units per year.

Mann-Kendall statistic = -2
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

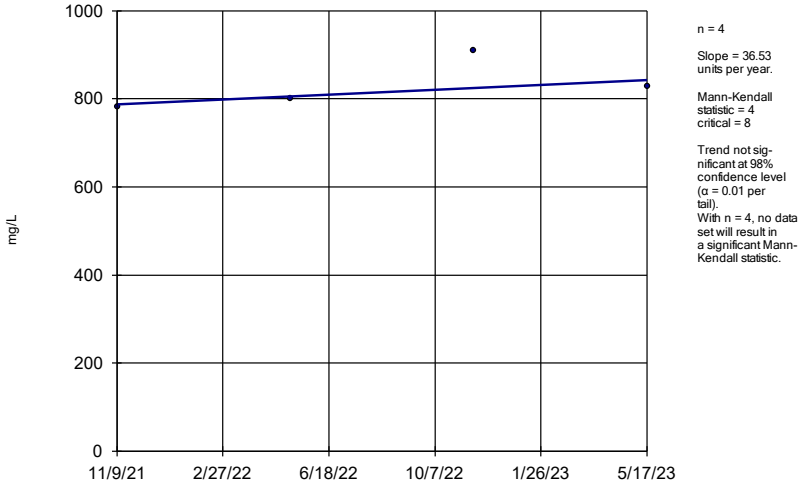
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-6A



n = 4

Slope = 36.53 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

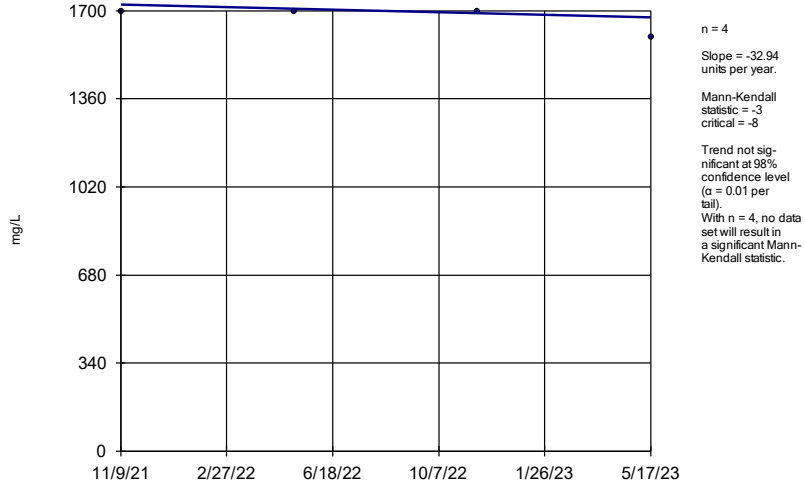
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Sulfate

MW-7 (bg)



n = 4

Slope = -32.94 units per year.

Mann-Kendall statistic = -3
critical = -8

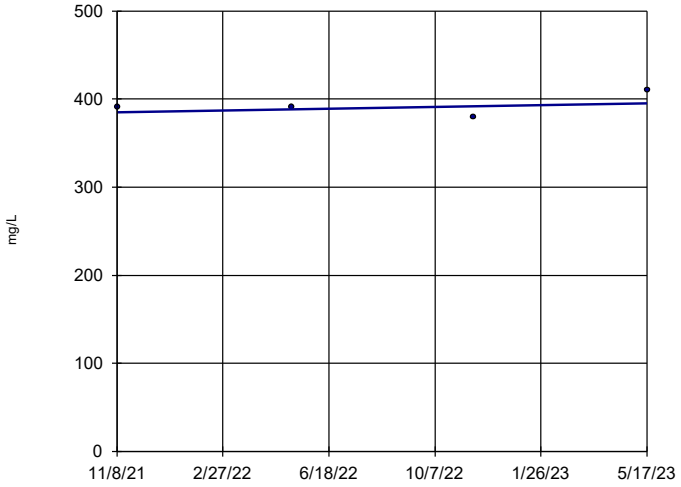
Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Total Dissolved Solids

MW-2 (bg)



n = 4

Slope = 6.577 units per year.

Mann-Kendall statistic = 1 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

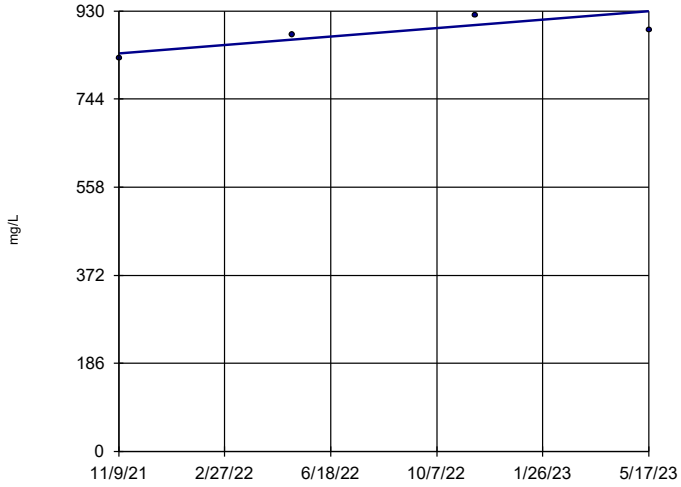
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-3 (bg)



n = 4

Slope = 58.19 units per year.

Mann-Kendall statistic = 4 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

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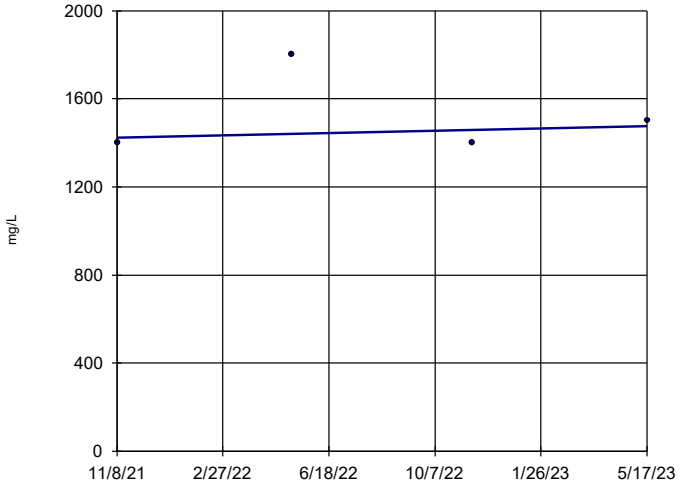
Total Dissolved Solids

MW-4



n = 4

Slope = 32.88 units per year.

Mann-Kendall statistic = 1 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

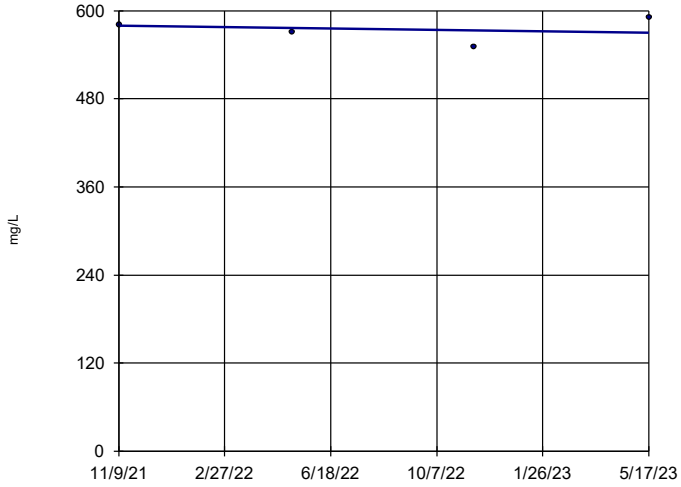
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-5



n = 4

Slope = -6.733 units per year.

Mann-Kendall statistic = 0 critical = 8

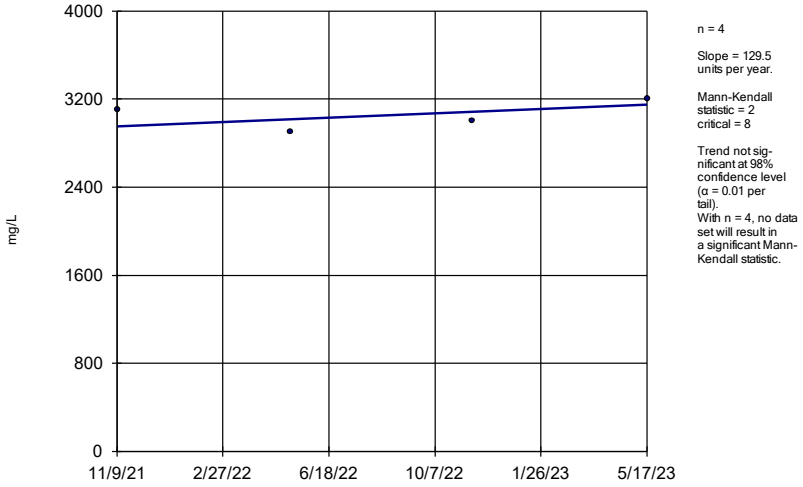
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Total Dissolved Solids

MW-5A



n = 4

Slope = 129.5 units per year.

Mann-Kendall statistic = 2 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

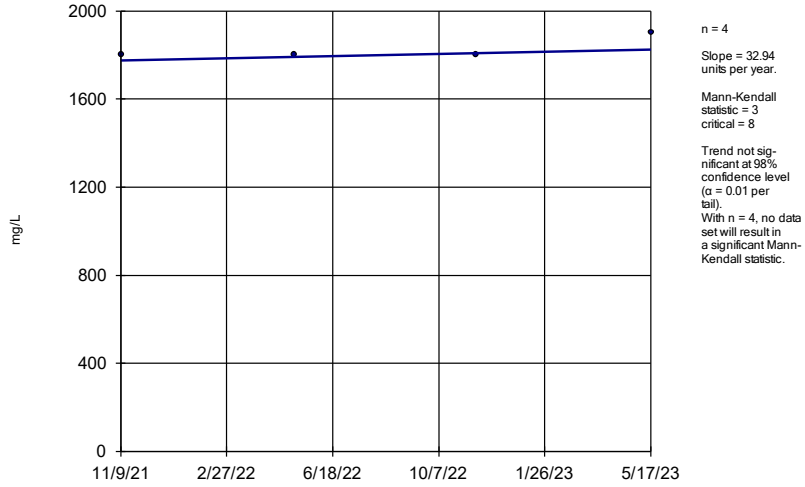
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-6



n = 4

Slope = 32.94 units per year.

Mann-Kendall statistic = 3 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

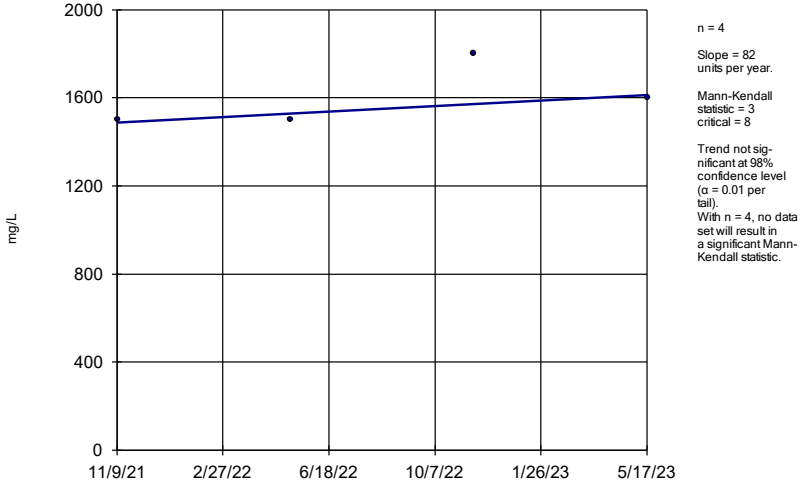
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-6A



n = 4

Slope = 82 units per year.

Mann-Kendall statistic = 3 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

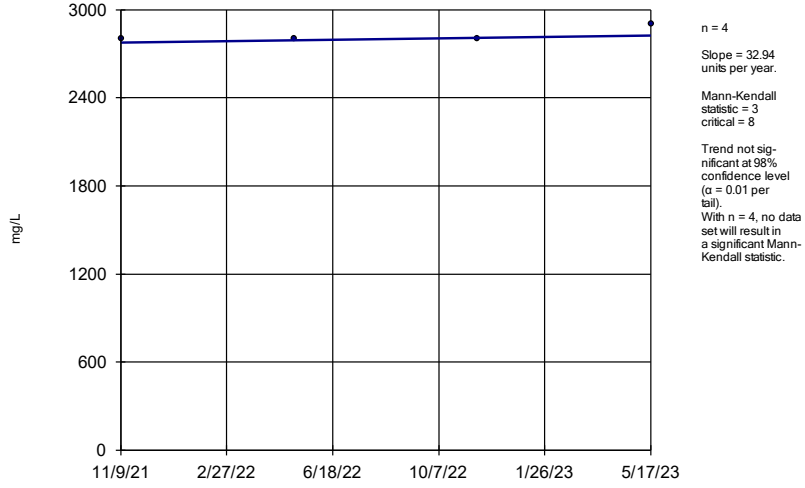
Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Total Dissolved Solids

MW-7 (bg)



n = 4

Slope = 32.94 units per year.

Mann-Kendall statistic = 3 critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Sen's Slope Estimator Analysis Run 1/24/2024 6:14 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Trend Test

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background Printed 1/24/2024, 6:14 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-2 (bg)	-0.05512	-4	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-3 (bg)	-0.00...	-1	-8	No	4	50	n/a	n/a	0.02	NP
Boron (mg/L)	MW-4	0	-1	-8	No	4	75	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5	-0.04215	-3	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5A	0.1662	4	8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6	0.000...	0	8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6A	-0.02937	-2	-8	No	4	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-7 (bg)	0.01647	3	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2 (bg)	-4.249	-5	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3 (bg)	4.227	2	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4	-6.577	-1	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	-6.399	-4	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5A	34.48	2	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	1.612	0	8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6A	-3.294	-1	-8	No	4	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7 (bg)	10.03	1	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2 (bg)	0	1	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3 (bg)	-7.62	-2	-8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4	1.1	2	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	-0.01625	0	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5A	32.49	4	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	0.9883	1	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6A	12.3	3	8	No	4	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7 (bg)	1.801	2	8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2 (bg)	-0.1575	-4	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3 (bg)	-0.01647	-3	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4	-0.00...	-1	-8	No	4	50	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	-0.01647	-1	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5A	-0.02335	-2	-8	No	4	25	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	-0.04699	0	8	No	4	25	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6A	-0.04114	-2	-8	No	4	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7 (bg)	0	0	8	No	4	100	n/a	n/a	0.02	NP
pH (SU)	MW-2 (bg)	-0.2009	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-3 (bg)	-0.06588	-1	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-4	0.2047	2	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-5	0.1561	4	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-5A	0.07157	2	8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-6	-0.06241	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-6A	-0.2771	-2	-8	No	4	0	n/a	n/a	0.02	NP
pH (SU)	MW-7 (bg)	0.04927	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2 (bg)	57.57	6	8	No	4	25	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3 (bg)	44.29	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4	-4.853	0	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	12.95	3	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5A	96.56	1	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	-168.2	-2	-8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6A	36.53	4	8	No	4	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7 (bg)	-32.94	-3	-8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2 (bg)	6.577	1	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-3 (bg)	58.19	4	8	No	4	0	n/a	n/a	0.02	NP

Trend Test

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background Printed 1/24/2024, 6:14 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Total Dissolved Solids (mg/L)	MW-4	32.88	1	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-6.733	0	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5A	129.5	2	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	32.94	3	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6A	82	3	8	No	4	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7 (bg)	32.94	3	8	No	4	0	n/a	n/a	0.02	NP

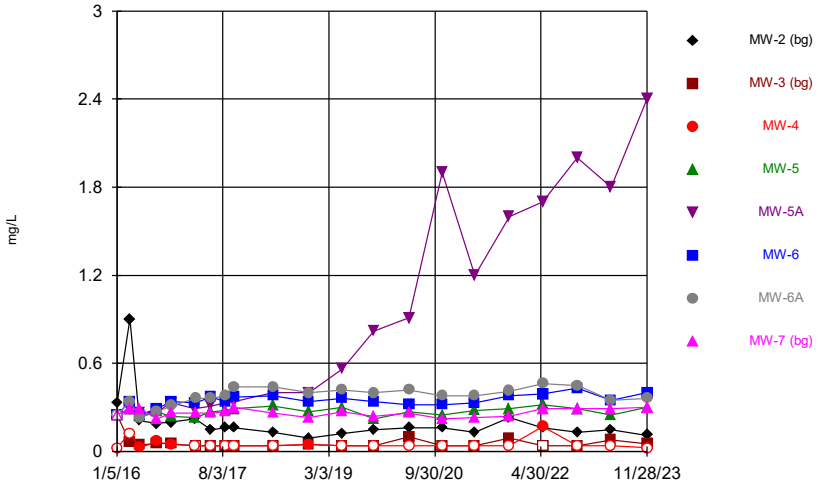
Midwest Environmental CONSULTANTS

Sanitas™ Output – Sampling Event

Time Series Analysis

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

Boron

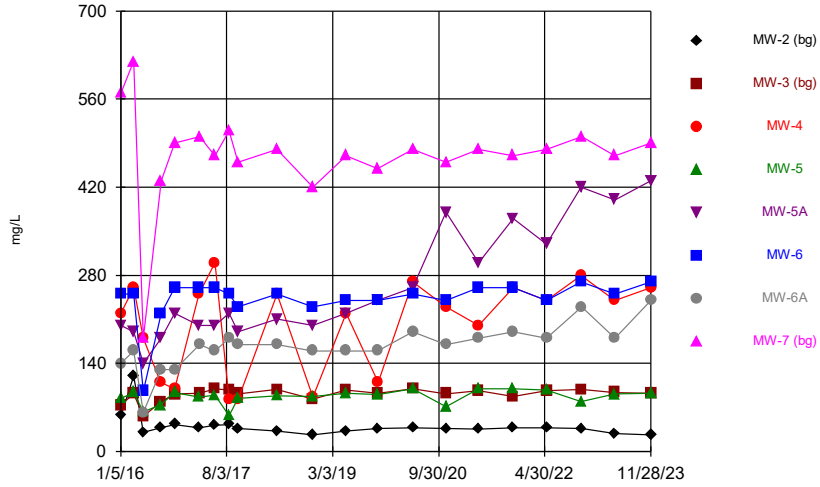


Time Series Analysis Run 1/24/2024 6:08 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Calcium

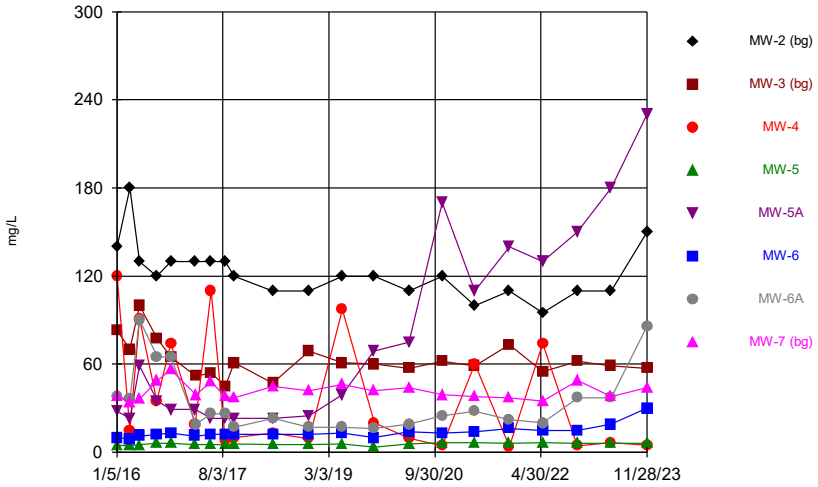


Time Series Analysis Run 1/24/2024 6:08 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG

Chloride

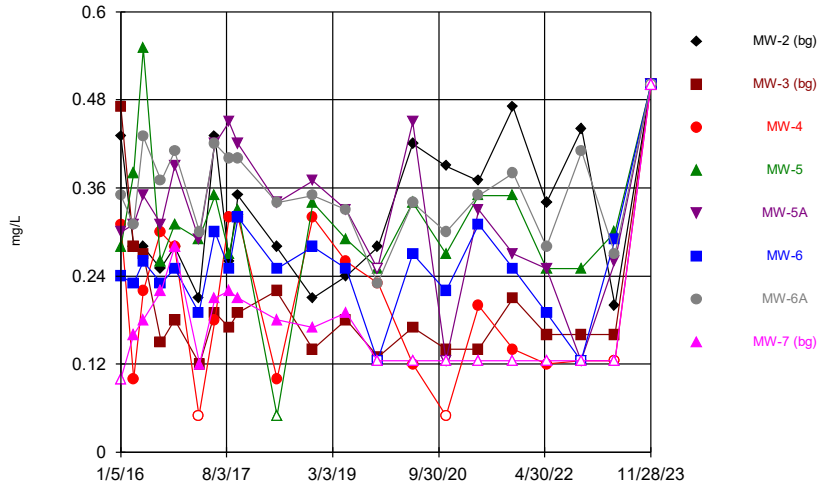


Time Series Analysis Run 1/24/2024 6:08 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ v.10.0.15 Sanitas software licensed to Midwest Environmental Consultants. UG
Hollow symbols indicate censored values.

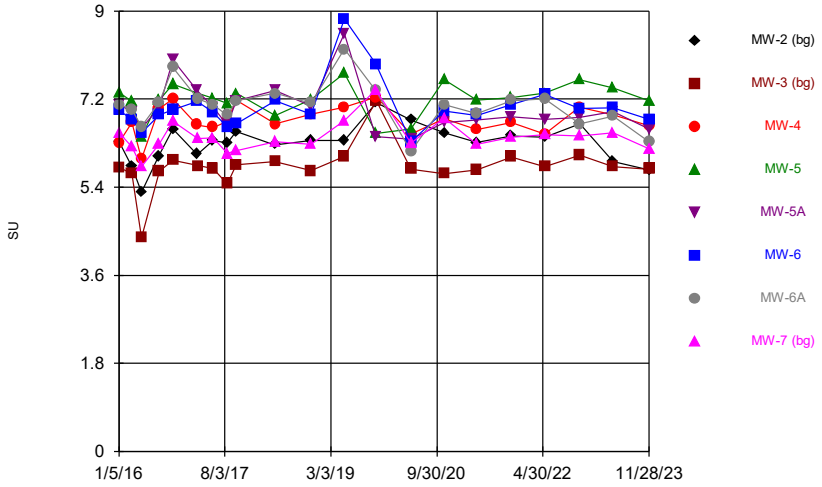
Fluoride



Time Series Analysis Run 1/24/2024 6:08 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

pH

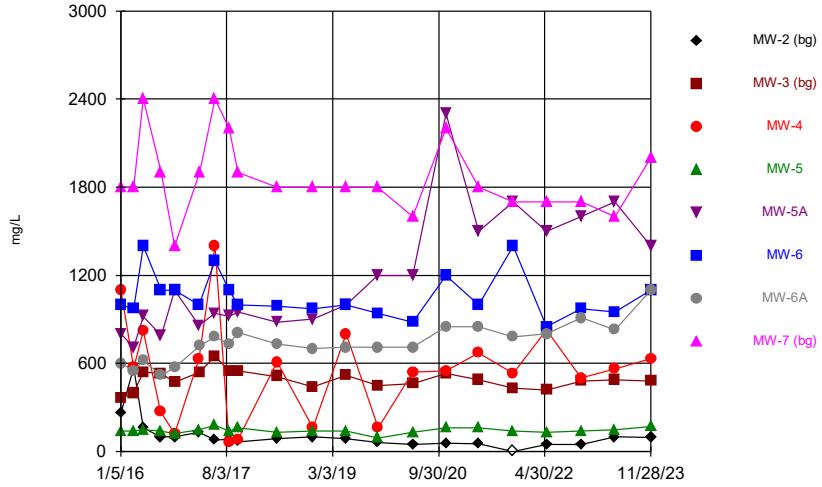


Time Series Analysis Run 1/24/2024 6:08 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Hollow symbols indicate censored values.

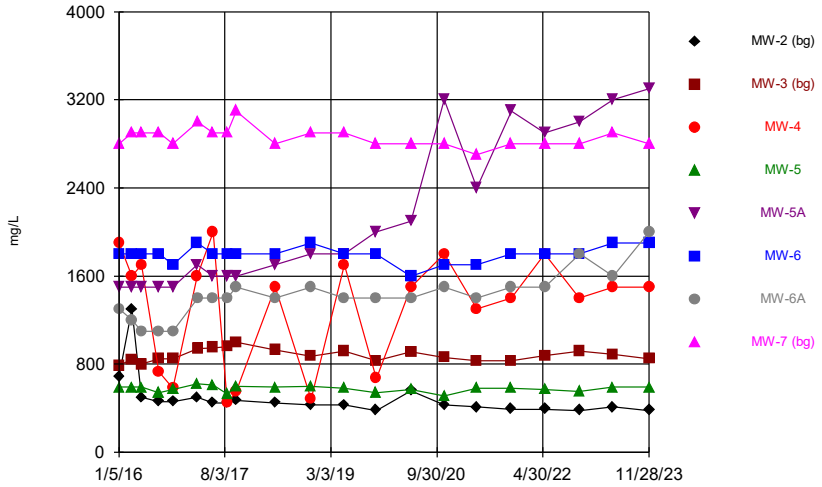
Sulfate



Time Series Analysis Run 1/24/2024 6:08 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Total Dissolved Solids



Time Series Analysis Run 1/24/2024 6:08 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Sanitas™ Output – Sampling Event

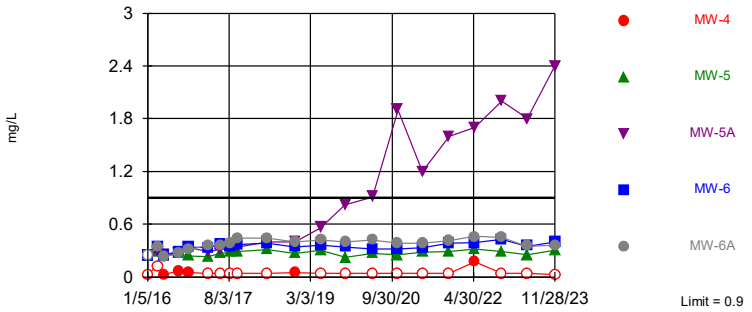
Prediction Limits

Hollow symbols indicate censored values.

Exceeds Limit: MW-5A

Boron

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 63 background values. 20.63% NDs. Annual per-constituent alpha = 0.002904. Individual comparison alpha = 0.0004845 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

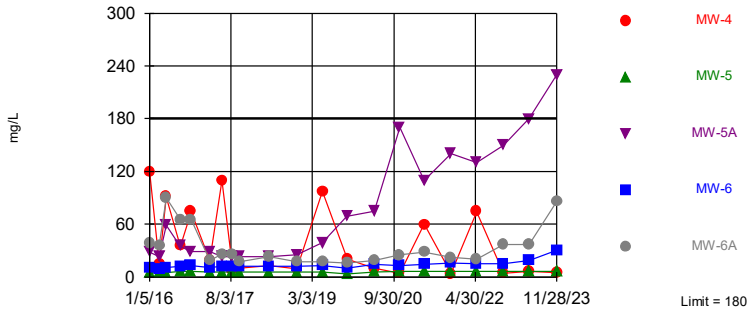
Prediction Limit Analysis Run 1/24/2024 6:17 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Exceeds Limit: MW-5A

Chloride

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 63 background values. Annual per-constituent alpha = 0.002904. Individual comparison alpha = 0.0004845 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

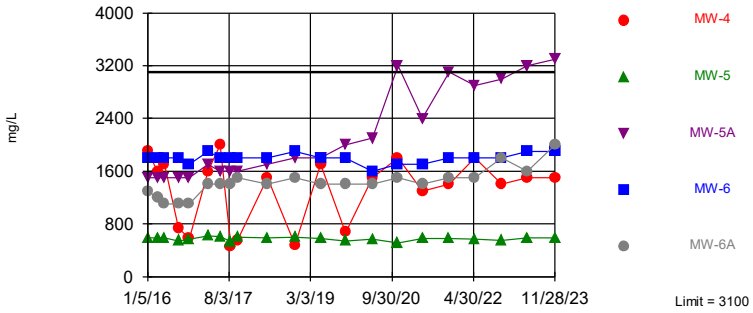
Prediction Limit Analysis Run 1/24/2024 6:17 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Exceeds Limit: MW-5A

Total Dissolved Solids

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 63 background values. Annual per-constituent alpha = 0.002904. Individual comparison alpha = 0.0004845 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 1/24/2024 6:17 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background

Prediction Limit

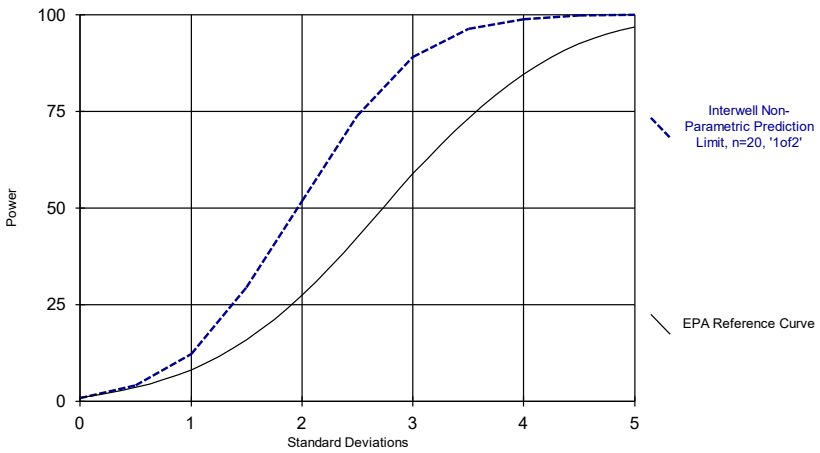
The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background Printed 1/24/2024, 6:25 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	MW-4	0.9	n/a	11/28/2023	0.025ND	No	63	20.63	n/a	0.000...	NP Inter (normality) ...
Boron (mg/L)	MW-5	0.9	n/a	11/28/2023	0.3	No	63	20.63	n/a	0.000...	NP Inter (normality) ...
Boron (mg/L)	**MW-5A**	**0.9**	**n/a**	**11/28/2023**	**2.4**	**Yes**	**63**	**20.63**	**n/a**	**0.000...**	**NP Inter (normality) ...**
Boron (mg/L)	MW-6	0.9	n/a	11/28/2023	0.4	No	63	20.63	n/a	0.000...	NP Inter (normality) ...
Boron (mg/L)	MW-6A	0.9	n/a	11/28/2023	0.36	No	63	20.63	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	MW-4	620	n/a	11/28/2023	260	No	63	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	MW-5	620	n/a	11/28/2023	93	No	63	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	MW-5A	620	n/a	11/28/2023	430	No	63	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	MW-6	620	n/a	11/28/2023	270	No	63	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	MW-6A	620	n/a	11/28/2023	240	No	63	0	n/a	0.000...	NP Inter (normality) ...
Chloride (mg/L)	MW-4	180	n/a	11/28/2023	4.6	No	63	0	n/a	0.000...	NP Inter (normality) ...
Chloride (mg/L)	MW-5	180	n/a	11/28/2023	6	No	63	0	n/a	0.000...	NP Inter (normality) ...
Chloride (mg/L)	**MW-5A**	**180**	**n/a**	**11/28/2023**	**230**	**Yes**	**63**	**0**	**n/a**	**0.000...**	**NP Inter (normality) ...**
Chloride (mg/L)	MW-6	180	n/a	11/28/2023	30	No	63	0	n/a	0.000...	NP Inter (normality) ...
Chloride (mg/L)	MW-6A	180	n/a	11/28/2023	86	No	63	0	n/a	0.000...	NP Inter (normality) ...
Fluoride (mg/L)	MW-4	0.4	n/a	11/28/2023	0.5ND	No	63	19.05	ln(x)	0.000...	Param Inter 1 of 2
Fluoride (mg/L)	MW-5	0.4	n/a	11/28/2023	0.5ND	No	63	19.05	ln(x)	0.000...	Param Inter 1 of 2
Fluoride (mg/L)	MW-5A	0.4	n/a	11/28/2023	0.5ND	No	63	19.05	ln(x)	0.000...	Param Inter 1 of 2
Fluoride (mg/L)	MW-6	0.4	n/a	11/28/2023	0.5ND	No	63	19.05	ln(x)	0.000...	Param Inter 1 of 2
Fluoride (mg/L)	MW-6A	0.4	n/a	11/28/2023	0.5ND	No	63	19.05	ln(x)	0.000...	Param Inter 1 of 2
pH (SU)	MW-4	7.39	4.37	11/28/2023	6.65	No	63	0	n/a	0.000969	NP Inter (normality) ...
pH (SU)	MW-5	7.39	4.37	11/28/2023	7.16	No	63	0	n/a	0.000969	NP Inter (normality) ...
pH (SU)	MW-5A	7.39	4.37	11/28/2023	6.59	No	63	0	n/a	0.000969	NP Inter (normality) ...
pH (SU)	MW-6	7.39	4.37	11/28/2023	6.79	No	63	0	n/a	0.000969	NP Inter (normality) ...
pH (SU)	MW-6A	7.39	4.37	11/28/2023	6.33	No	63	0	n/a	0.000969	NP Inter (normality) ...
Sulfate (mg/L)	MW-4	2400	n/a	11/28/2023	630	No	63	1.587	n/a	0.000...	NP Inter (normality) ...
Sulfate (mg/L)	MW-5	2400	n/a	11/28/2023	170	No	63	1.587	n/a	0.000...	NP Inter (normality) ...
Sulfate (mg/L)	MW-5A	2400	n/a	11/28/2023	1400	No	63	1.587	n/a	0.000...	NP Inter (normality) ...
Sulfate (mg/L)	MW-6	2400	n/a	11/28/2023	1100	No	63	1.587	n/a	0.000...	NP Inter (normality) ...
Sulfate (mg/L)	MW-6A	2400	n/a	11/28/2023	1100	No	63	1.587	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	MW-4	3100	n/a	11/28/2023	1500	No	63	0	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	MW-5	3100	n/a	11/28/2023	590	No	63	0	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	**MW-5A**	**3100**	**n/a**	**11/28/2023**	**3300**	**Yes**	**63**	**0**	**n/a**	**0.000...**	**NP Inter (normality) ...**
Total Dissolved Solids (mg/L)	MW-6	3100	n/a	11/28/2023	1900	No	63	0	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	MW-6A	3100	n/a	11/28/2023	2000	No	63	0	n/a	0.000...	NP Inter (normality) ...

Sanitas™ Output – Sampling Event

Power Curve

Power Curve



This report reflects annual total based on two evaluations per year.

Analysis Run 1/24/2024 6:29 PM

The Empire District Client: Midwest Environmental Consultants Data: 11-23 App 3 Asbury ponds with background