

March 8, 2022

Project No. GL21461064

Kent Walters

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Michigan Department of Environment Great Lakes and Energy
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FOURTH QUARTER 2021 MONITORING REPORT, FORMER JB SIMS GENERATING STATION, UNIT 3 A&B IMPOUNDMENTS – REPSponse TO COMMENTS

Dear Mr. Walters,

Golder Associates USA Inc. a member of WSP USA, Inc. (Golder) is providing this letter to the Michigan Department of Environment, Great Lakes and Energy (EGLE) as a response to the February 16, 2022 emailed comments provided to Golder by EGLE on the Fourth Quarter 2021 Monitoring Report, Former JB Sims Generating Station, Unit 3 A&B Impoundments (dated January 25, 2022).

Golder has provided EGLE's comments below **in bold**, with responses directly below the comment. The revised Fourth Quarter 2021 Monitoring Report for the Former JB Sims Generating Station, Unit 3 A&B Impoundments as well as the Fourth Quarter 2021 Monitoring Report for the Former JB Sims Generating Station Inactive 1&2 Impoundment and 2021 Annual Groundwater Monitoring & Corrective Action Report for the Former JB Sims Generating Station are attached.

Response to comments from email dated February 16, 2022:

Comment 1 - The report states that stilling wells and staff gauges were not used in the generation of groundwater contours and each of the four groundwater contour maps in the report indicate staff gauges were not included in the evaluation of groundwater contours. After review of the diagrams, it appears some staff gauges were used in developing the groundwater contours. Can you clarify and confirm which maps were generated with staff gauges/stilling wells (if any)?

Response:

Stilling wells were used for the contouring when they were measured. On October 25, 2021 they were not measured as noted in Table 2 of the Fourth Quarter 2021 Monitoring Report.

Staff gauges were not used to generate contour maps. As noted below, some staff gauges were not measured because they are either damaged or the water level was below the measuring post. In EGLE's request to add stilling wells to the work plan (email from EGLE dated June 3, 2021), EGLE's opinion concluded that staff gauges may not be reliable in large bodies of water. Therefore, as noted in the annual report, it is recommended to remove the staff gauges from future gauging activities.

Comment 2 - The report indicates some staff gauges were damaged. Are there plans to repair the gauges to be used for future sampling events?

Response:

There is no current plan to replace staff gauges. As noted in comment 1, it is recommended to discontinue the use of staff gauges because the data being received may be not reliable.

Comment 3 - Some of the generated contour lines appear to be inaccurate. For example, on the October 1, 2021 map at PZ-12 the groundwater elevation is listed as 581.5 however the 581.2 contour line directly bisects this point.

Response:

Based on EGLE's comment, Golder suggests the following edits:

Figure 3 – MW-20 label should be removed as this is not an installed location. PZ-12 should be 581.20 as noted on Table 2, in addition, SG-02 should be 581.99 as noted on Table 2. The staff gauges were the only locations not used for contouring.

Figure 4 – MW-20 label should be removed as this is not an installed location. Six piezometers, all staff gauges and all stilling wells were not measured as noted in the text of the Fourth Quarter 2021 Monitoring Report with a letter included in Appendix B. Trace could not locate the field forms. Therefore, these locations are not part of the contour maps.

Figure 5 – MW-20 label should be removed as this is not an installed location. Based on the review of the data from Table 2 the following information was added to Figure 5 for the following locations

- SG-01 = not measured (NM)
- SG-02 = 581.93 (but not used to generate contour)
- SG-03 = 581.65 (but not used to generate contour)
- SG-04R = 581.56 (but not used to generate contour)
- SG-05 = NM
- SG-06 = NM
- STW-01 = 580.20 (no contour changes were needed when adding this measurement to the map)
- STW-02 = 580.12 (adding this measurement it is noted that the contour line for 580.25 is now around MW-07 on the eastern side)
- STW-03 = 580.24 (adding this measurement it is noted that the 580.50 and 580.25 lines along the Grand River's edge shifted slightly)

With the edits noted above there are resulting minor shifts for the contour lines, but this does not alter the general presentation of groundwater flow.

Figure 6 – MW-01R is missing the groundwater elevation (582.09). The stilling wells are not identified on the map, however, no changes to the contour map are required since they were evaluated when drawing the contour lines. The elevations from Table 2 are provided below.

- STW-01 = 580.53
- STW-02 = 580.17
- STW-03 = 580.29

Golder has provided updated figures for the previously submitted quarterly reports and annual report and the complete revised reports are attached.

Comment 4 - On the November 23, 2021 map some of the stilling wells, staff gauges and piezometers have measurements of 0.00, I assume this is meant to indicate it was not measured, and doesn't actually mean 0.00 was recorded at this location? Please clarify.

Response:

The 0.00 notation is a default for AutoCAD when there is no measurement added to the AutoCAD surface file, however this did not affect the contouring. Suggested edits are identified above in the response to comment 3.

We trust that this additional information addresses the comments provided by EGLE on February 16, 2022. Please contact the City of Grand Haven team if you have further questions.

Sincerely,

Golder Associates Inc.



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Lead Consultant



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Director

CC: Lara Zawaideh, P.E. – HDR, Inc.
Molly Reeves, C.P.G. – HDR, Inc.
Derek Gajdos – City of Grand Haven
Erik Booth, P.E. - GHBLP

Attachments: Revised Fourth Quarter 2021 Monitoring Report, Former JB Sims Generating Station, Unit 3 A&B Impoundments (revision dated March 8, 2022)

Revised Fourth Quarter 2021 Monitoring Report, Former JB Sims Generating Station, Inactive 1/2 Impoundment (revision dated March 8, 2022)

Revised 2021 Annual Groundwater Monitoring & Corrective Action Report, Former JB Sims Generating Station (revision dated March 8, 2022)

[https://golderassociates.sharepoint.com/sites/149932/project files/7 correspondence/response to egle - 2021 gw reports 3-8-22.docx](https://golderassociates.sharepoint.com/sites/149932/project%20files/7%20correspondence/response%20to%20egle%20-%202021%20gw%20reports%203-8-22.docx)

APPENDIX A

**Revised Fourth Quarter 2021
Monitoring Report, Former JB Sims
Generating Station, Unit 3 A&B
Impoundments**



REPORT

Fourth Quarter 2021 Monitoring Report

*Former JB Sims Generating Station
Unit 3 A&B Impoundments*

Submitted to:

Grand Haven Board of Light and Power

1700 Eaton Drive
Grand Haven, Michigan

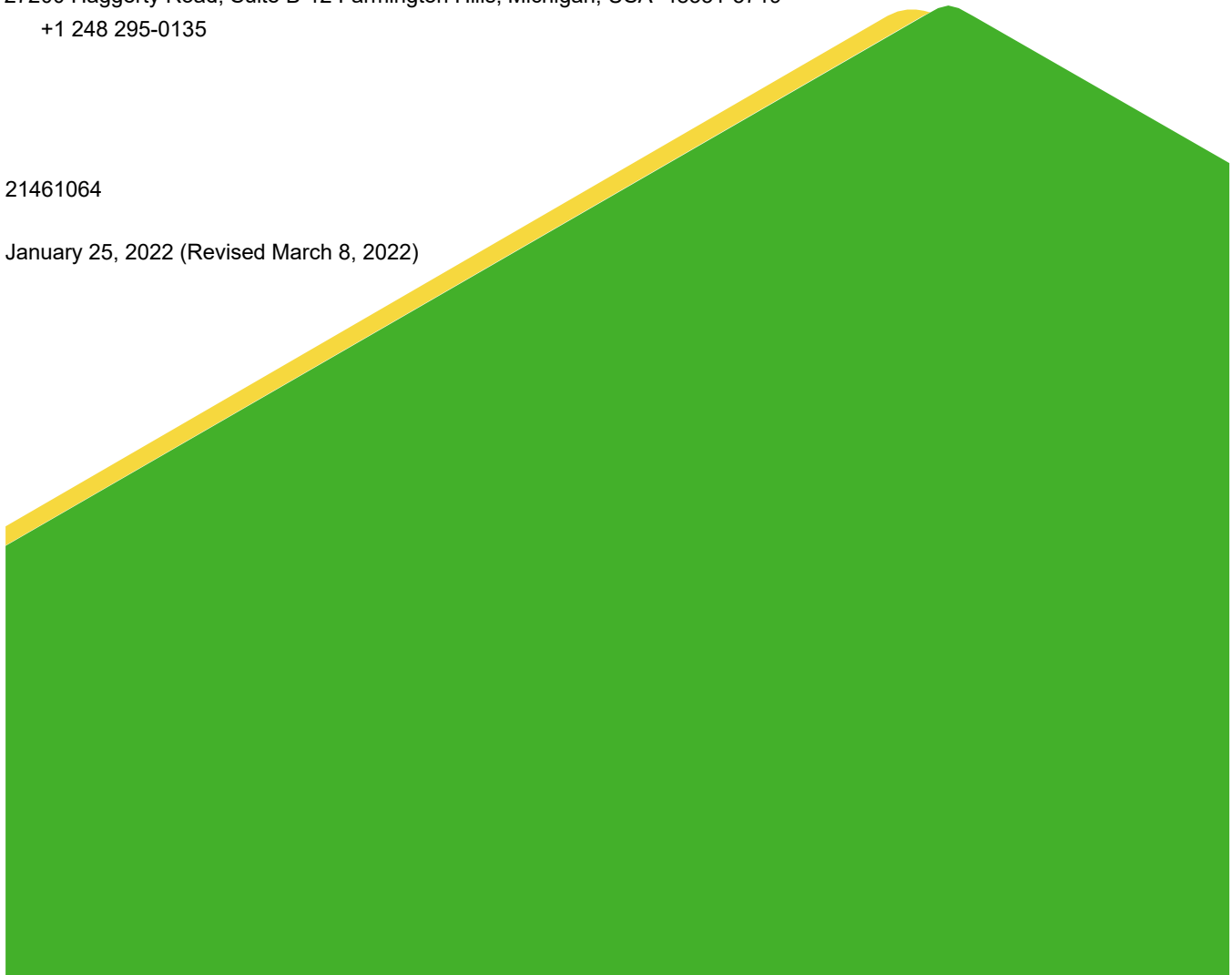
Submitted by:

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21461064

January 25, 2022 (Revised March 8, 2022)



Distribution List

Grand Haven Board of Light and Power

Michigan Department of Environment, Great Lakes, and Energy

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FIGURE 6

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Statistical Summary

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Laboratory Reports and Field Forms

1.0 INTRODUCTION

Grand Haven Board of Light and Power (GHBLP) began groundwater monitoring at the former JB Sims Generating Station (JB Sims, Site) in 2017 with the implementation of United States Environmental Protection Agency (USEPA) coal combustion residual (CCR) rule (40 Code of Federal Regulations [CFR] 257 Subpart D; published in 80 FR 21302-21501, April 17, 2015) for CCR Units.

On December 28, 2018, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (Michigan Part 115 Solid Waste Rules, Part 115 amendment).

The CCR units at JB Sims as defined by the Federal CCR Rule includes:

- Inactive Units 1/2 surface impoundment (Inactive 1/2 Impoundment)
 - Unlined surface impoundment
 - Ceased receiving CCR materials in 2012
 - Monitored following the Federal CCR Rule, not included in this monitoring report
- Former Unit 3A and 3B surface impoundments (Former 3A/B Impoundments)
 - Two engineered and clay lined surface impoundments
 - Ceased receiving CCR material in July 2020
 - CCR material was removed from within the surface impoundments in 2020
 - Monitored following the Federal CCR Rule and PA 640 Part 115 amendment
 - Quarterly interim statistical evaluation included in this monitoring report in accordance with PA 640 Part 115 amendment

In accordance with PA 640 Part 115 amendment, this *Fourth Quarter 2021 Monitoring Report* has been prepared to document groundwater monitoring activities conducted for only the former 3A/B Impoundments at JB Sims, the groundwater monitoring activities for the Inactive 1/2 Impoundment is included in a separate report submittal. Further discussions regarding the monitoring well networks for both inactive 1/2 Impoundment and former 3A/B impoundments is ongoing. Specifically, piezometers and stilling wells were recently installed and a *Field Summary Report* with recommendations for background groundwater data is forth coming. As such, statistical analysis results may change significantly based on a revised monitoring well network.

As described above, the detection monitoring well network is currently being evaluated, alternate/additional background monitoring wells are being considered, and statistical results are expected to change. Therefore, the purpose of this report is to comply with Rule 907(11) and Rule 908(6) and monitoring well MW-07 was used as an interim background well until a better understanding of the groundwater flow can be established.

1.1 Site Description and Background

The Site is located on the southwestern portion of Harbor Island in Grand Haven, Michigan, and is operated by GHBLP. JB Sims is situated on west end of Harbor Island with the Grand River and South Channel of the Grand River surrounding the island, which flows westerly toward Lake Michigan, approximately one mile west of the Site. Figure 1, Site Location Map, depicts the location of the Site relative to the surrounding area.

The Site is a former coal-fired power generation facility which ceased operations in February 2020. The inactive 1/2 Impoundment ceased receiving CCR materials in 2012. The coal-fired power generation facility ceased operations in February 2020 and ceased accepting CCR materials in the now former 3A/B Impoundments in July

2020. Figure 2, Site Plan depicts the general configuration of the former and inactive CCR surface impoundments and site monitoring wells.

1.2 Geologic and Hydrogeologic Setting

As described in the *Groundwater Monitoring System Certification* (ERM, 2017), the Site is located in an area of glacial drift (consisting of fine to medium sand with occasional beds of gravel) which is underlain by Marshall Sandstone. The glacial drift is between 100 to 200 feet thick in the area.

The former 3A/B Impoundments were engineered clay lined aboveground CCR units built over ash used as structural fill from Units 1 & 2. The unlined Units 1 & 2 impoundment were formed from sluicing ash to low lying areas on the Site in the 1960's and part of the 1970's. The Site was also previously used as the city dump. Materials documented from the former dump consist of a layer of mixed debris which includes glass, wood, plastic, ceramic, concrete, hides, brick and metal within a matrix of dark-grey to black, fine grained sand. The extent of the historic trash dump is detailed in *Coal Ash Delineation Sampling Results, Grand Haven Board of Light & Power, Grand Haven, Michigan* (ERM, 2016).

Portions of Harbor Island were developed by creating land with the use of unconsolidated fill, beneficial use of historical ash fill, and solid waste. Specifically, borings consist of a mixture of unconsolidated fine sand fill with intervals of silt and sand, historical ash fill, and municipal solid waste within the first 20 feet below ground surface (bgs). The fine sand fill was underlain by silt and clay to the bottom of each boring. The silt and clay represent the confining unit beneath the CCR units.

Groundwater was encountered between 5 and 15 feet bgs within the unconsolidated fill material, which consists of fine sand, ash, and municipal solid waste, located above a silt and clay unit. As described in the *Groundwater Monitoring System Certification* (ERM, 2017), sand in the uppermost aquifer assumes an effective porosity of 30 percent (%) and consists of poorly-graded fine sand with an estimated hydraulic conductivity of 27 feet per day and well-graded fine sand with an estimated hydraulic conductivity of 53 feet per day. Golder conducted site aquifer performance testing in September of 2021. The results of the aquifer performance testing provide additional data for updating the hydraulic conductivity. The recently calculated hydraulic conductivity for the Site is an average range of 0.19 feet per day to 242 feet per day. This wide range of variability is the result of the varying fill materials that form Harbor Island. In addition, a calculated hydraulic conductivity for the piezometers located on the eastern side of the wetland is an average 8.34 feet per day. A field summary report including the aquifer performance testing will be submitted under separate cover and is forth coming.

1.3 Groundwater Monitoring Well Network

The original monitoring well network was developed in 2017 for the former 3A/B Impoundments, which consisted of 4 monitoring wells [1 upgradient (MW-01R) and 3 downgradient monitoring wells (MW-02, MW-03, and MW-04)]. It was later determined that in accordance with the Federal CCR Rule, Inactive 1/2 Impoundment is subject to the groundwater monitoring and corrective action requirements and four additional monitoring wells were installed (MW-05 through MW-08). Based on correspondence with EGLE, two additional monitoring wells were installed in 2019 (MW-09 and MW-10). As a result, two groundwater monitoring networks are installed to monitor groundwater passing the CCR unit boundary of the inactive and former surface impoundments within the uppermost aquifer. The current groundwater monitoring well networks for the former 3A/B Impoundments as well as the inactive 1/2 Impoundment is included on Table 1, Summary of Locations. Only the groundwater monitoring well network for the former 3A/B Impoundments is discussed within this report.

The current groundwater monitoring well network for the former 3A/B impoundments includes the following monitoring wells:

- Interim background well: MW-07
 - MW-07 is currently identified as outside the flow path of the Unit 3 impoundments. However, with the revised Inactive 1/2 Impoundment boundary agreed to by EPA/EGLE/GHBLP/Golder in January 2021, monitoring well MW-07 may be influenced by the Inactive 1/2 Impoundment. As such EGLE has indicated that this well cannot be utilized as background for statistical evaluation of Unit 3. Since EPA agreed that this well can be used to evaluate data from the Unit 3 monitoring system, it remains as the interim background well for statistical evaluations.
 - Statistical analyses presented in this report utilize data from MW-07 as the interim background data set for interwell comparisons until the groundwater flow is further refined and additional/alternate background monitoring wells are established.
 - An additional 22 site piezometers were installed at the site in August/September 2021 based on the workplan approved by EGLE and EPA on June 22, 2021. Additional piezometers are expected to provide sufficient data to establish a site wide flow direction that will allow for EGLE to approve an alternate detection monitoring well network.
- Detection Monitoring Wells: MW-01R, MW-02, MW-03, and MW-04
- Assessment Monitoring Well: MW-09
 - Additional assessment monitoring wells may be added to the corrective action monitoring program but cannot be established until a detection monitoring well network is defined and statistical analyses completed.

Figure 2 depicts the current monitoring well network for the former 3A/B Impoundments as well as the network wells for the inactive Units 1 & 2 impoundment and additional site piezometers and stilling wells.

2.0 GROUNDWATER MONITORING ACTIVITIES

In accordance with PA 640 Part 115 amendment, the following describes the monitoring-related activities performed during the fourth quarter 2021 monitoring period and presents the status of the monitoring program. Samples were collected from each monitoring well in the current groundwater monitoring network for the former 3A/B impoundments.

As described in Part 115 Rule 907 (11), the data collected from each monitoring well must be submitted to EGLE within 30 days of the end of the calendar quarter in which sampling and analysis was conducted. As stated in the introduction, the statistical analysis provided in this report (as Appendix A – Statistical Summary) should be considered preliminary as the monitoring network is under evaluation.

2.1 Sample Methodology and Analysis

Groundwater analytical data, field sampling forms, and chain of custody records from this fourth quarter 2021 monitoring event are presented in Appendix B, Laboratory Reports and Field Forms. Although the laboratory report includes the analytical results for both the Inactive 1/2 Impoundment and the Former 3A/B Impoundments, only the results for monitoring wells associated with the Former 3A/B Impoundments were statistically evaluated (MW-1R, MW-2, MW-3, MW-4, MW-7, and MW-9) as part of this *Fourth Quarter 2021 Monitoring Report*.

2.2 Groundwater Elevation Measurements

Prior to sampling, groundwater elevations were recorded October 25, 2021 from each monitoring well and select piezometers. Trace misplaced the field forms for the water level measurements from PZ-11, PZ-12, PZ-21, PZ-

22, PZ-29, and PZ-30, all staff gauges and all stilling wells. As a result, these elevations are notably absent from the groundwater contour map for October 25, 2021. Three additional gauging events were conducted during the fourth quarter monitoring period on October 1, 2021, November 23, 2021, and December 17, 2021.

During the three additional gauging events water levels were only collected from two or three of the six staff gauges. Lack of measurements from the staff gauges were due to damaged staff gauge (SG-03, SG-05, and SG-06) or water level below the staff gauge (SG-01). With the recent installation of piezometers and stilling wells, measurements from staff gauges were evaluated and deemed inappropriate for use in generating groundwater contour maps given the level of uncertainty in the data with recent documentation of influence from freeze and thaw conditions, damaged staff gauges, and water level fluctuation near the staff gauge.

Groundwater elevations for each of water level events for the fourth quarter 2021 monitoring period are summarized in Table 2, Groundwater Elevation Summary. The elevation data were used to develop potentiometric surface elevation contour maps (Figure 3, Groundwater Contour Map, October 1, 2021, Figure 4, Groundwater Contour Map, October 25, 2021 (Fourth Quarter Monitoring Event), Figure 5, Groundwater Contour Map, November 23, 2021, and Figure 6, Groundwater Contour Map, December 17, 2021).

Groundwater flow across the island is influenced by the elevation of the Grand River and the south channel. Localized flow is radially inward when river levels are high and radially outward when river level are low. Localized flow direction and gradients across the Site property are also influenced by precipitation and surface infiltration, particularly in wetland areas. The fill material that has historically been placed on the island is variable across the site in both thickness and permeability resulting in variably infiltration rates from precipitation. As a result, the surface water feature within the boundary of the inactive 1/2 Impoundment will have a faster infiltration rate than other areas of the island causing a mounding effect. In the area surrounding the inactive 1/2 Impoundment, the groundwater flow direction shifts from a radial outward to radial inward depending on precipitation. Overall, the regional general direction of groundwater flow across the Harbor Island is west to southwest towards Lake Michigan.

2.3 Groundwater Gradient and Flow Velocity

Groundwater flow rates at the site have been calculated based on hydraulic gradients, hydraulic conductivity, and an estimated effective porosity of the screened horizon as provided in the *Groundwater Monitoring System Certification* (ERM, 2017). Based on the information provided by ERM, hydraulic conductivity ranges from 27 to 53 feet per day with an assumed effective porosity of 30 percent. As described above, the recently calculated hydraulic conductivity for the Site is an average range of 0.19 feet per day to 242 feet per day and is highly dependent on the fill materials at each location. This wide range of variability is the result of the varying fill materials that form Harbor Island. In addition, a calculated hydraulic conductivity for the piezometers located on the eastern side of the wetland is an average 8.34 feet per day.

Horizontal flow velocity was calculated using the commonly-used derivative of Darcy's Law:

Specifically,

$$V = \frac{K * i}{n_e}$$

V = Groundwater flow velocity
 K = Average Permeability of the aquifer
 i = Horizontal hydraulic gradient
 Ne = Effective porosity

Using this equation, groundwater flow velocities were calculated for the site from three well pairs (MW-01R/MW-03, MW-01R/PZ-13, and MW-01R/PZ-18). Groundwater flow velocity at the site ranges from 0.3 to 1,200 feet per

year around the mounding observed around the substation. In addition, groundwater flow velocities were calculated from three well pairs (PZ-12/PZ-27, PZ-27/PZ-25, and PZ-27/PZ-26) on the eastside of the wetland. Groundwater flow velocity at the site ranges from 0.01 to 7 feet per year on the eastside of the wetland.

The calculated flow velocities are best estimates based on field data and default data for soils, and therefore, these velocities should not be taken as absolute values, but rather as estimated values that may vary with future data collected at the site. The field summary report will include the detailed aquifer performance testing. An updated Hydrogeologic Monitoring Plan (HMP) and Groundwater Monitoring System Certification will be submitted following the collection of background groundwater quality data from the proposed detection monitoring locations.

2.4 Groundwater Sampling

Groundwater samples were collected in accordance with the PA 640 Part 115 amendment. Monitoring wells were purged and sampled using a peristaltic pump following low-flow sampling procedures. A multi parameter meter was used to monitor field parameters, namely: pH, temperature, conductivity, dissolved oxygen (DO), and oxidation-reduction potential (ORP), during well purging to verify stabilization prior to sampling. Turbidity is also recorded during purging using a field meter to verify stabilization. Groundwater samples were collected when the following general stabilization criteria were met:

- 0.2 standard units for pH
- 5% for specific conductance
- 0.2 milligrams per liter (mg/L) or 10% for DO > 0.5 mg/L (whichever is greater)
- Turbidity measurements less than 5 Nephelometric Turbidity Units (NTU)

Any deviation from stabilization criteria, if applicable, is identified on field sampling forms. Following well stabilization, unfiltered samples were collected directly into appropriately preserved laboratory supplied sample containers, placed in iced coolers, and submitted to the laboratory following standard chain-of-custody protocol. Field information forms as well as chain-of-custody records are included in Appendix B.

2.5 Laboratory Analyses

Groundwater samples collected for each monitoring well included both detection and assessment monitoring constituents pursuant to the PA 640 Part 115 amendment. Laboratory analyses were performed by Trace in Muskegon, Michigan with the radium laboratory analysis subcontracted to Eurofins, Eaton Analytical (Eurofins) in South Bend, Indiana. Analytical methods used for groundwater sample analysis are listed on the analytical laboratory reports included in Appendix B.

3.0 ANALYTICAL RESULTS AND STATISTICAL ANALYSES

Statistical analysis of detection and assessment monitoring constituents was performed on samples collected from the current groundwater monitoring network pursuant to the PA 640 Part 115 Amendment and following the appropriate certified statistical methodology.

As described in Part 115 Rule 908 (6), statistical analysis at each monitoring well must be completed and submitted to EGLE within 30 days of the end of the calendar quarter in which sampling and analysis was conducted. As stated in the Introduction, this statistical analysis is a preliminary evaluation since a revised detection monitoring well network is still being established. A separate field summary report with a list of proposed new detection monitoring locations as well as a proposed sampling frequency for background groundwater quality data collection is forth coming.

The statistical methodology used for the Site was developed in accordance with the PA 640 Part 115 Amendment using methods presented in *Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance*, March 2009, EPA 530/R-09-007 (USEPA, 2009).

3.1 Statistical Methodology

The Sanitas™ groundwater statistical software was used to perform the statistical analyses on detection and assessment monitoring constituents during the fourth quarter 2021 monitoring period. Sanitas™ is a decision support software package that incorporates the statistical tests required of Subtitle C and D facilities by USEPA regulations.

The following table provides a summary of the statistical methodology used for the former 3A/B impoundments groundwater monitoring.

STATISTICAL METHODOLOGY SUMMARY		
Former 3A/B Impoundments Monitoring Well Network	Background Wells	MW-07 (interim background location)
	Detection Monitoring Wells	MW-01R, MW-02, MW-03, and MW-04 (pending further evaluation)
	Assessment Monitoring Wells	MW-09 (pending further evaluation)
CCR Monitoring Constituents	Detection Monitoring (PA 640 Sec. 11511a(3)(c))	Boron, Calcium, Chloride, Fluoride, Iron, pH, Sulfate, and TDS
	Assessment Monitoring (PA 640 Sec. 11519b(2) plus above listed Detection Monitoring)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, combined Radium 226 + 228, Fluoride, Lead, Lithium, Nickel, Mercury, Molybdenum, Selenium, Silver, Thallium, Vanadium, and Zinc
Statistical Methodology	Data Screening on Proposed Background	Evaluate outliers, trends, and seasonality when sufficient data are available
	Statistical Limits	Interwell statistical limits will be applied on a constituent basis, depending on the appropriateness of the method as determined by the Analysis of Variance
	Confidence Intervals	Used in Assessment and Corrective Action monitoring.
	No Statistical Testing	Statistical testing is not required for constituents with 100% non-detects.
Statistical Methodology - continued	Verification Resample Plan (Optional)	<p>1-of-2 with minimum of 8 samples per well for interwell testing.</p> <ul style="list-style-type: none"> ▪ Initial statistical exceedance warrants independent resampling within 90 days. ▪ If resample passes, well/constituents is not a confirmed SSL. ▪ If resample exceeds, well/constituents has a confirmed SSL. <p>If no resample is collected, the original result is deemed verified.</p>

3.1.1 Detection Monitoring

Groundwater quality data was evaluated through use of interwell prediction limits for detection monitoring constituents. The Interwell Prediction Limit Plots are presented in Appendix A-1, Interwell Prediction Limits and Tolerance Limit Plots. Using these methods, upgradient well data was pooled to establish a background

statistical limit. Data are compared to the statistical limit to determine whether any concentrations exceed background levels. The selected statistical methodology uses an optional 1-of-2 verification resample plan. When an initial statistically significant increase (SSI) or questionable result occurs, a second sample may be collected to verify the initial result or determine if the result was an outlier.

If resampling is performed and the initial finding is not verified by resampling, the resampled value will replace the initial finding. When the resample confirms the initial finding, both values remain in the database and an SSI is declared.

The following guidance is also applicable to the statistical analysis methods:

- Statistical analyses are not performed on analytes containing 100% non-detects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain less than or equal to 15% non-detects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for non-detects is the practical quantitation limit (PQL) as reported by the laboratory.
- When data contain between 15-50% non-detects, a non-detect adjustment such as the Kaplan-Meier or Regression on Order Statistics (ROS) method for adjustment of the mean and standard deviation will be used prior to constructing a parametric prediction limit.
- Nonparametric prediction limits are used on data containing greater than 50% non-detects.

3.1.2 Assessment Monitoring

Following the above statistical methodology, groundwater protection standards (GWPS) have been established for statistical comparison of assessment monitoring constituents. Parametric tolerance limits were used to calculate background limits from pooled upgradient well data for assessment monitoring constituents with a target of 95% confidence and 95% coverage to determine the site-specific background level. The interwell tolerance limit plots are presented in Appendix A-1. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. These limits were used to identify the GWPS established under Rule 441(9).

As described in Rule 441, the GWPS is:

- The lower of the following
 - The maximum contaminant level (MCL) established under 40 CFR § 141.62 and § 141.66 of this title;
 - Where an MCL has not been established, background concentration for the constituent established in accordance with 40 CFR § 257.91; or a rule specified limit (RSL) identified for Cobalt, Lead, Lithium, or Molybdenum;
 - Applicable Michigan Part 201 Generic Cleanup Criteria and Screening Levels
 - Ground Surface Water Interface (GSI) criteria is applicable
 - Drinking Water Criteria (residential and non-residential criteria) may not be an applicable criterion. It is Golder's opinion that since drinking water wells will not be installed at the site nor on the Island since there is known impacts on Harbor Island that the DWC does not apply. Plus, the City of Grand Haven has a city ordinance preventing drinking water wells on properties with historical impacts. In addition, GHBLP is considering filing a restrictive covenant for the property to further prevent the installation of drinking water wells on the property.
 - Indoor Air Criteria, Ambient Air Criteria, Direct Contact Criteria, and Soil Saturation Concentration Screening Levels (Csat) is not applicable since GSI is more strict

- Background level for constituents where the background concentration is higher than the MCL, RSL, or Michigan Part 201 screening levels.

Following the above rule requirements, GWPS have been established for statistical comparison of assessment monitoring constituents. Site-Specific GWPS summarizes the background limit established at each monitoring well and the GWPS used for statistical comparison.

Interim Site-Specific Groundwater Protection Standards						
Analyte	Units ^[1]	Screening Levels ^[2]				Interim GWPS
		RSL	MCL	Michigan Part 201 GSI	Interim Site-Specific Background	
Part 115 Detection Monitoring Constituents (PA 640 Sec. 11511a(3)(c))						
Boron ^[3]	mg/L	N/R	N/R	7.2	16	16
Calcium ^[3]	mg/L	N/R	N/R	N/R	200	200
Chloride ^[3]	mg/L	N/R	N/R	150	15	150
Fluoride ^[4]	mg/L	N/R	4	2.67	0.2254	2.67
pH ^[3]	S.U.	N/R	N/R	6.5-9.0	5.9-8.6	6.5-9.0
Iron ^[3]	mg/L	N/R	N/R	N/R	25.01	25.01
Sulfate ^[3]	mg/L	N/R	N/R	370	84.74	370
Total Dissolved Solids ^[3]	mg/L	N/R	N/R	500	867	867
Part 115 Assessment Monitoring Constituents (PA 640 Sec. 11519b(2) plus Detection Monitoring Constituents)						
Antimony	mg/L	N/R	0.006	0.13	0.0016	0.006
Arsenic	mg/L	N/R	0.01	0.01	0.0048	0.01
Barium ^[4]	mg/L	N/R	2	1.2	0.52	1.2
Beryllium	mg/L	N/R	0.004	0.031	0.002	0.004
Cadmium ^[4]	mg/L	N/R	0.005	0.0025	0.0006	0.0025
Chromium ^[4]	mg/L	N/R	0.1	0.011	0.0028	0.01
Cobalt	mg/L	0.006	N/R	0.1	0.001	0.006
Copper ^{[3][5]}	mg/L	N/R	1.3	0.020	0.0040	0.02
Fluoride ^[4]	mg/L	N/R	4	2.67	0.2254	2.67
Lead	mg/L	0.015	N/R	0.014	0.0029	0.014
Lithium	mg/L	0.04	N/R	0.44	0.059	0.059
Mercury	mg/L	N/R	0.002	0.0000013	0.00014	0.00014
Molybdenum	mg/L	0.1	N/R	3.2	0.007	0.1
Nickel ^{[3][5]}	mg/L	N/R	N/R	0.11	0.0022	0.11
Radium (226 + 228)	pCi/L	N/R	5	N/R	2.12	5
Selenium ^[4]	mg/L	N/R	0.05	0.005	0.002	0.005
Silver ^{[3][5]}	mg/L	N/R	0.1	0.00006	0.001	0.001
Thallium	mg/L	N/R	0.002	0.0037	0.001	0.002

Interim Site-Specific Groundwater Protection Standards						
Analyte	Units ^[1]	Screening Levels ^[2]				Interim GWPS
		RSL	MCL	Michigan Part 201 GSI	Interim Site-Specific Background	
Vanadium ^[3]	mg/L	N/R	N/R	0.027	0.00089	0.027
Zinc ^{[3][5]}	mg/L	N/R	5.0	0.27	0.021	0.27

Notes:

[1] – Units for each constituent: mg/L = milligram per liter, S.U. = standard units, pCi/L = picocuries per liter

[2] – N/R = no reported screening level.

[3] – State of Michigan only, not part of the Federal CCR Rule.

[4] – State of Michigan criteria is stricter than the applicable criteria for the Federal CCR Rule.

[5] – insufficient number of observations available for calculating site specific background using interwell tolerance limits, therefore interwell prediction limits is used.

Using the calculated GWPS as identified above, confidence intervals were then constructed on downgradient wells for each of the detection and assessment monitoring constituents. Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard and a statistically significant level (SSL) is declared.

3.2 Statistical Analysis Results

Analytical data from the fourth quarter 2021 monitoring event were statistically analyzed in accordance with the Statistical Analysis Plan (Golder, 2017). Verification resampling to confirm initial SSIs was not performed; therefore, the one (1) initial statistical exceedance from total dissolved solids at monitoring well MW-04 is considered an SSI.

3.2.1 Data Screening

The initial step in the statistical evaluation is identifying potential outliers, trends, and seasonality with the analytical data. A summary of the analytical data is provided on Table 3, Analytical Results Summary. There were no outliers identified for the fourth quarter 2021 analytical data.

In addition, Mann-Kendall/Sen's Slope trend tests were performed for the monitoring wells. The significant trend plots for the constituents for the downgradient monitoring wells is presented in Appendix A-2, Trend Plots and Summary. Only statistically significant positive trends are considered problematic; statistically significant negative trends generally are interpreted to indicate improving groundwater quality. Of the significant trends noted during the fourth quarter 2021 monitoring period, the majority were significant decreasing or negative trends while four (4) were significant increasing or positive trends. A summary of the four (4) significant positive trends for the monitoring wells is included below.

- Calcium in MW-02
- Chromium in MW-03
- Combined Radium in MW-03 and MW-07

Based on review of the trend plots presented in Appendix A-2, the identified trends noted above are the result of geochemical variability in the subsurface likely influenced by historical ash and waste fill on the island coupled with varying groundwater elevations and flow directions influence by site recharge and elevations of the Grand River. Additionally, laboratory variability and changes to geochemical variability following the installation of the well can account for the some of the trends noted when including all the monitoring well data to evaluate overall trends. Thus, no data correction is necessary at this time, and the data, as reported, are useable for further statistical evaluation.

3.2.2 Detection Monitoring Statistical Results

Analytical data from the fourth quarter 2021 monitoring event for the former 3A/B impoundment detection monitoring constituents have been statistically analyzed in accordance with the site's Statistical Analysis Plan.

The interwell prediction limit plots for detection monitoring constituents are presented in Appendix A-1. Review of the Sanitas™ results indicates that the following SSIs were identified during the fourth quarter 2021 monitoring event:

Inter-Well Prediction Limit Statistically Significant Increase Summary	
Detection Monitoring Constituents	Former 3A/B Impoundments Network
Boron	MW-01R and MW-02
Calcium	MW-01R, MW-03, and MW-04
Chloride	MW-01R, MW-02, MW-03, and MW-04
Fluoride	MW-01R and MW-02
Iron	No SSIs observed
pH	No SSIs observed
Sulfate	MW-01R and MW-04
Total Dissolved Solids	MW-01R, MW-02, MW-03, and MW-04

Based on the SSIs identified at the site, assessment monitoring was originally initiated on April 9, 2018.

3.2.3 Assessment Monitoring Statistical Results

Review of the statistical results for the fourth quarter 2021 monitoring event indicates that SSLs were identified for assessment monitoring constituents using confidence intervals. The confidence intervals using the site specific GWPS are presented in Appendix A-3, Confidence Intervals. A summary of the SSLs is provided below.

Confidence Interval Exceedance Summary	
Assessment Monitoring Constituents	Former 3A/B Impoundments Network
Part 115 Detection Monitoring Constituents (PA 640 Sec. 11511a(3)(c))	
Boron	MW-01R and MW-02
Calcium	MW-03, MW-04, and MW-09
Chloride	MW-01R, MW-03, and MW-04
Sulfate	MW-01R, MW-03, and MW-04
Total Dissolved Solids	MW-01R, MW-02, MW-03, and MW-04
Part 115 Assessment Monitoring Constituents (PA 640 Sec. 11519b(2))	
Fluoride	MW-01R and MW-02
Lithium	MW-01R, MW-02, and MW-09

In response to the SSLs identified for Unit 3A/B, assessment of corrective measures (ACM) was initiated on February 8, 2019. Since that time, an alternate source demonstration (ASD) has been prepared that addresses the groundwater impacts (Golder, 2020b). That ASD concluded that the source of elevated constituents in groundwater was the result of the historical fill and waste placed on the island and not a release from the Unit 3

A/B impoundments. The ASD has not been approved by EGLE and further evaluation of the groundwater monitoring well network and groundwater chemistry is ongoing. Following determination and concurrence of the revised detection monitoring well network, GHBLP will re-evaluate the statistical analyses and either revisit the ASD or prepare an ACM following guidance provided in § 257 and PA 640.

4.0 CONCLUSIONS

The detection monitoring well network is currently being re-evaluated, alternate background monitoring wells are being considered, and statistical results are expected to change. As stated previously, a field summary report with revised detection monitoring locations is forthcoming. Following concurrence from EGLE, GHBLP will implement background groundwater quality data from the revised detection monitoring locations. An updated HMP and Groundwater Monitoring System Certification is expected following review of the background groundwater quality data. Therefore, the purpose of this report is to comply with Rule 907(11) and Rule 908(6) and monitoring well MW-07 was used as an interim background well until a better understanding of groundwater flow is determined.

The preliminary statistical evaluations, using the interim background well location, of the groundwater monitoring data for the former 3A/B Impoundments identified SSIs of detection monitoring constituents above prediction limits and SSLs of assessment monitoring constituents above the GWPS.

The following SSLs were identified above the GWPS during the fourth quarter monitoring event.

- Boron (preliminary GWPS of 16 mg/L)
 - MW-01R (CI range 140-190 mg/L)
 - MW-02 (CI range 99-138 mg/L)
- Calcium (preliminary GWPS of 200 mg/L)
 - MW-03 (CI range 540-620 mg/L)
 - MW-04 (CI range 421-463 mg/L)
 - MW-09 (CI range 228-258 mg/L)
- Chloride (preliminary GWPS of 150 mg/L)
 - MW-01R (CI range 251-264 mg/L)
 - MW-03 (CI range 360-454 mg/L)
 - MW-04 (CI range 241-314 mg/L)
- Fluoride (preliminary GWPS of 2.67 mg/L)
 - MW-01R (CI range 20-26 mg/L)
 - MW-02 (CI range 10-13 mg/L)
- Lithium (preliminary GWPS of 0.059 mg/L)
 - MW-01R (CI range 2.4-3.1 mg/L)
 - MW-02 (CI range 1.2-1.5 mg/L)
 - MW-09 (CI range 0.16-0.26 mg/L)
- Sulfate (preliminary GWPS of 370 mg/L)
 - MW-01R (CI range 528-761 mg/L)
 - MW-03 (CI range 486-972 mg/L)
 - MW-04 (CI range 639-802 mg/L)
- TDS (preliminary GWPS of 867 mg/L)
 - MW-01R (CI range 3,200-3,500 mg/L)
 - MW-02 (CI range 1,900-2,400 mg/L)
 - MW-03 (CI range 2,800-3,500 mg/L)
 - MW-04 (CI range 1,900-2,400 mg/L)

There is evidence of other potential sources for the groundwater impacts observed in groundwater monitoring wells in the former 3A/B impoundments groundwater monitoring network, including:

- Historical ash documented to be placed beneath the former 3A/B impoundments
- Historical ash placed as beneficial fill outside the boundary of the Inactive 1/2 Impoundment
- Historical waste placement at the JB Sims site
- Unlined inactive Units 1/2 impoundment located upgradient of the former 3A/B impoundments

The Site has submitted an ASD (Golder, 2020b) for the former 3A/B Impoundments groundwater monitoring data, which has not been approved by EGLE. As a result, further evaluation of the groundwater monitoring well network and groundwater chemistry is ongoing. These other potential sources currently exist on the JB Sims site and should be considered as likely influences on the groundwater quality at the site. The Site will remain in

assessment monitoring until the groundwater quality has returned to background conditions or is below GWPS at each of the detection monitoring wells.

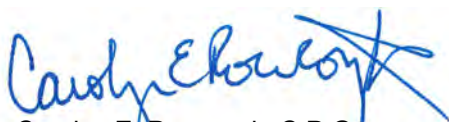
GHBLP is working with USEPA and EGLE to further evaluate the groundwater monitoring well networks at JB Sims. A field summary report with revised detection monitoring locations is forthcoming. GHBLP anticipates submitting a proposed expanded groundwater monitoring network in 2022. GHBLP will continue to address the groundwater impacts at JB Sims following the requirements of the PA 640 Part 115 amendment.

5.0 REFERENCES

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Signature Page

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TABLES

- Table 1 – Summary of Locations
- Table 2 – Groundwater Elevation Summary
- Table 3 – Analytical Results Summary

TABLE 1.
SUMMARY OF LOCATIONS
JB Sims Generating Station
 Fourth Quarter 2021 Monitoring Report

Location Identification	Current Groundwater Monitoring Networks		Coordinates		Date Installed	Ground Surface Elevation (feet MSL)	Top of Casing (Staff Gauge) Elevation (feet MSL)	Total Well Depth (Total Boring Depth) (ft)	Screen Interval (ft)	Comments
	Inactive 1/2 Impoundment	Former 3 A/B Impoundments	Northing	Easting						
Monitoring Wells										
MW-01R	Detection	Detection	578101.30	12624432.00	5/1/2020	585.73	588.45	10.00	5-10	
MW-02	Assessment	Detection	578241.91	12624222.64	1/18/2017	592.67	595.64	23.37	15-20	
MW-03	Assessment	Detection	578125.03	12624180.40	1/18/2017	590.42	593.08	20.34	12-17	
MW-04	Assessment	Detection	578003.96	12624165.24	1/18/2017	588.66	591.49	18.00	10-15	
MW-05	Detection	Piezometer	577970.06	12624634.16	5/22/2018	585.31	587.67	11.50	4-9	
MW-06	Detection	Piezometer	578229.40	12624525.24	5/22/2018	588.22	590.40	16.55	9-14	
MW-07	Detection	Detection/Background	577585.75	12625513.56	5/22/2018	583.65	586.49	18.80	11-16	
MW-08	Detection	Piezometer	578261.14	12625341.26	5/22/2018	582.74	585.40	11.85	4-9	
MW-09	Assessment	Assessment	578241.35	12624185.62	8/12/2019	586.80	589.65	12.00	7-12	
MW-10	Assessment	Piezometer	578367.40	12624470.20	8/12/2019	583.71	586.73	10.00	5-10	
Piezometers										
PZ-11	Site-wide Water Levels		578236.87	12624377.19	8/19/2021	592.46	595.27	15 (40)	10-15	
PZ-12	Site-wide Water Levels		577987.57	12624312.28	8/17/2021	584.94	588.03	8 (40)	3-8	
PZ-13	Site-wide Water Levels		577623.94	12624190.94	8/17/2021	583.23	586.08	9 (34)	4-9	
PZ-14	Site-wide Water Levels		577191.85	12624160.04	8/16/2021	583.46	586.39	8 (35)	3-8	
PZ-15	Site-wide Water Levels		577062.51	12624730.23	8/25/2021	589.32	592.38	20 (40)	15-20	
PZ-16	Site-wide Water Levels		577273.65	12625194.83	8/25/2021	582.18	584.87	8 (35)	3-8	
PZ-17	Site-wide Water Levels		577652.81	12624744.16	8/17/2021	584.03	587.02	8 (40)	3-8	
PZ-18	Site-wide Water Levels		577919.12	12624742.18	8/18/2021	584.12	587.22	8 (34)	3-8	
PZ-19	Site-wide Water Levels		577938.05	12624957.16	8/20/2021	583.06	585.86	8 (25)	3-8	
PZ-20	Site-wide Water Levels		577722.50	12625131.40	8/18/2021	582.43	585.74	8 (34)	3-8	
PZ-21	Site-wide Water Levels		577941.39	12625280.33	8/30/2021	NA	583.32	9 (30)	4-9	Located in standing water
PZ-22	Site-wide Water Levels		578056.88	12625387.96	8/31/2021	NA	583.42	9 (22)	4-9	Located in standing water

TABLE 1.
SUMMARY OF LOCATIONS
JB Sims Generating Station
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Location Identification	Current Groundwater Monitoring Networks		Coordinates		Date Installed	Ground Surface Elevation (feet MSL)	Top of Casing (Staff Gauge) Elevation (feet MSL)	Total Well Depth (Total Boring Depth) (ft)	Screen Interval (ft)	Comments
	Inactive 1/2 Impoundment	Former 3 A/B Impoundments	Northing	Easting						
Piezometers - continued										
PZ-23	Site-wide Water Levels		577627.71	12625841.35	8/25/2021	584.39	587.21	9 (25)	4-9	
PZ-24	Site-wide Water Levels		577884.70	12625979.33	8/24/2021	583.92	587.34	9 (30)	4-9	
PZ-25	Site-wide Water Levels		577703.65	12626240.18	8/24/2021	583.46	586.37	8 (30)	3-8	
PZ-26	Site-wide Water Levels		578114.39	12626145.22	8/23/2021	583.81	586.27	8 (30)	3-8	
PZ-27	Site-wide Water Levels		578303.89	12626551.81	8/23/2021	581.87	585.09	8 (40)	3-8	
PZ-28	Site-wide Water Levels		578314.93	12625722.71	8/23/2021	585.11	588.07	9 (29.5)	4-9	
PZ-29	Site-wide Water Levels		578138.08	12625241.56	8/30/2021	NA	583.49	9 (35)	4-9	Located in standing water
PZ-30	Site-wide Water Levels		578196.17	12624990.23	8/19/2021	583.02	585.80	8 (34)	3-8	
PZ-31	Site-wide Water Levels		578307.16	12624752.70	9/1/2021	582.56	585.85	8 (27)	3-8	
PZ-32	Site-wide Water Levels		578348.32	12624980.14	8/30/2021	583.08	586.26	8 (40)	3-8	
Staff Gauges										
SG-01	Site-wide Water Levels		578234.49	12624159.06	8/12/2019	NA	585.10	NA	NA	Located in standing water
SG-02	Site-wide Water Levels		578287.85	12624784.61	8/12/2019	NA	583.43	NA	NA	Located in standing water
SG-03	Site-wide Water Levels		578201.99	12624858.11	8/12/2019	NA	584.37	NA	NA	Located in standing water
SG-04R	Site-wide Water Levels		577966.13	12624647.67	6/9/2020	NA	585.04	NA	NA	Located in standing water
SG-05	Site-wide Water Levels		577717.81	12624888.51	8/12/2019	NA	584.83	NA	NA	Damaged in 2021
SG-06	Site-wide Water Levels		578227.56	12625365.56	8/12/2019	NA	584.88	NA	NA	Damaged in 2021
Stilling Wells										
STW-1	Site-wide Water Levels		578433.87	12625522.16	9/3/2021	NA	583.03	NA	NA	Located in standing water
STW-2	Site-wide Water Levels		577340.30	12625423.18	9/2/2021	NA	583.47	NA	NA	Located in standing water
STW-3	Site-wide Water Levels		577771.11	12624083.74	9/3/2021	NA	591.17	NA	NA	Located in standing water

Notes:

MSL = mean sea level.

NA = Not available

TABLE 2.
GROUNDWATER ELEVATION SUMMARY
JB Sims Generating Station
 Fourth Quarter 2021 Monitoring Report

Location Identification	Top of Casing (Staff Gauge) Elevation (feet MSL)	October 1, 2021			October 25, 2021		
		Date	Depth to Water (ft)	Groundwater Elevation	Date	Depth to Water (ft)	Groundwater Elevation
Monitoring Wells							
MW-01R	588.45	10/1/2021	7.01	581.44	10/25/2021	6.23	582.22
MW-02	595.64	10/1/2021	14.70	580.94	10/25/2021	14.71	580.93
MW-03	593.08	10/1/2021	12.07	581.01	10/25/2021	11.90	581.18
MW-04	591.49	10/1/2021	10.46	581.03	10/25/2021	10.22	581.27
MW-05	587.67	10/1/2021	6.54	581.13	10/25/2021	5.90	581.77
MW-06	590.40	10/1/2021	9.26	581.14	10/25/2021	8.50	581.90
MW-07	586.49	10/1/2021	5.43	581.06	10/25/2021	5.25	581.24
MW-08	585.40	10/1/2021	4.31	581.09	10/25/2021	4.04	581.36
MW-09	589.65	10/1/2021	8.58	581.07	10/25/2021	8.49	581.16
MW-10	586.73	10/1/2021	5.70	581.03	10/25/2021	5.32	581.41
Piezometers							
PZ-11	595.27	10/1/2021	14.00	581.27	10/25/2021	NR	NM
PZ-12	588.03	10/1/2021	6.83	581.20	10/25/2021	NR	NM
PZ-13	586.08	10/1/2021	4.96	581.12	10/25/2021	4.60	581.48
PZ-14	586.39	10/1/2021	5.32	581.07	10/25/2021	4.70	581.69
PZ-15	592.38	10/1/2021	11.15	581.23	10/25/2021	10.84	581.54
PZ-16	584.87	10/1/2021	3.86	581.01	10/25/2021	3.67	581.20
PZ-17	587.02	10/1/2021	5.85	581.17	10/25/2021	5.42	581.60
PZ-18	587.22	10/1/2021	6.15	581.07	10/25/2021	5.62	581.60
PZ-19	585.86	10/1/2021	4.78	581.08	10/25/2021	4.53	581.33
PZ-20	585.74	10/1/2021	4.78	580.96	10/25/2021	4.53	581.21
PZ-21	583.32	10/1/2021	2.18	581.14	10/25/2021	NR	NM
PZ-22	583.42	10/1/2021	2.35	581.07	10/25/2021	NR	NM
PZ-23	587.21	10/1/2021	6.50	580.71	10/25/2021	5.76	581.45
PZ-24	587.34	10/1/2021	6.61	580.73	10/25/2021	6.13	581.21
PZ-25	586.37	10/1/2021	5.26	581.11	10/25/2021	5.00	581.37
PZ-26	586.27	10/1/2021	5.52	580.75	10/25/2021	4.60	581.67
PZ-27	585.09	10/1/2021	4.40	580.69	10/25/2021	3.24	581.85
PZ-28	588.07	10/1/2021	6.95	581.12	10/25/2021	6.70	581.37
PZ-29	583.49	10/1/2021	2.24	581.25	10/25/2021	NR	NM
PZ-30	585.80	10/1/2021	5.02	580.78	10/25/2021	NR	NM
PZ-31	585.85	10/1/2021	4.81	581.04	10/25/2021	4.10	581.75
PZ-32	586.26	10/1/2021	5.25	581.01	10/25/2021	4.95	581.31
Staff Gauges							
SG-01	585.10	10/1/2021	NM	NM	10/25/2021	NR	NM
SG-02	583.43	10/1/2021	1.44	581.99	10/25/2021	NR	NM
SG-03	584.37	10/1/2021	NM	NM	10/25/2021	NR	NM
SG-04R	585.04	10/1/2021	3.38	581.66	10/25/2021	NR	NM
SG-05	584.83	10/1/2021	NM	NM	10/25/2021	NR	NM
SG-06	584.88	10/1/2021	NM	NM	10/25/2021	NR	NM
Stilling Wells							
STW-1	583.03	10/1/2021	1.88	581.15	10/25/2021	NR	NM
STW-2	583.47	10/1/2021	2.41	581.06	10/25/2021	NR	NM
STW-3	591.17	10/1/2021	10.10	581.07	10/25/2021	NR	NM

Notes:

MSL = mean sea level.

NA = Not available

TABLE 2.
GROUNDWATER ELEVATION SUMMARY
JB Sims Generating Station
 Fourth Quarter 2021 Monitoring Report

Location Identification	Top of Casing (Staff Gauge) Elevation (feet MSL)	November 23, 2021			December 17, 2021		
		Date	Depth to Water (ft)	Groundwater Elevation	Date	Depth to Water (ft)	Groundwater Elevation
Monitoring Wells							
MW-01R	588.45	11/23/2021	6.74	581.71	12/17/2021	6.36	582.09
MW-02	595.64	11/23/2021	15.68	579.96	12/17/2021	15.88	579.76
MW-03	593.08	11/23/2021	12.86	580.22	12/17/2021	12.61	580.47
MW-04	591.49	11/23/2021	11.08	580.41	12/17/2021	10.82	580.67
MW-05	587.67	11/23/2021	6.26	581.41	12/17/2021	6.28	581.39
MW-06	590.40	11/23/2021	9.06	581.34	12/17/2021	8.86	581.54
MW-07	586.49	11/23/2021	6.21	580.28	12/17/2021	6.02	580.47
MW-08	585.40	11/23/2021	5.05	580.35	12/17/2021	4.94	580.46
MW-09	589.65	11/23/2021	9.35	580.30	12/17/2021	9.09	580.56
MW-10	586.73	11/23/2021	6.47	580.26	12/17/2021	6.21	580.52
Piezometers							
PZ-11	595.27	11/23/2021	14.00	581.27	12/17/2021	13.75	581.52
PZ-12	588.03	11/23/2021	6.85	581.18	12/17/2021	6.28	581.75
PZ-13	586.08	11/23/2021	5.65	580.43	12/17/2021	5.45	580.63
PZ-14	586.39	11/23/2021	5.64	580.75	12/17/2021	5.40	580.99
PZ-15	592.38	11/23/2021	11.76	580.62	12/17/2021	11.58	580.80
PZ-16	584.87	11/23/2021	4.64	580.23	12/17/2021	4.48	580.39
PZ-17	587.02	11/23/2021	6.16	580.86	12/17/2021	6.00	581.02
PZ-18	587.22	11/23/2021	6.51	580.71	12/17/2021	6.41	580.81
PZ-19	585.86	11/23/2021	5.36	580.50	12/17/2021	5.23	580.63
PZ-20	585.74	11/23/2021	5.30	580.44	12/17/2021	5.31	580.43
PZ-21	583.32	11/23/2021	NM	NM	12/17/2021	2.85	580.47
PZ-22	583.42	11/23/2021	NM	NM	12/17/2021	2.90	580.52
PZ-23	587.21	11/23/2021	6.68	580.53	12/17/2021	6.48	580.73
PZ-24	587.34	11/23/2021	6.64	580.70	12/17/2021	6.31	581.03
PZ-25	586.37	11/23/2021	5.98	580.39	12/17/2021	5.90	580.47
PZ-26	586.27	11/23/2021	5.47	580.80	12/17/2021	5.14	581.13
PZ-27	585.09	11/23/2021	4.52	580.57	12/17/2021	3.99	581.10
PZ-28	588.07	11/23/2021	7.78	580.29	12/17/2021	7.68	580.39
PZ-29	583.49	11/23/2021	3.08	580.41	12/17/2021	2.83	580.66
PZ-30	585.80	11/23/2021	5.28	580.52	12/17/2021	4.95	580.85
PZ-31	585.85	11/23/2021	4.69	581.16	12/17/2021	4.66	581.19
PZ-32	586.26	11/23/2021	5.59	580.67	12/17/2021	5.45	580.81
Staff Gauges							
SG-01	585.10	11/23/2021	NM	NM	12/17/2021	NM	NM
SG-02	583.43	11/23/2021	1.50	581.93	12/17/2021	1.68	581.75
SG-03	584.37	11/23/2021	2.72	581.65	12/17/2021	2.80	581.57
SG-04R	585.04	11/23/2021	3.48	581.56	12/17/2021	3.56	581.48
SG-05	584.83	11/23/2021	NM	NM	12/17/2021	NM	NM
SG-06	584.88	11/23/2021	NM	NM	12/17/2021	NM	NM
Stilling Wells							
STW-1	583.03	11/23/2021	2.83	580.20	12/17/2021	2.50	580.53
STW-2	583.47	11/23/2021	3.35	580.12	12/17/2021	3.30	580.17
STW-3	591.17	11/23/2021	10.93	580.24	12/17/2021	10.88	580.29

Notes:

MSL = mean sea level.

NA = Not available

TABLE 3.
ANALYTICAL RESULTS SUMMARY
JB Sims Generating Station
 Fourth Quarter 2021

Analyte	Units	PQL	MDL	MW-01R	MW-02	MW-03	MW-04	MW-09
Detection Monitoring								
BORON, TOTAL	mg/L	0.050	0.017	140	100	4.4	3.7	6.8
CALCIUM, TOTAL	mg/L	0.50	0.16	220	190	490	370	220
CHLORIDE, TOTAL	mg/L	0.75	0.60	230	140	330	170	13
FLUORIDE, TOTAL	mg/L	0.10	0.055	13	9.4	0.89	1.3	2.5
IRON, TOTAL	mg/L	0.20	0.13	1.7	22	4.5	5.2	19
pH	S.U.	NA	NA	7.8	6.48	6.91	6.74	7.31
SULFATE, TOTAL	mg/L	3.0	0.41	530	< 0.41	23	450	14
TOTAL DISSOLVED SOLIDS	mg/L	40	NA	3,600	2,000	2,500	1,900	880
Assessment Monitoring								
ANTIMONY, TOTAL	mg/L	<0.00030	<0.00030	0.00044	<0.00030	<0.00030	<0.00030	<0.00030
ARSENIC, TOTAL	mg/L	0.0010	0.00050	0.0046	0.012	0.0012	0.0019	0.0025
BARIUM, TOTAL	mg/L	0.010	0.0013	0.20	0.50	0.47	0.12	5.0
BERYLLIUM, TOTAL	mg/L	0.0020	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
CADMIUM, TOTAL	mg/L	0.0010	0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
CHROMIUM, TOTAL	mg/L	0.00090	0.00070	0.0022	0.040	0.0041	0.0033	0.0029
COBALT, TOTAL	mg/L	0.0016	0.00050	0.0022	0.0055	0.0014 J	0.00079 J	< 0.00050
COPPER, TOTAL	mg/L	0.0040	0.0018	< 0.0018	0.0022 J	< 0.0018	< 0.0018	< 0.0018
LEAD, TOTAL	mg/L	0.0020	0.00050	0.0024	0.0018 J	< 0.00050	< 0.00050	< 0.00050
LITHIUM, TOTAL	mg/L	0.010	0.0067	2.8	1.2	0.053	0.061	0.26
MERCURY, TOTAL	mg/L	0.0000005	0.00000016	0.0000019	0.0000028	0.00000079	<0.00000016	0.00000062
MOLYBDENUM, TOTAL	mg/L	0.00040	0.000093	0.0016	0.0045	0.00012 J	0.0015	0.017
NICKEL, TOTAL	mg/L	0.0050	0.0022	0.0039 J	0.017	0.0027 J	0.011	< 0.0022
RADIUM (226 + 228)	pCi/L	1.0	NA	0.41	2.27	1.01	1.87	2.56
SELENIUM, TOTAL	mg/L	0.0020	0.0090	0.00097 J	0.0017 J	< 0.00090	< 0.00090	< 0.00090
SILVER, TOTAL	mg/L	0.0010	0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
THALLIUM, TOTAL	mg/L	0.0010	0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
VANADIUM, TOTAL	mg/L	0.00080	0.00050	0.0017	0.0039	0.0014	0.0010	< 0.00050
ZINC, TOTAL	mg/L	0.020	0.018	<0.018	<0.018	<0.018	<0.018	<0.018

NOTES:

mg/L - Milligrams per Liter

S.U. - standard units

pCi/L - picocuries per Liter

NA - Not available

J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL).

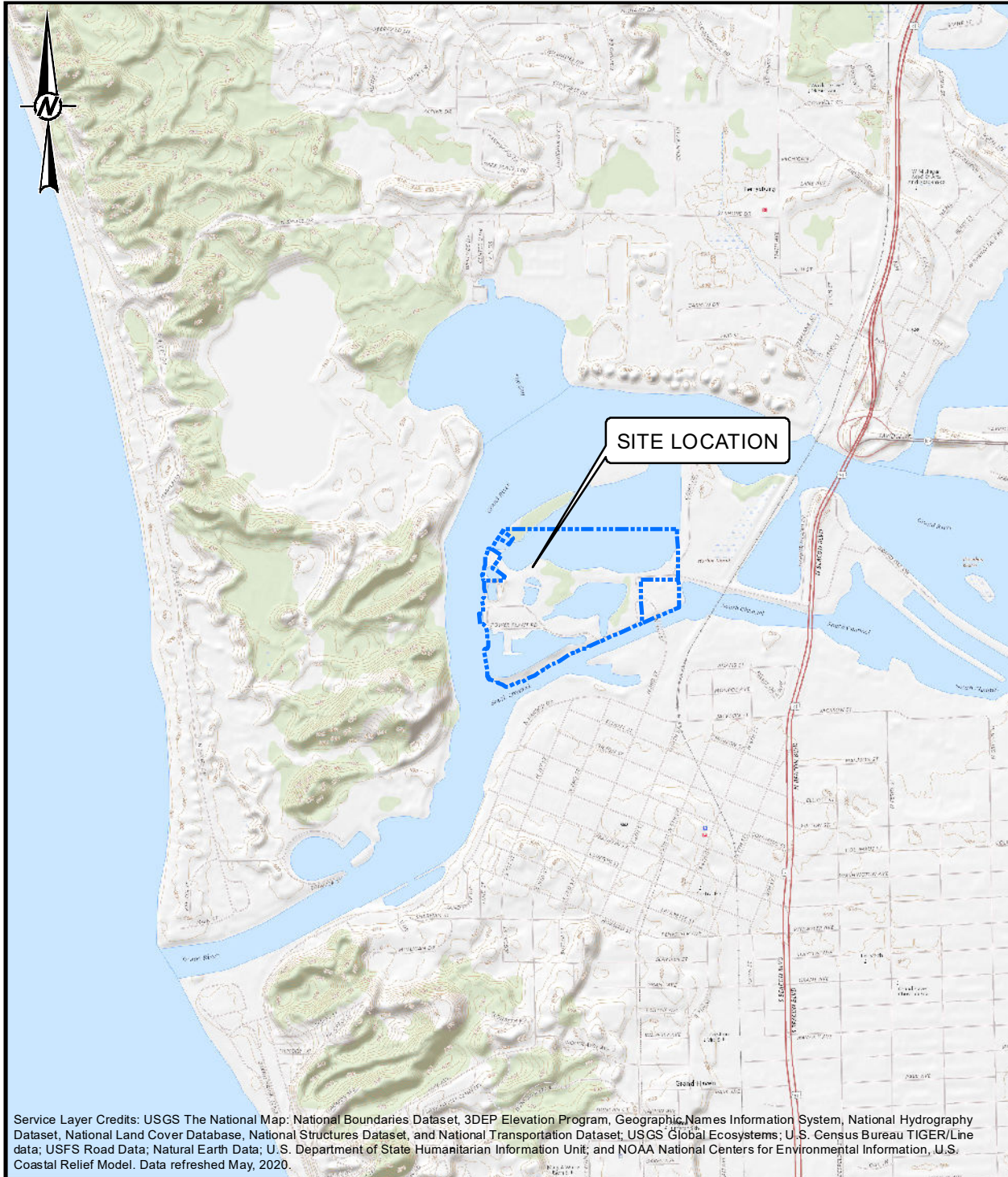
< - Constituent was analyzed, but was not detected above the MDL and is considered a non-detect.

FIGURES (Revised March 8, 2022)

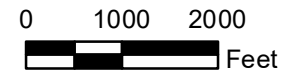
Figure 1 - Site Location Map

Figure 2 - Site Plan

Figures 3-6 - Groundwater Contour Maps



Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.



CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
 GRAND HAVEN, MICHIGAN

PROJECT
JB SIMS GENERATING STATION
 2021 QUARTERLY GROUNDWATER MONITORING

TITLE
SITE LOCATION MAP

CONSULTANT



YYYY-MM-DD 2021-04-05

PREPARED DJC

DESIGN CEP

REVIEW CEP

APPROVED DLP

PROJECT No.
 21461064

CONTROL
 20141048F000-GIS.mxd

Rev.
 0

FIGURE
 1






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NOTES

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- SG-05* HAS BEEN REMOVED

LEGEND

	MONITORING WELL
	STAFF GAUGE
	PIEZOMETER
	STILLING WELL

CLIENT
 GRAND HAVEN BOARD OF LIGHT AND POWER
 GRAND HAVEN, MICHIGAN

CONSULTANT

YYYY-MM-DD	2021-10-08
DESIGNED	CEP
PREPARED	DJC
REVIEWED	CEP
APPROVED	DLP

PROJECT
 JB SIMS GENERATING STATION
 2021 QUARTERLY GROUNDWATER MONITORING

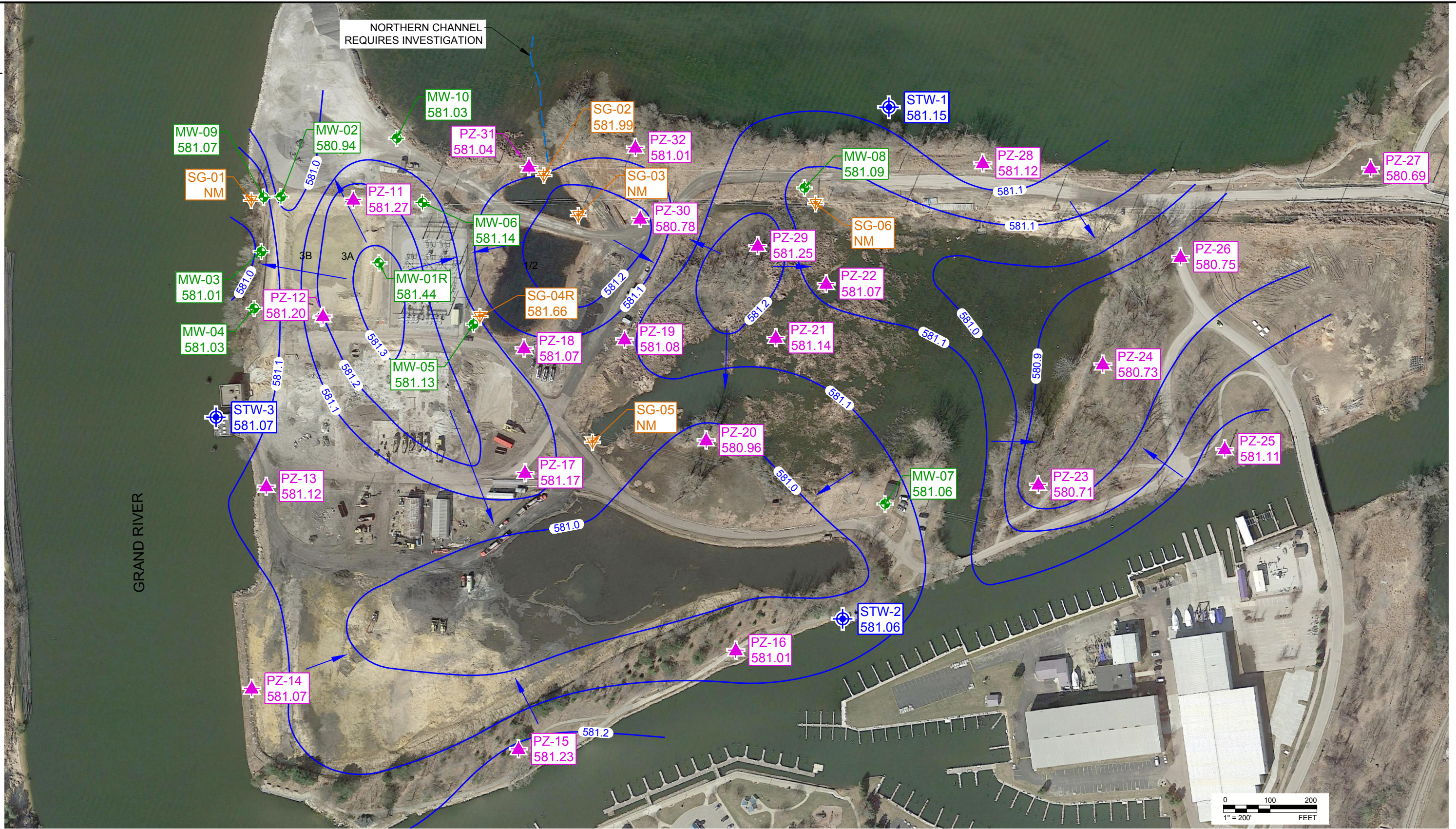
TITLE
SITE PLAN

PROJECT NO.	CONTROL	REV.	FIGURE
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NORTHERN CHANNEL
REQUIRES INVESTIGATION



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3. STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

- LEGEND**
- MONITORING WELL
 - STAFF GAUGE
 - PIEZOMETER
 - STILLING WELL
 - 581.0 GROUNDWATER CONTOURS
 - GROUNDWATER FLOW DIRECTION

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT	YYYY-MM-DD	2021-10-08
	DESIGNED	CEP
	PREPARED	DJC
	REVIEWED	CEP
	APPROVED	DLP

PROJECT
JB SIMS GENERATING STATION
2021 QUARTERLY GROUNDWATER MONITORING

TITLE	GROUNDWATER ELEVATION MAP	
PROJECT NO.	CONTROL	REV.
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NORTHERN CHANNEL
REQUIRES INVESTIGATION







GRAND RIVER

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- STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

- LEGEND**
-  MONITORING WELL
 -  STAFF GAUGE
 -  PIEZOMETER
 -  STILLING WELL
 -  581.0 — GROUNDWATER CONTOURS
 -  — GROUNDWATER FLOW DIRECTION

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

PROJECT
JB SIMS GENERATING STATION
2021 QUARTERLY GROUNDWATER MONITORING

CONSULTANT	YYYY-MM-DD	2022-01-07
 GOLDER MEMBER OF WSP	DESIGNED	CEP
	PREPARED	DJC
	REVIEWED	CEP
	APPROVED	DLP

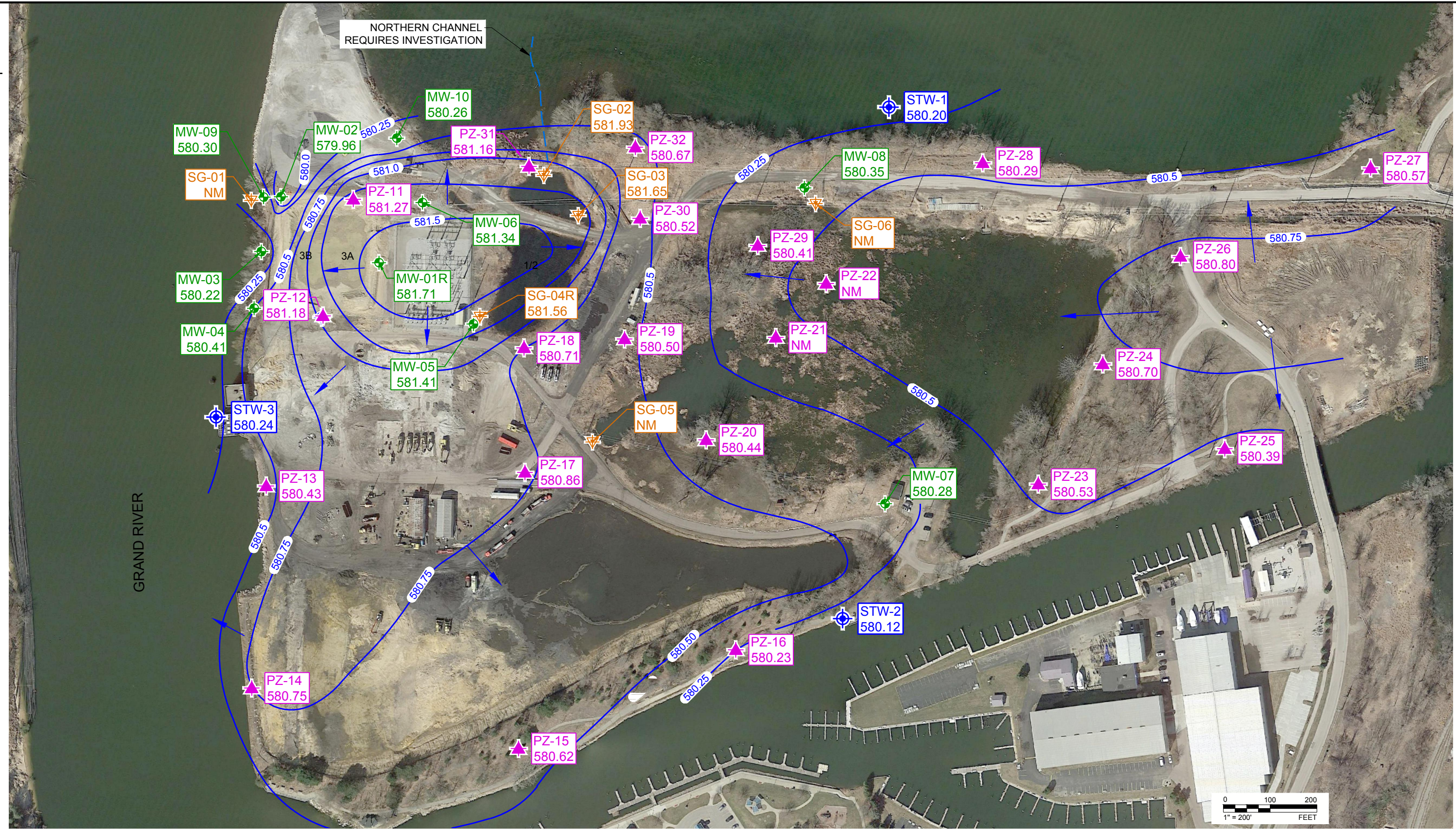
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OCTOBER 25, 2021

PROJECT NO.	CONTROL	REV.	FIGURE
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3. STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

- LEGEND**
- MONITORING WELL
 - STAFF GAUGE
 - PIEZOMETER
 - STILLING WELL
 - 581.0 GROUNDWATER CONTOURS
 - GROUNDWATER FLOW DIRECTION

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT	YYYY-MM-DD	2021-12-10
	DESIGNED	CEP
MEMBER OF WSP	PREPARED	DJC
	REVIEWED	CEP
	APPROVED	DLP

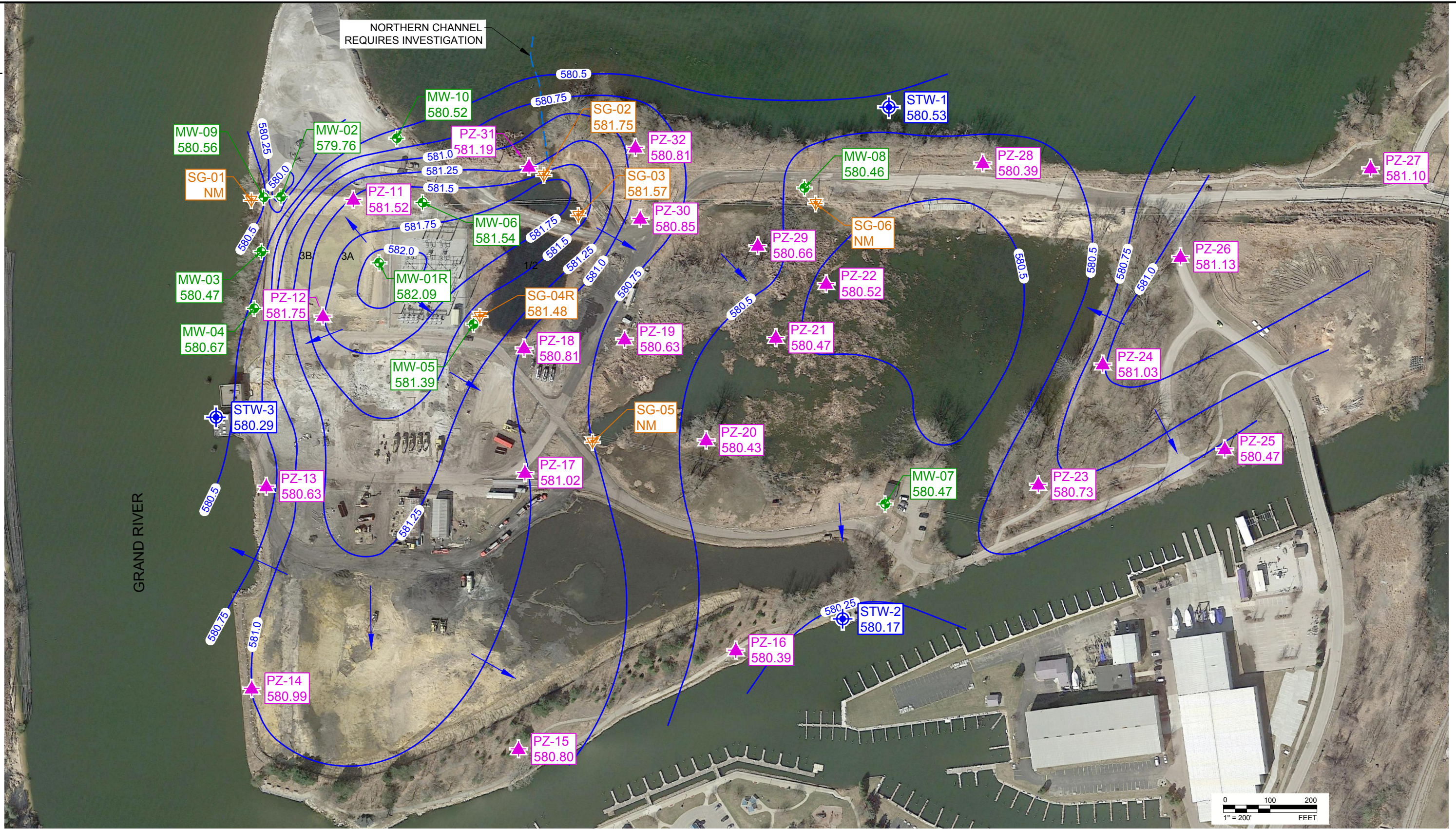
PROJECT
JB SIMS GENERATING STATION
2021 QUARTERLY GROUNDWATER MONITORING

TITLE	GROUNDWATER ELEVATION MAP	
PROJECT NO.	CONTROL	REV.
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REFERENCE
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LEGEND

	MONITORING WELL
	STAFF GAUGE
	PIEZOMETER
	STILLING WELL
	581.0 — GROUNDWATER CONTOURS
	— GROUNDWATER FLOW DIRECTION

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT

	GOLDER MEMBER OF WSP
YYYY-MM-DD	2022-01-07
DESIGNED	CEP
PREPARED	DJC
REVIEWED	CEP
APPROVED	DLP

PROJECT
JB SIMS GENERATING STATION
2021 QUARTERLY GROUNDWATER MONITORING

TITLE
GROUNDWATER ELEVATION MAP
DECEMBER 17, 2021

PROJECT NO.	CONTROL	REV.	FIGURE
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APPENDIX A

Statistical Summary

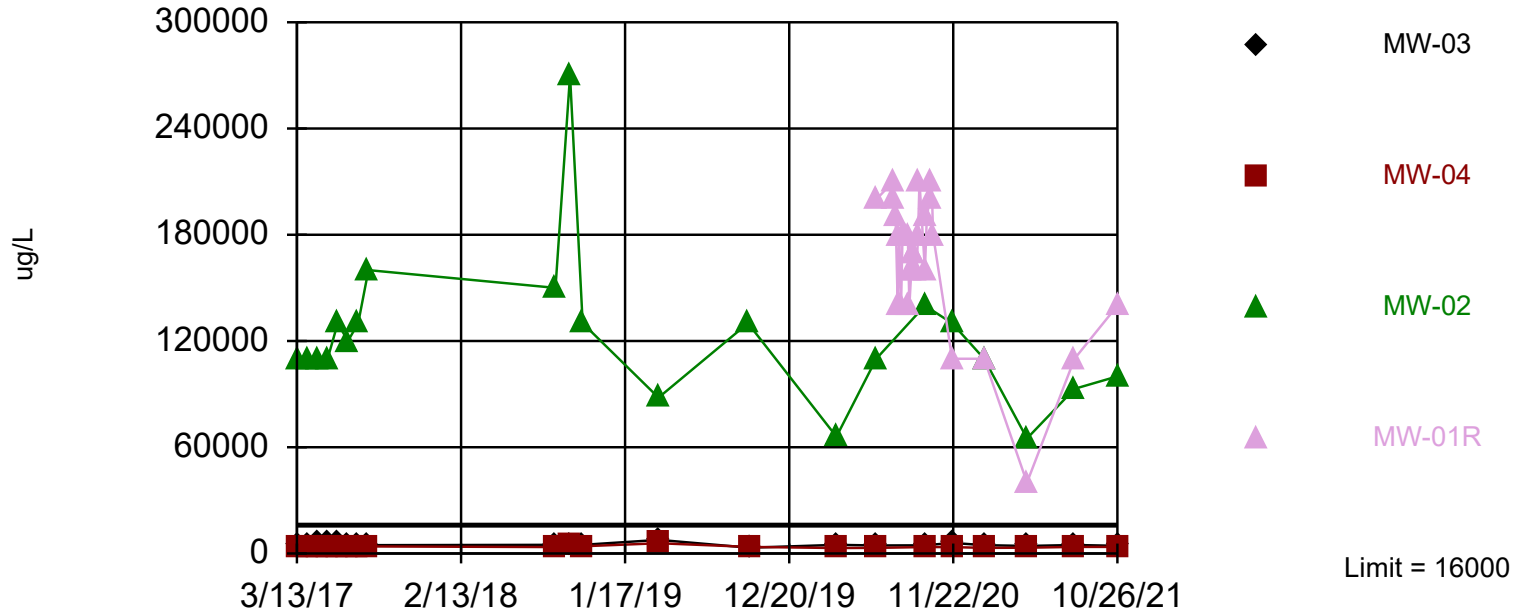
A-1 Interwell Prediction Limit and Tolerance Limit Plots

A-2 Trend Plots and Summary

A-3 Confidence Intervals

Exceeds Limit: MW-02, MW-01R

Prediction Limit Interwell Non-parametric

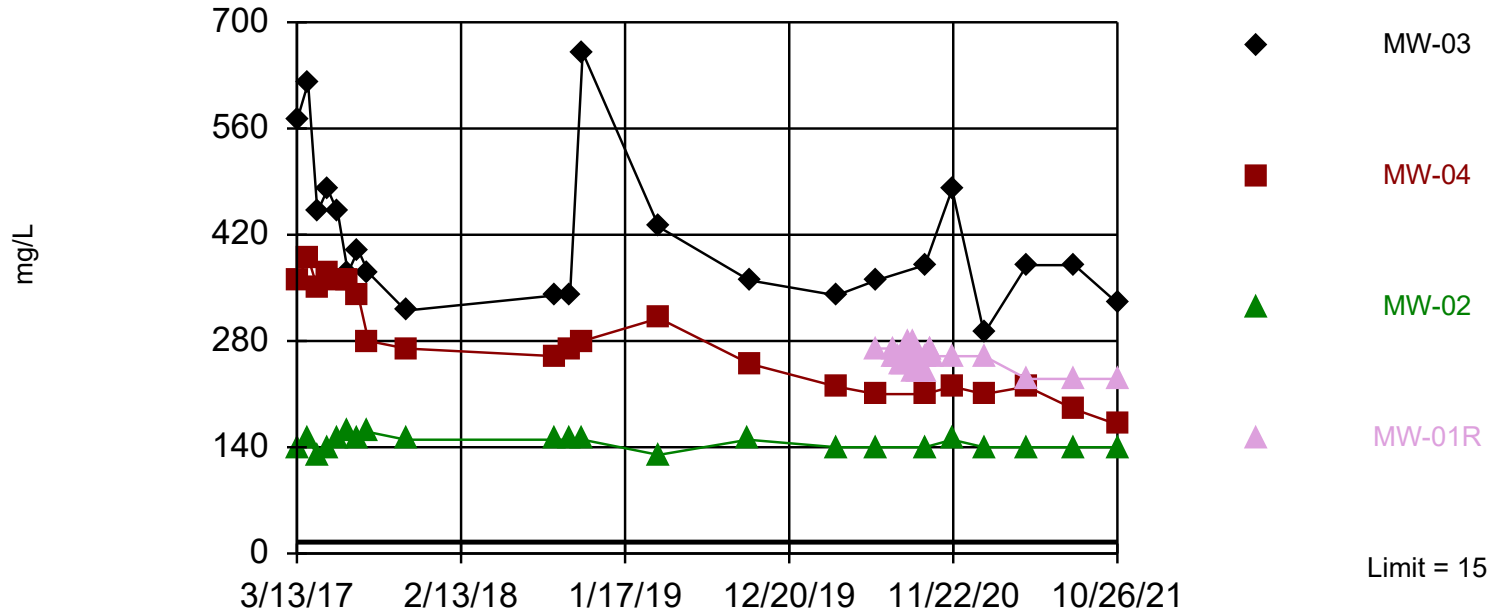


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Constituent: Boron Analysis Run 1/3/2022 1:17 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-03, MW-04, MW-02,
MW-01R

Prediction Limit Interwell Non-parametric

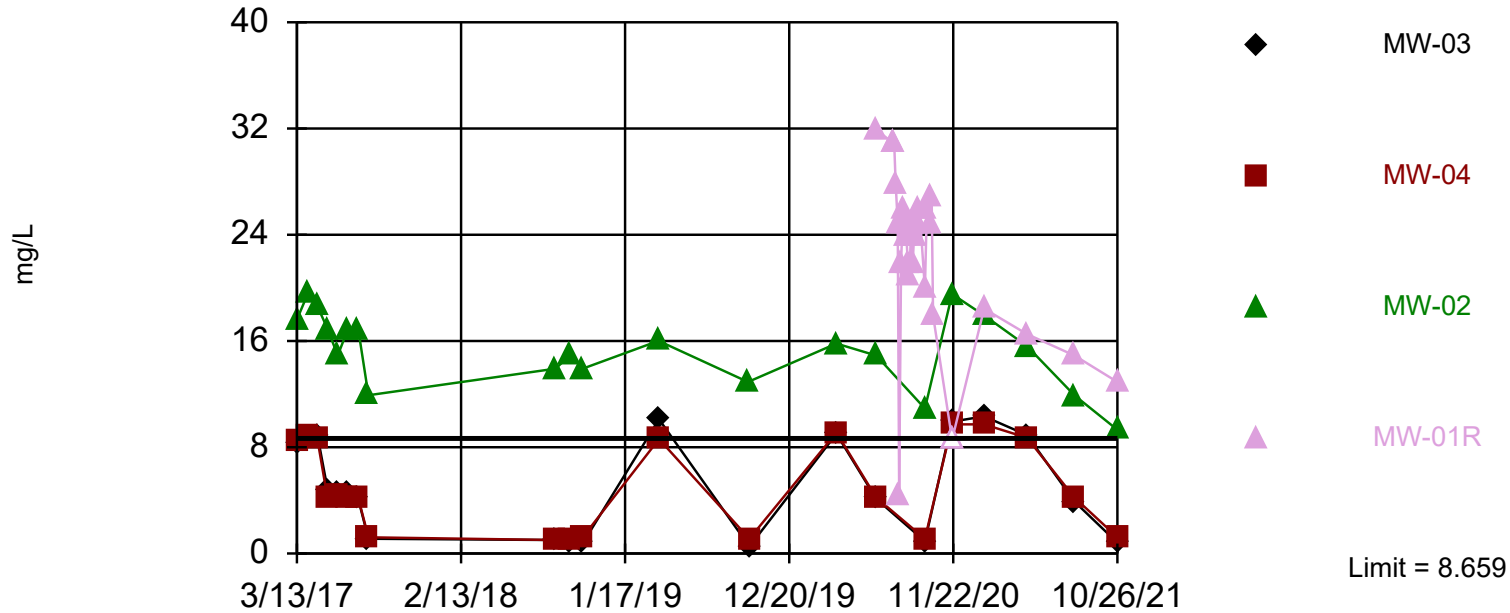


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Constituent: Chloride Analysis Run 1/3/2022 1:17 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

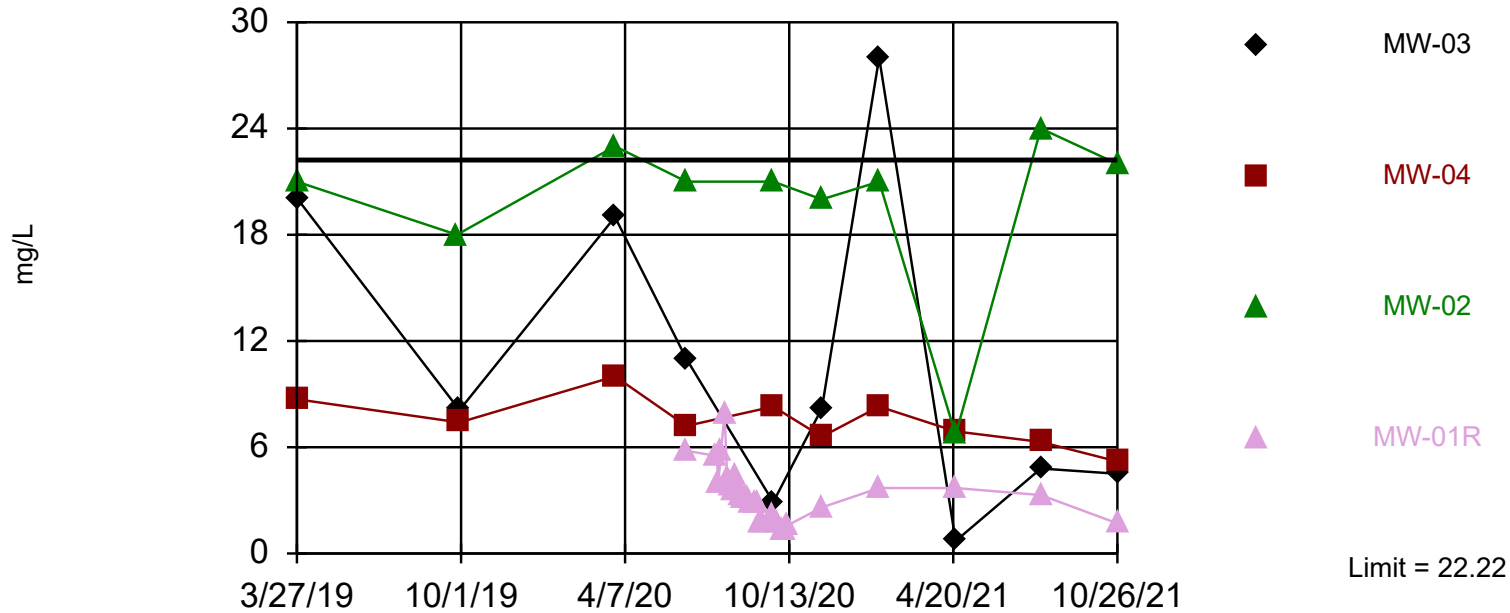
Exceeds Limit: MW-02, MW-01R

Prediction Limit Interwell Non-parametric



Within Limit

Prediction Limit Interwell Parametric

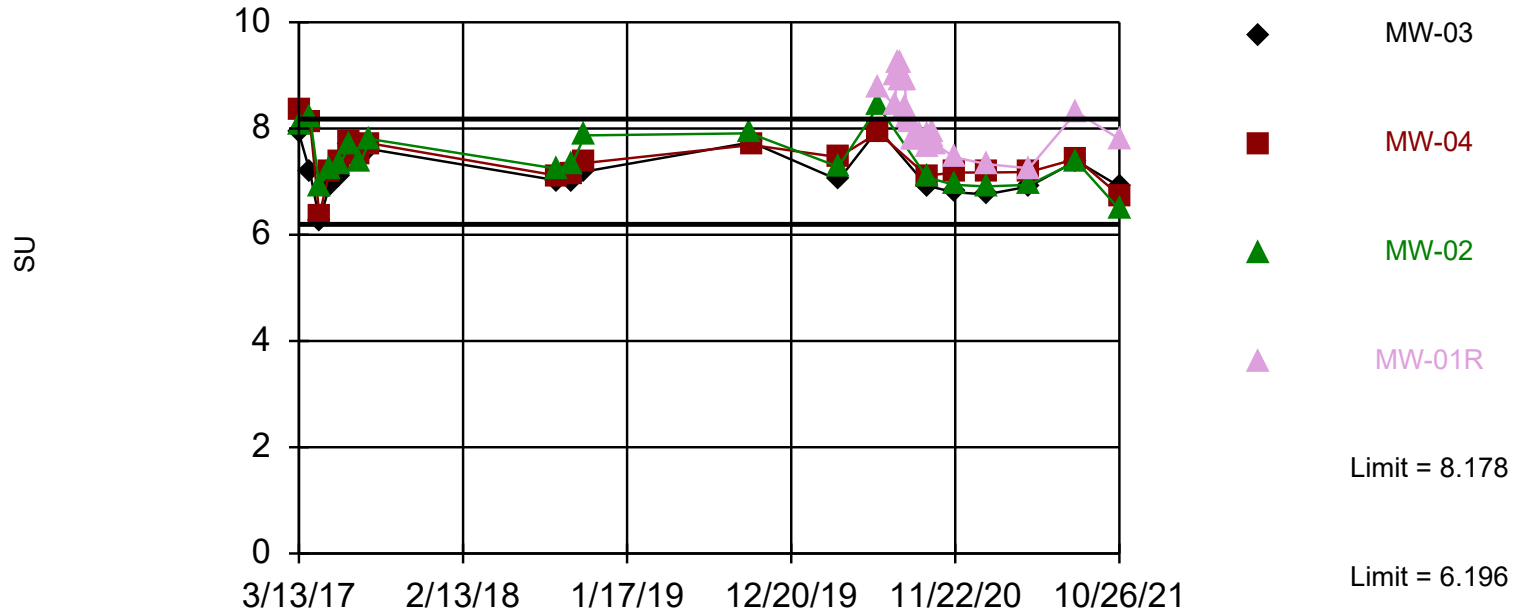


Background Data Summary: Mean=17.6, Std. Dev.=2.319, n=10. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.942, critical = 0.842. Report alpha = 0.1682. Individual comparison alpha = 0.045. Most recent point for each compliance well compared to limit.

Constituent: Iron Analysis Run 1/3/2022 1:17 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Within Limits

Prediction Limit Interwell Parametric

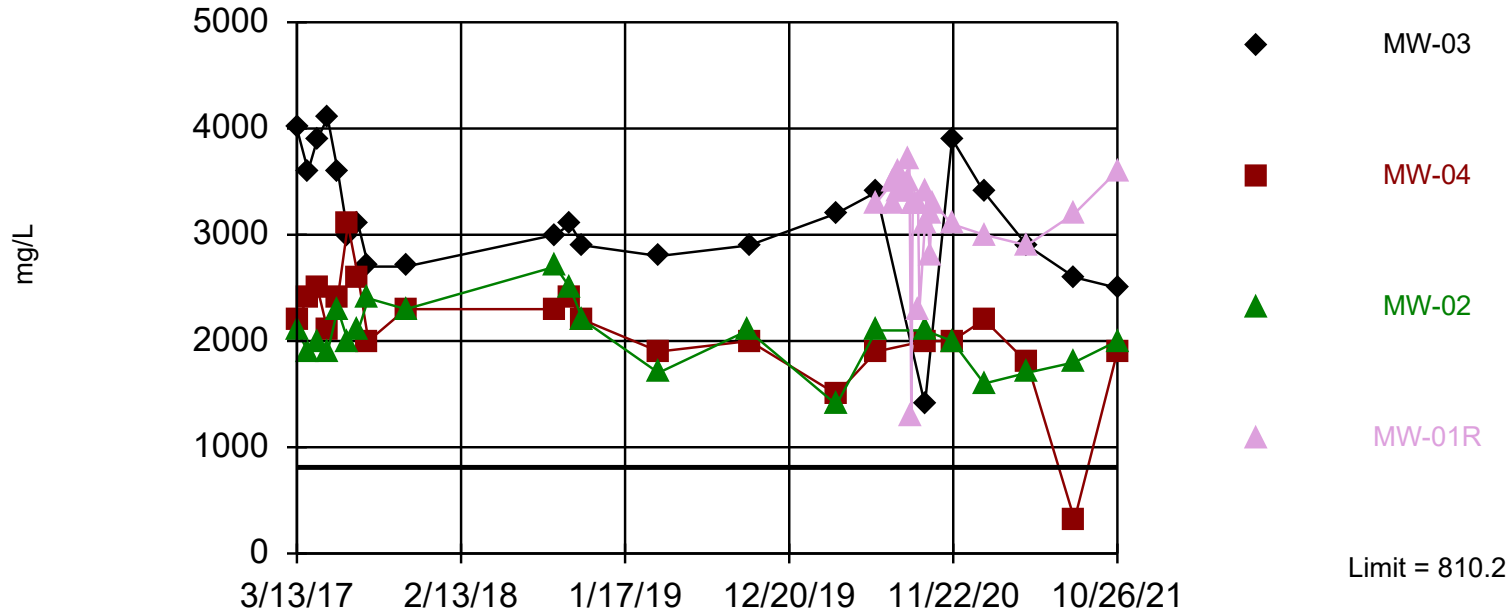


Background Data Summary: Mean=7.187, Std. Dev.=0.4429, n=17. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9662, critical = 0.892. Report alpha = 0.1682. Individual comparison alpha = 0.0225. Most recent point for each compliance well compared to limit.

Constituent: pH Analysis Run 1/3/2022 1:17 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-03, MW-04, MW-02,
MW-01R

Prediction Limit Interwell Parametric



Background Data Summary: Mean=666.1, Std. Dev.=78, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9596, critical = 0.897. Report alpha = 0.1682. Individual comparison alpha = 0.045. Most recent point for each compliance well compared to limit.

Constituent: Total Dissolved Solids Analysis Run 1/3/2022 1:17 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

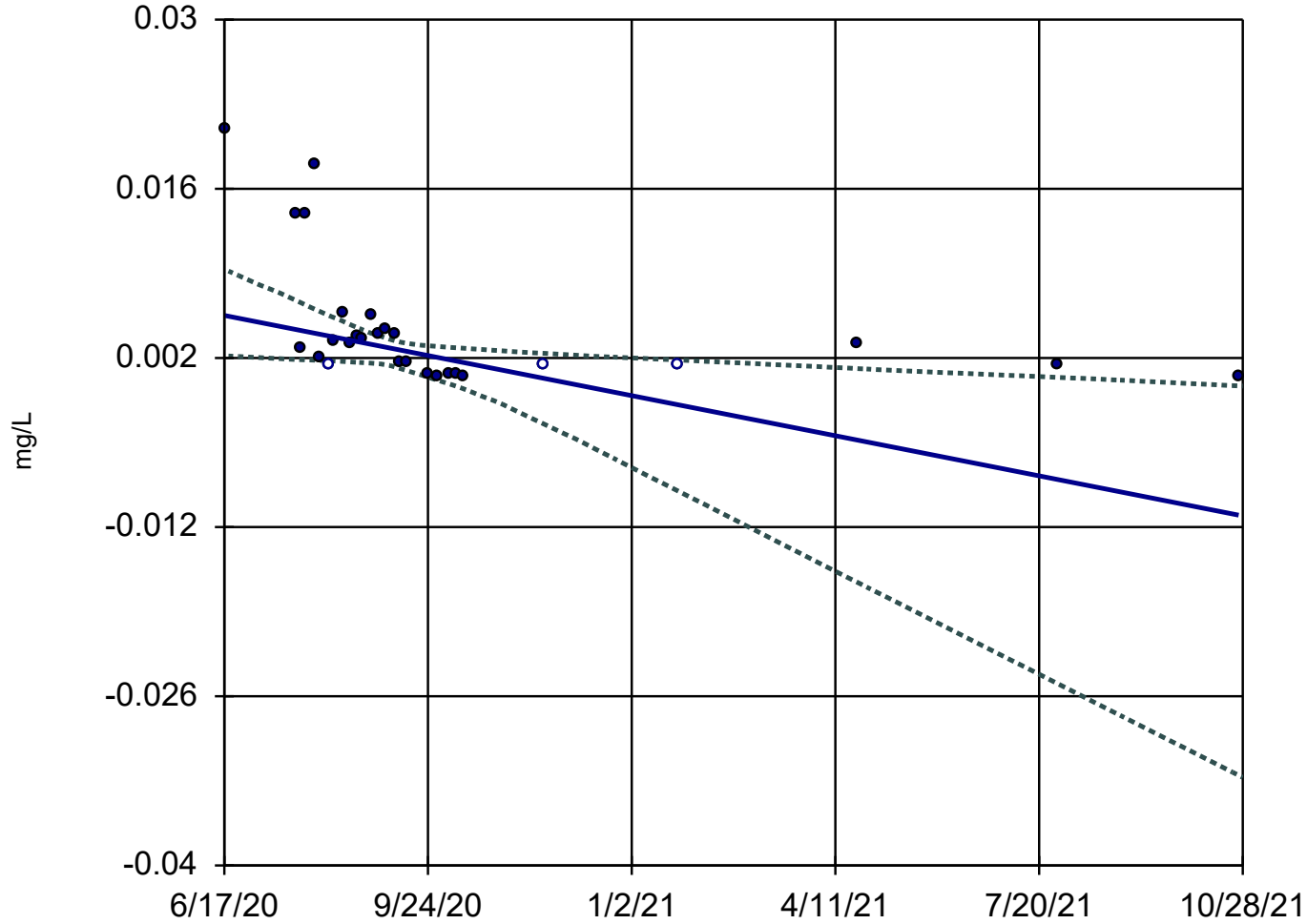
Interwell Prediction Limit

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:18 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Obsv.Bg N	Bg Wells	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (ug/L)	MW-03	16000	n/a	10/26/2021	4400	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-04	16000	n/a	10/26/2021	3700	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-02	16000	n/a	10/26/2021	100000	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-01R	16000	n/a	10/26/2021	140000	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-03	200000	n/a	10/26/2021	490000	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-04	200000	n/a	10/26/2021	370000	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-02	200000	n/a	10/26/2021	190000	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-01R	200000	n/a	10/26/2021	220000	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-03	15	n/a	10/26/2021	330	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-04	15	n/a	10/26/2021	170	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-02	15	n/a	10/26/2021	140	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-01R	15	n/a	10/26/2021	230	18 MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Fluoride (mg/L)	MW-03	8.659	n/a	10/26/2021	10.806	18 MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-04	8.659	n/a	10/26/2021	11.216	18 MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-02	8.659	n/a	10/26/2021	19.316	18 MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-01R	8.659	n/a	10/26/2021	12.92	18 MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Iron (mg/L)	MW-03	22.22	n/a	10/26/2021	4.5	10 MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-04	22.22	n/a	10/26/2021	5.2	10 MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-02	22.22	n/a	10/26/2021	22	10 MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-01R	22.22	n/a	10/26/2021	1.7	10 MW-07	17.6	2.319	0	None	No	0.045	Param
pH (SU)	MW-03	8.178	6.196	10/26/2021	6.91	17 MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-04	8.178	6.196	10/26/2021	6.74	17 MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-02	8.178	6.196	10/26/2021	6.48	17 MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-01R	8.178	6.196	10/26/2021	7.8	17 MW-07	7.187	0.4429	0	None	No	0.0225	Param
Sulfate (mg/L)	MW-03	69.35	n/a	10/26/2021	23	18 MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-04	69.35	n/a	10/26/2021	450	18 MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-02	69.35	n/a	10/26/2021	10.41ND	18 MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-01R	69.35	n/a	10/26/2021	530	18 MW-07	36.17	17.96	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-03	810.2	n/a	10/26/2021	2500	18 MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-04	810.2	n/a	10/26/2021	1900	18 MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-02	810.2	n/a	10/26/2021	2000	18 MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-01R	810.2	n/a	10/26/2021	3600	18 MW-07	666.1	78	0	None	No	0.045	Param

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.01216
units per year.

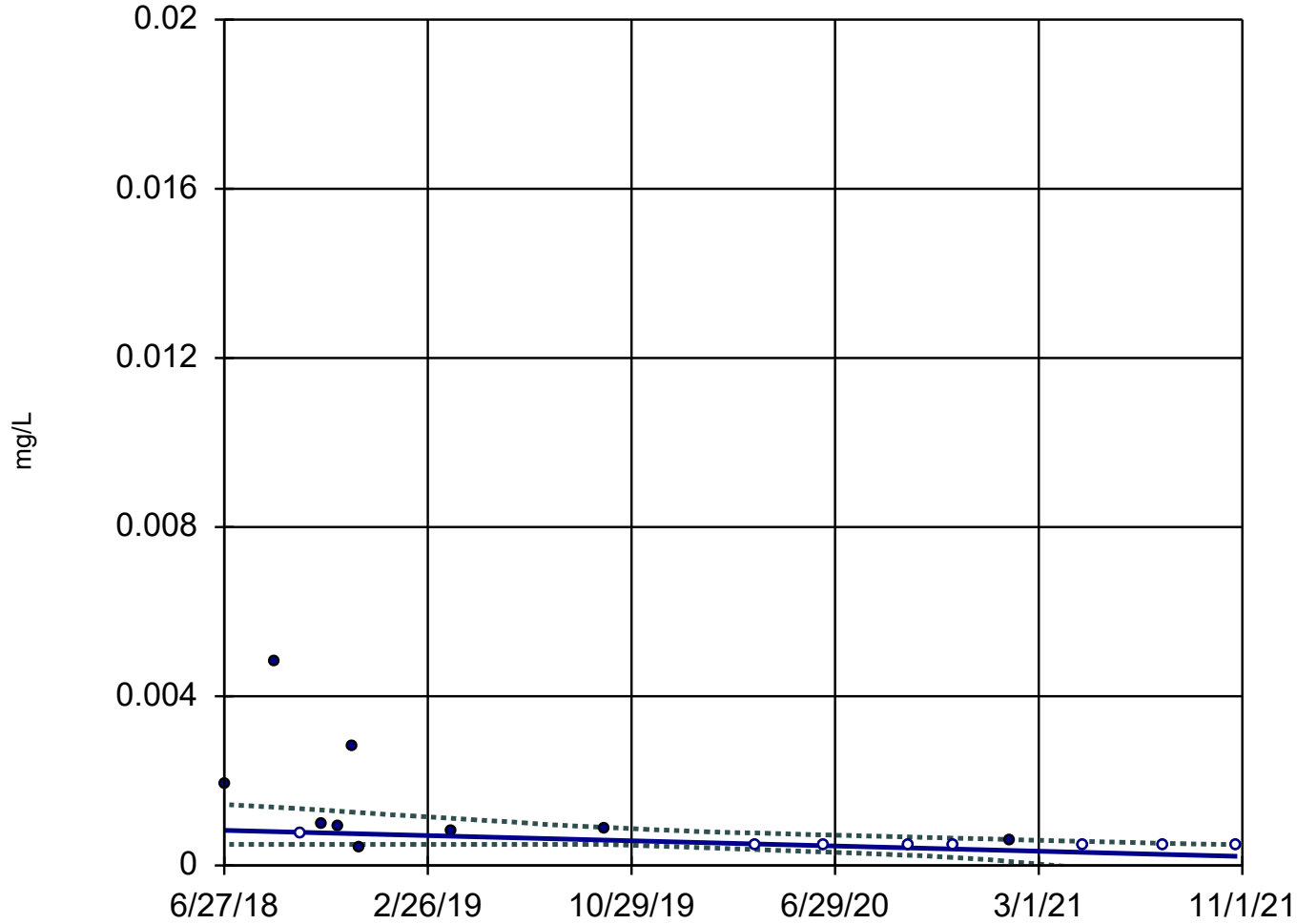
Mann-Kendall
statistic = -202
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Antimony Analysis Run 1/3/2022 1:06 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

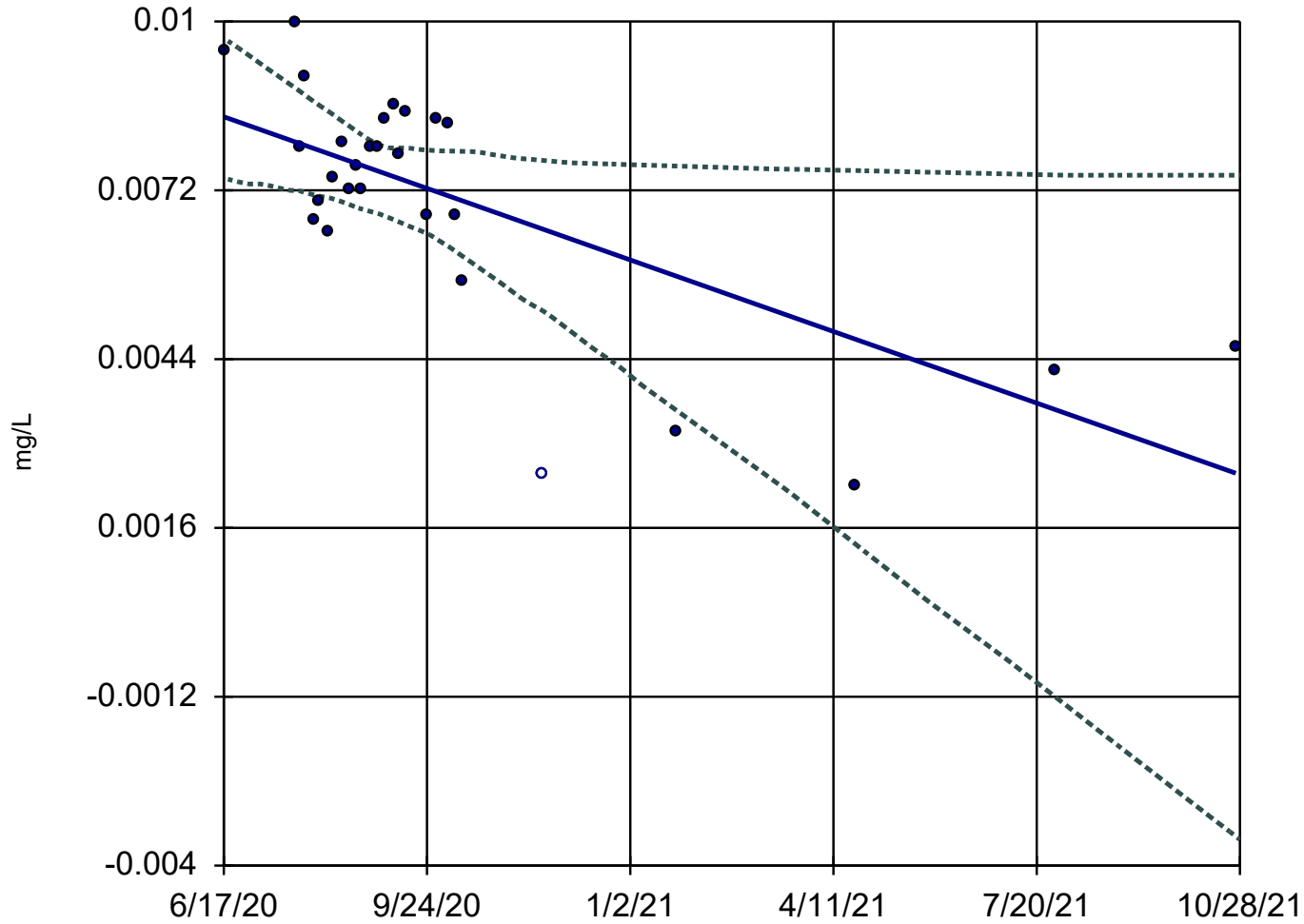
MW-07 (bg)



n = 17
Slope = -0.000184
units per year.
Mann-Kendall
statistic = -67
critical = -58
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.00435
units per year.

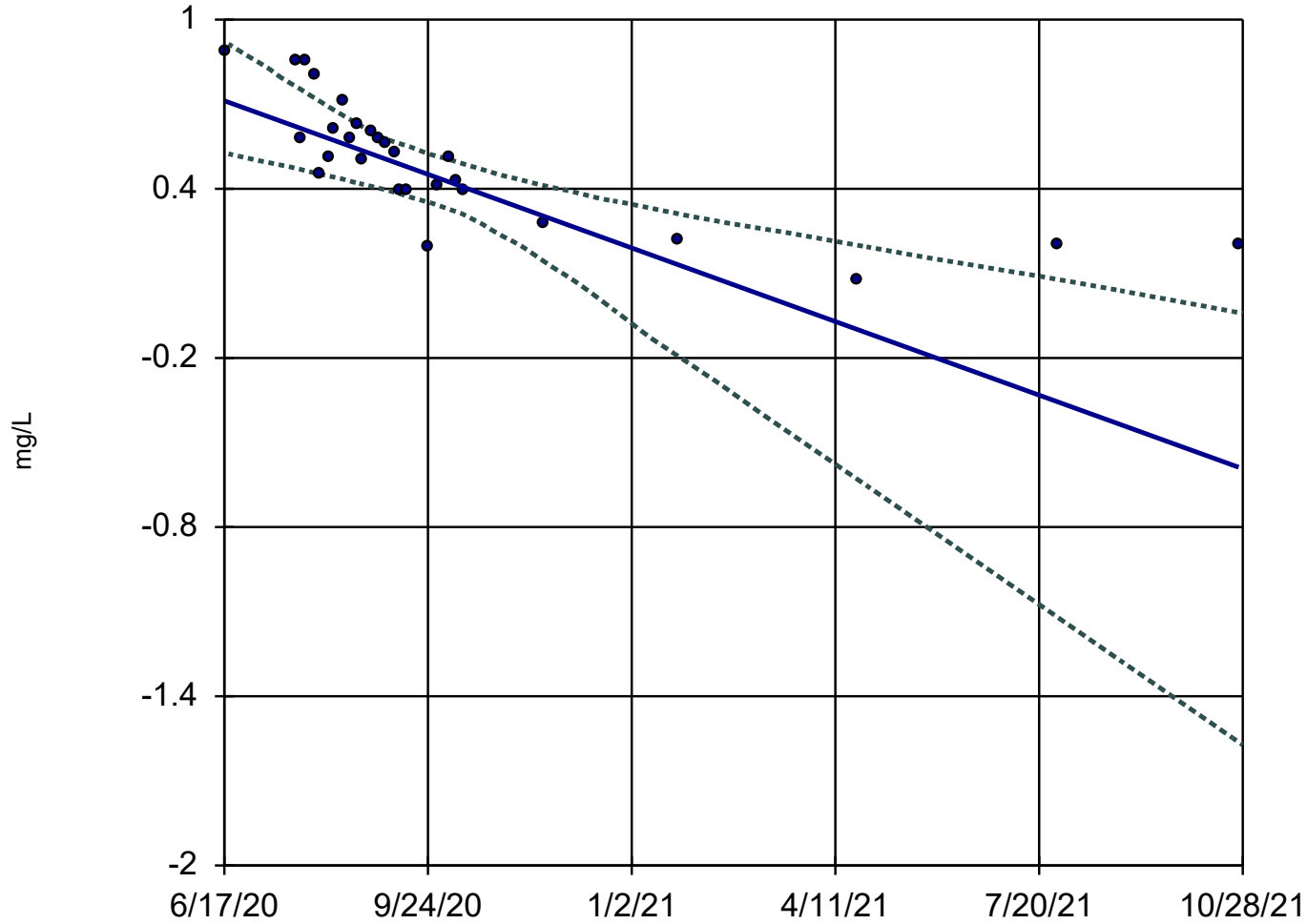
Mann-Kendall
statistic = -138
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Arsenic Analysis Run 1/3/2022 1:06 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.9564
units per year.

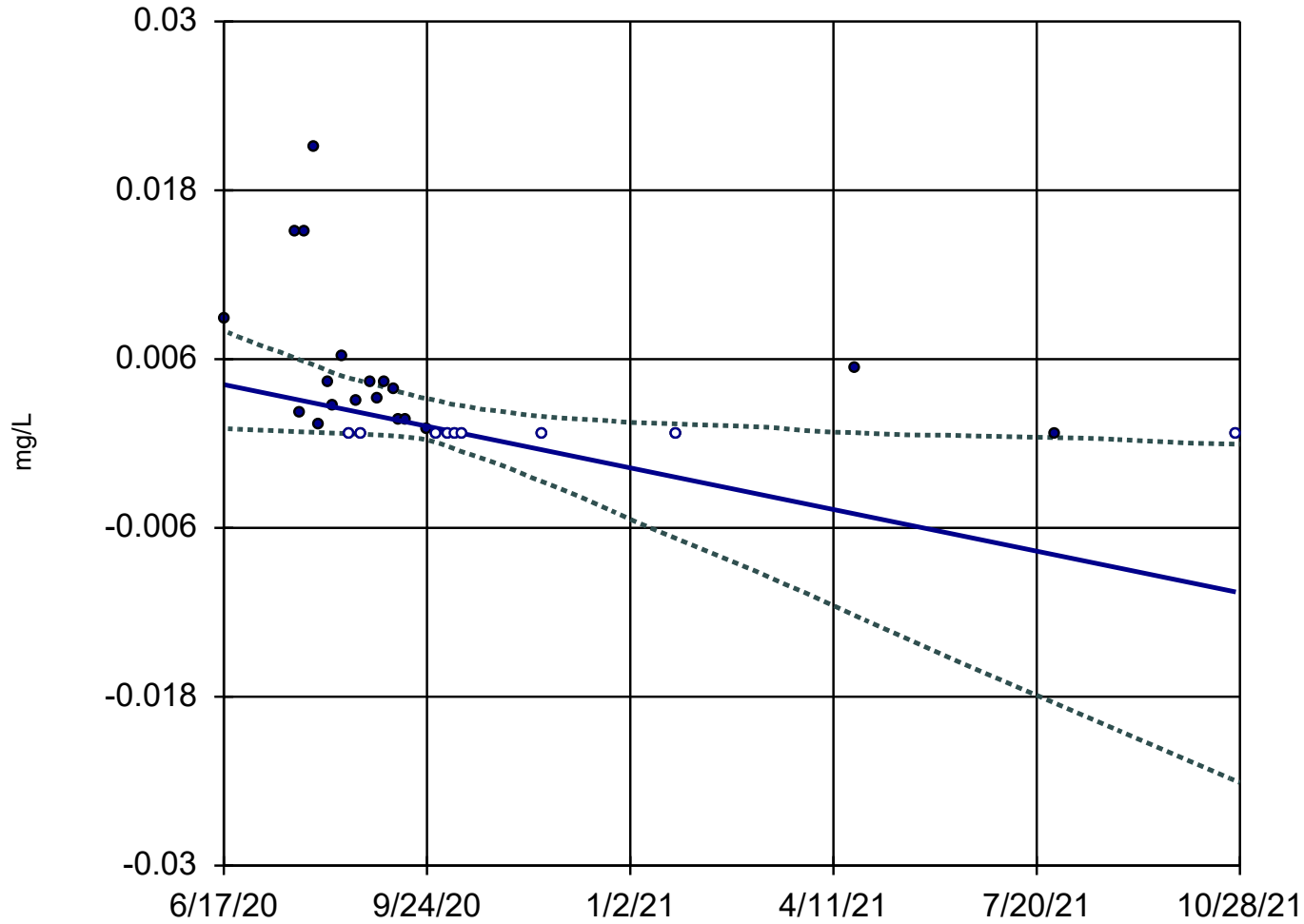
Mann-Kendall
statistic = -265
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Barium Analysis Run 1/3/2022 1:06 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.01085
units per year.

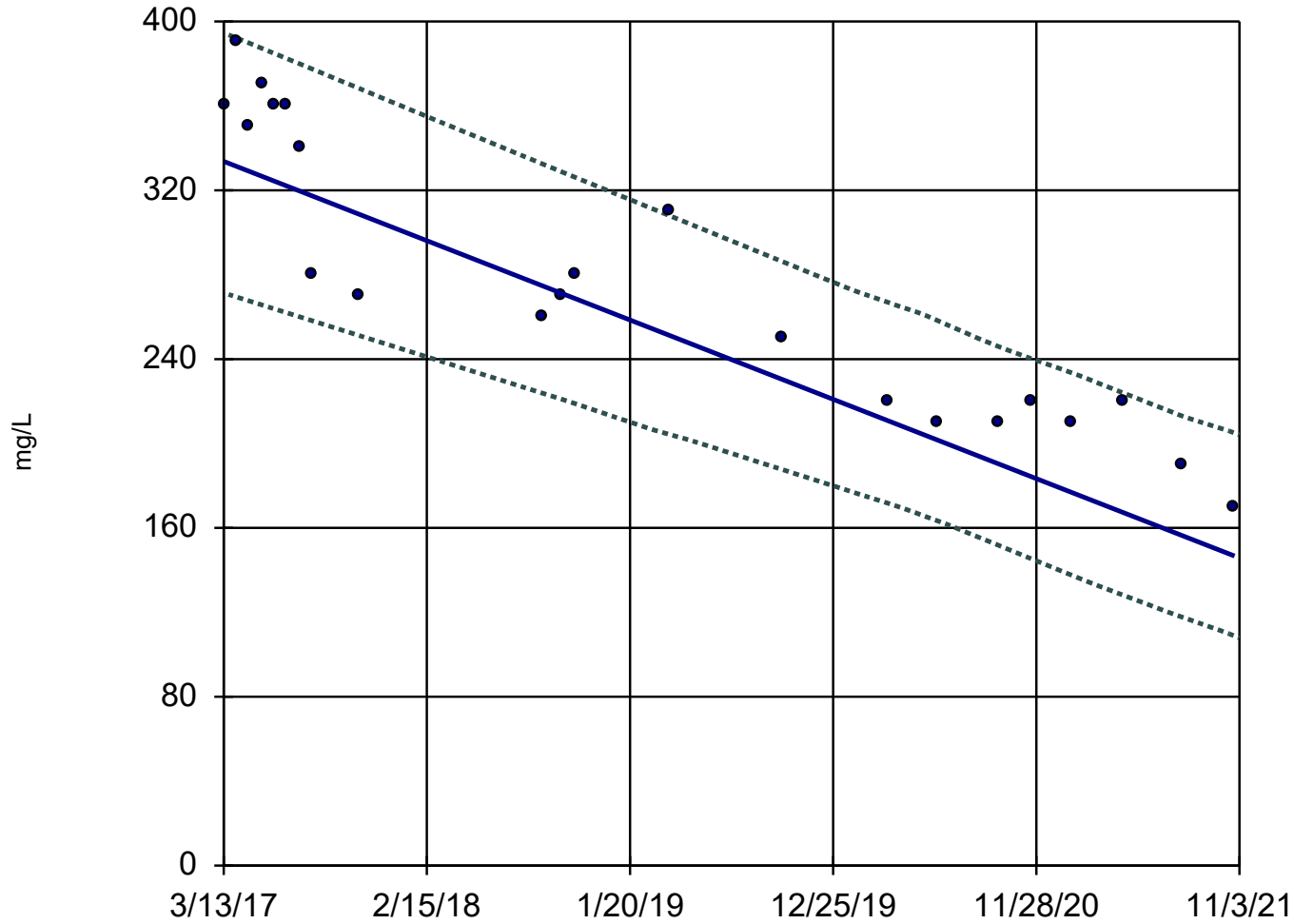
Mann-Kendall
statistic = -183
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Cadmium Analysis Run 1/3/2022 1:07 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-04



n = 22

Slope = -40.44
units per year.

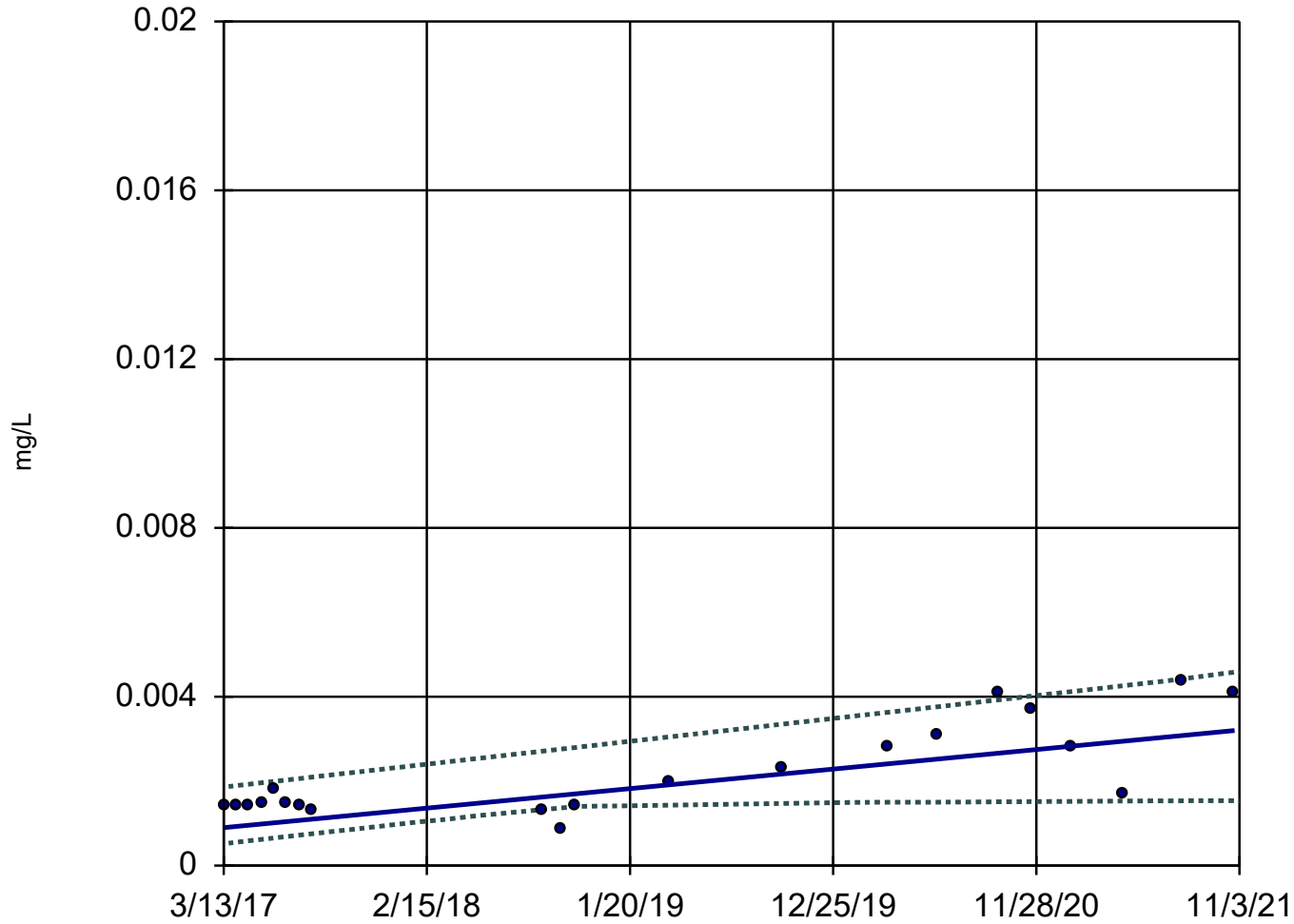
Mann-Kendall
statistic = -182
critical = -84

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Chloride Analysis Run 1/3/2022 1:07 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-03



n = 21

Slope = 0.0004979
units per year.

Mann-Kendall
statistic = 110
critical = 78

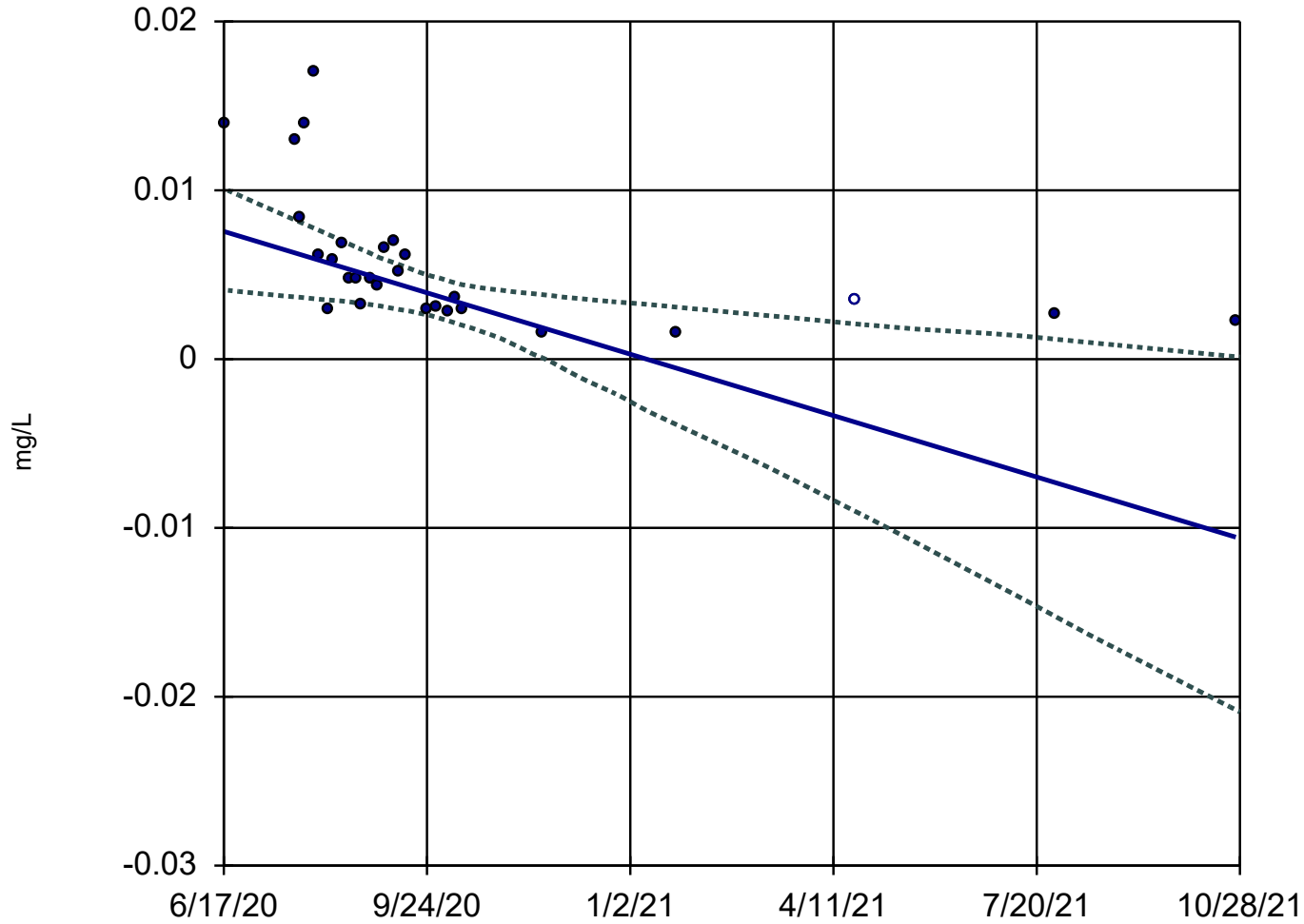
Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Chromium Analysis Run 1/3/2022 1:07 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

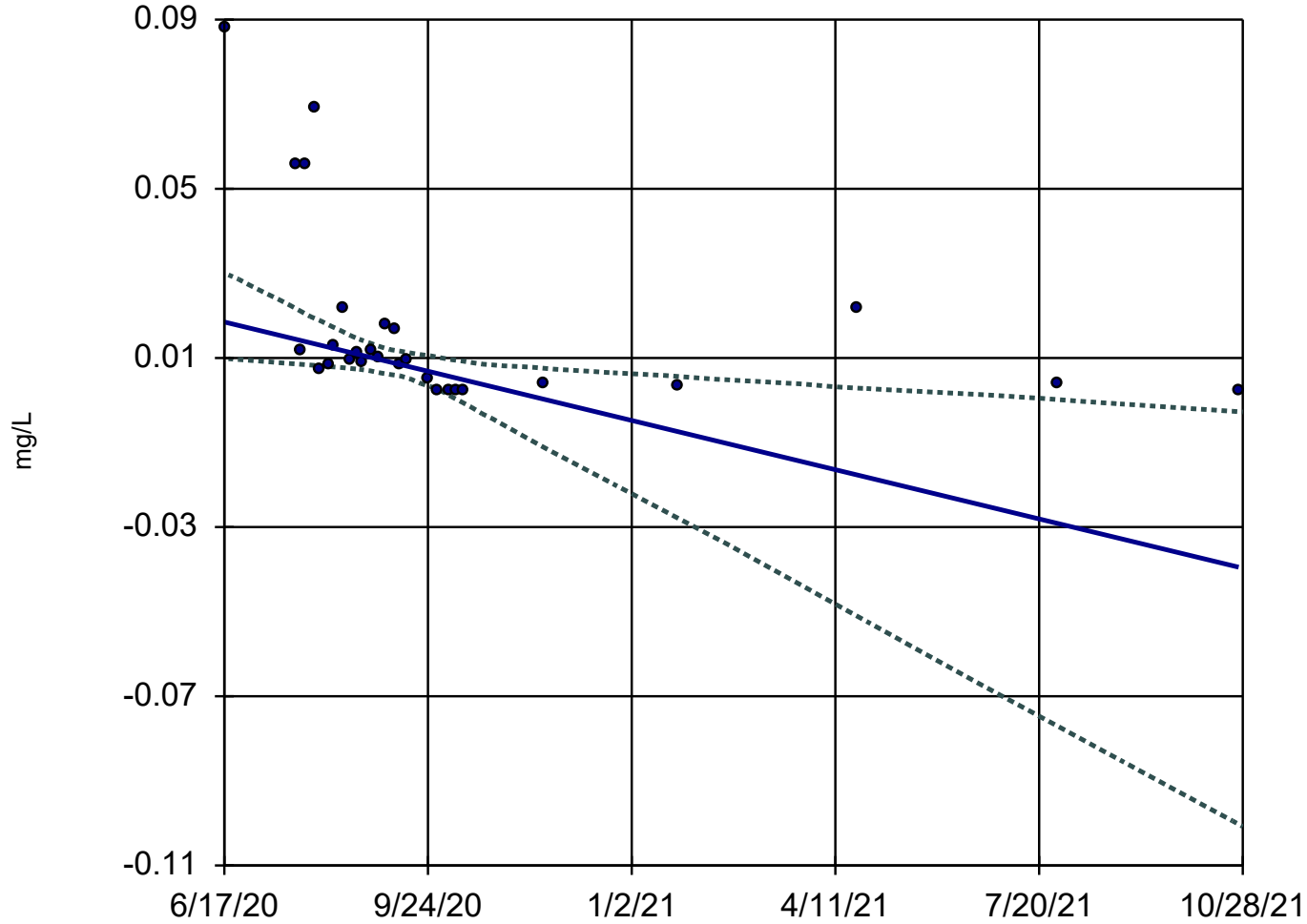
Sen's Slope and 95% Confidence Band

MW-01R



Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.04265
units per year.

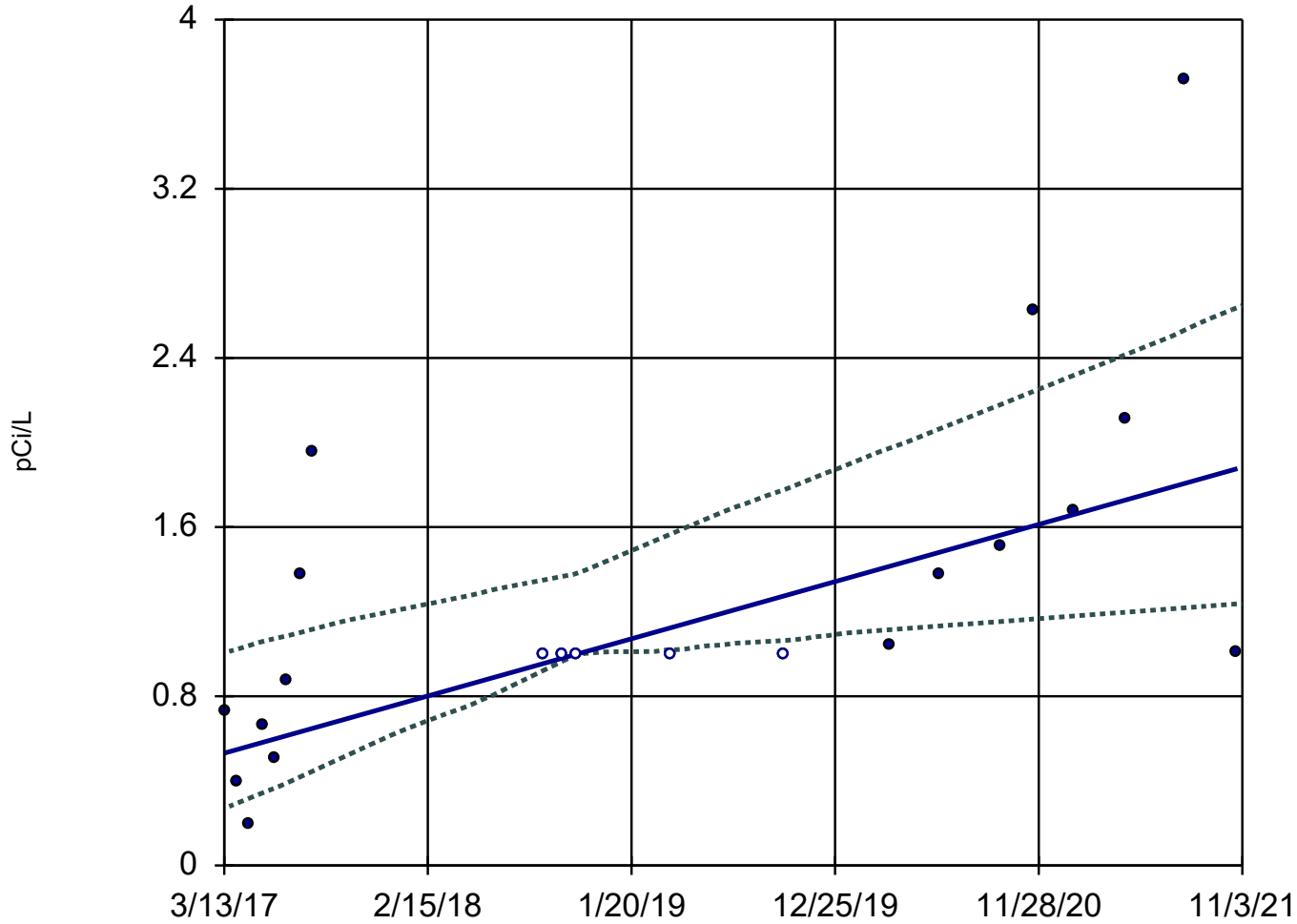
Mann-Kendall
statistic = -194
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Cobalt Analysis Run 1/3/2022 1:07 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

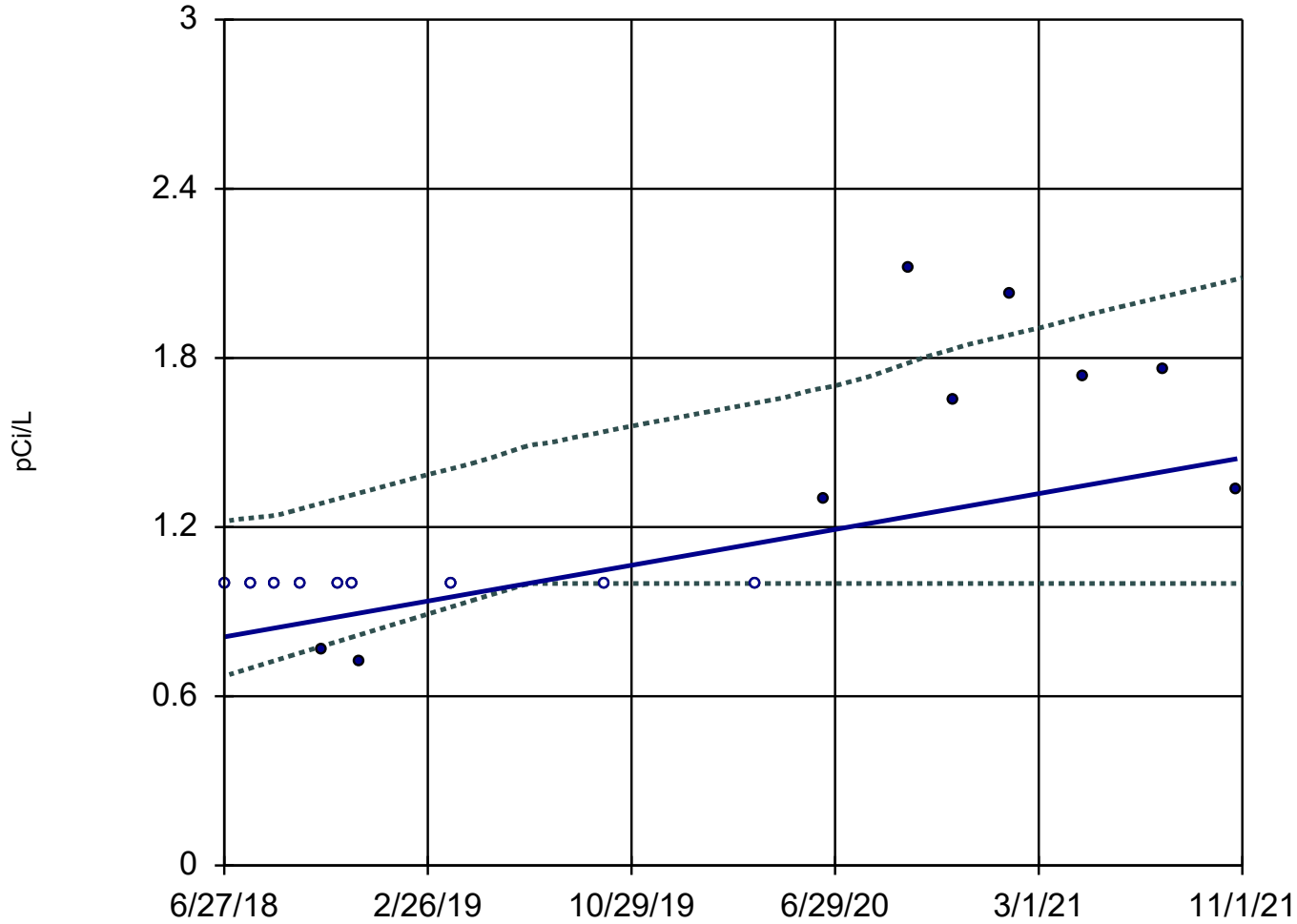
MW-03



n = 21
Slope = 0.2909
units per year.
Mann-Kendall
statistic = 135
critical = 78
Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 95% Confidence Band

MW-07 (bg)



n = 18

Slope = 0.1896
units per year.

Mann-Kendall
statistic = 73
critical = 63

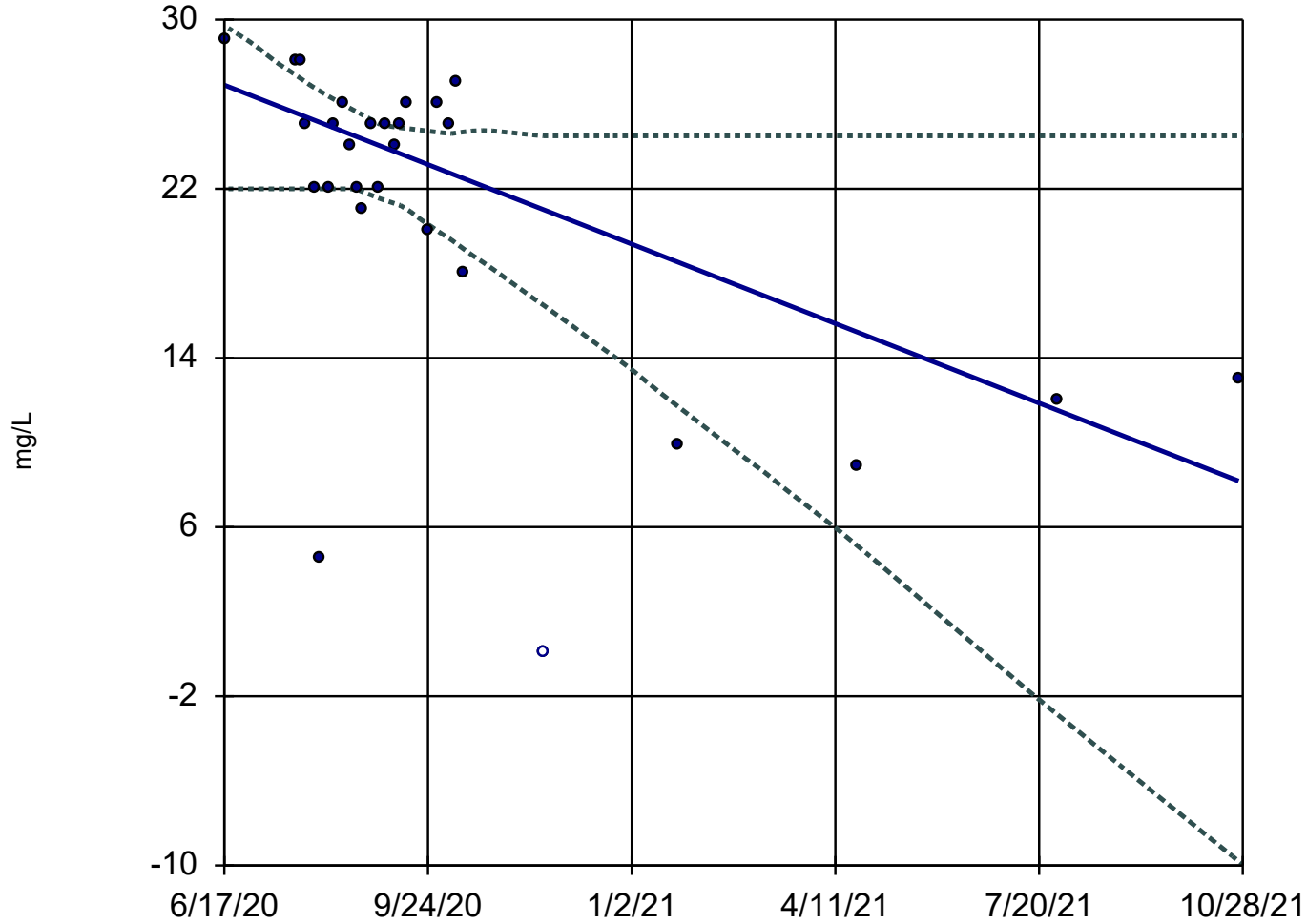
Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Combined Radium 226 + 228 Analysis Run 1/3/2022 1:07 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

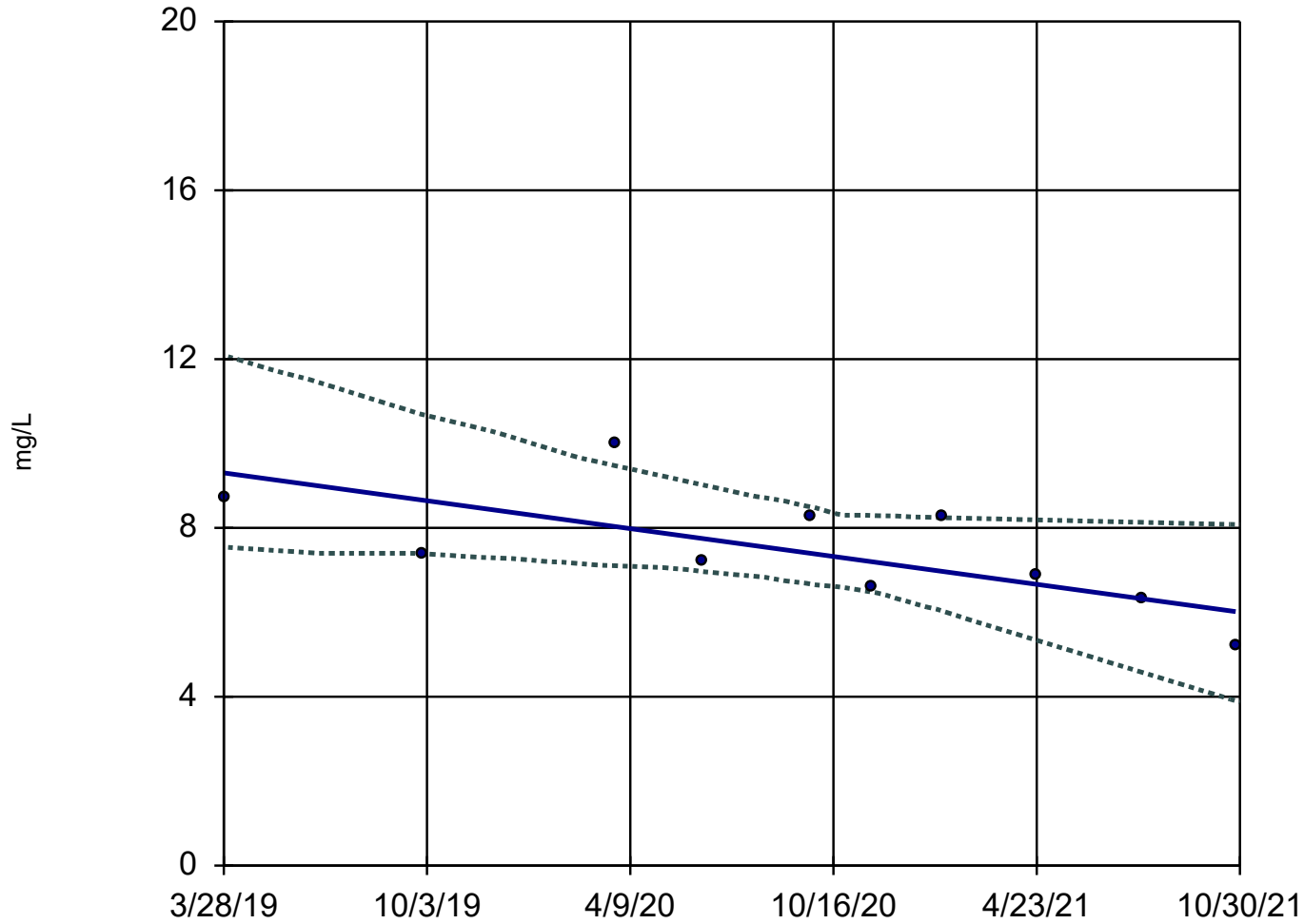
Sen's Slope and 95% Confidence Band

MW-01R



Sen's Slope and 95% Confidence Band

MW-04



n = 10

Slope = -1.271
units per year.

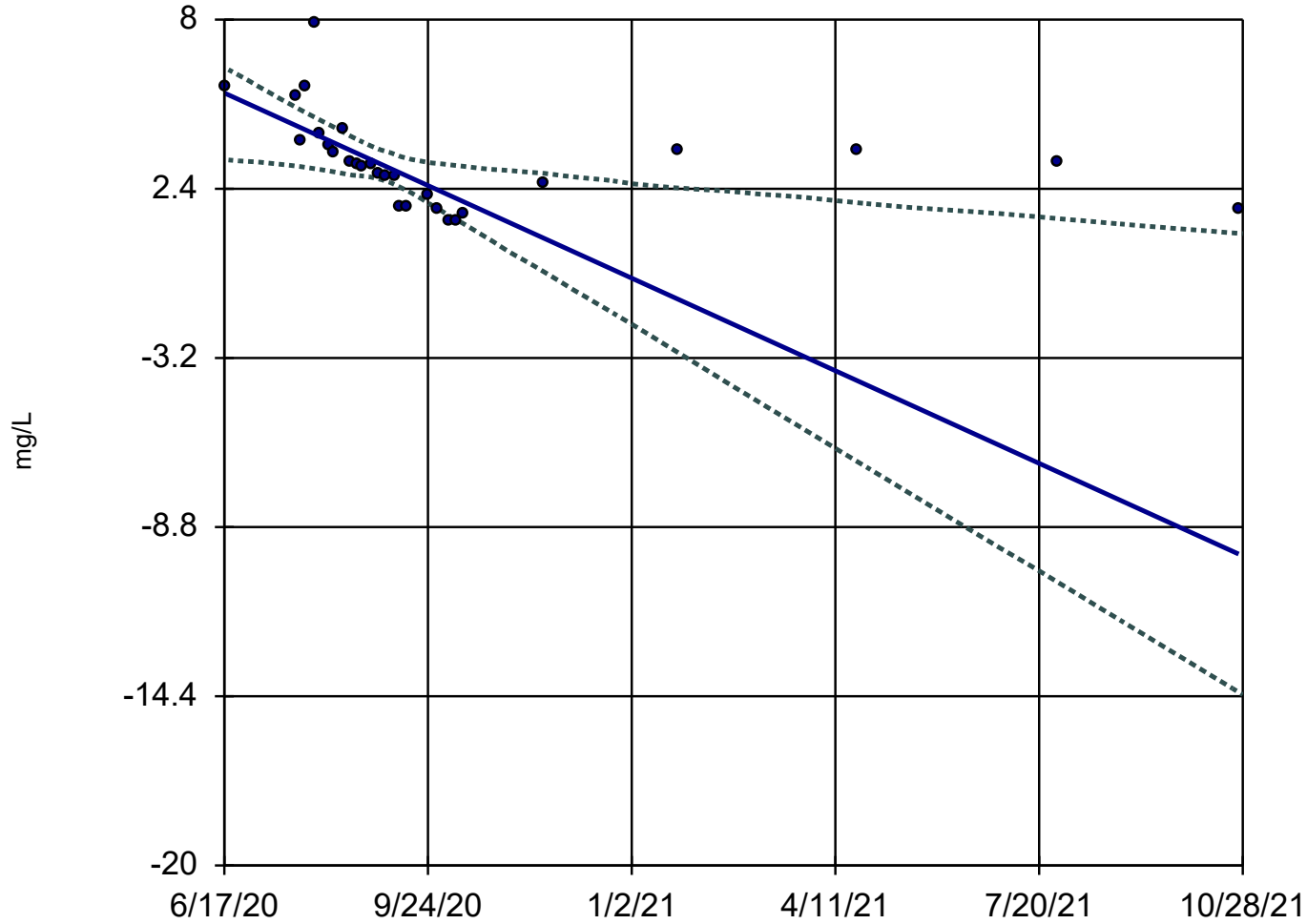
Mann-Kendall
statistic = -28
critical = -27

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Iron Analysis Run 1/3/2022 1:07 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -11.23
units per year.

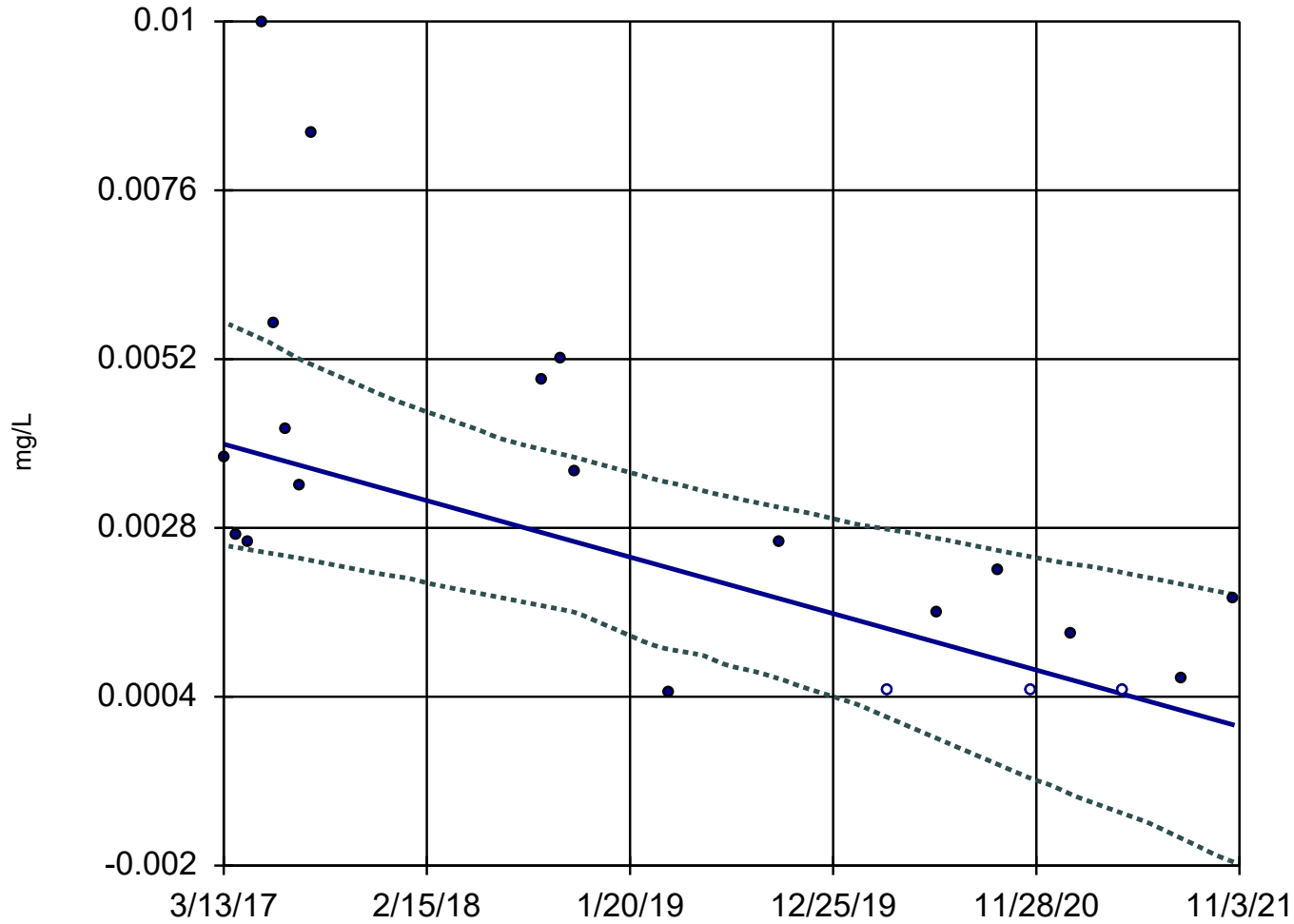
Mann-Kendall
statistic = -226
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Iron Analysis Run 1/3/2022 1:07 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-02



n = 21

Slope = -0.000864
units per year.

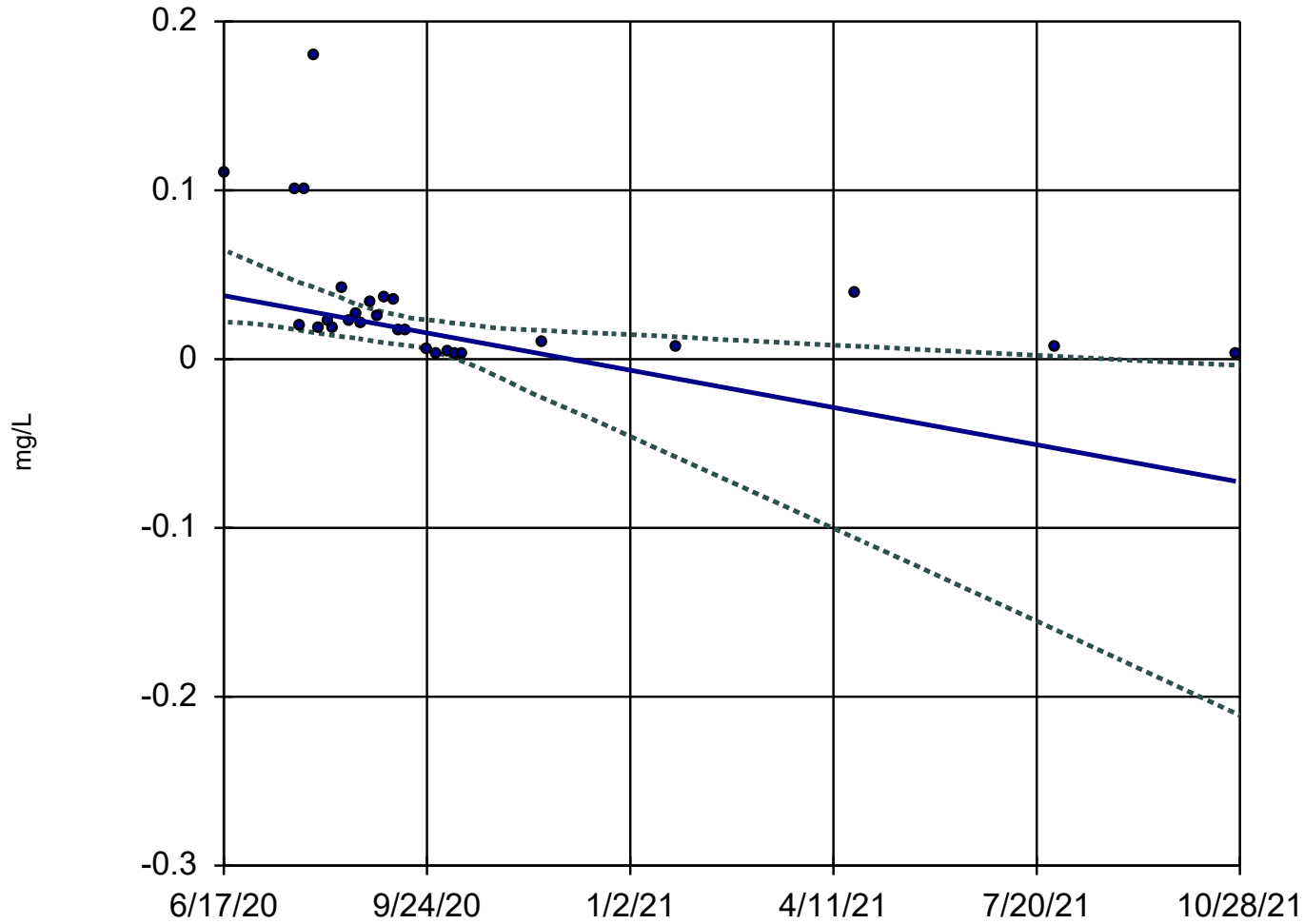
Mann-Kendall
statistic = -98
critical = -78

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Lead Analysis Run 1/3/2022 1:07 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.08089
units per year.

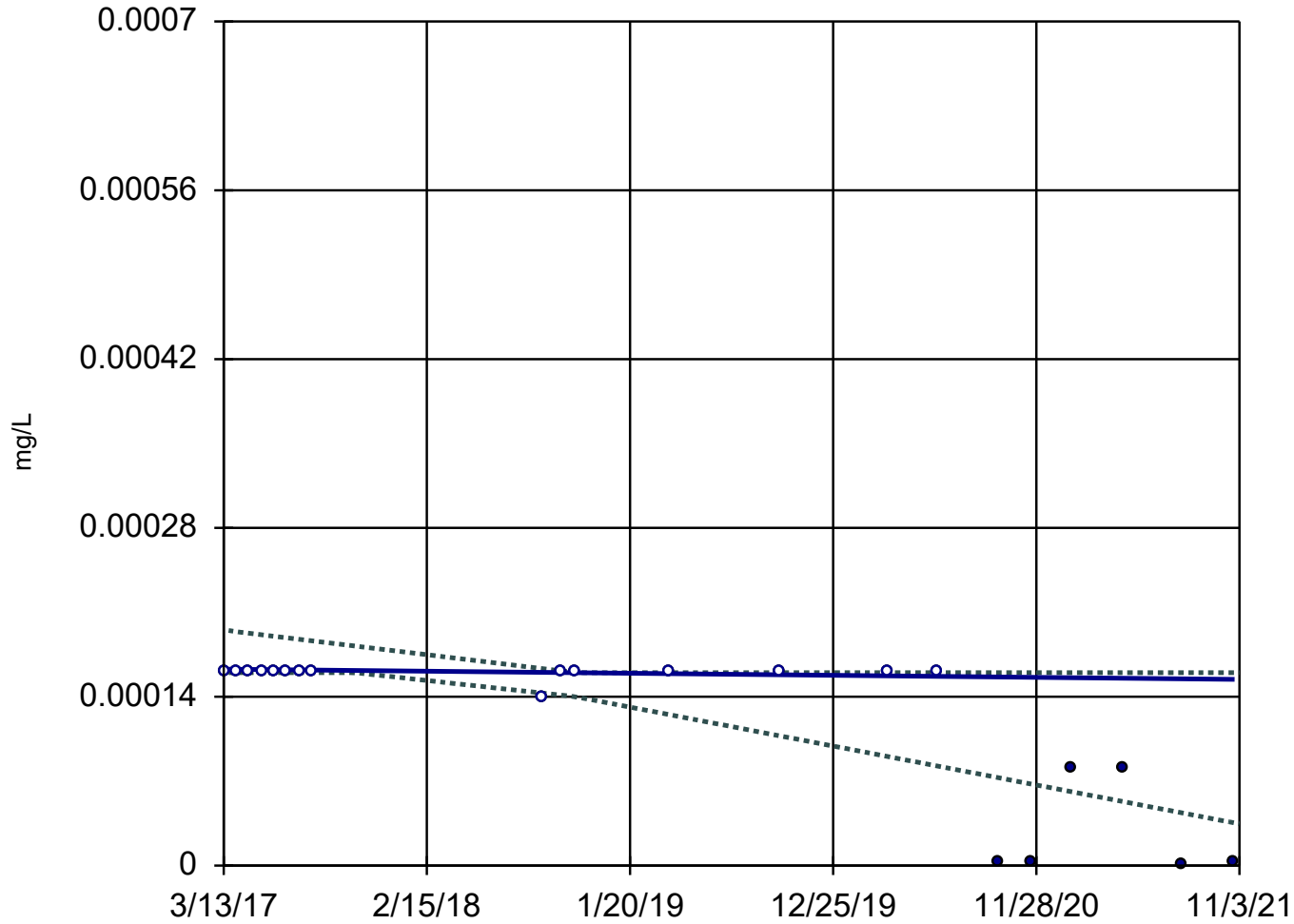
Mann-Kendall
statistic = -192
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Lead Analysis Run 1/3/2022 1:07 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

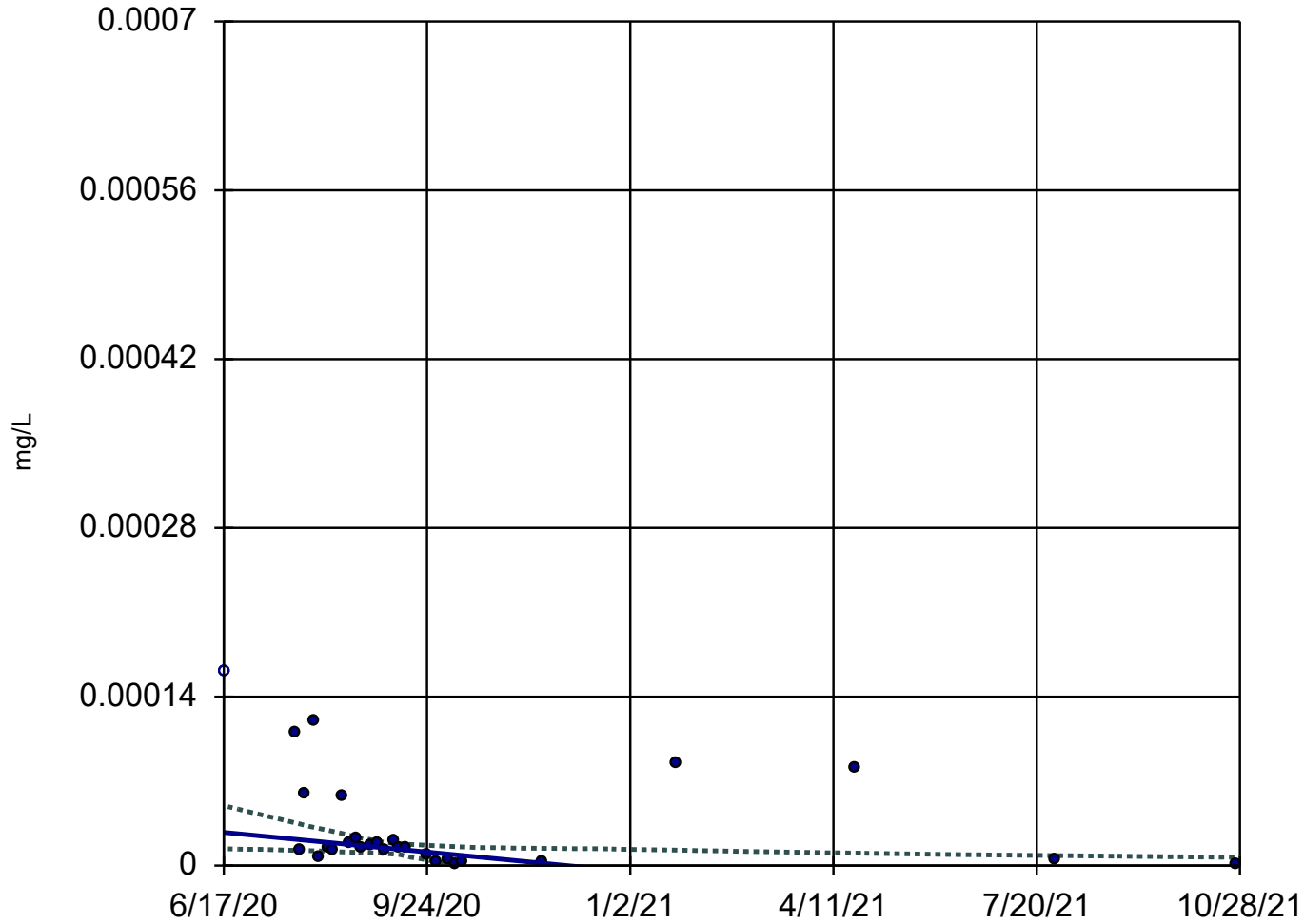
Sen's Slope and 95% Confidence Band

MW-02



Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.00005975
units per year.

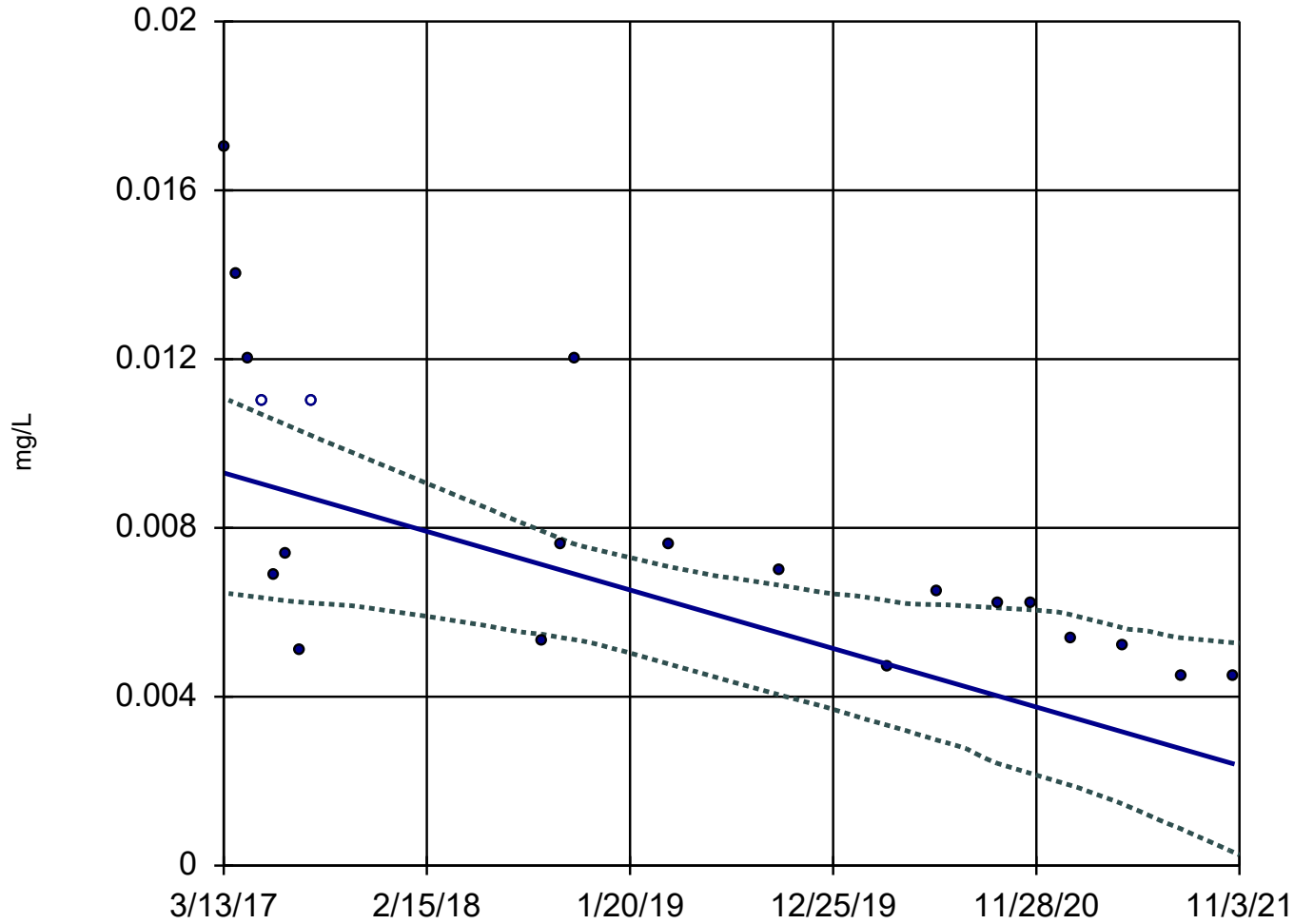
Mann-Kendall
statistic = -156
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Mercury Analysis Run 1/3/2022 1:07 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-02



n = 21

Slope = -0.001492
units per year.

Mann-Kendall
statistic = -131
critical = -78

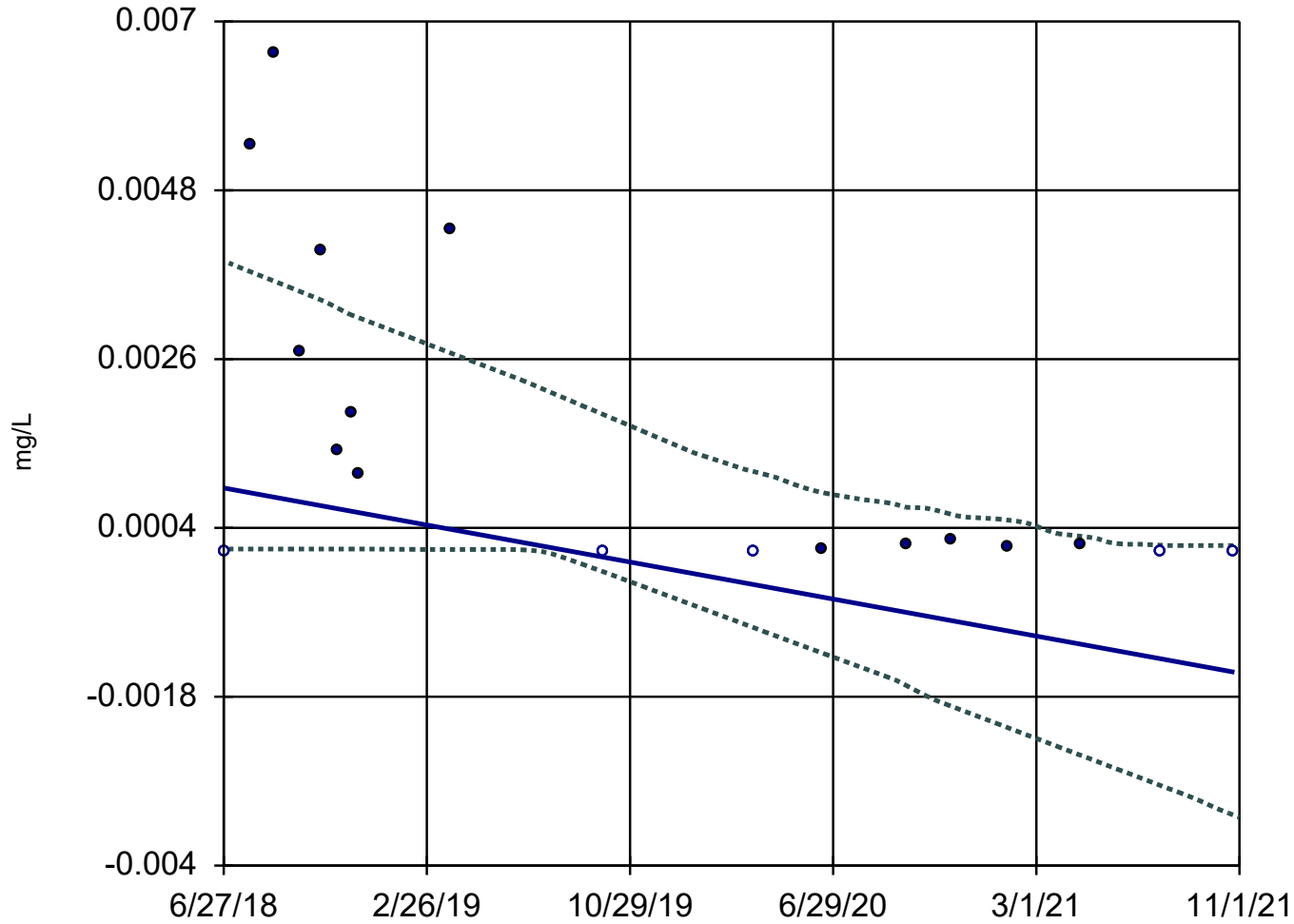
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Molybdenum Analysis Run 1/3/2022 1:07 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-07 (bg)



n = 18

Slope = -0.00072
units per year.

Mann-Kendall
statistic = -68
critical = -63

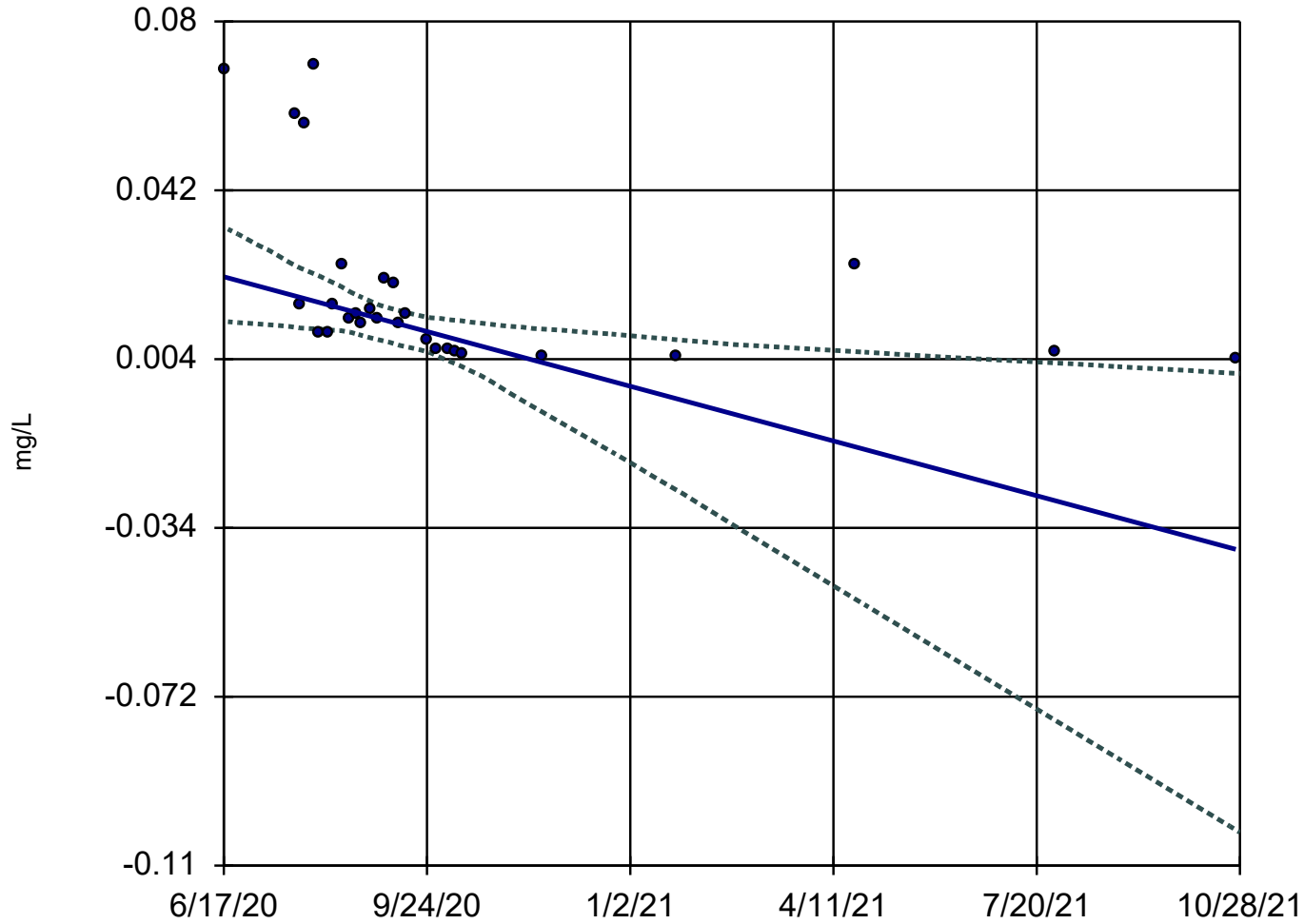
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Molybdenum Analysis Run 1/3/2022 1:07 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.04515
units per year.

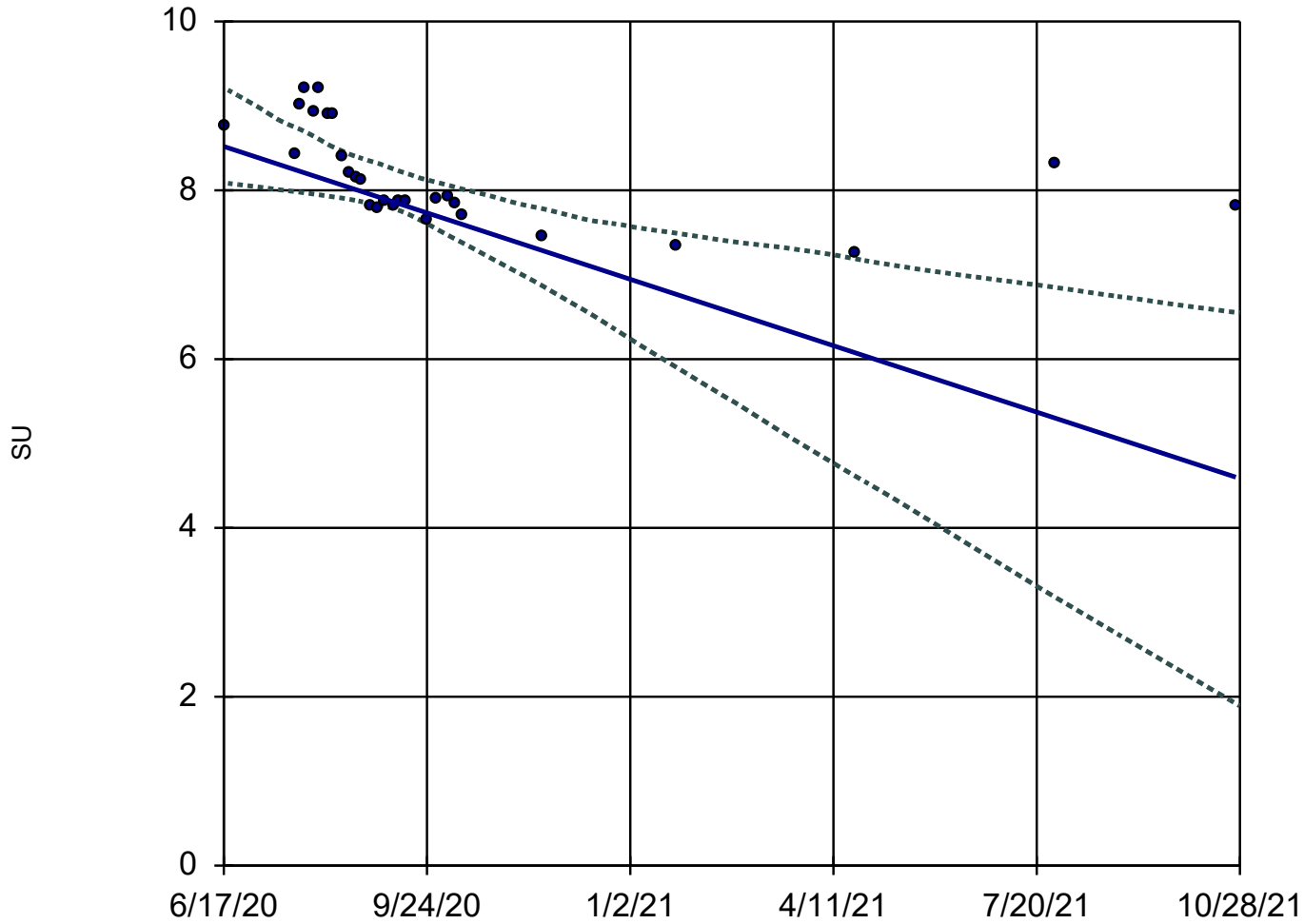
Mann-Kendall
statistic = -218
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Nickel Analysis Run 1/3/2022 1:08 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -2.882
units per year.

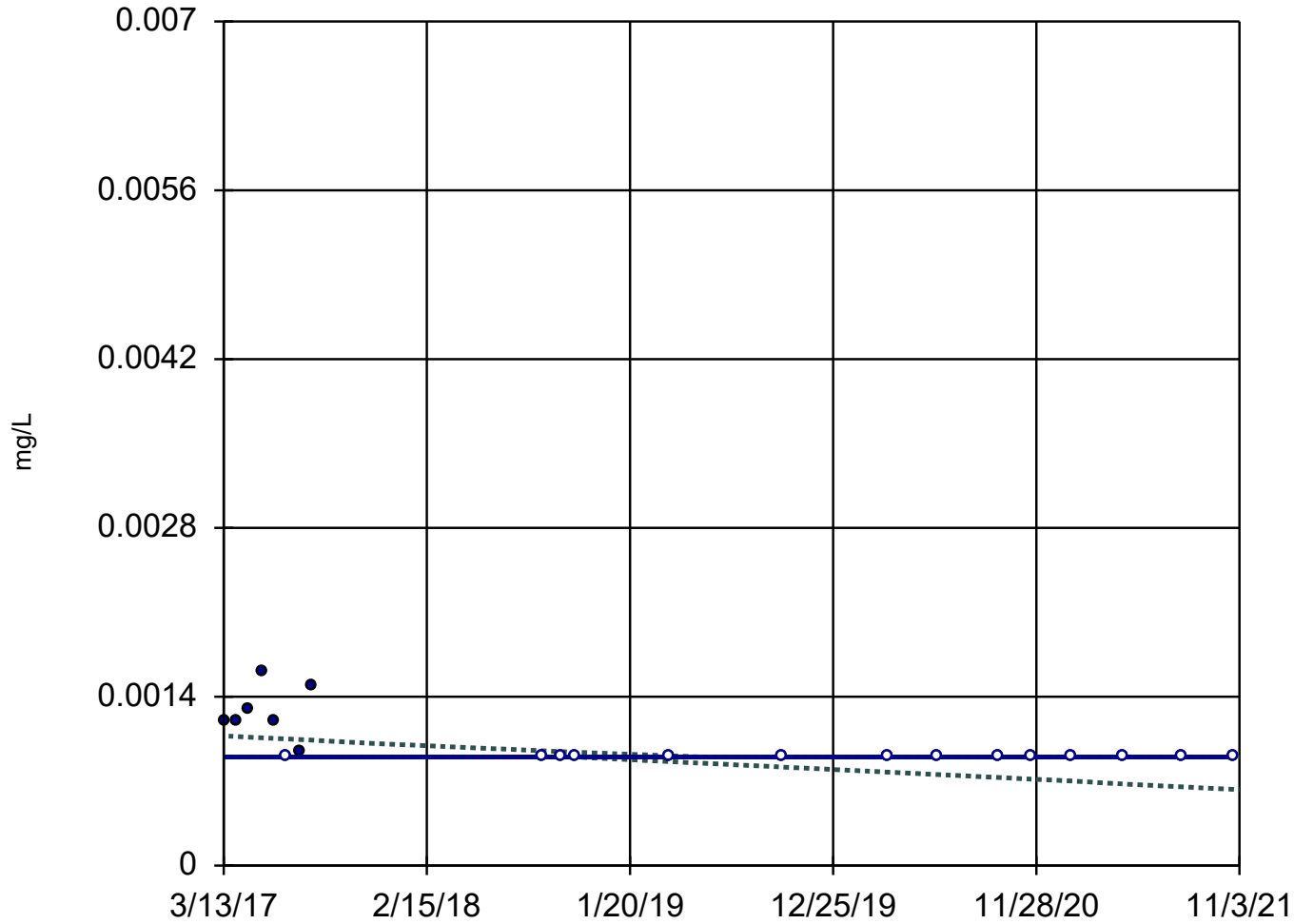
Mann-Kendall
statistic = -236
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: pH Analysis Run 1/3/2022 1:08 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-03

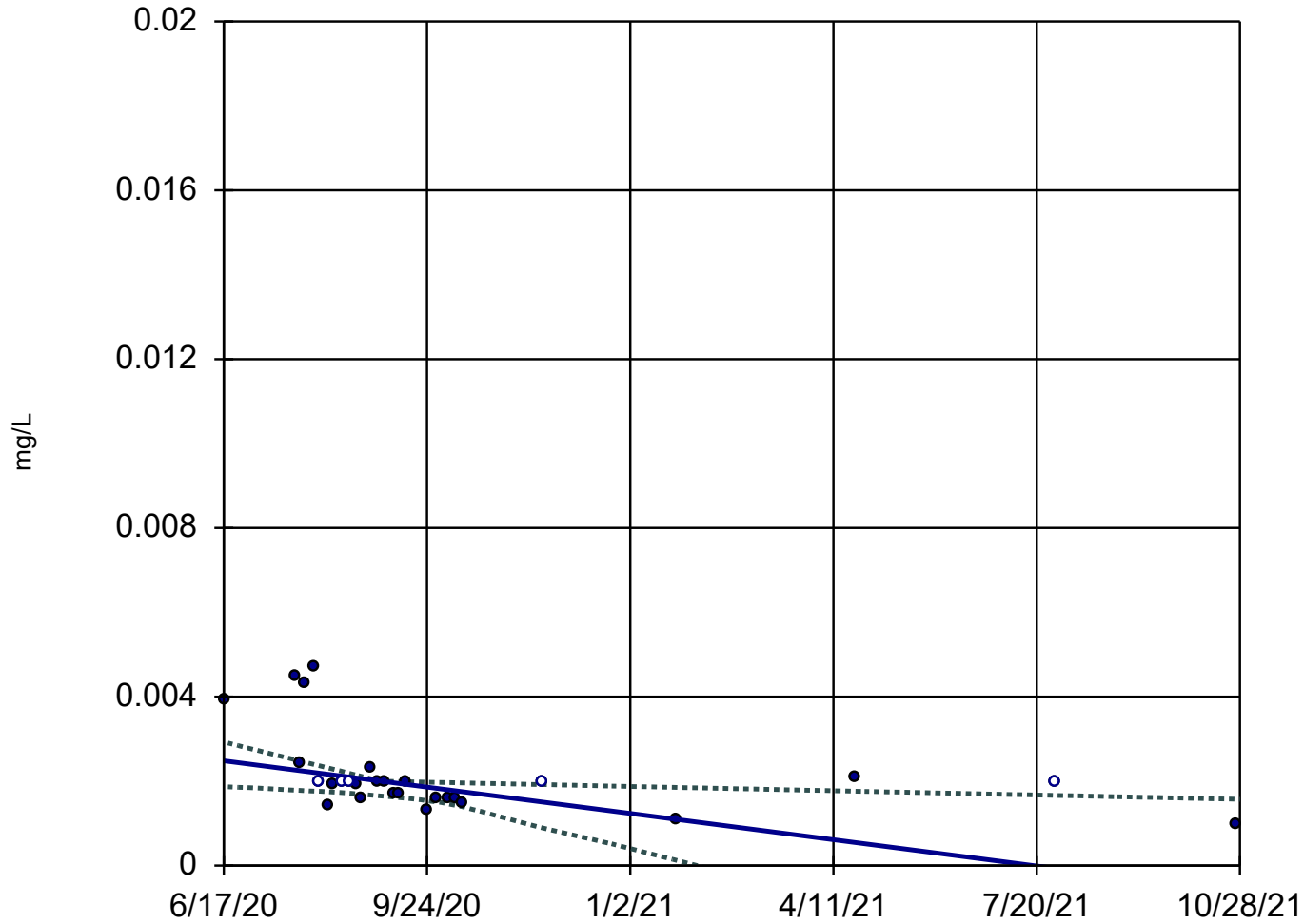


n = 21
Slope = 0
units per year.
Mann-Kendall
statistic = -92
critical = -78
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Selenium Analysis Run 1/3/2022 1:08 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

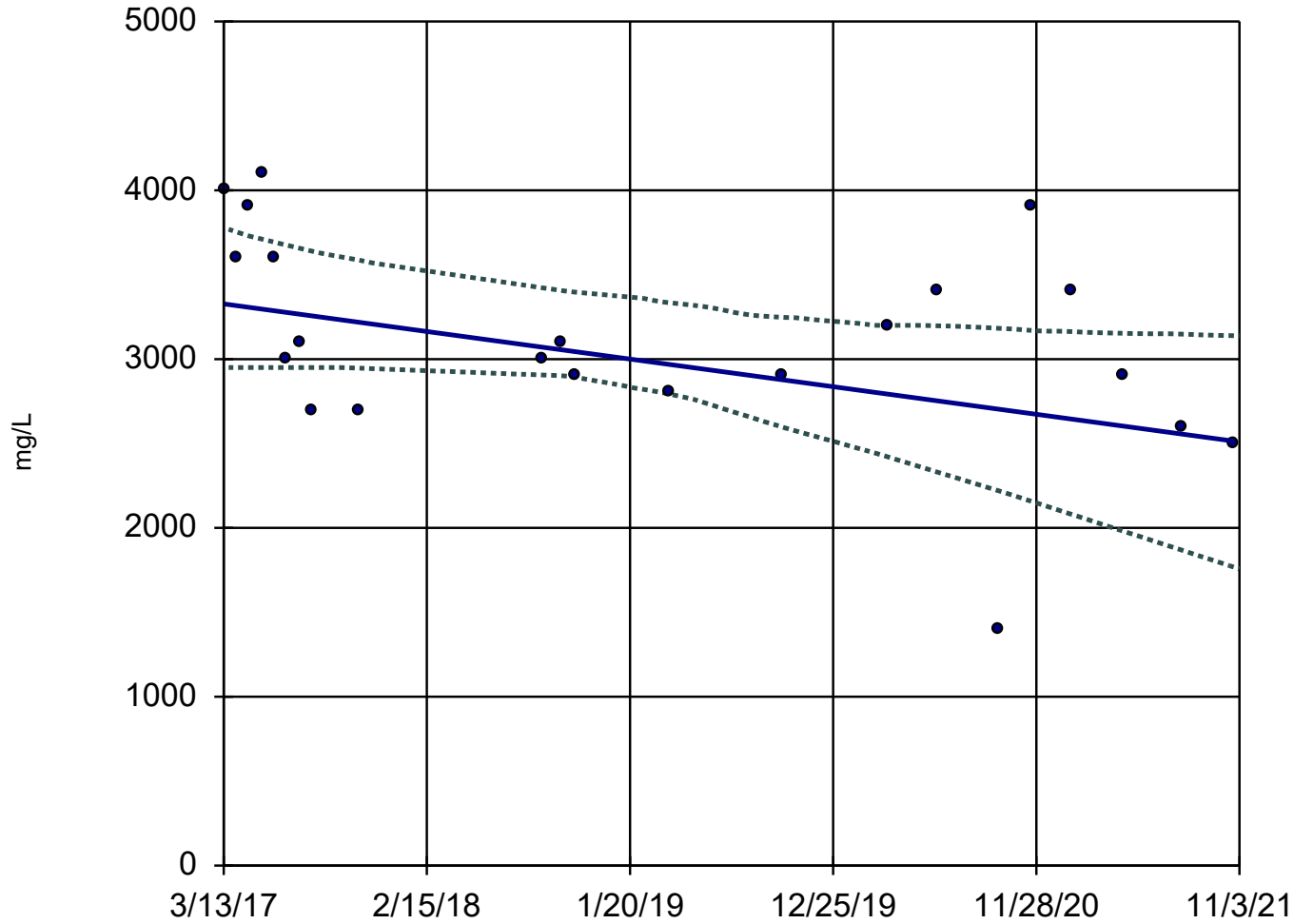
Sen's Slope and 95% Confidence Band

MW-01R



Sen's Slope and 95% Confidence Band

MW-03



n = 22

Slope = -175.8
units per year.

Mann-Kendall
statistic = -86
critical = -84

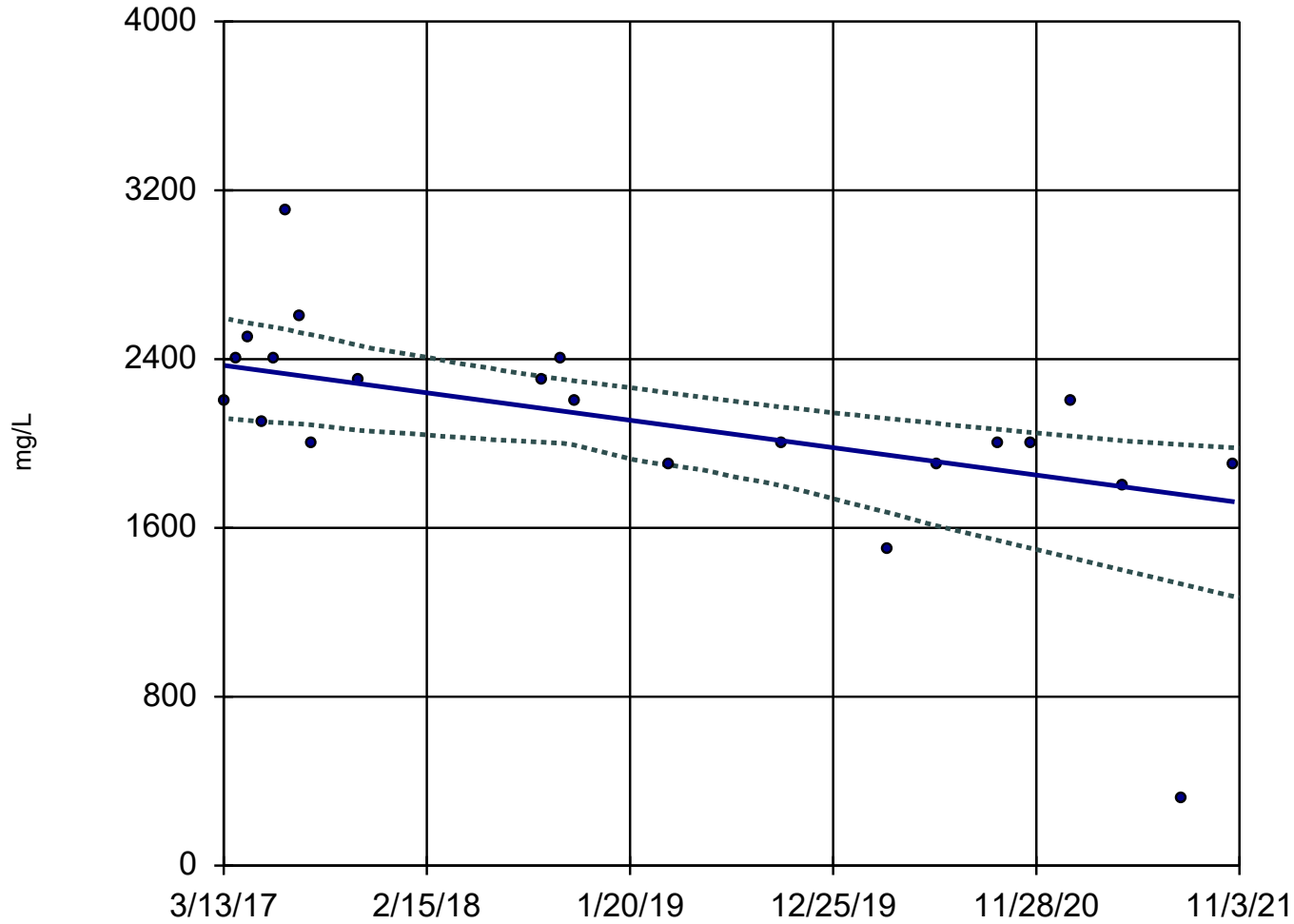
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Total Dissolved Solids Analysis Run 1/3/2022 1:08 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-04



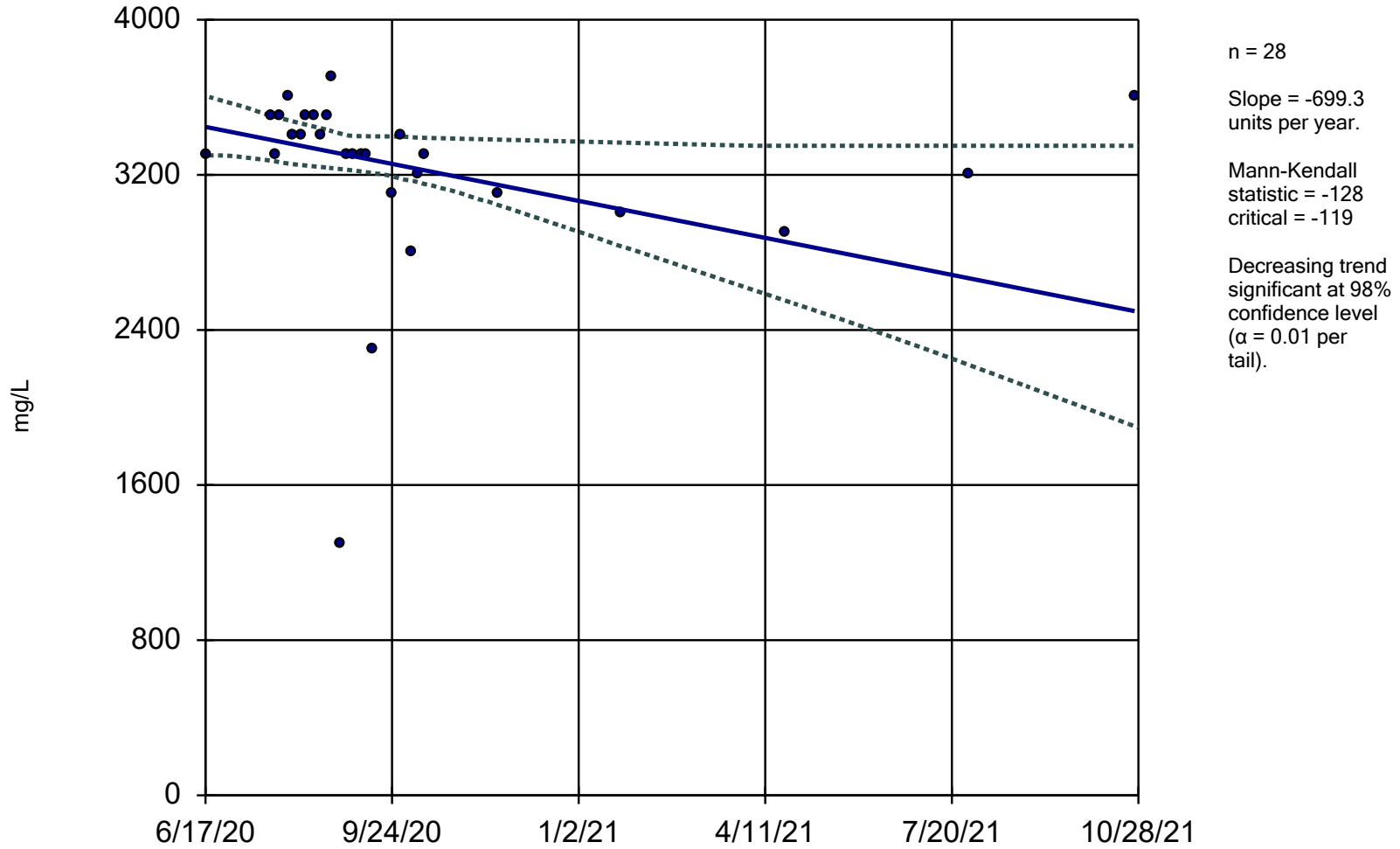
n = 22
Slope = -139.8 units per year.
Mann-Kendall statistic = -119 critical = -84
Decreasing trend significant at 98% confidence level ($\alpha = 0.01$ per tail).

Constituent: Total Dissolved Solids Analysis Run 1/3/2022 1:08 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R

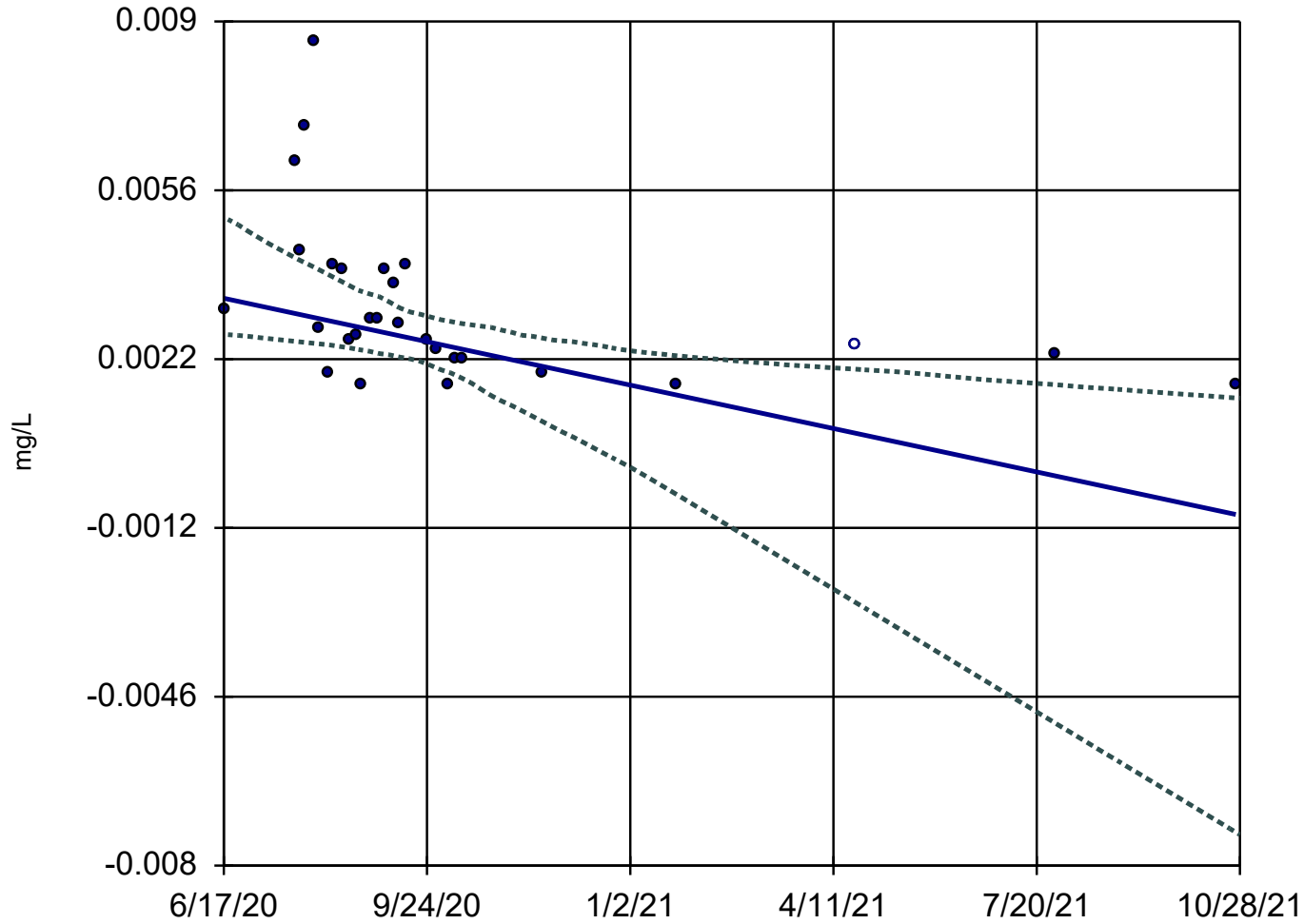


Constituent: Total Dissolved Solids Analysis Run 1/3/2022 1:08 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.003205
units per year.

Mann-Kendall
statistic = -190
critical = -119

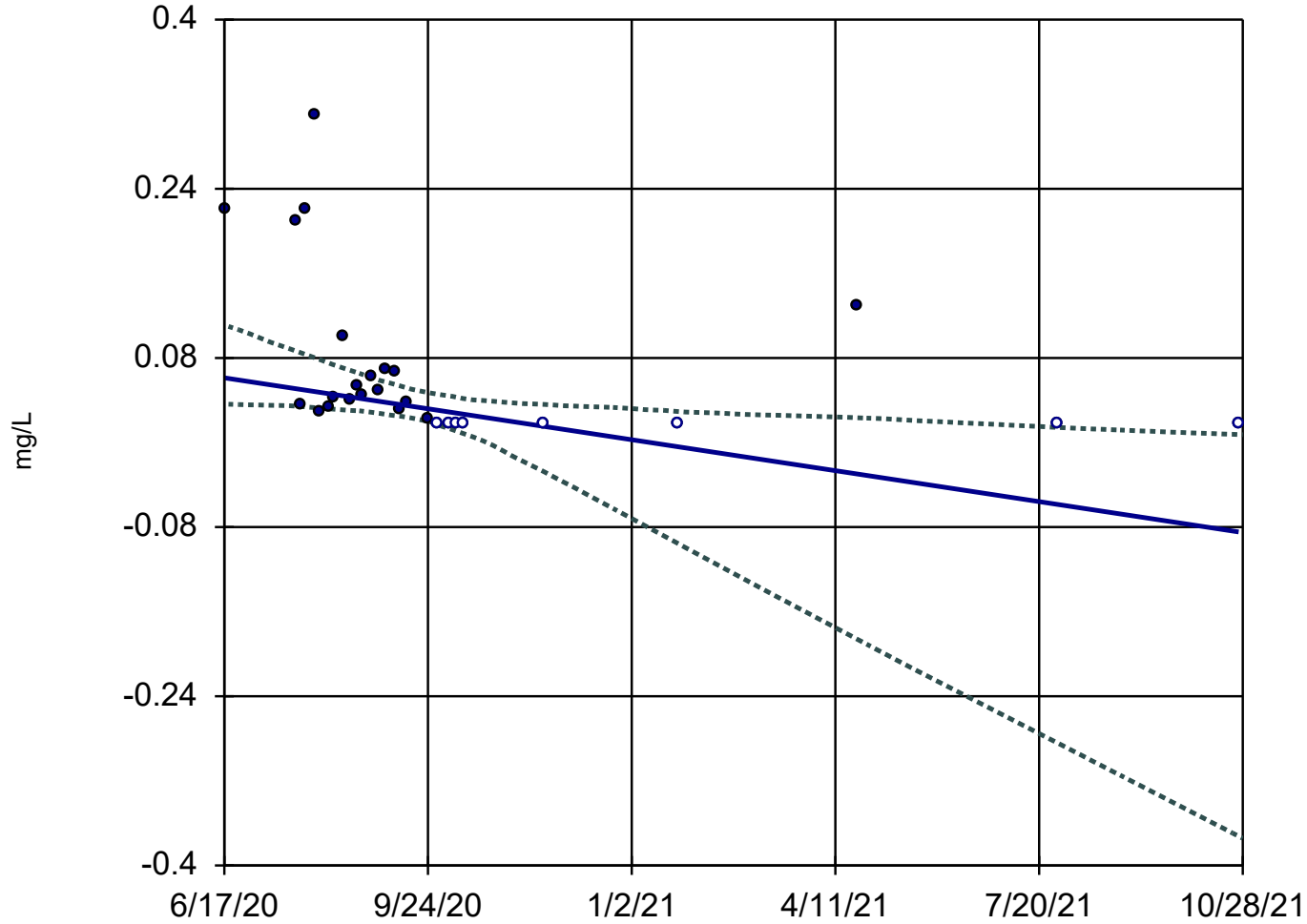
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Vanadium Analysis Run 1/3/2022 1:08 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.1071
units per year.

Mann-Kendall
statistic = -181
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Zinc Analysis Run 1/3/2022 1:08 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Trend Test

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:09 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	MW-03	0	-16	-78	No	21	95.24	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-04	0	0	78	No	21	95.24	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-02	0	-50	-78	No	21	66.67	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-07 (bg)	0	-9	-63	No	18	88.89	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-01R	-0.01216	-202	-119	Yes	28	10.71	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-03	-0.00...	-62	-78	No	21	9.524	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-04	0	-4	-78	No	21	4.762	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-02	0.000...	66	78	No	21	4.762	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-07 (bg)	-0.00...	-67	-58	Yes	17	47.06	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-01R	-0.00435	-138	-119	Yes	28	3.571	n/a	n/a	0.02	NP
Barium (mg/L)	MW-03	0.02875	71	78	No	21	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-04	-0.00...	-74	-78	No	21	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-02	0.004597	34	78	No	21	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-07 (bg)	-0.03042	-43	-63	No	18	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-01R	-0.9564	-265	-119	Yes	28	0	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-03	0	0	78	No	21	100	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-04	0	0	78	No	21	100	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-02	0	5	78	No	21	85.71	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-07 (bg)	0	0	63	No	18	100	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-01R	0	0	119	No	28	100	n/a	n/a	0.02	NP
Boron (ug/L)	MW-03	-130.2	-74	-78	No	21	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-04	0	-3	-78	No	21	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-02	-2177	-29	-78	No	21	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-07 (bg)	534.4	43	63	No	18	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-01R	-70940	-113	-119	No	28	0	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-03	0	17	78	No	21	95.24	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-04	0	-3	-78	No	21	90.48	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-02	0	11	78	No	21	66.67	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-07 (bg)	0	31	63	No	18	94.44	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-01R	-0.01085	-183	-119	Yes	28	32.14	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-03	-5163	-26	-84	No	22	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-04	-19211	-127	-84	Yes	22	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-02	6124	87	84	Yes	22	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-07 (bg)	0	-45	-63	No	18	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-01R	68915	44	119	No	28	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-03	-23.75	-79	-84	No	22	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-04	-40.44	-182	-84	Yes	22	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-02	0	-45	-84	No	22	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-07 (bg)	-0.3434	-55	-63	No	18	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-01R	-16.35	-92	-119	No	28	0	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-03	0.000...	110	78	Yes	21	0	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-04	0.000...	57	78	No	21	4.762	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-02	-0.00...	-56	-78	No	21	0	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-07 (bg)	0	27	63	No	18	66.67	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-01R	-0.01333	-228	-119	Yes	28	3.571	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-03	-0.00...	-67	-78	No	21	23.81	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-04	0.000...	78	78	No	21	38.1	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-02	-0.00...	-88	-78	Yes	21	0	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-07 (bg)	-0.00...	-7	-63	No	18	16.67	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-01R	-0.04265	-194	-119	Yes	28	0	n/a	n/a	0.02	NP

Trend Test

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:09 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Combined Radium 226 + 228 (pCi/L)	MW-03	0.2909	135	78	Yes	21	23.81	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-04	0.07155	48	78	No	21	38.1	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-02	0.1297	44	78	No	21	28.57	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-07 (bg)	0.1896	73	63	Yes	18	50	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-01R	-0.5062	-10	-17	No	7	42.86	n/a	n/a	0.02	NP
Copper (mg/L)	MW-03	0	17	27	No	10	80	n/a	n/a	0.02	NP
Copper (mg/L)	MW-04	0	18	27	No	10	70	n/a	n/a	0.02	NP
Copper (mg/L)	MW-02	0	8	27	No	10	70	n/a	n/a	0.02	NP
Copper (mg/L)	MW-07 (bg)	0	15	27	No	10	80	n/a	n/a	0.02	NP
Copper (mg/L)	MW-01R	0	-97	-119	No	28	64.29	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-03	-0.03296	-12	-78	No	21	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-04	0	22	78	No	21	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-02	-0.6591	-68	-78	No	21	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-07 (bg)	-0.0018	-17	-63	No	18	16.67	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-01R	-13.78	-128	-119	Yes	28	3.571	n/a	n/a	0.02	NP
Iron (mg/L)	MW-03	-4.925	-17	-27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-04	-1.271	-28	-27	Yes	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-02	0	5	27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-07 (bg)	-2.235	-25	-27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-01R	-11.23	-226	-119	Yes	28	0	n/a	n/a	0.02	NP
Lead (mg/L)	MW-03	0	25	78	No	21	66.67	n/a	n/a	0.02	NP
Lead (mg/L)	MW-04	0	45	78	No	21	66.67	n/a	n/a	0.02	NP
Lead (mg/L)	MW-02	-0.00...	-98	-78	Yes	21	14.29	n/a	n/a	0.02	NP
Lead (mg/L)	MW-07 (bg)	0	-7	-63	No	18	72.22	n/a	n/a	0.02	NP
Lead (mg/L)	MW-01R	-0.08089	-192	-119	Yes	28	0	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-03	-0.00...	-61	-78	No	21	4.762	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-04	0.00157	33	78	No	21	4.762	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-02	-0.08816	-80	-78	Yes	21	0	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-07 (bg)	-0.00...	-17	-63	No	18	44.44	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-01R	0	7	119	No	28	0	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-03	-2.0e-7	-95	-78	Yes	21	71.43	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-04	0	11	78	No	21	95.24	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-02	-0.00...	-95	-78	Yes	21	71.43	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-07 (bg)	0	-30	-63	No	18	77.78	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-01R	-0.00...	-156	-119	Yes	28	3.571	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-03	-0.00...	-126	-78	Yes	21	52.38	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-04	-0.00...	-41	-78	No	21	19.05	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-02	-0.00...	-131	-78	Yes	21	9.524	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-07 (bg)	-0.00072	-68	-63	Yes	18	27.78	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-01R	-0.00...	-22	-119	No	28	0	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-03	-0.00...	-9	-27	No	10	20	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-04	-0.00...	-21	-27	No	10	0	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-02	-0.00...	-10	-27	No	10	0	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-07 (bg)	0	17	27	No	10	80	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-01R	-0.04515	-218	-119	Yes	28	0	n/a	n/a	0.02	NP
pH (SU)	MW-03	-0.04752	-40	-73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-04	-0.08699	-48	-73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-02	-0.1217	-49	-73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-07 (bg)	-0.1825	-41	-58	No	17	0	n/a	n/a	0.02	NP
pH (SU)	MW-01R	-2.882	-236	-119	Yes	28	0	n/a	n/a	0.02	NP

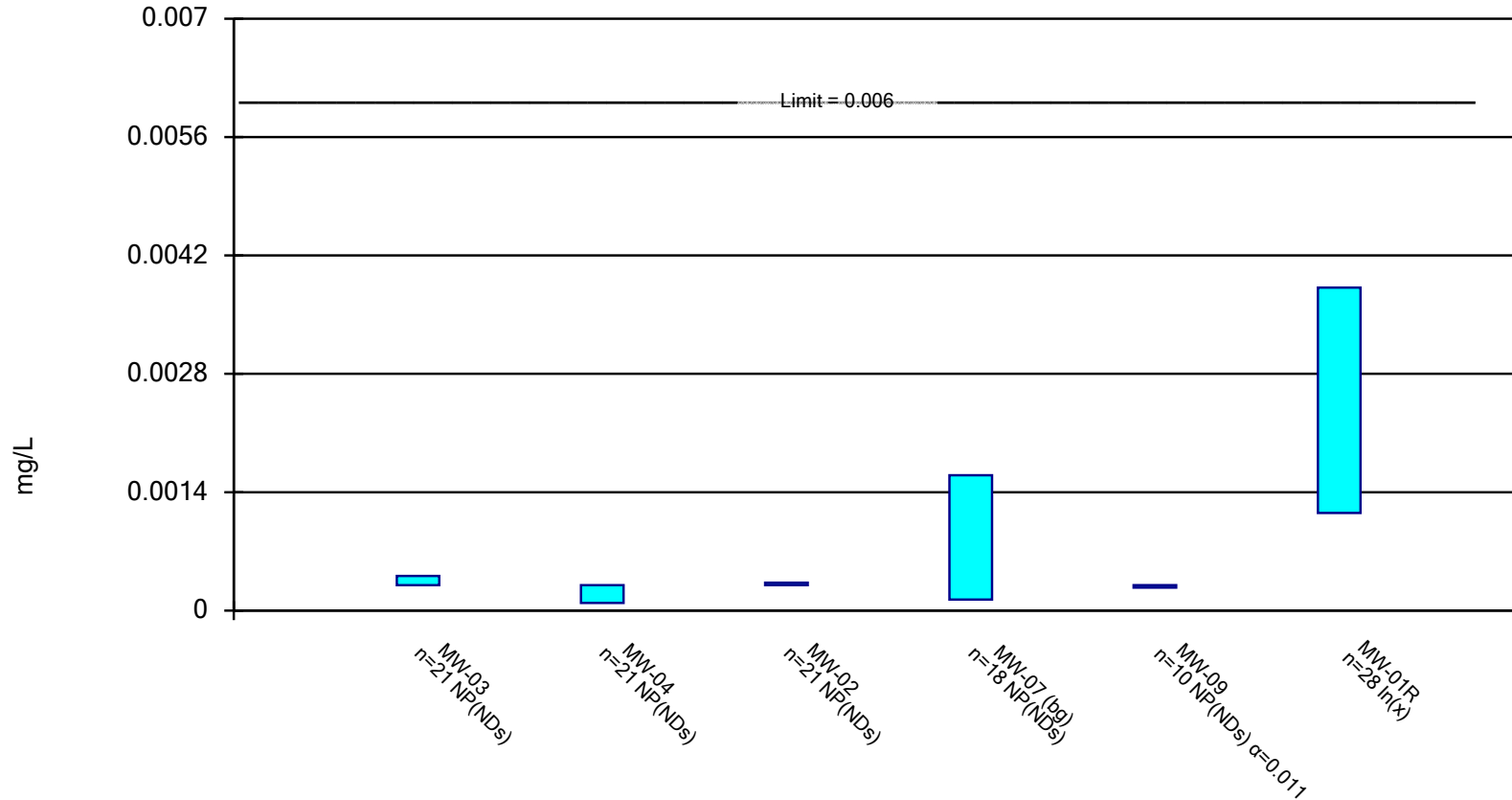
Trend Test

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:09 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Selenium (mg/L)	MW-03	0	-92	-78	Yes	21	66.67	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-04	0	29	78	No	21	85.71	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-02	-0.00...	-54	-78	No	21	19.05	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-07 (bg)	0	0	63	No	18	100	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-01R	-0.00...	-164	-119	Yes	28	17.86	n/a	n/a	0.02	NP
Silver (mg/L)	MW-03	0	7	27	No	10	90	n/a	n/a	0.02	NP
Silver (mg/L)	MW-04	0	15	27	No	10	80	n/a	n/a	0.02	NP
Silver (mg/L)	MW-02	0	7	27	No	10	90	n/a	n/a	0.02	NP
Silver (mg/L)	MW-07 (bg)	0	15	27	No	10	80	n/a	n/a	0.02	NP
Silver (mg/L)	MW-01R	0	0	119	No	28	100	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-03	-161.1	-94	-84	Yes	22	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-04	-82.6	-153	-84	Yes	22	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-02	0	33	84	No	22	54.55	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-07 (bg)	-10.9	-59	-63	No	18	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-01R	226.6	44	119	No	28	0	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-03	0	0	78	No	21	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-04	0	0	78	No	21	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-02	0	0	78	No	21	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-07 (bg)	0	0	63	No	18	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-01R	0	-15	-119	No	28	96.43	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-03	-175.8	-86	-84	Yes	22	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-04	-139.8	-119	-84	Yes	22	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-02	-60.43	-46	-84	No	22	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-07 (bg)	-36.5	-60	-63	No	18	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-01R	-699.3	-128	-119	Yes	28	0	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-03	-0.00...	-1	-27	No	10	10	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-04	0.000...	9	27	No	10	10	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-02	-0.00...	-3	-27	No	10	10	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-07 (bg)	0.000...	11	27	No	10	0	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-01R	-0.00...	-190	-119	Yes	28	3.571	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-03	0	7	27	No	10	90	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-04	0	7	27	No	10	90	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-02	0	7	27	No	10	90	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-07 (bg)	0	7	27	No	10	80	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-01R	-0.1071	-181	-119	Yes	28	28.57	n/a	n/a	0.02	NP

Parametric and Non-Parametric (NP) Confidence Interval

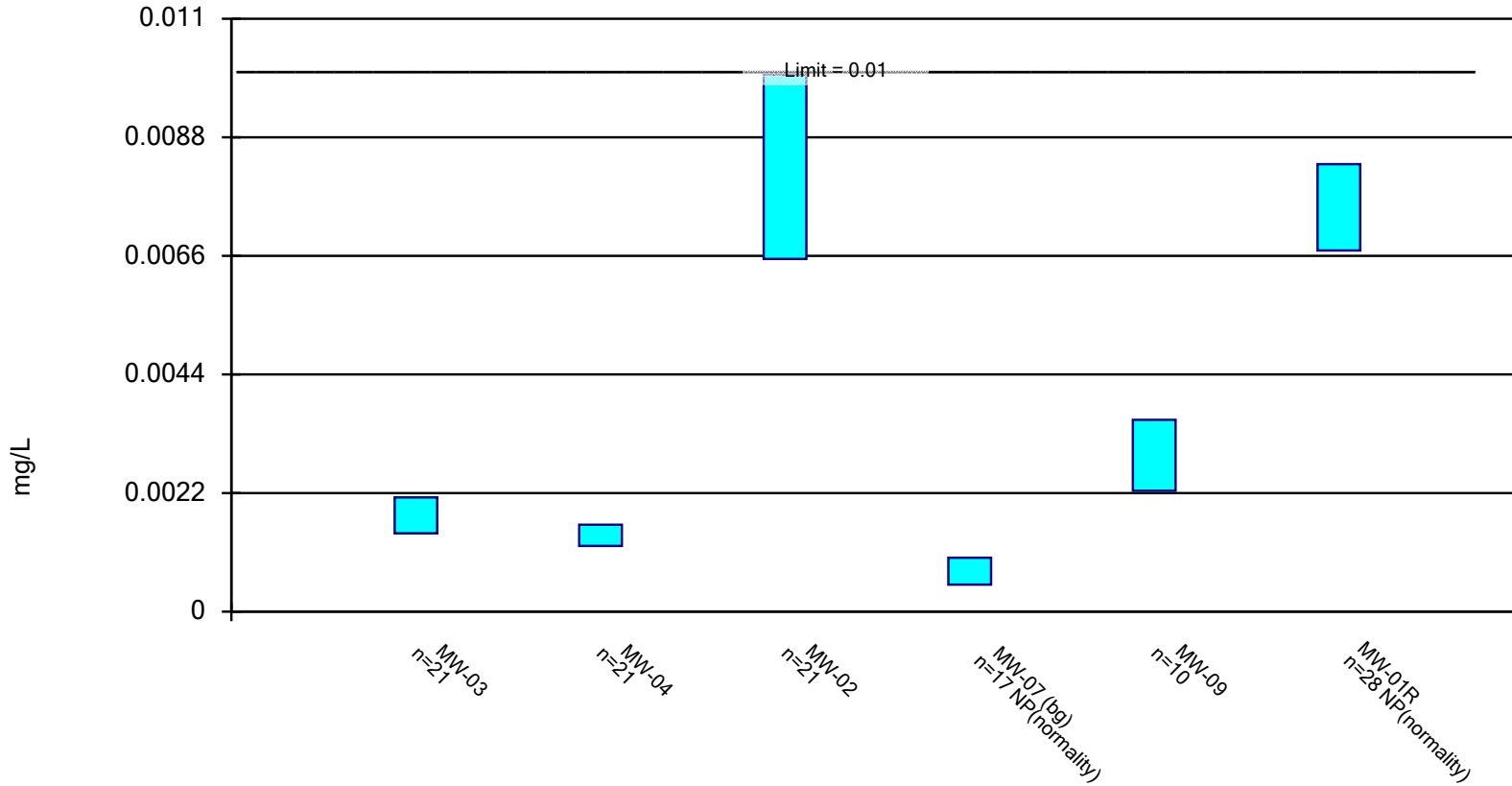
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Antimony Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

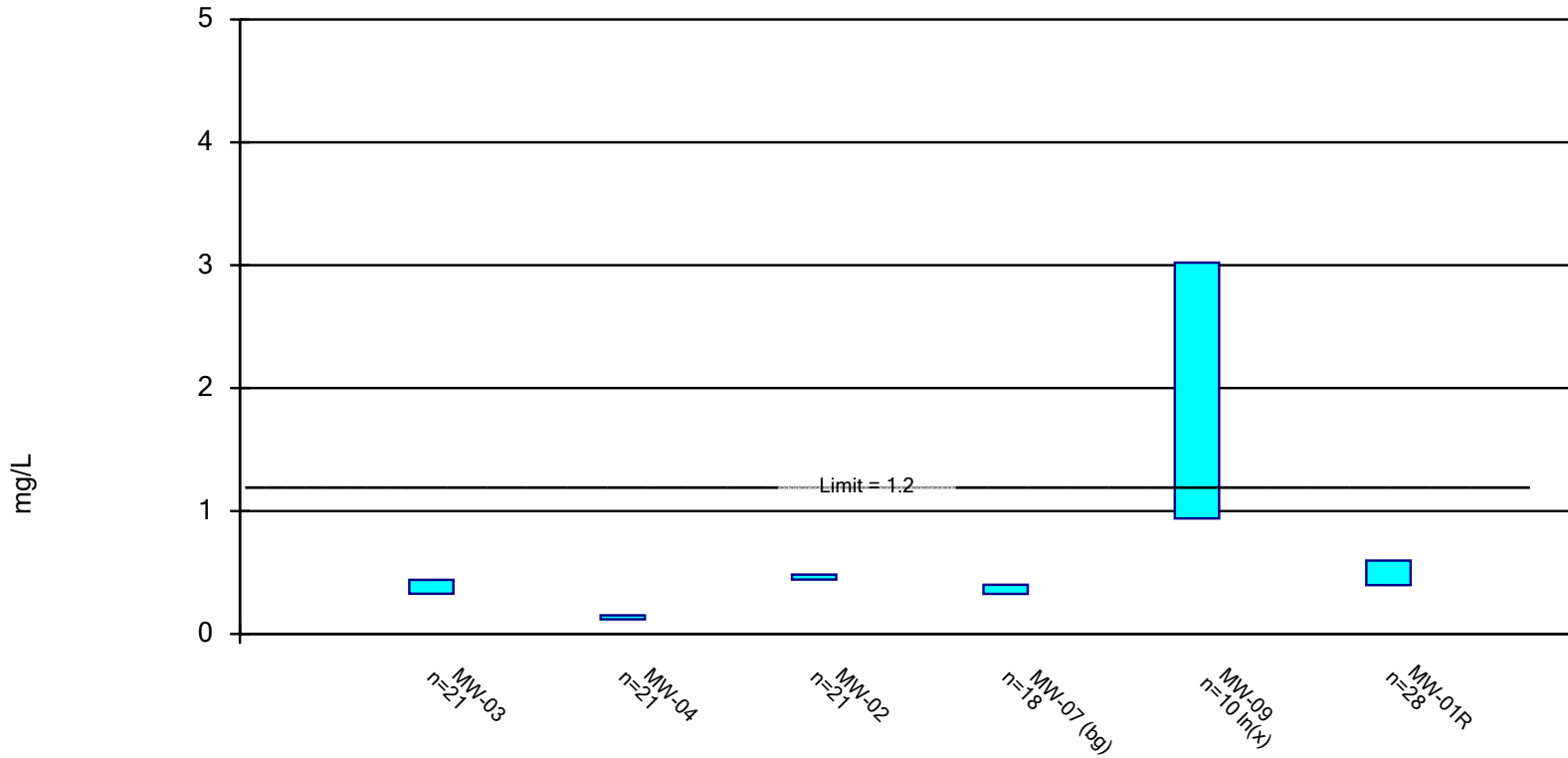
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric Confidence Interval

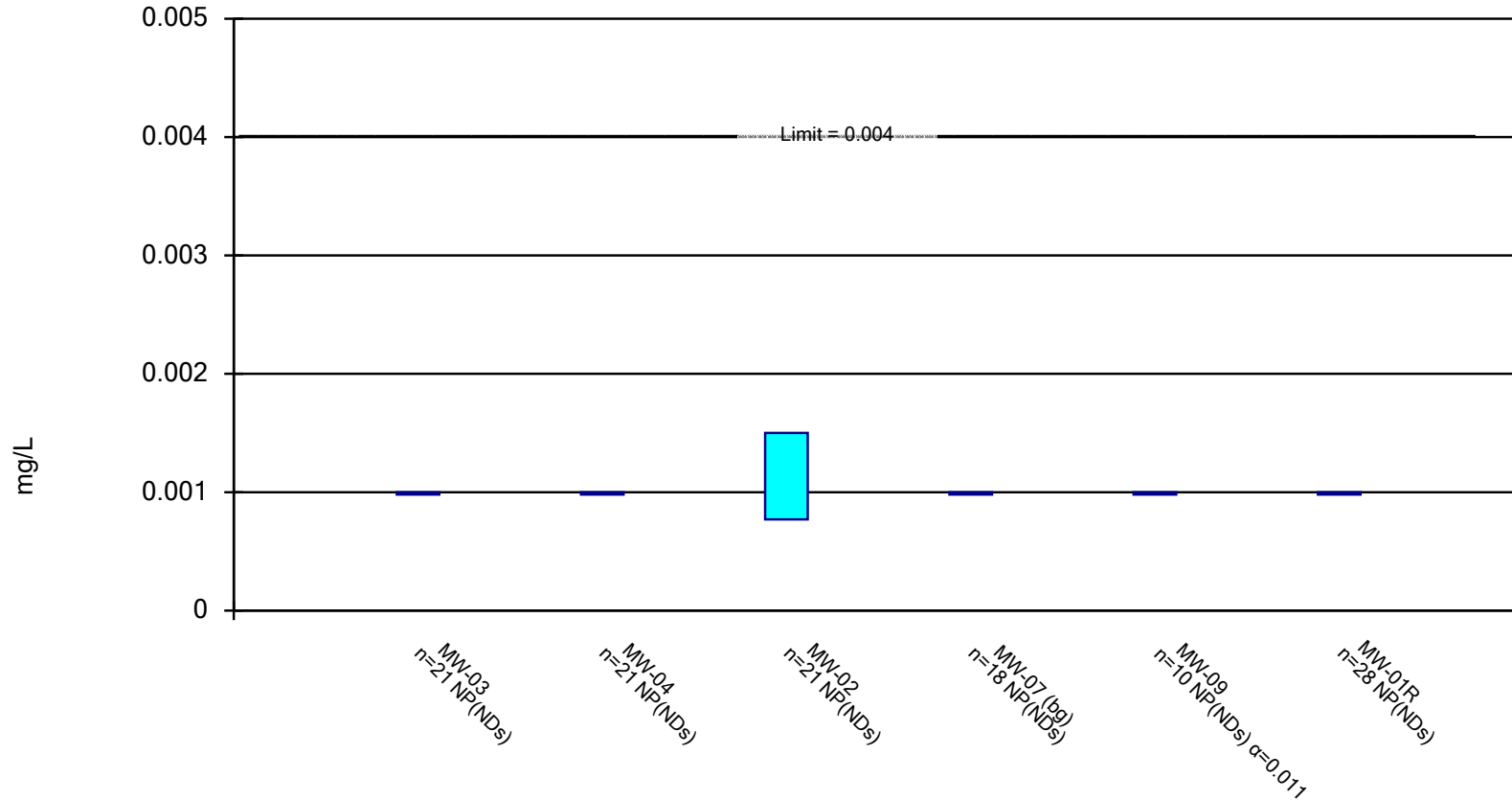
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

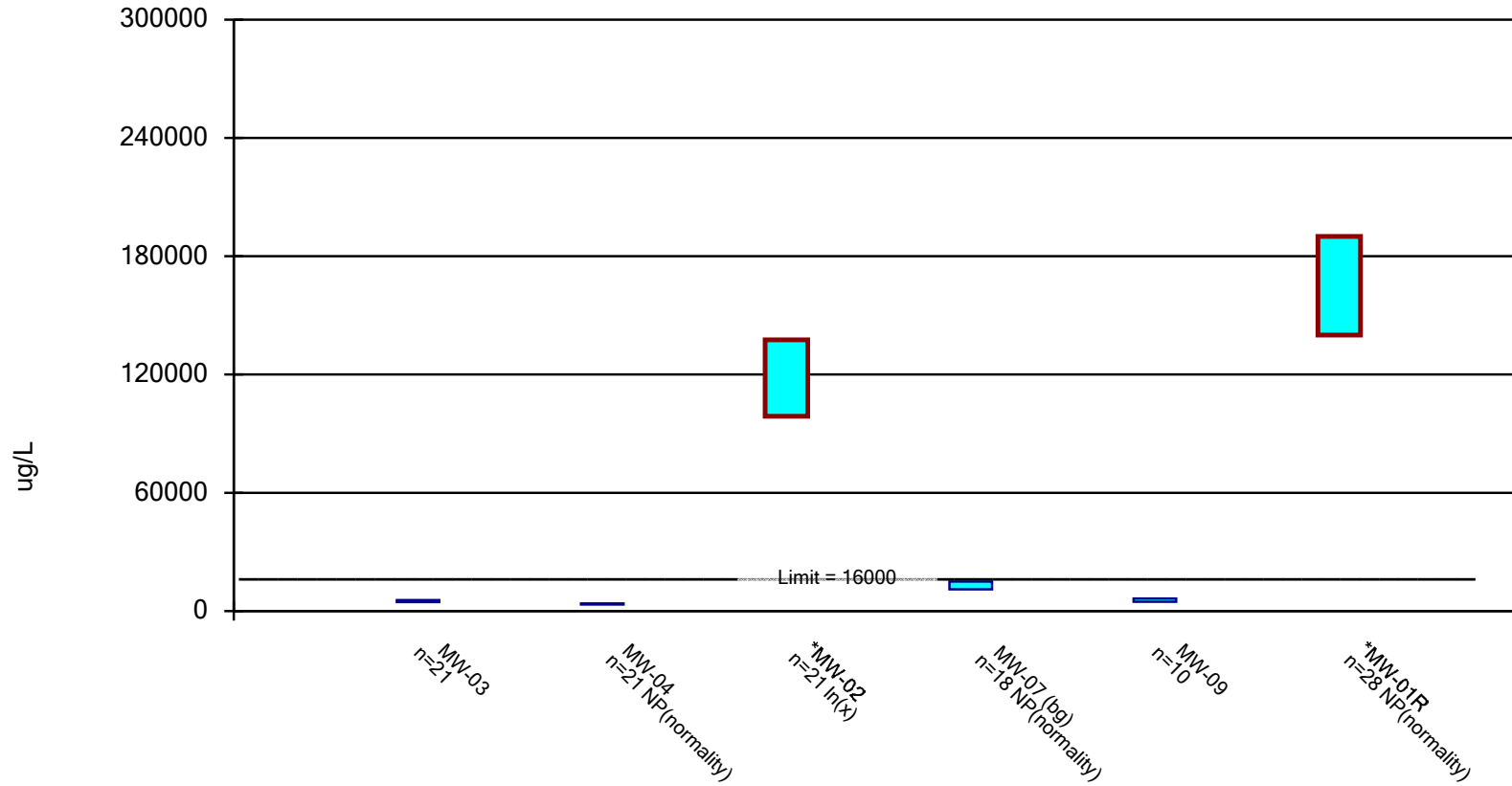
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Beryllium Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

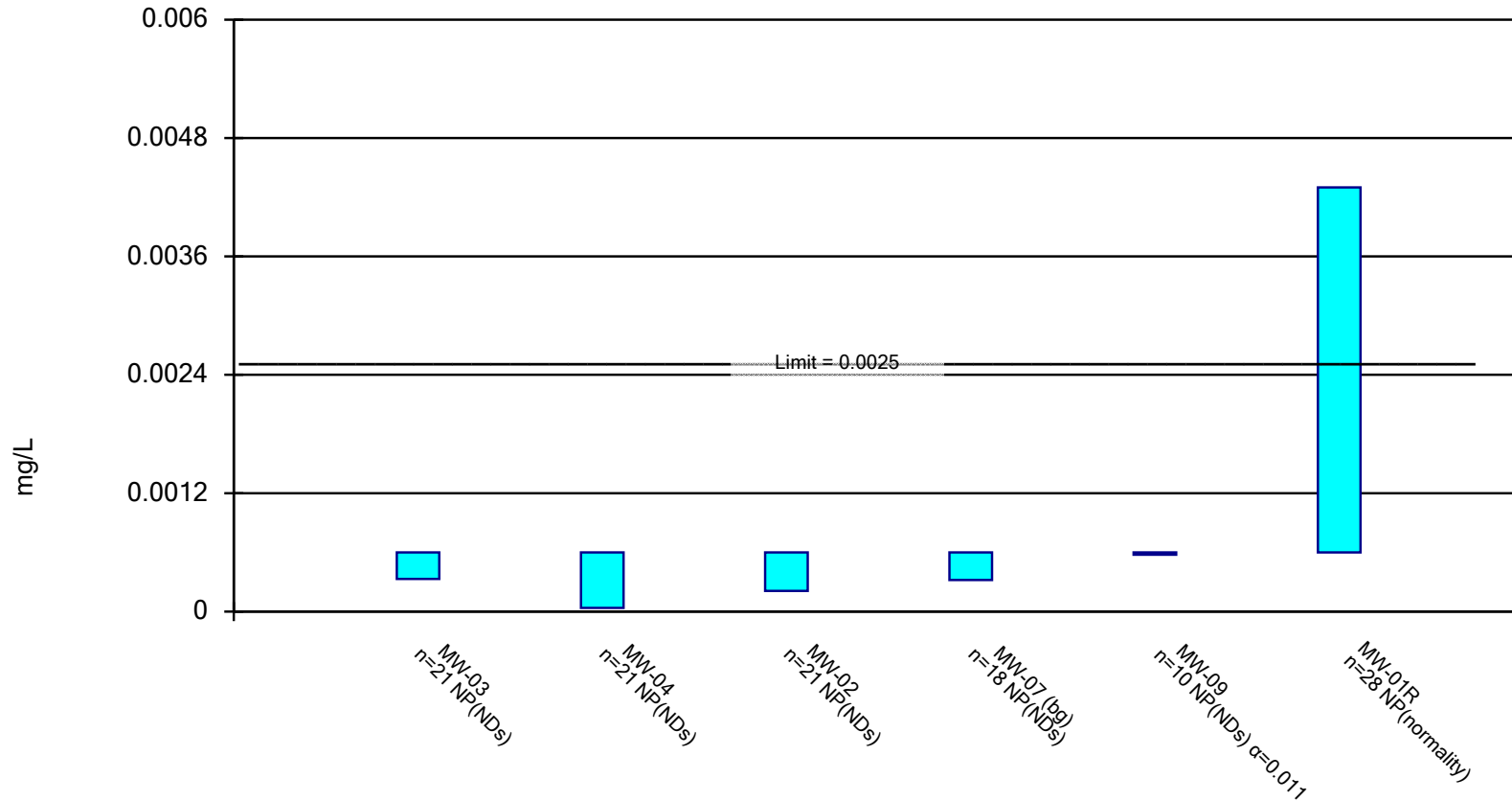
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

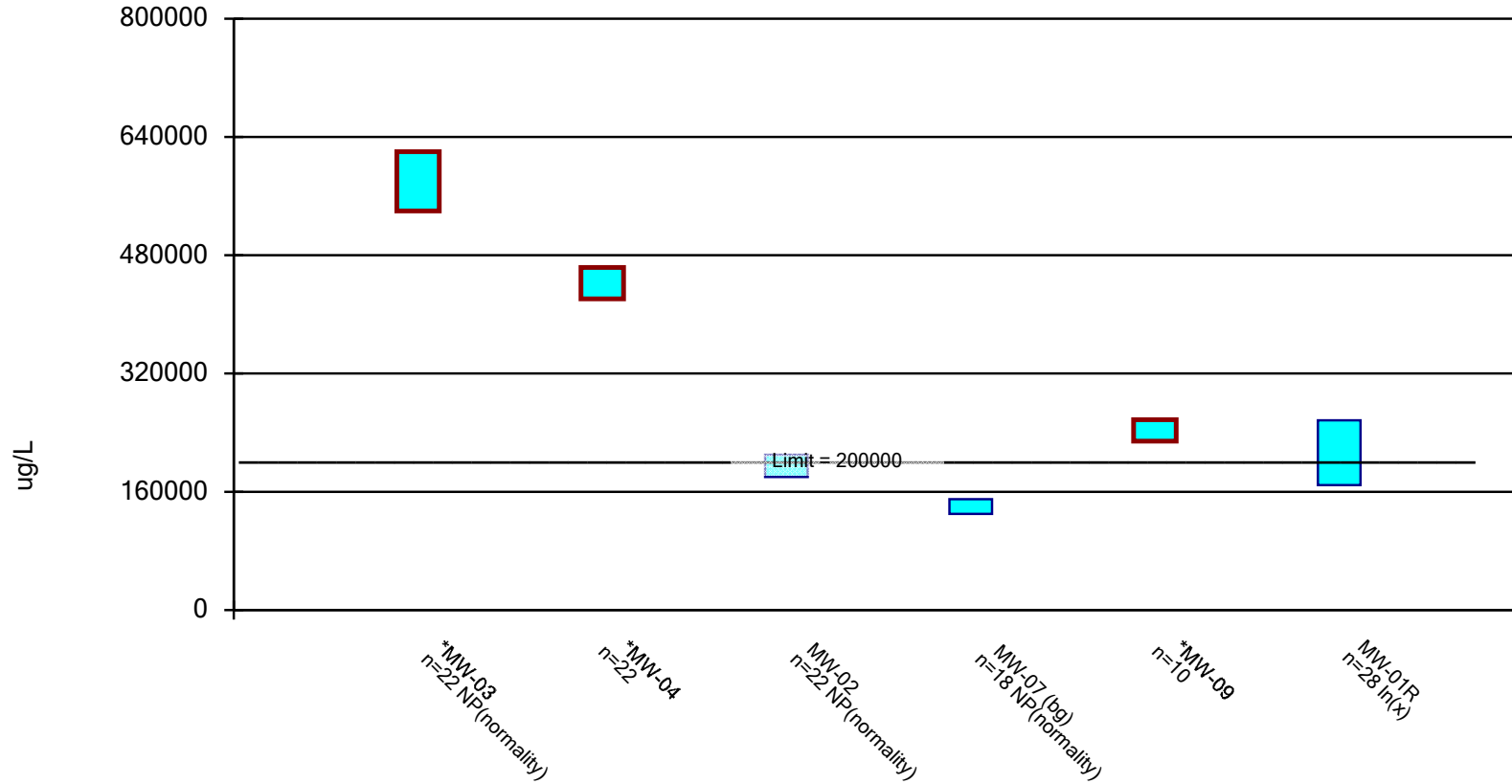
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Cadmium Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

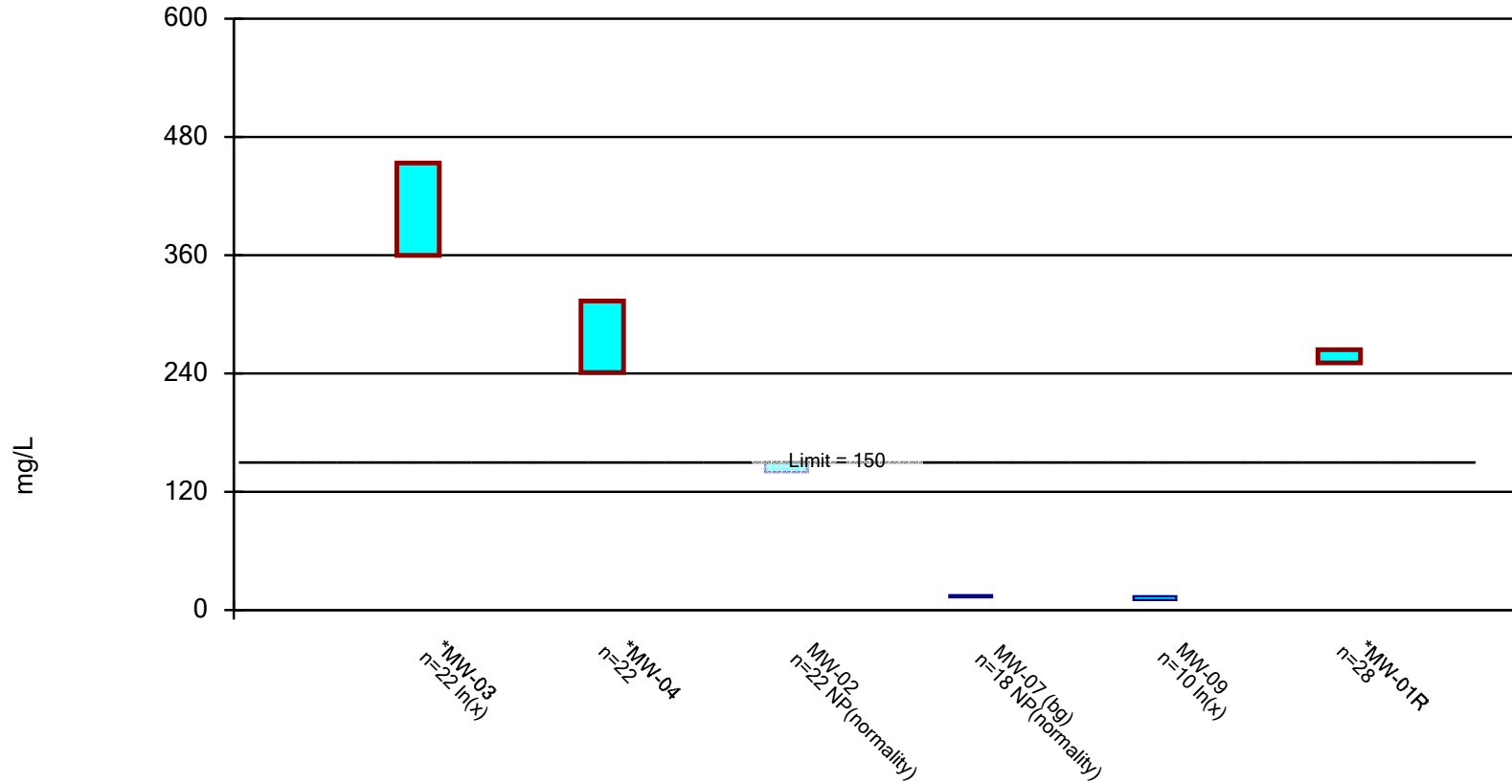
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

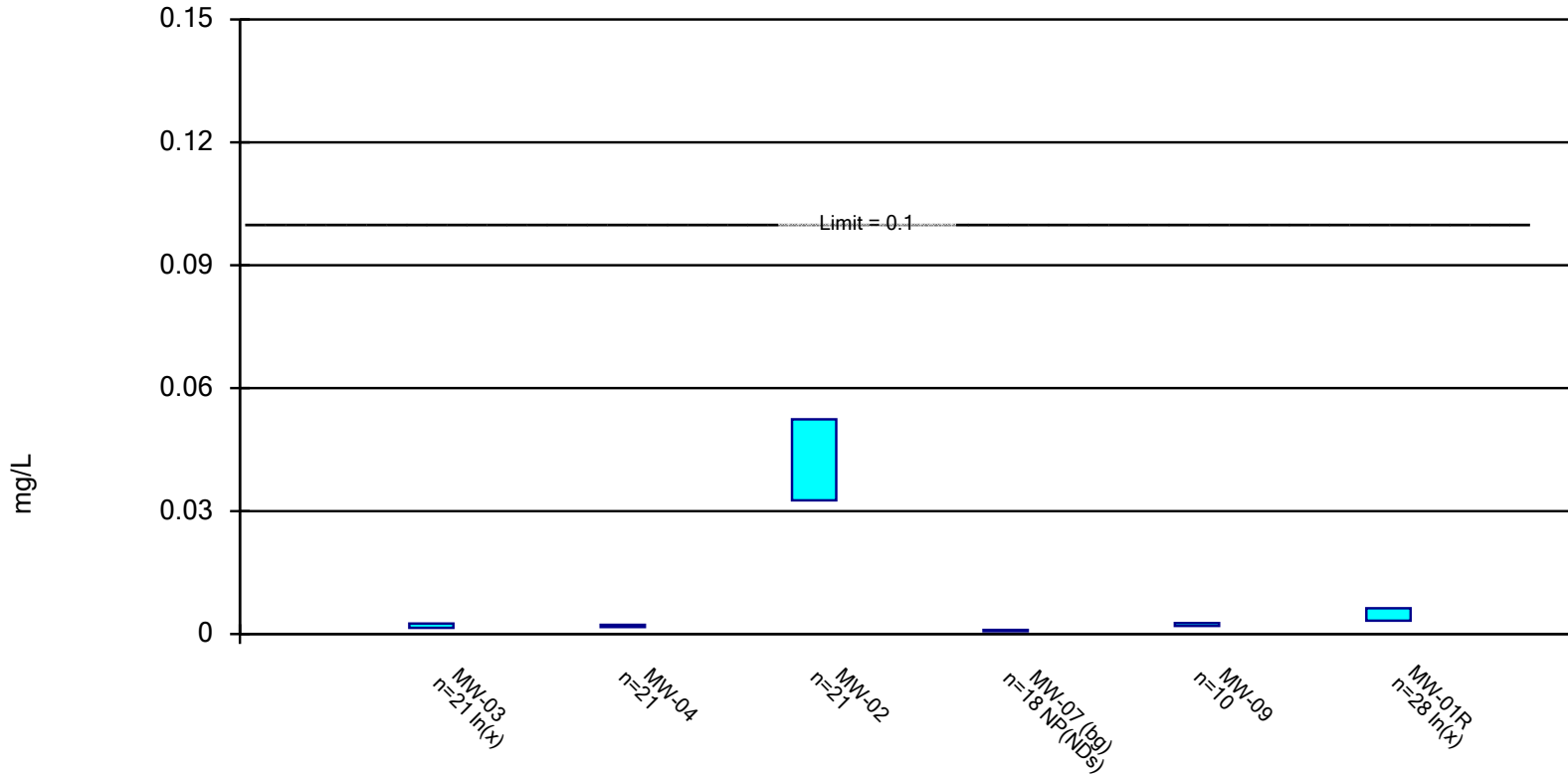
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chloride Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

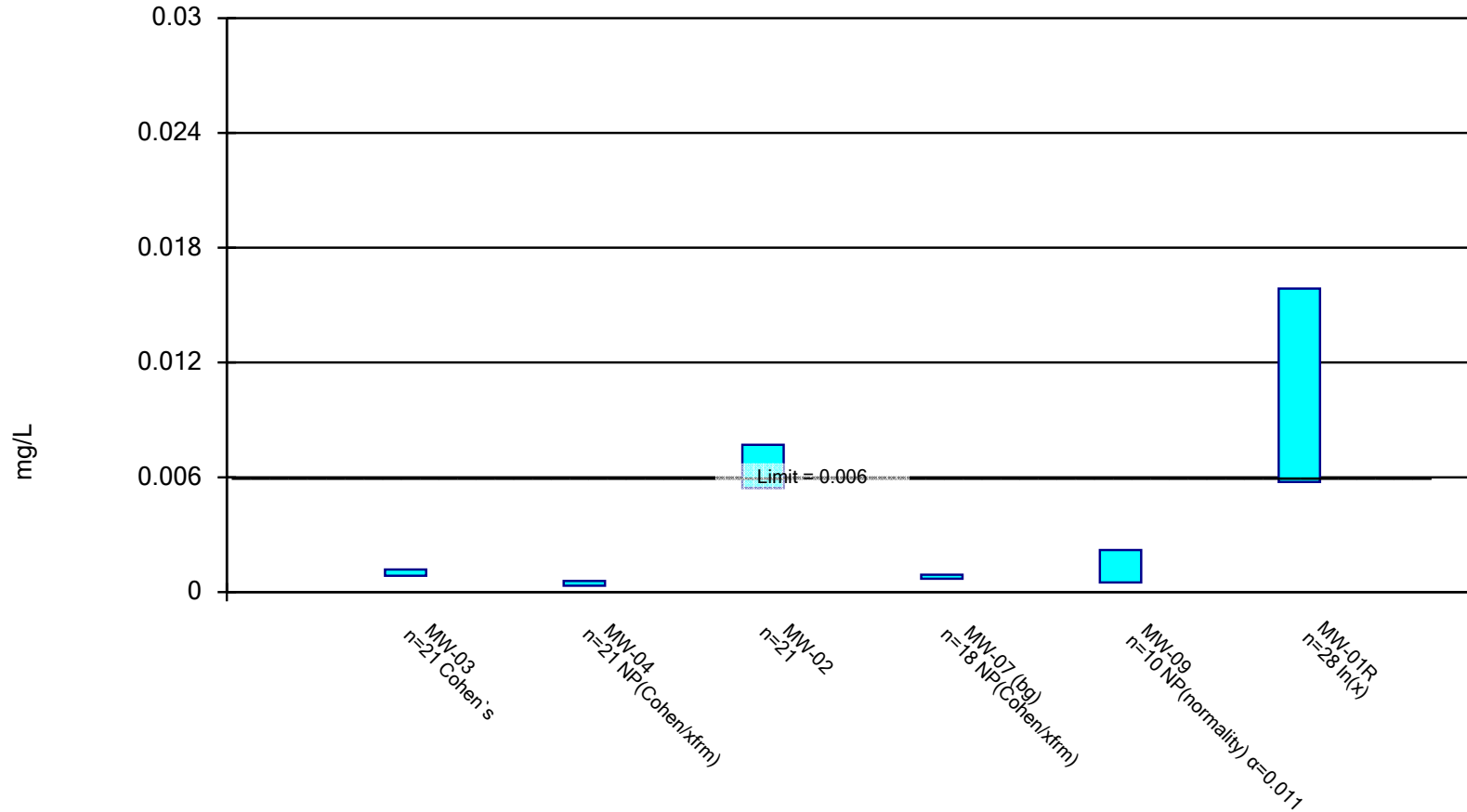
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

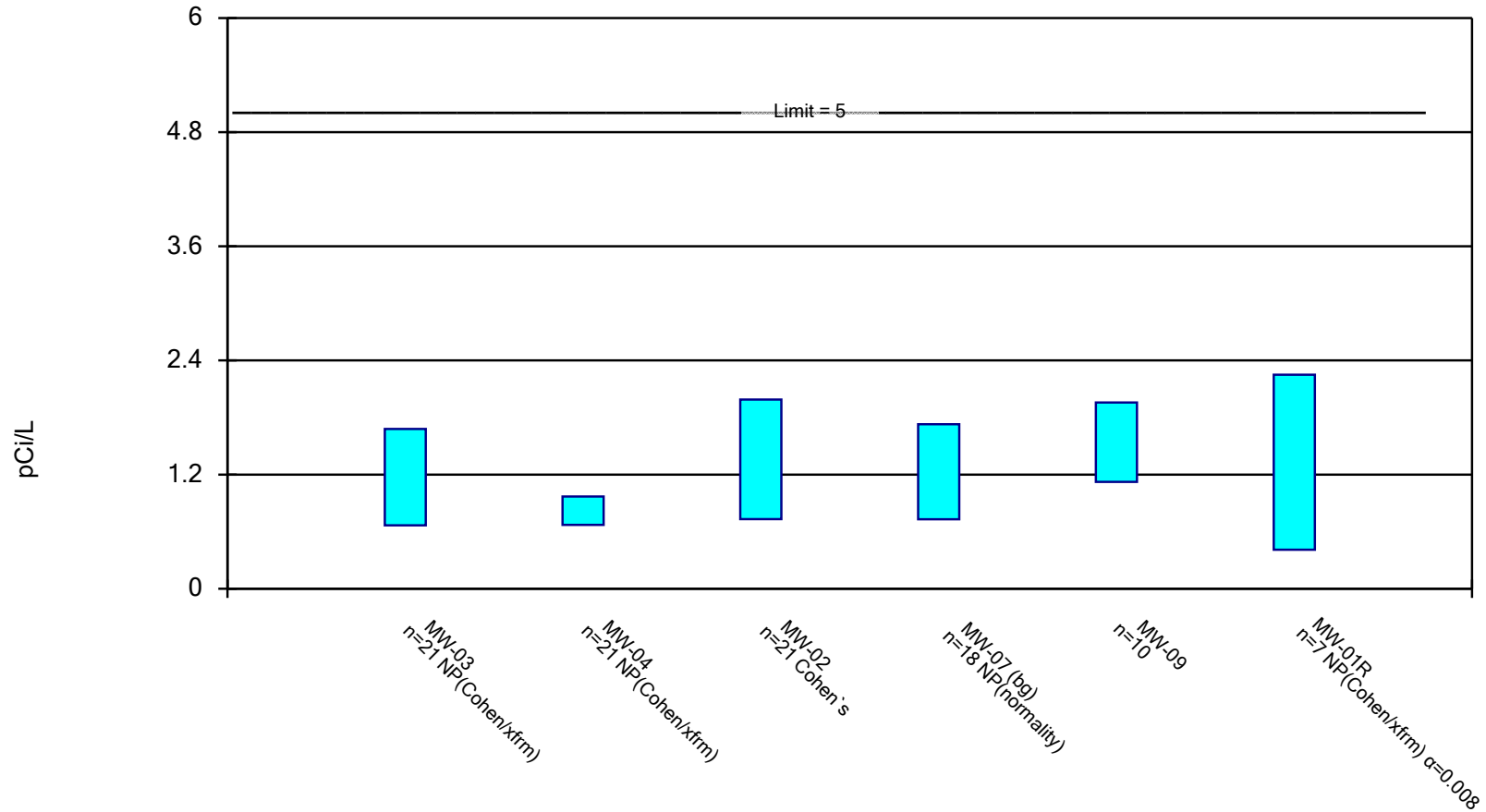
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

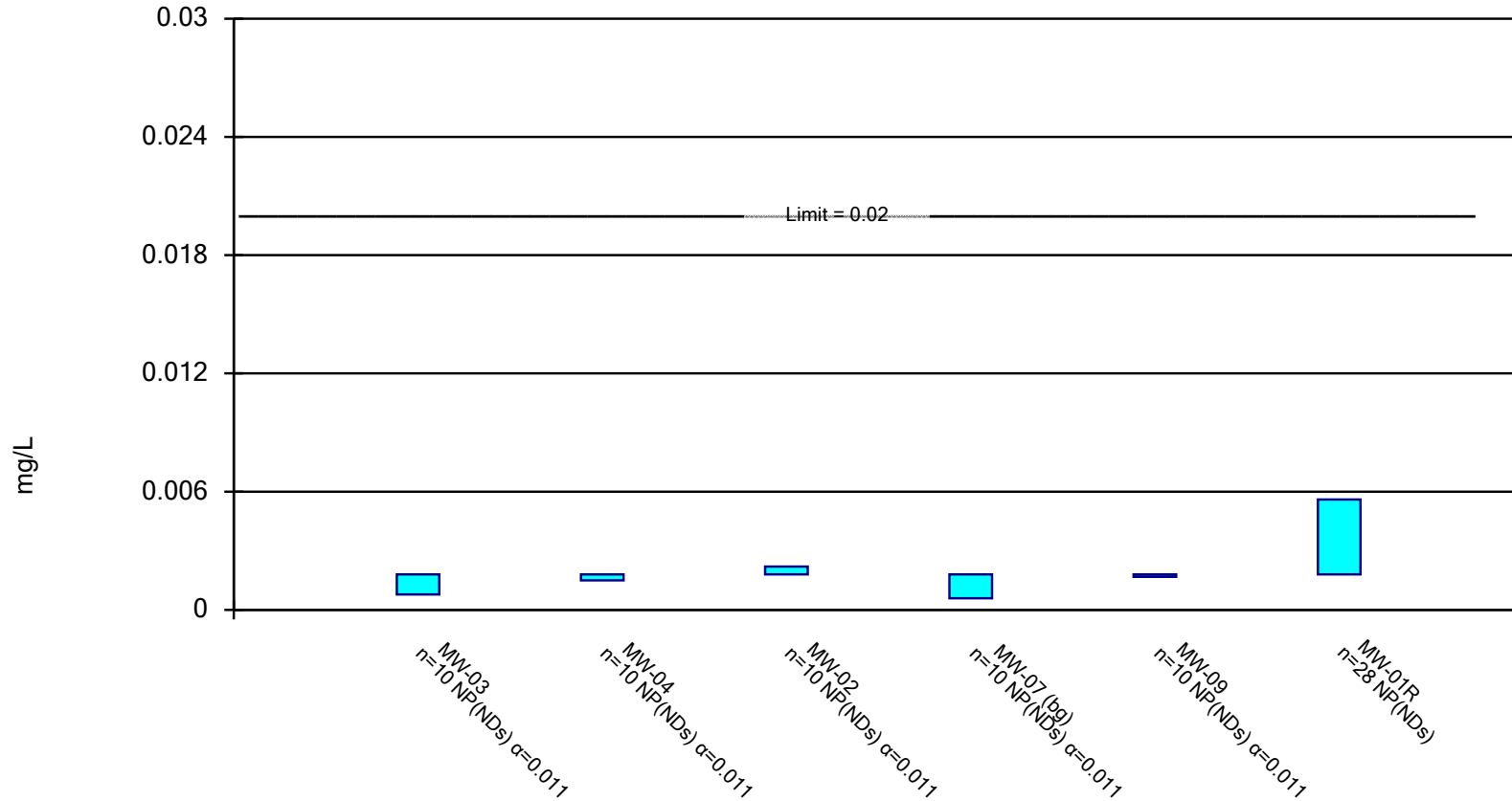


Constituent: Combined Radium 226 + 228 Analysis Run 1/3/2022 1:32 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

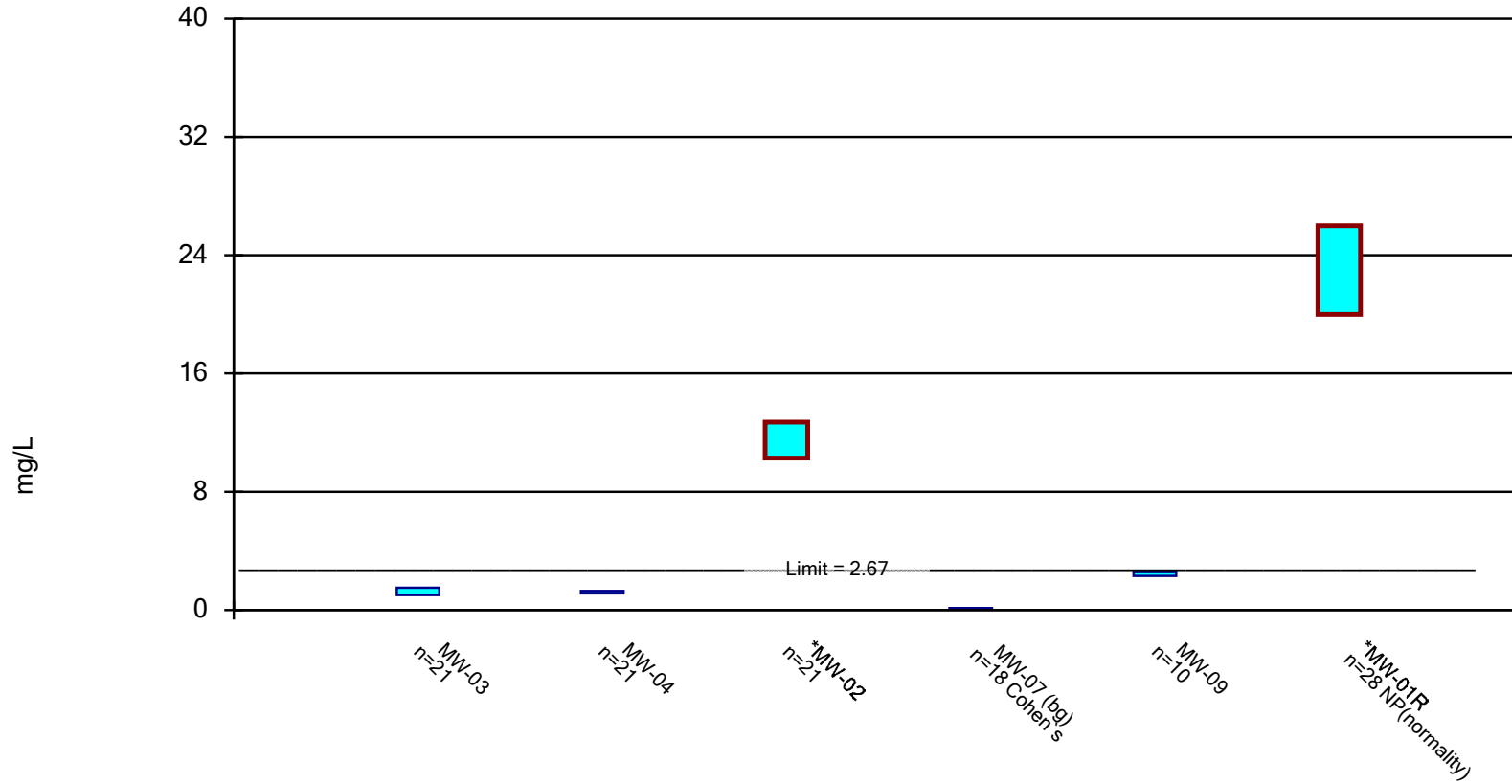
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Copper Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

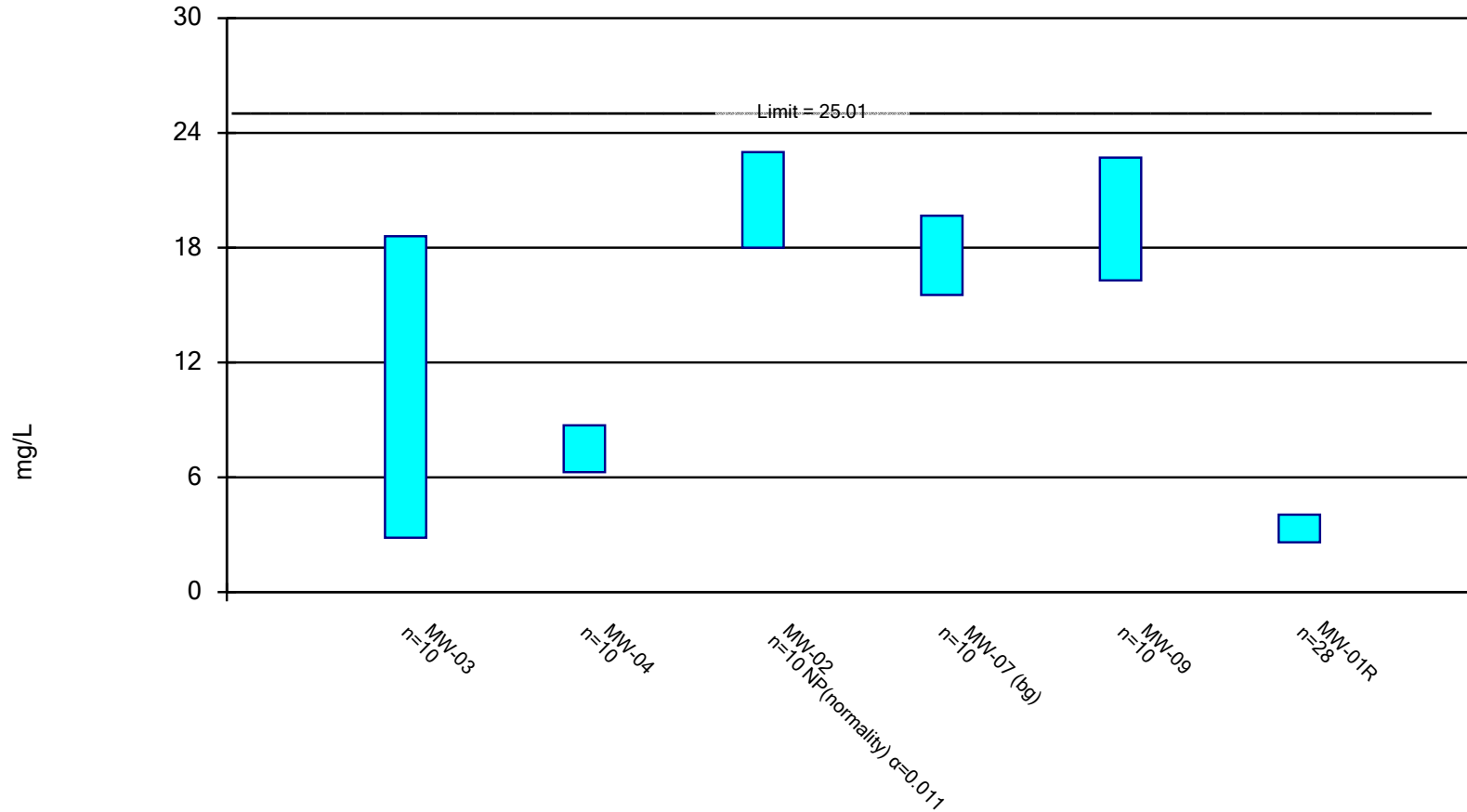
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

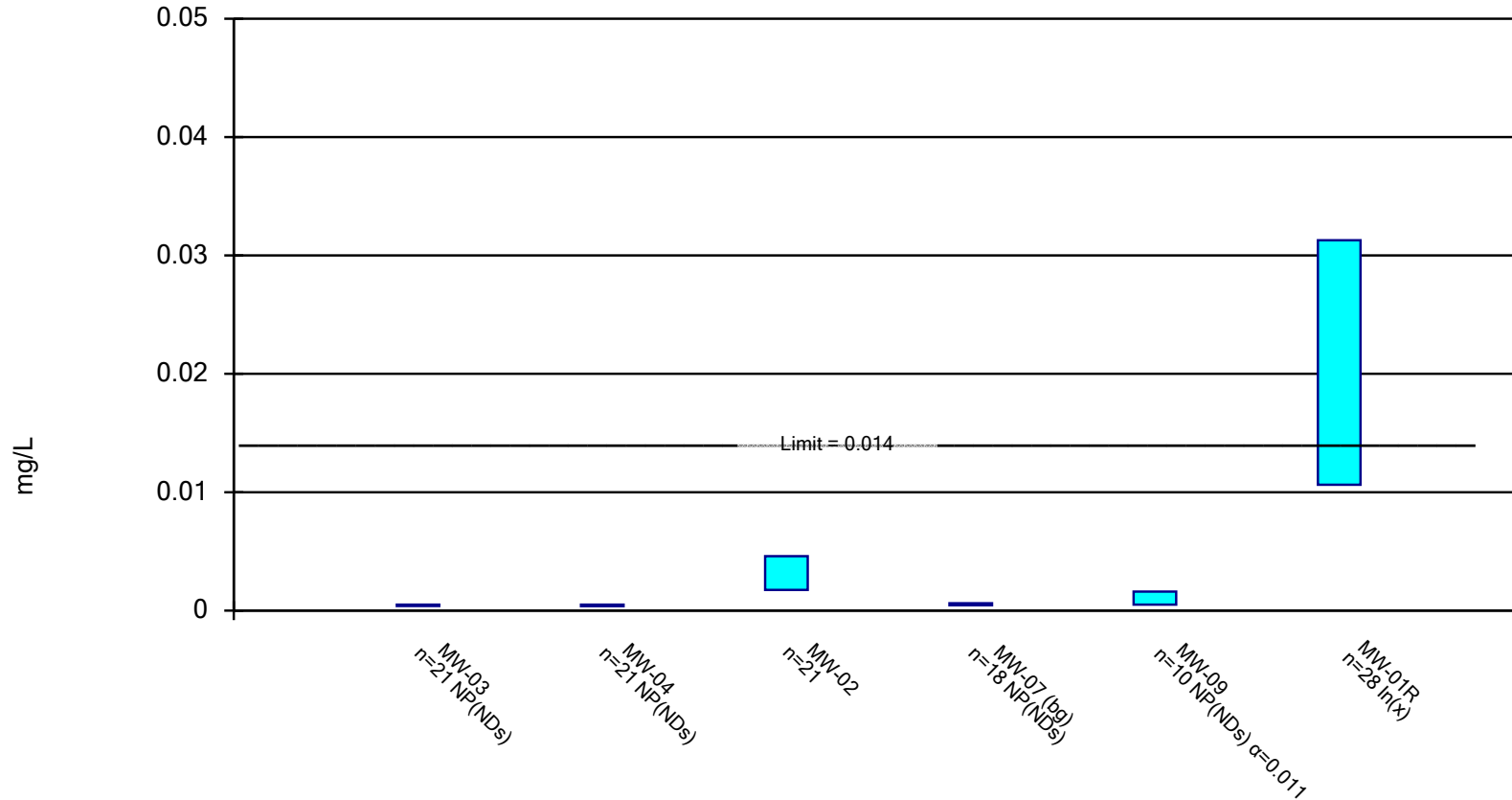
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Iron Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

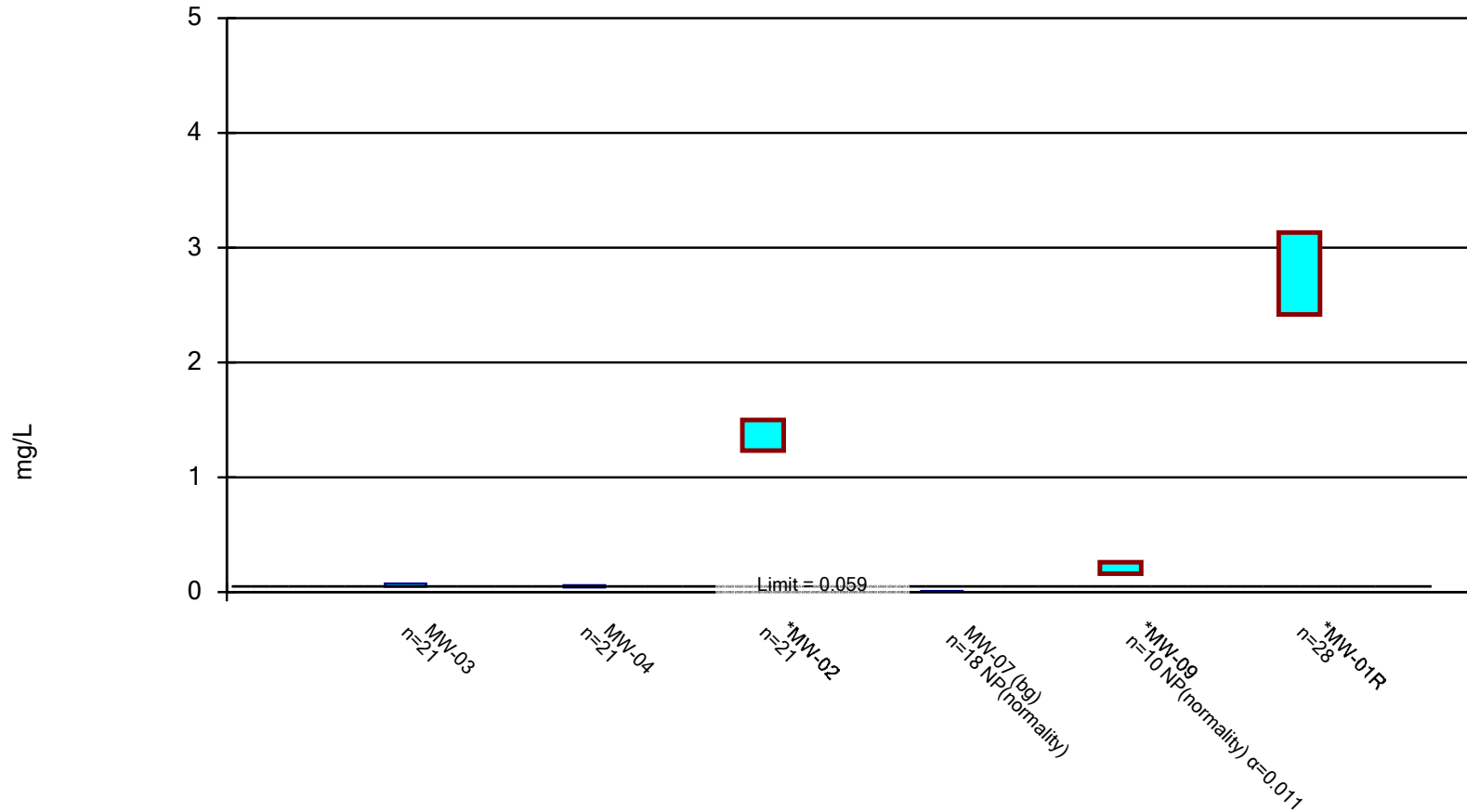
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

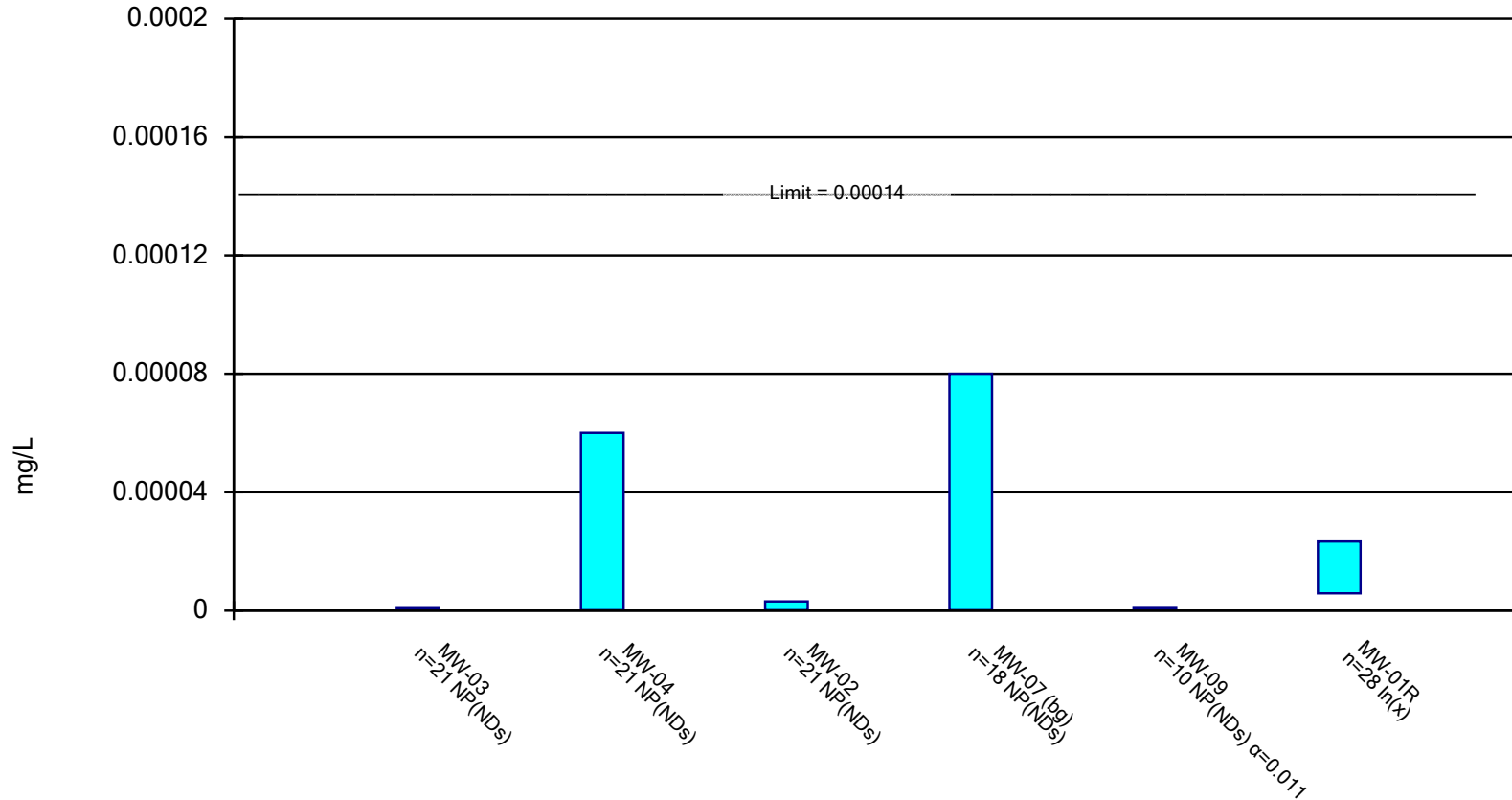
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

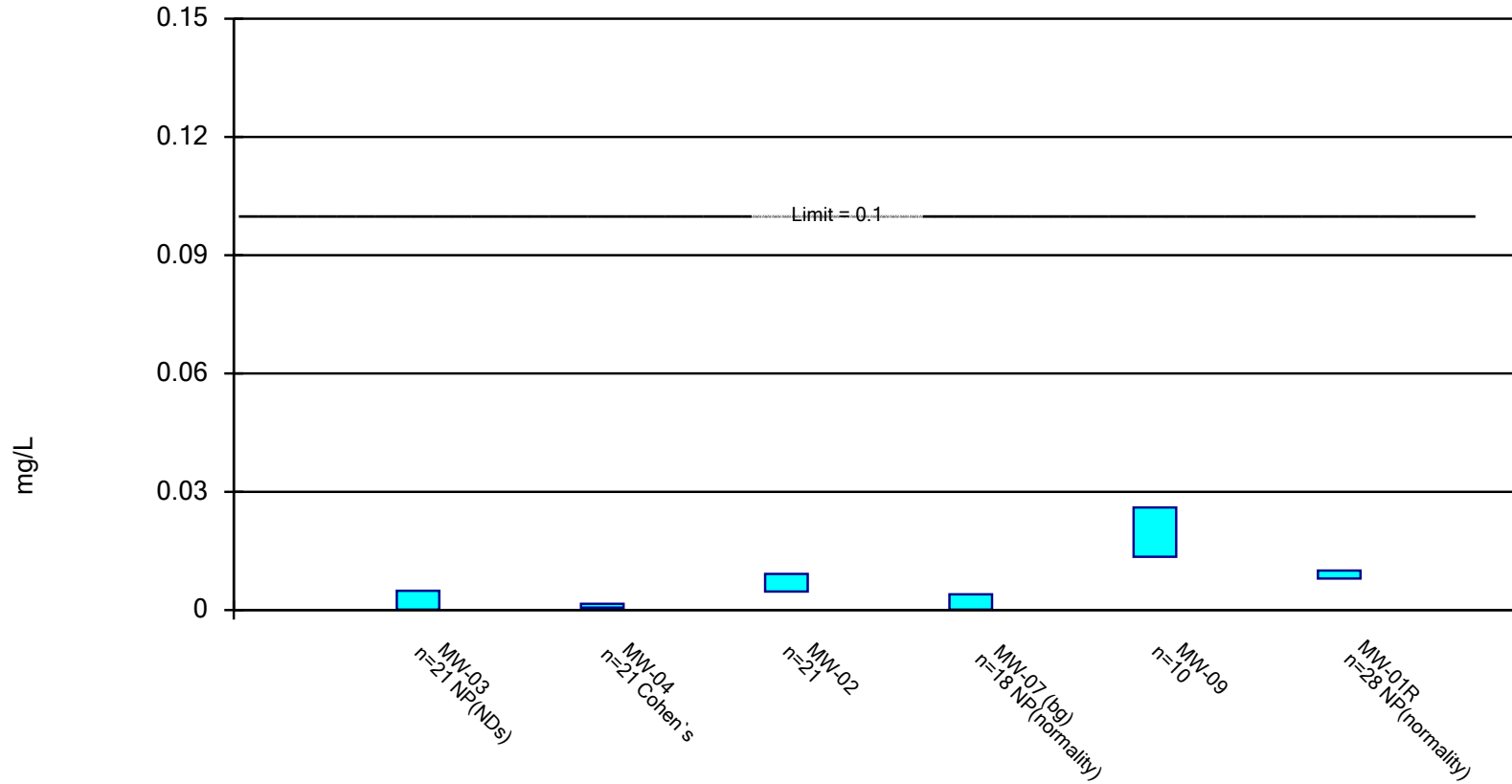
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

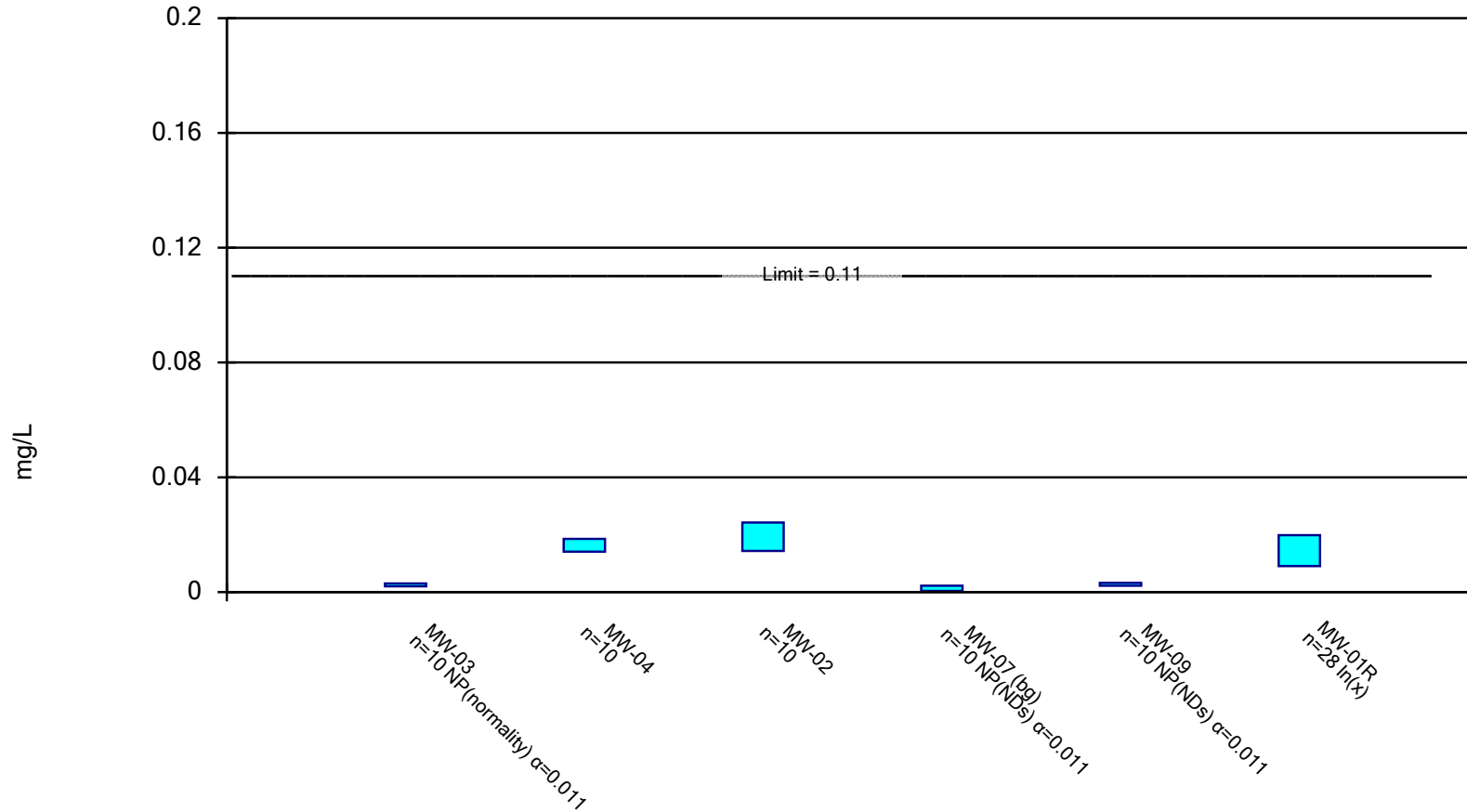


Constituent: Molybdenum Analysis Run 1/3/2022 1:32 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

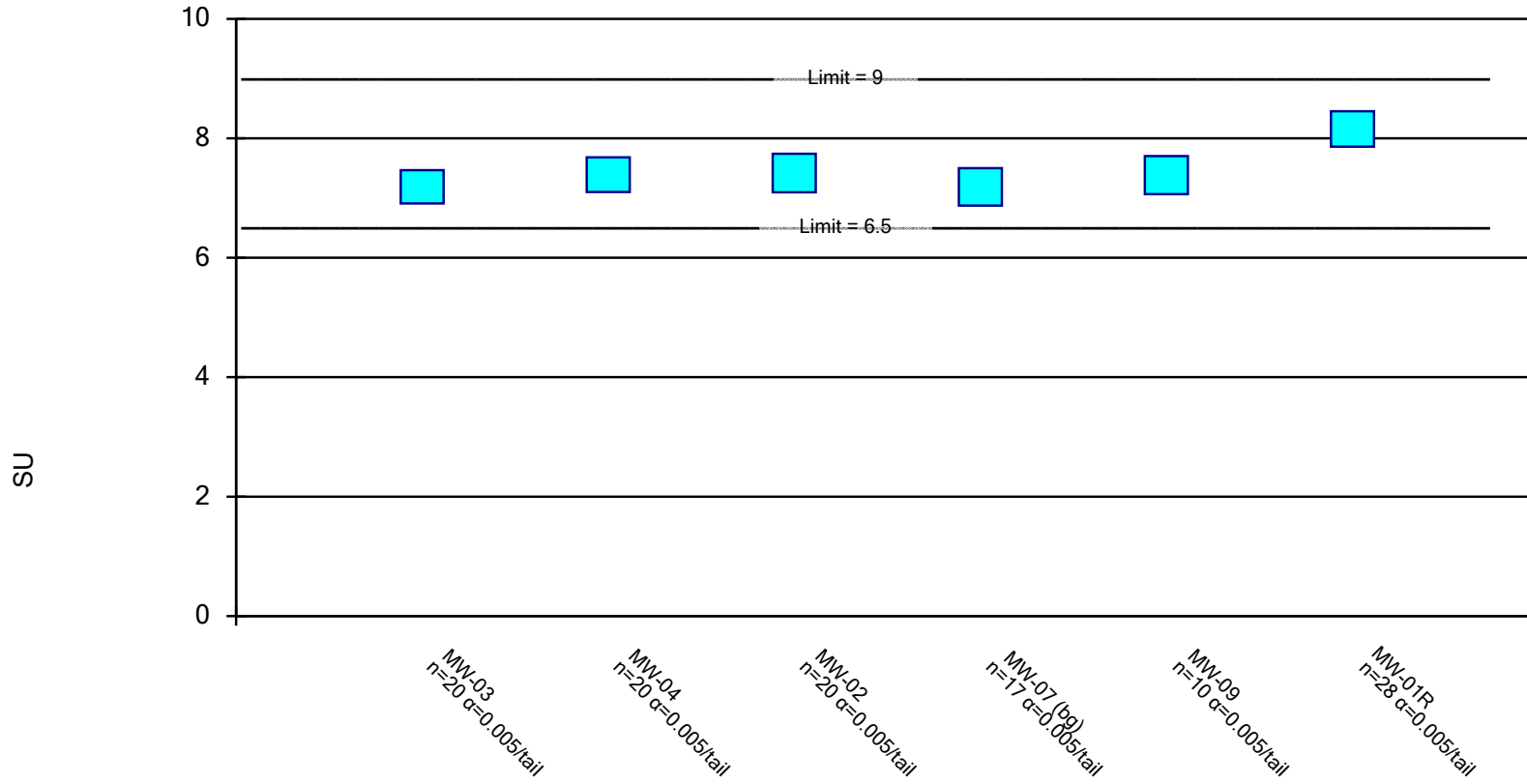
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Nickel Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric Confidence Interval

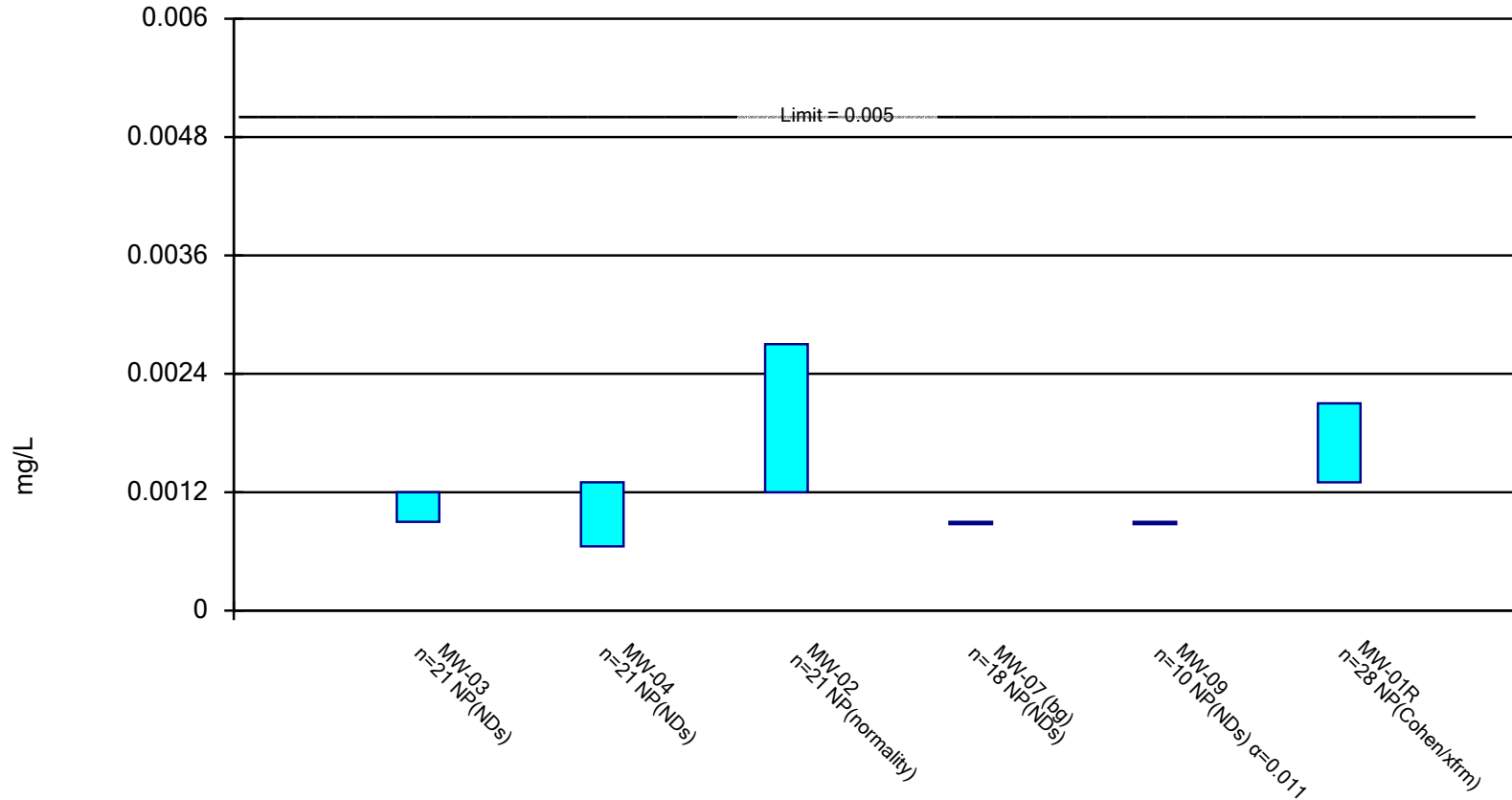
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: pH Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

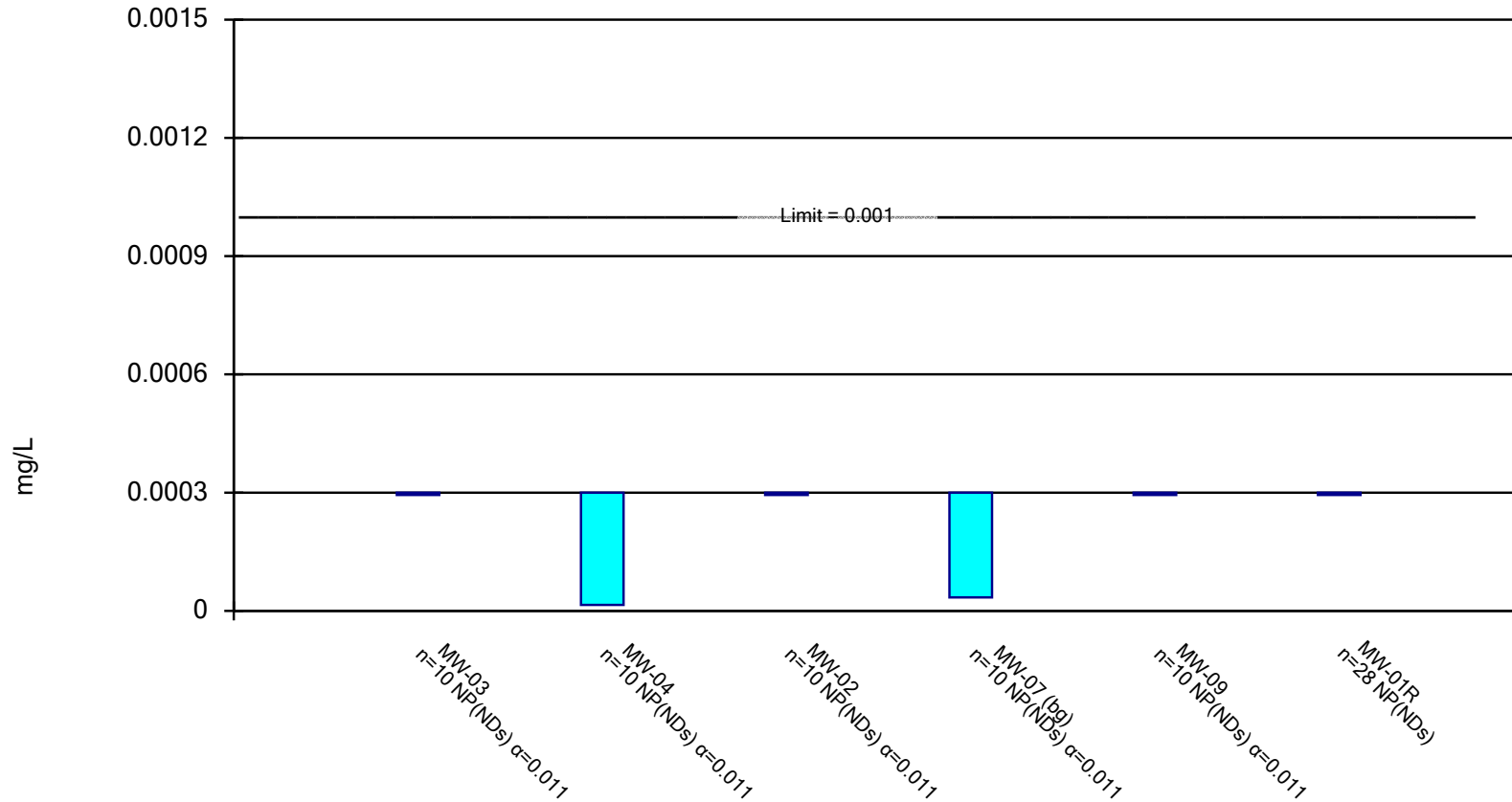
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Selenium Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

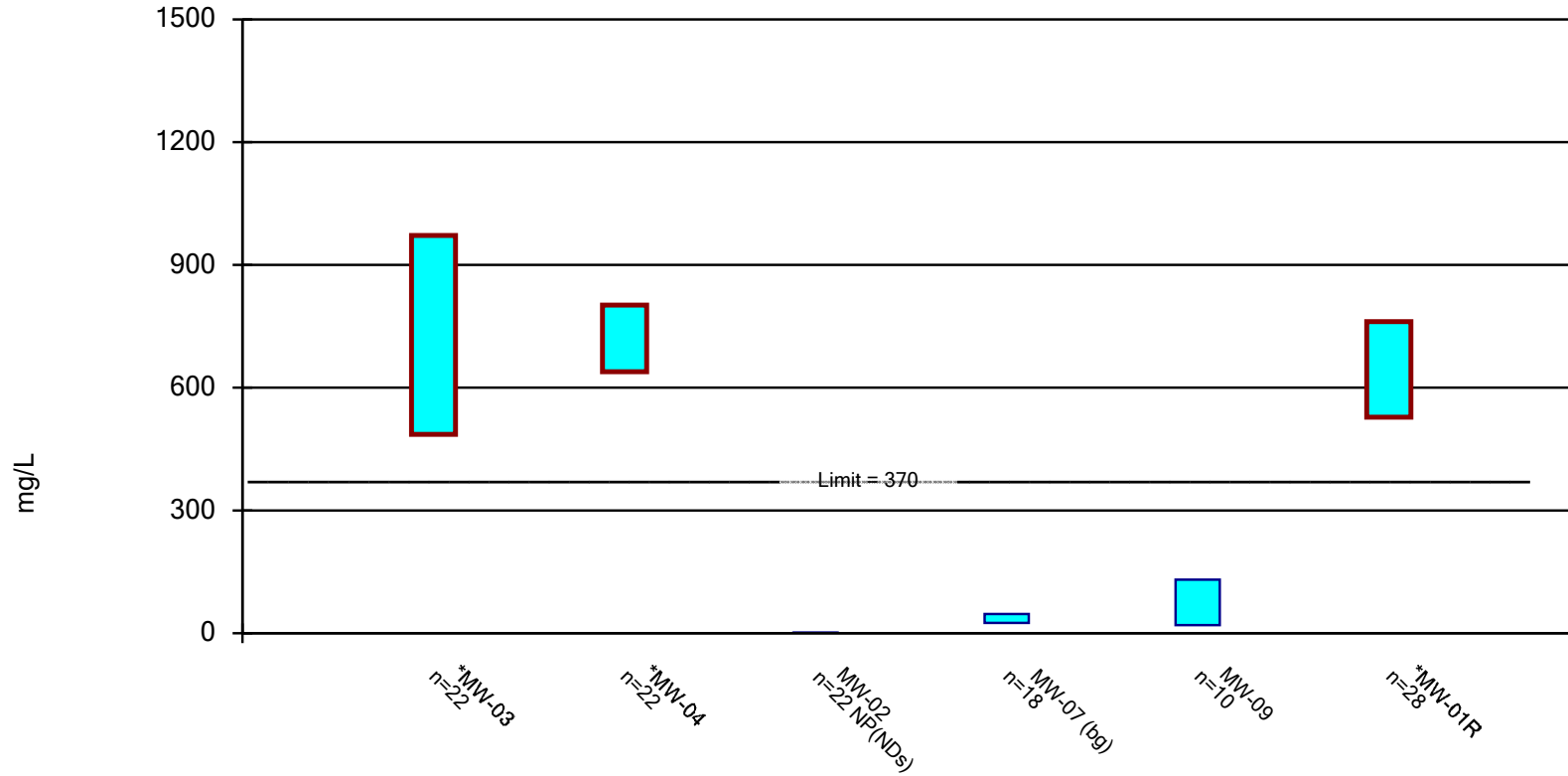
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Silver Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

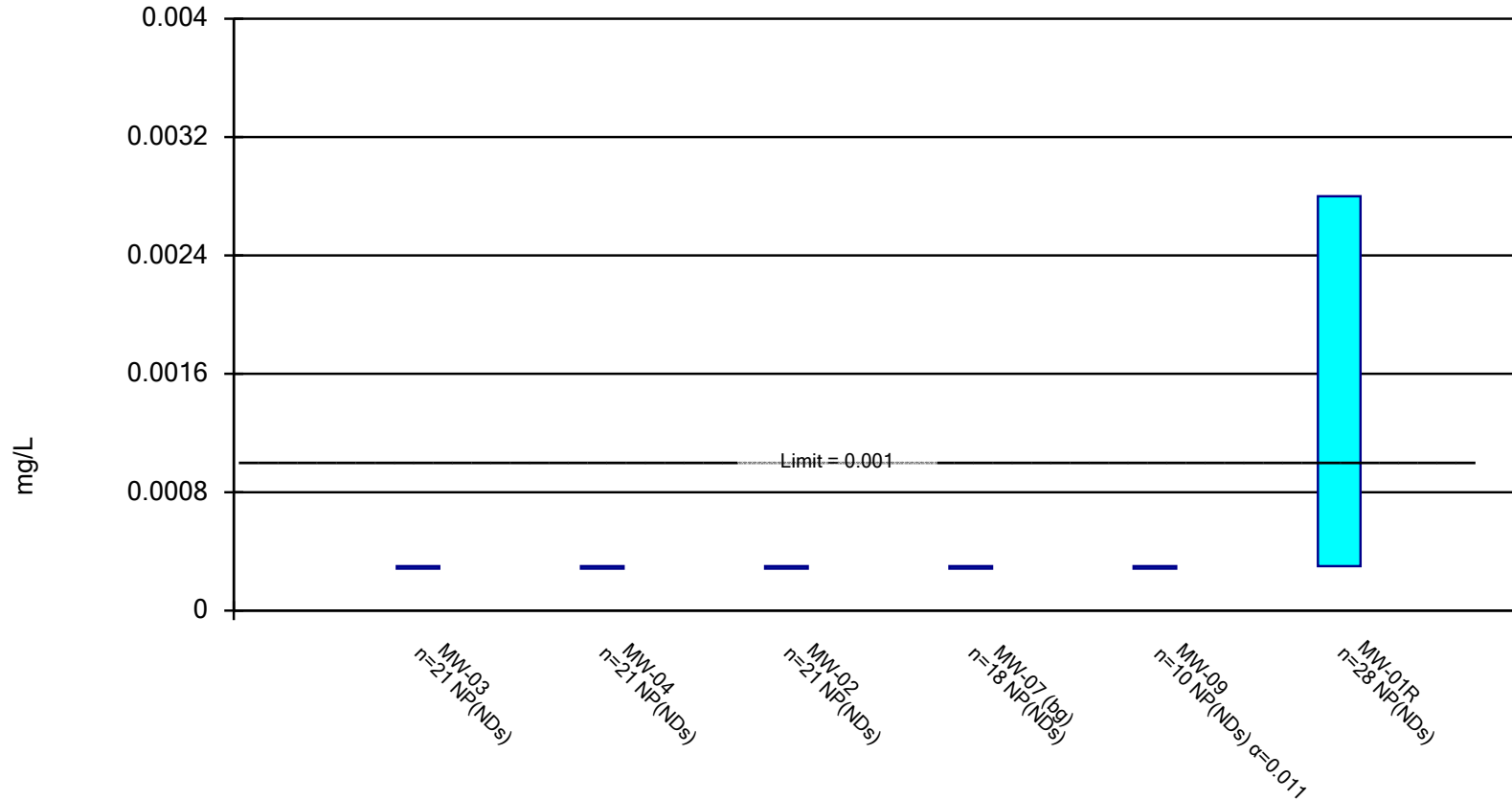
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Sulfate Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

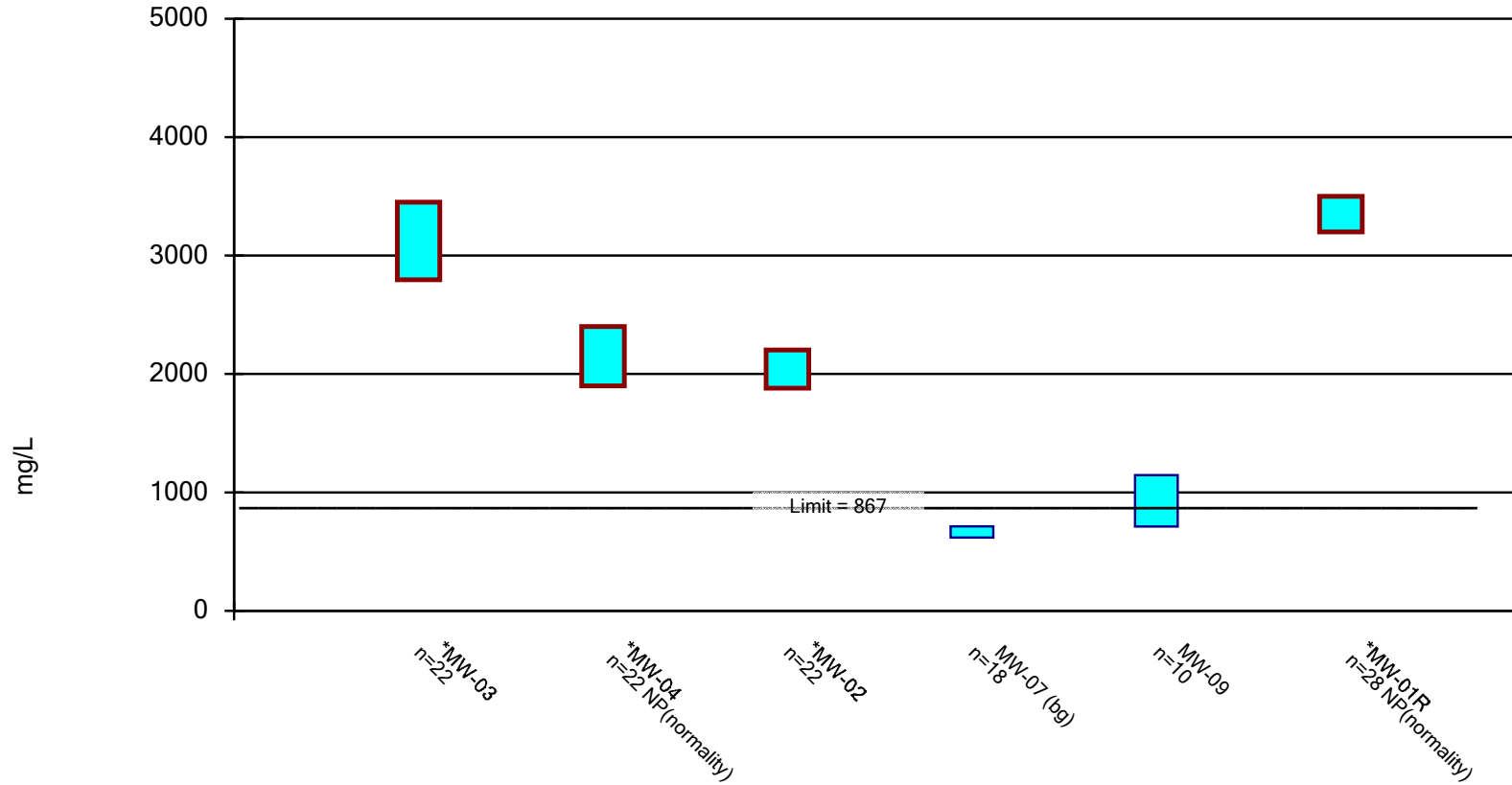
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Thallium Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

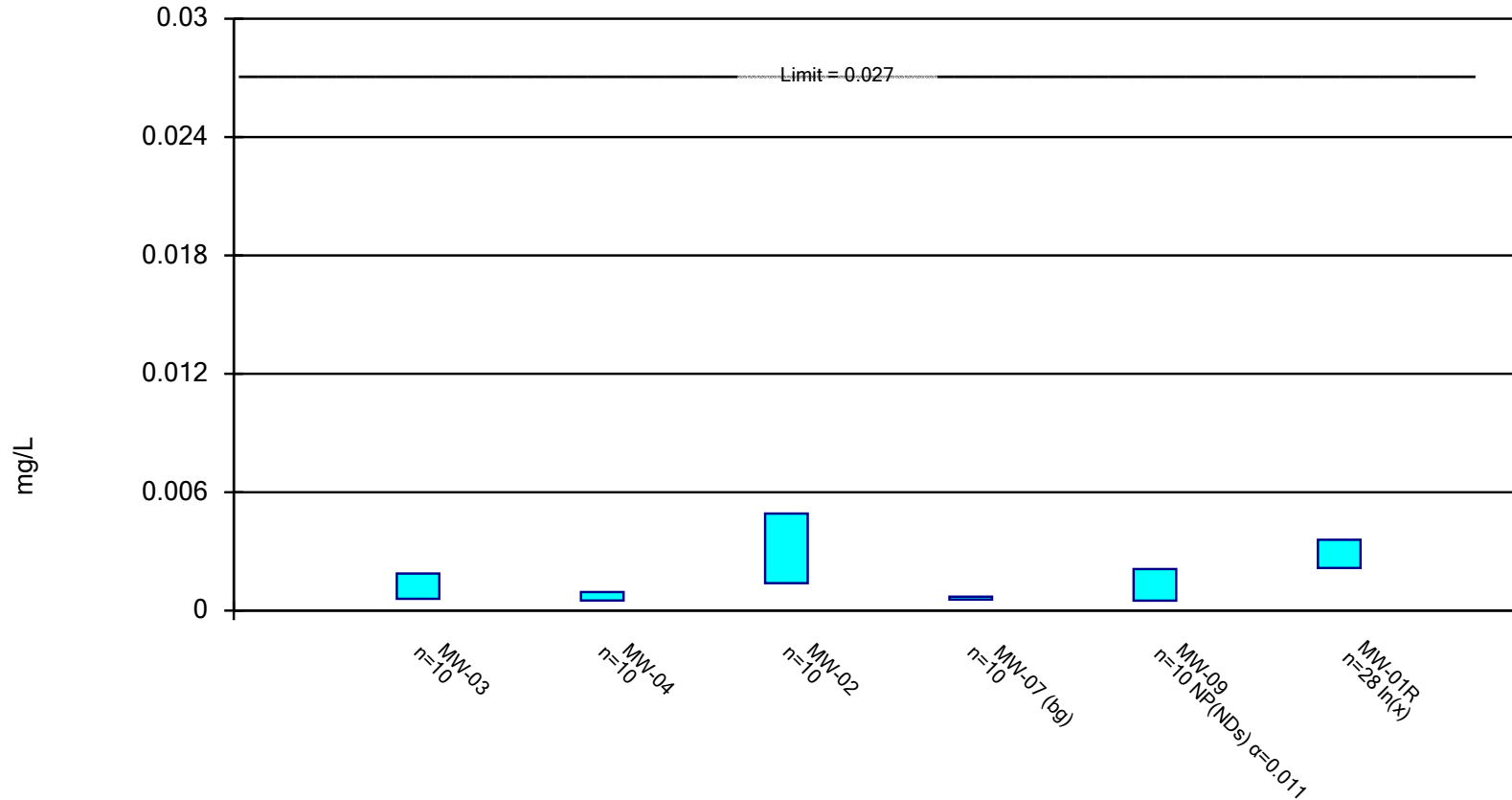


Constituent: Total Dissolved Solids Analysis Run 1/3/2022 1:32 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

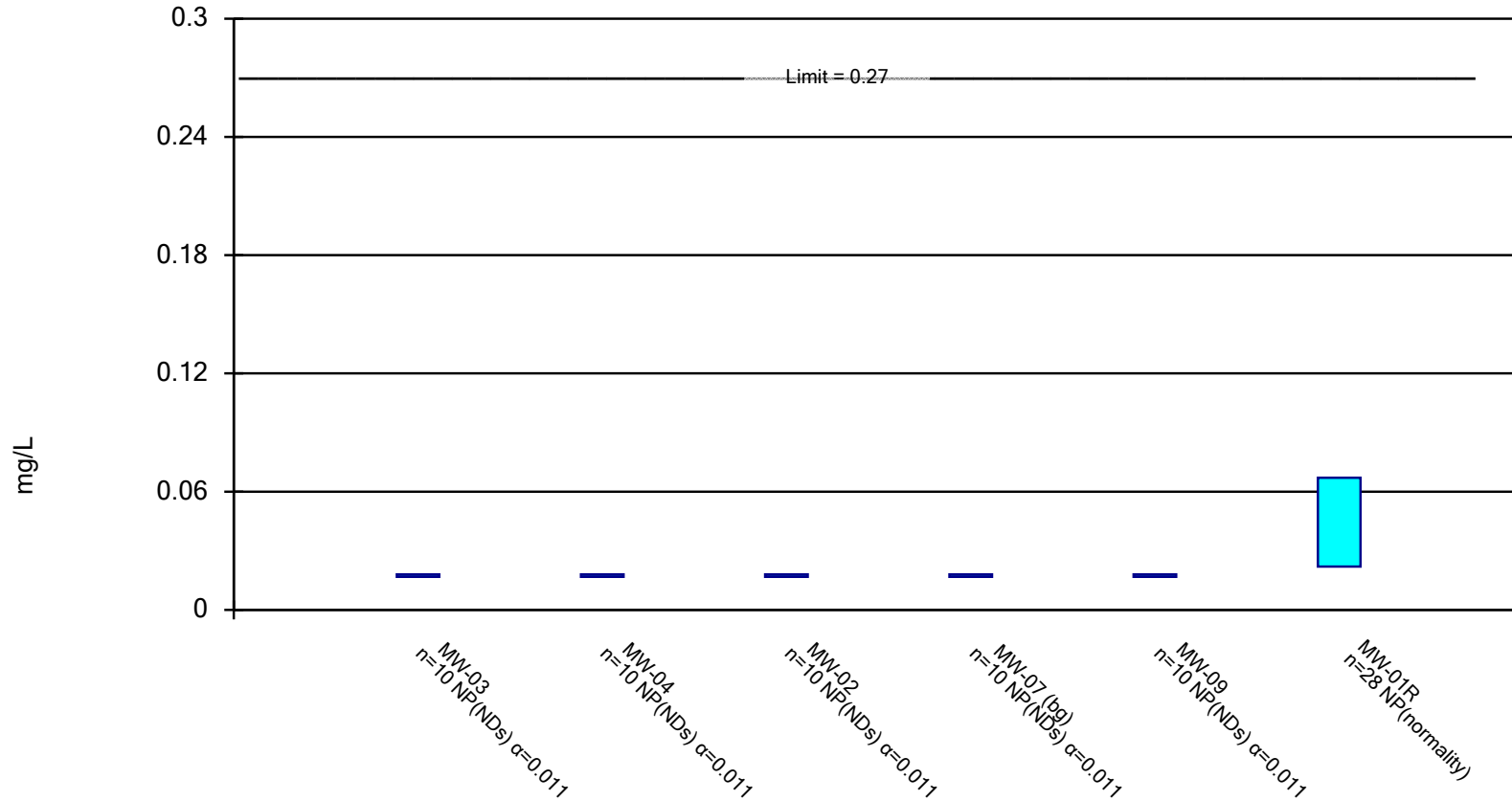
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Vanadium Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Zinc Analysis Run 1/3/2022 1:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 2:00 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-03	0.00041	0.0003	0.006	No	21	0.0003052	0.000024	95.24	No	0.01	NP (NDs)
Antimony (mg/L)	MW-04	0.0003	0.000091	0.006	No	21	0.00029	0.00004561	95.24	No	0.01	NP (NDs)
Antimony (mg/L)	MW-02	0.00033	0.0003	0.006	No	21	0.0003414	0.0001206	66.67	No	0.01	NP (NDs)
Antimony (mg/L)	MW-07 (bg)	0.0016	0.00013	0.006	No	18	0.0003628	0.0003114	88.89	No	0.01	NP (NDs)
Antimony (mg/L)	MW-09	0.0003	0.0003	0.006	No	10	0.0003	0	100	No	0.011	NP (NDs)
Antimony (mg/L)	MW-01R	0.003819	0.001155	0.006	No	28	0.004324	0.00553	10.71	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-03	0.002118	0.001453	0.01	No	21	0.001786	0.0006027	9.524	No	0.01	Param.
Arsenic (mg/L)	MW-04	0.001611	0.001217	0.01	No	21	0.001414	0.0003568	4.762	No	0.01	Param.
Arsenic (mg/L)	MW-02	0.009952	0.006543	0.01	No	21	0.008248	0.00309	4.762	No	0.01	Param.
Arsenic (mg/L)	MW-07 (bg)	0.001	0.0005	0.01	No	17	0.001078	0.00114	47.06	No	0.01	NP (normality)
Arsenic (mg/L)	MW-09	0.003558	0.002242	0.01	No	10	0.0029	0.0007379	0	No	0.01	Param.
Arsenic (mg/L)	MW-01R	0.0083	0.0067	0.01	No	28	0.006929	0.002187	3.571	No	0.01	NP (normality)
Barium (mg/L)	MW-03	0.4399	0.3268	1.2	No	21	0.3833	0.1025	0	No	0.01	Param.
Barium (mg/L)	MW-04	0.1514	0.1188	1.2	No	21	0.1351	0.02947	0	No	0.01	Param.
Barium (mg/L)	MW-02	0.4828	0.4429	1.2	No	21	0.4629	0.03621	0	No	0.01	Param.
Barium (mg/L)	MW-07 (bg)	0.4002	0.3264	1.2	No	18	0.3633	0.06097	0	No	0.01	Param.
Barium (mg/L)	MW-09	3.021	0.9393	1.2	No	10	2.082	1.567	0	ln(x)	0.01	Param.
Barium (mg/L)	MW-01R	0.5967	0.3973	1.2	No	28	0.497	0.2134	0	No	0.01	Param.
Beryllium (mg/L)	MW-03	0.001	0.001	0.004	No	21	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-04	0.001	0.001	0.004	No	21	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-02	0.0015	0.00077	0.004	No	21	0.0009681	0.0002412	85.71	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-07 (bg)	0.001	0.001	0.004	No	18	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-09	0.001	0.001	0.004	No	10	0.001	0	100	No	0.011	NP (NDs)
Beryllium (mg/L)	MW-01R	0.001	0.001	0.004	No	28	0.001	0	100	No	0.01	NP (NDs)
Boron (ug/L)	MW-03	5563	4580	16000	No	21	5071	890.6	0	No	0.01	Param.
Boron (ug/L)	MW-04	3900	3300	16000	No	21	3724	574.4	0	No	0.01	NP (normality)
Boron (ug/L)	MW-02	137592	98805	16000	Yes	21	122000	41539	0	ln(x)	0.01	Param.
Boron (ug/L)	MW-07 (bg)	15000	11000	16000	No	18	12978	3368	0	No	0.01	NP (normality)
Boron (ug/L)	MW-09	6385	4695	16000	No	10	5540	946.6	0	No	0.01	Param.
Boron (ug/L)	MW-01R	190000	140000	16000	Yes	28	165000	38442	0	No	0.01	NP (normality)
Cadmium (mg/L)	MW-03	0.0006	0.00033	0.0025	No	21	0.0005738	0.00008273	95.24	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-04	0.0006	0.000037	0.0025	No	21	0.0005463	0.0001696	90.48	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-02	0.0006	0.00021	0.0025	No	21	0.0004928	0.0002549	66.67	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-07 (bg)	0.0006	0.00032	0.0025	No	18	0.0005537	0.0001426	94.44	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-09	0.0006	0.0006	0.0025	No	10	0.0006	0	100	No	0.011	NP (NDs)
Cadmium (mg/L)	MW-01R	0.0043	0.0006	0.0025	No	28	0.003946	0.005132	32.14	No	0.01	NP (normality)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 2:00 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Calcium (ug/L)	MW-03	620000	540000	200000	Yes	22	589545	86050	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-04	463546	420999	200000	Yes	22	442273	39633	0	No	0.01	Param.
Calcium (ug/L)	MW-02	210000	180000	200000	No	22	203182	34001	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-07 (bg)	150000	130000	200000	No	18	145000	15435	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-09	257600	228400	200000	Yes	10	243000	16364	0	No	0.01	Param.
Calcium (ug/L)	MW-01R	256657	169040	200000	No	28	230393	114277	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-03	453.6	359.9	150	Yes	22	413.6	97.57	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-04	313.5	241	150	Yes	22	277.3	67.55	0	No	0.01	Param.
Chloride (mg/L)	MW-02	150	140	150	No	22	145	8.018	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-07 (bg)	15	13	150	No	18	14.11	0.8324	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-09	13.95	10.29	150	No	10	12.15	2.31	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-01R	264.2	250.8	150	Yes	28	257.5	14.3	0	No	0.01	Param.
Chromium (mg/L)	MW-03	0.00256	0.001525	0.1	No	21	0.002202	0.001094	0	ln(x)	0.01	Param.
Chromium (mg/L)	MW-04	0.002257	0.001705	0.1	No	21	0.001981	0.0004996	4.762	No	0.01	Param.
Chromium (mg/L)	MW-02	0.05239	0.03262	0.1	No	21	0.0425	0.01791	0	No	0.01	Param.
Chromium (mg/L)	MW-07 (bg)	0.001	0.00068	0.1	No	18	0.000925	0.0005008	66.67	No	0.01	NP (NDs)
Chromium (mg/L)	MW-09	0.002689	0.001971	0.1	No	10	0.00233	0.0004029	0	No	0.01	Param.
Chromium (mg/L)	MW-01R	0.006266	0.003249	0.1	No	28	0.005689	0.004133	3.571	ln(x)	0.01	Param.
Cobalt (mg/L)	MW-03	0.001178	0.0008524	0.006	No	21	0.0008833	0.0002917	23.81	No	0.01	Param.
Cobalt (mg/L)	MW-04	0.00058	0.00033	0.006	No	21	0.00051	0.0002227	38.1	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-02	0.007702	0.005441	0.006	No	21	0.006571	0.002049	0	No	0.01	Param.
Cobalt (mg/L)	MW-07 (bg)	0.00091	0.0007	0.006	No	18	0.0008239	0.0001295	16.67	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-09	0.0022	0.0005	0.006	No	10	0.000981	0.0007477	30	No	0.011	NP (normality)
Cobalt (mg/L)	MW-01R	0.01587	0.005758	0.006	No	28	0.01732	0.0221	0	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-03	1.68	0.666	5	No	21	1.21	0.8396	23.81	No	0.01	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	MW-04	0.97	0.671	5	No	21	0.8382	0.4338	38.1	No	0.01	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	MW-02	1.988	0.7317	5	No	21	1.565	0.8717	28.57	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-07 (bg)	1.73	0.73	5	No	18	1.11	0.5214	50	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-09	1.957	1.123	5	No	10	1.54	0.4674	10	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-01R	2.25	0.41	5	No	7	0.9557	0.5965	42.86	No	0.008	NP (Cohens/xfrm)
Copper (mg/L)	MW-03	0.0018	0.00078	0.02	No	10	0.001563	0.0005057	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-04	0.0018	0.0015	0.02	No	10	0.001695	0.0003201	70	No	0.011	NP (NDs)
Copper (mg/L)	MW-02	0.0022	0.0018	0.02	No	10	0.00193	0.0005376	70	No	0.011	NP (NDs)
Copper (mg/L)	MW-07 (bg)	0.0018	0.00059	0.02	No	10	0.001545	0.0005385	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-09	0.0018	0.0018	0.02	No	10	0.00175	0.0001581	90	No	0.011	NP (NDs)
Copper (mg/L)	MW-01R	0.0056	0.0018	0.02	No	28	0.006071	0.008081	64.29	No	0.01	NP (NDs)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 2:00 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Fluoride (mg/L)	MW-03	1.51	1.017	2.67	No	21	1.263	0.447	0	No	0.01	Param.
Fluoride (mg/L)	MW-04	1.292	1.131	2.67	No	21	1.211	0.1461	0	No	0.01	Param.
Fluoride (mg/L)	MW-02	12.71	10.28	2.67	Yes	21	11.5	2.209	0	No	0.01	Param.
Fluoride (mg/L)	MW-07 (bg)	0.1335	0.07364	2.67	No	18	0.1079	0.04269	16.67	No	0.01	Param.
Fluoride (mg/L)	MW-09	2.568	2.312	2.67	No	10	2.44	0.143	0	No	0.01	Param.
Fluoride (mg/L)	MW-01R	26	20	2.67	Yes	28	20.83	7.517	3.571	No	0.01	NP (normality)
Iron (mg/L)	MW-03	18.6	2.843	25.01	No	10	10.72	8.83	0	No	0.01	Param.
Iron (mg/L)	MW-04	8.715	6.265	25.01	No	10	7.49	1.373	0	No	0.01	Param.
Iron (mg/L)	MW-02	23	18	25.01	No	10	19.77	4.869	0	No	0.011	NP (normality)
Iron (mg/L)	MW-07 (bg)	19.67	15.53	25.01	No	10	17.6	2.319	0	No	0.01	Param.
Iron (mg/L)	MW-09	22.71	16.29	25.01	No	10	19.5	3.598	0	No	0.01	Param.
Iron (mg/L)	MW-01R	4.044	2.599	25.01	No	28	3.321	1.547	0	No	0.01	Param.
Lead (mg/L)	MW-03	0.0005	0.00038	0.014	No	21	0.0004395	0.0001571	66.67	No	0.01	NP (NDs)
Lead (mg/L)	MW-04	0.0005	0.00037	0.014	No	21	0.0004414	0.00009404	66.67	No	0.01	NP (NDs)
Lead (mg/L)	MW-02	0.0046	0.001745	0.014	No	21	0.003172	0.002587	14.29	No	0.01	Param.
Lead (mg/L)	MW-07 (bg)	0.00062	0.00045	0.014	No	18	0.0005756	0.0005995	72.22	No	0.01	NP (NDs)
Lead (mg/L)	MW-09	0.0016	0.0005	0.014	No	10	0.000793	0.0005488	70	No	0.011	NP (NDs)
Lead (mg/L)	MW-01R	0.03128	0.01062	0.014	No	28	0.03329	0.04093	0	ln(x)	0.01	Param.
Lithium (mg/L)	MW-03	0.07409	0.04808	0.059	No	21	0.06108	0.02358	4.762	No	0.01	Param.
Lithium (mg/L)	MW-04	0.05878	0.04167	0.059	No	21	0.05022	0.0155	4.762	No	0.01	Param.
Lithium (mg/L)	MW-02	1.499	1.233	0.059	Yes	21	1.366	0.241	0	No	0.01	Param.
Lithium (mg/L)	MW-07 (bg)	0.00835	0.0039	0.059	No	18	0.008872	0.01265	44.44	No	0.01	NP (normality)
Lithium (mg/L)	MW-09	0.26	0.16	0.059	Yes	10	0.235	0.04249	0	No	0.011	NP (normality)
Lithium (mg/L)	MW-01R	3.133	2.418	0.059	Yes	28	2.775	0.7644	0	No	0.01	Param.
Mercury (mg/L)	MW-03	8.0e-7	1.6e-7	0.00014	No	21	0.00001079	0.00002658	71.43	No	0.01	NP (NDs)
Mercury (mg/L)	MW-04	0.00006008	1.6e-7	0.00014	No	21	0.00000683	0.00002131	95.24	No	0.01	NP (NDs)
Mercury (mg/L)	MW-02	0.0000031	1.6e-7	0.00014	No	21	0.00001119	0.00002659	71.43	No	0.01	NP (NDs)
Mercury (mg/L)	MW-07 (bg)	0.00008	1.6e-7	0.00014	No	18	0.00002347	0.00004661	77.78	No	0.01	NP (NDs)
Mercury (mg/L)	MW-09	8.8e-7	1.6e-7	0.00014	No	10	0.000008344	0.0000253	60	No	0.011	NP (NDs)
Mercury (mg/L)	MW-01R	0.00002335	0.000005832	0.00014	No	28	0.00002651	0.00003384	3.571	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-03	0.0049	0.000093	0.1	No	21	0.002009	0.003164	52.38	No	0.01	NP (NDs)
Molybdenum (mg/L)	MW-04	0.00158	0.000607	0.1	No	21	0.001178	0.0007406	19.05	No	0.01	Param.
Molybdenum (mg/L)	MW-02	0.009148	0.004689	0.1	No	21	0.006918	0.004042	9.524	No	0.01	Param.
Molybdenum (mg/L)	MW-07 (bg)	0.004	0.000093	0.1	No	18	0.001595	0.00211	27.78	No	0.01	NP (normality)
Molybdenum (mg/L)	MW-09	0.02601	0.01353	0.1	No	10	0.01977	0.006998	0	No	0.01	Param.
Molybdenum (mg/L)	MW-01R	0.01	0.008	0.1	No	28	0.008514	0.003256	0	No	0.01	NP (normality)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 2:00 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Nickel (mg/L)	MW-03	0.003	0.002	0.11	No	10	0.00282	0.001522	20	No	0.011	NP (normality)
Nickel (mg/L)	MW-04	0.01853	0.01407	0.11	No	10	0.0163	0.002497	0	No	0.01	Param.
Nickel (mg/L)	MW-02	0.02424	0.01436	0.11	No	10	0.0193	0.005539	0	No	0.01	Param.
Nickel (mg/L)	MW-07 (bg)	0.0022	0.00042	0.11	No	10	0.001842	0.0007547	80	No	0.011	NP (NDs)
Nickel (mg/L)	MW-09	0.0032	0.0022	0.11	No	10	0.00246	0.000631	60	No	0.011	NP (NDs)
Nickel (mg/L)	MW-01R	0.01981	0.009064	0.11	No	28	0.0194	0.01951	0	ln(x)	0.01	Param.
pH (SU)	MW-03	7.466	6.91	9	No	20	7.188	0.4345	0	No	0.005	Param.
pH (SU)	MW-04	7.681	7.101	9	No	20	7.391	0.4537	0	No	0.005	Param.
pH (SU)	MW-02	7.742	7.095	9	No	20	7.419	0.5058	0	No	0.005	Param.
pH (SU)	MW-07 (bg)	7.501	6.873	9	No	17	7.187	0.4429	0	No	0.005	Param.
pH (SU)	MW-09	7.701	7.065	9	No	10	7.383	0.3094	0	No	0.005	Param.
pH (SU)	MW-01R	8.454	7.861	9	No	28	8.158	0.566	0	No	0.005	Param.
Selenium (mg/L)	MW-03	0.0012	0.0009	0.005	No	21	0.001026	0.0002179	66.67	No	0.01	NP (NDs)
Selenium (mg/L)	MW-04	0.0013	0.00065	0.005	No	21	0.0008943	0.0001214	85.71	No	0.01	NP (NDs)
Selenium (mg/L)	MW-02	0.0027	0.0012	0.005	No	21	0.002543	0.002738	19.05	No	0.01	NP (normality)
Selenium (mg/L)	MW-07 (bg)	0.0009	0.0009	0.005	No	18	0.0009	0	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-09	0.0009	0.0009	0.005	No	10	0.0009	0	100	No	0.011	NP (NDs)
Selenium (mg/L)	MW-01R	0.0021	0.0013	0.005	No	28	0.001949	0.001097	17.86	No	0.01	NP (Cohens/xfm)
Silver (mg/L)	MW-03	0.0003	0.0003	0.001	No	10	0.0002726	0.00008665	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-04	0.0003	0.000015	0.001	No	10	0.0002429	0.0001204	80	No	0.011	NP (NDs)
Silver (mg/L)	MW-02	0.0003	0.0003	0.001	No	10	0.0002736	0.00008348	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-07 (bg)	0.0003	0.000034	0.001	No	10	0.0002456	0.0001147	80	No	0.011	NP (NDs)
Silver (mg/L)	MW-09	0.0003	0.0003	0.001	No	10	0.0003	0	100	No	0.011	NP (NDs)
Silver (mg/L)	MW-01R	0.0003	0.0003	0.001	No	28	0.0003	0	100	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-03	972	485.9	370	Yes	22	729	452.8	0	No	0.01	Param.
Sulfate (mg/L)	MW-04	801.8	639.1	370	Yes	22	720.5	151.5	0	No	0.01	Param.
Sulfate (mg/L)	MW-02	1.5	0.41	370	No	22	1.98	3.488	54.55	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-07 (bg)	47.04	25.3	370	No	18	36.17	17.96	0	No	0.01	Param.
Sulfate (mg/L)	MW-09	131	19.54	370	No	10	75.26	62.45	0	No	0.01	Param.
Sulfate (mg/L)	MW-01R	761.3	528	370	Yes	28	644.6	249.6	0	No	0.01	Param.
Thallium (mg/L)	MW-03	0.0003	0.0003	0.001	No	21	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-04	0.0003	0.0003	0.001	No	21	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-02	0.0003	0.0003	0.001	No	21	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-07 (bg)	0.0003	0.0003	0.001	No	18	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-09	0.0003	0.0003	0.001	No	10	0.000355	0.0001739	90	No	0.011	NP (NDs)
Thallium (mg/L)	MW-01R	0.0028	0.0003	0.001	No	28	0.0003893	0.0004725	96.43	No	0.01	NP (NDs)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 2:00 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Total Dissolved Solids (mg/L)	MW-03	3450	2795	867	Yes	22	3123	610.2	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-04	2400	1900	867	Yes	22	2092	514.9	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-02	2202	1880	867	Yes	22	2041	300.3	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-07 (bg)	713.3	618.9	867	No	18	666.1	78	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-09	1146	712.3	867	No	10	929	242.9	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-01R	3500	3200	867	Yes	28	3214	470.4	0	No	0.01	NP (normality)
Vanadium (mg/L)	MW-03	0.00188	0.0005939	0.027	No	10	0.001237	0.0007208	10	No	0.01	Param.
Vanadium (mg/L)	MW-04	0.0009392	0.0005128	0.027	No	10	0.000726	0.000239	10	No	0.01	Param.
Vanadium (mg/L)	MW-02	0.004916	0.00139	0.027	No	10	0.003153	0.001976	10	No	0.01	Param.
Vanadium (mg/L)	MW-07 (bg)	0.0007082	0.0005598	0.027	No	10	0.000634	0.00008316	0	No	0.01	Param.
Vanadium (mg/L)	MW-09	0.0021	0.0005	0.027	No	10	0.00087	0.0007889	80	No	0.011	NP (NDs)
Vanadium (mg/L)	MW-01R	0.003589	0.002157	0.027	No	28	0.003179	0.00173	3.571	ln(x)	0.01	Param.
Zinc (mg/L)	MW-03	0.018	0.018	0.27	No	10	0.01628	0.005436	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-04	0.018	0.018	0.27	No	10	0.0165	0.004743	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-02	0.018	0.018	0.27	No	10	0.01719	0.002561	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-07 (bg)	0.018	0.018	0.27	No	10	0.01673	0.005157	80	No	0.011	NP (NDs)
Zinc (mg/L)	MW-09	0.018	0.018	0.27	No	10	0.01684	0.003668	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-01R	0.067	0.022	0.27	No	28	0.06954	0.07713	28.57	No	0.01	NP (normality)

APPENDIX B

Laboratory Reports and Field Forms

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



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888-979-4469 Fax
www.trace-labs.com

November 09, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1032
Client Project Impoundment Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 21J1032
Client Project ID: Impoundment Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1032-01	Unit 1/2 Near MW-5	Ground Water	TRACE-EB/TB	10/26/21 11:25	10/27/21 08:52
21J1032-02	Unit 1/2 Near SG-2	Ground Water	TRACE-EB/TB	10/26/21 15:25	10/27/21 08:52

CERTIFICATE OF ANALYSIS

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
 Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: 21J1032-01

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Chromium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Manganese	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Vanadium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.

Trace ID: 21J1032-02

Analysis: EPA 6020B

Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: T116174-MSD1

Analysis: EPA 6010D

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Calcium	Note 226 : The MS recovery was out of control, resulting in an out of control RPD between the MS and MSD. Because the background concentration of this analyte is greater than four times the spike amount, no data require qualification.
<i>Analysis: EPA 6020B</i>	
Chromium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Manganese	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Vanadium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-01 Matrix: Ground Water Date Collected: 10/26/21 11:25
 Sample ID: Unit 1/2 Near MW-5 Date Received: 10/27/21 08:52 Field pH: 7.11

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	1.5 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	1.8 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	470 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	0.28 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.039 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	34 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	12 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	20 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	0.00047 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0021 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.035 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0017 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs	206	
Cobalt	0.00086 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.072 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs	206	
Molybdenum	0.0064 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0032 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	0.0011 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.00094 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs	206	

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-01 Matrix: Ground Water Date Collected: 10/26/21 11:25
 Sample ID: Unit 1/2 Near MW-5 Date Received: 10/27/21 08:52 Field pH: 7.11

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	1300 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	1.8 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	480 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	0.098 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd	J	
Lithium	0.037 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	33 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	12 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	20 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0030 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00088 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Arsenic	0.0016 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.040 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00058 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00035 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.066 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0048 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0022 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00086 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00035 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-01 Matrix: Ground Water Date Collected: 10/26/21 11:25
 Sample ID: Unit 1/2 Near MW-5 Date Received: 10/27/21 08:52 Field pH: 7.11

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116092

Fluoride	3.1 mg/L	0.10	5	10/27/21	ans	10/28/21	ans		
Chloride	28 mg/L	0.75	5	10/27/21	ans	10/28/21	ans		
Sulfate as SO4	1300 mg/L	60	100	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116236

Bicarbonate Alkalinity as CaCO3 at pH 4.5	93 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1200 mg/L	20	2	10/28/21	gmr	10/28/21	gmr		
Total Dissolved Solids	1800 mg/L	20	2	11/01/21	mr	11/02/21	mr		

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-02 Matrix: Ground Water Date Collected: 10/26/21 15:25
 Sample ID: Unit 1/2 Near SG-2 Date Received: 10/27/21 08:52 Field pH: 8.39

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	3.3 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	4.6 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	280 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	0.25 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.061 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	56 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	15 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	48 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	0.00045 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0024 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.044 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0013 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	0.0021 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs	J	
Lead	0.00083 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Manganese	0.082 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0048 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0037 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	0.00093 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0014 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-02 Matrix: Ground Water Date Collected: 10/26/21 15:25
 Sample ID: Unit 1/2 Near SG-2 Date Received: 10/27/21 08:52 Field pH: 8.39

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	940 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	4.7 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	280 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	0.056 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd	J	
Lithium	0.057 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	54 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	15 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	49 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0013 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.0012 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0018 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.061 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	0.000045 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00023 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00062 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.00028 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Manganese	0.054 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0042 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0017 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00075 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00038 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-02 Matrix: Ground Water Date Collected: 10/26/21 15:25
 Sample ID: Unit 1/2 Near SG-2 Date Received: 10/27/21 08:52 Field pH: 8.39

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116092

Fluoride	3.1 mg/L	0.10	5	10/27/21	ans	10/28/21	ans		
Chloride	81 mg/L	15	100	10/28/21	ans	10/28/21	ans		
Sulfate as SO4	770 mg/L	60	100	10/28/21	ans	10/28/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116236

Bicarbonate Alkalinity as CaCO3 at pH 4.5	91 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1500 mg/L	20	2	10/28/21	gmr	10/28/21	gmr		
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QUALITY CONTROL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116281	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T116281-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T116281-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	23.4	94	77-123	

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116098	Analysis Description: Zinc, Dissolved
QC Batch Method:	Analysis Method: EPA 6010D

METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	0.0023	0.050	J
Beryllium	mg/L	0.000061	0.0010	J
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	0.015	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	

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METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116098-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.966	97	80-120	
Beryllium	mg/L	0.0500	0.0510	102	80-120	
Calcium	mg/L	10.0	10.3	103	80-120	
Iron	mg/L	10.0	10.4	104	80-120	
Potassium	mg/L	10.0	10.4	104	80-120	
Lithium	mg/L	0.500	0.522	104	80-120	
Magnesium	mg/L	10.0	10.5	105	80-120	
Sodium	mg/L	10.0	10.6	106	80-120	
Zinc	mg/L	1.00	1.04	104	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116098-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	1.83	1.00	2.78	2.79	95	96	75-125	0.8	20	
Beryllium	mg/L	0	0.0500	0.0476	0.0479	95	96	75-125	0.6	20	
Iron	mg/L	0.0978	10.0	9.84	10.0	97	99	75-125	2	20	
Potassium	mg/L	11.6	10.0	21.8	21.9	102	104	75-125	2	20	
Lithium	mg/L	0.0370	0.500	0.568	0.573	106	107	75-125	0.9	20	
Magnesium	mg/L	33.4	10.0	42.3	42.3	90	90	75-125	0.2	20	
Sodium	mg/L	20.3	10.0	30.8	31.0	105	107	75-125	2	20	
Zinc	mg/L	0.00301	1.00	0.991	1.02	99	102	75-125	3	20	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116098-MSD2

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Calcium	mg/L	478	100	576	562	98	84	75-125	16	20	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116174

Analysis Description: Potassium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6010D

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METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	0.060	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.830	93	80-120	
Beryllium	mg/L	0.111	0.109	98	80-120	
Calcium	mg/L	8.89	8.74	98	80-120	
Iron	mg/L	8.89	9.02	101	80-120	
Potassium	mg/L	8.89	9.03	102	80-120	
Lithium	mg/L	0.889	0.880	99	80-120	
Magnesium	mg/L	8.89	9.09	102	80-120	
Sodium	mg/L	8.89	9.07	102	80-120	
Zinc	mg/L	0.889	0.894	101	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116174-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	1.81	0.889	2.72	2.61	102	90	75-125	13	20	
Beryllium	mg/L	0	0.111	0.113	0.110	101	99	75-125	2	20	
Calcium	mg/L	468	8.89	498	475	342	80	75-125	124	20	226
Iron	mg/L	0.275	8.89	9.42	9.20	103	100	75-125	2	20	
Potassium	mg/L	11.6	8.89	21.7	21.1	113	107	75-125	6	20	
Lithium	mg/L	0.0394	0.889	0.997	0.969	108	105	75-125	3	20	
Magnesium	mg/L	33.6	8.89	42.5	41.6	99	89	75-125	11	20	
Sodium	mg/L	20.0	8.89	30.3	29.6	116	108	75-125	8	20	
Zinc	mg/L	0	0.889	0.909	0.876	102	99	75-125	4	20	

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Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116167
 QC Batch Method:

Analysis Description: Vanadium, Dissolved
 Analysis Method: EPA 6020B

METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	0.000026	0.000040	J
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	0.00017	0.00020	J
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0612	102	80-120	
Arsenic	mg/L	0.0600	0.0630	105	80-120	
Barium	mg/L	0.0600	0.0588	98	80-120	
Cadmium	mg/L	0.0600	0.0613	102	80-120	
Cobalt	mg/L	0.0600	0.0604	101	80-120	
Chromium	mg/L	0.0600	0.0629	105	80-120	
Copper	mg/L	0.0600	0.0610	102	80-120	
Manganese	mg/L	0.0600	0.0615	102	80-120	
Molybdenum	mg/L	0.0600	0.0588	98	80-120	
Nickel	mg/L	0.0600	0.0602	100	80-120	
Lead	mg/L	0.0600	0.0616	103	80-120	
Antimony	mg/L	0.0600	0.0577	96	80-120	
Selenium	mg/L	0.0600	0.0630	105	80-120	
Thallium	mg/L	0.0600	0.0617	103	80-120	

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LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Vanadium	mg/L	0.0600	0.0581	97	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116167-MSD1

Original: 21J1032-02

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Silver	mg/L	0	0.0500	0.0435	0.0420	87	84	75-125	4	20	
Arsenic	mg/L	0.00177	0.0500	0.0600	0.0573	116	111	75-125	5	20	
Cadmium	mg/L	0.0000452	0.0500	0.0492	0.0482	98	96	75-125	2	20	
Cobalt	mg/L	0.000233	0.0500	0.0459	0.0450	91	89	75-125	2	20	
Chromium	mg/L	0	0.0500	0.0493	0.0481	99	96	75-125	3	20	
Copper	mg/L	0.000624	0.0500	0.0419	0.0408	83	80	75-125	3	20	
Manganese	mg/L	0.0537	0.0500	0.105	0.102	102	97	75-125	5	20	
Molybdenum	mg/L	0.00421	0.0500	0.0585	0.0556	109	103	75-125	6	20	
Nickel	mg/L	0.00170	0.0500	0.0455	0.0445	88	86	75-125	2	20	
Selenium	mg/L	0.000753	0.0500	0.0555	0.0537	109	106	75-125	3	20	
Vanadium	mg/L	0.000380	0.0500	0.0516	0.0499	103	99	75-125	4	20	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116167-MSD2

Original: 21J1032-02

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Barium	mg/L	0.0610	0.250	0.308	0.306	99	98	75-125	1	20	
Lead	mg/L	0.000275	0.250	0.258	0.257	103	103	75-125	0.3	20	
Antimony	mg/L	0.00115	0.250	0.260	0.259	104	103	75-125	0.7	20	
Thallium	mg/L	0	0.250	0.265	0.262	106	105	75-125	1	20	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116174

Analysis Description: Selenium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6020B

METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	

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METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cadmium	mg/L	<0.0010	0.0010	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	0.00027	0.00040	J
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0333	120	80-120	
Arsenic	mg/L	0.0556	0.0599	108	80-120	
Barium	mg/L	0.889	0.950	107	80-120	
Cadmium	mg/L	0.0278	0.0297	107	80-120	
Cobalt	mg/L	0.889	0.892	100	80-120	
Chromium	mg/L	0.0278	0.0288	104	80-120	
Copper	mg/L	0.890	0.863	97	80-120	
Manganese	mg/L	0.887	0.878	99	80-120	
Molybdenum	mg/L	0.889	0.942	106	80-120	
Nickel	mg/L	0.889	0.840	95	80-120	
Lead	mg/L	0.0556	0.0533	96	80-120	
Antimony	mg/L	0.0556	0.0608	109	80-120	
Selenium	mg/L	0.0556	0.0560	101	80-120	
Thallium	mg/L	0.0556	0.0542	98	80-120	
Vanadium	mg/L	0.889	0.915	103	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116174-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Silver	mg/L	0	0.0278	0.0308	0.0292	111	105	75-125	5	20	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116174-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Arsenic	mg/L	0.00212	0.0556	0.0711	0.0670	124	117	75-125	6	20	
Barium	mg/L	0.0351	0.889	1.06	0.994	115	108	75-125	7	20	
Cadmium	mg/L	0	0.0278	0.0298	0.0280	107	101	75-125	6	20	
Cobalt	mg/L	0.000863	0.889	1.05	0.997	118	112	75-125	5	20	
Chromium	mg/L	0.00175	0.0278	0.0404	0.0382	139	131	75-125	6	20	206
Copper	mg/L	0	0.890	0.944	0.887	106	100	75-125	6	20	
Manganese	mg/L	0.0718	0.887	1.30	1.22	139	130	75-125	7	20	206
Molybdenum	mg/L	0.00638	0.889	1.03	0.980	115	110	75-125	5	20	
Nickel	mg/L	0.00323	0.889	0.959	0.909	108	102	75-125	5	20	
Lead	mg/L	0	0.0556	0.0499	0.0476	90	86	75-125	5	20	
Antimony	mg/L	0.000470	0.0556	0.0643	0.0600	115	107	75-125	7	20	
Selenium	mg/L	0.00107	0.0556	0.0649	0.0605	115	107	75-125	7	20	
Thallium	mg/L	0	0.0556	0.0519	0.0491	93	88	75-125	6	20	
Vanadium	mg/L	0.000945	0.889	1.35	1.28	152	144	75-125	6	20	206

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: [CALC]

Analysis Description: Hardness (Metals)

QC Batch Method:

Analysis Method: SM 2340 B-11

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116092

Analysis Description: Fluoride

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116092-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116092-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.00	100	90-110	
Fluoride	mg/L	1.00	0.992	99	90-110	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

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QC Batch: T116163

Analysis Description: Sulfate

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116163-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116163-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.11	102	90-110	
Sulfate as SO4	mg/L	5.00	4.88	98	90-110	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116228

Analysis Description: Sulfate

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116228-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116228-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Sulfate as SO4	mg/L	5.00	4.89	98	90-110	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116236

Analysis Description: Alkalinity, Bicarbonate

QC Batch Method: SM 2320 B-11

Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T116236-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	100	100	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	100	100	88-112	

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SAMPLE DUPLICATE: T116236-DUP1

Original: 21J1032-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	93.1	91.8	1	200	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116175

Analysis Description: Total Dissolved Solids

QC Batch Method: SM 2540 C-11

Analysis Method: SM 2540 C-11

METHOD BLANK: T116175-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	1.0	10	J

LABORATORY CONTROL SAMPLE: T116175-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	543	109	80-120	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116265

Analysis Description: Total Dissolved Solids

QC Batch Method: SM 2540 C-11

Analysis Method: SM 2540 C-11

METHOD BLANK: T116265-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	9.0	10	J

LABORATORY CONTROL SAMPLE: T116265-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	527	105	80-120	

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21J1032
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6	✓				
Representative Sample Temp °C	1.8	1.9	✓				✓

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present

Trace Courier Client Drop-off

Yes No Custody seals intact (if applicable)

UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10-26-21
 Field Personnel: EB
 Impoundment ID: Unit 12 by MW5
 Depth to Point:
 Sample Tubing Depth: 28 FT
 Purge Start Time: 10:55
 Purge Rate: 300 WL

Reading Time	11:17	11:20	11:22						
Depth to Water	-	-	-						
Temperature (Celsius)	9.57	9.57	9.57						
Specific Conductivity	2.05	2.05	2.05						
Dissolved Oxygen	11.00	11.00	11.00						
ORP (mV)	-11	-11	-11						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.11	7.11	7.11						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 10-26-21 Field Personnel: EB
 Impoundment ID: Unit 1a by S&S Depth to Point: _____ Sample Tubing Depth: 20 FT
 Purge Start Time: 14:55 Purge Rate: 300 mL/min

Reading Time	15:15	15:18	15:21						
Depth to Water	-	-	-						
Temperature (Celsius)	12.13	12.13	12.13						
Specific Conductivity	1.63	1.63	1.63						
Dissolved Oxygen	9.87	9.87	9.87						
ORP (mV)	100	160	100						
Turbidity(NTU)	3.7	3.8	3.7						
pH	8.39	8.39	8.39						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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November 09, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1034
Client Project MW Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 21J1034
Client Project ID: MW Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1034-01	MW-1R	Ground Water	TRACE-EB/TB	10/26/21 11:45	10/27/21 09:16
21J1034-02	MW-2	Ground Water	TRACE-EB/TB	10/26/21 13:55	10/27/21 09:16
21J1034-03	MW-3	Ground Water	TRACE-EB/TB	10/26/21 12:35	10/27/21 09:16
21J1034-04	MW-4	Ground Water	TRACE-EB/TB	10/26/21 12:00	10/27/21 09:16
21J1034-05	MW-5	Ground Water	TRACE-EB/TB	10/26/21 10:35	10/27/21 09:16
21J1034-06	MW-6	Ground Water	TRACE-EB/TB	10/26/21 11:00	10/27/21 09:16
21J1034-07	MW-7	Ground Water	TRACE-EB/TB	10/26/21 10:20	10/27/21 09:16
21J1034-08	MW-8	Ground Water	TRACE-EB/TB	10/26/21 15:35	10/27/21 09:16
21J1034-09	MW-9	Ground Water	TRACE-EB/TB	10/26/21 14:30	10/27/21 09:16
21J1034-10	MW-10	Ground Water	TRACE-EB/TB	10/26/21 15:05	10/27/21 09:16

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
 Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: 21J1034-01

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Cadmium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Silver	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: 21J1034-02

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: 21J1034-03

Analysis: EPA 6020B

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Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: 21J1034-04

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: 21J1034-10

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: T116175-DUP2

Analysis: SM 2540 C-11

Total Dissolved Solids	Note 623 : The relative percent difference between the sample and sample duplicate is out of control. The sample result should be considered estimated.
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-01 Matrix: Ground Water Date Collected: 10/26/21 11:45
 Sample ID: MW-1R Date Received: 10/27/21 09:16 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	1.9 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	140 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	220 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	1.7 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	2.8 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	120 mg/L	2.0	10	10/28/21	mrh	11/02/21	ckd		
Potassium	92 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	480 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	0.00044 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0046 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.20 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0022 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0022 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	0.0024 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.40 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0016 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0039 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	0.00097 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0017 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-01 Matrix: Ground Water Date Collected: 10/26/21 11:45
 Sample ID: MW-1R Date Received: 10/27/21 09:16 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	1000 mg/L	8.2	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	130 mg/L	2.5	50	10/27/21	ckd	10/29/21	ckd		
Calcium	250 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	1.5 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	2.6 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	120 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	85 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	470 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0013 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00050 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Arsenic	0.0040 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.21 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Chromium	0.00099 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00073 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.29 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0011 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0019 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00066 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.00020 mg/L	0.00020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00092 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-01 Matrix: Ground Water Date Collected: 10/26/21 11:45
 Sample ID: MW-1R Date Received: 10/27/21 09:16 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	13 mg/L	2.0	100	10/27/21	ans	10/27/21	ans		
Chloride	230 mg/L	15	100	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	530 mg/L	60	100	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116236

Bicarbonate Alkalinity as CaCO3 at pH 4.5	1200 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	3600 mg/L	20	2	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-02 Matrix: Ground Water Date Collected: 10/26/21 13:55
 Sample ID: MW-2 Date Received: 10/27/21 09:16 Field pH: 6.48

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	2.8 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	100 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	190 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	22 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	1.2 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	62 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	50 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	300 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.012 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.50 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.040 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0055 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	0.0022 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs	J	
Lead	0.0018 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Manganese	0.80 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0045 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.017 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	0.0017 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0039 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-02 Matrix: Ground Water Date Collected: 10/26/21 13:55
 Sample ID: MW-2 Date Received: 10/27/21 09:16 Field pH: 6.48

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	740 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	98 mg/L	0.50	10	10/27/21	ckd	10/29/21	ckd		
Calcium	200 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	22 mg/L	1.0	10	10/27/21	ckd	10/29/21	ckd		
Lithium	1.1 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	65 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	48 mg/L	10	10	10/27/21	ckd	10/29/21	ckd		
Sodium	310 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0030 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.012 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.48 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	0.000054 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Chromium	0.028 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.0047 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd		
Copper	0.00072 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.0012 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Manganese	0.80 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0038 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.015 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.0013 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	0.000027 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd	J	
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.0029 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-02 Matrix: Ground Water Date Collected: 10/26/21 13:55
 Sample ID: MW-2 Date Received: 10/27/21 09:16 Field pH: 6.48

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	9.4 mg/L	0.50	25	10/27/21	ans	10/27/21	ans		
Chloride	140 mg/L	3.8	25	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	<3.0 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	2100 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	2000 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-03 Matrix: Ground Water Date Collected: 10/26/21 12:35
 Sample ID: MW-3 Date Received: 10/27/21 09:16 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.79 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	4.4 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	490 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	4.5 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.053 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	200 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	21 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	140 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0012 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.47 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0041 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0014 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	2.1 mg/L	0.25	10	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.00012 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	J, N	
Nickel	0.0027 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0014 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-03 Matrix: Ground Water Date Collected: 10/26/21 12:35
 Sample ID: MW-3 Date Received: 10/27/21 09:16 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	2100 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	4.3 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	500 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	4.4 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.053 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	220 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	21 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	140 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.00074 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.0011 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.45 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0018 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00063 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00046 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	1.6 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00010 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J, N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00048 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00068 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-03 Matrix: Ground Water Date Collected: 10/26/21 12:35
 Sample ID: MW-3 Date Received: 10/27/21 09:16 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	0.89 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	330 mg/L	15	100	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	23 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	2000 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	2500 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-04 Matrix: Ground Water Date Collected: 10/26/21 12:00
 Sample ID: MW-4 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	3.7 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	370 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	5.2 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.061 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	89 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	22 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	81 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0019 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.12 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0033 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00079 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	1.1 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0015 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.011 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0010 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-04 Matrix: Ground Water Date Collected: 10/26/21 12:00
 Sample ID: MW-4 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	1300 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	4.1 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	380 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	5.4 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.071 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	90 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	21 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	83 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd		
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.0012 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.13 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0021 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00048 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.83 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00089 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0080 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00063 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-04 Matrix: Ground Water Date Collected: 10/26/21 12:00
 Sample ID: MW-4 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	1.3 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	170 mg/L	7.5	50	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	450 mg/L	30	50	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	870 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1900 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-05 Matrix: Ground Water Date Collected: 10/26/21 10:35
 Sample ID: MW-5 Date Received: 10/27/21 09:16 Field pH: 7.43

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/02/21	ckd		
Boron	3.0 mg/L	0.035	1	10/28/21	mrh	11/02/21	ckd		
Calcium	340 mg/L	3.5	10	10/28/21	mrh	11/02/21	ckd		
Iron	2.5 mg/L	0.14	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.089 mg/L	0.0070	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	37 mg/L	0.14	1	10/28/21	mrh	11/02/21	ckd		
Potassium	9.3 mg/L	0.70	1	10/28/21	mrh	11/02/21	ckd		
Sodium	29 mg/L	0.35	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.014 mg/L	0.014	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00021 mg/L	0.00021	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.040 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Barium	0.087 mg/L	0.0070	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0017 mg/L	0.00063	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00069 mg/L	0.0011	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0028 mg/L	0.0028	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.90 mg/L	0.018	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0023 mg/L	0.00028	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0015 mg/L	0.0035	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.00089 mg/L	0.00056	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-05 Matrix: Ground Water Date Collected: 10/26/21 10:35
 Sample ID: MW-5 Date Received: 10/27/21 09:16 Field pH: 7.43

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	1000 mg/L	0.58	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	3.1 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	360 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	2.0 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.092 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	39 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	9.4 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	30 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd		

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00010 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd	J	
Arsenic	0.043 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.088 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00021 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	0.69 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0016 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.00017 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00066 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-05 Matrix: Ground Water Date Collected: 10/26/21 10:35
 Sample ID: MW-5 Date Received: 10/27/21 09:16 Field pH: 7.43

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	3.3 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	22 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	320 mg/L	15	25	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	750 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1300 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-06 Matrix: Ground Water Date Collected: 10/26/21 11:00
 Sample ID: MW-6 Date Received: 10/27/21 09:16 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.94 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/02/21	ckd		
Boron	13 mg/L	0.35	10	10/28/21	mrh	11/02/21	ckd		
Calcium	200 mg/L	3.5	10	10/28/21	mrh	11/02/21	ckd		
Iron	13 mg/L	0.14	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.23 mg/L	0.0070	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	100 mg/L	1.4	10	10/28/21	mrh	11/02/21	ckd		
Potassium	34 mg/L	0.70	1	10/28/21	mrh	11/02/21	ckd		
Sodium	110 mg/L	3.5	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.014 mg/L	0.014	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00021 mg/L	0.00021	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0017 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Barium	1.6 mg/L	0.035	5	10/28/21	mrh	11/04/21	acs		
Cadmium	0.00053 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs	J	
Chromium	0.0029 mg/L	0.00063	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00082 mg/L	0.0011	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0028 mg/L	0.0028	1	10/28/21	mrh	11/04/21	acs		
Lead	0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.41 mg/L	0.018	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.00076 mg/L	0.00028	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0022 mg/L	0.0035	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Thallium	0.00030 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs	J	
Vanadium	0.00083 mg/L	0.00056	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
Client Project ID: MW Sampling

Trace ID: 21J1034-06 Matrix: Ground Water Date Collected: 10/26/21 11:00
Sample ID: MW-6 Date Received: 10/27/21 09:16 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	940 mg/L	5.8	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	13 mg/L	0.50	10	10/27/21	ckd	10/29/21	ckd		
Calcium	200 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	6.9 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.22 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	110 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	36 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	120 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0027 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00033 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0017 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	1.5 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	0.000072 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Chromium	0.0011 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00042 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00016 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	0.29 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00069 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00029 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-06 Matrix: Ground Water Date Collected: 10/26/21 11:00
 Sample ID: MW-6 Date Received: 10/27/21 09:16 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	1.6 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	200 mg/L	7.5	50	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	1.3 mg/L	3.0	5	10/27/21	ans	10/27/21	ans	J	

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	960 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1300 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-07 Matrix: Ground Water Date Collected: 10/26/21 10:20
 Sample ID: MW-7 Date Received: 10/27/21 09:16 Field pH: 7.01

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T116281

Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T116174

Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	15 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	130 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	16 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	<0.010 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	35 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	4.5 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	54 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		

Analysis Method: EPA 6020B

Batch: T116174

Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.36 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0010 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00088 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	2.0 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	<0.00040 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.00067 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-07 Matrix: Ground Water Date Collected: 10/26/21 10:20
 Sample ID: MW-7 Date Received: 10/27/21 09:16 Field pH: 7.01

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	470 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	16 mg/L	0.25	5	10/27/21	ckd	10/29/21	ckd		
Calcium	130 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd		
Iron	17 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.011 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	36 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	4.7 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	56 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd		

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00016 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd	J	
Arsenic	0.00033 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Barium	0.35 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00073 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	1.7 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.00013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00058 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-07 Matrix: Ground Water Date Collected: 10/26/21 10:20
 Sample ID: MW-7 Date Received: 10/27/21 09:16 Field pH: 7.01

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	0.094 mg/L	0.10	5	10/27/21	ans	10/27/21	ans	J	
Chloride	14 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	30 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	630 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	630 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-08 Matrix: Ground Water Date Collected: 10/26/21 15:35
 Sample ID: MW-8 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	1.4 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	130 mg/L	2.5	5	10/28/21	mrh	11/02/21	ckd		
Iron	29 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.043 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	25 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	9.4 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	27 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0067 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	1.0 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0012 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	1.5 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0037 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-08 Matrix: Ground Water Date Collected: 10/26/21 15:35
 Sample ID: MW-8 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	440 mg/L	0.82	5	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	1.4 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	140 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd		
Iron	28 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.043 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	26 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	9.3 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	28 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0015 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00033 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0062 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.96 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.00065 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Cobalt	0.00030 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	0.000042 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	1.3 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0033 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0010 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00038 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-08 Matrix: Ground Water Date Collected: 10/26/21 15:35
 Sample ID: MW-8 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	0.42 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	30 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	37 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	450 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	630 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-09 Matrix: Ground Water Date Collected: 10/26/21 14:30
 Sample ID: MW-9 Date Received: 10/27/21 09:16 Field pH: 7.31

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.62 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	6.8 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	220 mg/L	2.5	5	10/28/21	mrh	11/02/21	ckd		
Iron	19 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.26 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	36 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	16 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	32 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0025 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	5.0 mg/L	0.10	10	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0029 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.72 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.017 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-09 Matrix: Ground Water Date Collected: 10/26/21 14:30
 Sample ID: MW-9 Date Received: 10/27/21 09:16 Field pH: 7.31

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	690 mg/L	0.82	5	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	6.6 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	210 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	18 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.27 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	36 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	15 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	33 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0013 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00046 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0027 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	5.1 mg/L	0.0060	10	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0018 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00039 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	0.55 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.019 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.00080 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00037 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00031 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-09 Matrix: Ground Water Date Collected: 10/26/21 14:30
 Sample ID: MW-9 Date Received: 10/27/21 09:16 Field pH: 7.31

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	2.5 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	13 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	14 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	760 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	880 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-10 Matrix: Ground Water Date Collected: 10/26/21 15:05
 Sample ID: MW-10 Date Received: 10/27/21 09:16 Field pH: 7.42

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.80 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	52 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	140 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	10 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	1.4 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	65 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	52 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	480 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0011 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	1.5 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.011 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0011 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	0.0050 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	0.0012 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Manganese	0.50 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.012 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0027 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0018 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-10 Matrix: Ground Water Date Collected: 10/26/21 15:05
 Sample ID: MW-10 Date Received: 10/27/21 09:16 Field pH: 7.42

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	620 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	51 mg/L	0.50	10	10/27/21	ckd	10/29/21	ckd		
Calcium	140 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd		
Iron	8.2 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	1.4 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	65 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	48 mg/L	10	10	10/27/21	ckd	10/29/21	ckd		
Sodium	490 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0016 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	1.3 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0079 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00080 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00013 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.37 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0089 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0017 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00058 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.0013 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-10 Matrix: Ground Water Date Collected: 10/26/21 15:05
 Sample ID: MW-10 Date Received: 10/27/21 09:16 Field pH: 7.42

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116179

Fluoride	11 mg/L	0.20	10	10/28/21	ans	10/28/21	ans		
Chloride	520 mg/L	15	100	10/28/21	ans	10/28/21	ans		
Sulfate as SO4	53 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	970 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	2000 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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QUALITY CONTROL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116281	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T116281-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T116281-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	23.4	94	77-123	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116281-MSD1

Original: 21J1034-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Mercury	ng/L	1.88	10.0	10.1	9.92	82	80	71-125	2	24	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116098	Analysis Description: Sodium, Dissolved
QC Batch Method:	Analysis Method: EPA 6010D

METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	0.0023	0.050	J
Beryllium	mg/L	0.000061	0.0010	J
Calcium	mg/L	<0.50	0.50	

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METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	0.015	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116098-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.966	97	80-120	
Beryllium	mg/L	0.0500	0.0510	102	80-120	
Calcium	mg/L	10.0	10.3	103	80-120	
Iron	mg/L	10.0	10.4	104	80-120	
Potassium	mg/L	10.0	10.4	104	80-120	
Lithium	mg/L	0.500	0.522	104	80-120	
Magnesium	mg/L	10.0	10.5	105	80-120	
Sodium	mg/L	10.0	10.6	106	80-120	
Zinc	mg/L	1.00	1.04	104	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116174

Analysis Description: Lithium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6010D

METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	0.060	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

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LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.830	93	80-120	
Beryllium	mg/L	0.111	0.109	98	80-120	
Calcium	mg/L	8.89	8.74	98	80-120	
Iron	mg/L	8.89	9.02	101	80-120	
Potassium	mg/L	8.89	9.03	102	80-120	
Lithium	mg/L	0.889	0.880	99	80-120	
Magnesium	mg/L	8.89	9.09	102	80-120	
Sodium	mg/L	8.89	9.07	102	80-120	
Zinc	mg/L	0.889	0.894	101	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116167
 QC Batch Method:

Analysis Description: Barium, Dissolved
 Analysis Method: EPA 6020B

METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	0.000026	0.000040	J
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	0.00017	0.00020	J
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0612	102	80-120	
Arsenic	mg/L	0.0600	0.0630	105	80-120	

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LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Barium	mg/L	0.0600	0.0588	98	80-120	
Cadmium	mg/L	0.0600	0.0613	102	80-120	
Cobalt	mg/L	0.0600	0.0604	101	80-120	
Chromium	mg/L	0.0600	0.0629	105	80-120	
Copper	mg/L	0.0600	0.0610	102	80-120	
Manganese	mg/L	0.0600	0.0615	102	80-120	
Molybdenum	mg/L	0.0600	0.0588	98	80-120	
Nickel	mg/L	0.0600	0.0602	100	80-120	
Lead	mg/L	0.0600	0.0616	103	80-120	
Antimony	mg/L	0.0600	0.0577	96	80-120	
Selenium	mg/L	0.0600	0.0630	105	80-120	
Thallium	mg/L	0.0600	0.0617	103	80-120	
Vanadium	mg/L	0.0600	0.0581	97	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116174

Analysis Description: Selenium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6020B

METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	
Cadmium	mg/L	<0.0010	0.0010	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	0.00027	0.00040	J
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

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LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0333	120	80-120	
Arsenic	mg/L	0.0556	0.0599	108	80-120	
Barium	mg/L	0.889	0.950	107	80-120	
Cadmium	mg/L	0.0278	0.0297	107	80-120	
Cobalt	mg/L	0.889	0.892	100	80-120	
Chromium	mg/L	0.0278	0.0288	104	80-120	
Copper	mg/L	0.890	0.863	97	80-120	
Manganese	mg/L	0.887	0.878	99	80-120	
Molybdenum	mg/L	0.889	0.942	106	80-120	
Nickel	mg/L	0.889	0.840	95	80-120	
Lead	mg/L	0.0556	0.0533	96	80-120	
Antimony	mg/L	0.0556	0.0608	109	80-120	
Selenium	mg/L	0.0556	0.0560	101	80-120	
Thallium	mg/L	0.0556	0.0542	98	80-120	
Vanadium	mg/L	0.889	0.915	103	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: [CALC]
 QC Batch Method:

Analysis Description: Hardness (Metals)
 Analysis Method: SM 2340 B-11

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116121
 QC Batch Method: IC Prep W

Analysis Description: Sulfate
 Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116121-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116121-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.02	100	90-110	
Fluoride	mg/L	1.00	1.02	102	90-110	

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LABORATORY CONTROL SAMPLE: T116121-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Sulfate as SO4	mg/L	5.00	5.14	103	90-110	

MATRIX SPIKE: T116121-MS1 Original: **21J1034-01**

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Chloride	mg/L	233	500	794	112	80-120	
Fluoride	mg/L	12.6	100	107	94	80-120	
Sulfate as SO4	mg/L	533	500	1120	118	80-120	

MATRIX SPIKE: T116121-MS2 Original: **21J1034-07**

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Chloride	mg/L	13.9	25.0	39.6	103	80-120	
Fluoride	mg/L	0.0942	5.00	4.60	90	80-120	
Sulfate as SO4	mg/L	29.6	25.0	54.1	98	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116179	Analysis Description: Fluoride
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116179-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116179-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.03	101	90-110	
Fluoride	mg/L	1.00	1.01	101	90-110	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116236	Analysis Description: Alkalinity, Bicarbonate
QC Batch Method: SM 2320 B-11	Analysis Method: SM 2320 B-11

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LABORATORY CONTROL SAMPLE: T116236-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	100	100	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	100	100	88-112	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116366	Analysis Description: Alkalinity, Carbonate
QC Batch Method: SM 2320 B-11	Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T116366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	97.3	97	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	97.3	97	88-112	

SAMPLE DUPLICATE: T116366-DUP1 Original: 21J1034-02

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	2150	218	163	200	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	0	<5.0		200	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116175	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-11	Analysis Method: SM 2540 C-11

METHOD BLANK: T116175-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	1.0	10	J

LABORATORY CONTROL SAMPLE: T116175-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	543	109	80-120	

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SAMPLE DUPLICATE: T116175-DUP2

Original: 21J1034-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	3600	2800	25	10	623

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21J1034
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6					
Representative Sample Temp °C	1.8	1.9					

Sample Receipt

- Yes No
- Received on ice or other coolant
- Ice still present upon receipt
- Custody seals present Yes No Custody seals intact (if applicable)
- Trace Courier Client Drop-off UPS Fed Ex US Mail Other

Sample Condition

- Yes No N/A
- All sample containers arrived unbroken and labeled
- Sufficient sample to run requested analyses
- Correct chemical preservative added to samples
- Samples preserved at Trace See below
- Chemical preservation verified, check EMD pH test strip used (if applicable)
- pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other
- Air bubbles absent from VOAs

Chain of Custody (COC)

- Yes No
- All bottle labels agree with COC
- COC filled out properly
- COC signed by client

Notes:

HNO₃ added to 02-E, 03-E, 04-E, 05-E, 06-E, 10-E
 at 10:00 on 10/27/21

~~NaOH added to DH 10/27/21~~

HNO₃ Preserved radiums 10/27/21 @ 13:11

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: EB

Well No.: MW-1R

Depth to Point: 18.2ft

Depth to Water: 6.23

Purge Start Time: 11:25

Purge Rate: 300ml/min

Reading Time	11:38	11:41	11:44						
Depth to Water	7.51	7.51	7.51						
Temperature (Celsius)	17.07	17.07	17.07						
Specific Conductivity	3.44	3.44	3.44						
Dissolved Oxygen	1.01	1.01	1.01						
ORP (mV)	-23	-23	-23						
Turbidity(NTU)	22.6	22.6	22.6						
pH	7.80	7.80	7.80						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 2
 Date: 10-26-21
 Field Personnel: EB
 Depth to Water: 14.71
 Depth to Point: 23.51'
 Purge Start Time: 13:35
 Purge Rate: 3000 L/min

Reading Time	13:47	13:50	13:52					
Depth to Water	15.21	15.23	15.23					
Temperature (Celsius)	14.17	14.17	14.17					
Specific Conductivity	4.12	4.12	4.12					
Dissolved Oxygen	0.0	0.0	0.0					
ORP (mV)	-129	-129	-129					
Turbidity(NTU)	0.0	0.0	0.0					
pH	6.48	6.48	6.48					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 3

Depth to Point: 20.5'

Depth to Water: 11.90

Purge Start Time: 12:10

Purge Rate: 300ml/min

Reading Time	12:27	12:30	12:33						
Depth to Water	12.72	12.72	12.72						
Temperature (Celsius)	15.86	15.86	15.86						
Specific Conductivity	3.96	3.96	3.96						
Dissolved Oxygen	2.14	2.14	2.14						
ORP (mV)	-19	-19	-19						
Turbidity(NTU)	1.5	1.6	1.6						
pH	6.91	6.91	6.91						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 4

Depth to Point: 18.01'

Depth to Water: 10.22

Purge Start Time: 11:40

Purge Rate: 300ml/min

Reading Time	11:54	11:57	12:08						
Depth to Water	6.74 11.03	11.03	11.03						
Temperature (Celsius)	16.68	16.88	16.68						
Specific Conductivity	2.56	2.56	2.56						
Dissolved Oxygen	.47	.47	.48						
ORP (mV)	-116	-116	-116						
Turbidity(NTU)	0.0	0.0	0.0						
pH	6.74	6.74	6.74						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Trace Analytical Laboratories, Inc.

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 5

Depth to Point: 11.5'

Depth to Water: 5.90

Purge Start Time: 10:15

Purge Rate: 300 mL/min

Reading Time	10:25	10:27	10:30						
Depth to Water	6.73	6.73	6.73						
Temperature (Celsius)	16.02	16.02	16.02						
Specific Conductivity	1.76	1.76	1.76						
Dissolved Oxygen	.56	.56	.56						
ORP (mV)	-148	-148	-148						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.41	7.43	7.43						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 6
 Date: 10-26-21
 Depth to Water: 8.50
 Depth to Point: 16.55'
 Purge Start Time: 10:40
 Field Personnel: ERB
 Purge Rate: 3000 L/min

Reading Time	10:50	10:53	10:56						
Depth to Water	9.31	9.31	9.31						
Temperature (Celsius)	17.59	17.59	17.59						
Specific Conductivity	2.06	2.06	2.06						
Dissolved Oxygen	.57	.57	.57						
ORP (mV)	-18	-18	-18						
Turbidity(NTU)	.3	.4	.3						
pH	7.60	7.60	7.60						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: ERB

Well No.: MW/7

Depth to Point: 18.81'

Depth to Water: 5.25

Purge Start Time: 10:00

Purge Rate: 3000ml/min

Reading Time	10:15	10:17	10:20						
Depth to Water	6.21	6.21	6.21						
Temperature (Celsius)	15.24	15.24	15.24						
Specific Conductivity	1.15	1.15	1.15						
Dissolved Oxygen	.73	.73	.73						
ORP (mV)	-27	-27	-27						
Turbidity(NTU)	4	4	3						
pH	7.01	7.01	7.01						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: ER

Well No.: MW 8

Depth to Point: 11.85

Depth to Water: 4.04

Purge Start Time: 15:10

Purge Rate: 300ml/min

Reading Time	15:25	15:28	15:31						
Depth to Water	4.86	4.86	4.86						
Temperature (Celsius)	15.72	15.72	15.72						
Specific Conductivity	.804	.805	.805						
Dissolved Oxygen	0.0	0.0	0.0						
ORP (mV)	-137	-137	-137						
Turbidity(NTU)	0.0	0.0	0.0						
pH	6.74	6.74	6.74						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: ER

Well No.: MW/9

Depth to Point: 14.9

Depth to Water: 8.49

Purge Start Time: 14:10

Purge Rate: 3000 L/min

Reading Time	14:20	14:24	14:27					
Depth to Water	9.31	9.31	9.31					
Temperature (Celsius)	16.12	16.12	16.13					
Specific Conductivity	1.25	1.25	1.25					
Dissolved Oxygen	.56	.56	.56					
ORP (mV)	-9	-9	-9					
Turbidity(NTU)	5.4	5.4	5.4					
pH	7.31	7.31	7.31					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 10

Depth to Point: 13.00

Depth to Water: 5.32

Purge Start Time: 14:45

Purge Rate: 300ml/min

Reading Time	14:55	14:58	15:01						
Depth to Water	6.07	6.07	6.07						
Temperature (Celsius)	16.66	16.66	16.66						
Specific Conductivity	3.65	3.65	3.65						
Dissolved Oxygen	0.28	0.28	0.28						
ORP (mV)	-198	-198	-198						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.42	7.42	7.42						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

November 30, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1032 & 21J1034
Client Project Impoundment & MW Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

The results were obtained from Eurofins.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink that reads "Jon Mink". The signature is written in a cursive, flowing style.

Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



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SAMPLE SUMMARY

Trace Project ID: 21J1032
Client Project ID: Impoundment Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1032-01	Unit 1/2 Near MW-5	Ground Water	TRACE-EB/TB	10/26/21 11:25	10/27/21 08:52
21J1032-02	Unit 1/2 Near SG-2	Ground Water	TRACE-EB/TB	10/26/21 15:25	10/27/21 08:52

SAMPLE SUMMARY

Trace Project ID: 21J1034
Client Project ID: MW Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1034-01	MW-1R	Ground Water	TRACE-EB/TB	10/26/21 11:45	10/27/21 09:16
21J1034-02	MW-2	Ground Water	TRACE-EB/TB	10/26/21 13:55	10/27/21 09:16
21J1034-03	MW-3	Ground Water	TRACE-EB/TB	10/26/21 12:35	10/27/21 09:16
21J1034-04	MW-4	Ground Water	TRACE-EB/TB	10/26/21 12:00	10/27/21 09:16
21J1034-05	MW-5	Ground Water	TRACE-EB/TB	10/26/21 10:35	10/27/21 09:16
21J1034-06	MW-6	Ground Water	TRACE-EB/TB	10/26/21 11:00	10/27/21 09:16
21J1034-07	MW-7	Ground Water	TRACE-EB/TB	10/26/21 10:20	10/27/21 09:16
21J1034-08	MW-8	Ground Water	TRACE-EB/TB	10/26/21 15:35	10/27/21 09:16
21J1034-09	MW-9	Ground Water	TRACE-EB/TB	10/26/21 14:30	10/27/21 09:16
21J1034-10	MW-10	Ground Water	TRACE-EB/TB	10/26/21 15:05	10/27/21 09:16

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-6209-1
Client Project/Site: Trace-21J1034 & 21J1032
Revision: 1

For:
Trace Analytical Laboratories
2241 Black Creek Road
Muskegon, Michigan 49444

Attn: Jon Mink

Karen Fullmer

Authorized for release by:
11/29/2021 6:14:27 PM

Karen Fullmer, Project Manager
(574)233-4777
karen.fullmer@eurofinset.com

LINKS

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results through
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www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Qualifiers

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.
α	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

Case Narrative

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Job ID: 810-6209-1

Laboratory: Eurofins Eaton Analytical - South Bend

Narrative

Job Narrative 810-6209-1

Comments

No additional comments.

Revision

The report being provided is a revision of the original report sent on 11/22/2021. The report (revision 1) is being revised due to: Project was logged in as drinking water matrix by accident. Report revised to change matrix..

Receipt

The samples were received on 10/28/2021 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 14.0° C and 14.2° C.

RAD

Method SM7500 Ra D: The barium carrier recovery is outside the upper control limit (110%) <OR> lower control for the following sample(s): 6209-A-11-D Re-analysis is required.

Method SM7500 Ra D: The barium carrier recovery 69.2mg is outside the established limits of 40.5-64.8mg for the following sample: MW-9 (810-6209-11). Re-analysis is required.

Method SM7500 Ra D: The barium carrier recovery 69.2mg is outside the established limits of 40.5-64.8mg for the following sample: MW-9 (810-6209-11). Re-analysis is required. Insufficient sample was available for re-analysis and matrix is dirty; therefore, the data have been reported.

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

Detection Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: Unit 1/2 Near MW-5

Lab Sample ID: 810-6209-1

No Detections.

Client Sample ID: Unit 1/2 Near SG-2

Lab Sample ID: 810-6209-2

No Detections.

Client Sample ID: MW-1R

Lab Sample ID: 810-6209-3

No Detections.

Client Sample ID: MW-2

Lab Sample ID: 810-6209-4

No Detections.

Client Sample ID: MW-3

Lab Sample ID: 810-6209-5

No Detections.

Client Sample ID: MW-4

Lab Sample ID: 810-6209-6

No Detections.

Client Sample ID: MW-5

Lab Sample ID: 810-6209-7

No Detections.

Client Sample ID: MW-6

Lab Sample ID: 810-6209-8

No Detections.

Client Sample ID: MW-7

Lab Sample ID: 810-6209-9

No Detections.

Client Sample ID: MW-8

Lab Sample ID: 810-6209-10

No Detections.

Client Sample ID: MW-9

Lab Sample ID: 810-6209-11

No Detections.

Client Sample ID: MW-10

Lab Sample ID: 810-6209-12

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical - South Bend

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: Unit 1/2 Near MW-5

Lab Sample ID: 810-6209-1

Date Collected: 10/26/21 11:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.72719		1.00	0.620	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.290	U	0.380		1.00	0.410	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.500	U	0.620		1.00	0.620	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: Unit 1/2 Near SG-2

Lab Sample ID: 810-6209-2

Date Collected: 10/26/21 15:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.60745		1.00	0.550	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.310	U	0.330		1.00	0.330	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-0.410	U	0.510		1.00	0.550	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-1R

Lab Sample ID: 810-6209-3

Date Collected: 10/26/21 11:45

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.410		0.51088		1.00	0.410	pCi/L		11/12/21 13:20	1

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-1R

Date Collected: 10/26/21 11:45

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-3

Matrix: Ground Water

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.410		0.330		1.00	0.310	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.0800	U	0.390		1.00	0.410	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-2

Date Collected: 10/26/21 13:55

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-4

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.27		0.91351		1.00	0.610	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	1.00		0.680		1.00	0.610	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.27		0.610		1.00	0.580	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-3

Date Collected: 10/26/21 12:35

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-5

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.01		0.68593		1.00	0.540	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.310	U	0.490		1.00	0.540	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-3

Date Collected: 10/26/21 12:35

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-5

Matrix: Ground Water

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.01		0.480		1.00	0.460	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-4

Date Collected: 10/26/21 12:00

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-6

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.87		0.67209		1.00	0.460	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.910		0.460		1.00	0.360	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.960		0.490		1.00	0.460	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-5

Date Collected: 10/26/21 10:35

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-7

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.60539		1.00	0.530	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.160	U	0.310		1.00	0.350	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.340	U	0.520		1.00	0.530	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-6

Date Collected: 10/26/21 11:00

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-8

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.76485		1.00	0.630	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.0600	U	0.570		1.00	0.370	pCi/L	11/02/21 14:10	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-2.15	U	0.510		1.00	0.630	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-7

Date Collected: 10/26/21 10:20

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-9

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.33		0.70434		1.00	0.490	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.790		0.550		1.00	0.490	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.540		0.440		1.00	0.440	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-8

Date Collected: 10/26/21 15:35

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-10

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.860		0.63640		1.00	0.530	pCi/L		11/12/21 13:20	1

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-8

Lab Sample ID: 810-6209-10

Date Collected: 10/26/21 15:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.860		0.450		1.00	0.350	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-1.22	U	0.450		1.00	0.530	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-9

Lab Sample ID: 810-6209-11

Date Collected: 10/26/21 14:30

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.56		0.69527		1.00	0.470	pCi/L		11/11/21 16:33	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.840		0.450		1.00	0.370	pCi/L	11/02/21 14:16	11/05/21 11:46	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.72		0.530		1.00	0.470	pCi/L	11/02/21 14:19	11/11/21 12:18	1

Client Sample ID: MW-10

Lab Sample ID: 810-6209-12

Date Collected: 10/26/21 15:05

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.03		0.71505		1.00	0.500	pCi/L		11/11/21 16:33	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.930		0.480		1.00	0.380	pCi/L	11/02/21 14:16	11/05/21 11:46	1

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-10

Date Collected: 10/26/21 15:05

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-12

Matrix: Ground Water

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.10		0.530		1.00	0.500	pCi/L	11/02/21 14:19	11/11/21 12:18	1

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method: SM7500 Ra B - Radium-226

Lab Sample ID: MB 810-6416/1-A
Matrix: Drinking Water
Analysis Batch: 7018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6416

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.07000	U	0.250		1.00	0.310	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Lab Sample ID: LCS 810-6416/2-A
Matrix: Drinking Water
Analysis Batch: 7018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6416

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	8.73	7.940			1.00	0.370	pCi/L	91	90 - 110

Lab Sample ID: 810-6209-9 MS
Matrix: Ground Water
Analysis Batch: 7018

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 6416

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	0.790		9.11	8.750			1.00	0.360	pCi/L	96	80 - 120

Lab Sample ID: 810-6209-9 MSD
Matrix: Ground Water
Analysis Batch: 7018

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 6416

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RPD	RPD Limit
Ra-226	0.790		8.95	8.080			1.00	0.330	pCi/L	90	80 - 120	8	20

Lab Sample ID: MB 810-6420/1-A
Matrix: Drinking Water
Analysis Batch: 7017

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6420

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.5800		0.400		1.00	0.350	pCi/L	11/02/21 14:16	11/05/21 11:46	1

Lab Sample ID: LCS 810-6420/2-A
Matrix: Drinking Water
Analysis Batch: 7017

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6420

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	8.73	8.170			1.00	0.360	pCi/L	94	90 - 110

Lab Sample ID: 810-6209-11 MS
Matrix: Ground Water
Analysis Batch: 7017

Client Sample ID: MW-9
Prep Type: Total/NA
Prep Batch: 6420

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	0.840		9.04	8.630			1.00	0.400	pCi/L	95	80 - 120

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QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method: SM7500 Ra B - Radium-226

Lab Sample ID: 810-6209-11 MSD
 Matrix: Ground Water
 Analysis Batch: 7017

Client Sample ID: MW-9
 Prep Type: Total/NA
 Prep Batch: 6420

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RPD	
											84	80 - 120	15	20
Ra-226	0.840		8.86	7.400			1.00	0.350	pCi/L	84	80 - 120	15	20	

Method: SM7500 Ra D - Radium-228

Lab Sample ID: MB 810-6417/1-A
 Matrix: Drinking Water
 Analysis Batch: 7201

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-0.3600	U	0.390		1.00	0.440	pCi/L	11/02/21 14:13	11/11/21 15:31	1

Lab Sample ID: LCS 810-6417/2-A
 Matrix: Drinking Water
 Analysis Batch: 7201

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									84	80 - 120
Ra-228	8.84	7.400			1.00	0.370	pCi/L	84	80 - 120	

Lab Sample ID: 810-6209-10 MS
 Matrix: Ground Water
 Analysis Batch: 7201

Client Sample ID: MW-8
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
											95	70 - 130
Ra-228	-1.22	U	8.98	8.550			1.00	0.370	pCi/L	95	70 - 130	

Lab Sample ID: 810-6209-10 MSD
 Matrix: Ground Water
 Analysis Batch: 7201

Client Sample ID: MW-8
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RPD	
											90	70 - 130	4	20
Ra-228	-1.22	U	9.15	8.240			1.00	0.490	pCi/L	90	70 - 130	4	20	

Lab Sample ID: MB 810-6421/1-A
 Matrix: Drinking Water
 Analysis Batch: 7161

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 6421

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.1000	U	0.430		1.00	0.450	pCi/L	11/02/21 14:19	11/11/21 12:18	1

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method: SM7500 Ra D - Radium-228 (Continued)

Lab Sample ID: LCS 810-6421/2-A
 Matrix: Drinking Water
 Analysis Batch: 7161

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 6421

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-228	8.84	9.590			1.00	0.470	pCi/L	108	80 - 120

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QC Association Summary

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Rad

Prep Batch: 6416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-1	Unit 1/2 Near MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-2	Unit 1/2 Near SG-2	Total/NA	Ground Water	RAD Prep	
810-6209-3	MW-1R	Total/NA	Ground Water	RAD Prep	
810-6209-4	MW-2	Total/NA	Ground Water	RAD Prep	
810-6209-5	MW-3	Total/NA	Ground Water	RAD Prep	
810-6209-6	MW-4	Total/NA	Ground Water	RAD Prep	
810-6209-7	MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-8	MW-6	Total/NA	Ground Water	RAD Prep	
810-6209-9	MW-7	Total/NA	Ground Water	RAD Prep	
810-6209-10	MW-8	Total/NA	Ground Water	RAD Prep	
MB 810-6416/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6416/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	
810-6209-9 MS	MW-7	Total/NA	Ground Water	RAD Prep	
810-6209-9 MSD	MW-7	Total/NA	Ground Water	RAD Prep	

Prep Batch: 6417

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-1	Unit 1/2 Near MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-2	Unit 1/2 Near SG-2	Total/NA	Ground Water	RAD Prep	
810-6209-3	MW-1R	Total/NA	Ground Water	RAD Prep	
810-6209-4	MW-2	Total/NA	Ground Water	RAD Prep	
810-6209-5	MW-3	Total/NA	Ground Water	RAD Prep	
810-6209-6	MW-4	Total/NA	Ground Water	RAD Prep	
810-6209-7	MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-8	MW-6	Total/NA	Ground Water	RAD Prep	
810-6209-9	MW-7	Total/NA	Ground Water	RAD Prep	
810-6209-10	MW-8	Total/NA	Ground Water	RAD Prep	
MB 810-6417/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6417/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	
810-6209-10 MS	MW-8	Total/NA	Ground Water	RAD Prep	
810-6209-10 MSD	MW-8	Total/NA	Ground Water	RAD Prep	

Prep Batch: 6420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-11	MW-9	Total/NA	Ground Water	RAD Prep	
810-6209-12	MW-10	Total/NA	Ground Water	RAD Prep	
MB 810-6420/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6420/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	
810-6209-11 MS	MW-9	Total/NA	Ground Water	RAD Prep	
810-6209-11 MSD	MW-9	Total/NA	Ground Water	RAD Prep	

Prep Batch: 6421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-11	MW-9	Total/NA	Ground Water	RAD Prep	
810-6209-12	MW-10	Total/NA	Ground Water	RAD Prep	
MB 810-6421/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6421/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	

Lab Chronicle

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: Unit 1/2 Near MW-5

Lab Sample ID: 810-6209-1

Date Collected: 10/26/21 11:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: Unit 1/2 Near SG-2

Lab Sample ID: 810-6209-2

Date Collected: 10/26/21 15:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-1R

Lab Sample ID: 810-6209-3

Date Collected: 10/26/21 11:45

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-2

Lab Sample ID: 810-6209-4

Date Collected: 10/26/21 13:55

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Lab Chronicle

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-3

Lab Sample ID: 810-6209-5

Date Collected: 10/26/21 12:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-4

Lab Sample ID: 810-6209-6

Date Collected: 10/26/21 12:00

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-5

Lab Sample ID: 810-6209-7

Date Collected: 10/26/21 10:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-6

Lab Sample ID: 810-6209-8

Date Collected: 10/26/21 11:00

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7223		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		

Lab Chronicle

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-6

Lab Sample ID: 810-6209-8

Date Collected: 10/26/21 11:00

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-7

Lab Sample ID: 810-6209-9

Date Collected: 10/26/21 10:20

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-8

Lab Sample ID: 810-6209-10

Date Collected: 10/26/21 15:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-9

Lab Sample ID: 810-6209-11

Date Collected: 10/26/21 14:30

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7165	11/11/21 16:33	JB	EA SB
Total/NA	Prep	RAD Prep			6420	11/02/21 14:16	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7017	11/05/21 11:46	JB	EA SB
Total/NA	Prep	RAD Prep			6421	11/02/21 14:19	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7161	11/11/21 12:18	OO	EA SB

Lab Chronicle

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-10

Lab Sample ID: 810-6209-12

Date Collected: 10/26/21 15:05

Matrix: Ground Water

Date Received: 10/28/21 09:45

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Analysis	7500 Ra D		1	7165	11/11/21 16:33	JB	EA SB
Total/NA	Prep	RAD Prep			6420	11/02/21 14:16	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7017	11/05/21 11:46	JB	EA SB
Total/NA	Prep	RAD Prep			6421	11/02/21 14:19	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7161	11/11/21 12:18	OO	EA SB

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Laboratory: Eurofins Eaton Analytical - South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	03-22-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7500 Ra D		Ground Water	Combined Radium 226 + 228
SM7500 Ra B	RAD Prep	Ground Water	Ra-226
SM7500 Ra D	RAD Prep	Ground Water	Ra-228



Method Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method	Method Description	Protocol	Laboratory
7500 Ra D	Radium 226 Radium 228 Combined	SM	EA SB
SM7500 Ra B	Radium-226	SM	EA SB
SM7500 Ra D	Radium-228	SM	EA SB
RAD Prep	Preparation, Radiologicals	None	EA SB

Protocol References:

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777



Sample Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

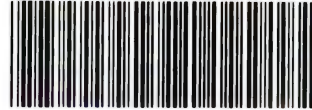
Job ID: 810-6209-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-6209-1	Unit 1/2 Near MW-5	Ground Water	10/26/21 11:25	10/28/21 09:45
810-6209-2	Unit 1/2 Near SG-2	Ground Water	10/26/21 15:25	10/28/21 09:45
810-6209-3	MW-1R	Ground Water	10/26/21 11:45	10/28/21 09:45
810-6209-4	MW-2	Ground Water	10/26/21 13:55	10/28/21 09:45
810-6209-5	MW-3	Ground Water	10/26/21 12:35	10/28/21 09:45
810-6209-6	MW-4	Ground Water	10/26/21 12:00	10/28/21 09:45
810-6209-7	MW-5	Ground Water	10/26/21 10:35	10/28/21 09:45
810-6209-8	MW-6	Ground Water	10/26/21 11:00	10/28/21 09:45
810-6209-9	MW-7	Ground Water	10/26/21 10:20	10/28/21 09:45
810-6209-10	MW-8	Ground Water	10/26/21 15:35	10/28/21 09:45
810-6209-11	MW-9	Ground Water	10/26/21 14:30	10/28/21 09:45
810-6209-12	MW-10	Ground Water	10/26/21 15:05	10/28/21 09:45

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14



Eaton Analytical



810-6209 Chain of Custody

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order #
Batch #

www.EurofinsUS.com/Eaton

CHAIN OF CUSTODY RECORD

Page ____ of ____

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REPORT TO:				SAMPLER (Signature)				PWS ID #		STATE (sample origin)		PROJECT NAME		PO#		# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
Jon Mink, Tim Brewer (jmink@trace-labs.com, tbrewer@trace-labs.com) Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444 231-773-5998										MI				21J1034 & 21J1032				
BILL TO:				COMPLIANCE MONITORING		Yes		No		POPULATION SERVED		SOURCE WATER						
LAB Number		COLLECTION			SAMPLING SITE				TEST NAME		SAMPLE REMARKS		CHLORINATED					
		DATE	TIME	AM	PM					pH Acceptable		YES	NO					
1		10/26/21	11:25	x		Unit 1/2 Near MW-5(FF)				Radium 226/228			x	1	GW	SW		
2		10/26/21	15:25		x	Unit 1/2 Near SG-2(FF)				Radium 226/228			x	1	GW	SW		
3		10/26/21	11:45	x		MW-1R(FF)				Radium 226/228			x	1	GW	SW		
4		10/26/21	13:55		x	MW-2(FF)				Radium 226/228			x	1	GW	SW		
5		10/26/21	12:35		x	MW-3(FF)				Radium 226/228			x	1	GW	SW		
6		10/26/21	12:00		x	MW-4(FF)				Radium 226/228			x	1	GW	SW		
7		10/26/21	10:35	x		MW-5(FF)				Radium 226/228			x	1	GW	SW		
8		10/26/21	11:00	x		MW-6(FF)				Radium 226/228			x	1	GW	SW		
9		10/26/21	10:20	x		MW-7(FF)				Radium 226/228			x	1	GW	SW		
10		10/26/21	15:35		x	MW-8(FF)				Radium 226/228			x	1	GW	SW		
11		10/26/21	14:30		x	MW-9(FF)				Radium 226/228			x	1	GW	SW		
12		10/26/21	15:05		x	MW-10(FF)				Radium 226/228			x	1	GW	SW		
13																		
14																		

RELINQUISHED BY: (Signature) <i>MA</i>	DATE 10/27/21	TIME 13:24	RECEIVED BY: (Signature) Fedex	DATE	TIME	LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT LAB COMMENTS Liters Received = 4L jug each site IR 23 55102821
RELINQUISHED BY: (Signature) Fedex	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY: <i>Seeger 10/28/21 0945</i>	DATE	TIME	
CONDITIONS UPON RECEIPT (check one):		Iced: Wet/Blue <input checked="" type="checkbox"/>		Ambient <input checked="" type="checkbox"/>		°C Upon Receipt: <input checked="" type="checkbox"/> N/A
MATRIX CODES: DW-DRINKING WATER RW-REAGENT WATER GW-GROUND WATER EW-EXPOSURE WATER SW-SURFACE WATER PW-POOL WATER WW-WASTE WATER		TURN-AROUND TIME (TAT) - SURCHARGES SW = Standard Written: (15 working days) 0% RV* = Rush Verbal: (5 working days) 50% RW* = Rush Written: (5 working days) 75%		IV* = Immediate Verbal: (3 working days) 100% IW* = Immediate Written: (3 working days) 125% SP* = Weekend, Holiday CALL STAT* = Less than 48 hours CALL		Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.
* Please call, expedited service not available for all testing						06-LO-F0435 Issue 6.0 Effective Date: 2016-09-20

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.



Eaton Analytical

110 S. Hill Street
 South Bend, IN 46617
 T: 1.800.332.4345
 F: 1.574.233.8207

Order # _____

Batch # _____

www.EurofinsUS.com/Eaton

CHAIN OF CUSTODY RECORD

Page _____ of _____

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REPORT TO:				SAMPLER (Signature)		PWS ID #	STATE (sample origin)	PROJECT NAME	PO#	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
Jon Mink, Tim Brewer (jmink@trace-labs.com, tbrewer@trace-labs.com) Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444 231-773-5998							MI		21J1034 & 21J1032			
BILL TO:				COMPLIANCE MONITORING		POPULATION SERVED	SOURCE WATER			YES	NO	
Accounts Payable, Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444												
LAB Number	COLLECTION				SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED		# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
	DATE	TIME	AM	PM				YES	NO			
1	10/28/21	11:25	x		Unit 1/2 Near MW-5	Radium 226/228			x	1	GW	SW
2	10/28/21	15:25		x	Unit 1/2 Near SG-2	Radium 226/228			x	1	GW	SW
3	10/28/21	11:45	x		MW-1R	Radium 226/228			x	1	GW	SW
4	10/28/21	13:55		x	MW-2	Radium 226/228			x	1	GW	SW
5	10/28/21	12:35		x	MW-3	Radium 226/228			x	1	GW	SW
6	10/28/21	12:00		x	MW-4	Radium 226/228			x	1	GW	SW
7	10/28/21	10:35	x		MW-5	Radium 226/228			x	1	GW	SW
8	10/28/21	11:00	x		MW-6	Radium 226/228			x	1	GW	SW
9	10/28/21	10:20	x		MW-7	Radium 226/228			x	1	GW	SW
10	10/28/21	15:35		x	MW-8	Radium 226/228			x	1	GW	SW
11	10/28/21	14:30		x	MW-9	Radium 226/228			x	1	GW	SW
12	10/28/21	15:05		x	MW-10	Radium 226/228			x	1	GW	SW
13												
14												

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT LAB COMMENTS
		AM PM			AM PM	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	CONDITIONS UPON RECEIPT (check one): <input type="checkbox"/> Iced/Wet/Blue <input type="checkbox"/> Ambient <input type="checkbox"/> °C Upon Receipt <input type="checkbox"/> N/A
		AM PM			AM PM	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME	
		AM PM			AM PM	
MATRIX CODES: DW-DRINKING WATER RW-REAGENT WATER GW-GROUND WATER EW-EXPOSURE WATER SW-SURFACE WATER PW-POOL WATER WW-WASTE WATER	TURN-AROUND TIME (TAT) - SURCHARGES					
	SW = Standard Written: (15 working days) 0%		RV = Rush Verbal: (5 working days) 50%		IW = Immediate Verbal: (3 working days) 100%	
	RW = Rush Written: (5 working days) 75%				IW = Immediate Written: (3 working days) 125%	
					SP = Weekend, Holiday CALL	
					STAT = Less than 48 hours CALL	
	* Please call, expedited service not available for all testing					

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.

06-LO-F0435 Issue 6.0 Effective Date: 2016-09-20

Spurgeon, Sheri

From: Fullmer, Karen
Sent: Monday, November 01, 2021 1:37 PM
To: Spurgeon, Sheri
Subject: FW: Revised chain of custody for J6209
Attachments: Eurofins COC-Revised for Trace Labs 21J1034 and 21J1032.pdf

Sheri,

Here is a revised COC for Job 6209.

Best regards,

Karen Fullmer
Analytical Service Manager



Eurofins Eaton Analytical, LLC
110 South Hill Street
South Bend, IN 46617

Office: +1 574-472-5513
Mobile: +1 574-309-8853

E-Mail: karen.fullmer@eurofinset.com
Website: www.EurofinsUS.com/Env

From: Britani Wright <bwright@trace-labs.com>
Sent: Thursday, October 28, 2021 5:27 PM
To: Fullmer, Karen <Karen.Fullmer@eurofinset.com>; Jon Mink <jmink@trace-labs.com>
Subject: Revised chain of custody

EXTERNAL EMAIL*

Hi Karen,
I've attached a revised Chain of Custody for the radium samples that we sent in yesterday afternoon-for Trace Labs ID#'s 21J1034 & 21J1032. The only thing that needs to be changed is that the (FF) after each sampling site ID needs to be removed. Sorry for the inconvenience.

Thank you,

Britani Wright

Sample Receiving Supervisor/
Purchasing Coordinator
O: 231-773-5998 ext. 259
C: 616-916-4328
bwright@trace-labs.com



Trace Analytical Laboratories, Inc.
2241 Black Creek Rd.
Muskegon, MI 49444
231.773.5998 ext. 243

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Login Sample Receipt Checklist

Client: Trace Analytical Laboratories

Job Number: 810-6209-1

Login Number: 6209

List Source: Eurofins Eaton Analytical - South Bend

List Number: 1

Creator: Spurgeon, Sheri

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

21J1032
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6					
Representative Sample Temp °C	1.8	1.9					

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present

Trace Courier Client Drop-off

Yes No Custody seals intact (if applicable)

UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10.26.21
 Field Personnel: EB
 Impoundment ID: Unit 12 by MW5
~~Depth to Point:~~
 Sample Tubing Depth: 28 Ft
 Purge Start Time: 10:55
 Purge Rate: 300 W/L

Reading Time	11:17	11:20	11:22						
Depth to Water	-	-	-						
Temperature (Celsius)	9.57	9.57	9.57						
Specific Conductivity	2.05	2.05	2.05						
Dissolved Oxygen	11.00	11.00	11.00						
ORP (mV)	-11	-11	-11						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.11	7.11	7.11						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10.26.21
 Field Personnel: ER
 Impoundment ID: Unit 1a by S&S
 Depth to Point: _____
 Sample Tubing Depth: 20 FT
 Purge Start Time: 14:55
 Purge Rate: 300 mL/min

Reading Time	15:15	15:18	15:21						
Depth to Water	—	—	—						
Temperature (Celsius)	12.13	12.13	12.13						
Specific Conductivity	1.63	1.63	1.63						
Dissolved Oxygen	9.87	9.87	9.87						
ORP (mV)	100	100	100						
Turbidity(NTU)	3.7	3.8	3.7						
pH	8.39	8.39	8.39						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic



Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673

Phone 231.773.5998
 Fax 888.979.4469
 www.trace-labs.com

CHAIN-OF-CUSTODY RECORD

Report Results To:

Company Name: Grand Haven Board of Light & Power		PO #:
Report To: Paul Cederquist		Contact Name:
Mailing Address:		Billing Address (if different):
City, State, Zip Code:	City, State, Zip Code:	City, State, Zip Code:
Office Phone:	Cell Phone:	Phone Number:
Email Address:	Billing Email Address:	

Trace Use:

Logged By:	<i>BW</i>
Checked By:	<i>DF</i>
Soil Volatiles Preserved (circle if applicable):	
MeOH	Low Level
Lab	
Sampling Time:	

Trace ID No.
2101034

Turnaround Requirements:

Standard, 5-10 Days
 3 Day*
 1 Day*

Matrix Key:

S = Soil / Solid WI = Wipes
 W = Water LW = Liquid Waste
 SL = Sludge A = Air
 OI = Oil D = Drinking Water

*Results provided end of business day, requires prior approval.

Trace No.	Date Collected	Time Collected	Client Sample ID	Sampled By: <i>EB/TB</i>	Metals Field Filtered (Y/N)	Matrix	Number of Containers	Preservation						Analysis Requested	Remarks	
								Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other			
	10/26/21	11:45	MMW-1R		Y	W	5	X						X	T-B, Ca, Fe, Sb, As, Ba, Be, Cd, Cr	
		13:55	MMW-2											X	T- Co, Cu, Pb, Li, Mo, Ni Se, Ag	
		12:35	MMW-3											X	T- Ti, V, Zn, Mn, Mg, K, Na	
		12:00	MMW-4											X	Diss. Metals (Same as Totals)	
		16:35	MMW-5											X	Fluoride, Sulfate, TDS, Chlorides	
		11:00	MMW-6											X	pH	
		10:20	MMW-7											X	LLHg	
		15:35	MMW-8											X	Radiums 226/228	
		14:30	MMW-9											X	Bicarb-Alk, Carbonate-Alk	
		15:05	MMW-10											X		

Please Sign

In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.

<i>BW</i>	<i>BW</i>	Date	Time	Date	Time
		10/27/21	8:26		

21J1034
Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6					
Representative Sample Temp °C	1.8	1.9					

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present

Trace Courier Client Drop-off

Yes No Custody seals intact (if applicable)

UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace See below

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

HNO₃ added to 02-E, 03-E, 04-E, 05-E, 06-E, 10-E
 at 10:00 on 10/27/21

~~NaOH added to DH 10/27/21~~

HNO₃ Preserved radiums 10/27/21 @ 13:11

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: EB

Well No.: MW-1R

Depth to Point: 18.2ft

Depth to Water: 6.23

Purge Start Time: 11:25

Purge Rate: 300ml/min

Reading Time	11:38	11:41	11:44						
Depth to Water	7.51	7.51	7.51						
Temperature (Celsius)	17.07	17.07	17.07						
Specific Conductivity	3.44	3.44	3.44						
Dissolved Oxygen	1.01	1.01	1.01						
ORP (mV)	-23	-23	-23						
Turbidity(NTU)	22.6	22.6	22.6						
pH	7.80	7.80	7.80						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 10-26-21 Field Personnel: EB
 Well No.: MW 2 Depth to Point: 23.51' Purge Start Time: 13.35
 Depth to Water: 14.71 Purge Rate: 30w/min

Reading Time	13:47	13:50	13:52					
Depth to Water	15.21	15.23	15.23					
Temperature (Celsius)	14.17	14.17	14.17					
Specific Conductivity	4.12	4.12	4.12					
Dissolved Oxygen	0.0	0.0	0.0					
ORP (mV)	-129	-129	-129					
Turbidity(NTU)	0.0	0.0	0.0					
pH	6.48	6.48	6.48					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 3

Depth to Point: 20.5'

Depth to Water: 11.90

Purge Start Time: 12:10

Purge Rate: 300ml/min

Reading Time	12:27	12:30	12:38					
Depth to Water	12.72	12.72	12.72					
Temperature (Celsius)	15.86	15.86	15.86					
Specific Conductivity	3.96	3.96	3.96					
Dissolved Oxygen	2.14	2.14	2.14					
ORP (mV)	-19	-19	-19					
Turbidity(NTU)	1.5	1.6	1.6					
pH	6.91	6.91	6.91					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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 Muskegon, MI 49444-2673



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 888-979-4469 Fax
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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 4

Depth to Point: 18.01'

Depth to Water: 10.22

Purge Start Time: 11:40

Purge Rate: 300ml/min

Reading Time	11:54	11:57	12:00						
Depth to Water	6.74 11.03	11.03	11.03						
Temperature (Celsius)	16.68	16.88	16.68						
Specific Conductivity	2.56	2.56	2.56						
Dissolved Oxygen	.47	.47	.48						
ORP (mV)	-116	-116	-116						
Turbidity(NTU)	0.0	0.0	0.0						
pH	6.74	6.74	6.74						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 5

Depth to Point: 11.5'

Depth to Water: 5.90

Purge Start Time: 10:15

Purge Rate: 300 mL/min

Reading Time	10:25	10:27	10:30						
Depth to Water	6.73	6.73	6.73						
Temperature (Celsius)	16.02	16.02	16.02						
Specific Conductivity	1.76	1.76	1.76						
Dissolved Oxygen	.56	.56	.56						
ORP (mV)	-148	-148	-148						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.41	7.43	7.43						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: ERB

Well No.: MW 6

Depth to Point: 16.55'

Depth to Water: 8.50

Purge Start Time: 10:40

Purge Rate: 3500ml/min

Reading Time	10:50	10:53	10:56					
Depth to Water	9.31	9.31	9.31					
Temperature (Celsius)	17.59	17.59	17.59					
Specific Conductivity	2.06	2.06	2.06					
Dissolved Oxygen	.57	.57	.57					
ORP (mV)	-18	-18	-18					
Turbidity(NTU)	.3	.4	.3					
pH	7.60	7.60	7.60					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBP

Date: 10-26-21

Field Personnel: ERB

Well No.: MW 7

Depth to Point: 18.81'

Depth to Water: 5.25

Purge Start Time: 10:00

Purge Rate: 3000 L/min

Reading Time	10:15	10:17	10:20						
Depth to Water	6.21	6.21	6.21						
Temperature (Celsius)	15.24	15.24	15.24						
Specific Conductivity	1.15	1.15	1.15						
Dissolved Oxygen	.73	.73	.73						
ORP (mV)	-27	-27	-27						
Turbidity(NTU)	4	4	3						
pH	7.01	7.01	7.01						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: ER

Well No.: MW 8

Depth to Point: 11.85

Depth to Water: 4.04

Purge Start Time: 15:10

Purge Rate: 300mL/min

Reading Time	15:25	15:28	15:31						
Depth to Water	4.86	4.86	4.86						
Temperature (Celsius)	15.72	15.72	15.72						
Specific Conductivity	.804	.805	.805						
Dissolved Oxygen	0.0	0.0	0.0						
ORP (mV)	-137	-137	-137						
Turbidity(NTU)	0.0	0.0	0.0						
pH	6.74	6.74	6.74						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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 Muskegon, MI 49444-2673



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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: EB

Well No.: MW 9

Depth to Point: 14.9

Depth to Water: 8.49

Purge Start Time: 14:10

Purge Rate: 3000 L/min

Reading Time	14:20	14:24	14:27						
Depth to Water	9.31	9.31	9.31						
Temperature (Celsius)	16.12	16.12	16.13						
Specific Conductivity	1.25	1.25	1.25						
Dissolved Oxygen	.56	.56	.56						
ORP (mV)	-9	-9	-9						
Turbidity(NTU)	5.4	5.4	5.4						
pH	7.31	7.31	7.31						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 10

Depth to Point: 13.00

Depth to Water: 5.32

Purge Start Time: 14:45

Purge Rate: 300ml/min

Reading Time	14:55	14:58	15:01					
Depth to Water	6.07	6.07	6.07					
Temperature (Celsius)	16.66	16.66	16.66					
Specific Conductivity	3.65	3.65	3.65					
Dissolved Oxygen	0.28	0.28	0.28					
ORP (mV)	-198	-198	-198					
Turbidity(NTU)	0.0	0.0	0.0					
pH	7.42	7.42	7.42					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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November 09, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1157
Client Project Surface Water Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 21J1157
Client Project ID: Surface Water Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1157-01	SW-SG-1	Surface Water	TRACE-EB/TB	10/28/21 10:15	10/28/21 15:58
21J1157-02	SW-N-SG-2	Surface Water	TRACE-EB/TB	10/28/21 09:10	10/28/21 15:58
21J1157-03	SW-SE-MW-7	Surface Water	TRACE-EB/TB	10/28/21 12:05	10/28/21 15:58
21J1157-04	SW-NE-MW-10	Surface Water	TRACE-EB/TB	10/28/21 10:30	10/28/21 15:58

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: T116265-DUP1

Analysis: SM 2540 C-11

Total Dissolved Solids

Note 623 : The relative percent difference between the sample and sample duplicate is out of control. The sample result should be considered estimated.

Trace ID: T116384-MSD1

Analysis: EPA 6010D

Calcium

Note 207 : The RPD between the MS and the MSD was out of control. Because both spike recoveries were in control, no data require qualification.

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-01 Matrix: Surface Water Date Collected: 10/28/21 10:15
 Sample ID: SW-SG-1 Date Received: 10/28/21 15:58 Field pH: 8.46

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116283</i>									
Mercury	2.2 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116267</i>									
Beryllium	<0.0018 mg/L	0.0018	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.053 mg/L	0.045	1	11/01/21	mrh	11/02/21	ckd		
Calcium	72 mg/L	0.45	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.61 mg/L	0.18	1	11/01/21	mrh	11/02/21	ckd		
Lithium	0.0070 mg/L	0.0090	1	11/01/21	mrh	11/02/21	ckd	J, N	
Magnesium	22 mg/L	0.18	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.6 mg/L	0.90	1	11/01/21	mrh	11/02/21	ckd		
Sodium	24 mg/L	0.45	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.018 mg/L	0.018	1	11/01/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116267</i>									
Antimony	<0.00027 mg/L	0.00027	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.0014 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Barium	0.057 mg/L	0.0090	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.00090 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0016 mg/L	0.00081	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0014 mg/L	0.0014	1	11/01/21	mrh	11/04/21	acs		
Copper	0.0022 mg/L	0.0036	1	11/01/21	mrh	11/04/21	acs	J	
Lead	0.00086 mg/L	0.0018	1	11/01/21	mrh	11/04/21	acs	J	
Manganese	0.046 mg/L	0.022	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0013 mg/L	0.00036	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	0.0020 mg/L	0.0045	1	11/01/21	mrh	11/04/21	acs	J	
Selenium	<0.0018 mg/L	0.0018	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.00090 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.00090 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.0017 mg/L	0.00072	1	11/01/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-01 Matrix: Surface Water Date Collected: 10/28/21 10:15
 Sample ID: SW-SG-1 Date Received: 10/28/21 15:58 Field pH: 8.46

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	270 mg/L	0.74	1	11/01/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116384

Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.047 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd	J	
Calcium	69 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.058 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd	J	
Lithium	0.0033 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	J, N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.0 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	22 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	0.0018 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00035 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0013 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.051 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00017 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.0011 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	0.00011 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00053 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-01 Matrix: Surface Water Date Collected: 10/28/21 10:15
 Sample ID: SW-SG-1 Date Received: 10/28/21 15:58 Field pH: 8.46

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.094 mg/L	0.10	5	10/29/21	ans	10/29/21	ans	J	
Chloride	43 mg/L	0.75	5	10/29/21	ans	10/29/21	ans		
Sulfate as SO4	34 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	220 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	320 mg/L	40	4	11/01/21	mr	11/02/21	mr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-02 Matrix: Surface Water Date Collected: 10/28/21 09:10
 Sample ID: SW-N-SG-2 Date Received: 10/28/21 15:58 Field pH: 7.57

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116283</i>									
Mercury	7.5 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116267</i>									
Beryllium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.13 mg/L	0.050	1	11/01/21	mrh	11/02/21	ckd		
Calcium	59 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.41 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Lithium	0.011 mg/L	0.010	1	11/01/21	mrh	11/02/21	ckd	N	
Magnesium	22 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.6 mg/L	1.0	1	11/01/21	mrh	11/02/21	ckd		
Sodium	28 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/01/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116267</i>									
Antimony	<0.00030 mg/L	0.00030	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Barium	0.068 mg/L	0.010	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0021 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	11/01/21	mrh	11/04/21	acs		
Copper	0.0031 mg/L	0.0040	1	11/01/21	mrh	11/04/21	acs	J	
Lead	0.00086 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs	J	
Manganese	0.055 mg/L	0.025	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0010 mg/L	0.00040	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	11/01/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.00061 mg/L	0.00080	1	11/01/21	mrh	11/04/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-02 Matrix: Surface Water Date Collected: 10/28/21 09:10
 Sample ID: SW-N-SG-2 Date Received: 10/28/21 15:58 Field pH: 7.57

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	240 mg/L	0.82	1	11/01/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116384

Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.12 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd		
Calcium	59 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.14 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd		
Lithium	0.0073 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	J, N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.3 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	26 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	0.00092 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00029 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.00091 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Barium	0.066 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00015 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00034 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.000098 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.048 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0011 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0014 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00038 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-02 Matrix: Surface Water Date Collected: 10/28/21 09:10
 Sample ID: SW-N-SG-2 Date Received: 10/28/21 15:58 Field pH: 7.57

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.14 mg/L	0.10	5	10/29/21	ans	10/29/21	ans		
Chloride	52 mg/L	1.5	10	11/02/21	jma	11/02/21	jma		
Sulfate as SO4	<3.0 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	210 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	340 mg/L	40	4	11/01/21	mr	11/02/21	mr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-03 Matrix: Surface Water Date Collected: 10/28/21 12:05
 Sample ID: SW-SE-MW-7 Date Received: 10/28/21 15:58 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116283</i>									
Mercury	3.0 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116267</i>									
Beryllium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.049 mg/L	0.050	1	11/01/21	mrh	11/02/21	ckd	J	
Calcium	71 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.99 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Lithium	<0.010 mg/L	0.010	1	11/01/21	mrh	11/02/21	ckd	N	
Magnesium	21 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.7 mg/L	1.0	1	11/01/21	mrh	11/02/21	ckd		
Sodium	23 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/01/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116267</i>									
Antimony	<0.00030 mg/L	0.00030	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.0017 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Barium	0.058 mg/L	0.010	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0026 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	11/01/21	mrh	11/04/21	acs		
Copper	0.0033 mg/L	0.0040	1	11/01/21	mrh	11/04/21	acs	J	
Lead	0.0021 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Manganese	0.071 mg/L	0.025	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0013 mg/L	0.00040	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	0.0025 mg/L	0.0050	1	11/01/21	mrh	11/04/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.0023 mg/L	0.00080	1	11/01/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-03 Matrix: Surface Water Date Collected: 10/28/21 12:05
 Sample ID: SW-SE-MW-7 Date Received: 10/28/21 15:58 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	270 mg/L	0.82	1	11/01/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116384

Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.045 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd	J	
Calcium	70 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.067 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd	J	
Lithium	0.0034 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	J, N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.1 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	21 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	0.0016 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00023 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0013 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.051 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00018 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.0013 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	0.000089 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.022 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00054 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-03 Matrix: Surface Water Date Collected: 10/28/21 12:05
 Sample ID: SW-SE-MW-7 Date Received: 10/28/21 15:58 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.093 mg/L	0.10	5	10/29/21	ans	10/29/21	ans	J	
Chloride	41 mg/L	0.75	5	10/29/21	ans	10/29/21	ans		
Sulfate as SO4	32 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	220 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	330 mg/L	38	3.846154	11/01/21	mr	11/02/21	mr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-04 Matrix: Surface Water Date Collected: 10/28/21 10:30
 Sample ID: SW-NE-MW-10 Date Received: 10/28/21 15:58 Field pH: 7.89

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116283</i>									
Mercury	8.8 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116267</i>									
Beryllium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.20 mg/L	0.050	1	11/01/21	mrh	11/02/21	ckd		
Calcium	62 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.25 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Lithium	0.015 mg/L	0.010	1	11/01/21	mrh	11/02/21	ckd	N	
Magnesium	24 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.7 mg/L	1.0	1	11/01/21	mrh	11/02/21	ckd		
Sodium	29 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/01/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116267</i>									
Antimony	<0.00030 mg/L	0.00030	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.00091 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs	J	
Barium	0.067 mg/L	0.010	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0017 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	11/01/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	11/01/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Manganese	0.10 mg/L	0.025	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0010 mg/L	0.00040	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	11/01/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.00086 mg/L	0.00080	1	11/01/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-04 Matrix: Surface Water Date Collected: 10/28/21 10:30
 Sample ID: SW-NE-MW-10 Date Received: 10/28/21 15:58 Field pH: 7.89

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	250 mg/L	0.82	1	11/01/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116384									
Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.18 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd		
Calcium	56 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.077 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd	J	
Lithium	0.010 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.4 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	27 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd		
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00032 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.00097 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Barium	0.059 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.00043 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Cobalt	0.00013 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00056 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.00013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.024 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00094 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00031 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-04 Matrix: Surface Water Date Collected: 10/28/21 10:30
 Sample ID: SW-NE-MW-10 Date Received: 10/28/21 15:58 Field pH: 7.89

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.12 mg/L	0.10	5	10/29/21	ans	10/29/21	ans		
Chloride	52 mg/L	1.5	10	11/02/21	jma	11/02/21	jma		
Sulfate as SO4	31 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	190 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	300 mg/L	40	4	11/01/21	mr	11/02/21	mr		
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QUALITY CONTROL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116283	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T116283-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116283-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116283-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T116283-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	23.4	94	77-123	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116267	Analysis Description: Beryllium, Total
QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids	Analysis Method: EPA 6010D

METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	0.17	0.50	J
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	0.18	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	0.057	0.20	J
Sodium	mg/L	0.39	0.50	J

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METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116267-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.857	96	80-120	
Beryllium	mg/L	0.111	0.110	99	80-120	
Calcium	mg/L	8.89	8.88	100	80-120	
Iron	mg/L	8.89	9.16	103	80-120	
Potassium	mg/L	8.89	9.15	103	80-120	
Lithium	mg/L	0.889	0.887	100	80-120	
Magnesium	mg/L	8.89	9.28	104	80-120	
Sodium	mg/L	8.89	9.42	106	80-120	
Zinc	mg/L	0.889	0.921	104	80-120	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116384
 QC Batch Method:

Analysis Description: Zinc, Dissolved
 Analysis Method: EPA 6010D

METHOD BLANK: T116384-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0010	0.0010	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	0.029	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116384-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.932	93	80-120	
Beryllium	mg/L	0.0500	0.0519	104	80-120	
Calcium	mg/L	10.0	10.0	100	80-120	

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LABORATORY CONTROL SAMPLE: T116384-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Iron	mg/L	10.0	10.1	101	80-120	
Potassium	mg/L	10.0	9.86	99	80-120	
Lithium	mg/L	0.500	0.493	99	80-120	
Magnesium	mg/L	10.0	10.0	100	80-120	
Sodium	mg/L	10.0	9.67	97	80-120	
Zinc	mg/L	1.00	1.01	101	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116384-MSD1 Original: 21J1157-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	0.0467	1.00	0.978	0.972	93	93	75-125	0.7	20	
Beryllium	mg/L	0	0.0500	0.0533	0.0522	107	104	75-125	2	20	
Calcium	mg/L	69.2	10.0	80.6	77.8	114	86	75-125	28	20	207
Iron	mg/L	0.0584	10.0	10.2	10.0	101	100	75-125	1	20	
Potassium	mg/L	4.00	10.0	14.1	14.0	101	100	75-125	1	20	
Lithium	mg/L	0.00333	0.500	0.499	0.493	99	98	75-125	1	20	
Magnesium	mg/L	20.8	10.0	31.2	30.2	104	94	75-125	10	20	
Sodium	mg/L	21.5	10.0	31.3	31.1	98	96	75-125	2	20	
Zinc	mg/L	0.00178	1.00	0.985	0.980	98	98	75-125	0.5	20	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116167
 QC Batch Method:

Analysis Description: Chromium, Dissolved
 Analysis Method: EPA 6020B

METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	0.000026	0.000040	J
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	

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METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	0.00017	0.00020	J
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0612	102	80-120	
Arsenic	mg/L	0.0600	0.0630	105	80-120	
Barium	mg/L	0.0600	0.0588	98	80-120	
Cadmium	mg/L	0.0600	0.0613	102	80-120	
Cobalt	mg/L	0.0600	0.0604	101	80-120	
Chromium	mg/L	0.0600	0.0629	105	80-120	
Copper	mg/L	0.0600	0.0610	102	80-120	
Manganese	mg/L	0.0600	0.0615	102	80-120	
Molybdenum	mg/L	0.0600	0.0588	98	80-120	
Nickel	mg/L	0.0600	0.0602	100	80-120	
Lead	mg/L	0.0600	0.0616	103	80-120	
Antimony	mg/L	0.0600	0.0577	96	80-120	
Selenium	mg/L	0.0600	0.0630	105	80-120	
Thallium	mg/L	0.0600	0.0617	103	80-120	
Vanadium	mg/L	0.0600	0.0581	97	80-120	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116267

Analysis Description: Nickel, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6020B

METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	
Cadmium	mg/L	<0.0010	0.0010	

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METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116267-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0329	118	80-120	
Arsenic	mg/L	0.0556	0.0602	108	80-120	
Barium	mg/L	0.889	0.994	112	80-120	
Cadmium	mg/L	0.0278	0.0307	111	80-120	
Cobalt	mg/L	0.889	0.923	104	80-120	
Chromium	mg/L	0.0278	0.0303	109	80-120	
Copper	mg/L	0.890	0.882	99	80-120	
Manganese	mg/L	0.887	0.918	104	80-120	
Molybdenum	mg/L	0.889	0.945	106	80-120	
Nickel	mg/L	0.889	0.869	98	80-120	
Lead	mg/L	0.0556	0.0542	98	80-120	
Antimony	mg/L	0.0556	0.0634	114	80-120	
Selenium	mg/L	0.0556	0.0584	105	80-120	
Thallium	mg/L	0.0556	0.0552	99	80-120	
Vanadium	mg/L	0.889	0.974	110	80-120	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: [CALC]

Analysis Description: Hardness (Metals)

QC Batch Method:

Analysis Method: SM 2340 B-11

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

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QC Batch: T116228

Analysis Description: Chloride

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116228-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116228-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.16	103	90-110	
Fluoride	mg/L	1.00	1.03	103	90-110	
Sulfate as SO4	mg/L	5.00	4.89	98	90-110	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: T116313

Analysis Description: Chloride

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116313-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	

LABORATORY CONTROL SAMPLE: T116313-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	4.57	91	90-110	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: T116366

Analysis Description: Alkalinity, Carbonate

QC Batch Method: SM 2320 B-11

Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T116366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	97.3	97	88-112	

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 2241 Black Creek Road
 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

LABORATORY CONTROL SAMPLE: T116366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	97.3	97	88-112	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116265	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-11	Analysis Method: SM 2540 C-11

METHOD BLANK: T116265-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	9.0	10	J

LABORATORY CONTROL SAMPLE: T116265-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	527	105	80-120	

SAMPLE DUPLICATE: T116265-DUP1 Original: 21J1157-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	320	368	14	10	623

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10-28-21
 Field Personnel: EB/TB
 Surface Water ID: N-502
 Purge Start Time: 8:45
 Purge Rate: 300 gpm/min

Reading Time	9:00	9:03	9:06						
Temperature (Celsius)	9.93	9.93	9.93						
Specific Conductivity	472	472	472						
Dissolved Oxygen	10.02	10.02	10.02						
ORP (mV)	6	6	6						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.57	7.57	7.57						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: ER/TB

Surface Water ID: 56-1

Purge Start Time: 9:55

Purge Rate: 3000 L/min

Reading Time	10:08	10:11	10:13						
Temperature (Celsius)	11.28	11.28	11.28						
Specific Conductivity	.581	.581	.581						
Dissolved Oxygen	7.91	7.91	7.91						
ORP (mV)	196	196	196						
Turbidity(NTU)	22.4	22.4	22.4						
pH	8.46	8.46	8.46						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: EB/TB

Surface Water ID: NE-MW-10

Purge Start Time: 10:05

Purge Rate: 300wL/min

Reading Time	10:20	10:23	10:26						
Temperature (Celsius)	10.20	10.20	10.20						
Specific Conductivity	.463	.463	.463						
Dissolved Oxygen	10.05	10.05	10.05						
ORP (mV)	53	53	53						
Turbidity(NTU)	14.9	14.9	14.9						
pH	7.89	7.89	7.89						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10-28-21
 Field Personnel: EB/TR

Surface Water ID: SE-MW7
 Purge Start Time: 11:46
 Purge Rate: 3000l/min

Reading Time	11:55	11:58	12:01						
Temperature (Celsius)	10.72	10.72	10.72						
Specific Conductivity	476	476	476						
Dissolved Oxygen	9.75	9.75	9.75						
ORP (mV)	52	52	52						
Turbidity(NTU)	10.1	10.1	10.1						
pH	7.80	7.80	7.80						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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21J1157
Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10/29/21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20812743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:37							
Logged by: BW							
Package Description: Cobler							
Package Temp °C	-0.4	-0.3	✓	✓			
Representative Sample Temp °C	5.2	5.3	✓	✓			✓

Sample Receipt

- Yes No
- Received on ice or other coolant
- Ice still present upon receipt
- Custody seals present
- Trace Courier Client Drop-off
- Yes No Custody seals intact (if applicable)
- UPS Fed Ex US Mail Other

Sample Condition

- Yes No N/A
- All sample containers arrived unbroken and labeled
- Sufficient sample to run requested analyses
- Correct chemical preservative added to samples
- Samples preserved at Trace
- Chemical preservation verified, check EMD pH test strip used (if applicable)
- pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other
- Air bubbles absent from VOAs

Chain of Custody (COC)

- Yes No
- All bottle labels agree with COC
- COC filled out properly
- COC signed by client

Notes:

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Muskegon, MI 49444-2673



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November 30, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1157
Client Project Surface Water Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

The results were obtained from Eurofins.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink that reads "Jon Mink".

Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008

Trace Analytical Laboratories, Inc.
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SAMPLE SUMMARY

Trace Project ID: 21J1157
Client Project ID: Surface Water Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1157-01	SW-SG-1	Surface Water	TRACE-EB/TB	10/28/21 10:15	10/28/21 15:58
21J1157-02	SW-N-SG-2	Surface Water	TRACE-EB/TB	10/28/21 09:10	10/28/21 15:58
21J1157-03	SW-SE-MW-7	Surface Water	TRACE-EB/TB	10/28/21 12:05	10/28/21 15:58
21J1157-04	SW-NE-MW-10	Surface Water	TRACE-EB/TB	10/28/21 10:30	10/28/21 15:58

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-6473-1
Client Project/Site: Trace - 21J1157
Revision: 1

For:
Trace Analytical Laboratories
2241 Black Creek Road
Muskegon, Michigan 49444

Attn: Jon Mink

Karen Fullmer

Authorized for release by:
11/30/2021 11:40:43 AM

Karen Fullmer, Project Manager
(574)233-4777
karen.fullmer@eurofinset.com

LINKS

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results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Qualifiers

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.
α	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

Case Narrative

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Job ID: 810-6473-1

Laboratory: Eurofins Eaton Analytical - South Bend

Narrative

Job Narrative 810-6473-1

Comments

No additional comments.

Revision

The report being provided is a revision of the original report sent on 11/18/2021. The report (revision 1) is being revised due to: Samples were logged in as drinking water by accident..

Receipt

The samples were received on 11/1/2021 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 12.4° C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. Bottles did not match coc at all and in-house coc was created. Client sent updated coc.

RAD

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

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Detection Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SG-1

Lab Sample ID: 810-6473-1

No Detections.

Client Sample ID: 21J1157/SW-N-SG-2

Lab Sample ID: 810-6473-2

No Detections.

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

No Detections.

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

No Detections.

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This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical - South Bend

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SG-1

Lab Sample ID: 810-6473-1

Date Collected: 10/28/21 10:15

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.80802		1.00	0.500	pCi/L		11/15/21 09:30	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	-0.820	U	0.650		1.00	0.340	pCi/L	11/04/21 13:22	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.150	U	0.480		1.00	0.500	pCi/L	11/12/21 10:12	11/15/21 12:05	1

Client Sample ID: 21J1157/SW-N-SG-2

Lab Sample ID: 810-6473-2

Date Collected: 10/28/21 09:10

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.76837		1.00	0.500	pCi/L		11/15/21 09:30	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.0800	U	0.600		1.00	0.350	pCi/L	11/04/21 13:22	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-0.0800	U	0.480		1.00	0.500	pCi/L	11/12/21 10:12	11/15/21 12:05	1

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

Date Collected: 10/28/21 12:05

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.670		0.83006		1.00	0.480	pCi/L		11/15/21 09:30	1

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

Date Collected: 10/28/21 12:05

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	-0.470	U	0.670		1.00	0.330	pCi/L	11/04/21 13:22	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.670		0.490		1.00	0.480	pCi/L	11/12/21 10:12	11/15/21 12:05	1

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

Date Collected: 10/28/21 10:30

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.45		0.54489		1.00	0.380	pCi/L		11/15/21 09:30	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.650		0.370		1.00	0.310	pCi/L	11/04/21 13:22	11/08/21 11:28	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.800		0.400		1.00	0.380	pCi/L	11/12/21 10:12	11/15/21 12:05	1

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Method: SM7500 Ra B - Radium-226

Lab Sample ID: MB 810-6604/1-A
 Matrix: Drinking Water
 Analysis Batch: 7022

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 6604

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Ra-226	0.5000		0.240		1.00	0.180	pCi/L	11/04/21 13:22	11/08/21 11:28	1

Lab Sample ID: LCS 810-6604/2-A
 Matrix: Drinking Water
 Analysis Batch: 7022

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 6604

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec.
		Result	Qual	Uncert. (2σ+/-)					Limits
Ra-226	8.73	9.470			1.00	0.190	pCi/L	108	90 - 110

Method: SM7500 Ra D - Radium-228

Lab Sample ID: MB 810-7205/1-A
 Matrix: Drinking Water
 Analysis Batch: 7351

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 7205

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Ra-228	-0.1600	U	0.430		1.00	0.460	pCi/L	11/12/21 10:12	11/15/21 12:18	1

Lab Sample ID: LCS 810-7205/2-A
 Matrix: Drinking Water
 Analysis Batch: 7351

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 7205

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec.
		Result	Qual	Uncert. (2σ+/-)					Limits
Ra-228	8.83	7.490			1.00	0.520	pCi/L	85	80 - 120

QC Association Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Rad

Prep Batch: 6604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6473-1	21J1157/SW-SG-1	Total/NA	Surface Water	RAD Prep	
810-6473-2	21J1157/SW-N-SG-2	Total/NA	Surface Water	RAD Prep	
810-6473-3	21J1157/SW-SE-MW-7	Total/NA	Surface Water	RAD Prep	
810-6473-4	21J1157/SW-NE-MW-10	Total/NA	Surface Water	RAD Prep	
MB 810-6604/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6604/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	

Prep Batch: 7205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6473-1	21J1157/SW-SG-1	Total/NA	Surface Water	RAD Prep	
810-6473-2	21J1157/SW-N-SG-2	Total/NA	Surface Water	RAD Prep	
810-6473-3	21J1157/SW-SE-MW-7	Total/NA	Surface Water	RAD Prep	
810-6473-4	21J1157/SW-NE-MW-10	Total/NA	Surface Water	RAD Prep	
MB 810-7205/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-7205/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	

Lab Chronicle

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SG-1

Lab Sample ID: 810-6473-1

Date Collected: 10/28/21 10:15

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7224		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Client Sample ID: 21J1157/SW-N-SG-2

Lab Sample ID: 810-6473-2

Date Collected: 10/28/21 09:10

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7224		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

Date Collected: 10/28/21 12:05

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7224		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

Date Collected: 10/28/21 10:30

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB

Lab Chronicle

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

Date Collected: 10/28/21 10:30

Matrix: Surface Water

Date Received: 11/01/21 09:00

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7022	11/08/21 11:28	JB	EA SB
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Laboratory: Eurofins Eaton Analytical - South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	03-22-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7500 Ra D		Surface Water	Combined Radium 226 + 228
SM7500 Ra B	RAD Prep	Surface Water	Ra-226
SM7500 Ra D	RAD Prep	Surface Water	Ra-228



Method Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Method	Method Description	Protocol	Laboratory
7500 Ra D	Radium 226 Radium 228 Combined	SM	EA SB
SM7500 Ra B	Radium-226	SM	EA SB
SM7500 Ra D	Radium-228	SM	EA SB
RAD Prep	Preparation, Radiologicals	None	EA SB

Protocol References:

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

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Sample Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-6473-1	21J1157/SW-SG-1	Surface Water	10/28/21 10:15	11/01/21 09:00
810-6473-2	21J1157/SW-N-SG-2	Surface Water	10/28/21 09:10	11/01/21 09:00
810-6473-3	21J1157/SW-SE-MW-7	Surface Water	10/28/21 12:05	11/01/21 09:00
810-6473-4	21J1157/SW-NE-MW-10	Surface Water	10/28/21 10:30	11/01/21 09:00

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Eaton Analytical



110 S. Hill Street
 South Bend, IN 46617
 T: 1.800.332.4345
 F: 1.574.233.8207

Order # _____
 Batch # _____

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CHAIN OF CUSTODY RECORD

Page _____ of _____

Shaded area for EEA use only

REPORT TO:		SAMPLER (Signature)		PWS ID #	STATE (sample origin)	PROJECT NAME	PO#	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME			
Jon Mink, Tim Brewer (jmink@trace-labs.com, tbrewer@trace-labs.com) Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444 231-773-5998					MI		21J1157						
BILL TO:		COMPLIANCE MONITORING		Yes	No	POPULATION SERVED	SOURCE WATER						
Accounts Payable, Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444													
LAB Number	COLLECTION				SAMPLING SITE	TEST NAME	pH Acceptable	SAMPLE REMARKS	CHLORINATED		# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
	DATE	TIME	AM	PM					YES	NO			
1	10/28/21	10:15	x		SW-SG-1	Radium 226/228	✓			x	1	SW	SW
2	10/28/21	9:10	x		SW-N-SG-2	Radium 226/228	✓			x	1	SW	SW
3	10/28/21	12:05		x	SW-SE-MW-7	Radium 226/228	✓			x	1	SW	SW
4	10/28/21	10:30	x		SW-NE-MW-10	Radium 226/228	✓			x	1	SW	SW
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

Liters Received = 4 jug each site

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE 10/29/21	TIME	RECEIVED BY: (Signature)	DATE	TIME	LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME	



CONDITIONS UPON RECEIPT (check one):
 ___ Iced: Wet/Blue ___ Ambient 12.4 °C Upon Receipt ___ N/A

MATRIX CODES: DW-DRINKING WATER RW-REAGENT WATER GW-GROUND WATER EW-EXPOSURE WATER SW-SURFACE WATER PW-POOL WATER WW-WASTE WATER	TURN-AROUND TIME (TAT) - SURCHARGES SW = Standard Written: (15 working days) 0% RV = Rush Verbal: (5 working days) 50% RW = Rush Written: (5 working days) 75%	IV = Immediate Verbal: (3 working days) 100% IW = Immediate Written: (3 working days) 125% SP = Weekend, Holiday CALL STAT = Less than 48 hours CALL	Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.
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Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.

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South Bend, IN

110 S Hill Street
 South Bend, IN 46617
 Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record



Client Information		Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:			
Client Contact: <i>Trace</i>		Phone:		E-Mail:		State of Origin:		Page: Page 1 of			
Company:		PWSID:		Analysis Requested						Job #:	
Address:		Due Date Requested:		Field Filtered Sample (Yes or No) <i>Rad 226 & 238</i> Perform MS/MSD (Yes or No)						Total Number of containers ↓	
City:		TAT Requested (days):									
State, Zip:		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No									
Phone:		PO #:									
Email:		WO #:									
Project Name:		Project #:		pH Acceptable						Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)	
Site:		SSOW#:									
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/sol, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Special Instructions/Note:		
				Preservation Code:							
<i>21J 1157-01</i>											
<i>↓ 02</i>											
<i>03</i>											
<i>04</i>											
Liters Received = <i>4.6 jug</i>											
Coc completed by <i>SS</i>											
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>sgl</i>		Date/Time: <i>11/21 0900</i>		Company: <i>EEA</i>	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <i>Ambient 12.4°C</i>							





Eaton Analytical

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order #
Batch #

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CHAIN OF CUSTODY RECORD

Page ___ of ___

Main data table with columns: REPORT TO, SAMPLER (Signature), PWS ID #, STATE (sample origin), PROJECT NAME, PO#, COMPLIANCE MONITORING, POPULATION SERVED, SOURCE WATER, LAB Number, COLLECTION (DATE, TIME, AM, PM), SAMPLING SITE, TEST NAME, SAMPLE REMARKS, CHLORINATED (YES, NO), # OF CONTAINERS, MATRIX CODE, TURNAROUND TIME.

Rec. 4 bottles w/ 21J1157-01 thru 04
SS 11/21

Handwritten signature and date table: RELINQUISHED BY:(Signature), DATE, TIME, RECEIVED BY:(Signature), DATE, TIME.

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT. LAB COMMENTS. CONDITIONS UPON RECEIPT (check one): Cool, Wet/Blue, Ambient, °C Upon Receipt, N/A.

MATRIX CODES: DW-DRINKING WATER, RW-REAGENT WATER, GW-GROUND WATER, EW-EXPOSURE WATER, SW-SURFACE WATER, PW-POOL WATER, WW-WASTE WATER. TURN-AROUND TIME (TAT) - SURCHARGES: SW = Standard Written: (15 working days) 0%, RV = Rush Verbal: (5 working days) 50%, RW = Rush Written: (5 working days) 75%. IV = Immediate Verbal: (3 working days) 100%, IW = Immediate Written: (3 working days) 125%, SP = Weekend, Holiday CALL, STAT = Less than 48 hours CALL.

Login Sample Receipt Checklist

Client: Trace Analytical Laboratories

Job Number: 810-6473-1

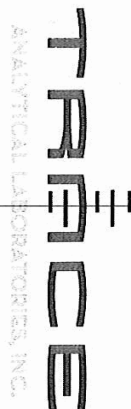
Login Number: 6473

List Source: Eurofins Eaton Analytical - South Bend

List Number: 1

Creator: Spurgeon, Sheri

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	False	Thermal preservation not required.
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	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	



Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673

Phone 231.773.5998
 Fax 888.979.4469
 www.trace-labs.com

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Trace ID No. 2211157

Report Results To:

Bill To:

Trace Use:

Company Name: Grand Haven Board of Light & Power	PO #:	Logged By: <u>BW</u>
Report To: Paul Cederquist	Contact Name:	Checked By: <u>DH</u>
Mailing Address:	Billing Address (if different):	Soil Vials Preserved (circle if applicable):
City, State, Zip Code:	City, State, Zip Code:	MeOH
Office Phone:	Call Phone:	Low Level
Email Address:	Phone Number:	Lab
	Billing Email Address:	Sampling Time:

Turnaround Requirements:

- Standard 5-10 Days
- 3 Day*
- 1 Day*

Matrix Key:

- S = Soil / Solid
- W = Water
- SL = Sludge
- OI = Oil
- WI = Wipes
- LW = Liquid Waste
- A = Air
- D = Drinking Water

*Results provided end of business day, requires prior approval.

Project Name: **Surface Water Sampling**

Sampled By: EB/TB

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y/N)	Matrix	Number of Containers	Preservation						Analysis Requested	Remarks	
							Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other			
1	10/28/21	10:15	SW-SG-1	Y	W	5	X	X					X	T-B,Ca,Fe,Sb,As,Ba, Be,Cd,Cr	
2	9/10		SW-N-SG-2	Y	W	5	X	X					X	T- Co,Cu, Pb, Li,Mo,Ni Se,Ag	pH=8.46
3	12:05		SW-SE-MW-7	Y	W	5	X	X					X	Diss.Metals (Same as Totals)	pH=7.57
4	10:30		SW-NE-MW-10	Y	W	5	X	X					X	Fluoride,Sulfate,TDS, Chlorides	pH=7.86
													X	pH	pH=7.89
													X	LLHg	
													X	Radiums 226/228	
													X	Bicarb-Alk, Carbonate-Alk	
														Possible Health Hazards?	

Please Sign

Released By: <u>[Signature]</u>	Received By: <u>[Signature]</u>	Date: <u>10/28/21</u>	Time: <u>1558</u>	Released By:	Received By:	Date:	Time:

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.

Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-28-21

Field Personnel: EB/TB

Surface Water ID: N-502

Purge Start Time: 8:45

Purge Rate: 300 gpm/min

Reading Time	9:00	9:03	9:06						
Temperature (Celsius)	9.93	9.93	9.93						
Specific Conductivity	.472	.472	.472						
Dissolved Oxygen	10.02	10.02	10.02						
ORP (mV)	6	6	6						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.57	7.57	7.57						

Stabilization Criteria:

Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: ER/TB

Surface Water ID: 56-1

Purge Start Time: 9:55

Purge Rate: Severe Chlorine

Reading Time	10:08	10:11	10:13						
Temperature (Celsius)	11.28	11.28	11.28						
Specific Conductivity	.581	.581	.581						
Dissolved Oxygen	7.91	7.91	7.91						
ORP (mV)	196	196	196						
Turbidity(NTU)	22.4	22.4	22.4						
pH	8.46	8.46	8.46						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: EB/TB

Surface Water ID: NE-MNW-10

Purge Start Time: 10:05

Purge Rate: 3000 L/min

Reading Time	10:20	10:23	10:26						
Temperature (Celsius)	10.20	10.20	10.20						
Specific Conductivity	.463	.463	.463						
Dissolved Oxygen	10.05	10.05	10.05						
ORP (mV)	53	53	53						
Turbidity(NTU)	14.9	14.9	14.9						
pH	7.89	7.89	7.89						

Stabilization Criteria:

Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-28-21

Field Personnel: EB/TR

Surface Water ID: SE-MW7

Purge Start Time: 11:46

Purge Rate: 30000/min

Reading Time	11:55	11:58	12:01						
Temperature (Celsius)	10.72	10.72	10.72						
Specific Conductivity	476	476	476						
Dissolved Oxygen	9.75	9.75	9.75						
ORP (mV)	52	52	52						
Turbidity(NTU)	10.1	10.1	10.1						
pH	7.80	7.80	7.80						

Stabilization Criteria:

Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

21J1157
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date:	10/29/21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20812743 (CF: -0.4°C)	Temp Blank	Client Sample
Time:	9:37							
Logged by:	BW							
Package Description:	Cobler							
Package Temp °C	-0.4		-0.3	✓	✓			
Representative Sample Temp °C	5.2		5.3	✓	✓			✓

Sample Receipt

- Yes/ No
- Received on ice or other coolant
- Ice still present upon receipt
- Custody seals present
- Trace Courier Client Drop-off
- Yes No Custody seals intact (if applicable)
- UPS Fed Ex US Mail Other

Sample Condition

- Yes/ No/ N/A
- All sample containers arrived unbroken and labeled
- Sufficient sample to run requested analyses
- Correct chemical preservative added to samples
- Samples preserved at Trace
- Chemical preservation verified, check EMD pH test strip used (if applicable)
- pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other
- Air bubbles absent from VOAs

Chain of Custody (COC)

- Yes/ No
- All bottle labels agree with COC
- COC filled out properly
- COC signed by client

Notes:

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444



Phone: 231.773.5998
Fax: 888.979.4469
www.trace-labs.com

December 7, 2021

Paul Cederquist
Grand Haven Board of Light and Power
1700 Eaton Drive
Grand Haven, MI 49417

R.E. Missing Static Water Elevations for October

Paul,

Unfortunately do to a loss of the data sheets / notebook from the 25th of October not all of the measurements for static water elevations were available to be reported. All of the wells that were scheduled to be sampled had the results transferred to their respective sampling log sheets prior to starting sampling and were included in the spreadsheet. However those points that were measured but not sampled were only recorded on the missing log.

Trace has looked everywhere for the missing log but it unfortunately cannot be located.

Going forward we will be recording the field measurements into an excel spreadsheet as soon as the sampling event is completed.

Sorry for the inconvenience.

Sincerely,

Jon Mink
Senior Project Manager



golder.com

APPENDIX B

**Revised Fourth Quarter 2021
Monitoring Report, Former JB Sims
Generating Station, Inactive 1/2
Impoundment**



REPORT

Fourth Quarter 2021 Monitoring Report

*Former JB Sims Generating Station
Inactive 1/2 Impoundment*

Submitted to:

Grand Haven Board of Light and Power

1700 Eaton Drive
Grand Haven, Michigan

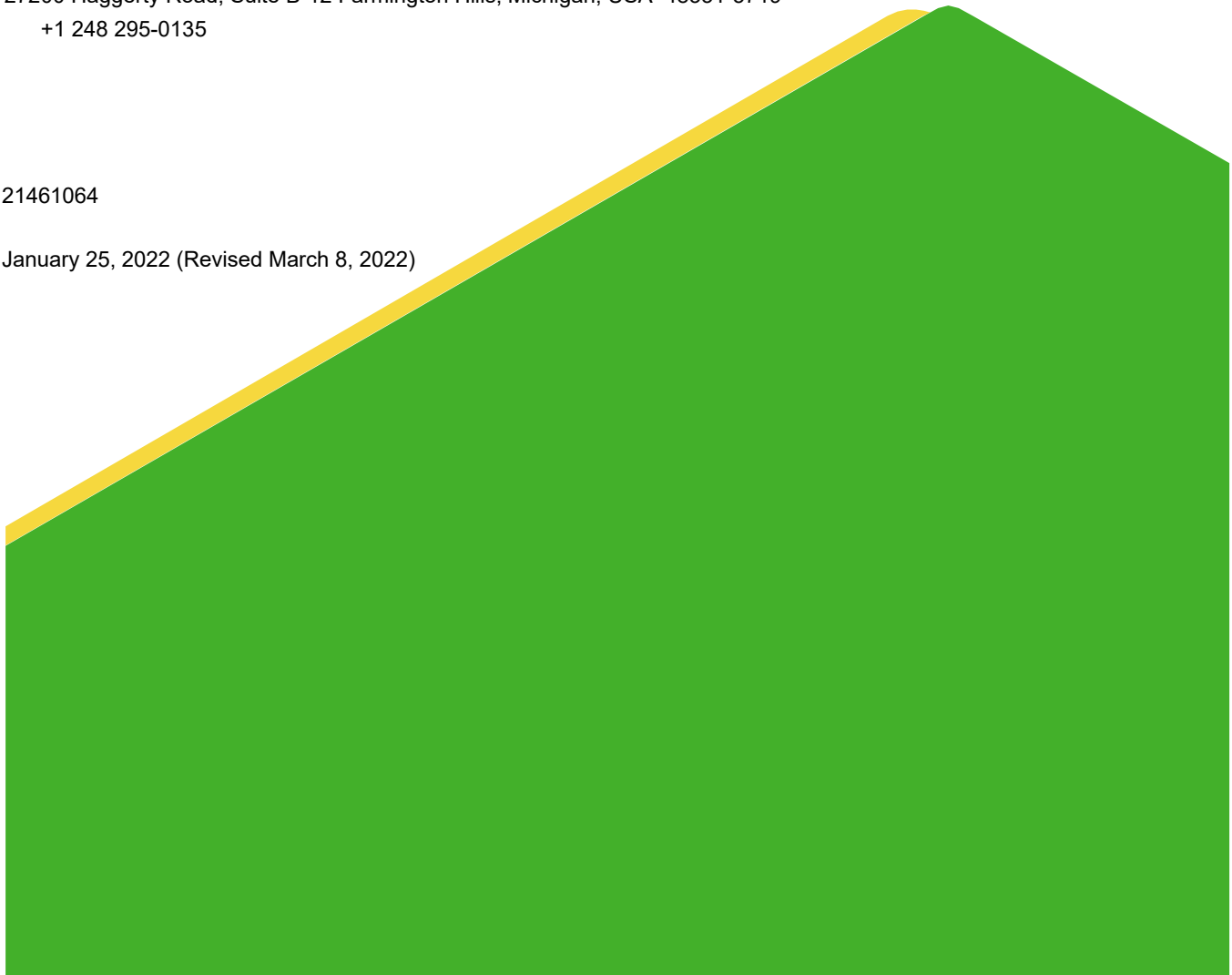
Submitted by:

Golder Associates Inc.

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21461064

January 25, 2022 (Revised March 8, 2022)



Distribution List

Grand Haven Board of Light and Power

Michigan Department of Environment, Great Lakes, and Energy

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Groundwater Contour Map – October 25, 2021 (Fourth Quarter Monitoring Event)

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Groundwater Contour Map – November 23, 2021

FIGURE 6

Groundwater Contour Map – December 17, 2021

APPENDICES

APPENDIX A

Statistical Summary

APPENDIX B

Laboratory Report and Field Forms

1.0 INTRODUCTION

Grand Haven Board of Light and Power (GHBLP) began groundwater monitoring at the former JB Sims Generating Station (JB Sims, Site) in 2017 with the implementation of United States Environmental Protection Agency (USEPA) coal combustion residual (CCR) rule (40 Code of Federal Regulations [CFR] 257 Subpart D; published in 80 FR 21302-21501, April 17, 2015) for CCR Units.

On December 28, 2018, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (Michigan Part 115 Solid Waste Rules, Part 115 amendment. Currently, the Inactive Units 1/2 Impoundment (Inactive 1/2 Impoundment) is not subject to the Part 115 amendment. However, this determination may change depending on the closure options approved for the site. As such, this report is submitted to present results of sampling and preliminary statistical analyses for Inactive 1/2 Impoundment monitoring wells only. Since the detection monitoring well network is currently being evaluated, alternate background monitoring wells are being considered and statistical results are expected to change. The purpose of this report is to comply with Rule 907(11) and Rule 908(6) and should be considered a data submittal only.

The CCR units at JB Sims as defined by the Federal CCR Rule includes:

- Inactive 1/2 Impoundment
 - Unlined surface impoundment
 - Ceased receiving CCR materials in 2012
 - Monitored following the Federal CCR Rule
 - Closure determination is still being evaluated. In the interim, quarterly statistical evaluation in accordance with PA 640 Part 115 amendment is included in this report.
- Former 3A/B Impoundments
 - Two engineered and clay lined surface impoundments
 - Ceased receiving CCR materials in July 2020
 - CCR material removed from within the surface impoundments in 2020
 - Monitored following the Federal CCR Rule and PA 640 Part 115 amendment
 - Quarterly statistical evaluation in accordance with PA 640 Part 115 amendment and reported in a separate report

This *Fourth Quarter 2021 Monitoring Report* has been prepared to document groundwater monitoring activities conducted for only the Inactive 1/2 Impoundment at JB Sims, the groundwater monitoring activities for the former Unit 3 impoundments is included in a separate report submittal. As noted earlier, the Inactive 1/2 Impoundment is not regulated under the Part 115 amendment unless the impoundment is closed in place. Closure plans for the Inactive 1/2 Impoundment remain pending following EPA determination of the unit boundary on January 14, 2021. Since the Inactive 1/2 Impoundment closure determination is still being evaluated, this *Fourth Quarter 2021 Monitoring Report* has been prepared to document the groundwater monitoring activities to EGLE. Further discussions regarding the monitoring well networks for both Inactive 1/2 Impoundment and Former 3A/B Impoundments is ongoing. Specifically, piezometers and stilling wells were recently installed and a *Field Summary Report* with recommendations for background groundwater data is forth coming. As such, statistical analysis results may change significantly based on a revised background dataset and this report's purpose is for data submittal only.

1.1 Site Description and Background

The Site is located on the southwestern portion of Harbor Island in Grand Haven, Michigan, and is operated by GHBLP. The Former JB Sims is situated on the west end of Harbor Island with the Grand River and South Channel of the Grand River surrounding the island, which flows westerly toward Lake Michigan, approximately one mile west of the Site. Figure 1, Site Location Map, depicts the location of the Site relative to the surrounding area.

The Site is a former coal-fired power generation facility which ceased operations in February 2020. The Inactive 1/2 Impoundment ceased receiving CCR materials in 2012. The coal-fired power generation facility ceased operations in February 2020 and ceased accepting CCR materials in the now Former 3A/B Impoundments in July 2020. Figure 2, Site Plan depicts the general configuration of the former and inactive CCR surface impoundments and site monitoring wells.

1.2 Geologic and Hydrogeologic Setting

As described in the *Groundwater Monitoring System Certification* (ERM, 2017), the Site is located in an area of glacial drift (consisting of fine to medium sand with occasional beds of gravel) which is underlain by Marshall Sandstone. The glacial drift is between 100 to 200 feet thick in the area.

The Former 3A/B Impoundments were engineered clay lined aboveground CCR units built over ash used as structural fill from Units 1 & 2. The unlined Units 1 & 2 impoundment were formed from sluicing ash to low lying areas on the Site in the 1960's and part of the 1970's. The site was also previously used as the city dump. Materials documented from the former dump consist of a layer of mixed debris which includes glass, wood, plastic, ceramic, concrete, hides, brick and metal within a matrix of dark-grey to black, fine grained sand. The extent of the historical trash dump is detailed in *Coal Ash Delineation Sampling Results, Grand Haven Board of Light & Power, Grand Haven, Michigan* (ERM, 2016).

Portions of Harbor Island were developed by creating land with the use of unconsolidated fill, solid waste, and beneficial use of historical ash fill. Specifically, borings consist of a mixture of unconsolidated fine sand fill with intervals of silt and sand, historical ash fill, and municipal solid waste within the first 20 feet below ground surface (bgs). The fine sand fill was underlain by silt and clay to the bottom of each boring. The silt and clay represent the confining unit beneath the CCR units.

Groundwater was encountered between 5 and 15 feet bgs within the unconsolidated fill material, which consists of fine sand, ash, and municipal solid waste, located above a silt and clay unit. As described in the *Groundwater Monitoring System Certification* (ERM, 2017), sand in the uppermost aquifer assumes an effective porosity of 30 percent (%) and consists of poorly-graded fine sand with an estimated hydraulic conductivity of 27 feet per day and well-graded fine sand with an estimated hydraulic conductivity of 53 feet per day. Golder conducted site aquifer performance testing in September of 2021. The results of the aquifer performance testing provide additional data for updating the hydraulic conductivity. The recently calculated hydraulic conductivity for the Site is an average range of 0.19 feet per day to 242 feet per day. This wide range of variability is the result of the varying fill materials that form Harbor Island. In addition, a calculated hydraulic conductivity for the piezometers located on the eastern side of the wetland is an average 8.34 feet per day. A field summary report including the aquifer performance testing will be submitted under separate cover and is forth coming.

1.3 Groundwater Monitoring Well Network

The original monitoring well network was developed in 2017 for the former 3A/B Impoundments, which consisted of 4 monitoring wells [1 upgradient (MW-01R) and 3 downgradient monitoring wells (MW-02, MW-03, and MW-

04)]. It was later determined that in accordance with the Federal CCR Rule, Inactive 1/2 Impoundment is subject to the groundwater monitoring and corrective action requirements and four additional monitoring wells were installed (MW-05 through MW-08). As a result, two groundwater monitoring networks are installed to monitor groundwater passing the CCR unit boundary of the inactive and former surface impoundments within the uppermost aquifer. The current groundwater monitoring well networks for the Inactive 1/2 Impoundment as well as the former 3A/B Impoundments are included on Table 1, Summary of Locations.

The current groundwater monitoring well network for the Inactive 1/2 Impoundment includes the following monitoring wells:

- Interim background well: MW-07
 - Statistical analyses presented in this report utilize data from MW-07 as the interim background data set for interwell comparisons until the groundwater flow is further refined and additional/alternate background monitoring wells are established.
 - An additional 22 site piezometers were installed at the site in August/September 2021 based on the workplan approved by EGLE and EPA on June 22, 2021. Additional piezometers are expected to provide sufficient data to establish a site wide flow direction that will allow for EGLE to approve an alternate detection monitoring well network.
- Detection Monitoring Wells: MW-01R, MW-05, MW-06, and MW-08
- Assessment Monitoring Wells: MW-02, MW-03, MW-4, MW-09, and MW-10
 - Additional assessment monitoring wells may be added to the corrective action monitoring program but cannot be established until a detection monitoring well network is defined and statistical analyses completed.

Figure 2 depicts the current monitoring well network for the Inactive 1/2 Impoundment as well as additional site piezometers and stilling wells.

2.0 GROUNDWATER MONITORING ACTIVITIES

In accordance with the Federal CCR Rule and PA 640 Part 115 amendment, the following describes the monitoring-related activities performed during the fourth quarter 2021 monitoring period and presents the status of the monitoring program. Samples were collected from each monitoring well in the current groundwater monitoring network for the Inactive 1/2 Impoundment.

As described in Part 115 Rule 907 (11), the data collected from each monitoring well must be submitted to EGLE within 30 days of the end of the calendar quarter in which sampling and analysis was conducted. As stated in the introduction, the statistical analysis provided in this report (as Appendix A – Statistical Summary) should be considered preliminary as the monitoring network is under evaluation.

2.1 Sample Methodology and Analysis

Groundwater analytical data, field sampling forms, and chain of custody records from this fourth quarter 2021 monitoring event are presented in Appendix B, Laboratory Reports and Field Forms. Although the laboratory reports included the analytical results for both the Inactive 1/2 Impoundment and the Former 3A/B Impoundments, the results for monitoring wells associated with the Inactive 1/2 Impoundment were statistically evaluated (MW-1R, MW-02, MW-03, MW-04, MW-05, MW-06, MW-07, MW-08, MW-09, and MW-10) as part of this *Fourth Quarter 2021 Monitoring Report*.

2.2 Groundwater Elevation Measurements

Prior to sampling, groundwater elevations were recorded October 25, 2021 from each monitoring well and select piezometers. Trace Laboratories, Inc. (Trace) misplaced the field forms for the water level measurements from PZ-11, PZ-12, PZ-21, PZ-22, PZ-29, and PZ-30, all staff gauges and all stilling wells. As a result, these elevations are notably absent from the groundwater contour map for October 25, 2021. Three additional gauging events were conducted during the fourth quarter monitoring period on October 1, 2021, November 23, 2021, and December 17, 2021.

During the three additional gauging events water levels were only collected from two or three of the six staff gauges. Lack of measurements from the staff gauges were due to damaged staff gauge (SG-03, SG-05, and SG-06) or water level below the staff gauge (SG-01). With the recent installation of piezometers and stilling wells, measurements from staff gauges were evaluated and deemed inappropriate for use in generating groundwater contour maps given the level of uncertainty in the data with recent documentation of influence from freeze and thaw conditions, damaged staff gauges, and water level fluctuation near the staff gauge.

Groundwater elevations for each of water level events for the fourth quarter 2021 monitoring period are summarized in Table 2, Groundwater Elevation Summary. The elevation data were used to develop potentiometric surface elevation contour maps (Figure 3, Groundwater Contour Map, October 1, 2021, Figure 4, Groundwater Contour Map, October 25, 2021 (Fourth Quarter Monitoring Event), Figure 5, Groundwater Contour Map, November 23, 2021, and Figure 6, Groundwater Contour Map, December 17, 2021).

Groundwater flow across the island is influenced by the elevation of the Grand River and the south channel. Localized flow is radially inward when river levels are high and radially outward when river level are low. Localized flow direction and gradients across the Site property are also influenced by precipitation and surface infiltration, particularly in wetland areas. The fill material that has historically been placed on the island is variable across the site in both thickness and permeability resulting in variably infiltration rates from precipitation. As a result, the surface water feature within the boundary of the inactive 1/2 Impoundment will have a faster infiltration rate than other areas of the island causing a mounding effect. In the area surrounding the inactive 1/2 Impoundment, the groundwater flow direction shifts from a radial outward to radial inward depending on precipitation. Overall, the regional general direction of groundwater flow across the Harbor Island is west to southwest towards Lake Michigan.

2.3 Groundwater Gradient and Flow Velocity

Groundwater flow rates at the site have been calculated based on hydraulic gradients, hydraulic conductivity, and an estimated effective porosity of the screened horizon as provided in the *Groundwater Monitoring System Certification* (ERM, 2017). Based on the information provided by ERM, assumed hydraulic conductivity ranges from 27 to 53 feet per day with an assumed effective porosity of 30 percent. As described above, the recently calculated hydraulic conductivity for the Site is an average range of 0.19 feet per day to 242 feet per day and is highly dependent on the fill materials at each location. This wide range of variability is the result of the varying fill materials that form Harbor Island. In addition, a calculated hydraulic conductivity for the piezometers located on the eastern side of the wetland is an average 8.34 feet per day.

Horizontal flow velocity was calculated using the commonly-used derivative of Darcy's Law:

Specifically,

$$V = \frac{K * i}{n_e}$$

V = Groundwater flow velocity

K = Average Permeability of the aquifer

i = Horizontal hydraulic gradient

N_e = Effective porosity

Using this equation, groundwater flow velocities were calculated for the site from three well pairs (MW-01R/MW-03, MW-01R/PZ-13, and MW-01R/PZ-18). Groundwater flow velocity at the site ranges from 0.3 to 1,200 feet per year around the mounding observed around the substation. In addition, groundwater flow velocities were calculated from three well pairs (PZ-12/PZ-27, PZ-27/PZ-25, and PZ-27/PZ-26) on the eastside of the wetland. Groundwater flow velocity at the site ranges from 0.01 to 7 feet per year on the eastside of the wetland.

The calculated flow velocities are best estimates based on field data and default data for soils, and therefore, these velocities should not be taken as absolute values, but rather as estimated values that may vary with future data collected at the site. The field summary report will include the detailed aquifer performance testing. An updated Hydrogeologic Monitoring Plan (HMP) and Groundwater Monitoring System Certification will be submitted following the collection of background groundwater quality data from the proposed detection monitoring locations.

2.4 Groundwater Sampling

Groundwater samples were collected in accordance with the Federal CCR Rule and PA 640 Part 115 amendment. Monitoring wells were purged and sampled using a peristaltic pump following low-flow sampling procedures. A multi parameter meter was used to monitor field parameters, namely: pH, temperature, conductivity, dissolved oxygen (DO), and oxidation-reduction potential (ORP), during well purging to verify stabilization prior to sampling. Turbidity is also recorded during purging using a field meter to verify stabilization. Groundwater samples were collected when the following general stabilization criteria were met:

- 0.2 standard units for pH
- 5% for specific conductance
- 0.2 milligrams per liter (mg/L) or 10% for DO > 0.5 mg/L (whichever is greater)
- Turbidity measurements less than 5 Nephelometric Turbidity Units (NTU)

Any deviation from stabilization criteria, if applicable, is identified on field sampling forms. Following well stabilization, unfiltered samples were collected directly into appropriately preserved laboratory supplied sample containers, placed in iced coolers, and submitted to the laboratory following standard chain-of-custody protocol. Field information forms as well as chain-of-custody records are included in Appendix B.

2.5 Laboratory Analyses

Groundwater samples collected for each monitoring well included both detection and assessment monitoring constituents pursuant to the PA 640 Part 115 amendment. Laboratory analyses were performed by Trace in Muskegon, Michigan with the radium laboratory analysis subcontracted to Eurofins, Eaton Analytical (Eurofins) in South Bend, Indiana. Analytical methods used for groundwater sample analysis are listed on the analytical laboratory reports included in Appendix B.

3.0 ANALYTICAL RESULTS AND STATISTICAL ANALYSES

Statistical analysis of detection and assessment monitoring constituents was performed on samples collected from the current groundwater monitoring network pursuant to the Federal CCR Rule and following the appropriate certified statistical methodology.

As described in Part 115 Rule 908 (6), statistical analysis at each monitoring well must be completed and submitted to EGLE within 30 days of the end of the calendar quarter in which sampling and analysis was conducted. As stated in the Introduction, this statistical analysis is a preliminary evaluation since a revised detection monitoring well network is still being established. A separate field summary report with a list of proposed new detection monitoring locations as well as a proposed sampling frequency for background groundwater quality data collection is forth coming.

The statistical methodology used for the Site was developed in accordance with the Federal CCR Rule using methods presented in *Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance*, March 2009, EPA 530/R-09-007 (USEPA, 2009).

3.1 Statistical Methodology

The Sanitas™ groundwater statistical software was used to perform the statistical analyses on detection and assessment monitoring constituents during the fourth quarter 2021 monitoring period. Sanitas™ is a decision support software package that incorporates the statistical tests required of Subtitle C and D facilities by USEPA regulations.

The following table provides a summary of the statistical methodology used for the Inactive 1/2 Impoundment groundwater monitoring.

STATISTICAL METHODOLOGY SUMMARY		
Inactive 1/2 Impoundments Monitoring Well Network	Background Wells	MW-07 (interim background location)
	Detection Monitoring Wells	MW-01R, MW-05, MW-06, and MW-08 (pending further evaluation)
	Assessment Monitoring Wells	MW-02, MW-03, MW-04, MW-09, and MW-10 (pending further evaluation)
CCR Monitoring Constituents	Detection Monitoring (PA 640 Sec. 11511a(3)(c))	Boron, Calcium, Chloride, Fluoride, Iron, pH, Sulfate, and TDS
	Assessment Monitoring (PA 640 Sec. 11519b(2) plus above listed Detection Monitoring)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, combined Radium 226 + 228, Fluoride, Lead, Lithium, Nickel, Mercury, Molybdenum, Selenium, Silver, Thallium, Vanadium, Zinc, and the above listed detection monitoring constituents in accordance with the Part 115 Amendment
Statistical Methodology	Data Screening on Proposed Background	Evaluate outliers, trends, and seasonality when sufficient data are available
	Statistical Limits	Interwell statistical limits will be applied on a constituent basis, depending on the appropriateness of the method as determined by the Analysis of Variance
	Confidence Intervals	Used in Assessment and Corrective Action monitoring.

STATISTICAL METHODOLOGY SUMMARY		
Statistical Methodology - continued	No Statistical Testing	Statistical testing is not required for constituents with 100% non-detects.
	Verification Resample Plan (Optional)	1-of-2 with minimum of 8 samples per well for interwell testing. <ul style="list-style-type: none"> ▪ Initial statistical exceedance warrants independent resampling within 90 days. ▪ If resample passes, well/constituents is not a confirmed SSI. ▪ If resample exceeds, well/constituents has a confirmed SSI. If no resample is collected, the original result is deemed verified.

3.1.1 Detection Monitoring

Groundwater quality data was evaluated through use of interwell prediction limits for detection monitoring constituents. The Interwell Prediction Limit Plots are presented in Appendix A-1, Interwell Prediction Limits and Tolerance Limit Plots. Using these methods, upgradient well data was pooled to establish a background statistical limit. Data are compared to the statistical limit to determine whether any concentrations exceed background levels. The selected statistical methodology uses an optional 1-of-2 verification resample plan. When an initial statistically significant increase (SSI) or questionable result occurs, a second sample may be collected to verify the initial result or determine if the result was an outlier.

If resampling is performed and the initial finding is not verified by resampling, the resampled value will replace the initial finding. When the resample confirms the initial finding, both values remain in the database and an SSI is declared.

The following guidance is also applicable to the statistical analysis methods:

- Statistical analyses are not performed on analytes containing 100% non-detects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain less than or equal to 15% non-detects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for non-detects is the practical quantitation limit (PQL) as reported by the laboratory.
- When data contain between 15-50% non-detects, a non-detect adjustment such as the Kaplan-Meier or Regression on Order Statistics (ROS) method for adjustment of the mean and standard deviation will be used prior to constructing a parametric prediction limit.
- Nonparametric prediction limits are used on data containing greater than 50% non-detects.

3.1.2 Assessment Monitoring

Following the above statistical methodology, groundwater protection standards (GWPS) have been established for statistical comparison of assessment monitoring constituents. Parametric tolerance limits were used to calculate background limits from pooled upgradient well data (MW-07) for assessment monitoring constituents with a target of 95% confidence and 95% coverage to determine the site-specific background level. The interwell tolerance limit plots are presented in Appendix A-1. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. Since the closure evaluation is not

complete for the Inactive 1/2 Impoundments, these limits were used to identify the GWPS established under 40 CFR §257.95(h) and Rule 441(9).

As described in 40 CFR §257.95(h) and Rule 441, the GWPS is:

- The lower of the following
 - The maximum contaminant level (MCL) established under 40 CFR § 141.62 and § 141.66 of this title;
 - Where an MCL has not been established, background concentration for the constituent established in accordance with 40 CFR § 257.91; or a rule specified limit (RSL) identified for Cobalt, Lead, Lithium, or Molybdenum;
 - Michigan Part 201 Generic Cleanup Criteria and Screening Levels
 - Ground Surface Water Interface (GSI) criteria is applicable
 - Drinking Water Criteria (residential and non-residential criteria) may not be an applicable criterion. It is Golder’s opinion that since drinking water wells will not be installed at the site nor on the Island since there is known impacts on Harbor Island that the DWC does not apply. Plus, the City of Grand Haven has a city ordinance preventing drinking water wells on properties with historical impacts. In addition, GHBLP is considering filing a restrictive covenant for the property to further prevent the installation of drinking water wells on the property.
 - Indoor Air Criteria, Ambient Air Criteria, Direct Contact Criteria, and Soil Saturation Concentration Screening Levels (Csat) is not applicable since GSI is more strict
- Background level for constituents where the background concentration is higher than the MCL, RSL, or applicable Michigan Part 201 screening levels.

Following the above rule requirements, GWPS have been established for statistical comparison of assessment monitoring constituents. Site-Specific GWPS summarizes the background limit established at each monitoring well and the GWPS used for statistical comparison.

Interim Site-Specific Groundwater Protection Standards						
Analyte	Units ^[1]	Screening Levels ^[2]				Interim GWPS
		RSL	MCL	Michigan Part 201 GSI	Interim Site-Specific Background	
Part 115 Detection Monitoring Constituents (PA 640 Sec. 11511a(3)(c))						
Boron ^[3]	mg/L	N/R	N/R	7.2	16	16
Calcium ^[3]	mg/L	N/R	N/R	N/R	200	200
Chloride ^[3]	mg/L	N/R	N/R	150	15	150
Fluoride ^[4]	mg/L	N/R	4	2.67	0.2254	2.67
pH ^[3]	S.U.	N/R	N/R	6.5-9.0	5.9-8.6	6.5-9.0
Iron ^[3]	mg/L	N/R	N/R	N/R	25.01	25.01
Sulfate ^[3]	mg/L	N/R	N/R	370	82.4	370
Total Dissolved Solids ^[3]	mg/L	N/R	N/R	500	867	867
Part 115 Assessment Monitoring Constituents (PA 640 Sec. 11519b(2) plus Detection Monitoring Constituents)						
Antimony	mg/L	N/R	0.006	0.13	0.0016	0.006
Arsenic	mg/L	N/R	0.01	0.01	0.0048	0.01
Barium ^[4]	mg/L	N/R	2	1.2	0.52	1.2

Interim Site-Specific Groundwater Protection Standards						
Analyte	Units ^[1]	Screening Levels ^[2]				Interim GWPS
		RSL	MCL	Michigan Part 201 GSI	Interim Site-Specific Background	
Beryllium	mg/L	N/R	0.004	0.031	0.002	0.004
Cadmium ^[4]	mg/L	N/R	0.005	0.0025	0.0006	0.0025
Chromium ^[4]	mg/L	N/R	0.1	0.12	0.0028	0.1
Cobalt	mg/L	0.006	N/R	0.1	0.001	0.006
Copper ^{[3][5]}	mg/L	N/R	1.3	0.020	0.0040	0.02
Fluoride ^[4]	mg/L	N/R	4	2.67	0.2	2.67
Lead	mg/L	0.015	N/R	0.014	0.0029	0.014
Lithium	mg/L	0.04	N/R	0.44	0.059	0.059
Mercury	mg/L	N/R	0.002	0.0000013	0.00014	0.00014
Molybdenum	mg/L	0.1	N/R	3.2	0.007	0.1
Nickel ^{[3][5]}	mg/L	N/R	N/R	0.11	0.0022	0.11
Radium (226 + 228)	pCi/L	N/R	5	N/R	2.12	5
Selenium ^[4]	mg/L	N/R	0.05	0.005	0.002	0.005
Silver ^{[3][5]}	mg/L	N/R	N/R	0.00006	0.001	0.001
Thallium	mg/L	N/R	0.002	0.0037	0.001	0.002
Vanadium ^[3]	mg/L	N/R	N/R	0.027	0.00089	0.027
Zinc ^{[3][5]}	mg/L	N/R	5.0	0.27	0.021	0.27

Notes:

[1] – Units for each constituent: mg/L = milligram per liter, S.U. = standard units, pCi/L = picocuries per liter

[2] – N/R = no reported screening level.

[3] – State of Michigan only, not part of the Federal CCR Rule.

[4] – State of Michigan criteria is stricter than the applicable criteria for the Federal CCR Rule.

[5] – insufficient number of observations available for calculating site specific background using interwell tolerance limits, therefore interwell prediction limits is used.

Using the interim calculated GWPS as identified above, confidence intervals were then constructed on downgradient wells for each of the detection and assessment monitoring constituents. Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard and a statistically significant level (SSL) is declared.

3.2 Statistical Analysis Results

Analytical data from the fourth quarter 2021 monitoring event were statistically analyzed in accordance with the Statistical Analysis Plan (Golder, 2017). Verification resampling to confirm initial SSIs was not performed; therefore, the one (1) initial statistical exceedance from iron at monitoring well MW-08 is considered an SSI.

3.2.1 Data Screening

The initial step in the statistical evaluation is identifying potential outliers, trends, and seasonality with the analytical data. A summary of the analytical data is provided on Table 2, Analytical Results Summary. There were no outliers identified for the fourth quarter 2021 analytical data.

In addition, Mann-Kendall/Sen's Slope trend tests were performed for the downgradient monitoring wells. The significant trend plots for the constituents for the downgradient monitoring wells is presented in Appendix A-2, Trend Plots. Only statistically significant positive trends are considered potentially problematic; statistically significant negative trends generally are interpreted to indicate improving groundwater quality. Of the significant trends noted during the fourth quarter 2021 monitoring period, the majority were significant decreasing or negative trends while eight (8) were significant increasing or positive trends. A summary of the eight (8) significant positive trends for the monitoring wells is included below.

- Barium in MW-06, MW-08, and MW-10
- Calcium in MW-02
- Chromium in MW-03
- Combined Radium in MW-03 and MW-07
- Fluoride in MW-05

Based on review of the trend plots presented in Appendix A-2, the identified trends noted above are the result of geochemical variability in the subsurface likely influenced by historical ash and waste fill on the island coupled with varying groundwater elevations and flow directions influence by site recharge and elevations of the Grand River. Additionally, laboratory variability and changes to geochemical variability following the installation of the well can account for the some of the trends noted when including all of the monitoring well data to evaluate overall trends. Thus, no data correction is necessary at this time, and the data, as reported, are useable for further statistical evaluation.

3.2.2 Detection Monitoring Statistical Results

Analytical data from the fourth quarter 2021 monitoring event for the Inactive 1/2 Impoundment detection monitoring constituents have been statistically analyzed in accordance with the site's Statistical Analysis Plan.

The interwell prediction limit plots for detection monitoring constituents are presented in Appendix A-1. Review of the Sanitas™ results indicates that the following SSIs were identified during the fourth quarter 2021 monitoring event:

Inter-Well Prediction Limit Statistically Significant Increase Summary	
Detection Monitoring Constituents	Inactive 1/2 Impoundment Network
Boron	MW-01R
Calcium	MW-01R and MW-05
Chloride	MW-01R, MW-05, MW-06, and MW-08
Fluoride	MW-01R
Iron	MW-08
pH	No SSIs observed
Sulfate	MW-01R and MW-05
Total Dissolved Solids	MW-01R, MW-05, and MW-06

Based on the SSIs identified at the site, assessment monitoring was originally initiated on April 9, 2018.

3.2.3 Assessment Monitoring Statistical Results

Review of the statistical results for the fourth quarter 2021 monitoring event indicates that SSLs were identified for assessment monitoring constituents using confidence intervals (CI). The confidence intervals using the site specific GWPS are presented in Appendix A-3, Confidence Intervals.

A summary of the SSLs is provided below.

Confidence Interval Exceedance Summary	
Assessment Monitoring Constituents	Inactive 1/2 Impoundment Network
Part 115 Detection Monitoring Constituents (PA 640 Sec. 11511a(3)(c))	
Boron	MW-01R, MW-02, and MW-10
Calcium	MW-03, MW-04, MW-05, and MW-09
Chloride	MW-01R, MW-03, MW-04, and MW-10
Sulfate	MW-01R, MW-03, and MW-04
Total Dissolved Solids	MW-01R, MW-02, MW-03, MW-04, MW-05, MW-06, and MW-10
Part 115 Assessment Monitoring Constituents (PA 640 Sec. 11519b(2))	
Arsenic	MW-05
Fluoride	MW-01R, MW-02, and MW-10
Lithium	MW-01R, MW-02, MW-05, MW-06, MW-09, and MW-10

In response to the SSLs identified for the Inactive 1/2 Impoundment, assessment of corrective measures (ACM) was initiated on February 8, 2019. The documentation of the assessment of corrective measures was halted pending EPA and EGLE concurrence regarding the delineation of the Inactive Unit 1/2 Impoundment and an alternate approved monitoring network. Following determination and concurrence of the detection monitoring well network, the ACM will be completed, and remedy selection alternatives identified. GHBLP will pursue groundwater corrective action following the provisions of 40 CFR 257.96.

4.0 CONCLUSIONS

The detection monitoring well network is currently being re-evaluated, alternate background monitoring wells are being considered, and statistical results are expected to change. As stated previously, a field summary report with revised detection monitoring locations is forthcoming. Following concurrence from EGLE, GHBLP will implement background groundwater quality data from the revised detection monitoring locations. An updated HMP and Groundwater Monitoring System Certification is expected following review of the background groundwater quality data. Therefore, the purpose of this report is to comply with Rule 907(11) and Rule 908(6) and monitoring well MW-07 was used as an interim background well until a better understanding of groundwater flow is determined.

The preliminary statistical evaluations, using the interim background well location, of the groundwater monitoring data for the Inactive 1/2 Impoundment identified SSLs of detection monitoring constituents above prediction limits and SSLs of assessment monitoring constituents above the GWPS.

The following SSLs were identified above the GWPS during the fourth quarter monitoring event.

- Arsenic (preliminary GWPS of 0.01 mg/L)
 - MW-05 (CI range 0.063-0.16 mg/L)
- Boron (preliminary GWPS of 16 mg/L)
 - MW-01R (CI range 140-190 mg/L)
 - MW-02 (CI range 99-138 mg/L)
 - MW-10 (CI range 39-50 mg/L)
- Calcium (preliminary GWPS of 200 mg/L)
 - MW-03 (CI range 540-620 mg/L)
 - MW-04 (CI range 421-463 mg/L)
 - MW-05 CI range 240-560 mg/L)
 - MW-09 (CI range 228-258 mg/L)

- Chloride (preliminary GWPS of 150 mg/L)
 - MW-01R (CI range 251-264 mg/L)
 - MW-03 (CI range 360-454 mg/L)
 - MW-04 (CI range 241-314 mg/L)
 - MW-010 (CI range 412-604 mg/L)
- Fluoride (preliminary GWPS of 2.67 mg/L)
 - MW-01R (CI range 20-26 mg/L)
 - MW-02 (CI range 10-13 mg/L)
 - MW-10 (CI range 10-12 mg/L)
- Lithium (preliminary GWPS of 0.059 mg/L)
 - MW-01R (CI range 2.4-3.1 mg/L)
 - MW-02 (CI range 1.2-1.5 mg/L)
 - MW-05 (CI range 0.07-0.13 mg/L)
 - MW-06 (CI range 0.17-0.23 mg/L)
 - MW-09 (CI range 0.16-0.26 mg/L)
 - MW-10 (CI range 0.98-1.5 mg/L)
- Sulfate (preliminary GWPS of 370 mg/L)
 - MW-01R (CI range 528-761 mg/L)
 - MW-03 (CI range 486-972 mg/L)
 - MW-04 (CI range 639-802 mg/L)
- TDS (preliminary GWPS of 867 mg/L)
 - MW-01R (CI range 3,200-3,500 mg/L)
 - MW-02 (CI range 1,900-2,400 mg/L)
 - MW-03 (CI range 2,800-3,500 mg/L)
 - MW-04 (CI range 1,900-2,400 mg/L)
 - MW-05 (CI range 900-2,400 mg/L)
 - MW-06 (CI range 1,200-1,600 mg/L)
 - MW-10 (CI range 1,500-1,900 mg/L)

There is evidence of other potential sources for the groundwater impacts observed in groundwater monitoring wells in the Inactive 1/2 Impoundment groundwater monitoring network, including:

- Historical ash placed as beneficial fill outside the boundary of the Inactive 1/2 Impoundment
- Historical waste placement at the JB Sims site

These other potential sources currently exist on the JB Sims site and should be considered as likely influences on the groundwater quality at the site. The Site will remain in assessment monitoring and pursue remedial alternatives until the groundwater quality has returned to background conditions or is below GWPS at each of the detection monitoring wells.

GHBLP is working with USEPA and EGLE to further evaluate the groundwater monitoring well networks at JB Sims. A field summary report with revised detection monitoring locations is forthcoming. GHBLP anticipates submitting a proposed expanded groundwater monitoring network in 2022. GHBLP will continue to address the groundwater impacts at JB Sims following the requirements of the PA 640 Part 115 amendment.

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TABLES

- Table 1 - Summary of Locations
- Table 2 - Groundwater Elevation Summary
- Table 3 - Analytical Results Summary

TABLE 1.
SUMMARY OF LOCATIONS
JB Sims Generating Station
Fourth Quarter 2021 Monitoring Report

Location Identification	Current Groundwater Monitoring Networks		Coordinates		Date Installed	Ground Surface Elevation (feet MSL)	Top of Casing (Staff Gauge) Elevation (feet MSL)	Total Well Depth (Total Boring Depth) (ft)	Screen Interval (ft)	Comments
	Inactive 1/2 Impoundment	Former 3 A/B Impoundments	Northing	Easting						
Monitoring Wells										
MW-01R	Detection	Detection	578101.30	12624432.00	5/1/2020	585.73	588.45	10.00	5-10	
MW-02	Assessment	Detection	578241.91	12624222.64	1/18/2017	592.67	595.64	23.37	15-20	
MW-03	Assessment	Detection	578125.03	12624180.40	1/18/2017	590.42	593.08	20.34	12-17	
MW-04	Assessment	Detection	578003.96	12624165.24	1/18/2017	588.66	591.49	18.00	10-15	
MW-05	Detection	Piezometer	577970.06	12624634.16	5/22/2018	585.31	587.67	11.50	4-9	
MW-06	Detection	Piezometer	578229.40	12624525.24	5/22/2018	588.22	590.40	16.55	9-14	
MW-07	Detection	Detection/Background	577585.75	12625513.56	5/22/2018	583.65	586.49	18.80	11-16	
MW-08	Detection	Piezometer	578261.14	12625341.26	5/22/2018	582.74	585.40	11.85	4-9	
MW-09	Assessment	Assessment	578241.35	12624185.62	8/12/2019	586.80	589.65	12.00	7-12	
MW-10	Assessment	Piezometer	578367.40	12624470.20	8/12/2019	583.71	586.73	10.00	5-10	
Piezometers										
PZ-11	Site-wide Water Levels		578236.87	12624377.19	8/19/2021	592.46	595.27	15 (40)	10-15	
PZ-12	Site-wide Water Levels		577987.57	12624312.28	8/17/2021	584.94	588.03	8 (40)	3-8	
PZ-13	Site-wide Water Levels		577623.94	12624190.94	8/17/2021	583.23	586.08	9 (34)	4-9	
PZ-14	Site-wide Water Levels		577191.85	12624160.04	8/16/2021	583.46	586.39	8 (35)	3-8	
PZ-15	Site-wide Water Levels		577062.51	12624730.23	8/25/2021	589.32	592.38	20 (40)	15-20	
PZ-16	Site-wide Water Levels		577273.65	12625194.83	8/25/2021	582.18	584.87	8 (35)	3-8	
PZ-17	Site-wide Water Levels		577652.81	12624744.16	8/17/2021	584.03	587.02	8 (40)	3-8	
PZ-18	Site-wide Water Levels		577919.12	12624742.18	8/18/2021	584.12	587.22	8 (34)	3-8	
PZ-19	Site-wide Water Levels		577938.05	12624957.16	8/20/2021	583.06	585.86	8 (25)	3-8	
PZ-20	Site-wide Water Levels		577722.50	12625131.40	8/18/2021	582.43	585.74	8 (34)	3-8	
PZ-21	Site-wide Water Levels		577941.39	12625280.33	8/30/2021	NA	583.32	9 (30)	4-9	Located in standing water
PZ-22	Site-wide Water Levels		578056.88	12625387.96	8/31/2021	NA	583.42	9 (22)	4-9	Located in standing water

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	Inactive 1/2 Impoundment	Former 3 A/B Impoundments	Northing	Easting						
Piezometers - continued										
PZ-23	Site-wide Water Levels		577627.71	12625841.35	8/25/2021	584.39	587.21	9 (25)	4-9	
PZ-24	Site-wide Water Levels		577884.70	12625979.33	8/24/2021	583.92	587.34	9 (30)	4-9	
PZ-25	Site-wide Water Levels		577703.65	12626240.18	8/24/2021	583.46	586.37	8 (30)	3-8	
PZ-26	Site-wide Water Levels		578114.39	12626145.22	8/23/2021	583.81	586.27	8 (30)	3-8	
PZ-27	Site-wide Water Levels		578303.89	12626551.81	8/23/2021	581.87	585.09	8 (40)	3-8	
PZ-28	Site-wide Water Levels		578314.93	12625722.71	8/23/2021	585.11	588.07	9 (29.5)	4-9	
PZ-29	Site-wide Water Levels		578138.08	12625241.56	8/30/2021	NA	583.49	9 (35)	4-9	Located in standing water
PZ-30	Site-wide Water Levels		578196.17	12624990.23	8/19/2021	583.02	585.80	8 (34)	3-8	
PZ-31	Site-wide Water Levels		578307.16	12624752.70	9/1/2021	582.56	585.85	8 (27)	3-8	
PZ-32	Site-wide Water Levels		578348.32	12624980.14	8/30/2021	583.08	586.26	8 (40)	3-8	
Staff Gauges										
SG-01	Site-wide Water Levels		578234.49	12624159.06	8/12/2019	NA	585.10	NA	NA	Located in standing water
SG-02	Site-wide Water Levels		578287.85	12624784.61	8/12/2019	NA	583.43	NA	NA	Located in standing water
SG-03	Site-wide Water Levels		578201.99	12624858.11	8/12/2019	NA	584.37	NA	NA	Located in standing water
SG-04R	Site-wide Water Levels		577966.13	12624647.67	6/9/2020	NA	585.04	NA	NA	Located in standing water
SG-05	Site-wide Water Levels		577717.81	12624888.51	8/12/2019	NA	584.83	NA	NA	Damaged in 2021
SG-06	Site-wide Water Levels		578227.56	12625365.56	8/12/2019	NA	584.88	NA	NA	Damaged in 2021
Stilling Wells										
STW-1	Site-wide Water Levels		578433.87	12625522.16	9/3/2021	NA	583.03	NA	NA	Located in standing water
STW-2	Site-wide Water Levels		577340.30	12625423.18	9/2/2021	NA	583.47	NA	NA	Located in standing water
STW-3	Site-wide Water Levels		577771.11	12624083.74	9/3/2021	NA	591.17	NA	NA	Located in standing water

Notes:

MSL = mean sea level.

NA = Not available

TABLE 2.
GROUNDWATER ELEVATION SUMMARY
JB Sims Generating Station
 Fourth Quarter 2021 Monitoring Report

Location Identification	Top of Casing (Staff Gauge) Elevation (feet MSL)	October 1, 2021			October 25, 2021		
		Date	Depth to Water (ft)	Groundwater Elevation	Date	Depth to Water (ft)	Groundwater Elevation
Monitoring Wells							
MW-01R	588.45	10/1/2021	7.01	581.44	10/25/2021	6.23	582.22
MW-02	595.64	10/1/2021	14.70	580.94	10/25/2021	14.71	580.93
MW-03	593.08	10/1/2021	12.07	581.01	10/25/2021	11.90	581.18
MW-04	591.49	10/1/2021	10.46	581.03	10/25/2021	10.22	581.27
MW-05	587.67	10/1/2021	6.54	581.13	10/25/2021	5.90	581.77
MW-06	590.40	10/1/2021	9.26	581.14	10/25/2021	8.50	581.90
MW-07	586.49	10/1/2021	5.43	581.06	10/25/2021	5.25	581.24
MW-08	585.40	10/1/2021	4.31	581.09	10/25/2021	4.04	581.36
MW-09	589.65	10/1/2021	8.58	581.07	10/25/2021	8.49	581.16
MW-10	586.73	10/1/2021	5.70	581.03	10/25/2021	5.32	581.41
Piezometers							
PZ-11	595.27	10/1/2021	14.00	581.27	10/25/2021	NR	NM
PZ-12	588.03	10/1/2021	6.83	581.20	10/25/2021	NR	NM
PZ-13	586.08	10/1/2021	4.96	581.12	10/25/2021	4.60	581.48
PZ-14	586.39	10/1/2021	5.32	581.07	10/25/2021	4.70	581.69
PZ-15	592.38	10/1/2021	11.15	581.23	10/25/2021	10.84	581.54
PZ-16	584.87	10/1/2021	3.86	581.01	10/25/2021	3.67	581.20
PZ-17	587.02	10/1/2021	5.85	581.17	10/25/2021	5.42	581.60
PZ-18	587.22	10/1/2021	6.15	581.07	10/25/2021	5.62	581.60
PZ-19	585.86	10/1/2021	4.78	581.08	10/25/2021	4.53	581.33
PZ-20	585.74	10/1/2021	4.78	580.96	10/25/2021	4.53	581.21
PZ-21	583.32	10/1/2021	2.18	581.14	10/25/2021	NR	NM
PZ-22	583.42	10/1/2021	2.35	581.07	10/25/2021	NR	NM
PZ-23	587.21	10/1/2021	6.50	580.71	10/25/2021	5.76	581.45
PZ-24	587.34	10/1/2021	6.61	580.73	10/25/2021	6.13	581.21
PZ-25	586.37	10/1/2021	5.26	581.11	10/25/2021	5.00	581.37
PZ-26	586.27	10/1/2021	5.52	580.75	10/25/2021	4.60	581.67
PZ-27	585.09	10/1/2021	4.40	580.69	10/25/2021	3.24	581.85
PZ-28	588.07	10/1/2021	6.95	581.12	10/25/2021	6.70	581.37
PZ-29	583.49	10/1/2021	2.24	581.25	10/25/2021	NR	NM
PZ-30	585.80	10/1/2021	5.02	580.78	10/25/2021	NR	NM
PZ-31	585.85	10/1/2021	4.81	581.04	10/25/2021	4.10	581.75
PZ-32	586.26	10/1/2021	5.25	581.01	10/25/2021	4.95	581.31
Staff Gauges							
SG-01	585.10	10/1/2021	NM	NM	10/25/2021	NR	NM
SG-02	583.43	10/1/2021	1.44	581.99	10/25/2021	NR	NM
SG-03	584.37	10/1/2021	NM	NM	10/25/2021	NR	NM
SG-04R	585.04	10/1/2021	3.38	581.66	10/25/2021	NR	NM
SG-05	584.83	10/1/2021	NM	NM	10/25/2021	NR	NM
SG-06	584.88	10/1/2021	NM	NM	10/25/2021	NR	NM
Stilling Wells							
STW-1	583.03	10/1/2021	1.88	581.15	10/25/2021	NR	NM
STW-2	583.47	10/1/2021	2.41	581.06	10/25/2021	NR	NM
STW-3	591.17	10/1/2021	10.10	581.07	10/25/2021	NR	NM

Notes:

MSL = mean sea level.

NA = Not available

TABLE 2.
GROUNDWATER ELEVATION SUMMARY
JB Sims Generating Station
 Fourth Quarter 2021 Monitoring Report

Location Identification	Top of Casing (Staff Gauge) Elevation (feet MSL)	November 23, 2021			December 17, 2021		
		Date	Depth to Water (ft)	Groundwater Elevation	Date	Depth to Water (ft)	Groundwater Elevation
Monitoring Wells							
MW-01R	588.45	11/23/2021	6.74	581.71	12/17/2021	6.36	582.09
MW-02	595.64	11/23/2021	15.68	579.96	12/17/2021	15.88	579.76
MW-03	593.08	11/23/2021	12.86	580.22	12/17/2021	12.61	580.47
MW-04	591.49	11/23/2021	11.08	580.41	12/17/2021	10.82	580.67
MW-05	587.67	11/23/2021	6.26	581.41	12/17/2021	6.28	581.39
MW-06	590.40	11/23/2021	9.06	581.34	12/17/2021	8.86	581.54
MW-07	586.49	11/23/2021	6.21	580.28	12/17/2021	6.02	580.47
MW-08	585.40	11/23/2021	5.05	580.35	12/17/2021	4.94	580.46
MW-09	589.65	11/23/2021	9.35	580.30	12/17/2021	9.09	580.56
MW-10	586.73	11/23/2021	6.47	580.26	12/17/2021	6.21	580.52
Piezometers							
PZ-11	595.27	11/23/2021	14.00	581.27	12/17/2021	13.75	581.52
PZ-12	588.03	11/23/2021	6.85	581.18	12/17/2021	6.28	581.75
PZ-13	586.08	11/23/2021	5.65	580.43	12/17/2021	5.45	580.63
PZ-14	586.39	11/23/2021	5.64	580.75	12/17/2021	5.40	580.99
PZ-15	592.38	11/23/2021	11.76	580.62	12/17/2021	11.58	580.80
PZ-16	584.87	11/23/2021	4.64	580.23	12/17/2021	4.48	580.39
PZ-17	587.02	11/23/2021	6.16	580.86	12/17/2021	6.00	581.02
PZ-18	587.22	11/23/2021	6.51	580.71	12/17/2021	6.41	580.81
PZ-19	585.86	11/23/2021	5.36	580.50	12/17/2021	5.23	580.63
PZ-20	585.74	11/23/2021	5.30	580.44	12/17/2021	5.31	580.43
PZ-21	583.32	11/23/2021	NM	NM	12/17/2021	2.85	580.47
PZ-22	583.42	11/23/2021	NM	NM	12/17/2021	2.90	580.52
PZ-23	587.21	11/23/2021	6.68	580.53	12/17/2021	6.48	580.73
PZ-24	587.34	11/23/2021	6.64	580.70	12/17/2021	6.31	581.03
PZ-25	586.37	11/23/2021	5.98	580.39	12/17/2021	5.90	580.47
PZ-26	586.27	11/23/2021	5.47	580.80	12/17/2021	5.14	581.13
PZ-27	585.09	11/23/2021	4.52	580.57	12/17/2021	3.99	581.10
PZ-28	588.07	11/23/2021	7.78	580.29	12/17/2021	7.68	580.39
PZ-29	583.49	11/23/2021	3.08	580.41	12/17/2021	2.83	580.66
PZ-30	585.80	11/23/2021	5.28	580.52	12/17/2021	4.95	580.85
PZ-31	585.85	11/23/2021	4.69	581.16	12/17/2021	4.66	581.19
PZ-32	586.26	11/23/2021	5.59	580.67	12/17/2021	5.45	580.81
Staff Gauges							
SG-01	585.10	11/23/2021	NM	NM	12/17/2021	NM	NM
SG-02	583.43	11/23/2021	1.50	581.93	12/17/2021	1.68	581.75
SG-03	584.37	11/23/2021	2.72	581.65	12/17/2021	2.80	581.57
SG-04R	585.04	11/23/2021	3.48	581.56	12/17/2021	3.56	581.48
SG-05	584.83	11/23/2021	NM	NM	12/17/2021	NM	NM
SG-06	584.88	11/23/2021	NM	NM	12/17/2021	NM	NM
Stilling Wells							
STW-1	583.03	11/23/2021	2.83	580.20	12/17/2021	2.50	580.53
STW-2	583.47	11/23/2021	3.35	580.12	12/17/2021	3.30	580.17
STW-3	591.17	11/23/2021	10.93	580.24	12/17/2021	10.88	580.29

Notes:

MSL = mean sea level.

NA = Not available

**TABLE 3.
ANALYTICAL RESULTS SUMMARY
JB Sims Generating Station
Fourth Quarter 2021**

Analyte	Units	PQL	MDL	MW-01R	MW-02	MW-03	MW-04	MW-05	MW-06	MW-07	MW-08	MW-09	MW-10
Detection Monitoring													
BORON, TOTAL	mg/L	0.050	0.017	140	100	4.4	3.7	3.0	13	15	1.4	6.8	52
CALCIUM, TOTAL	mg/L	0.50	0.16	220	190	490	370	340	200	130	130	220	140
CHLORIDE, TOTAL	mg/L	0.75	0.60	230	140	330	170	22	200	14	30	13	520
FLUORIDE, TOTAL	mg/L	0.10	0.055	13	9.4	0.89	1.3	3.3	1.6	0.094 J	0.42	2.5	11
IRON, TOTAL	mg/L	0.20	0.13	1.7	22	4.5	5.2	2.5	13	16	29	19	10
pH	S.U.	NA	NA	7.8	6.48	6.91	6.74	7.43	7.6	7.01	6.74	7.31	7.42
SULFATE, TOTAL	mg/L	3.0	0.41	530	< 0.41	23	450	320	1.3 J	30	37	14	53
TOTAL DISSOLVED SOLIDS	mg/L	40	NA	3,600	2,000	2,500	1,900	1,300	1,300	630	630	880	2,000
Assessment Monitoring													
ANTIMONY, TOTAL	mg/L	<0.00030	<0.00030	0.00044	<0.00030	<0.00030	<0.00030	<0.00021	<0.00021	<0.00030	<0.00030	<0.00030	<0.00030
ARSENIC, TOTAL	mg/L	0.0010	0.00050	0.0046	0.012	0.0012	0.0019	0.04	0.0017	<0.0005	0.0067	0.0025	0.0011
BARIUM, TOTAL	mg/L	0.010	0.0013	0.20	0.50	0.47	0.12	0.087	1.6	0.36	1.0	5.0	1.5
BERYLLIUM, TOTAL	mg/L	0.0020	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00070	<0.00070	<0.0010	<0.0010	<0.0010	<0.0010
CADMIUM, TOTAL	mg/L	0.0010	0.00060	<0.00060	<0.00060	<0.00060	<0.00060	< 0.00042	0.00053 J	<0.00060	<0.00060	<0.00060	<0.00060
CHROMIUM, TOTAL	mg/L	0.00090	0.00070	0.0022	0.040	0.0041	0.0033	0.0017	0.0029	0.0010	0.0012	0.0029	0.011
COBALT, TOTAL	mg/L	0.0016	0.00050	0.0022	0.0055	0.0014 J	0.00079 J	0.00069 J	0.00082 J	0.00088 J	< 0.00050	< 0.00050	0.0011 J
COPPER, TOTAL	mg/L	0.0040	0.0018	< 0.0018	0.0022 J	< 0.0018	< 0.0018	< 0.0013	< 0.0013	< 0.0018	< 0.0018	< 0.0018	0.0050
LEAD, TOTAL	mg/L	0.0020	0.00050	0.0024	0.0018 J	< 0.00050	< 0.00050	< 0.00035	0.0014	< 0.00050	< 0.00050	< 0.00050	0.0012 J
LITHIUM, TOTAL	mg/L	0.010	0.0067	2.8	1.2	0.053	0.061	0.089	0.23	< 0.0067	0.043	0.26	1.4
MERCURY, TOTAL	mg/L	0.0000005	0.00000016	0.0000019	0.0000028	0.0000079	<0.0000016	<0.0000016	0.0000094	<0.0000016	<0.0000016	0.0000062	0.0000008
MOLYBDENUM, TOTAL	mg/L	0.00040	0.000093	0.0016	0.0045	0.00012 J	0.0015	0.0023	0.00076	< 0.000093	0.0037	0.017	0.012
NICKEL, TOTAL	mg/L	0.0050	0.0022	0.0039 J	0.017	0.0027 J	0.011	0.0015 J	0.0022 J	< 0.0022	< 0.0022	< 0.0022	0.0027 J
RADIUM (226 + 228)	pCi/L	1.0	NA	0.41	2.27	1.01	1.87	0.34 J	0.06 J	1.33	0.86	2.56	2.03
SELENIUM, TOTAL	mg/L	0.0020	0.0090	0.00097 J	0.0017 J	< 0.00090	< 0.00090	< 0.00063	< 0.00063	< 0.00090	< 0.00090	< 0.00090	< 0.00090
SILVER, TOTAL	mg/L	0.0010	0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00021	<0.00021	<0.00030	<0.00030	<0.00030	<0.00030
THALLIUM, TOTAL	mg/L	0.0010	0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00021	0.00030 J	<0.00030	<0.00030	<0.00030	<0.00030
VANADIUM, TOTAL	mg/L	0.00080	0.00050	0.0017	0.0039	0.0014	0.0010	0.00089	0.00083	0.00067 J	< 0.00050	< 0.00050	0.0018
ZINC, TOTAL	mg/L	0.020	0.018	<0.018	<0.018	<0.018	<0.018	<0.012	<0.012	<0.018	<0.018	<0.018	<0.018

NOTES:

mg/L - Milligrams per Liter

S.U. - standard units

pCi/L - picocuries per Liter

NA - Not available

J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL).

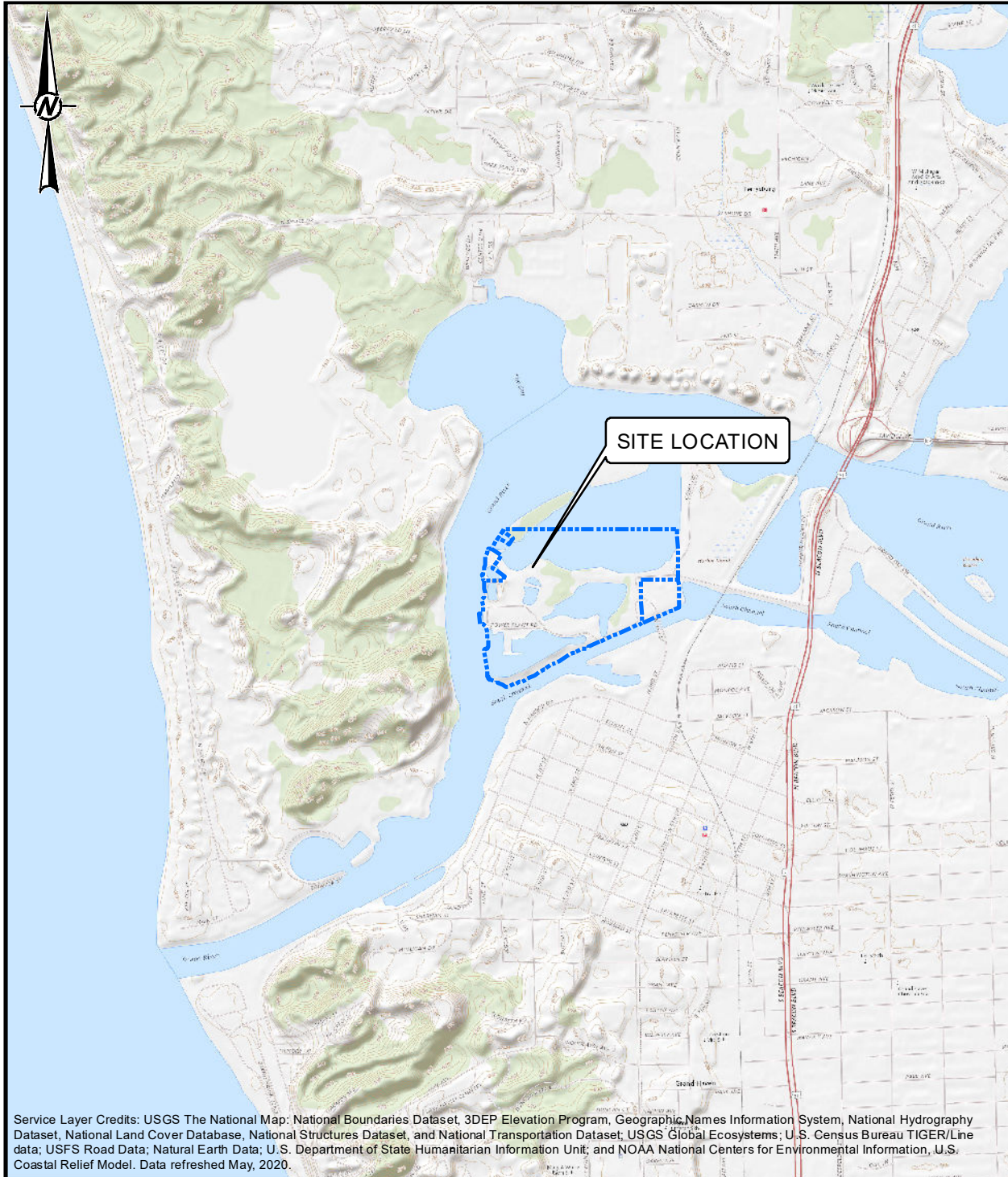
< - Constituent was analyzed, but was not detected above the MDL and is considered a non-detect.

FIGURES (Revised March 8, 2022)

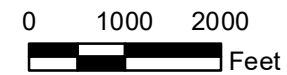
Figure 1 - Site Location Map

Figure 2 - Site Plan

Figures 3 through 6 - Groundwater Contour Maps



Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.



CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
 GRAND HAVEN, MICHIGAN

PROJECT
JB SIMS GENERATING STATION
 2021 QUARTERLY GROUNDWATER MONITORING

TITLE
SITE LOCATION MAP

CONSULTANT



YYYY-MM-DD 2021-04-05

PREPARED DJC

DESIGN CEP

REVIEW CEP

APPROVED DLP

PROJECT No.
 21461064

CONTROL
 20141048F000-GIS.mxd

Rev.
 0

FIGURE
 1





1in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANS.A



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REFERENCE
AERIAL PHOTOGRAPH COURTESY OF GOOGLE EARTH PRO; IMAGE DATE: 2021-03-18.

NOTES
1. HORIZONTAL COORDINATE SYSTEM BASED ON MICHIGAN STATE PLANE SOUTH, INTERNATIONAL FEET. VERTICAL DATUM IS NAVD 1988.
2. MONITORING WELLS AND STAFF GAUGES WERE SURVEYED BY DRIESEN & ASSOCIATES, INC. ON AUGUST 28, 2019. MW-1R AND SG-4R WERE SURVEYED BY DRIESEN & ASSOCIATES, INC. ON JUNE 17, 2020. PIEZOMETER AND STILLING WELLS WERE SURVEYED BY GOLDER ASSOCIATES ON OCTOBER 1, 2021.
3. SG-05* HAS BEEN REMOVED

- LEGEND**
-  MONITORING WELL
 -  STAFF GAUGE
 -  PIEZOMETER
 -  STILLING WELL

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT	YYYY-MM-DD	2021-10-08
 GOLDER MEMBER OF WSP	DESIGNED	CEP
	PREPARED	DJC
	REVIEWED	CEP
	APPROVED	DLP

PROJECT
JB SIMS GENERATING STATION
2021 QUARTERLY GROUNDWATER MONITORING

TITLE
SITE PLAN

PROJECT NO.	CONTROL	REV.	FIGURE
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN ADJUSTED FROM ANSI B



NORTHERN CHANNEL
REQUIRES INVESTIGATION



REFERENCE
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NOTES
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3. STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

- LEGEND**
- MONITORING WELL
 - STAFF GAUGE
 - PIEZOMETER
 - STILLING WELL
 - 581.0 GROUNDWATER CONTOURS
 - GROUNDWATER FLOW DIRECTION

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT	YYYY-MM-DD	2021-10-08
	DESIGNED	CEP
	PREPARED	DJC
	REVIEWED	CEP
	APPROVED	DLP

PROJECT
JB SIMS GENERATING STATION
2021 QUARTERLY GROUNDWATER MONITORING

TITLE	GROUNDWATER ELEVATION MAP	
PROJECT NO.	CONTROL	REV.
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1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



NORTHERN CHANNEL
REQUIRES INVESTIGATION

GRAND RIVER

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REFERENCE
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NOTES

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- STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

LEGEND

	MONITORING WELL
	STAFF GAUGE
	PIEZOMETER
	STILLING WELL
	GROUNDWATER CONTOURS
	GROUNDWATER FLOW DIRECTION

CLIENT		PROJECT	
GRAND HAVEN BOARD OF LIGHT AND POWER GRAND HAVEN, MICHIGAN		JB SIMS GENERATING STATION 2021 QUARTERLY GROUNDWATER MONITORING	
CONSULTANT		YYYY-MM-DD	2022-01-07
		DESIGNED	CEP
		PREPARED	DJC
		REVIEWED	CEP
		APPROVED	DLP

TITLE		PROJECT NO.		CONTROL		REV.		FIGURE	
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



NORTHERN CHANNEL
REQUIRES INVESTIGATION



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3. STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

LEGEND

- MONITORING WELL
- STAFF GAUGE
- PIEZOMETER
- STILLING WELL
- 581.0 GROUNDWATER CONTOURS
- GROUNDWATER FLOW DIRECTION

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT	YYYY-MM-DD	2021-12-10
	DESIGNED	CEP
	PREPARED	DJC
	REVIEWED	CEP
	APPROVED	DLP

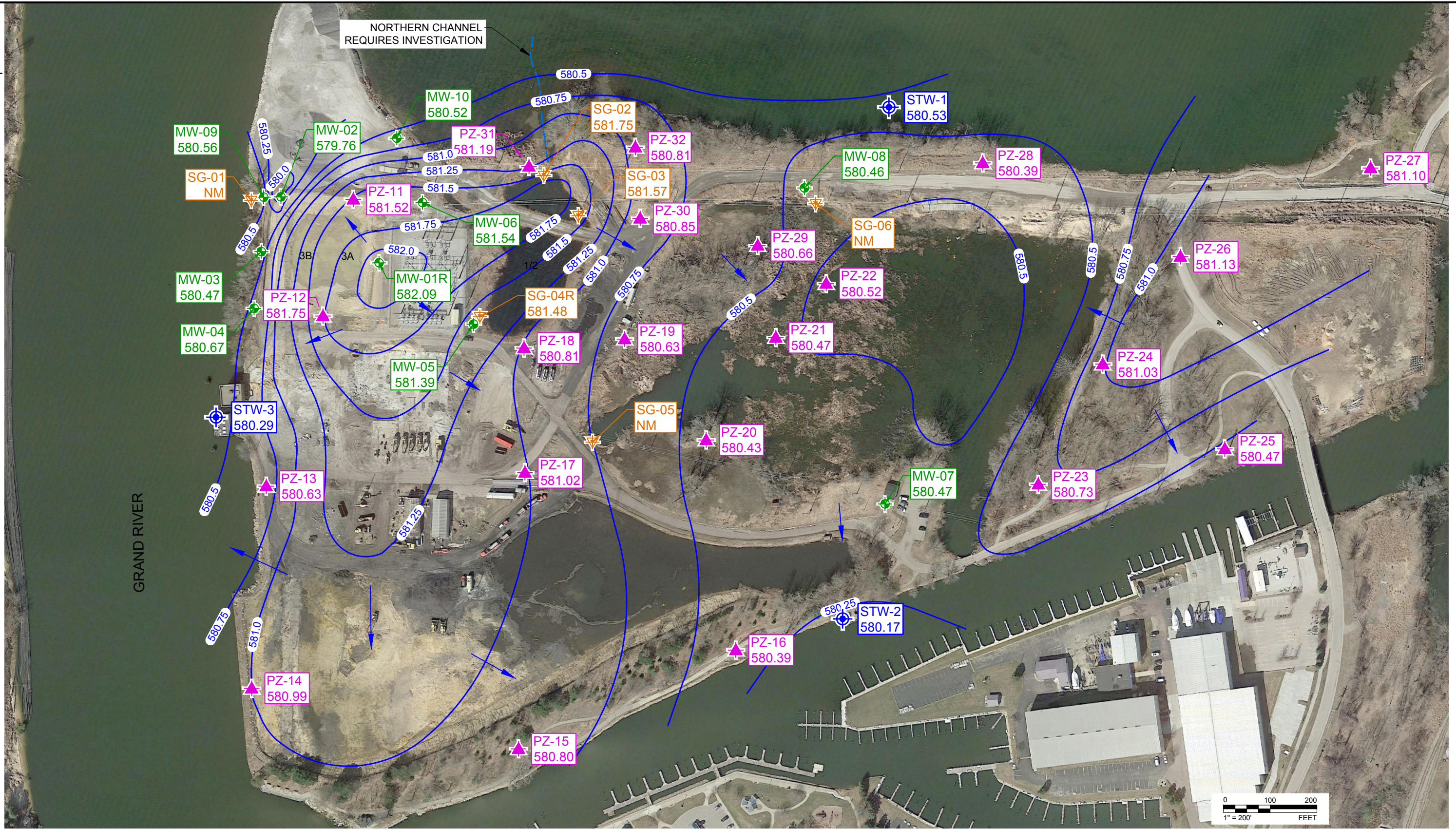
PROJECT
JB SIMS GENERATING STATION
2021 QUARTERLY GROUNDWATER MONITORING

TITLE	GROUNDWATER ELEVATION MAP	
PROJECT NO.	CONTROL	REV.
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSIB



NORTHERN CHANNEL
REQUIRES INVESTIGATION



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REFERENCE
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NOTES
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3. STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

LEGEND

	MONITORING WELL
	STAFF GAUGE
	PIEZOMETER
	STILLING WELL
	581.0 — GROUNDWATER CONTOURS
	— GROUNDWATER FLOW DIRECTION

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT

	GOLDER MEMBER OF WSP
YYYY-MM-DD	2022-01-07
DESIGNED	CEP
PREPARED	DJC
REVIEWED	CEP
APPROVED	DLP

PROJECT
JB SIMS GENERATING STATION
2021 QUARTERLY GROUNDWATER MONITORING

TITLE
GROUNDWATER ELEVATION MAP
DECEMBER 17, 2021

PROJECT NO.	CONTROL	REV.	FIGURE
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSIB

APPENDIX A

Statistical Summary

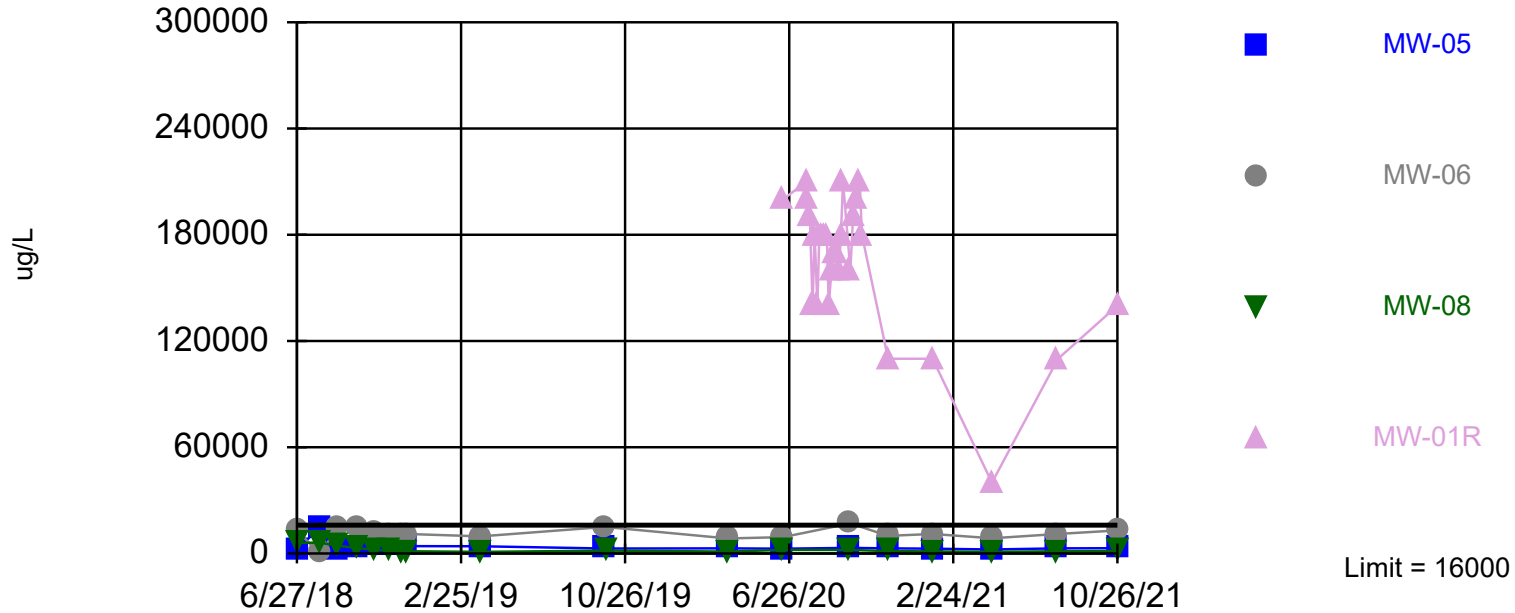
A-1 Interwell Prediction Limit and Tolerance Limit Plots

A-2 Trend Plots and Summary

A-3 Confidence Intervals

Exceeds Limit: MW-01R

Prediction Limit Interwell Non-parametric

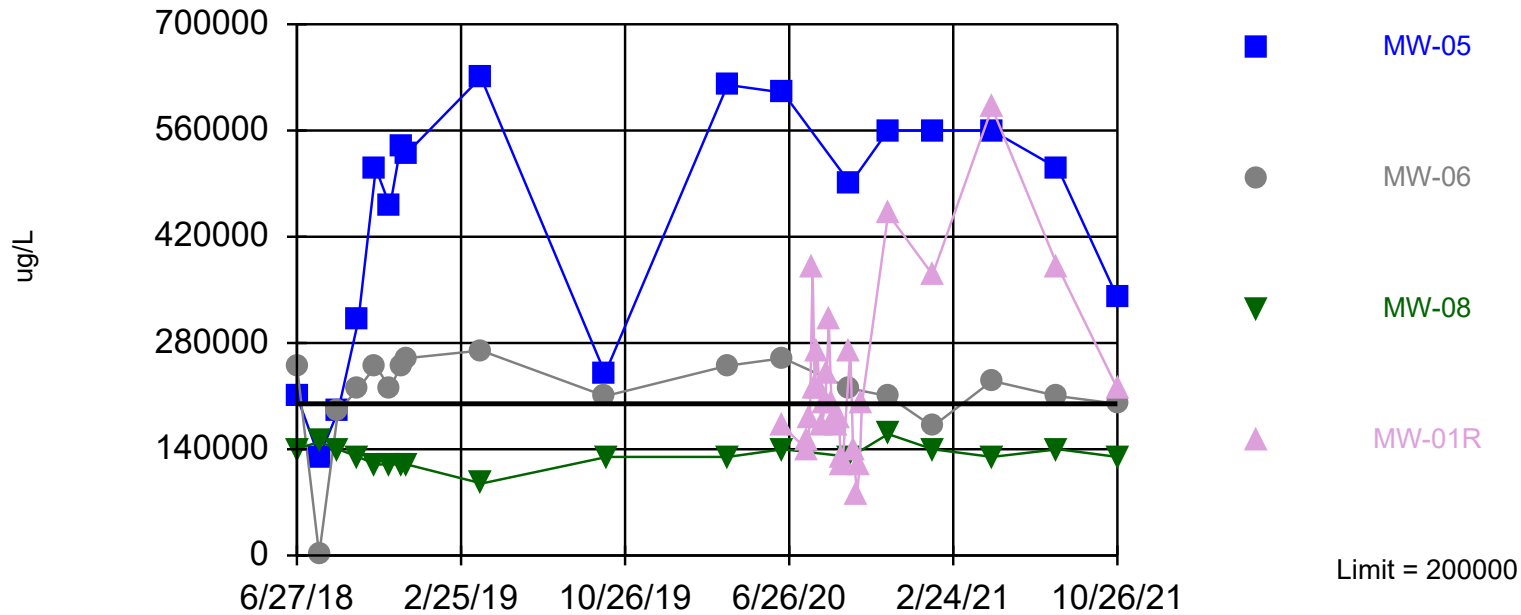


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Constituent: Boron Analysis Run 1/3/2022 1:12 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-05, MW-01R

Prediction Limit Interwell Non-parametric

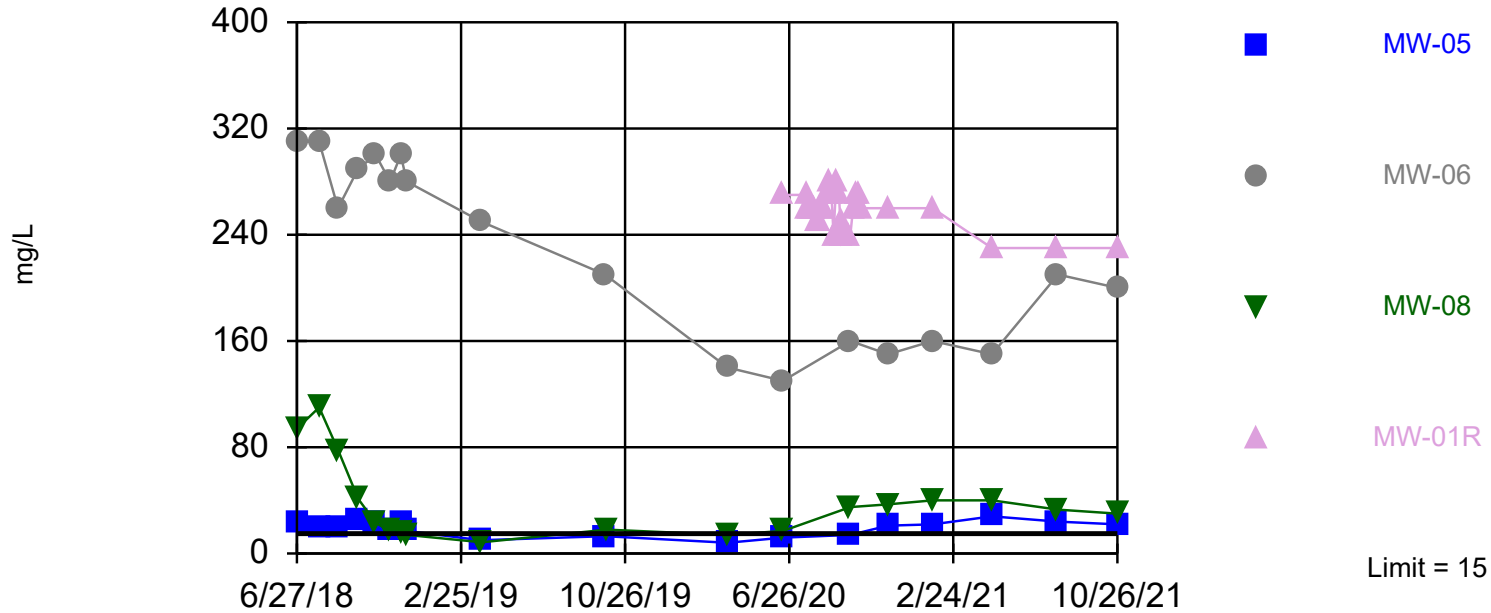


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Constituent: Calcium Analysis Run 1/3/2022 1:12 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-05, MW-06, MW-08,
MW-01R

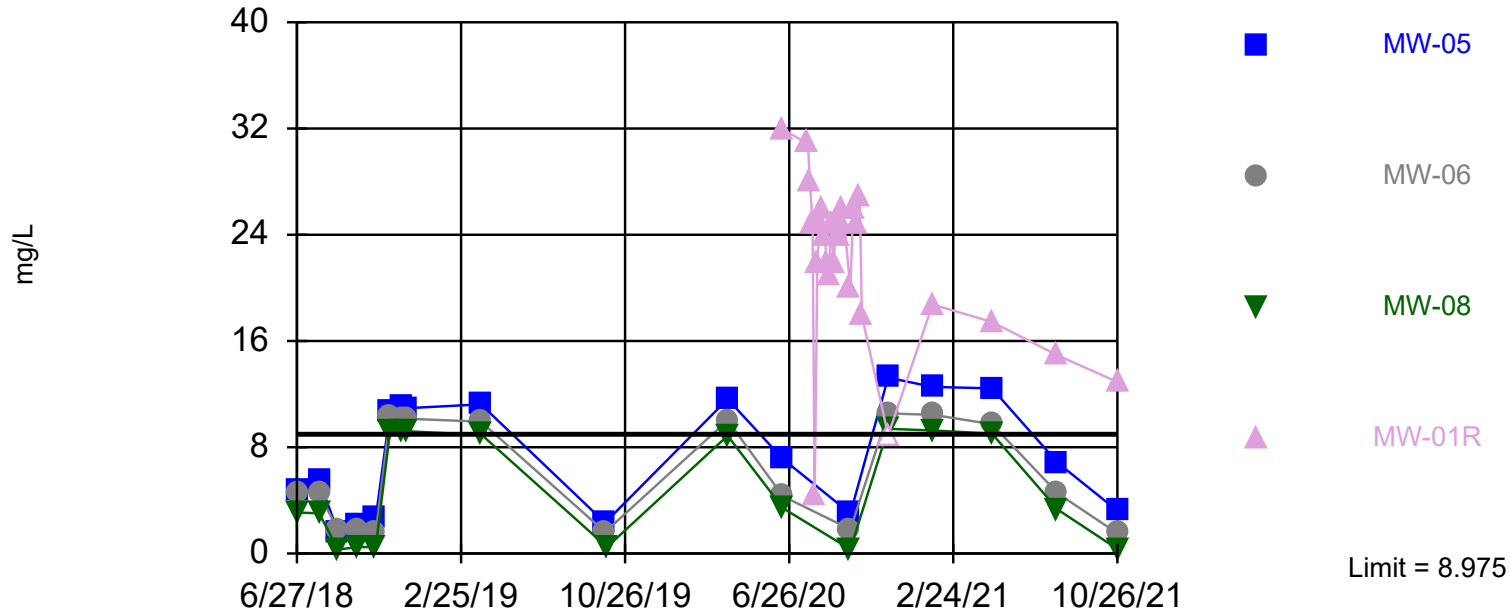
Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Exceeds Limit: MW-01R

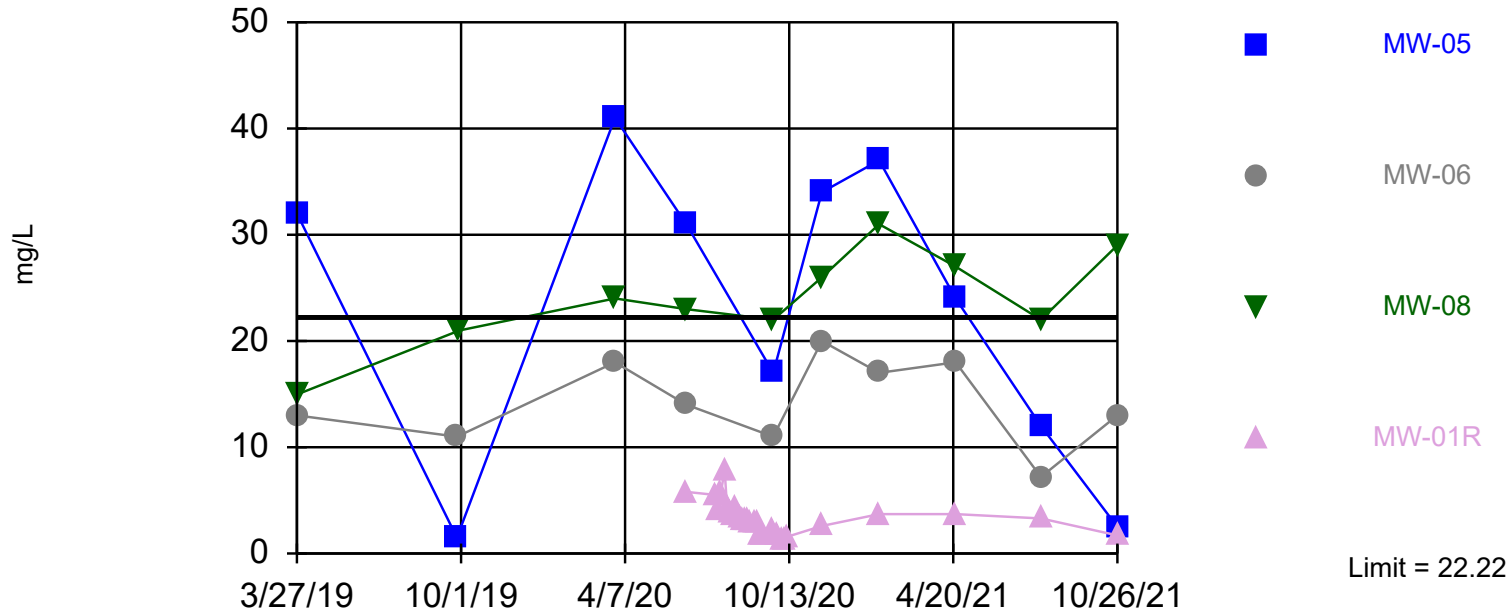
Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. 16.67% NDs. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Data were deseasonalized.

Exceeds Limit: MW-08

Prediction Limit Interwell Parametric

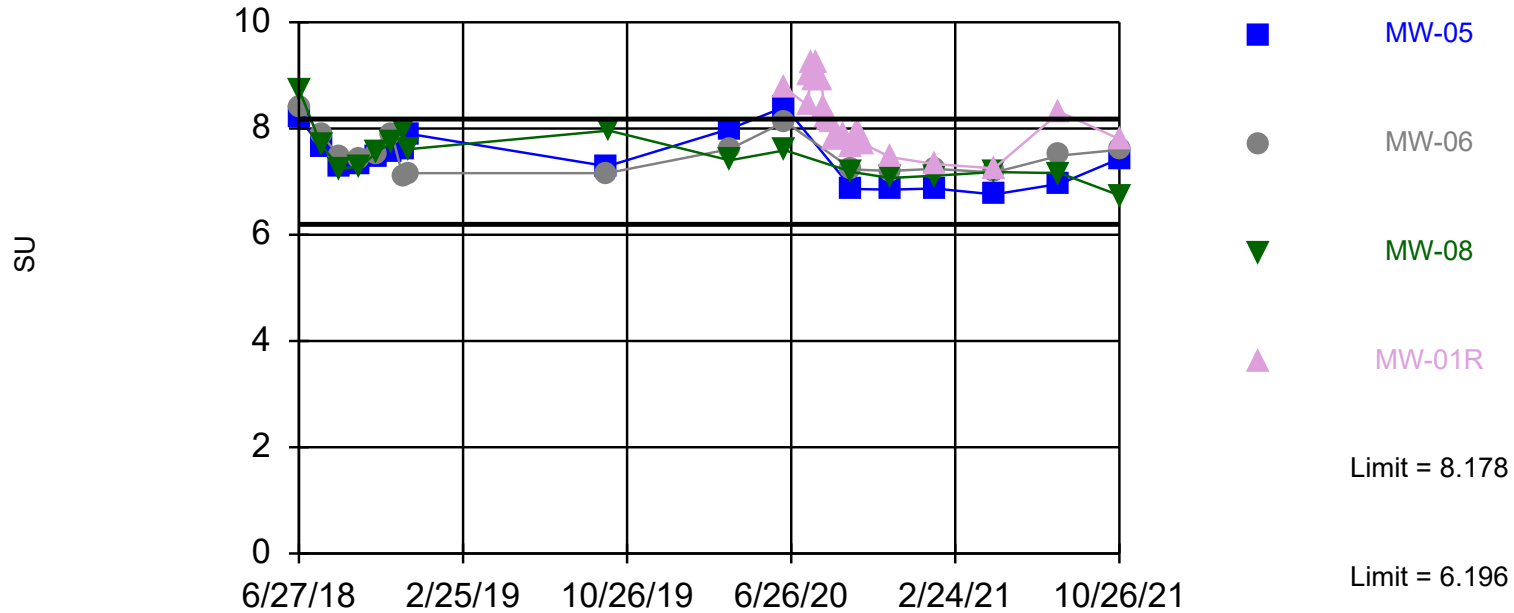


Background Data Summary: Mean=17.6, Std. Dev.=2.319, n=10. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.942, critical = 0.842. Report alpha = 0.1682. Individual comparison alpha = 0.045. Most recent point for each compliance well compared to limit.

Constituent: Iron Analysis Run 1/3/2022 1:12 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Within Limits

Prediction Limit Interwell Parametric

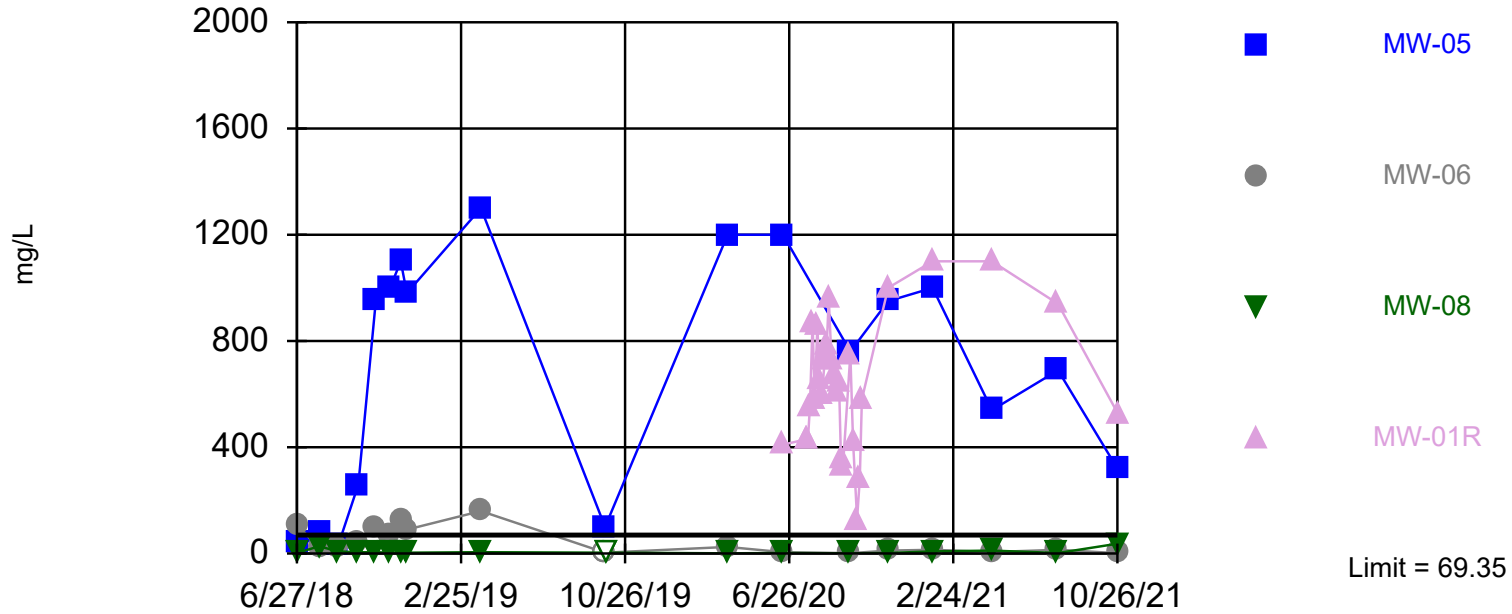


Background Data Summary: Mean=7.187, Std. Dev.=0.4429, n=17. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9662, critical = 0.892. Report alpha = 0.1682. Individual comparison alpha = 0.0225. Most recent point for each compliance well compared to limit.

Constituent: pH Analysis Run 1/3/2022 1:12 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-05, MW-01R

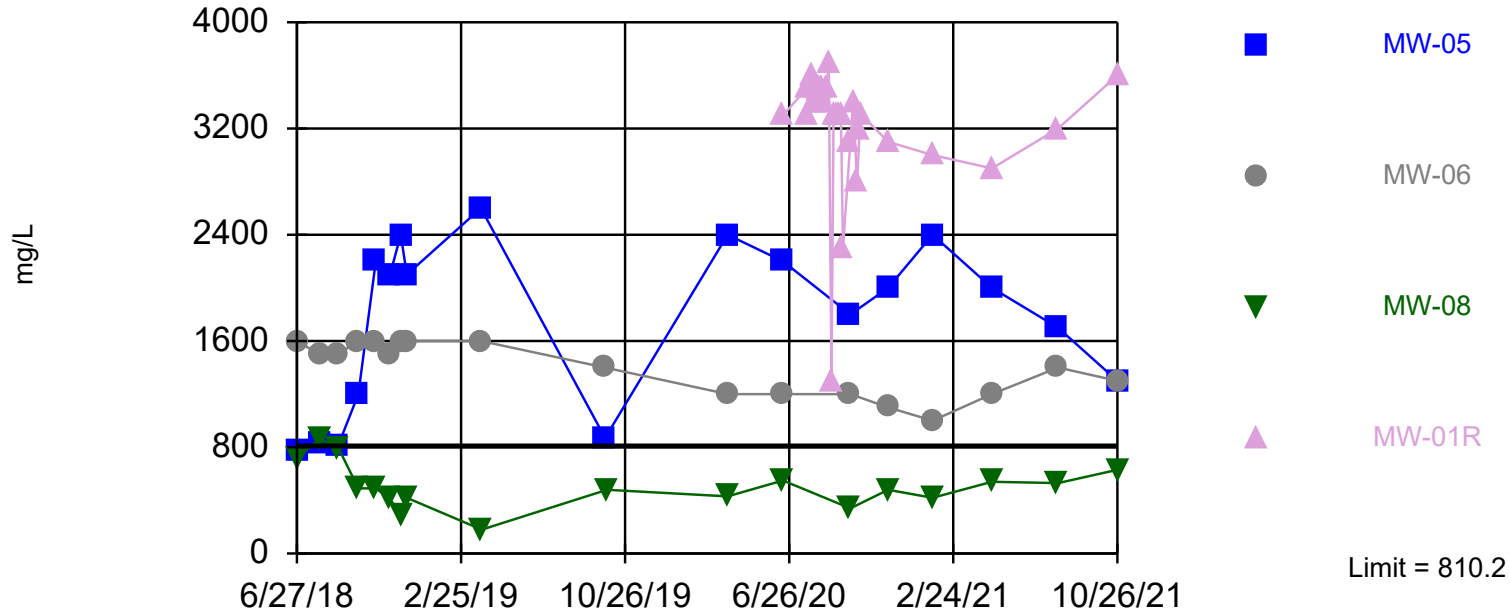
Prediction Limit Interwell Parametric



Background Data Summary: Mean=36.17, Std. Dev.=17.96, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9066, critical = 0.897. Report alpha = 0.1682. Individual comparison alpha = 0.045. Most recent point for each compliance well compared to limit.

Exceeds Limit: MW-05, MW-06, MW-01R

Prediction Limit Interwell Parametric



Background Data Summary: Mean=666.1, Std. Dev.=78, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9596, critical = 0.897. Report alpha = 0.1682. Individual comparison alpha = 0.045. Most recent point for each compliance well compared to limit.

Constituent: Total Dissolved Solids Analysis Run 1/3/2022 1:12 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

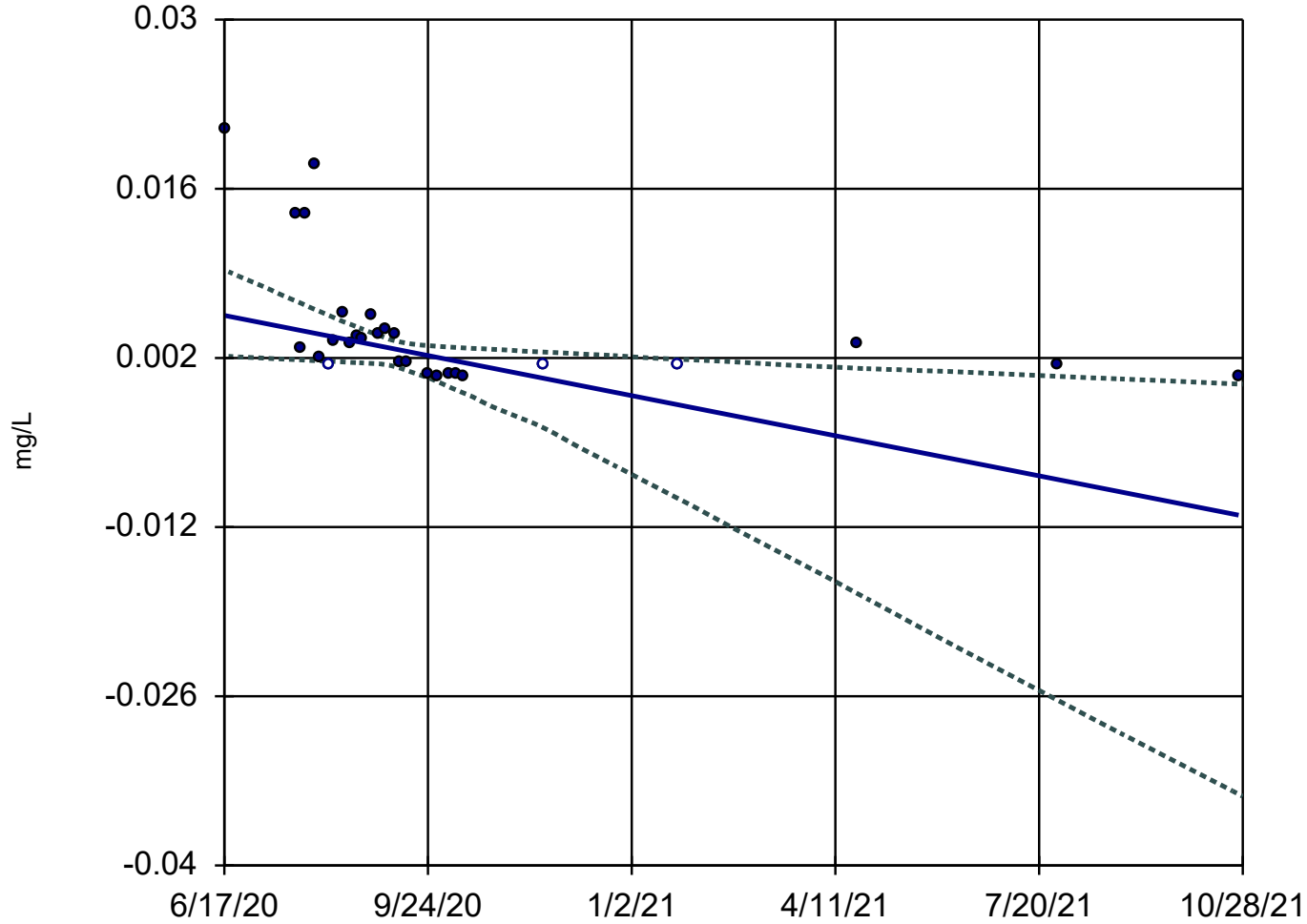
Interwell Prediction Limit

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:13 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Bg N	Bg Wells	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (ug/L)	MW-05	16000	n/a	10/26/2021	3000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-06	16000	n/a	10/26/2021	13000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-08	16000	n/a	10/26/2021	1400	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-01R	16000	n/a	10/26/2021	140000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-05	200000	n/a	10/26/2021	340000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-06	200000	n/a	10/26/2021	200000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-08	200000	n/a	10/26/2021	130000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-01R	200000	n/a	10/26/2021	220000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-05	15	n/a	10/26/2021	22	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-06	15	n/a	10/26/2021	200	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-08	15	n/a	10/26/2021	30	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-01R	15	n/a	10/26/2021	230	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Fluoride (mg/L)	MW-05	8.975	n/a	10/26/2021	3.216	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-06	8.975	n/a	10/26/2021	1.516	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-08	8.975	n/a	10/26/2021	0.336	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-01R	8.975	n/a	10/26/2021	12.92	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Iron (mg/L)	MW-05	22.22	n/a	10/26/2021	2.5	10	MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-06	22.22	n/a	10/26/2021	13	10	MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-08	22.22	n/a	10/26/2021	29	10	MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-01R	22.22	n/a	10/26/2021	1.7	10	MW-07	17.6	2.319	0	None	No	0.045	Param
pH (SU)	MW-05	8.178	6.196	10/26/2021	7.43	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-06	8.178	6.196	10/26/2021	7.6	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-08	8.178	6.196	10/26/2021	6.74	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-01R	8.178	6.196	10/26/2021	7.8	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
Sulfate (mg/L)	MW-05	69.35	n/a	10/26/2021	320	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-06	69.35	n/a	10/26/2021	1.3J	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-08	69.35	n/a	10/26/2021	137	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-01R	69.35	n/a	10/26/2021	530	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-05	810.2	n/a	10/26/2021	1300	18	MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-06	810.2	n/a	10/26/2021	1300	18	MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-08	810.2	n/a	10/26/2021	630	18	MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-01R	810.2	n/a	10/26/2021	3600	18	MW-07	666.1	78	0	None	No	0.045	Param

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.01216
units per year.

Mann-Kendall
statistic = -202
critical = -119

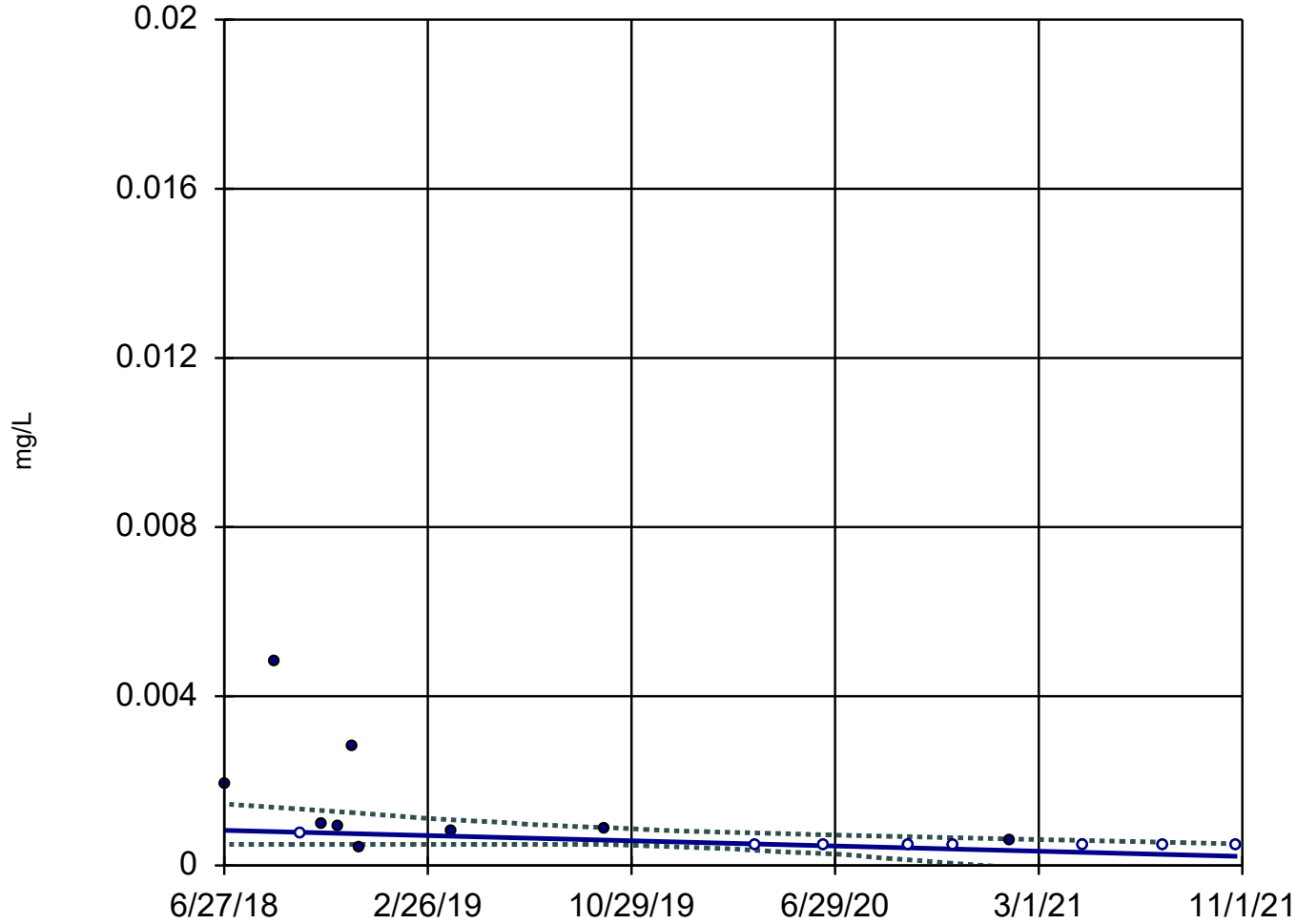
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Antimony Analysis Run 1/3/2022 12:55 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-07 (bg)



n = 17

Slope = -0.000184
units per year.

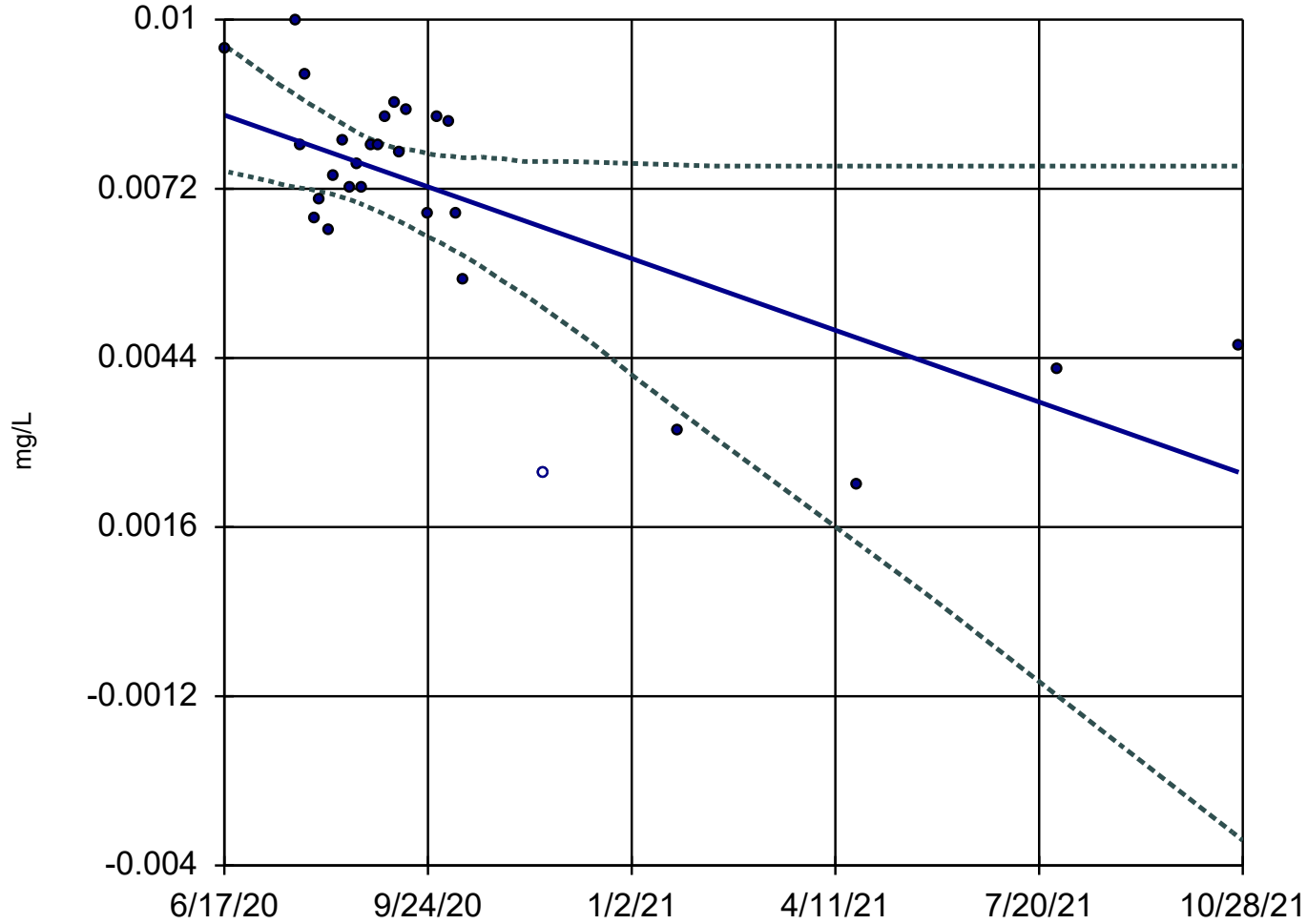
Mann-Kendall
statistic = -67
critical = -58

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Arsenic Analysis Run 1/3/2022 12:55 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.00435
units per year.

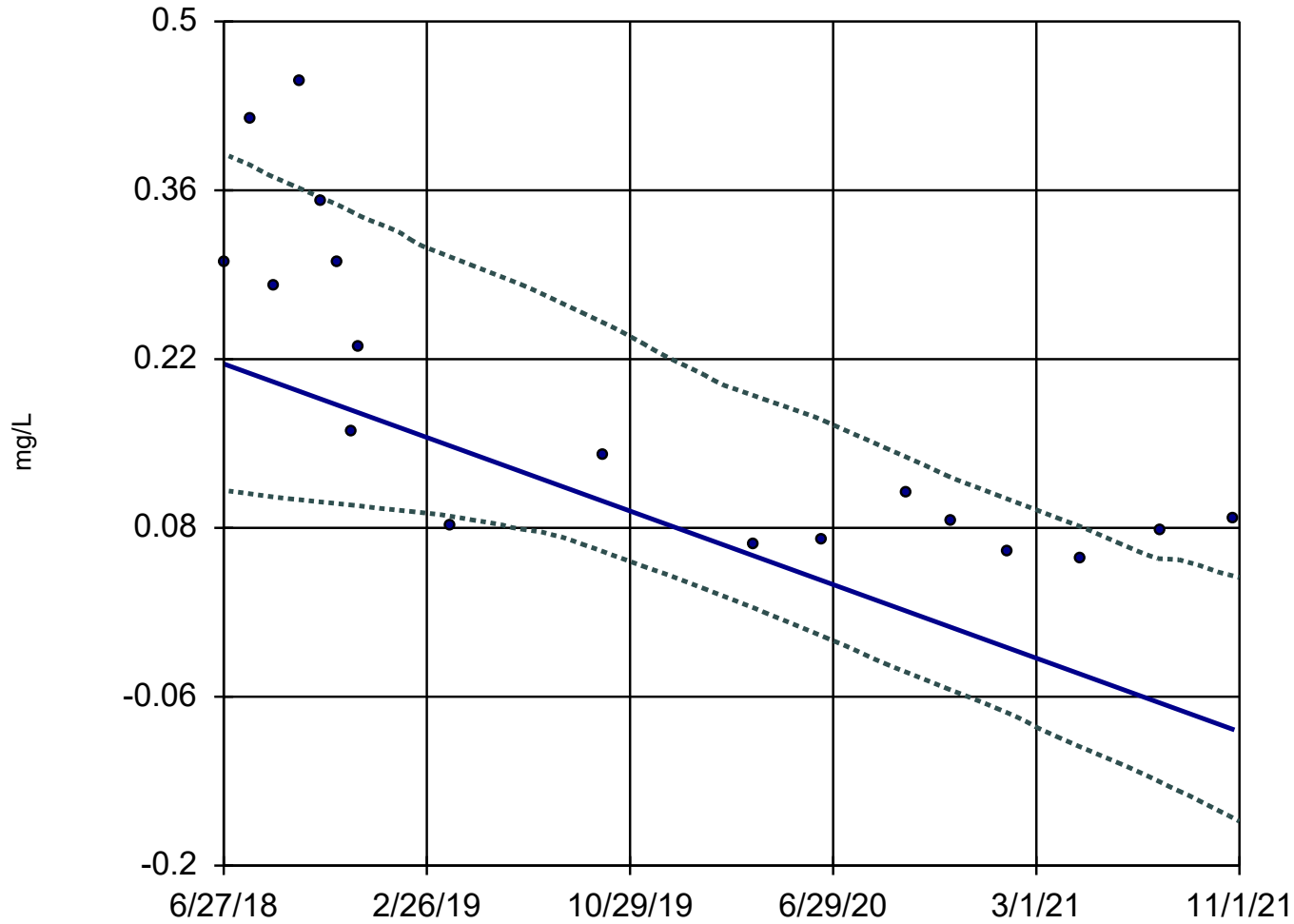
Mann-Kendall
statistic = -138
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Arsenic Analysis Run 1/3/2022 12:55 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-05



n = 18

Slope = -0.09104
units per year.

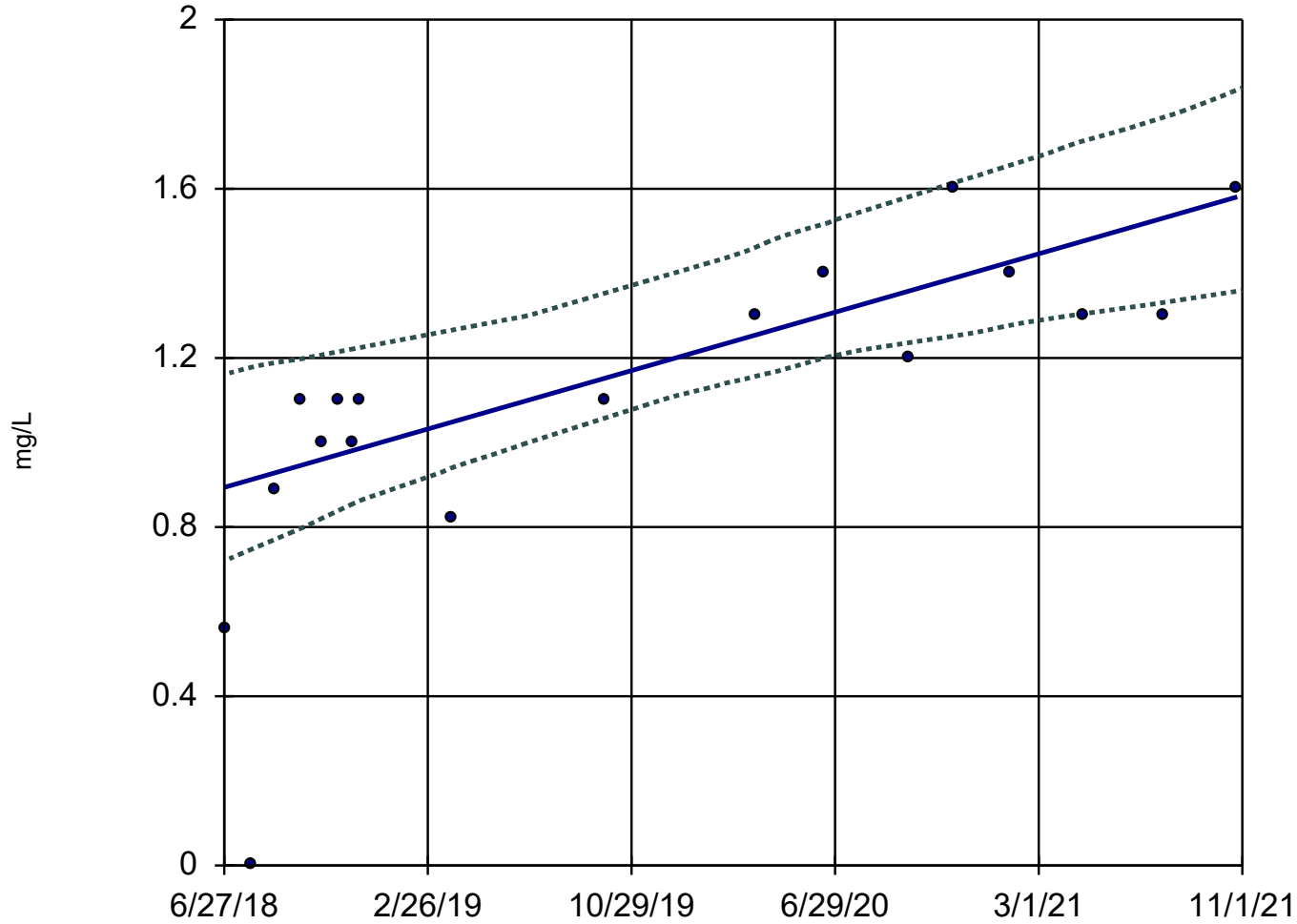
Mann-Kendall
statistic = -98
critical = -63

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Barium Analysis Run 1/3/2022 12:55 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-06



n = 18

Slope = 0.206
units per year.

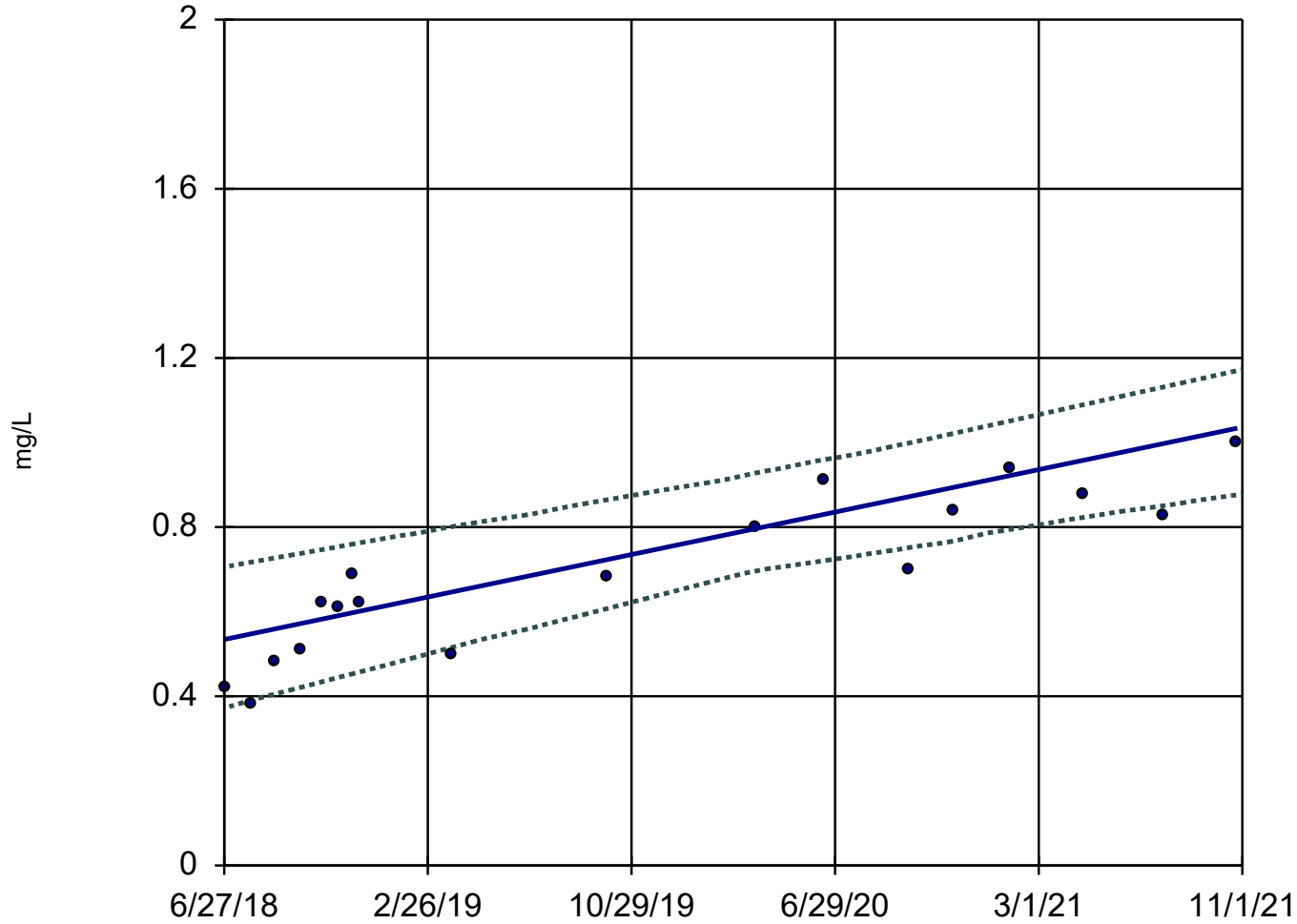
Mann-Kendall
statistic = 103
critical = 63

Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Barium Analysis Run 1/3/2022 12:55 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-08



n = 18

Slope = 0.1499
units per year.

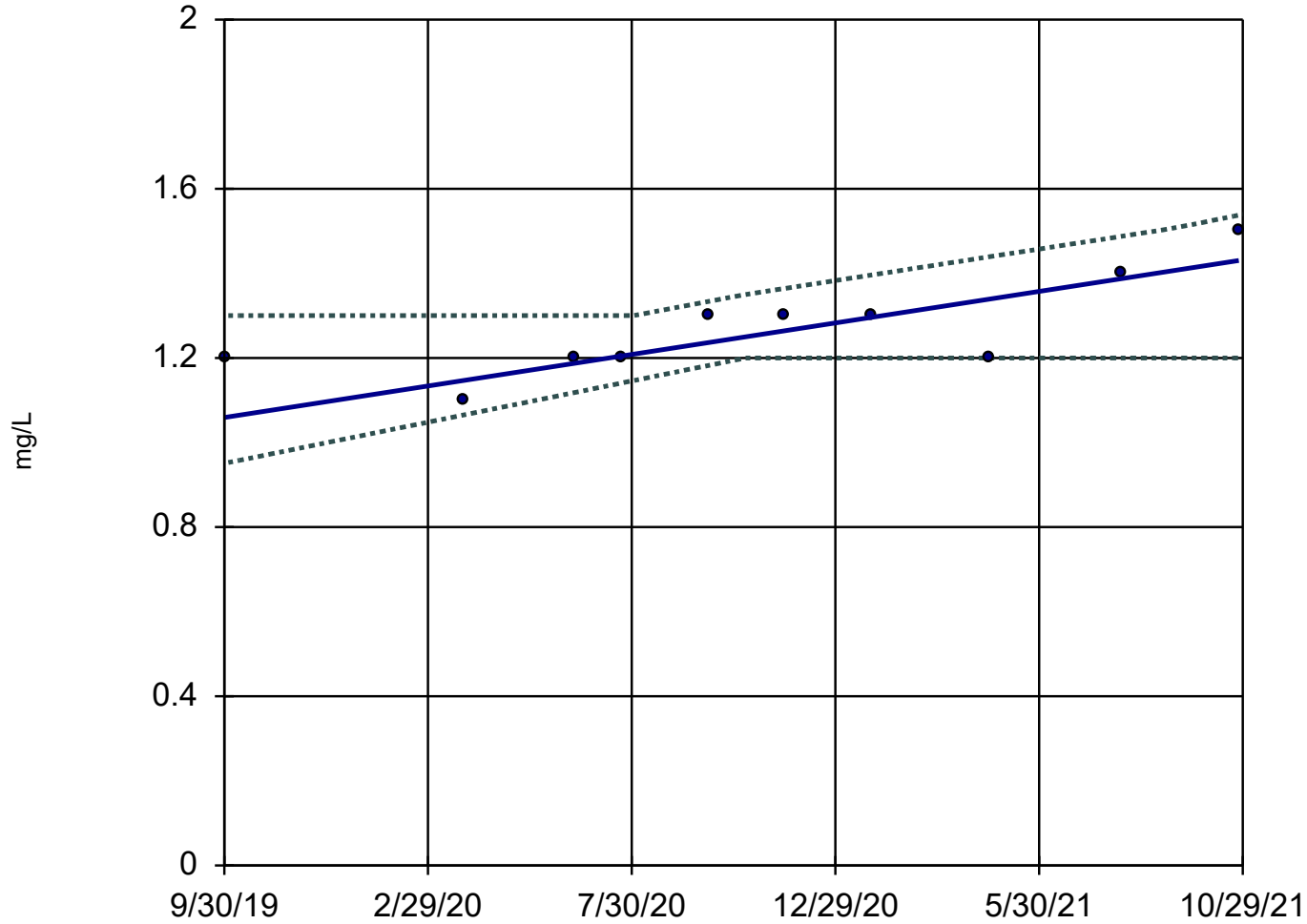
Mann-Kendall
statistic = 116
critical = 63

Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Barium Analysis Run 1/3/2022 12:55 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-10



n = 10

Slope = 0.1789
units per year.

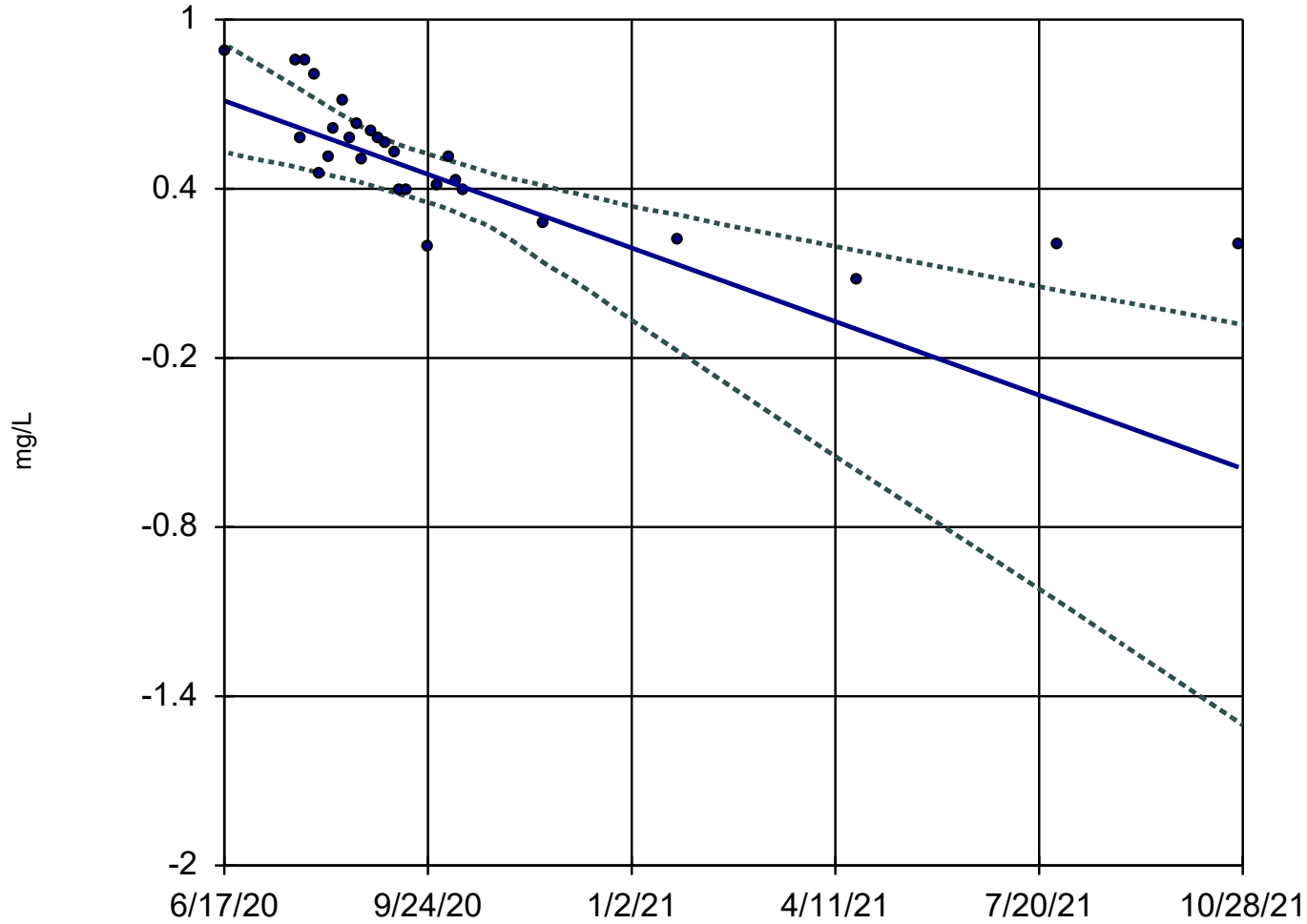
Mann-Kendall
statistic = 28
critical = 27

Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Barium Analysis Run 1/3/2022 12:55 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.9564
units per year.

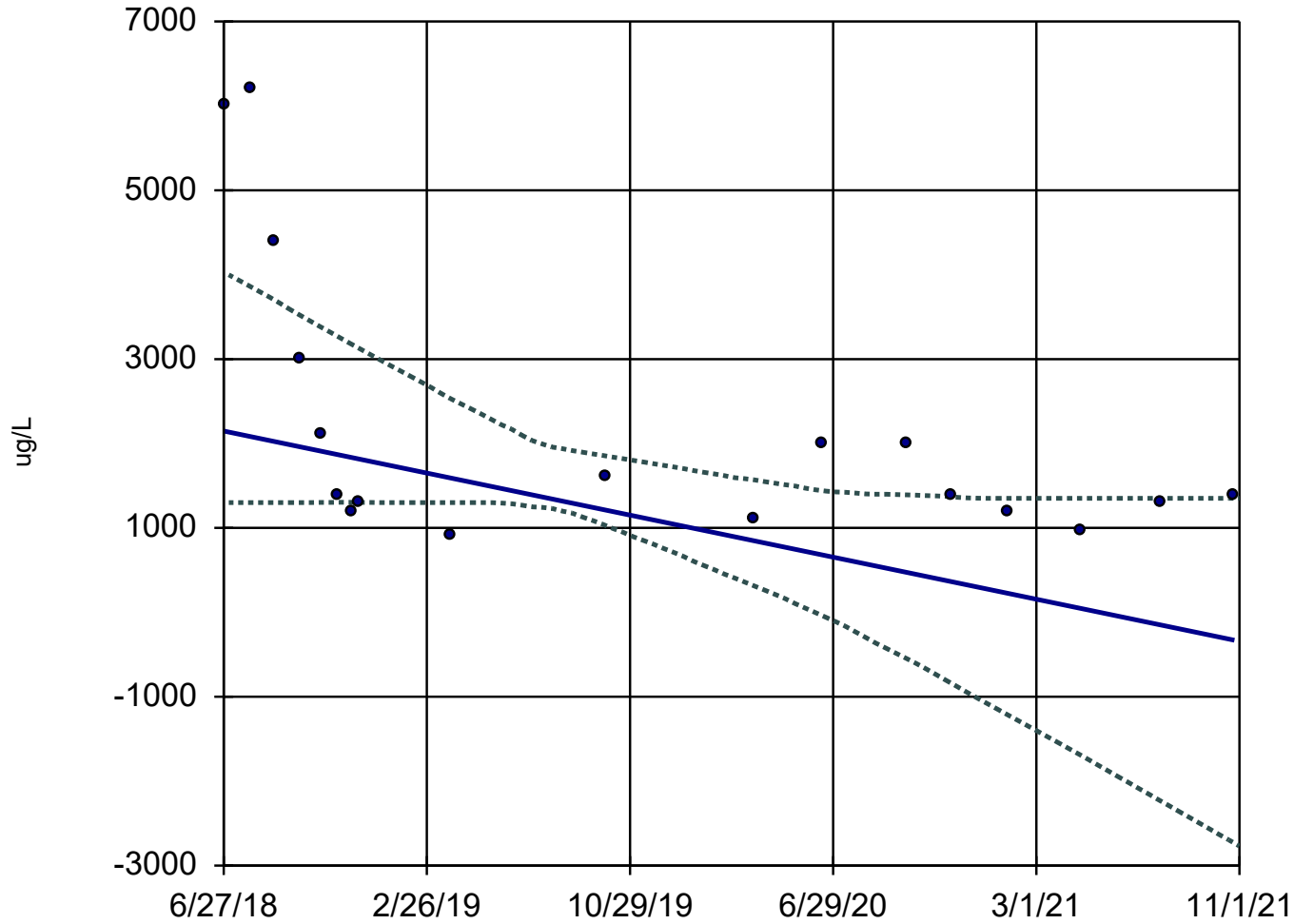
Mann-Kendall
statistic = -265
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Barium Analysis Run 1/3/2022 12:55 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-08



n = 18

Slope = -743
units per year.

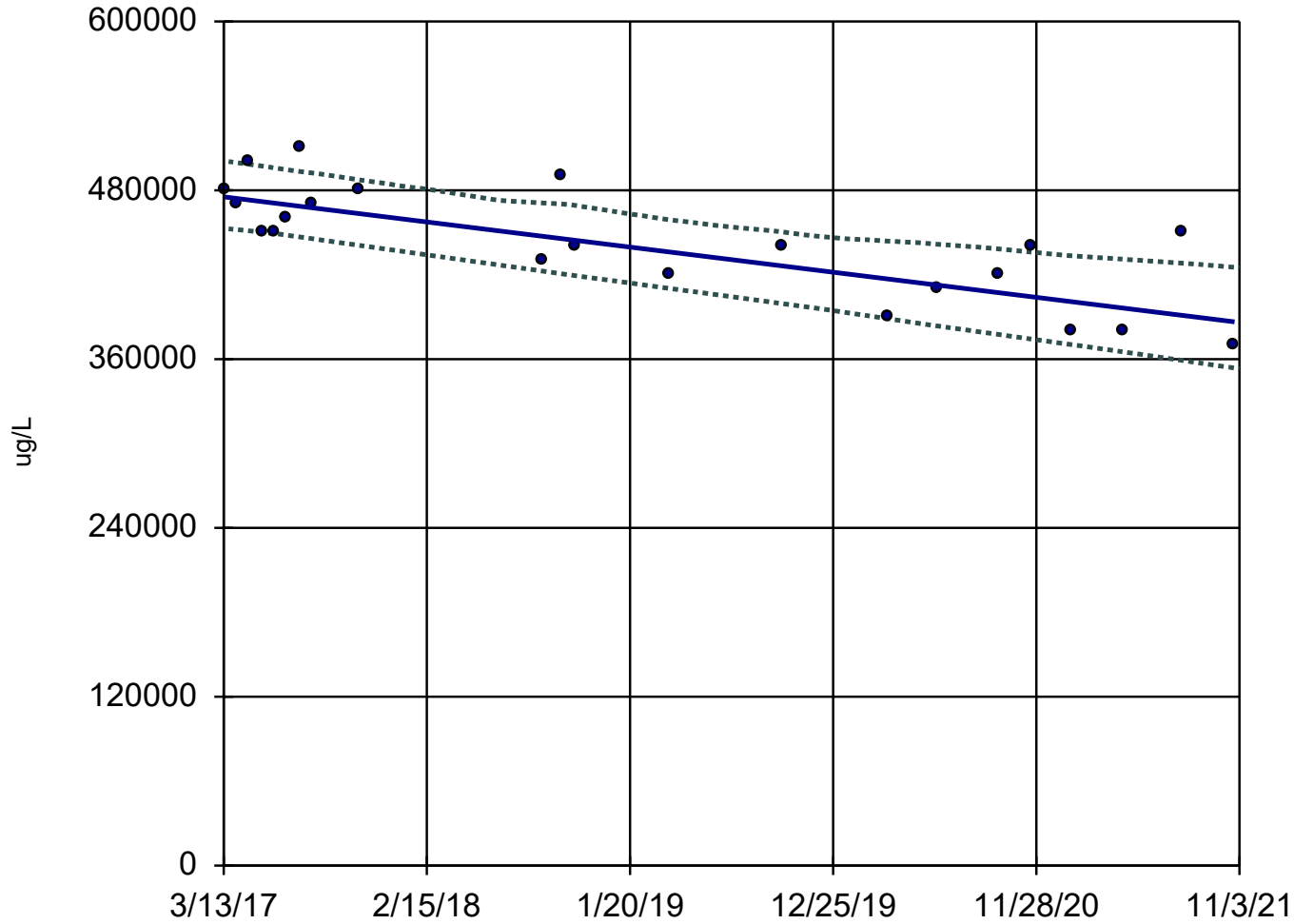
Mann-Kendall
statistic = -71
critical = -63

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Boron Analysis Run 1/3/2022 12:56 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-04



n = 22

Slope = -19211 units per year.

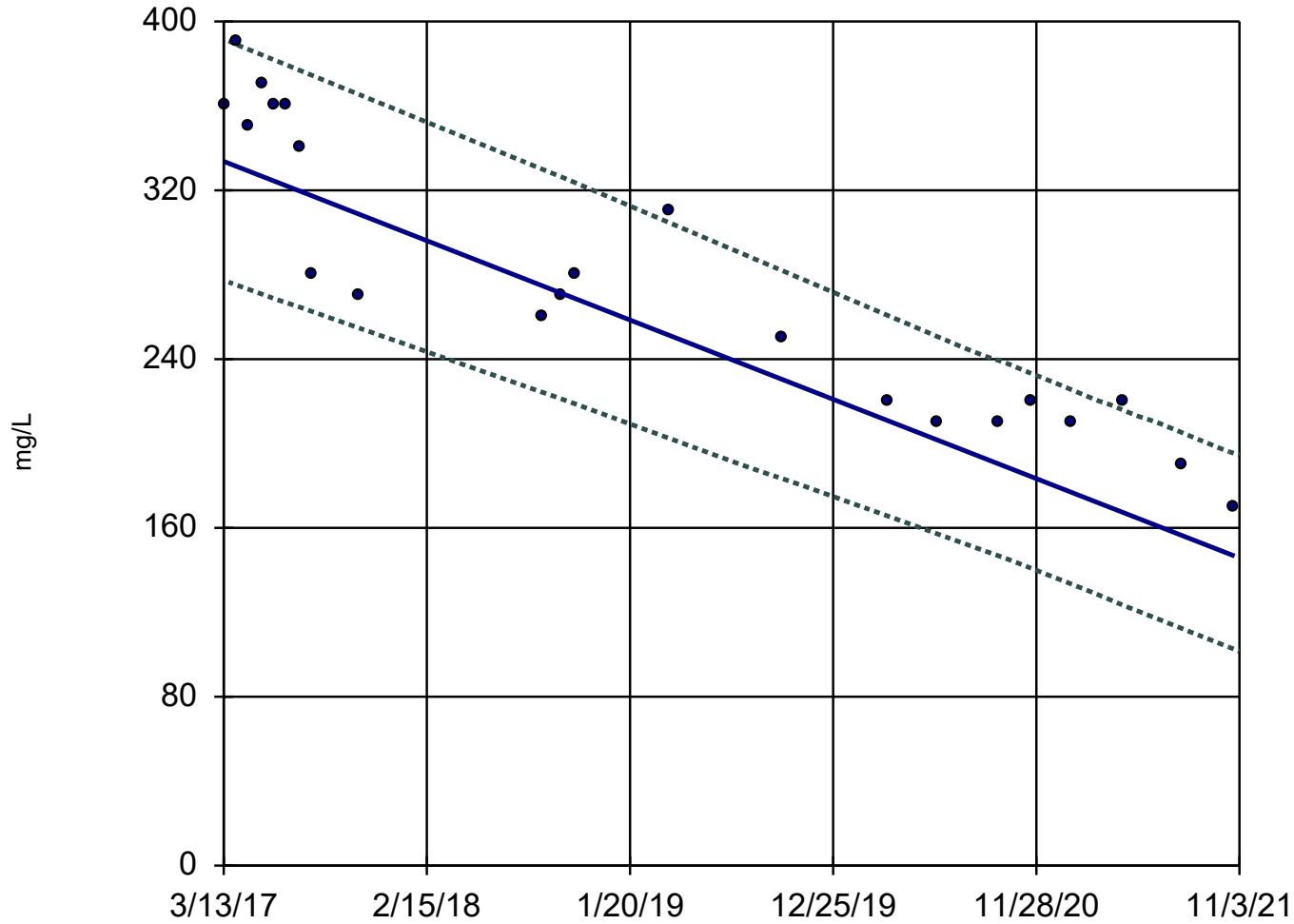
Mann-Kendall statistic = -127
critical = -84

Decreasing trend significant at 98% confidence level ($\alpha = 0.01$ per tail).

Constituent: Calcium Analysis Run 1/3/2022 12:56 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-04



n = 22

Slope = -40.44
units per year.

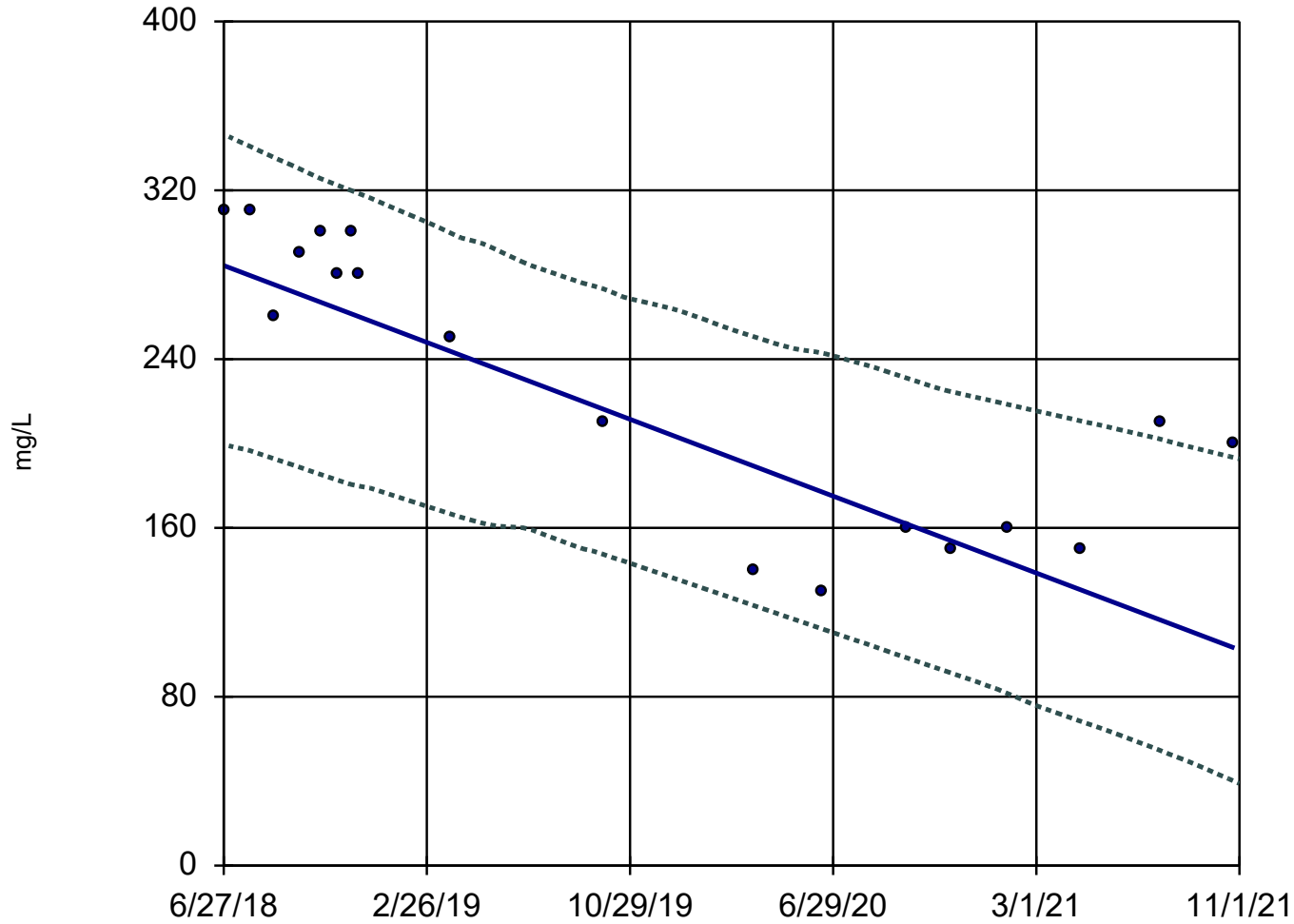
Mann-Kendall
statistic = -182
critical = -84

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Chloride Analysis Run 1/3/2022 12:56 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-06



n = 18

Slope = -54.36
units per year.

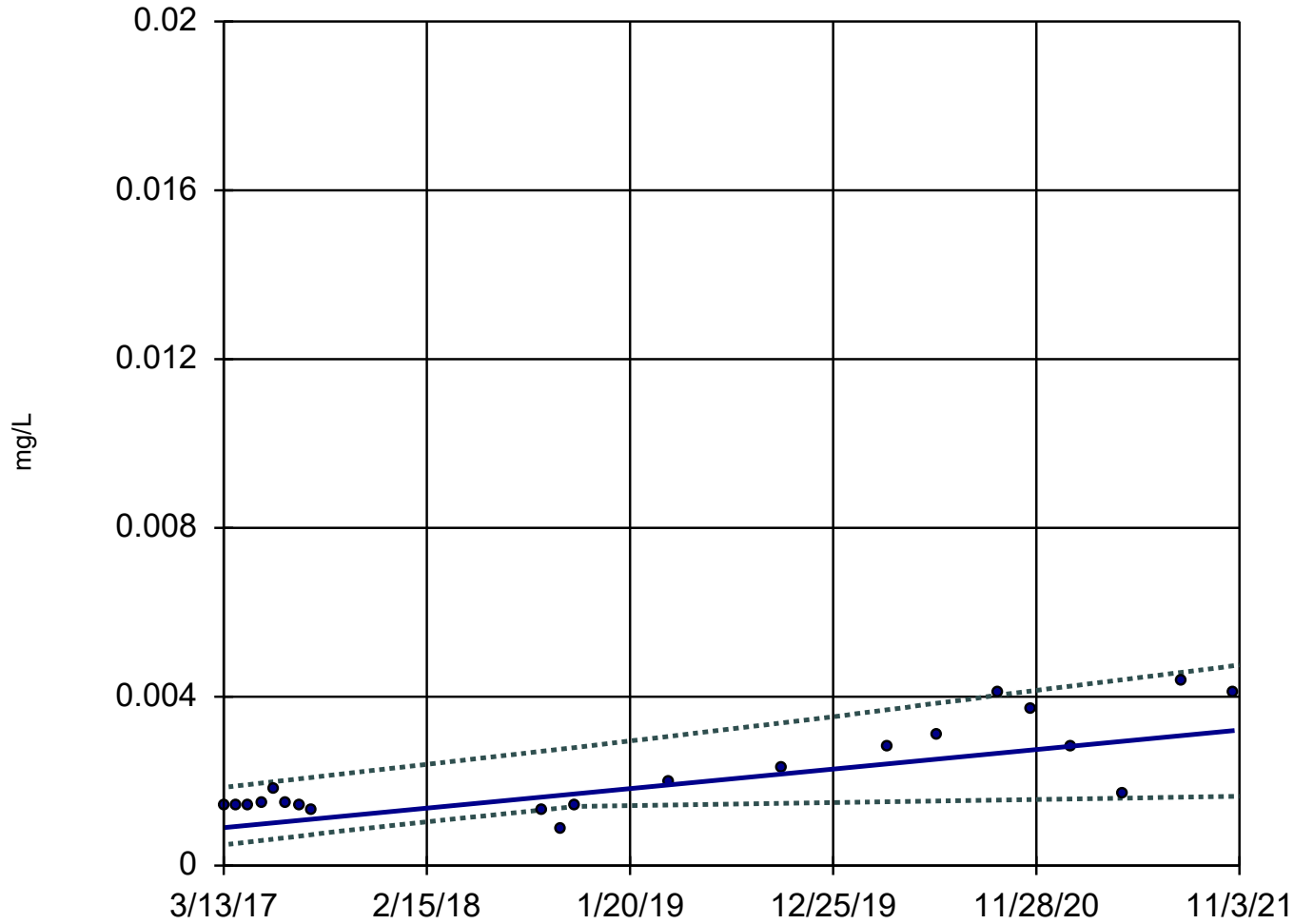
Mann-Kendall
statistic = -89
critical = -63

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Chloride Analysis Run 1/3/2022 12:56 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-03



n = 21

Slope = 0.0004979
units per year.

Mann-Kendall
statistic = 110
critical = 78

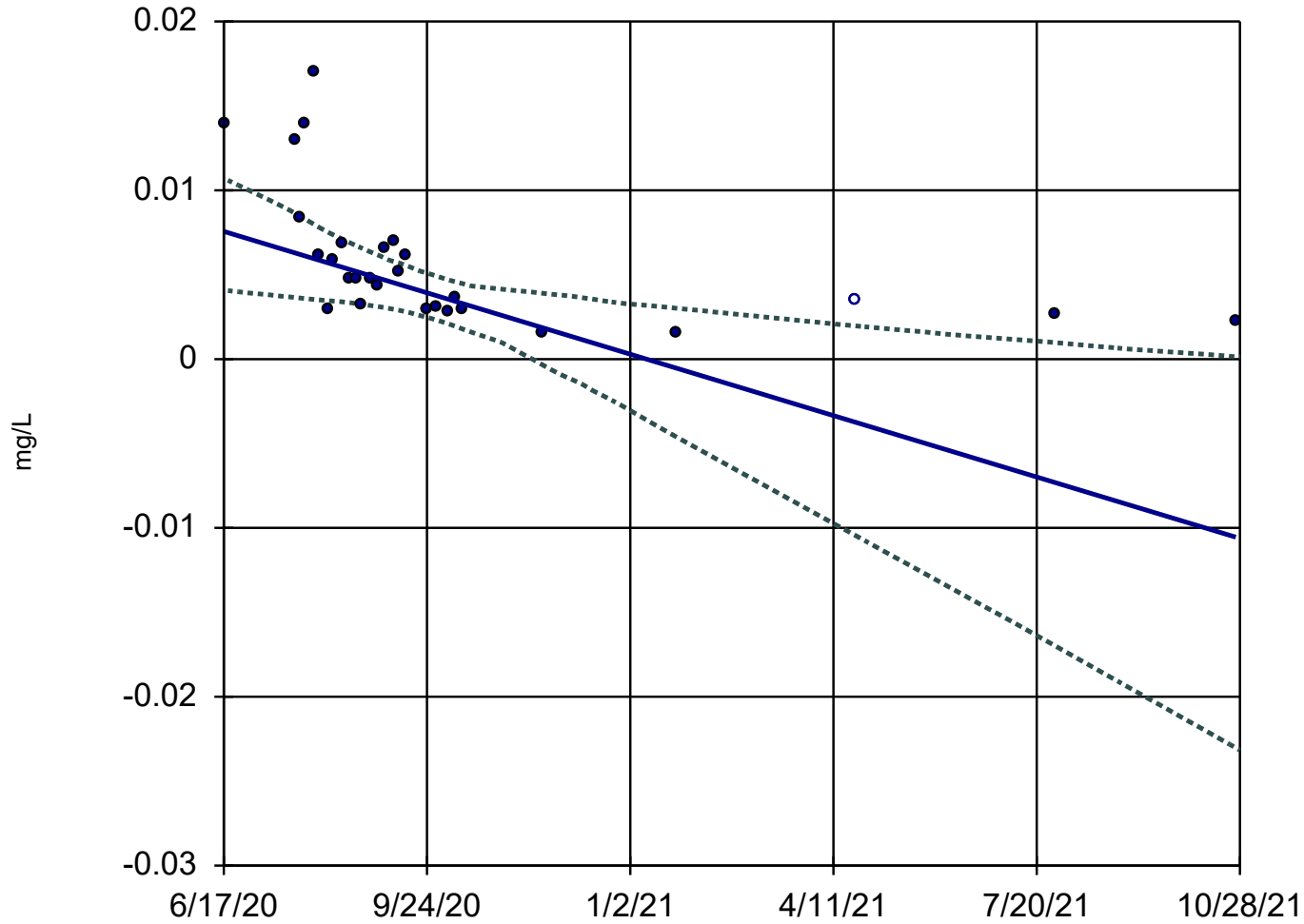
Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Chromium Analysis Run 1/3/2022 12:56 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.01333
units per year.

Mann-Kendall
statistic = -228
critical = -119

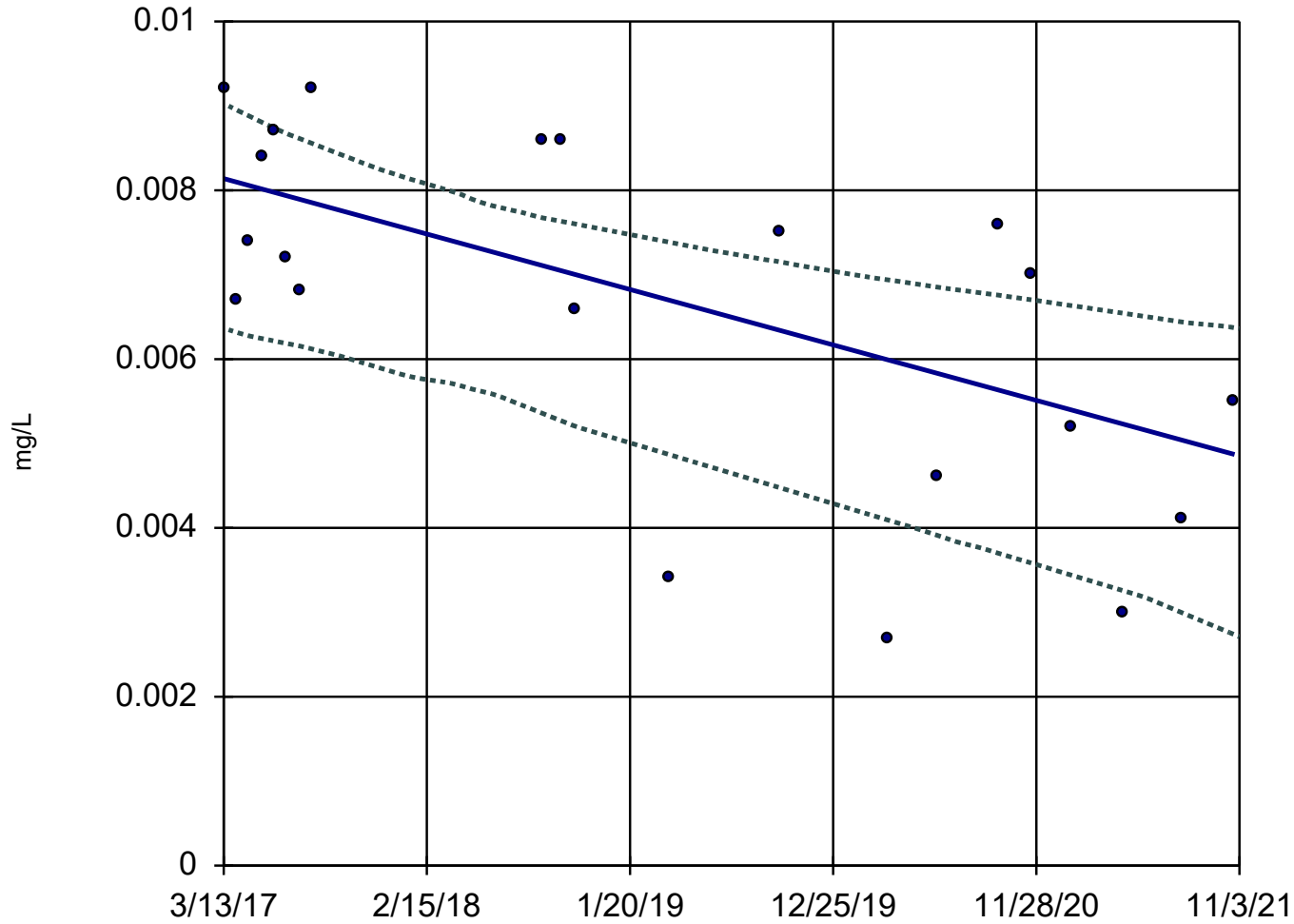
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Chromium Analysis Run 1/3/2022 12:56 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-02

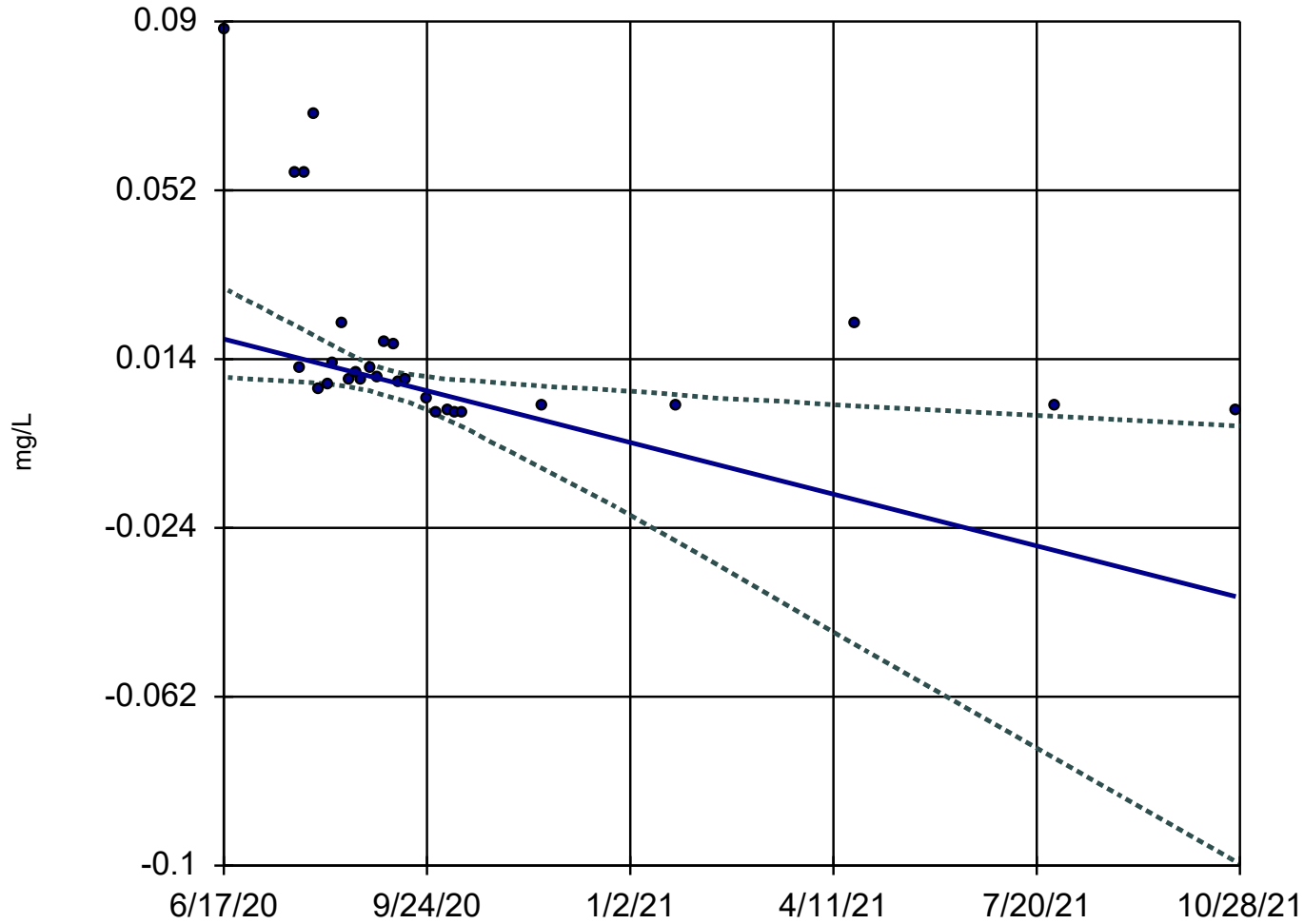


n = 21
Slope = -0.0007069
units per year.
Mann-Kendall
statistic = -88
critical = -78
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Cobalt Analysis Run 1/3/2022 12:56 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.04265
units per year.

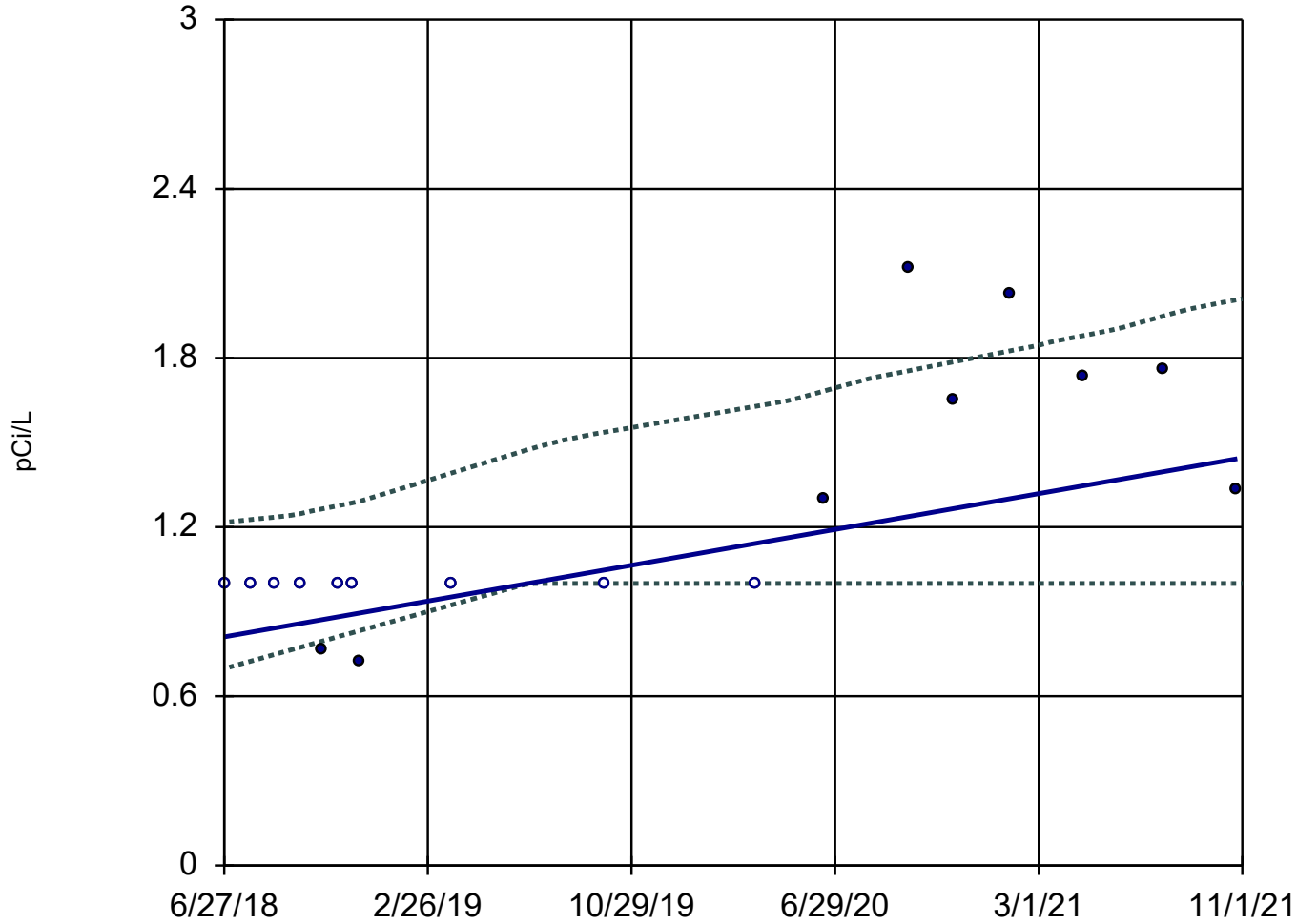
Mann-Kendall
statistic = -194
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Cobalt Analysis Run 1/3/2022 12:56 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

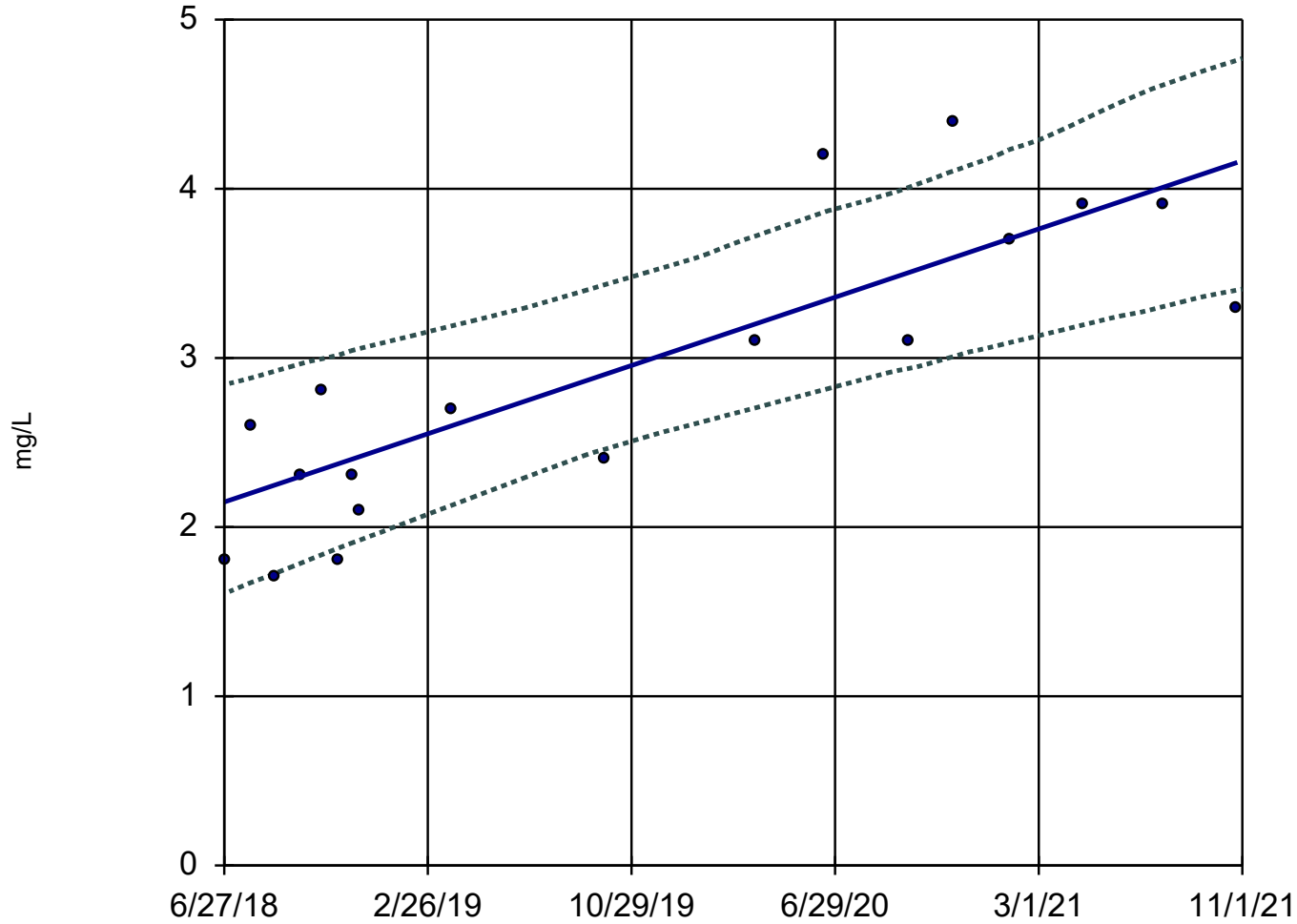
MW-07 (bg)



n = 18
Slope = 0.1896
units per year.
Mann-Kendall
statistic = 73
critical = 63
Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 95% Confidence Band

MW-05



n = 18

Slope = 0.6021
units per year.

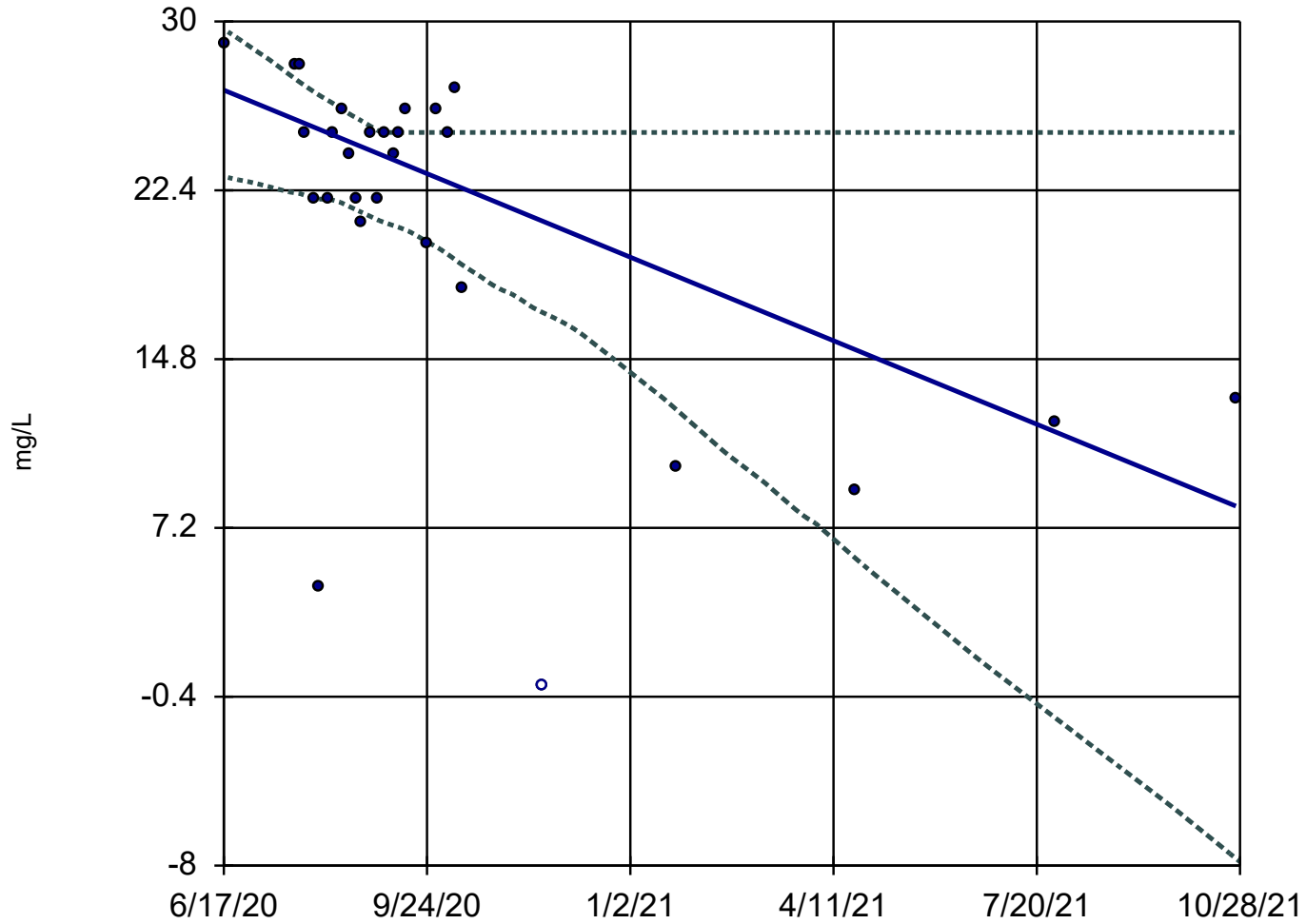
Mann-Kendall
statistic = 93
critical = 63

Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Fluoride Analysis Run 1/3/2022 12:57 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -13.78
units per year.

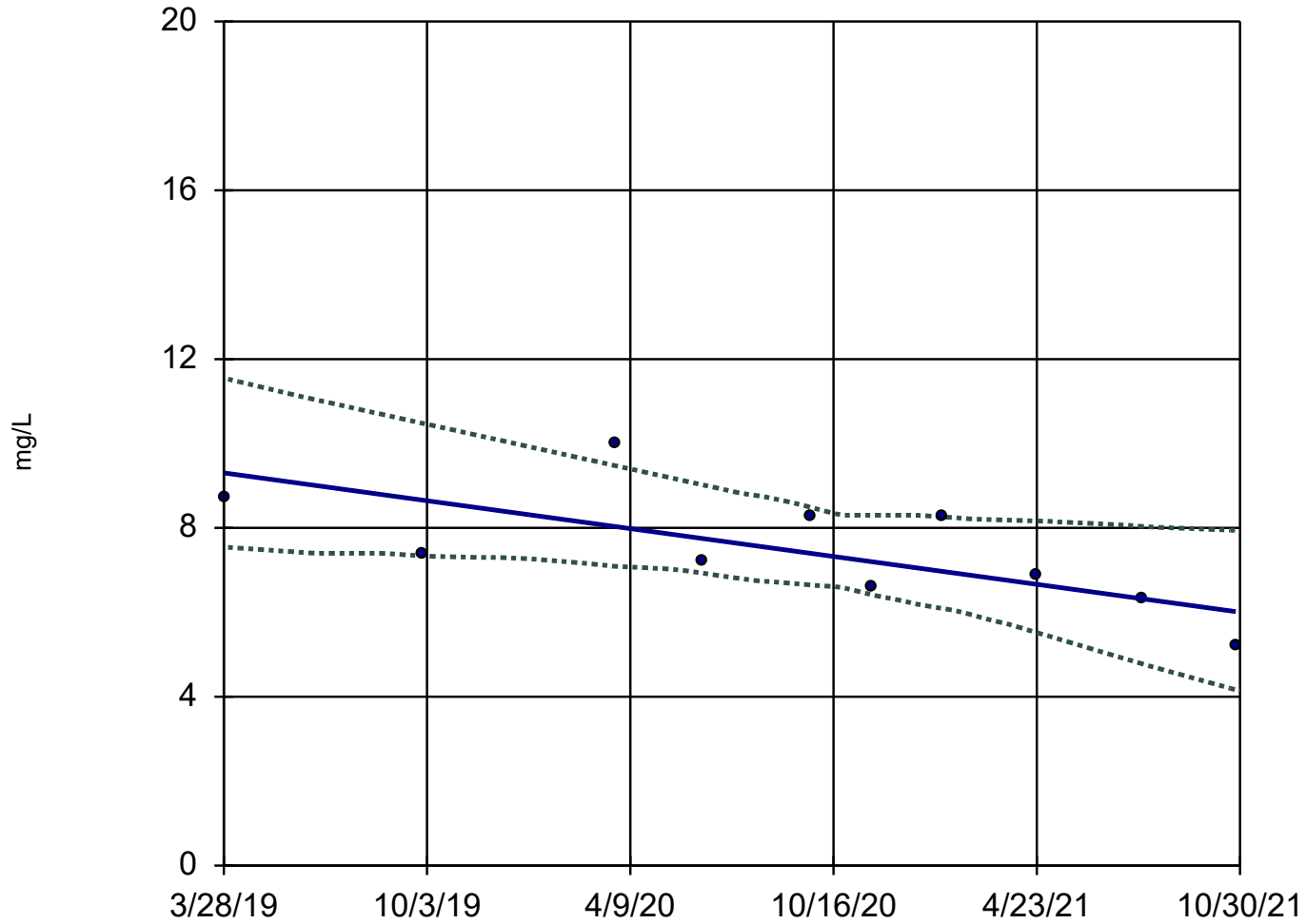
Mann-Kendall
statistic = -128
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Fluoride Analysis Run 1/3/2022 12:57 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-04



n = 10

Slope = -1.271
units per year.

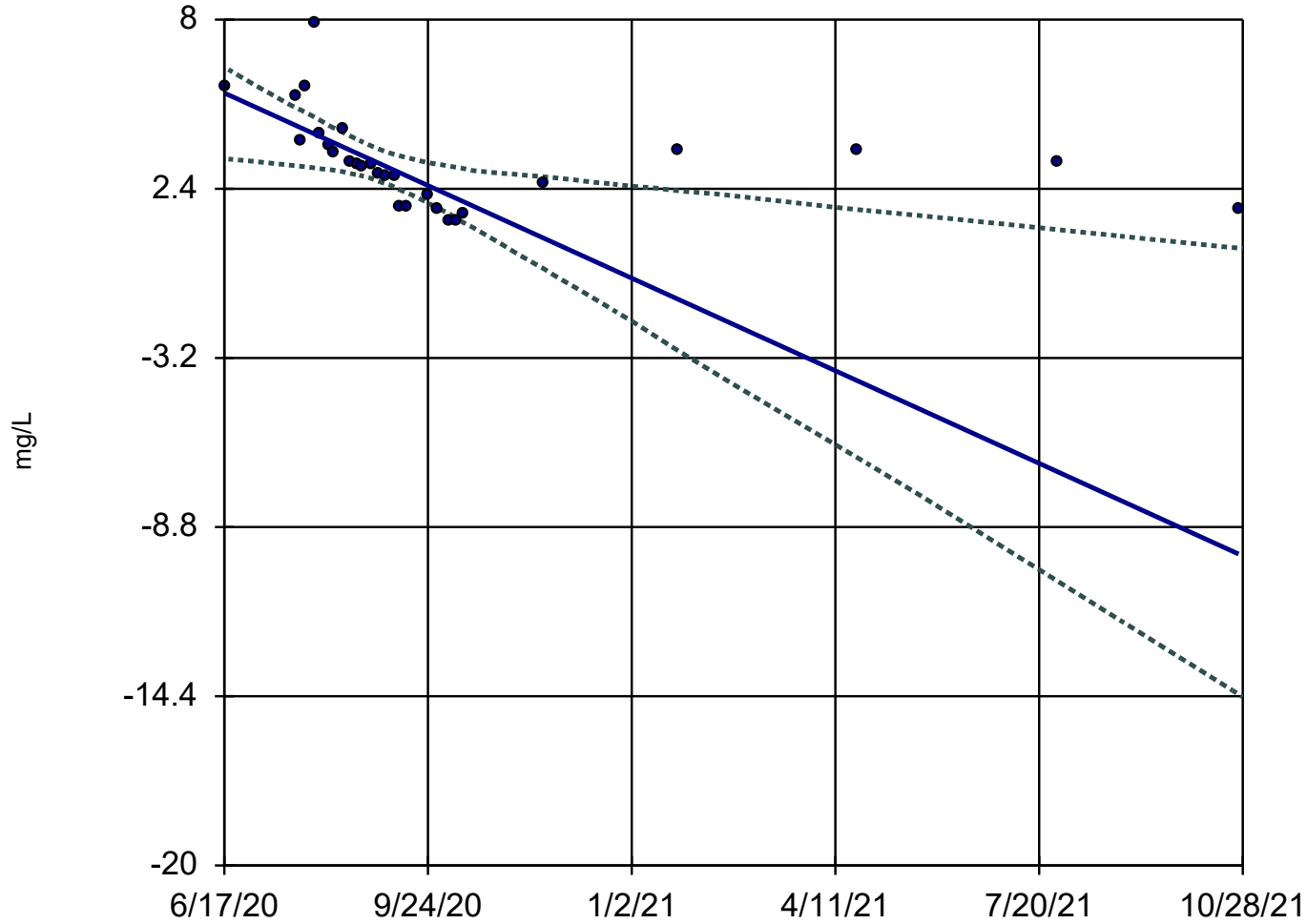
Mann-Kendall
statistic = -28
critical = -27

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Iron Analysis Run 1/3/2022 12:57 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -11.23
units per year.

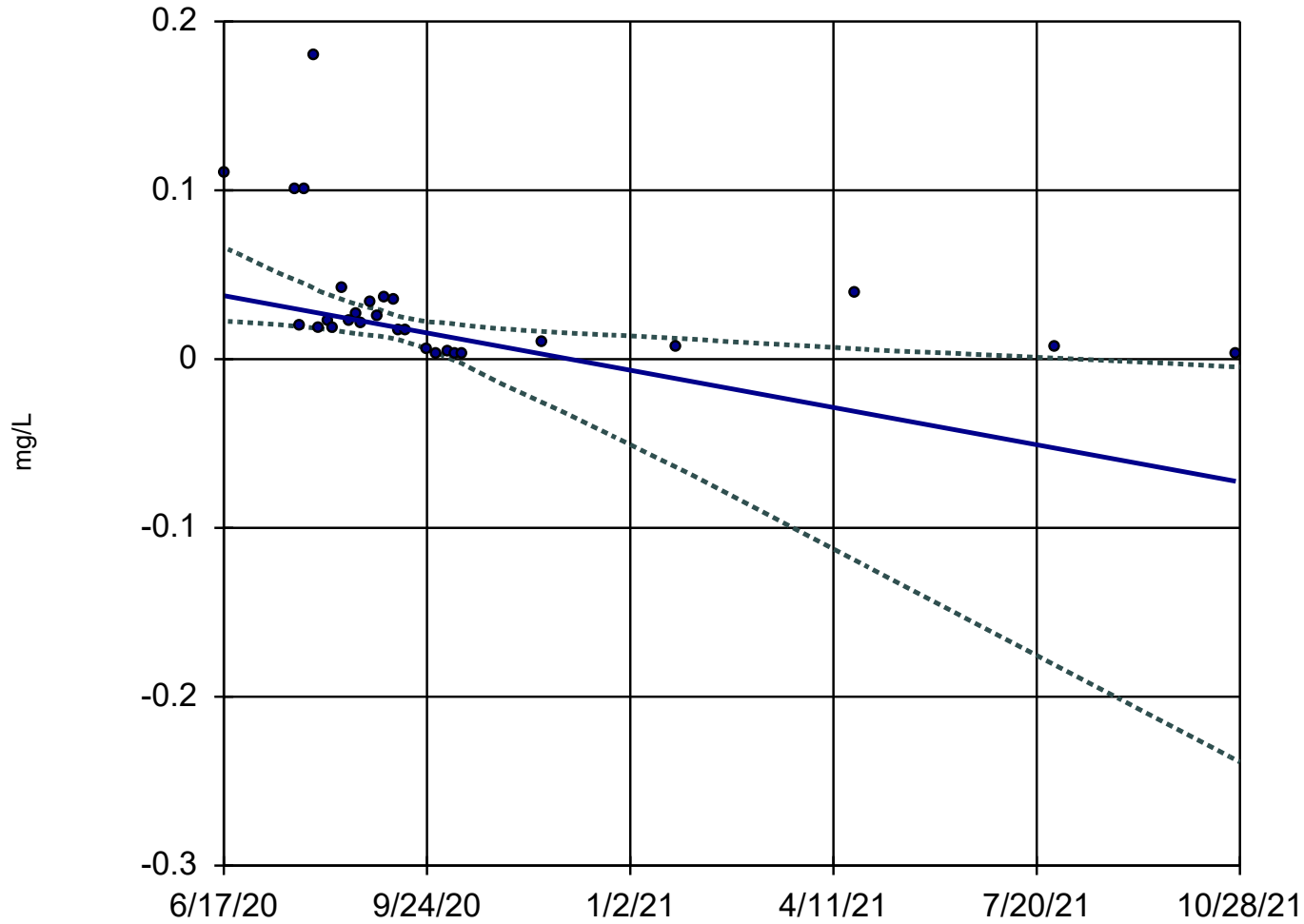
Mann-Kendall
statistic = -226
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Iron Analysis Run 1/3/2022 12:57 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.08089
units per year.

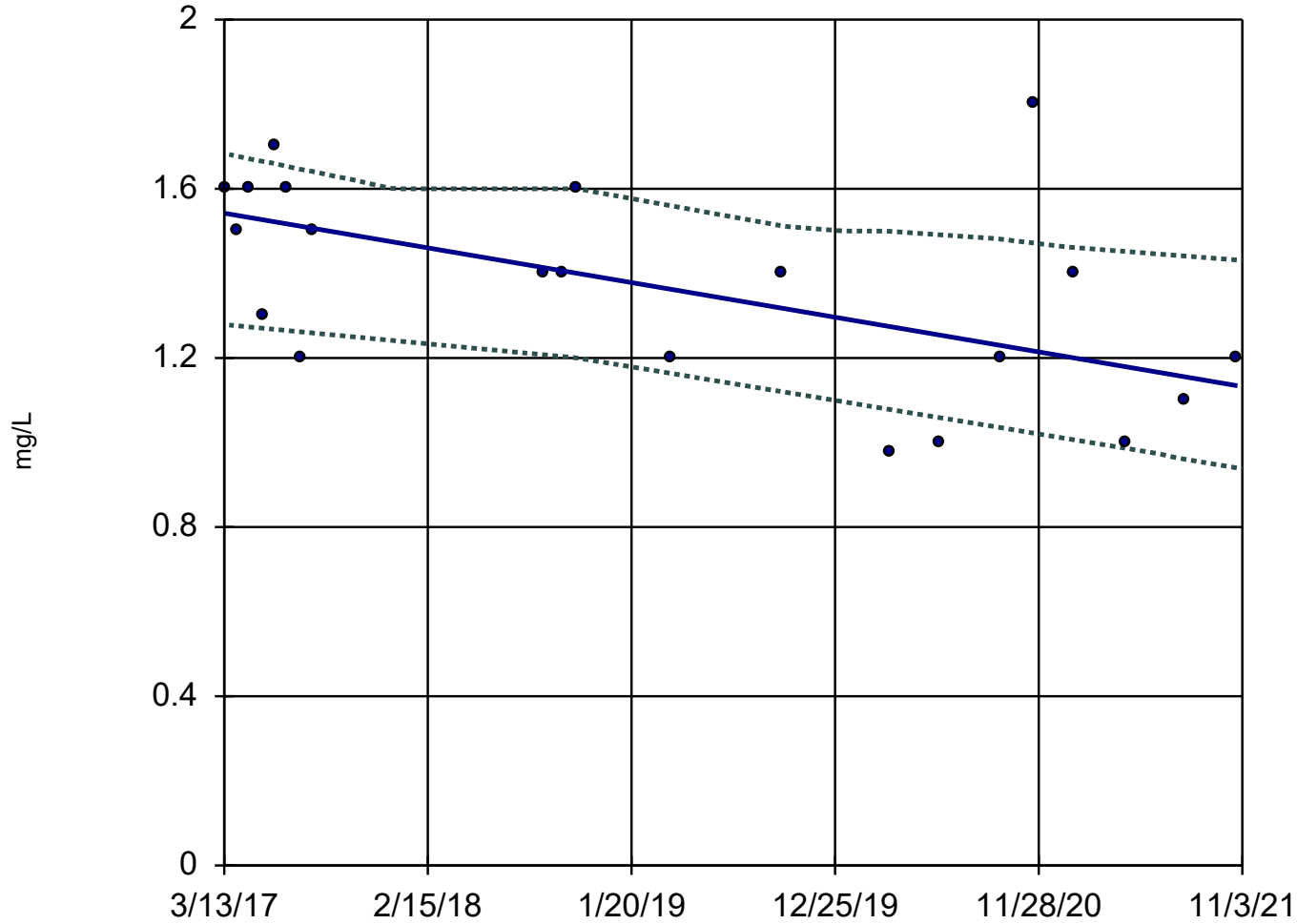
Mann-Kendall
statistic = -192
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Lead Analysis Run 1/3/2022 12:57 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-02



n = 21

Slope = -0.08816
units per year.

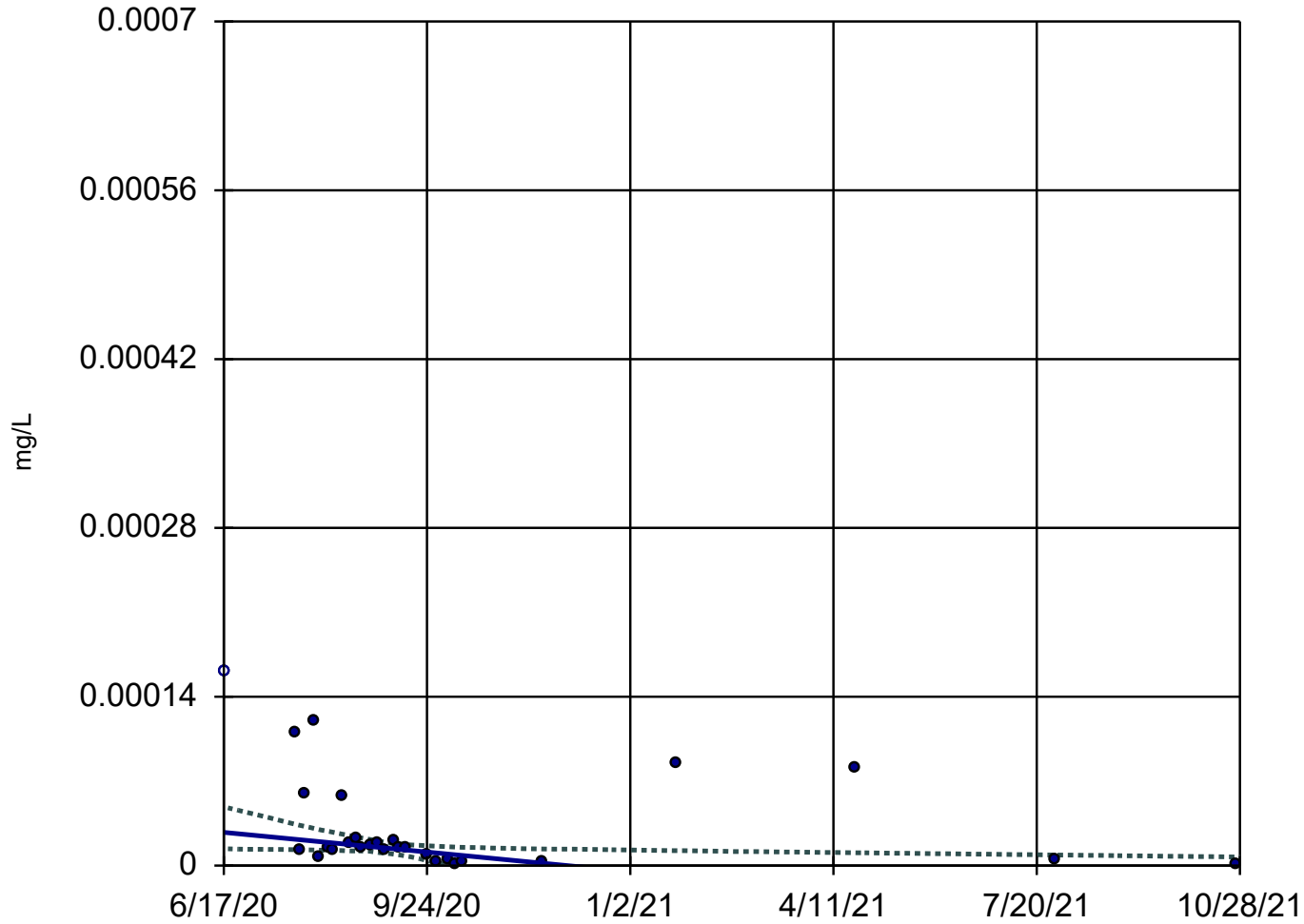
Mann-Kendall
statistic = -80
critical = -78

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Lithium Analysis Run 1/3/2022 12:57 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.00005975
units per year.

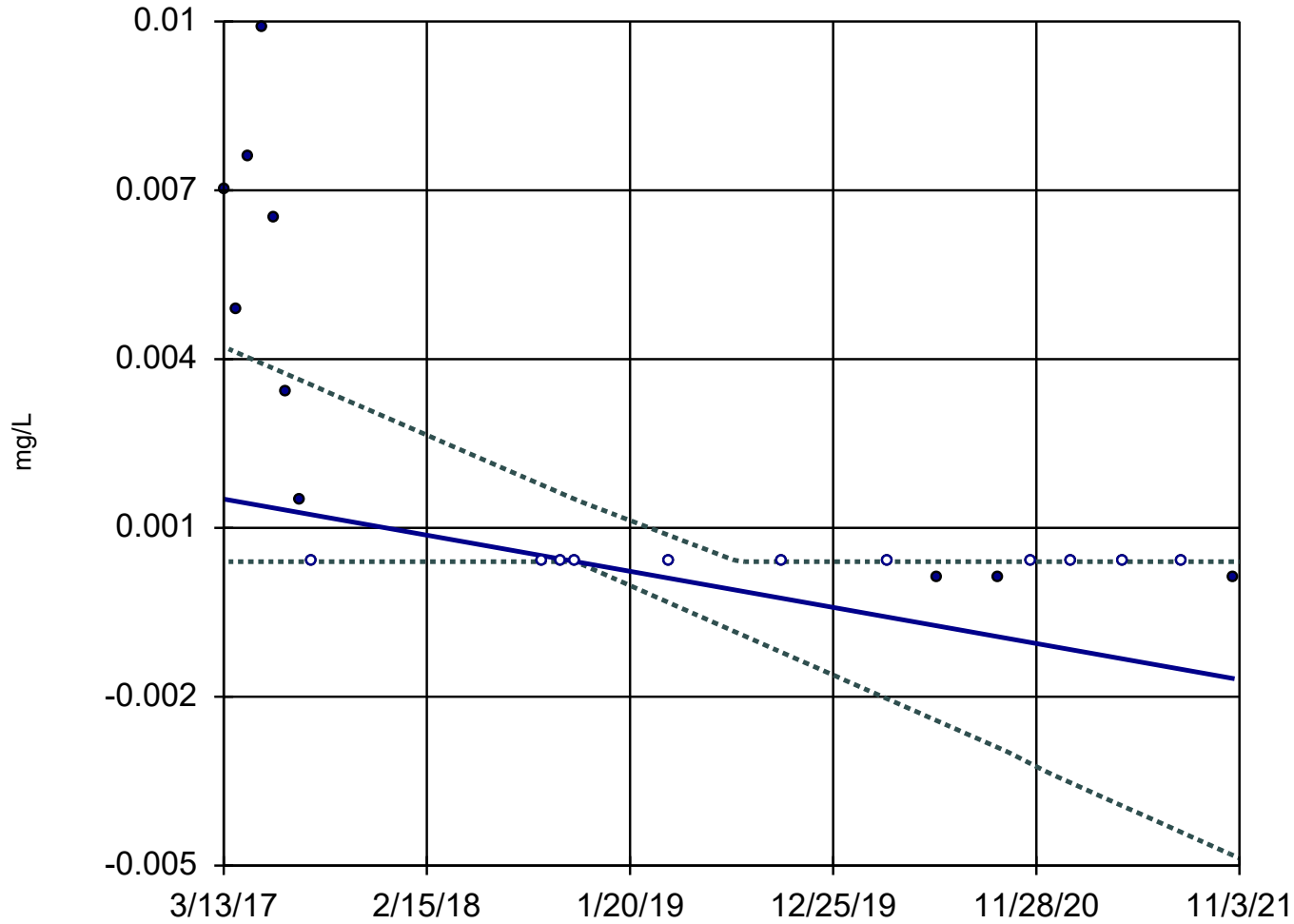
Mann-Kendall
statistic = -156
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Mercury Analysis Run 1/3/2022 12:57 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-03



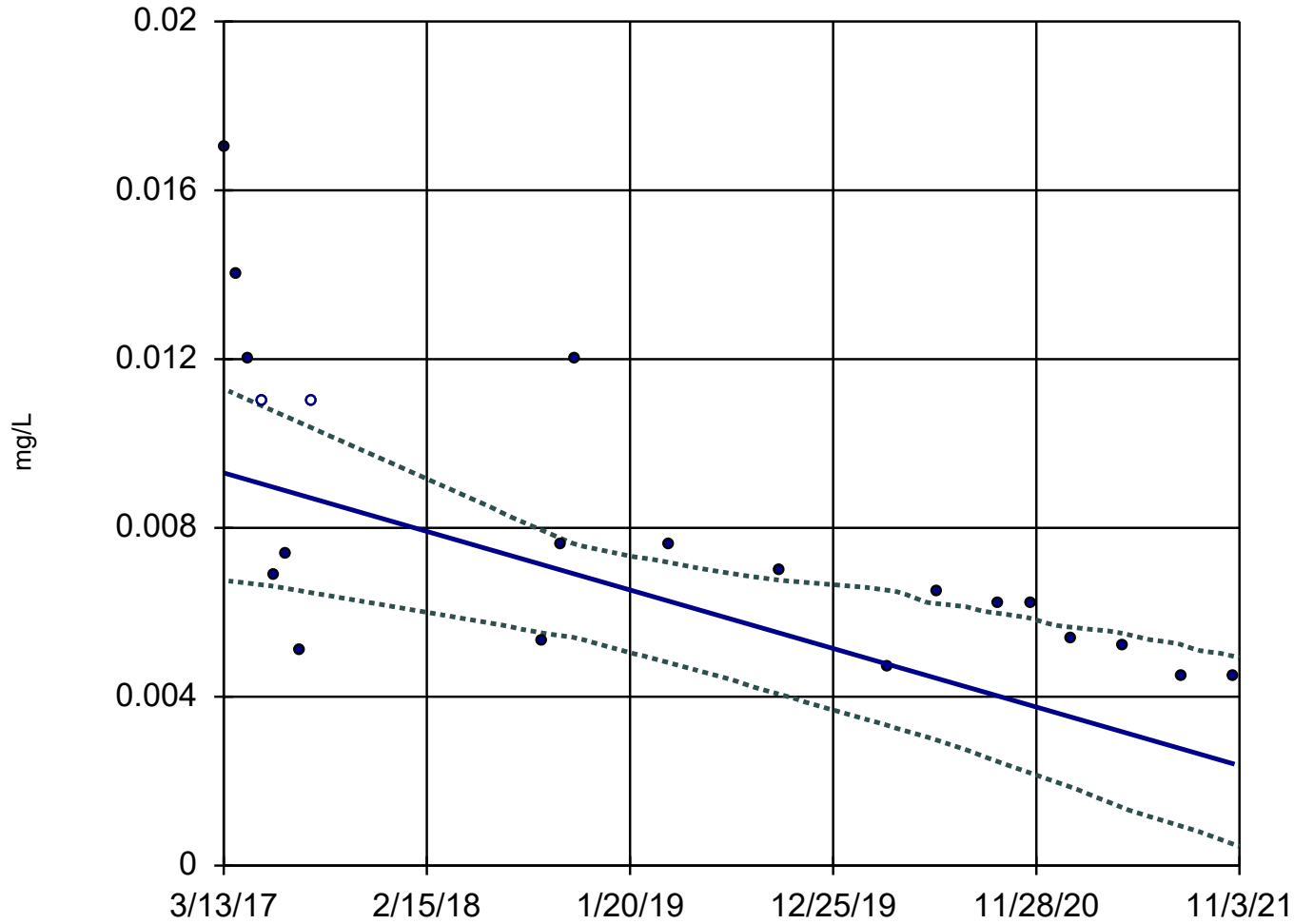
n = 21
Slope = -0.0006905
units per year.
Mann-Kendall
statistic = -126
critical = -78
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Molybdenum Analysis Run 1/3/2022 12:57 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-02



n = 21

Slope = -0.001492
units per year.

Mann-Kendall
statistic = -131
critical = -78

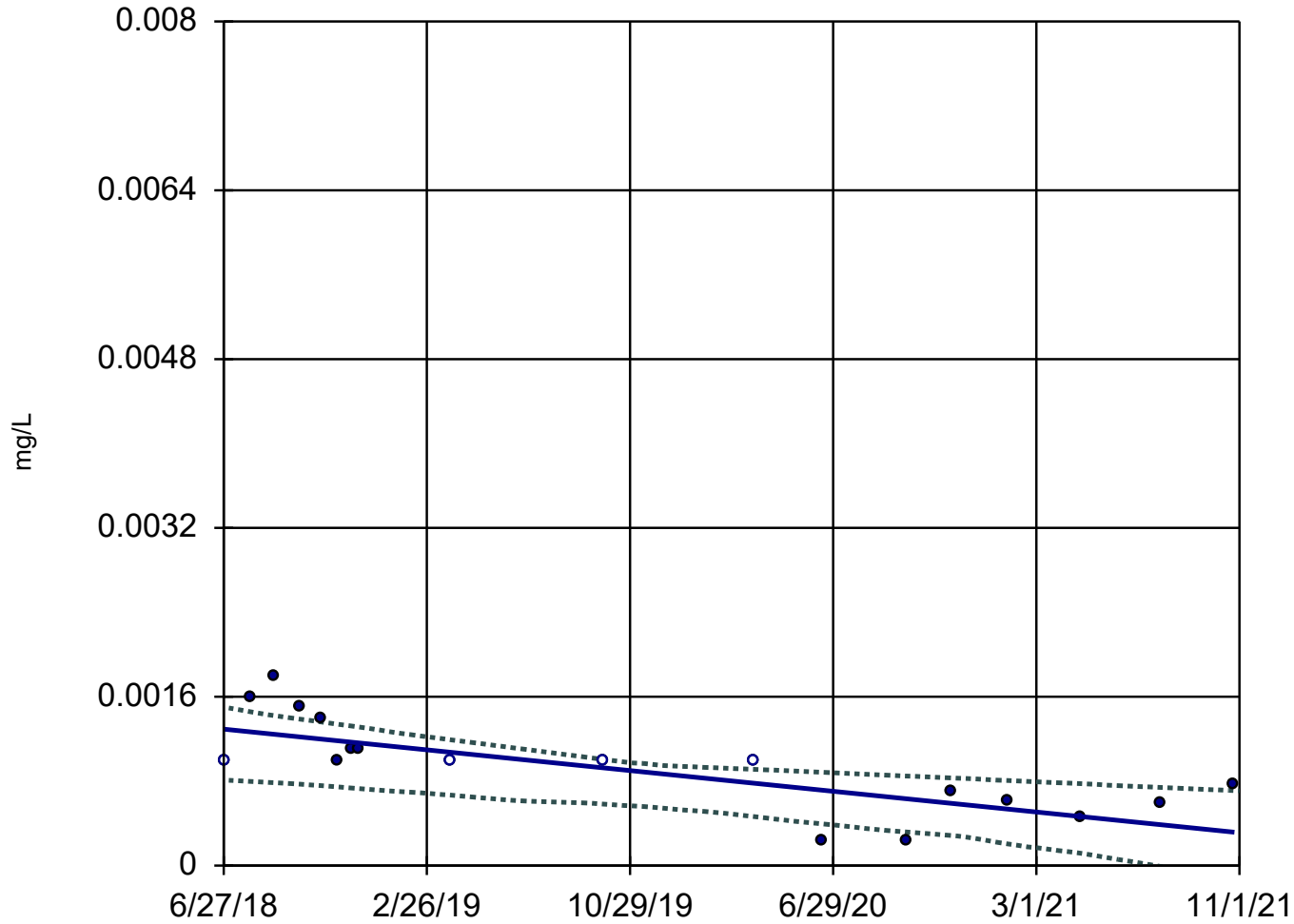
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Molybdenum Analysis Run 1/3/2022 12:57 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

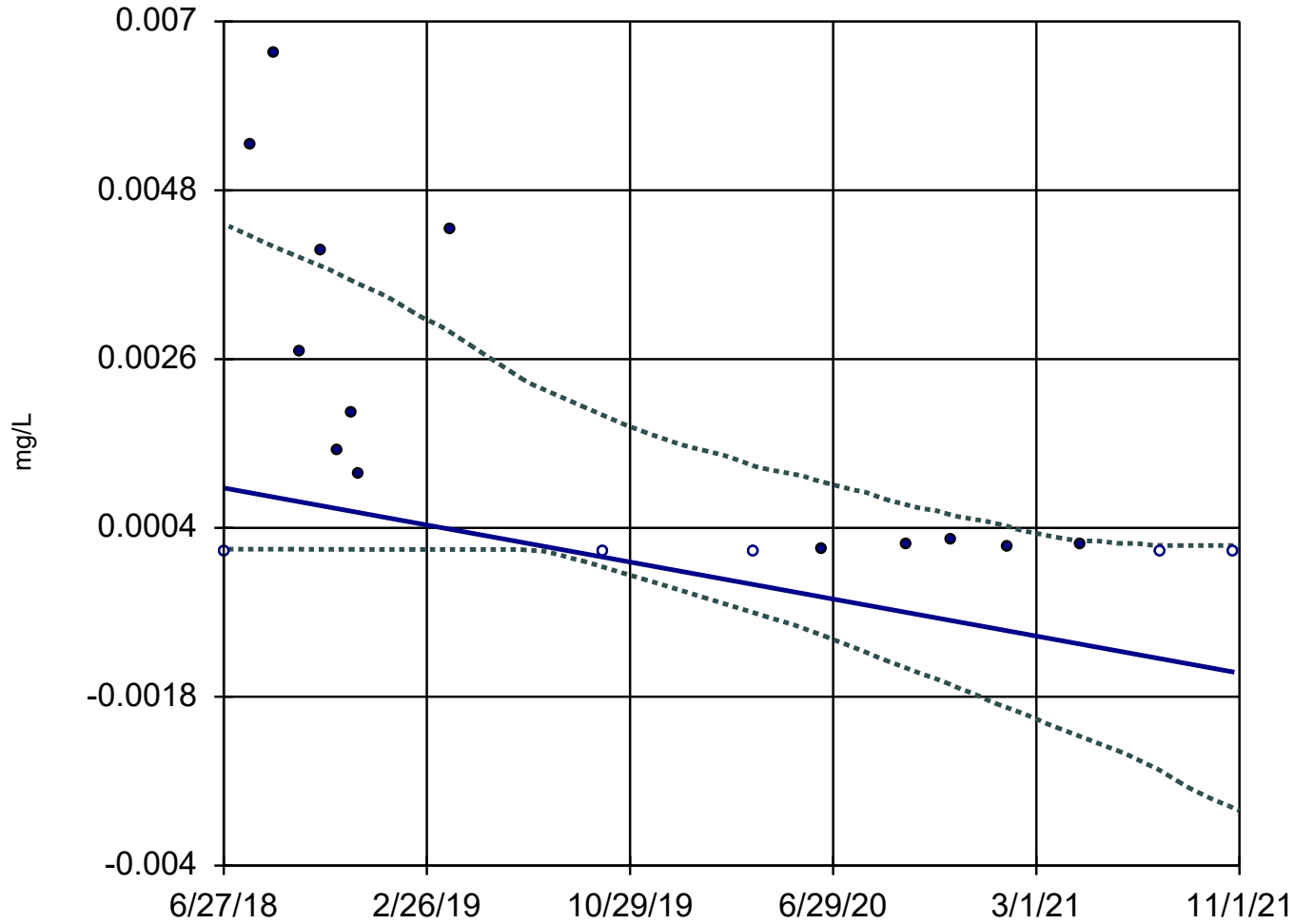
MW-06



n = 18
Slope = -0.0002929
units per year.
Mann-Kendall
statistic = -93
critical = -63
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 95% Confidence Band

MW-07 (bg)



n = 18

Slope = -0.00072
units per year.

Mann-Kendall
statistic = -68
critical = -63

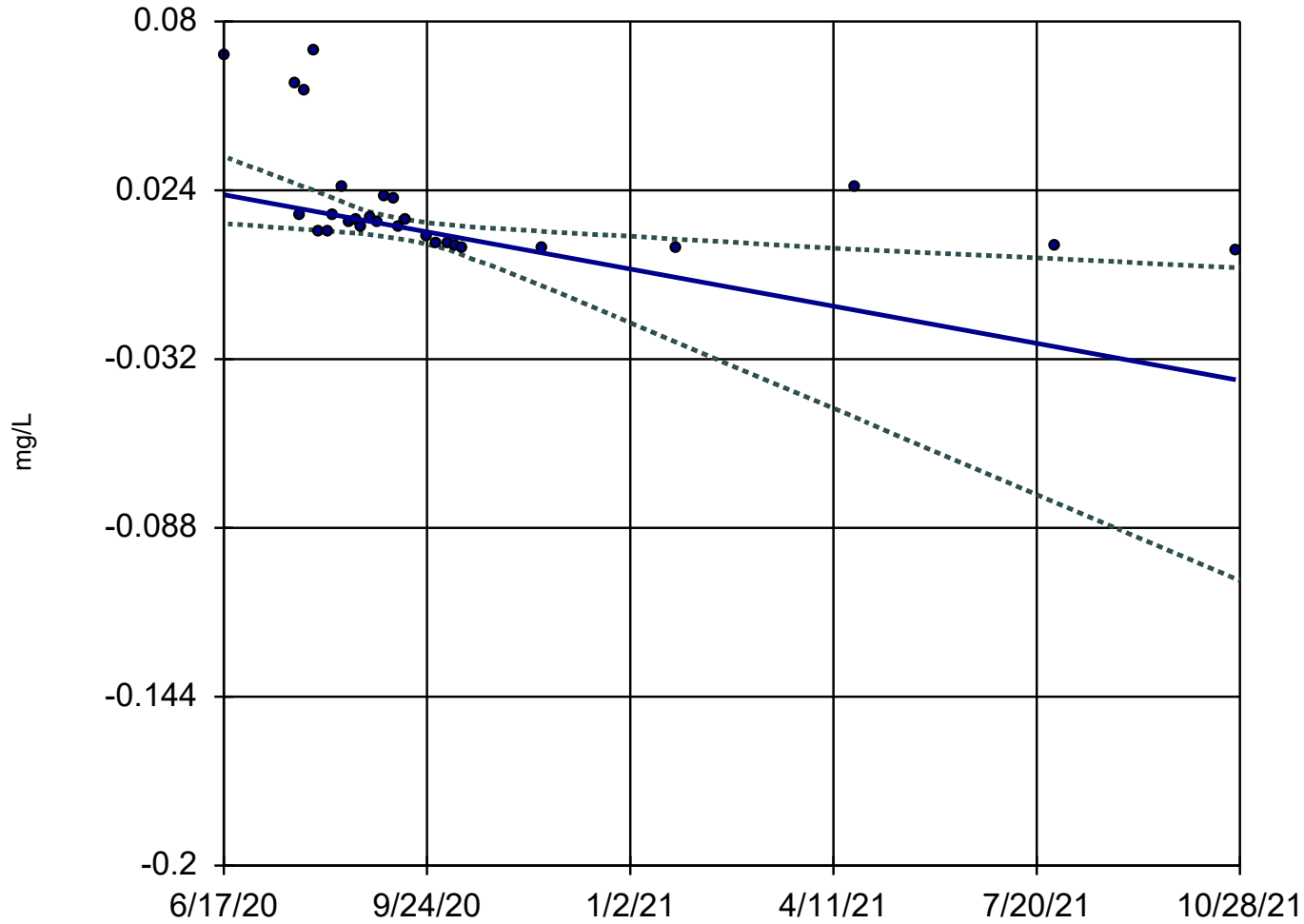
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Molybdenum Analysis Run 1/3/2022 12:57 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.04515
units per year.

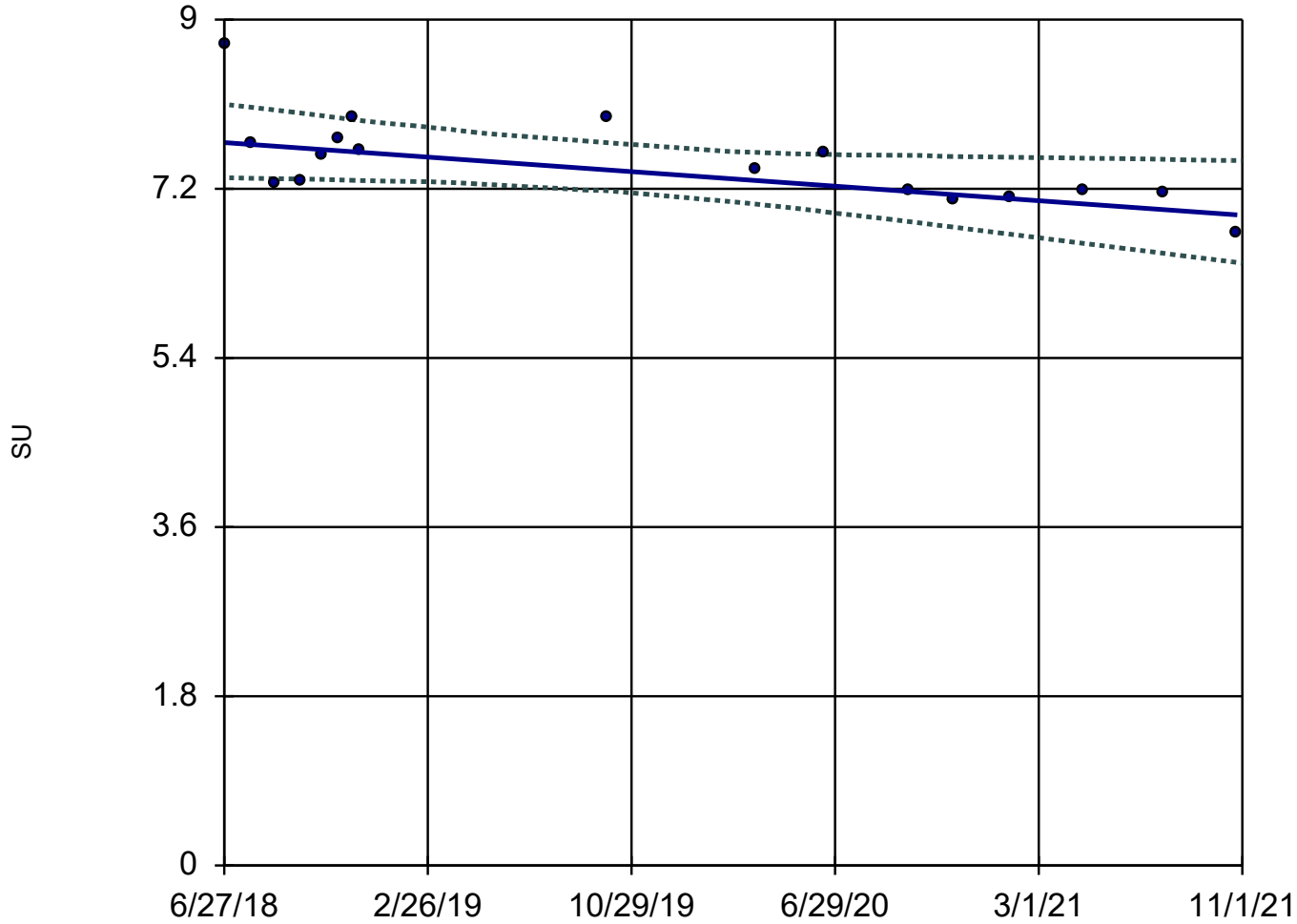
Mann-Kendall
statistic = -218
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Nickel Analysis Run 1/3/2022 12:58 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-08



n = 17

Slope = -0.2308
units per year.

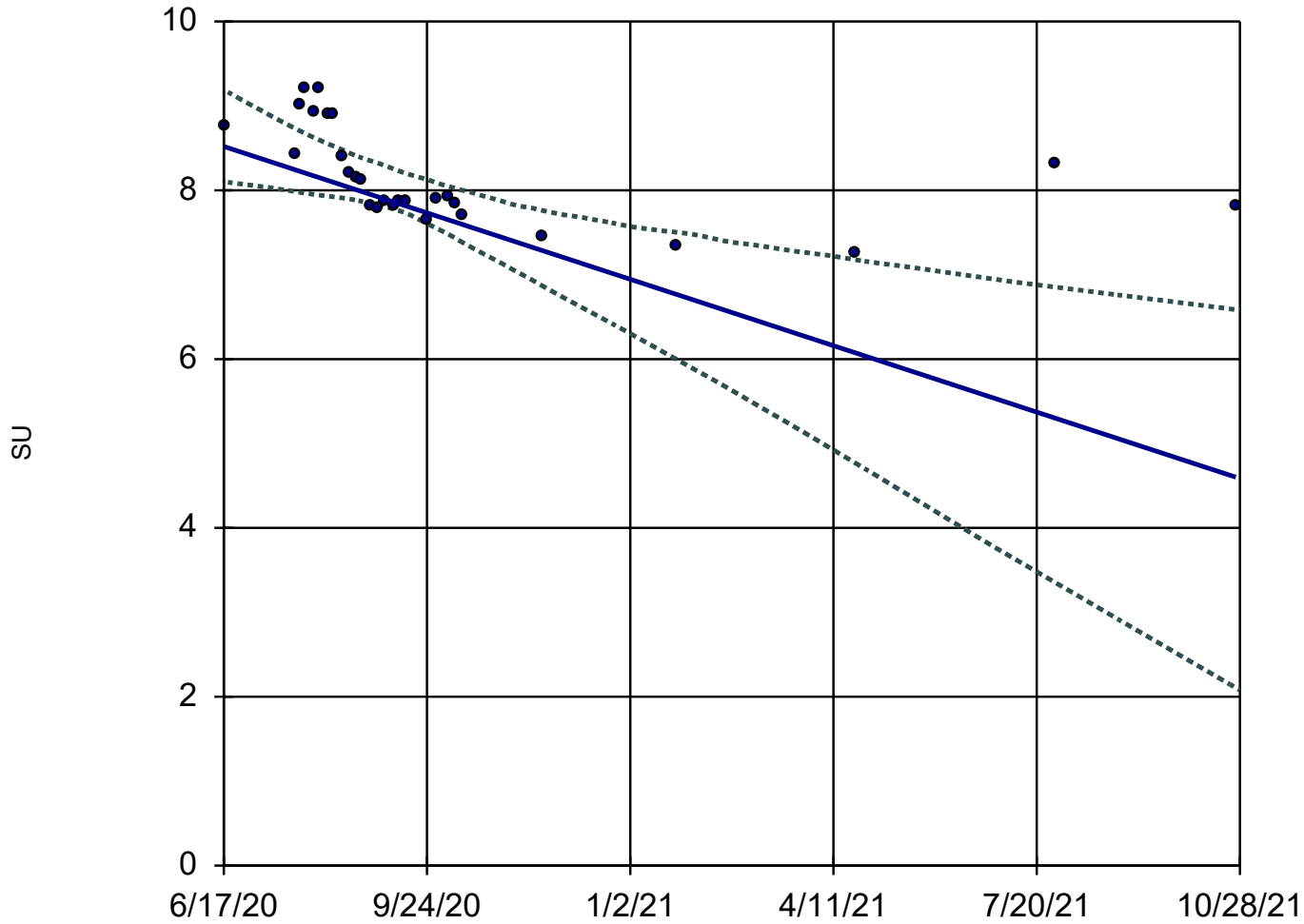
Mann-Kendall
statistic = -70
critical = -58

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: pH Analysis Run 1/3/2022 12:58 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -2.882
units per year.

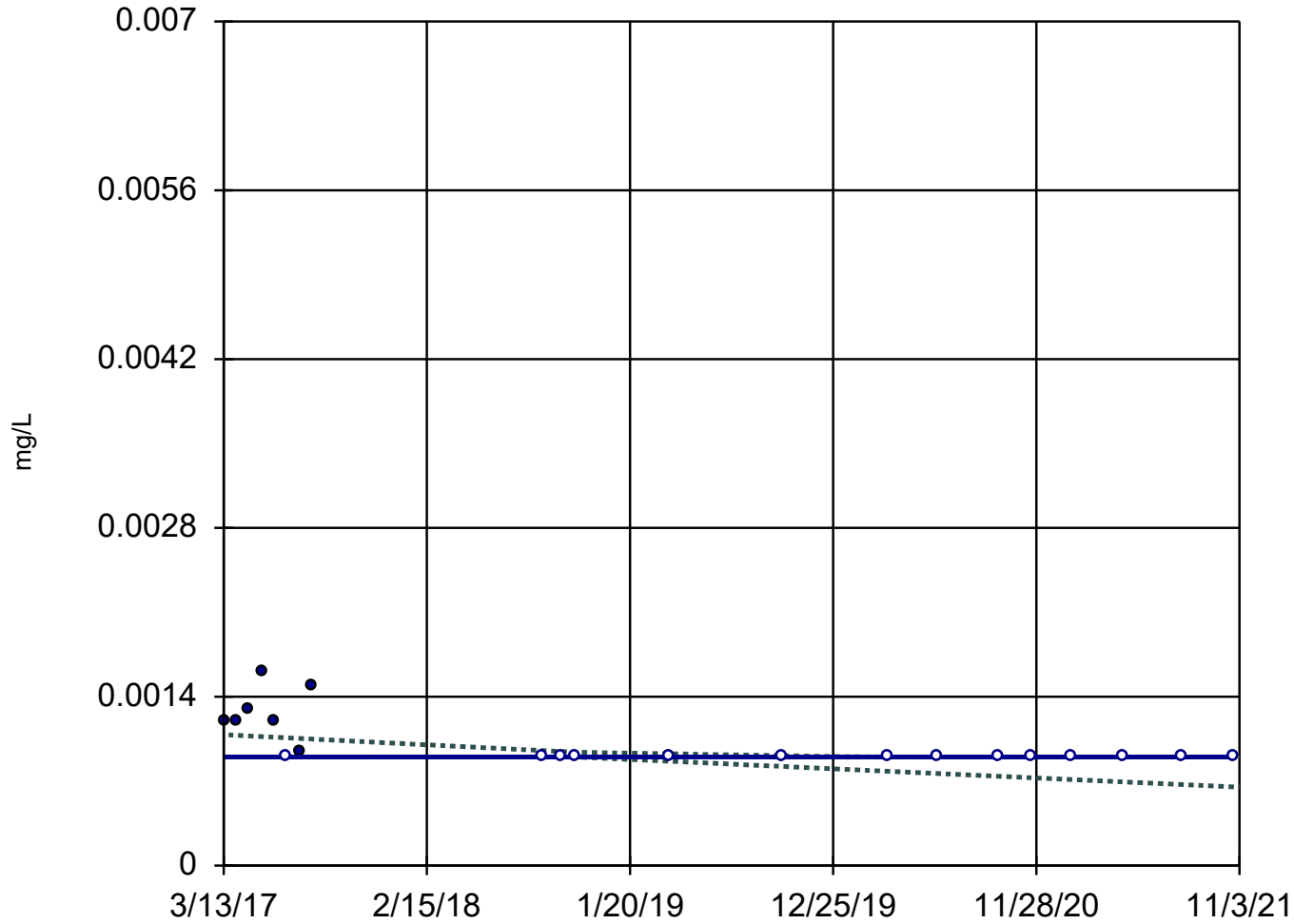
Mann-Kendall
statistic = -236
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: pH Analysis Run 1/3/2022 12:58 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

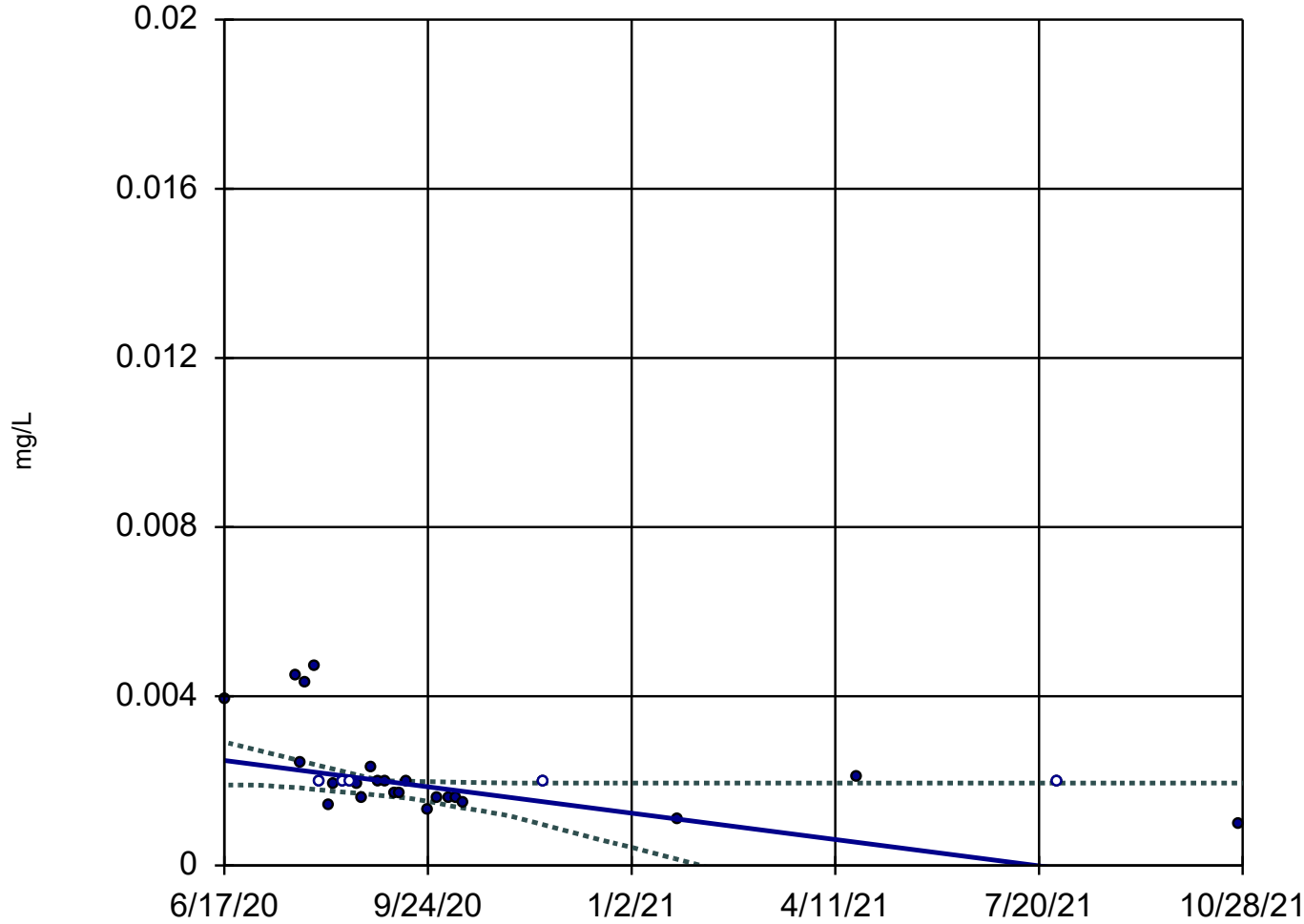
MW-03



n = 21
Slope = 0
units per year.
Mann-Kendall
statistic = -92
critical = -78
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 95% Confidence Band

MW-01R

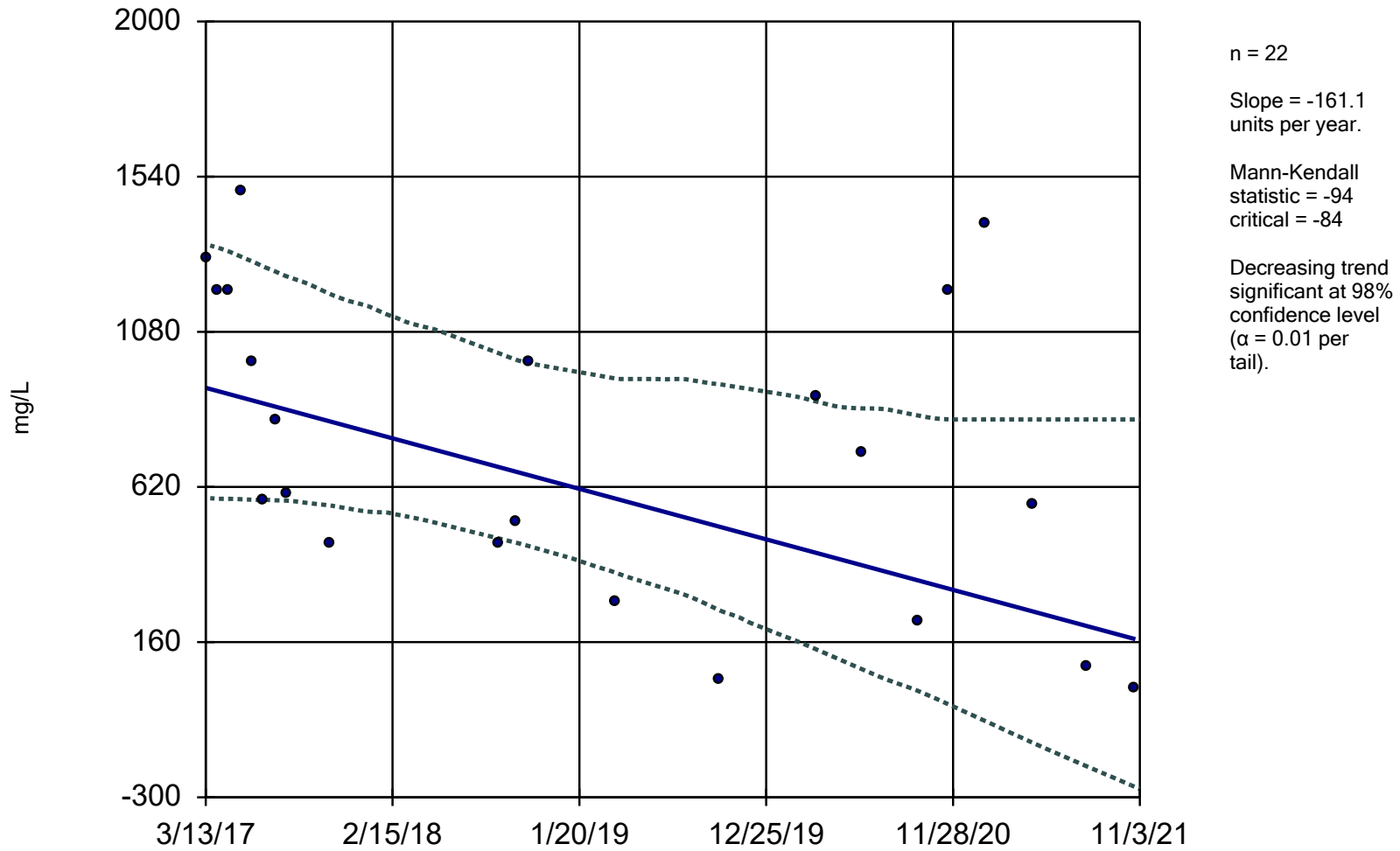


n = 28
 Slope = -0.002281 units per year.
 Mann-Kendall statistic = -164
 critical = -119
 Decreasing trend significant at 98% confidence level ($\alpha = 0.01$ per tail).

Constituent: Selenium Analysis Run 1/3/2022 12:58 PM View: Appendix III
 Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

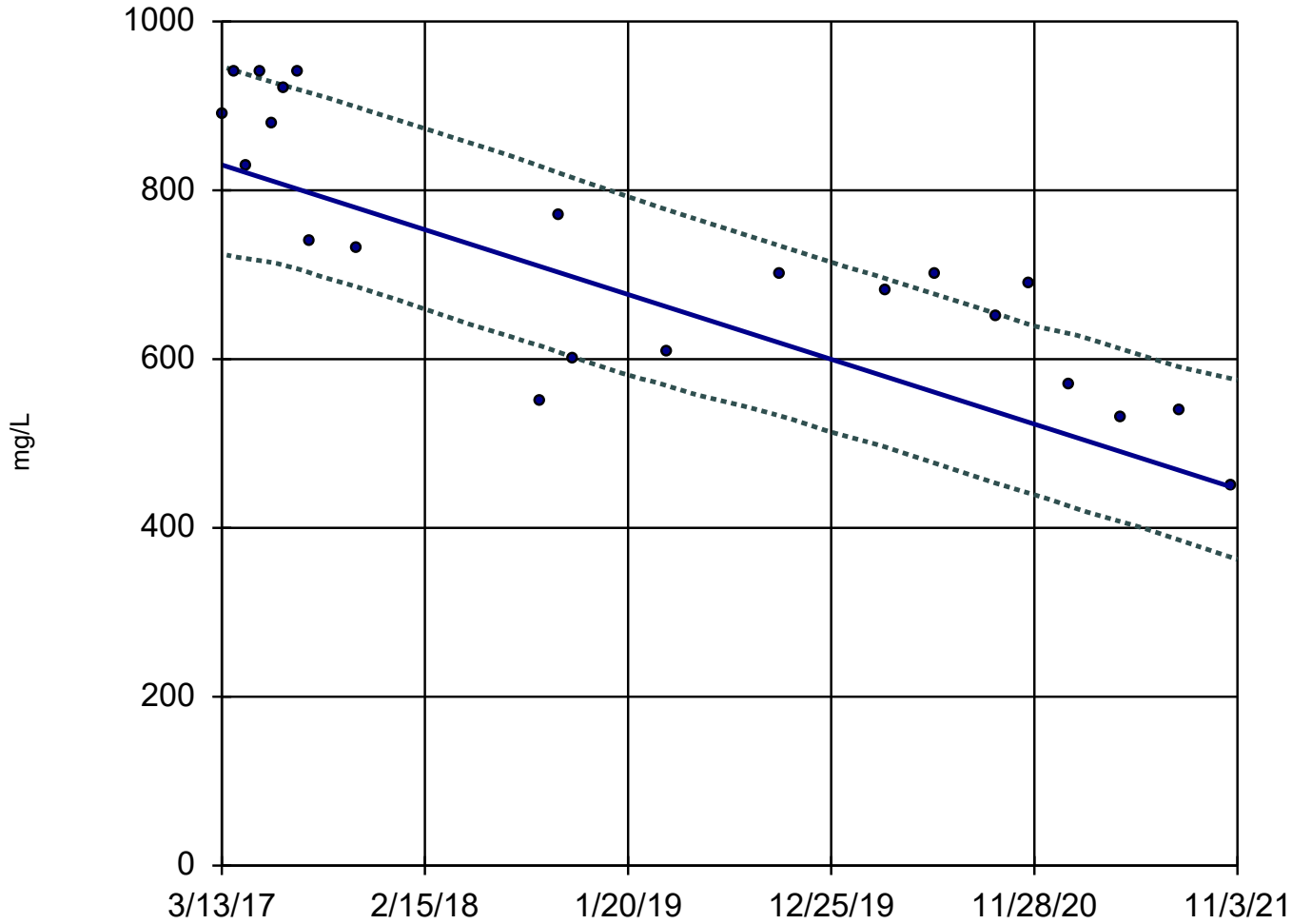
MW-03



Constituent: Sulfate Analysis Run 1/3/2022 12:58 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-04



n = 22

Slope = -82.6
units per year.

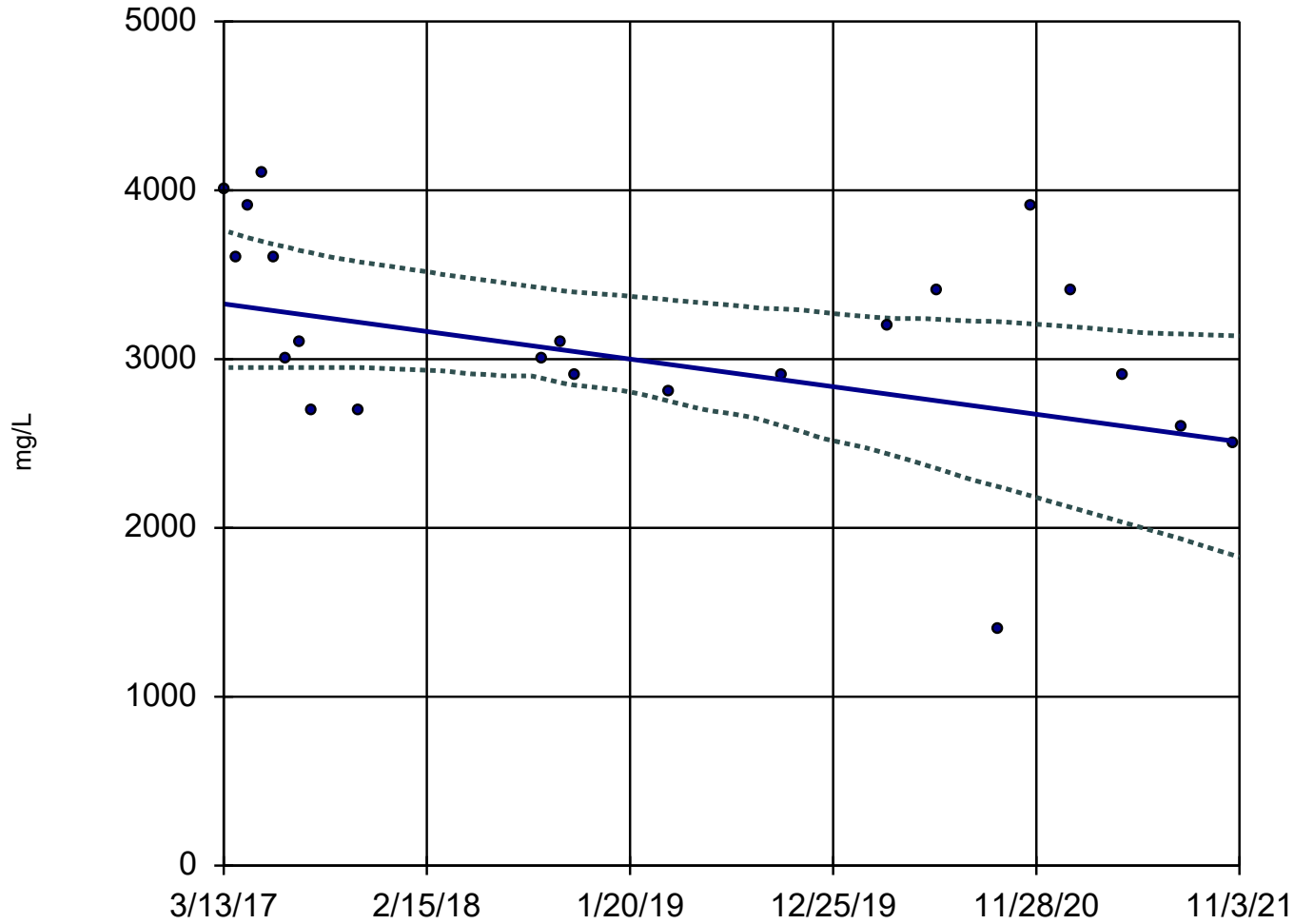
Mann-Kendall
statistic = -153
critical = -84

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Sulfate Analysis Run 1/3/2022 12:58 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-03



n = 22

Slope = -175.8
units per year.

Mann-Kendall
statistic = -86
critical = -84

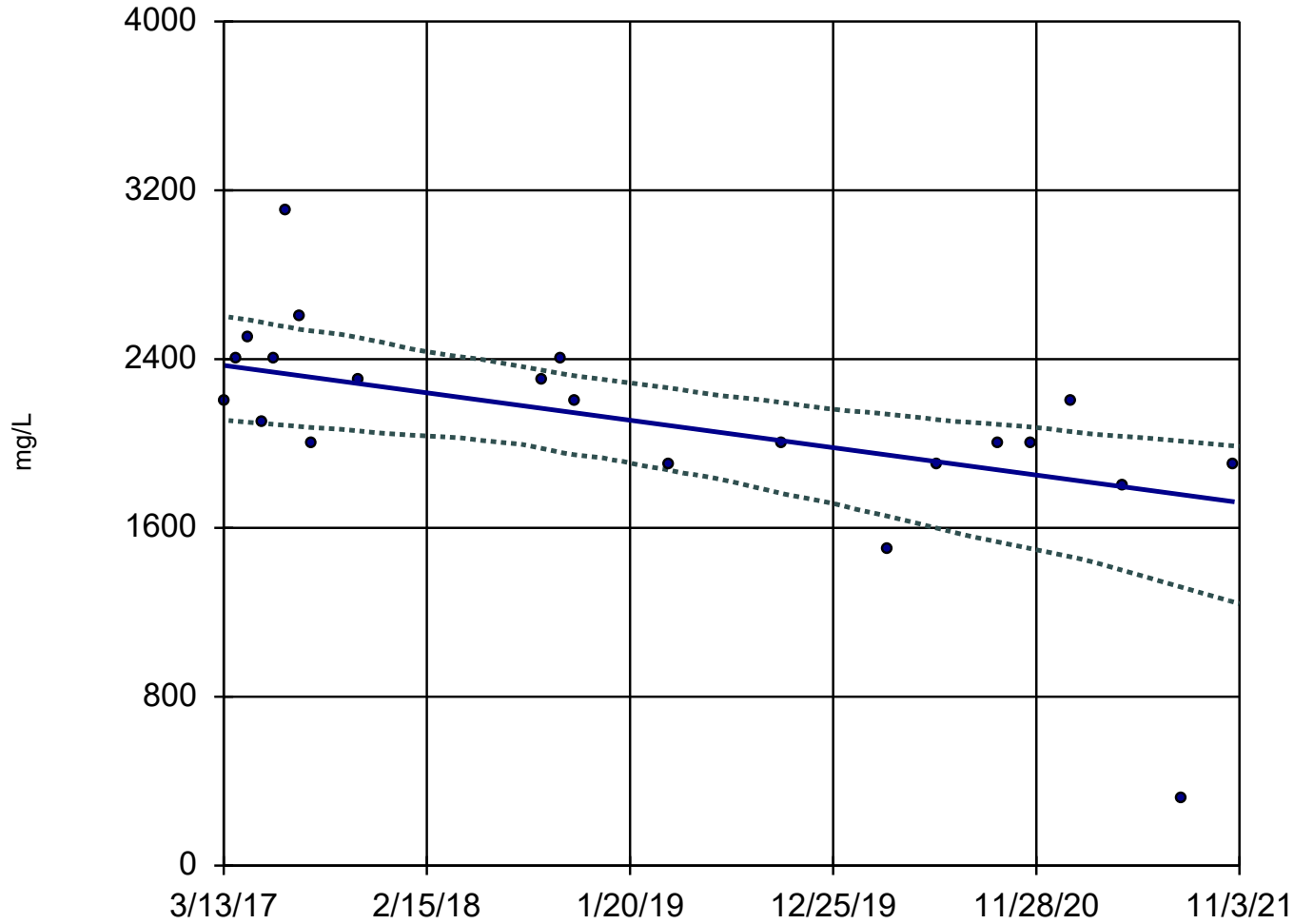
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Total Dissolved Solids Analysis Run 1/3/2022 12:58 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-04



n = 22

Slope = -139.8
units per year.

Mann-Kendall
statistic = -119
critical = -84

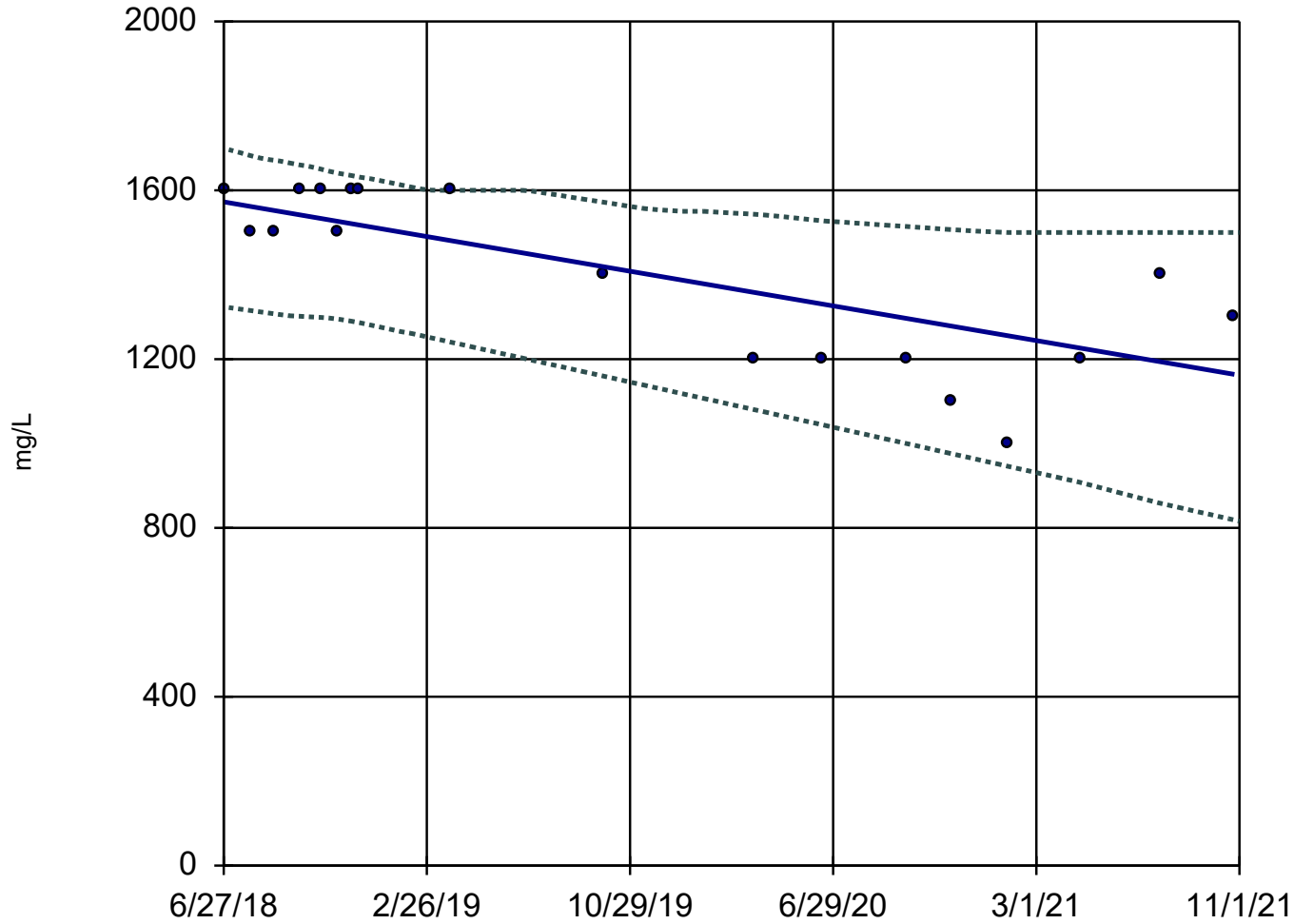
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Total Dissolved Solids Analysis Run 1/3/2022 12:58 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-06



n = 18

Slope = -122.6
units per year.

Mann-Kendall
statistic = -74
critical = -63

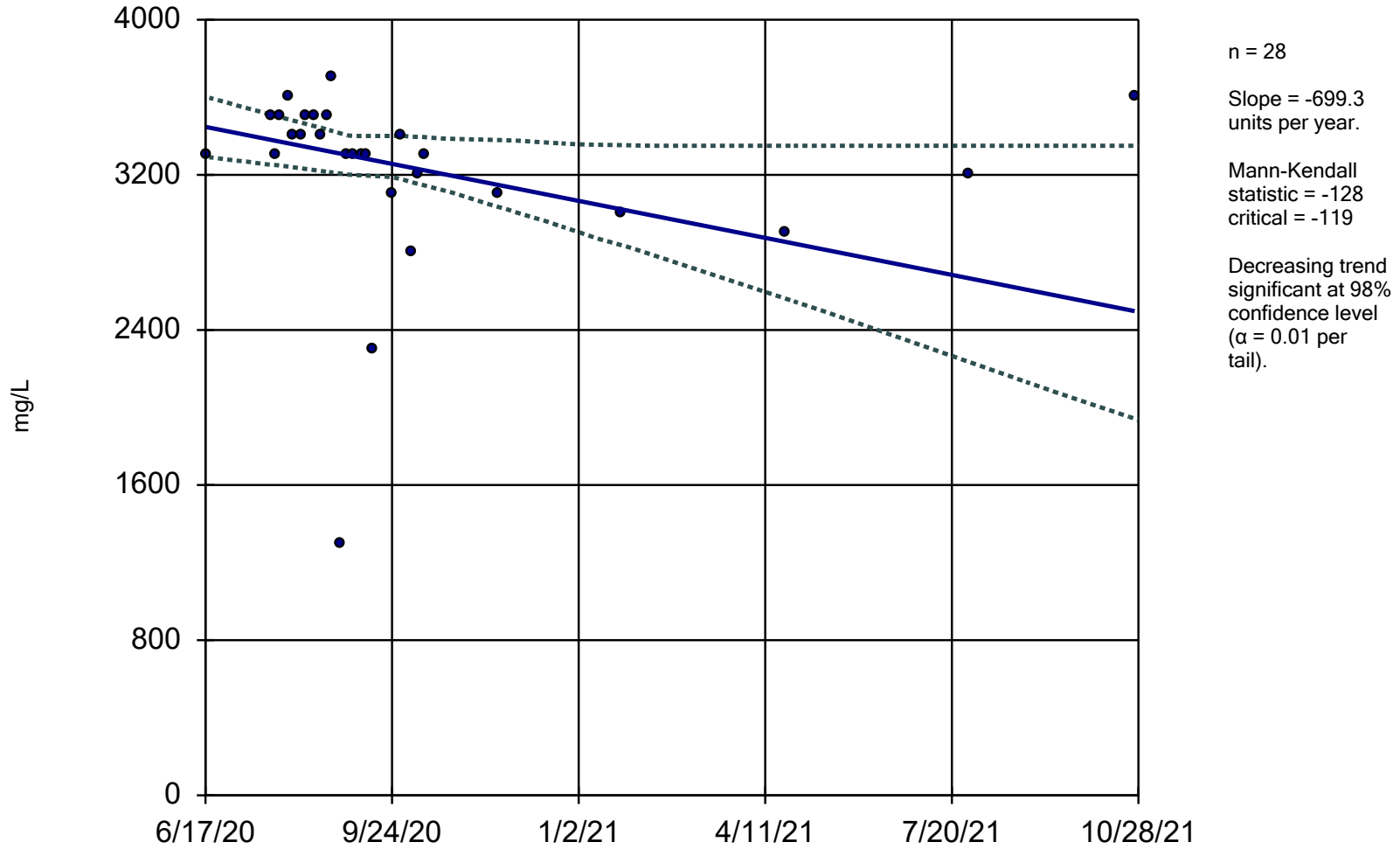
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Total Dissolved Solids Analysis Run 1/3/2022 12:58 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R

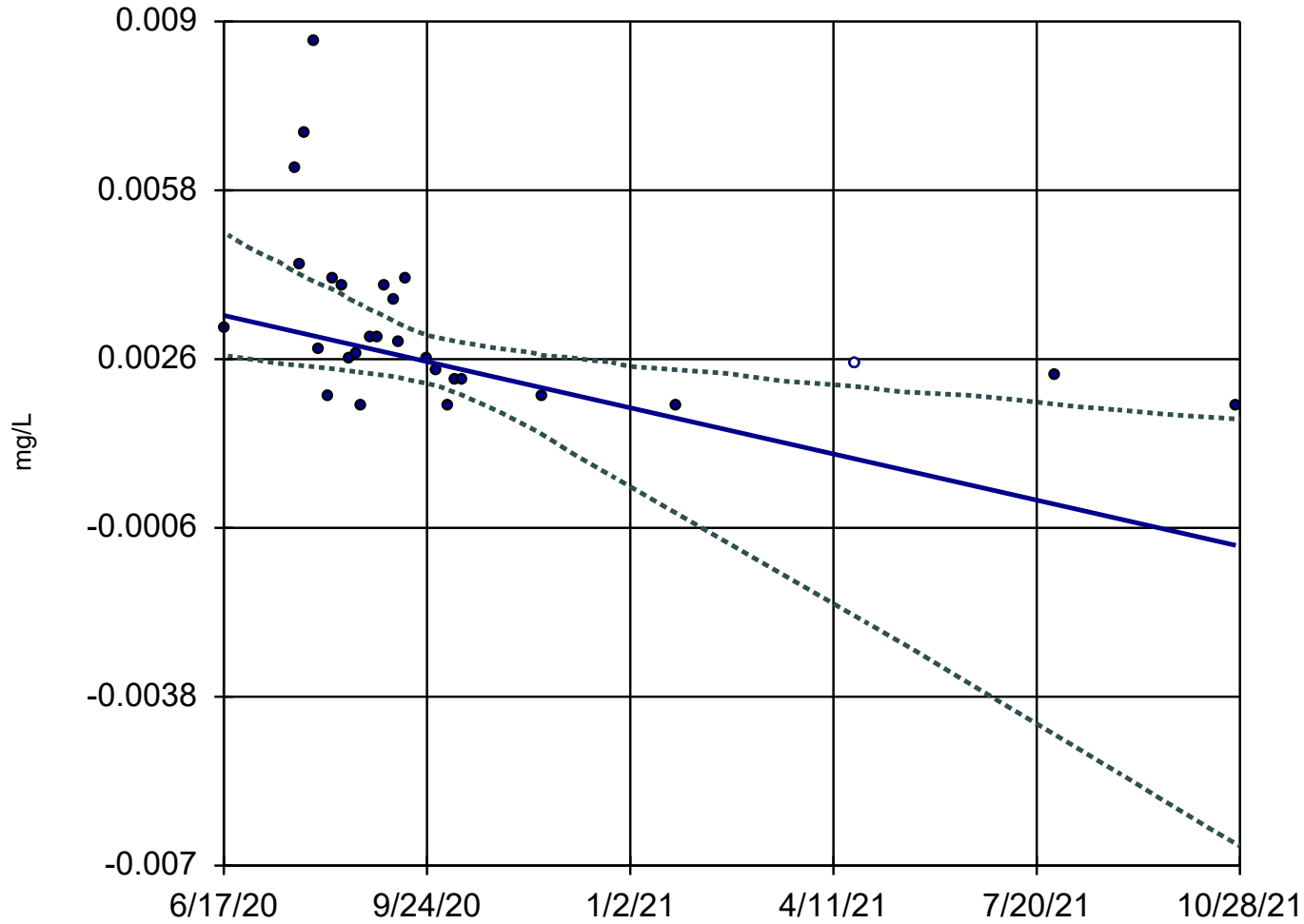


Constituent: Total Dissolved Solids Analysis Run 1/3/2022 12:58 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.003205
units per year.

Mann-Kendall
statistic = -190
critical = -119

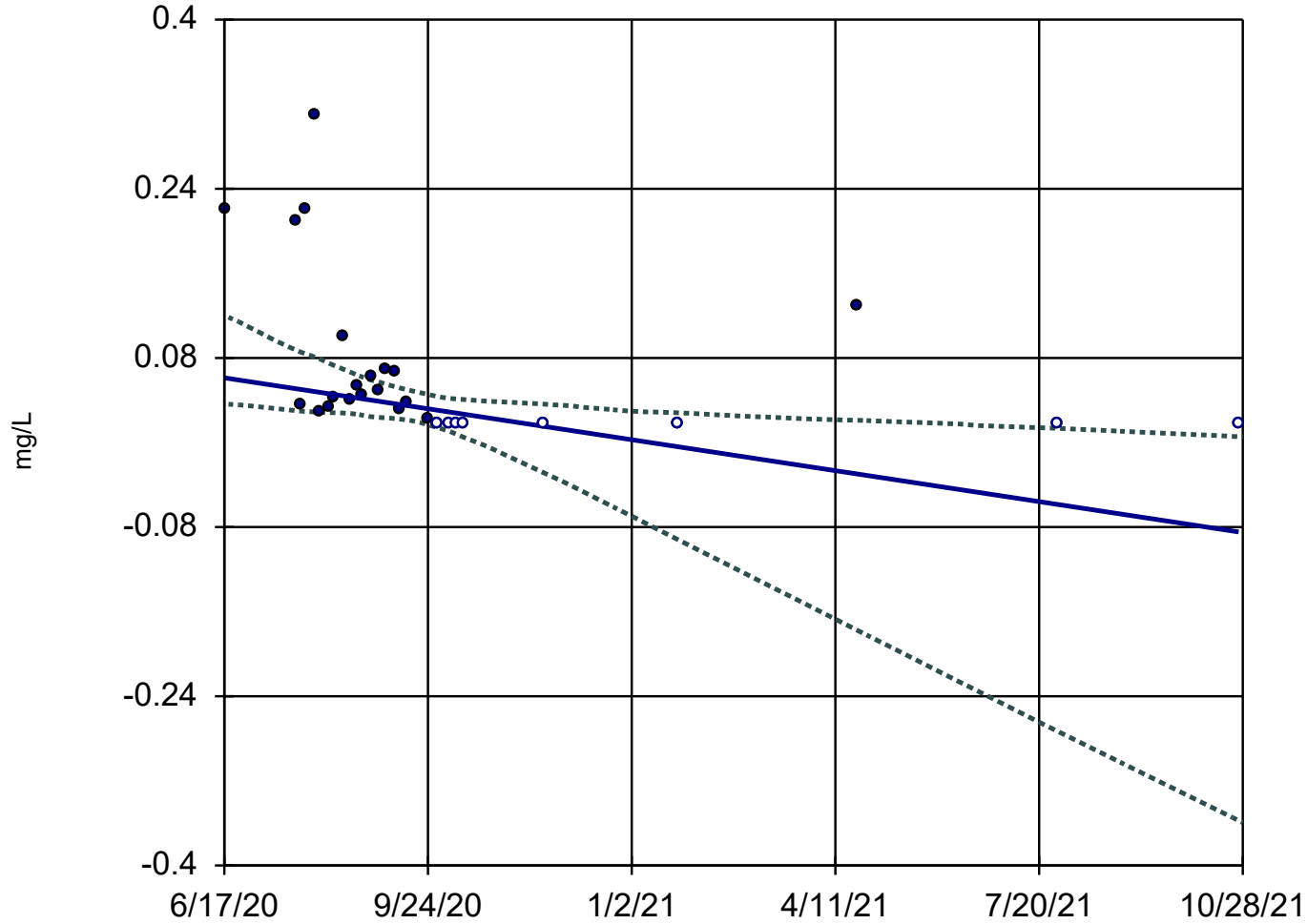
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Vanadium Analysis Run 1/3/2022 12:58 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Sen's Slope and 95% Confidence Band

MW-01R



n = 28

Slope = -0.1071
units per year.

Mann-Kendall
statistic = -181
critical = -119

Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Zinc Analysis Run 1/3/2022 12:59 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Trend Test

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:03 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	MW-03	0	-16	-78	No	21	95.24	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-04	0	0	78	No	21	95.24	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-02	0	-50	-78	No	21	66.67	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-05	0	-28	-63	No	18	100	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-06	0	-24	-63	No	18	77.78	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-07 (bg)	0	-9	-63	No	18	88.89	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-08	0	7	63	No	18	88.89	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-10	0	1	27	No	10	80	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-09	0	0	27	No	10	100	n/a	n/a	0.02	NP
Antimony (mg/L)	MW-01R	-0.01216	-202	-119	Yes	28	10.71	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-03	-0.00...	-62	-78	No	21	9.524	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-04	0	-4	-78	No	21	4.762	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-02	0.000...	66	78	No	21	4.762	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-05	-0.02243	-29	-63	No	18	0	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-06	-0.00...	-5	-63	No	18	5.556	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-07 (bg)	-0.00...	-67	-58	Yes	17	47.06	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-08	-0.00...	-22	-63	No	18	0	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-10	-0.00...	-13	-27	No	10	0	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-09	0.000...	8	27	No	10	0	n/a	n/a	0.02	NP
Arsenic (mg/L)	MW-01R	-0.00435	-138	-119	Yes	28	3.571	n/a	n/a	0.02	NP
Barium (mg/L)	MW-03	0.02875	71	78	No	21	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-04	-0.00...	-74	-78	No	21	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-02	0.004597	34	78	No	21	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-05	-0.09104	-98	-63	Yes	18	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-06	0.206	103	63	Yes	18	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-07 (bg)	-0.03042	-43	-63	No	18	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-08	0.1499	116	63	Yes	18	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-10	0.1789	28	27	Yes	10	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-09	0.8295	9	27	No	10	0	n/a	n/a	0.02	NP
Barium (mg/L)	MW-01R	-0.9564	-265	-119	Yes	28	0	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-03	0	0	78	No	21	100	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-04	0	0	78	No	21	100	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-02	0	5	78	No	21	85.71	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-05	0	0	63	No	18	100	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-06	0	-11	-63	No	18	100	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-07 (bg)	0	0	63	No	18	100	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-08	0	1	63	No	18	94.44	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-10	0	0	27	No	10	100	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-09	0	0	27	No	10	100	n/a	n/a	0.02	NP
Beryllium (mg/L)	MW-01R	0	0	119	No	28	100	n/a	n/a	0.02	NP
Boron (ug/L)	MW-03	-130.2	-74	-78	No	21	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-04	0	-3	-78	No	21	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-02	-2177	-29	-78	No	21	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-05	-428.4	-40	-63	No	18	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-06	-360.7	-17	-63	No	18	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-07 (bg)	534.4	43	63	No	18	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-08	-743	-71	-63	Yes	18	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-10	6518	19	27	No	10	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-09	445.1	7	27	No	10	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-01R	-70940	-113	-119	No	28	0	n/a	n/a	0.02	NP

Trend Test

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:03 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Cadmium (mg/L)	MW-03	0	17	78	No	21	95.24	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-04	0	-3	-78	No	21	90.48	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-02	0	11	78	No	21	66.67	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-05	0	26	63	No	18	83.33	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-06	0	40	63	No	18	61.11	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-07 (bg)	0	31	63	No	18	94.44	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-08	0	34	63	No	18	88.89	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-10	0	1	27	No	10	80	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-09	0	0	27	No	10	100	n/a	n/a	0.02	NP
Cadmium (mg/L)	MW-01R	-0.01085	-183	-119	Yes	28	32.14	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-03	-5163	-26	-84	No	22	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-04	-19211	-127	-84	Yes	22	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-02	6124	87	84	Yes	22	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-05	60430	53	63	No	18	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-06	-3516	-14	-63	No	18	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-07 (bg)	0	-45	-63	No	18	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-08	0	10	63	No	18	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-10	0	7	27	No	10	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-09	-19624	-24	-27	No	10	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-01R	68915	44	119	No	28	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-03	-23.75	-79	-84	No	22	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-04	-40.44	-182	-84	Yes	22	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-02	0	-45	-84	No	22	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-05	0	-4	-63	No	18	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-06	-54.36	-89	-63	Yes	18	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-07 (bg)	-0.3434	-55	-63	No	18	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-08	-3.626	-24	-63	No	18	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-10	61.66	6	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-09	1.177	13	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-01R	-16.35	-92	-119	No	28	0	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-03	0.000...	110	78	Yes	21	0	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-04	0.000...	57	78	No	21	4.762	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-02	-0.00...	-56	-78	No	21	0	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-05	0	56	63	No	18	77.78	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-06	0.000...	15	63	No	18	0	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-07 (bg)	0	27	63	No	18	66.67	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-08	0.000...	8	63	No	18	27.78	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-10	0	-2	-27	No	10	0	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-09	0.000...	10	27	No	10	0	n/a	n/a	0.02	NP
Chromium (mg/L)	MW-01R	-0.01333	-228	-119	Yes	28	3.571	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-03	-0.00...	-67	-78	No	21	23.81	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-04	0.000...	78	78	No	21	38.1	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-02	-0.00...	-88	-78	Yes	21	0	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-05	0	-4	-63	No	18	33.33	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-06	0	25	63	No	18	50	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-07 (bg)	-0.00...	-7	-63	No	18	16.67	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-08	0	-11	-63	No	18	50	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-10	0	0	27	No	10	0	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-09	-0.00...	-13	-27	No	10	30	n/a	n/a	0.02	NP
Cobalt (mg/L)	MW-01R	-0.04265	-194	-119	Yes	28	0	n/a	n/a	0.02	NP

Trend Test

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:03 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Combined Radium 226 + 228 (pCi/L)	MW-03	0.2909	135	78	Yes	21	23.81	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-04	0.07155	48	78	No	21	38.1	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-02	0.1297	44	78	No	21	28.57	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-05	0	15	63	No	18	50	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-06	0.1616	25	63	No	18	33.33	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-07 (bg)	0.1896	73	63	Yes	18	50	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-08	0.4752	52	63	No	18	33.33	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-10	0.5352	19	23	No	9	22.22	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-09	0.3911	25	27	No	10	10	n/a	n/a	0.02	NP
Combined Radium 226 + 228 (pCi/L)	MW-01R	-0.5062	-10	-17	No	7	42.86	n/a	n/a	0.02	NP
Copper (mg/L)	MW-03	0	17	27	No	10	80	n/a	n/a	0.02	NP
Copper (mg/L)	MW-04	0	18	27	No	10	70	n/a	n/a	0.02	NP
Copper (mg/L)	MW-02	0	8	27	No	10	70	n/a	n/a	0.02	NP
Copper (mg/L)	MW-05	0	-1	-27	No	10	80	n/a	n/a	0.02	NP
Copper (mg/L)	MW-06	0	2	27	No	10	70	n/a	n/a	0.02	NP
Copper (mg/L)	MW-07 (bg)	0	15	27	No	10	80	n/a	n/a	0.02	NP
Copper (mg/L)	MW-08	0	15	27	No	10	80	n/a	n/a	0.02	NP
Copper (mg/L)	MW-10	0	17	27	No	10	80	n/a	n/a	0.02	NP
Copper (mg/L)	MW-09	0	9	27	No	10	90	n/a	n/a	0.02	NP
Copper (mg/L)	MW-01R	0	-97	-119	No	28	64.29	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-03	-0.03296	-12	-78	No	21	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-04	0	22	78	No	21	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-02	-0.6591	-68	-78	No	21	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-05	0.6021	93	63	Yes	18	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-06	-0.0333	-27	-63	No	18	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-07 (bg)	-0.0018	-17	-63	No	18	16.67	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-08	0.02808	37	63	No	18	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-10	0.7359	13	27	No	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-09	0.05456	8	27	No	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-01R	-13.78	-128	-119	Yes	28	3.571	n/a	n/a	0.02	NP
Iron (mg/L)	MW-03	-4.925	-17	-27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-04	-1.271	-28	-27	Yes	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-02	0	5	27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-05	-8.528	-11	-27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-06	0	0	27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-07 (bg)	-2.235	-25	-27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-08	3.925	24	27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-10	1.201	18	27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-09	1.472	5	27	No	10	0	n/a	n/a	0.02	NP
Iron (mg/L)	MW-01R	-11.23	-226	-119	Yes	28	0	n/a	n/a	0.02	NP
Lead (mg/L)	MW-03	0	25	78	No	21	66.67	n/a	n/a	0.02	NP
Lead (mg/L)	MW-04	0	45	78	No	21	66.67	n/a	n/a	0.02	NP
Lead (mg/L)	MW-02	-0.00...	-98	-78	Yes	21	14.29	n/a	n/a	0.02	NP
Lead (mg/L)	MW-05	0	-26	-63	No	18	55.56	n/a	n/a	0.02	NP
Lead (mg/L)	MW-06	0	-5	-63	No	18	22.22	n/a	n/a	0.02	NP
Lead (mg/L)	MW-07 (bg)	0	-7	-63	No	18	72.22	n/a	n/a	0.02	NP
Lead (mg/L)	MW-08	-0.00...	-35	-63	No	18	50	n/a	n/a	0.02	NP
Lead (mg/L)	MW-10	-0.00...	-2	-27	No	10	20	n/a	n/a	0.02	NP
Lead (mg/L)	MW-09	0	-18	-27	No	10	70	n/a	n/a	0.02	NP
Lead (mg/L)	MW-01R	-0.08089	-192	-119	Yes	28	0	n/a	n/a	0.02	NP

Trend Test

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:03 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Lithium (mg/L)	MW-03	-0.00...	-61	-78	No	21	4.762	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-04	0.00157	33	78	No	21	4.762	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-02	-0.08816	-80	-78	Yes	21	0	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-05	0.01316	32	63	No	18	11.11	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-06	0	-11	-63	No	18	5.556	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-07 (bg)	-0.00...	-17	-63	No	18	44.44	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-08	0.003044	33	63	No	18	5.556	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-10	0.1862	15	27	No	10	0	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-09	0.01738	14	27	No	10	0	n/a	n/a	0.02	NP
Lithium (mg/L)	MW-01R	0	7	119	No	28	0	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-03	-2.0e-7	-95	-78	Yes	21	71.43	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-04	0	11	78	No	21	95.24	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-02	-0.00...	-95	-78	Yes	21	71.43	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-05	0	-15	-63	No	18	94.44	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-06	-0.00...	-60	-63	No	18	55.56	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-07 (bg)	0	-30	-63	No	18	77.78	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-08	0	22	63	No	18	66.67	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-10	4.5e-7	23	27	No	10	40	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-09	0	8	27	No	10	60	n/a	n/a	0.02	NP
Mercury (mg/L)	MW-01R	-0.00...	-156	-119	Yes	28	3.571	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-03	-0.00...	-126	-78	Yes	21	52.38	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-04	-0.00...	-41	-78	No	21	19.05	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-02	-0.00...	-131	-78	Yes	21	9.524	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-05	-0.00...	-21	-63	No	18	11.11	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-06	-0.00...	-93	-63	Yes	18	22.22	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-07 (bg)	-0.00072	-68	-63	Yes	18	27.78	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-08	-0.00...	-22	-63	No	18	11.11	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-10	0.000...	1	27	No	10	0	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-09	0.004345	12	27	No	10	0	n/a	n/a	0.02	NP
Molybdenum (mg/L)	MW-01R	-0.00...	-22	-119	No	28	0	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-03	-0.00...	-9	-27	No	10	20	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-04	-0.00...	-21	-27	No	10	0	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-02	-0.00...	-10	-27	No	10	0	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-05	0	-5	-27	No	10	40	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-06	0	8	27	No	10	70	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-07 (bg)	0	17	27	No	10	80	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-08	0	17	27	No	10	80	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-10	0.000...	15	27	No	10	50	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-09	0.000...	20	27	No	10	60	n/a	n/a	0.02	NP
Nickel (mg/L)	MW-01R	-0.04515	-218	-119	Yes	28	0	n/a	n/a	0.02	NP
pH (SU)	MW-03	-0.04752	-40	-73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-04	-0.08699	-48	-73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-02	-0.1217	-49	-73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-05	-0.2073	-40	-58	No	17	0	n/a	n/a	0.02	NP
pH (SU)	MW-06	-0.1001	-22	-58	No	17	0	n/a	n/a	0.02	NP
pH (SU)	MW-07 (bg)	-0.1825	-41	-58	No	17	0	n/a	n/a	0.02	NP
pH (SU)	MW-08	-0.2308	-70	-58	Yes	17	0	n/a	n/a	0.02	NP
pH (SU)	MW-10	-0.2886	-25	-27	No	10	0	n/a	n/a	0.02	NP
pH (SU)	MW-09	-0.2728	-17	-27	No	10	0	n/a	n/a	0.02	NP
pH (SU)	MW-01R	-2.882	-236	-119	Yes	28	0	n/a	n/a	0.02	NP

Trend Test

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:03 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Selenium (mg/L)	MW-03	0	-92	-78	Yes	21	66.67	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-04	0	29	78	No	21	85.71	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-02	-0.00...	-54	-78	No	21	19.05	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-05	0	0	63	No	18	100	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-06	0	0	63	No	18	100	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-07 (bg)	0	0	63	No	18	100	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-08	0	0	63	No	18	100	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-10	0	0	27	No	10	100	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-09	0	0	27	No	10	100	n/a	n/a	0.02	NP
Selenium (mg/L)	MW-01R	-0.00...	-164	-119	Yes	28	17.86	n/a	n/a	0.02	NP
Silver (mg/L)	MW-03	0	7	27	No	10	90	n/a	n/a	0.02	NP
Silver (mg/L)	MW-04	0	15	27	No	10	80	n/a	n/a	0.02	NP
Silver (mg/L)	MW-02	0	7	27	No	10	90	n/a	n/a	0.02	NP
Silver (mg/L)	MW-05	0	7	27	No	10	90	n/a	n/a	0.02	NP
Silver (mg/L)	MW-06	0	7	27	No	10	90	n/a	n/a	0.02	NP
Silver (mg/L)	MW-07 (bg)	0	15	27	No	10	80	n/a	n/a	0.02	NP
Silver (mg/L)	MW-08	0	9	27	No	10	90	n/a	n/a	0.02	NP
Silver (mg/L)	MW-10	0	0	27	No	10	100	n/a	n/a	0.02	NP
Silver (mg/L)	MW-09	0	0	27	No	10	100	n/a	n/a	0.02	NP
Silver (mg/L)	MW-01R	0	0	119	No	28	100	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-03	-161.1	-94	-84	Yes	22	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-04	-82.6	-153	-84	Yes	22	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-02	0	33	84	No	22	54.55	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-05	108.7	28	63	No	18	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-06	-14.75	-61	-63	No	18	5.556	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-07 (bg)	-10.9	-59	-63	No	18	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-08	-0.6646	-27	-63	No	18	5.556	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-10	2.252	14	27	No	10	30	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-09	-4.609	-3	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-01R	226.6	44	119	No	28	0	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-03	0	0	78	No	21	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-04	0	0	78	No	21	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-02	0	0	78	No	21	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-05	0	0	63	No	18	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-06	0	-15	-63	No	18	88.89	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-07 (bg)	0	0	63	No	18	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-08	0	0	63	No	18	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-10	0	0	27	No	10	100	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-09	0	-3	-27	No	10	90	n/a	n/a	0.02	NP
Thallium (mg/L)	MW-01R	0	-15	-119	No	28	96.43	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-03	-175.8	-86	-84	Yes	22	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-04	-139.8	-119	-84	Yes	22	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-02	-60.43	-46	-84	No	22	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-05	148	27	63	No	18	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-06	-122.6	-74	-63	Yes	18	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-07 (bg)	-36.5	-60	-63	No	18	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-08	-12.01	-14	-63	No	18	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-10	117.7	10	27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-09	-115.9	-18	-27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-01R	-699.3	-128	-119	Yes	28	0	n/a	n/a	0.02	NP

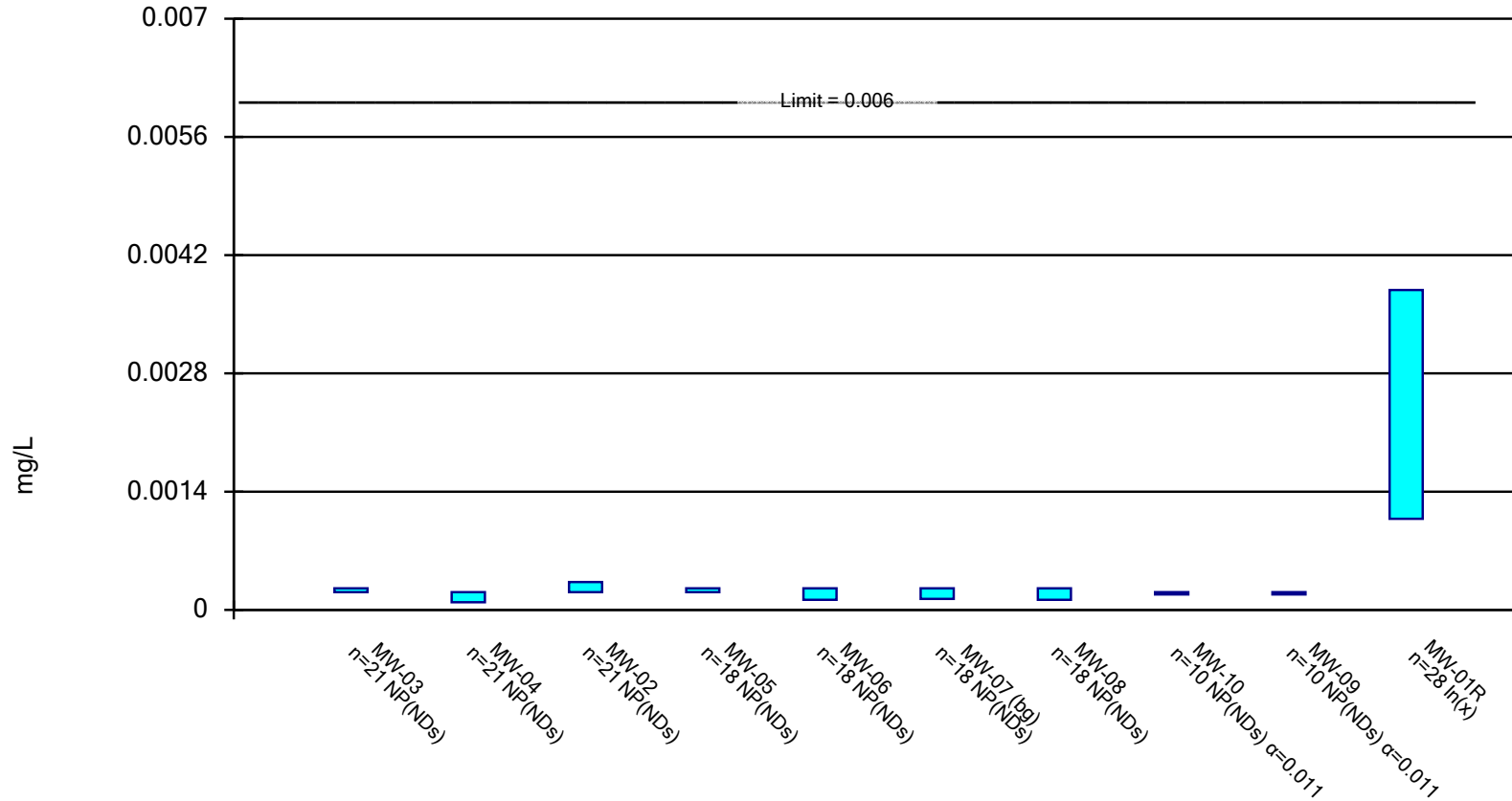
Trend Test

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:03 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Vanadium (mg/L)	MW-03	-0.00...	-1	-27	No	10	10	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-04	0.000...	9	27	No	10	10	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-02	-0.00...	-3	-27	No	10	10	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-05	-0.00...	-16	-27	No	10	40	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-06	0.000...	26	27	No	10	60	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-07 (bg)	0.000...	11	27	No	10	0	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-08	0	17	27	No	10	80	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-10	-0.00...	-6	-27	No	10	0	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-09	0	-11	-27	No	10	80	n/a	n/a	0.02	NP
Vanadium (mg/L)	MW-01R	-0.00...	-190	-119	Yes	28	3.571	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-03	0	7	27	No	10	90	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-04	0	7	27	No	10	90	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-02	0	7	27	No	10	90	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-05	0	-1	-27	No	10	80	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-06	0	7	27	No	10	90	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-07 (bg)	0	7	27	No	10	80	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-08	0	7	27	No	10	90	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-10	0	1	27	No	10	80	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-09	0	9	27	No	10	90	n/a	n/a	0.02	NP
Zinc (mg/L)	MW-01R	-0.1071	-181	-119	Yes	28	28.57	n/a	n/a	0.02	NP

Parametric and Non-Parametric (NP) Confidence Interval

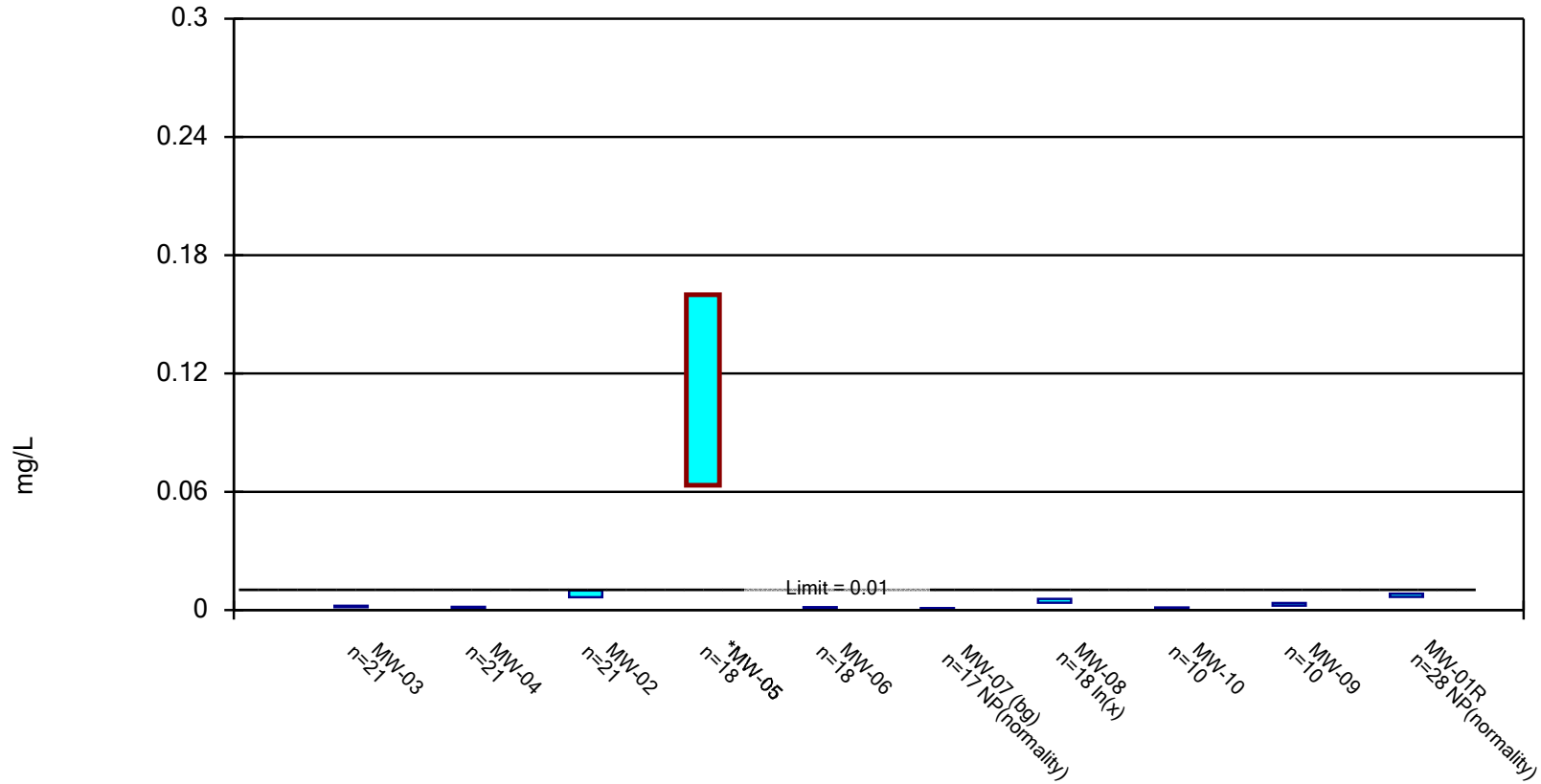
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Antimony Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

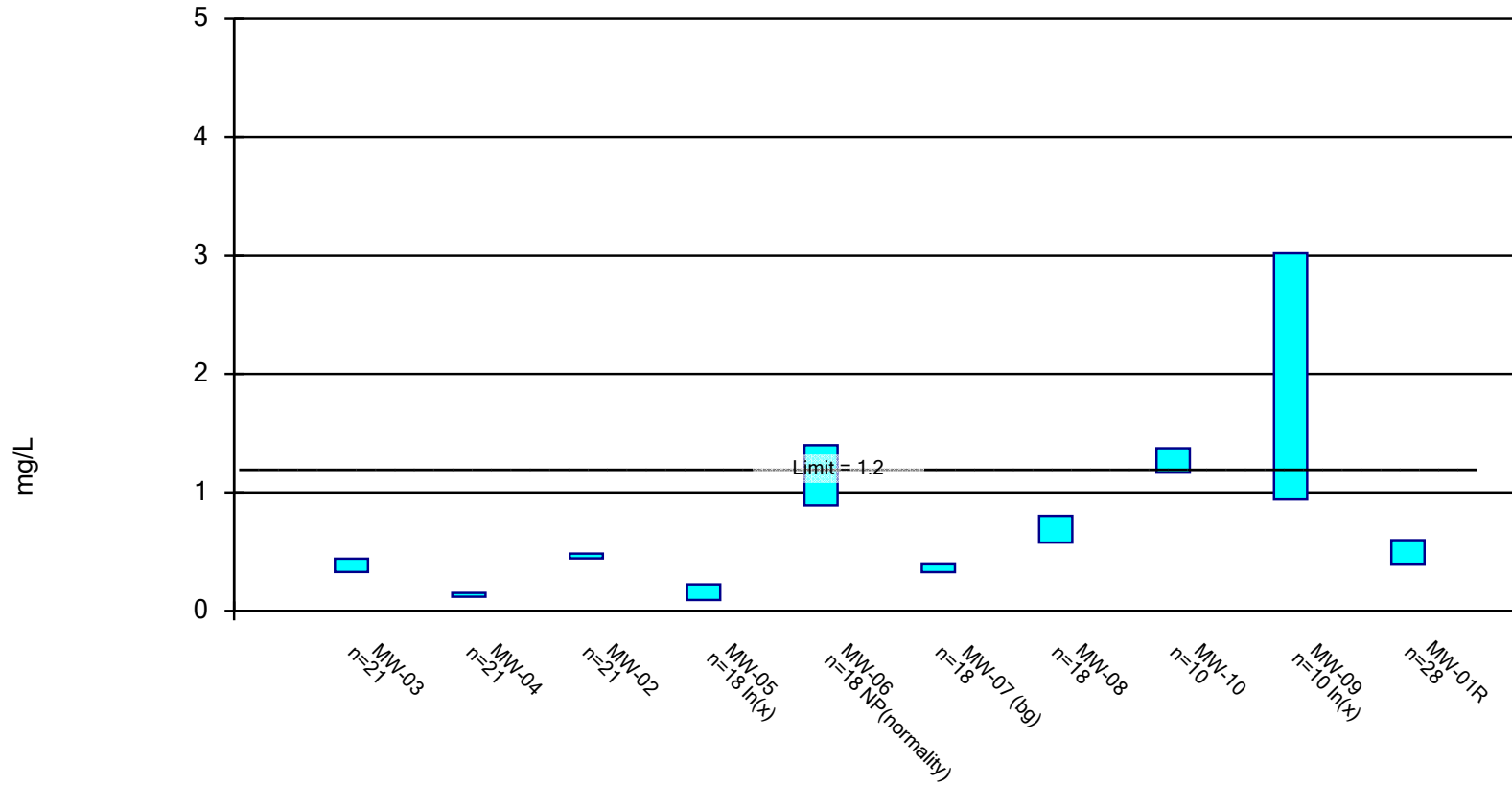
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

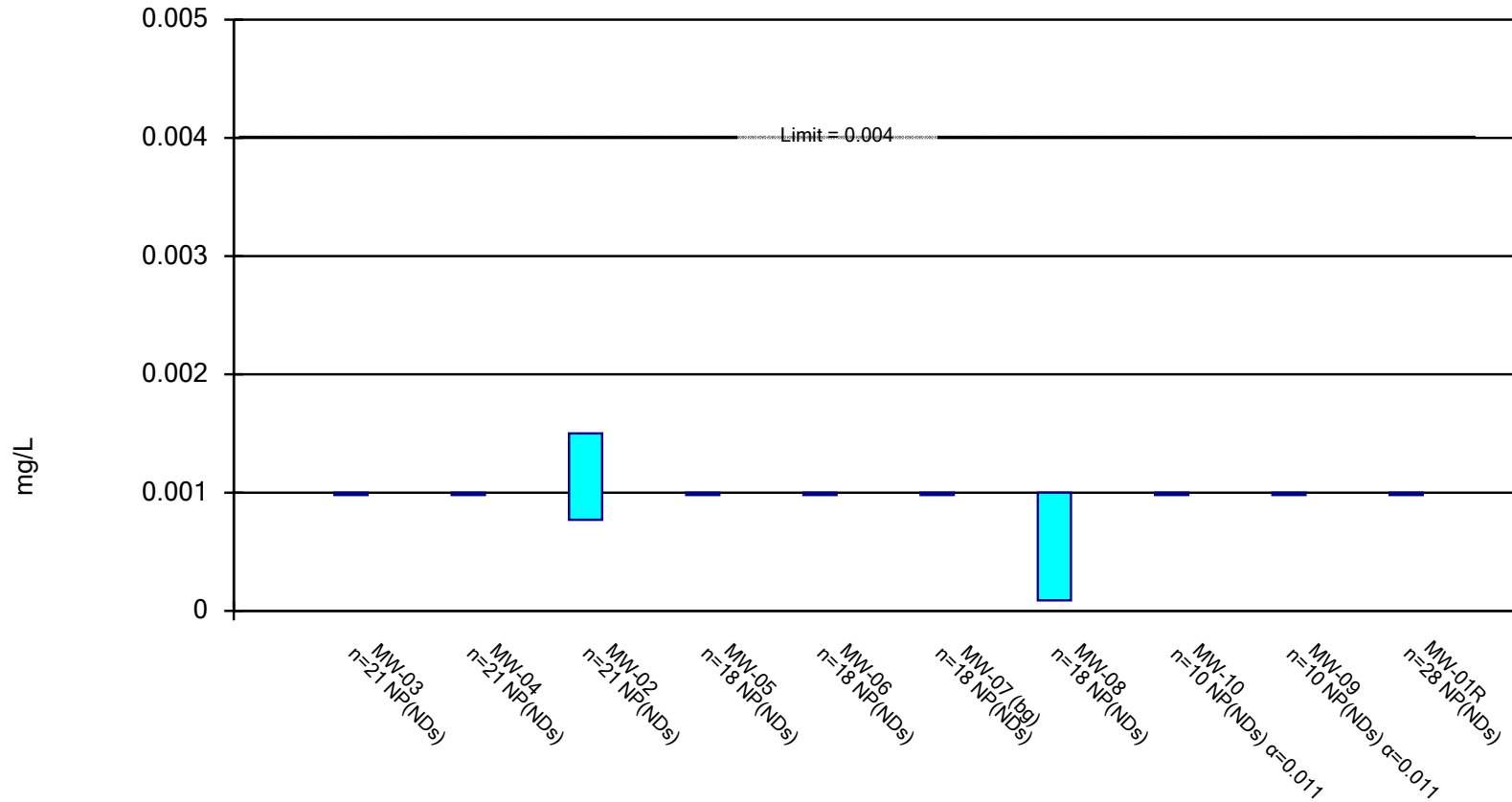
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

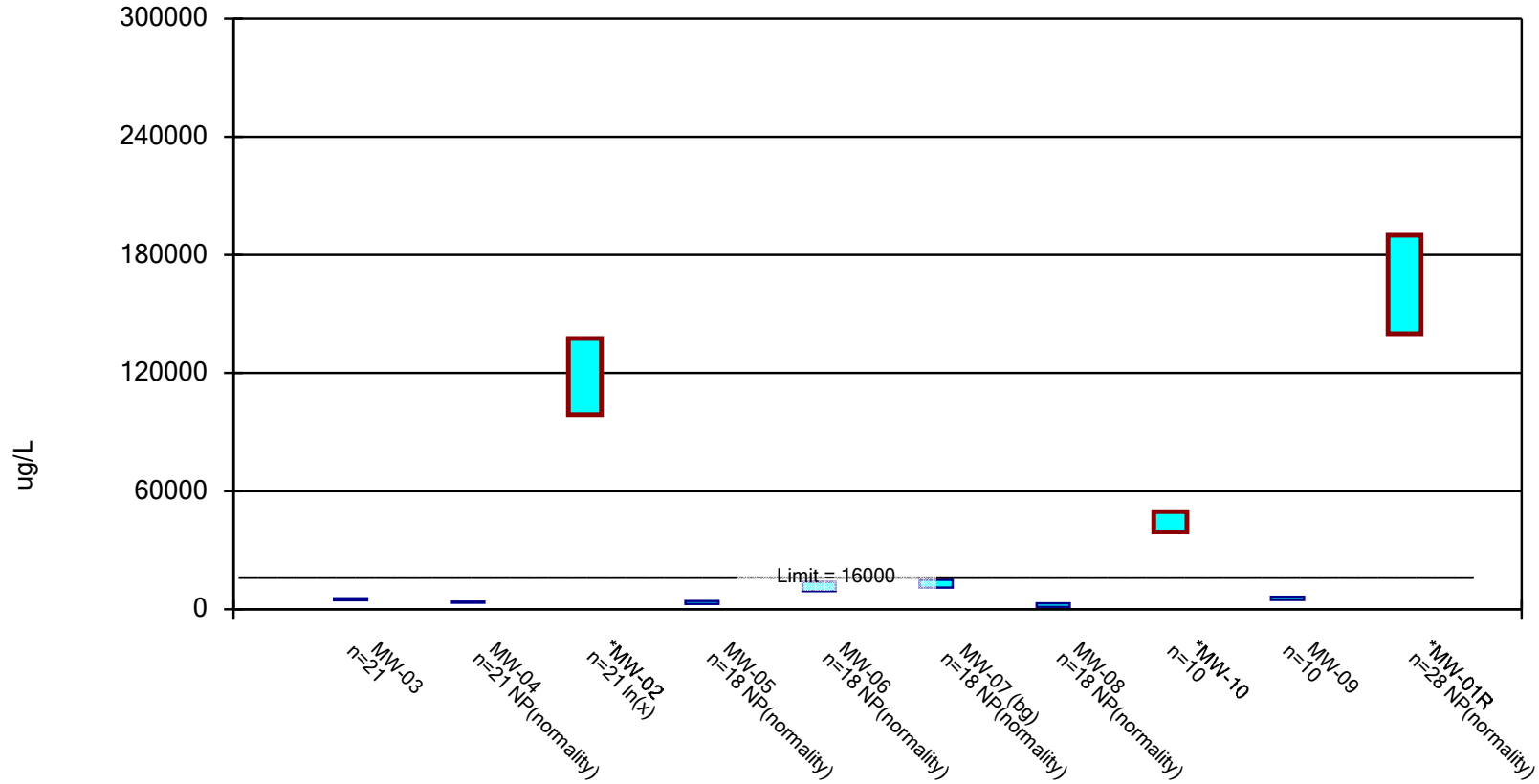
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Beryllium Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

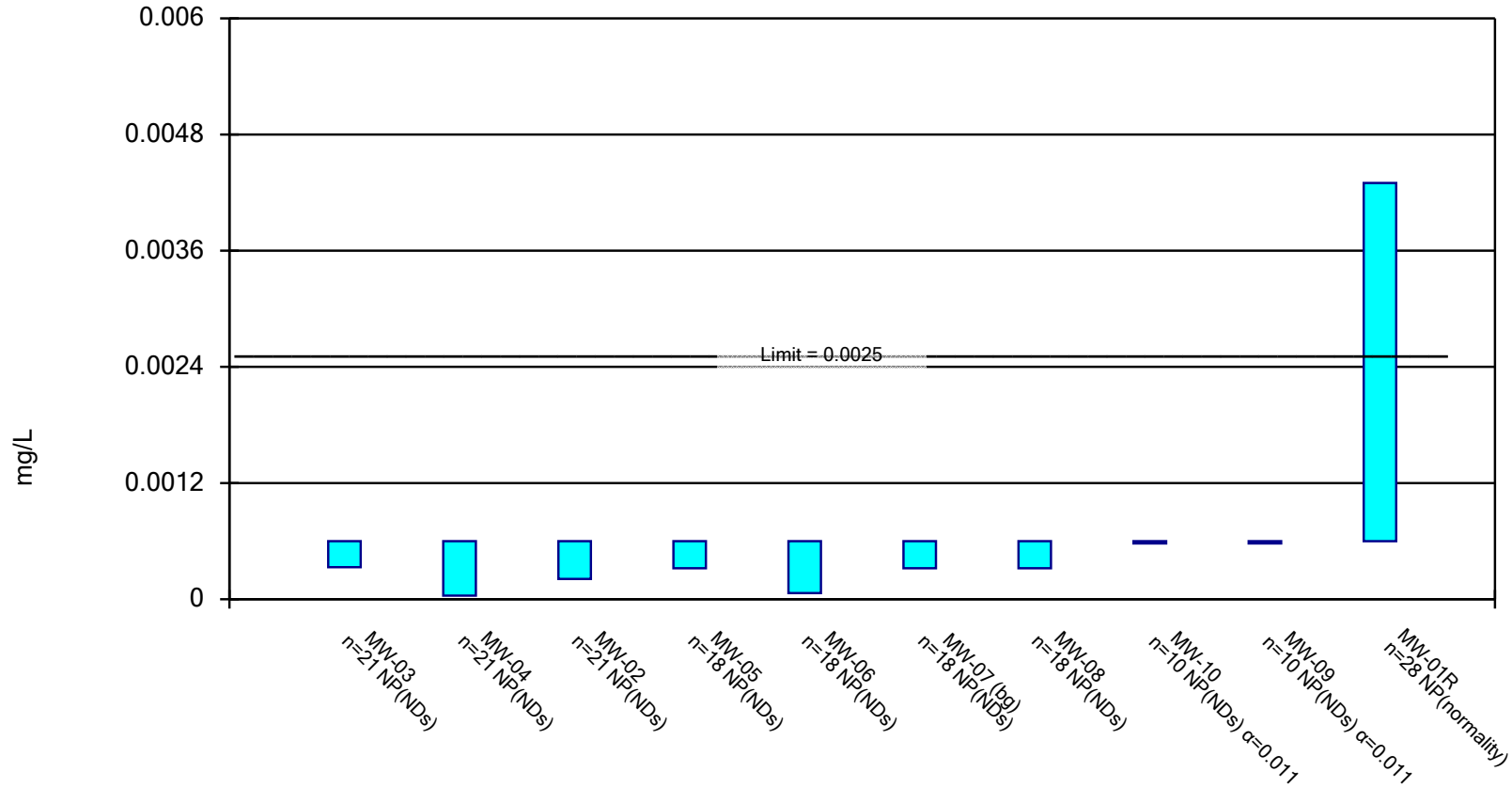
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

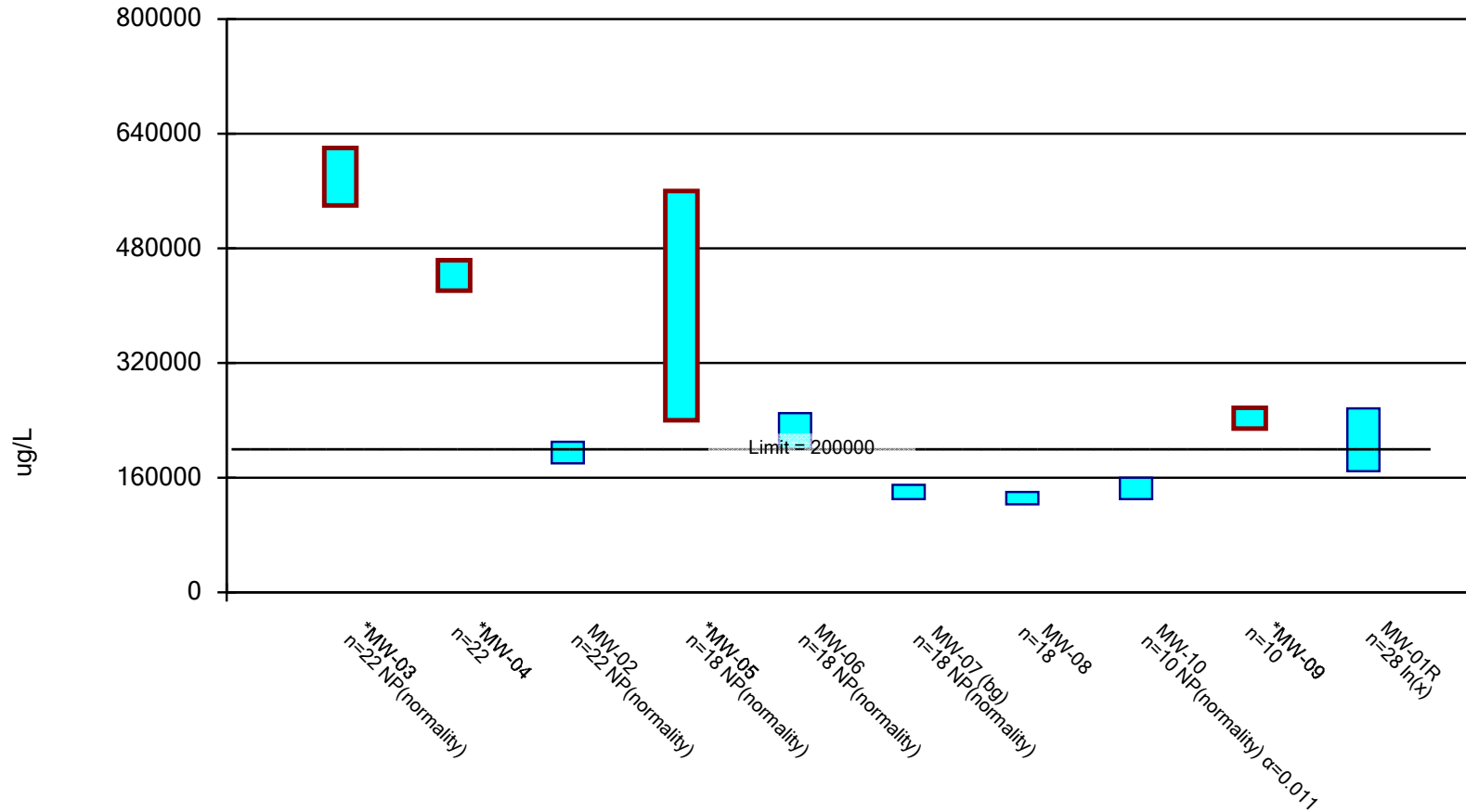
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Cadmium Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

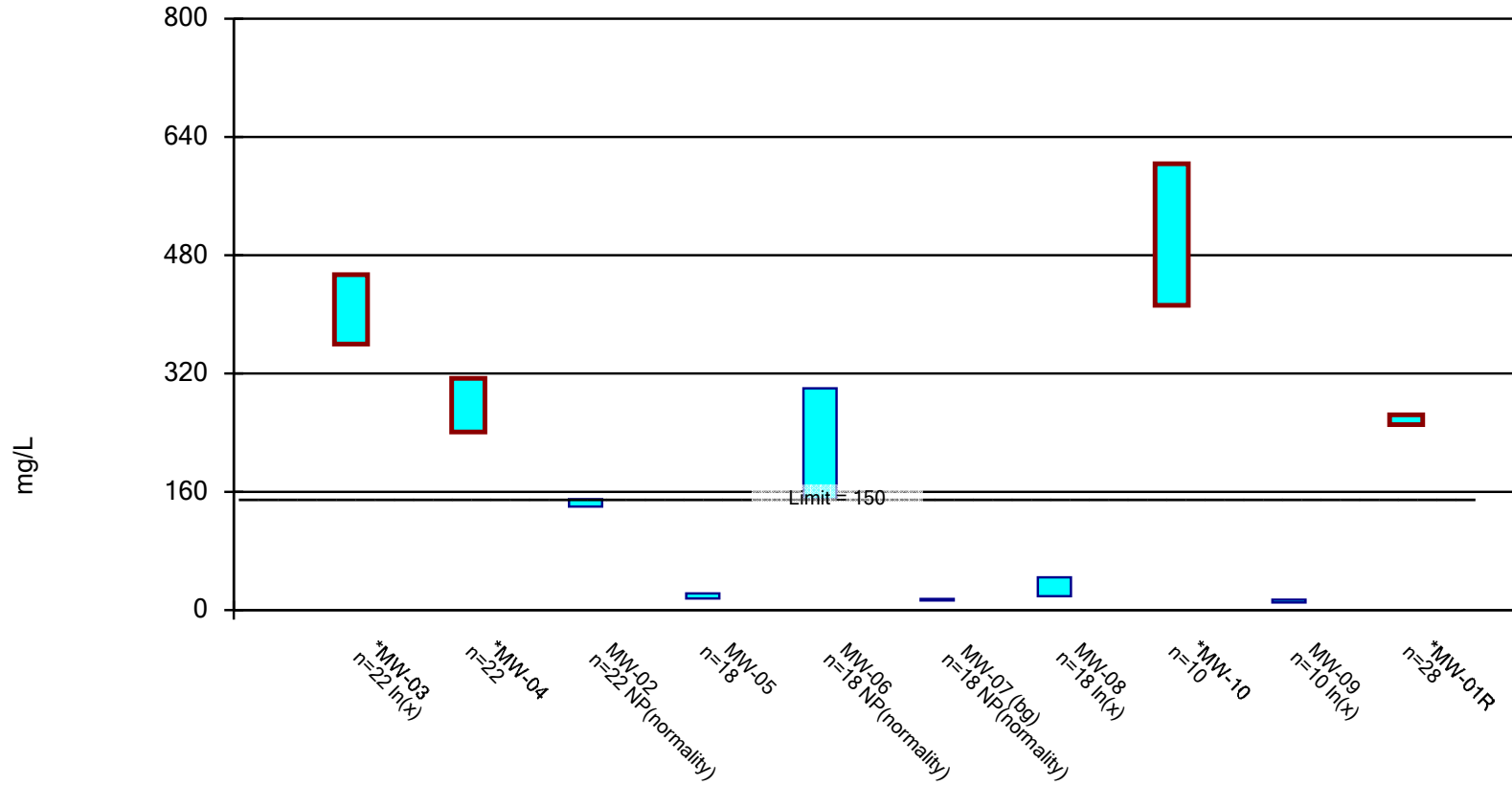
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

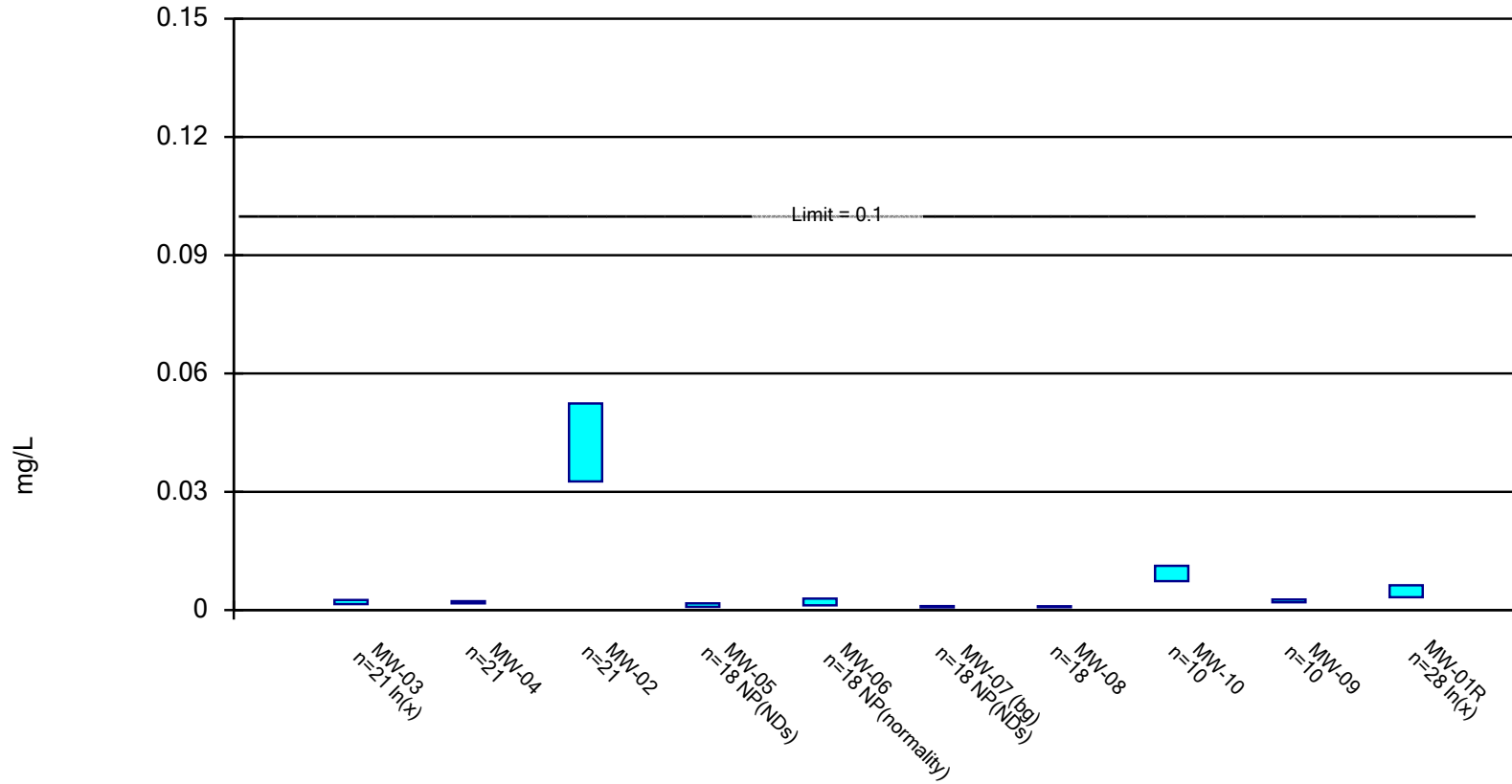
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chloride Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

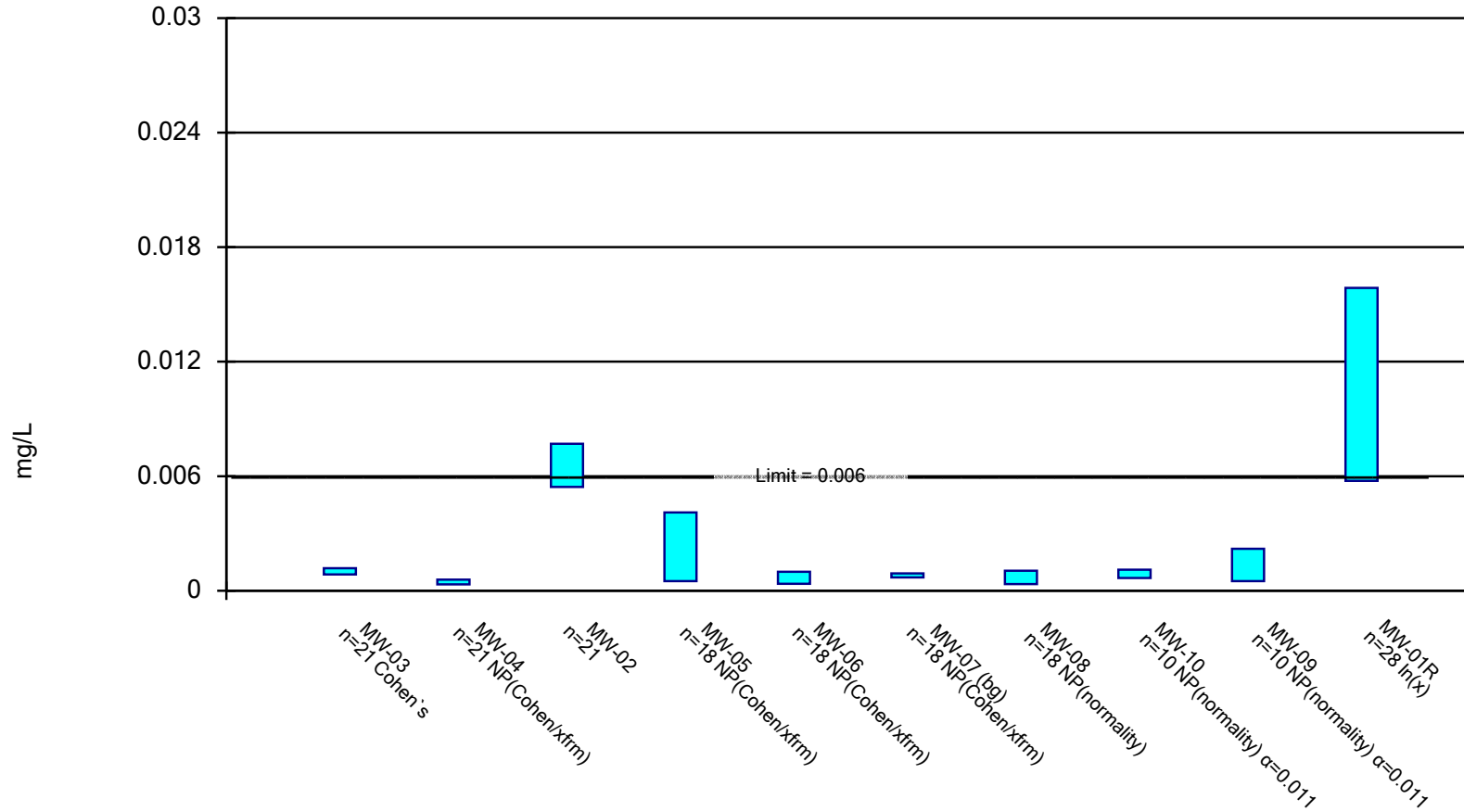
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

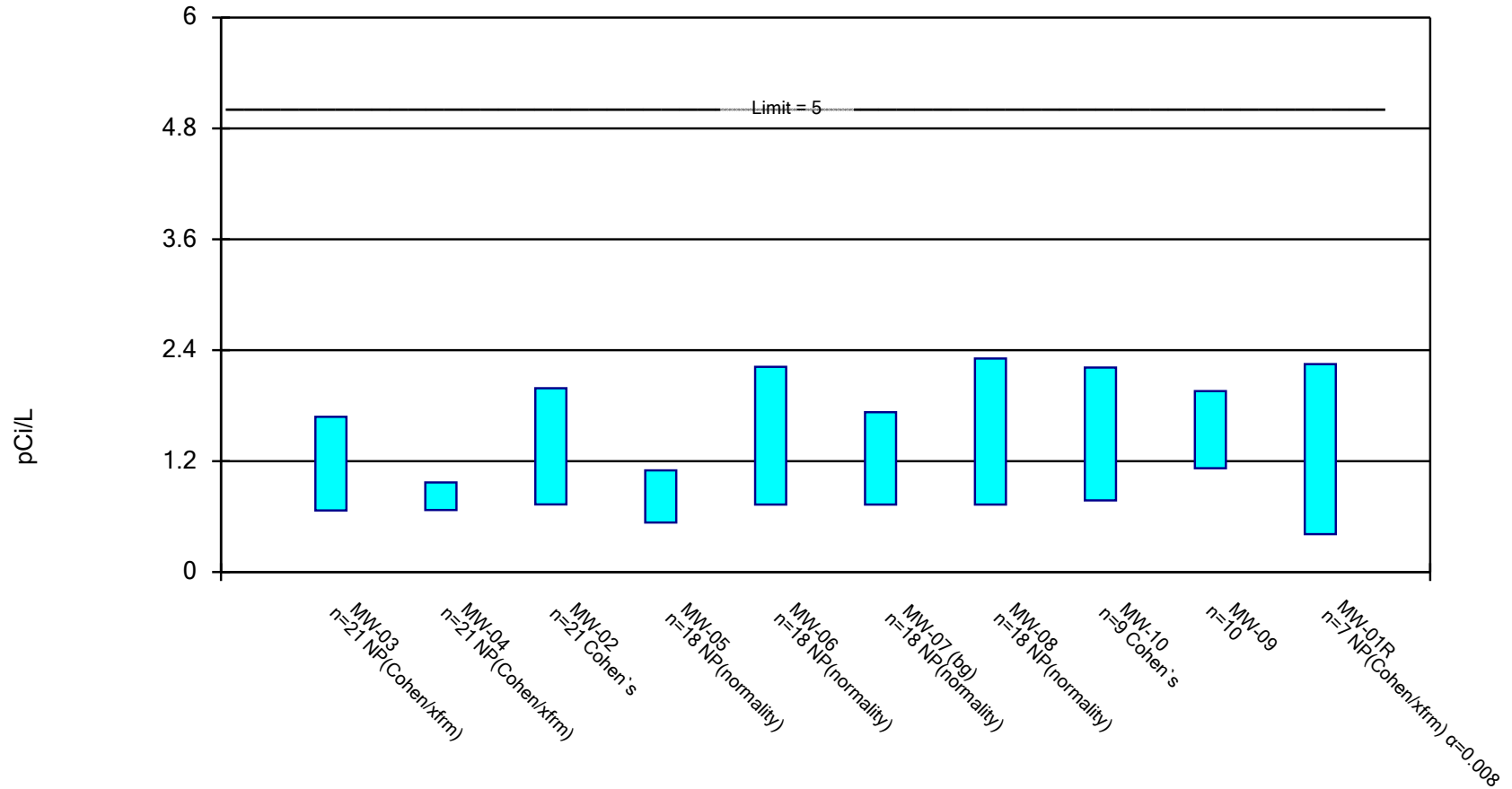
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

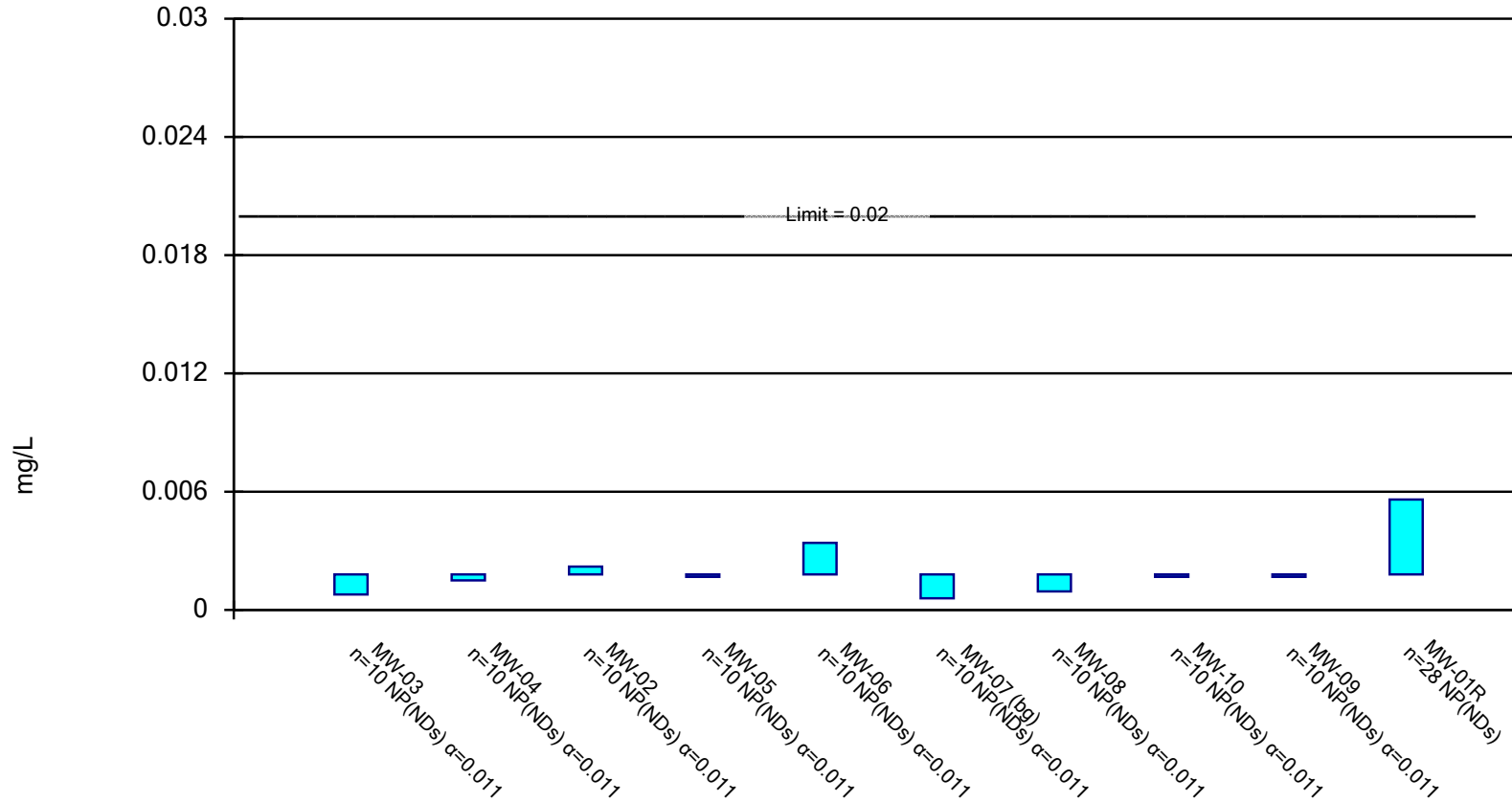


Constituent: Combined Radium 226 + 228 Analysis Run 1/3/2022 1:24 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

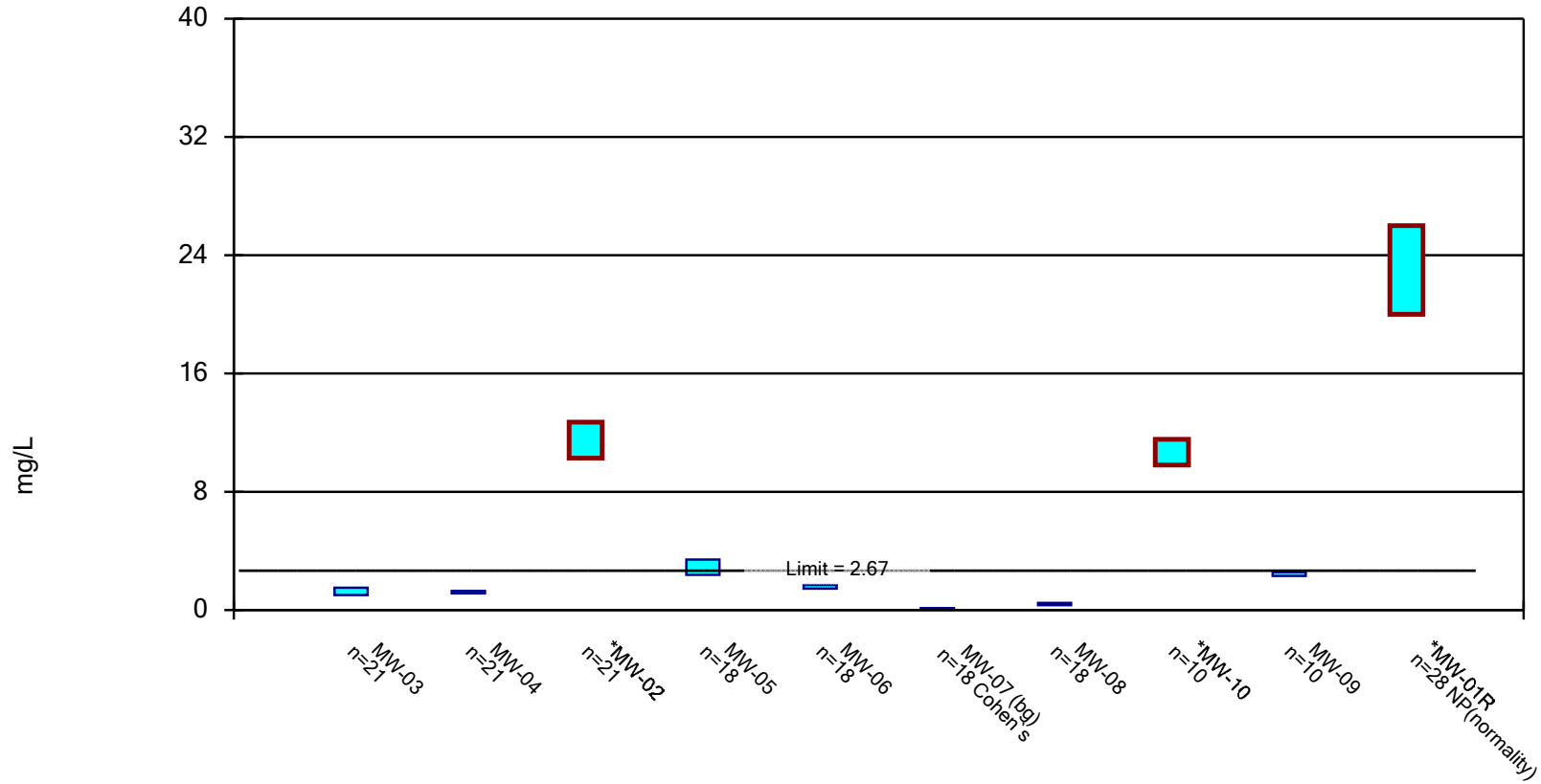
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Copper Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

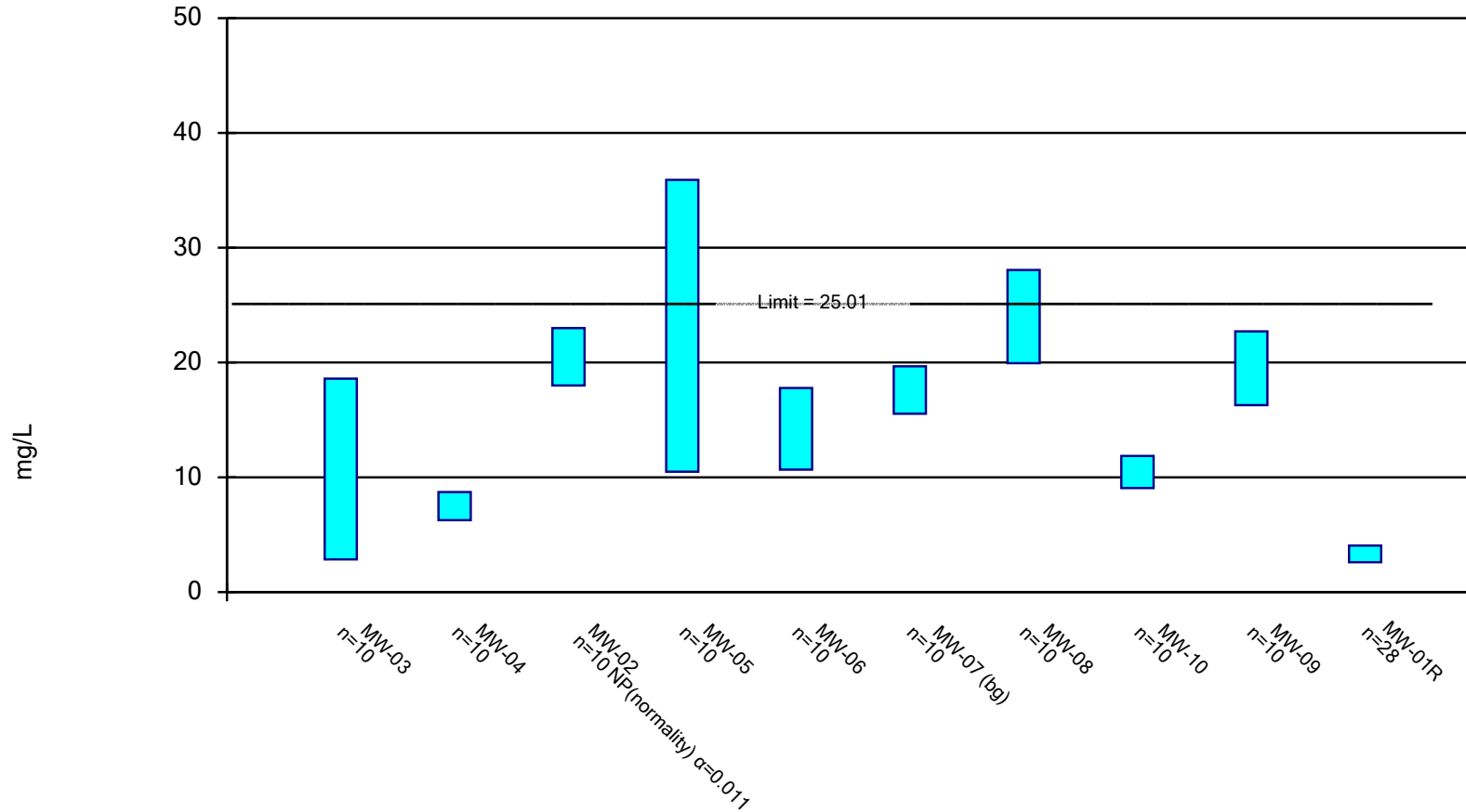
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

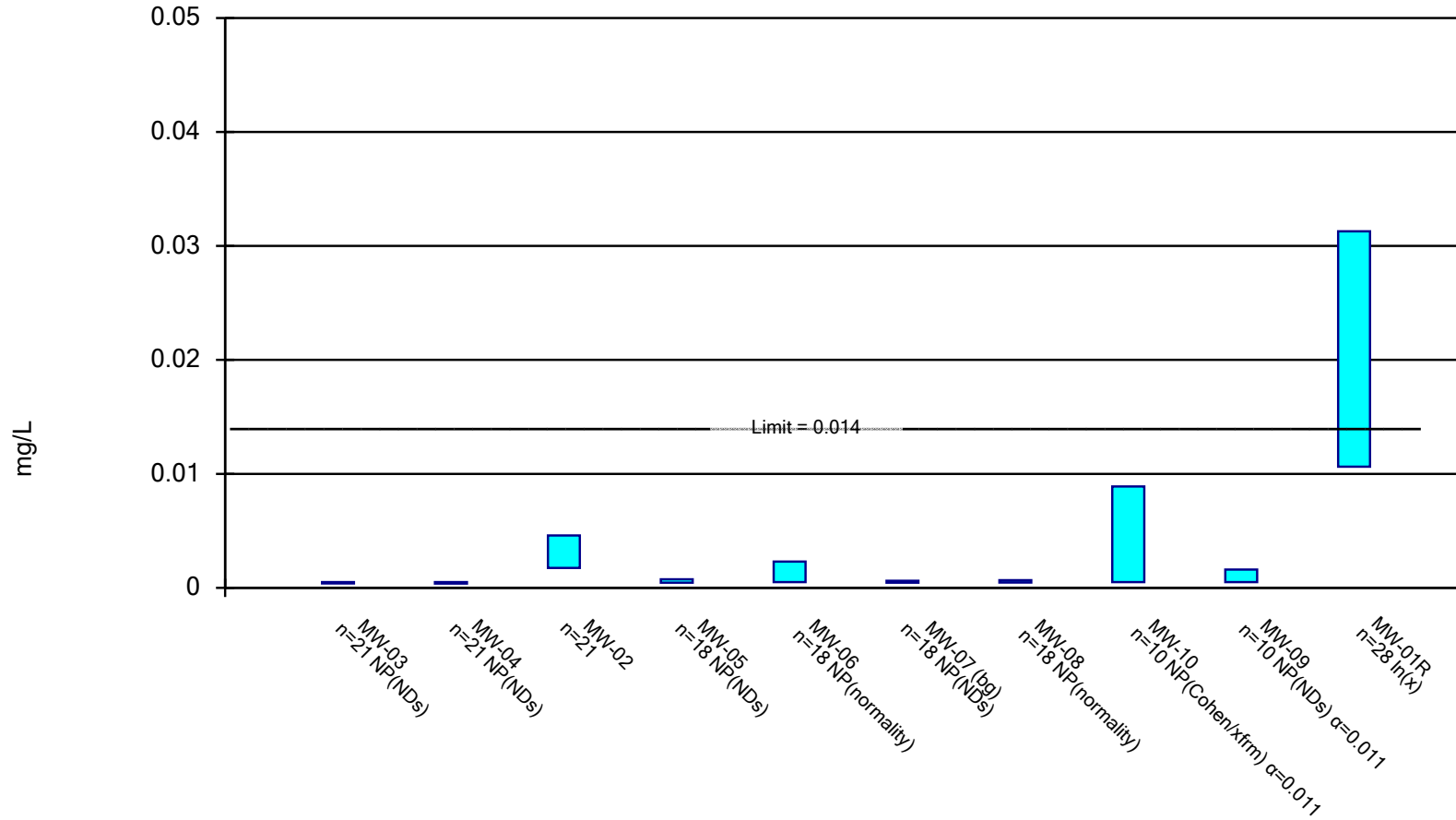
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Iron Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

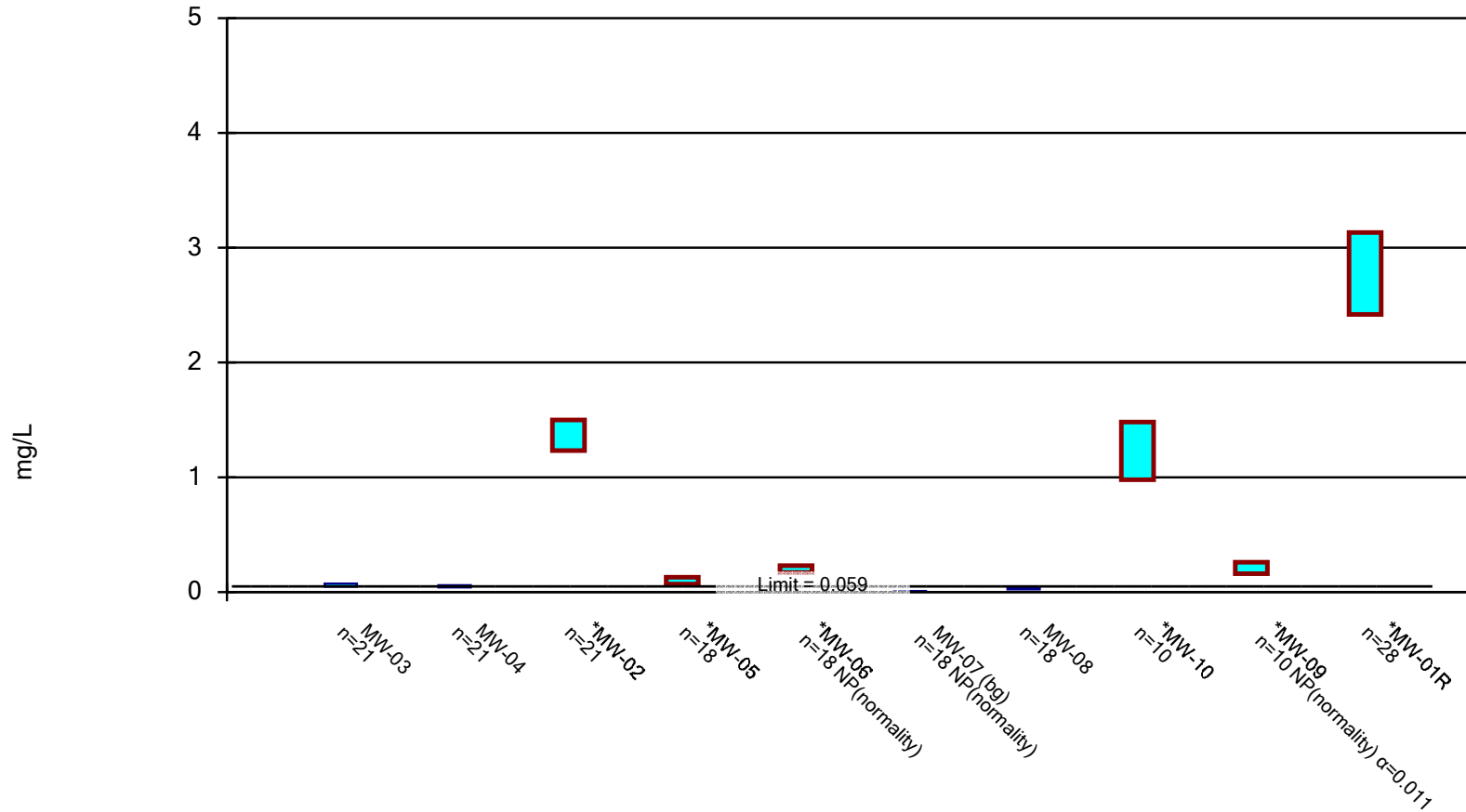
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

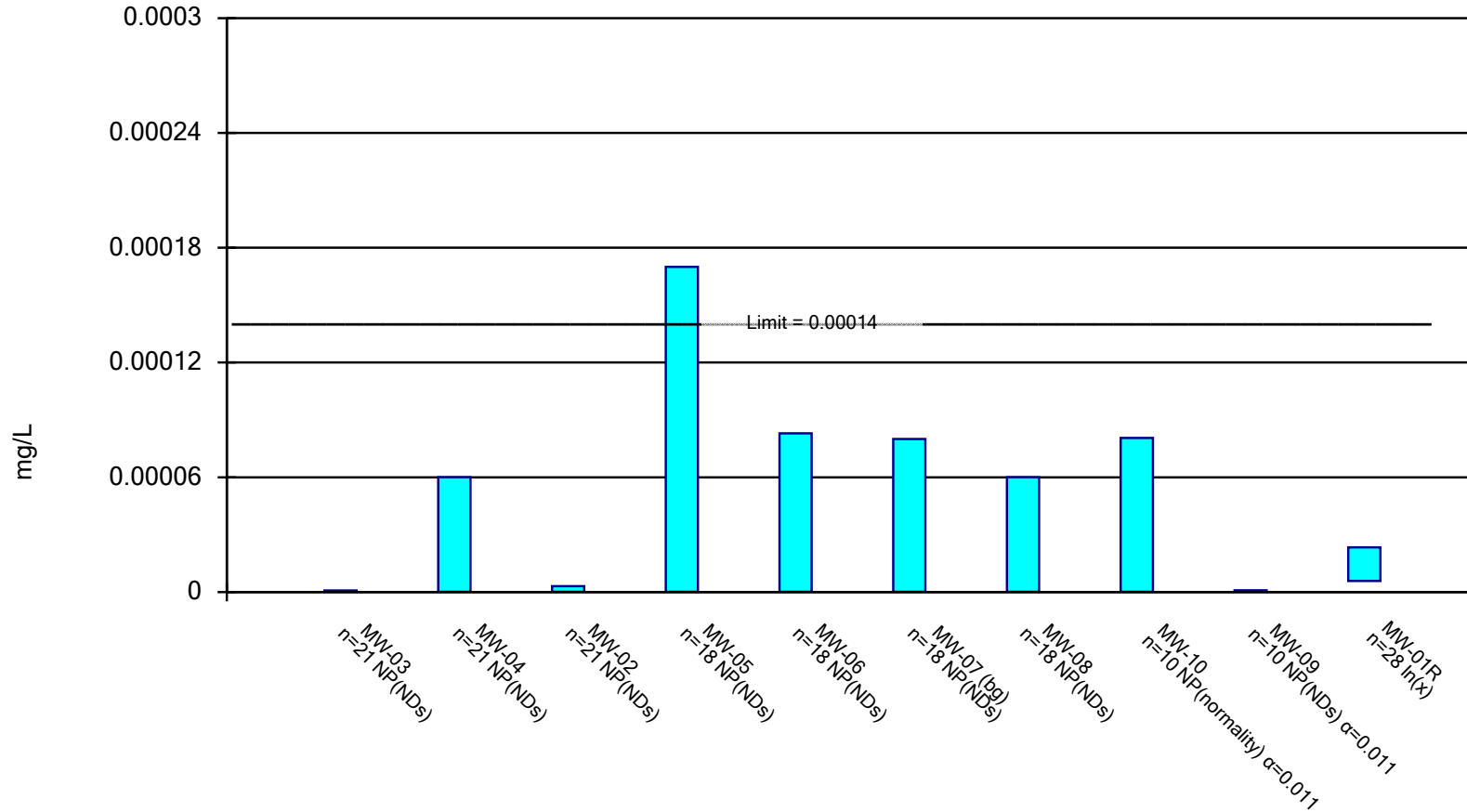
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

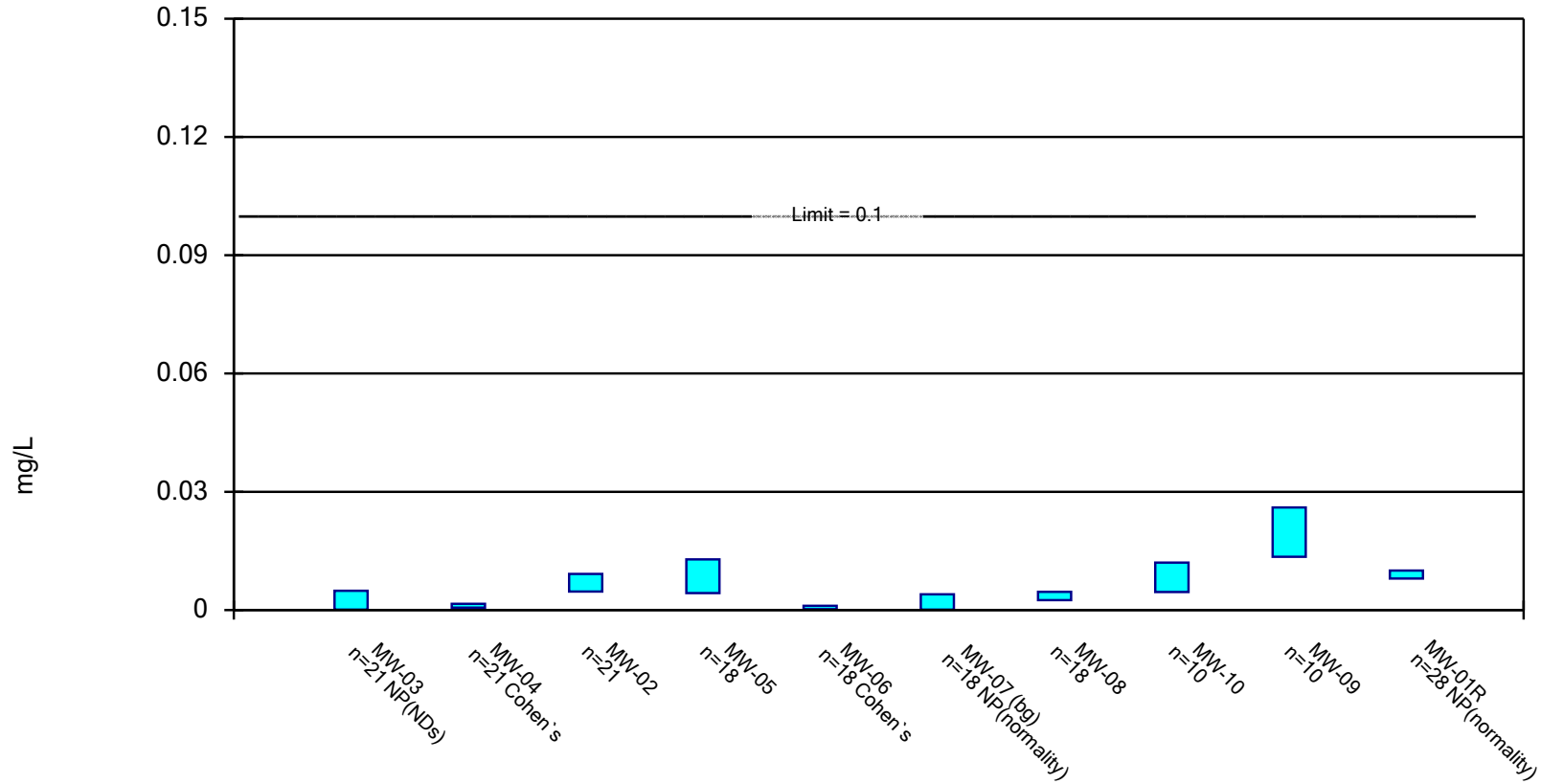
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

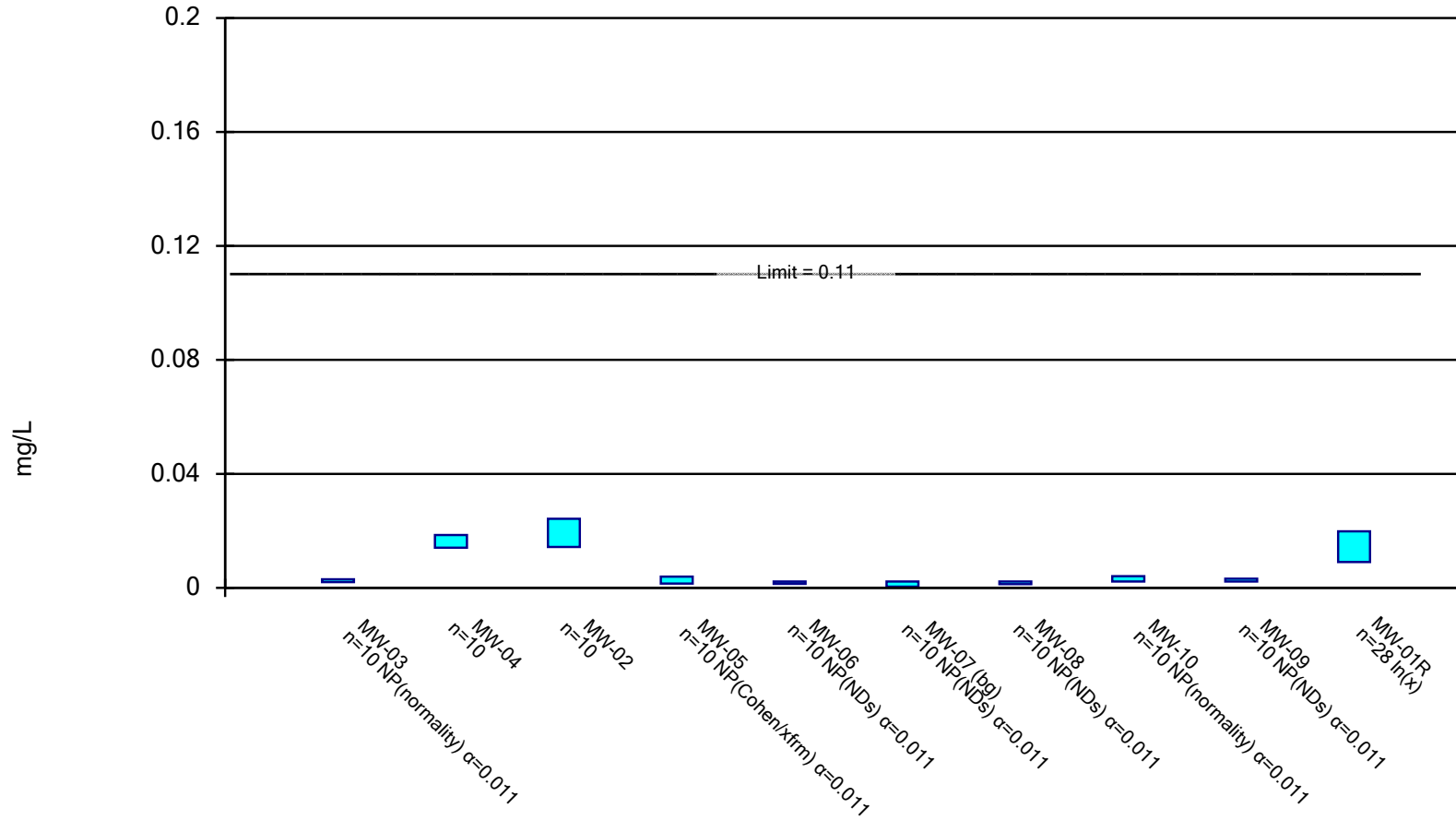


Constituent: Molybdenum Analysis Run 1/3/2022 1:24 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

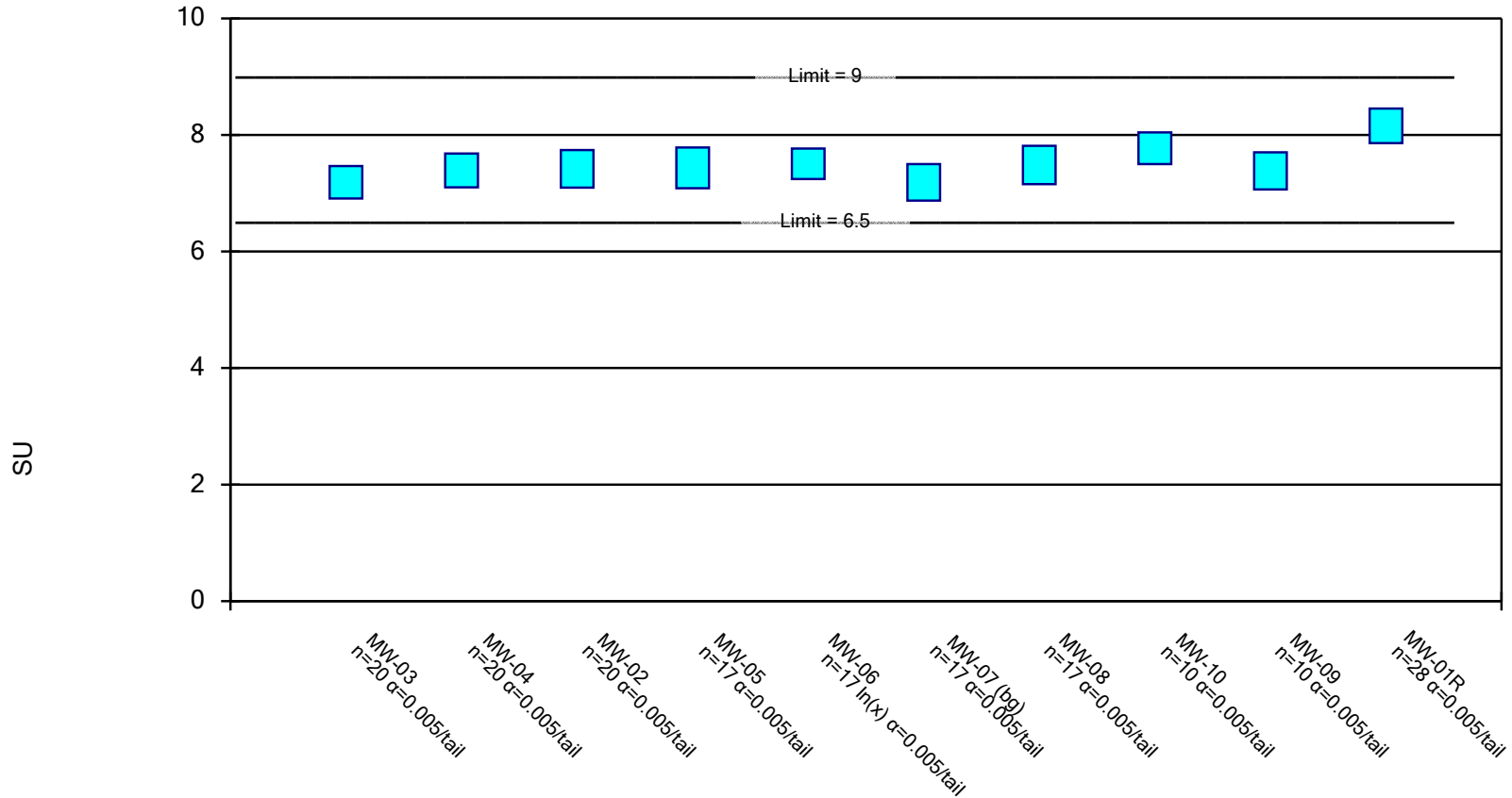
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Nickel Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric Confidence Interval

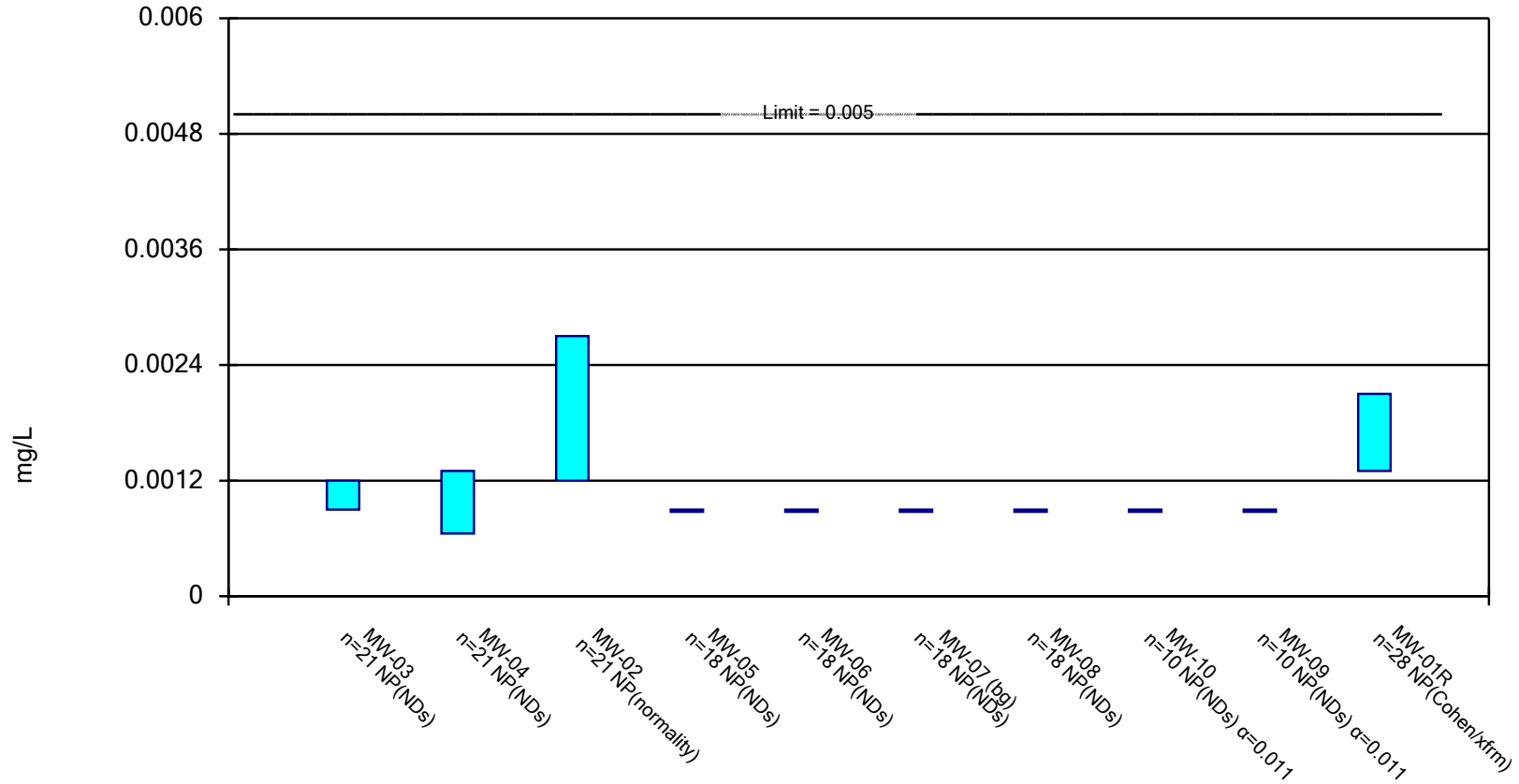
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: pH Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

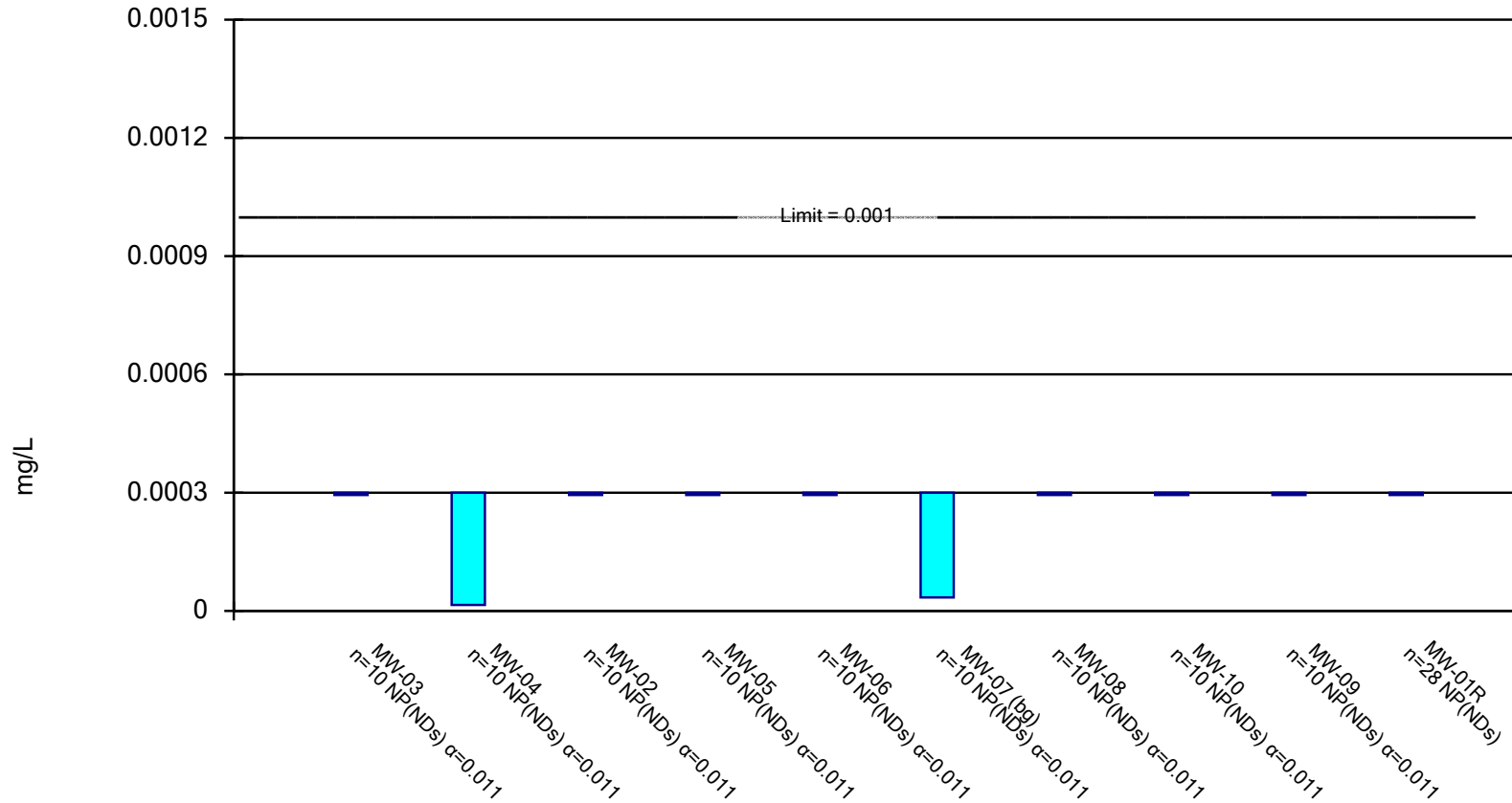
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Selenium Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

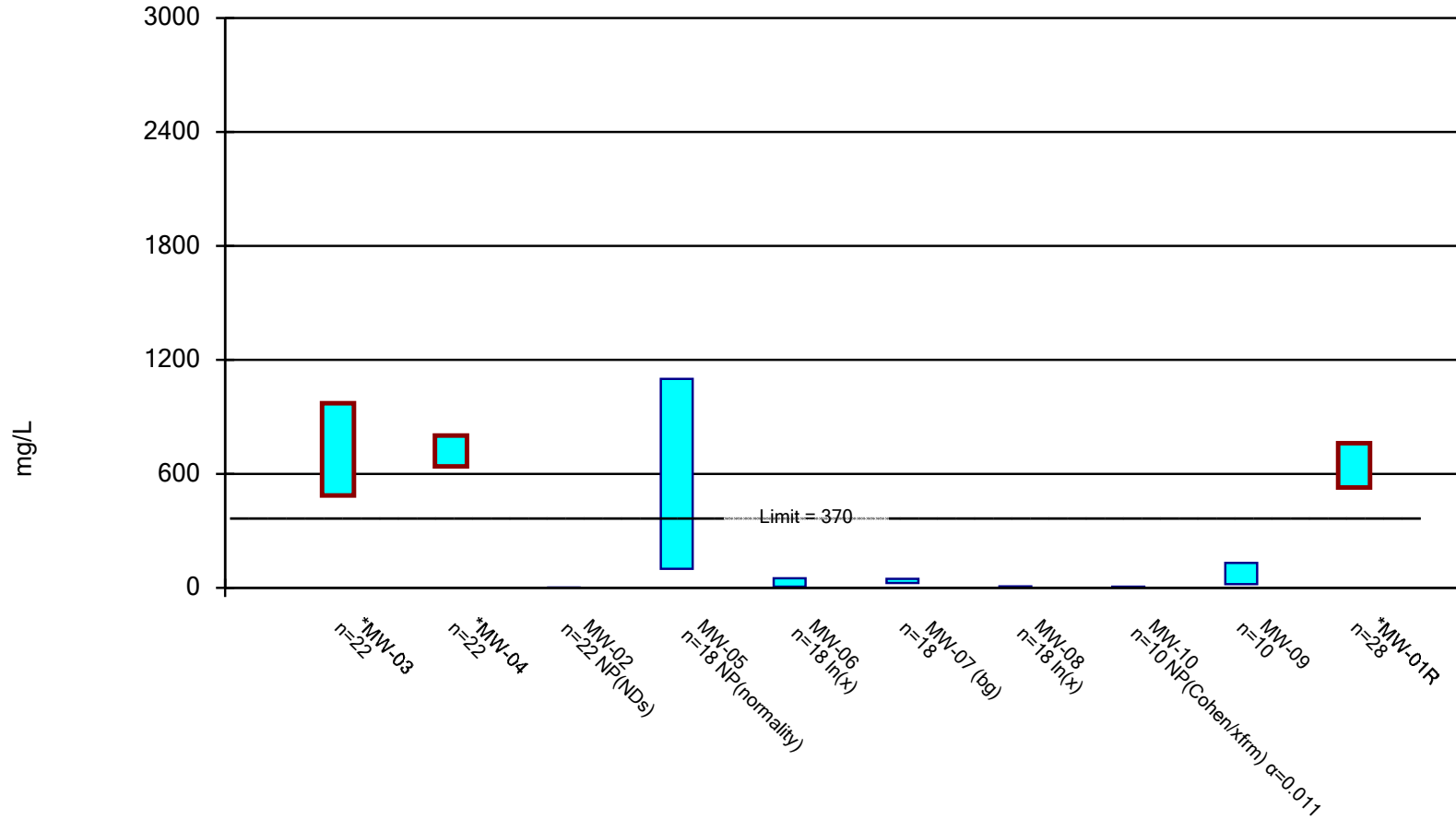
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Silver Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

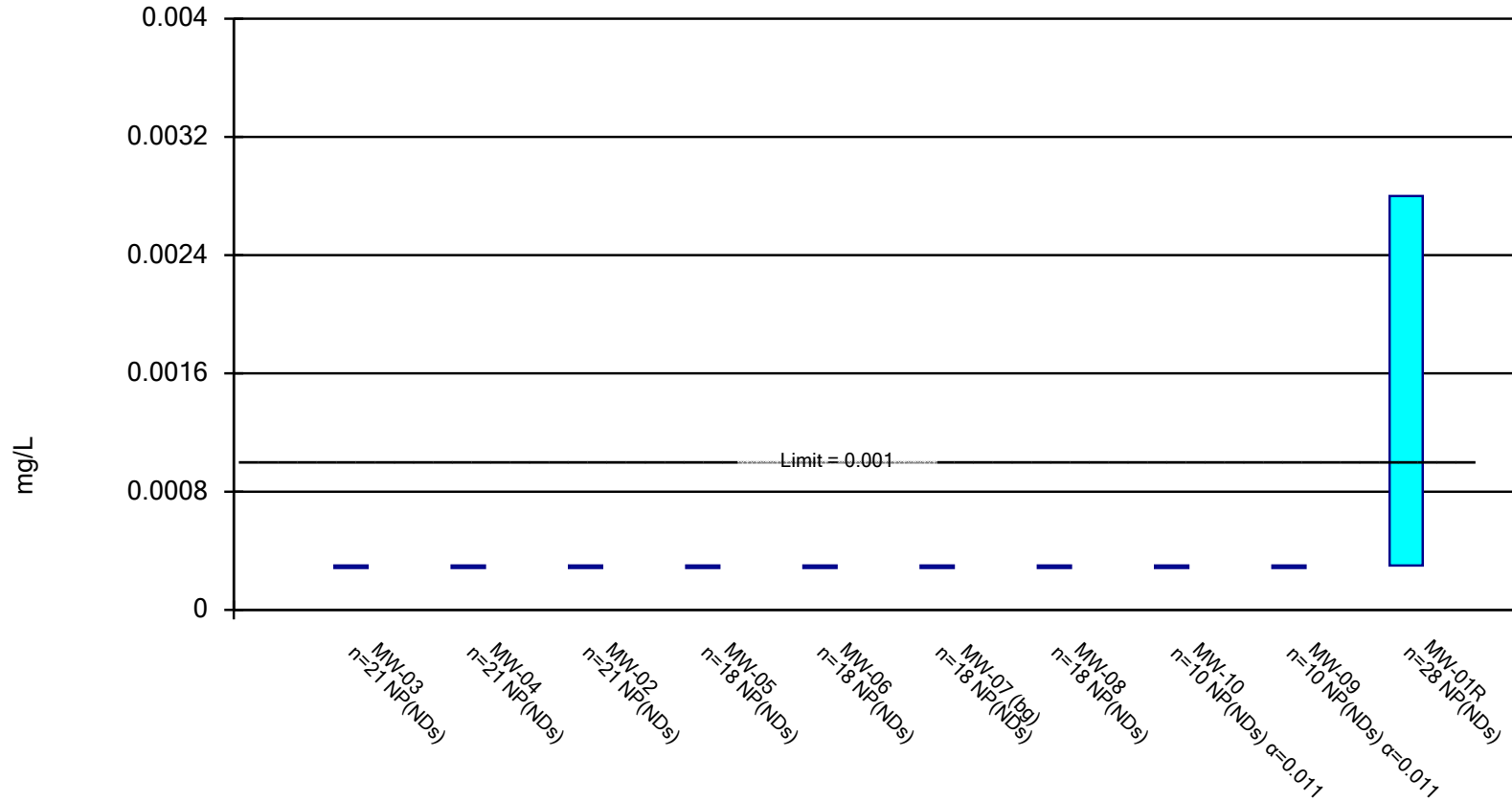
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Sulfate Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

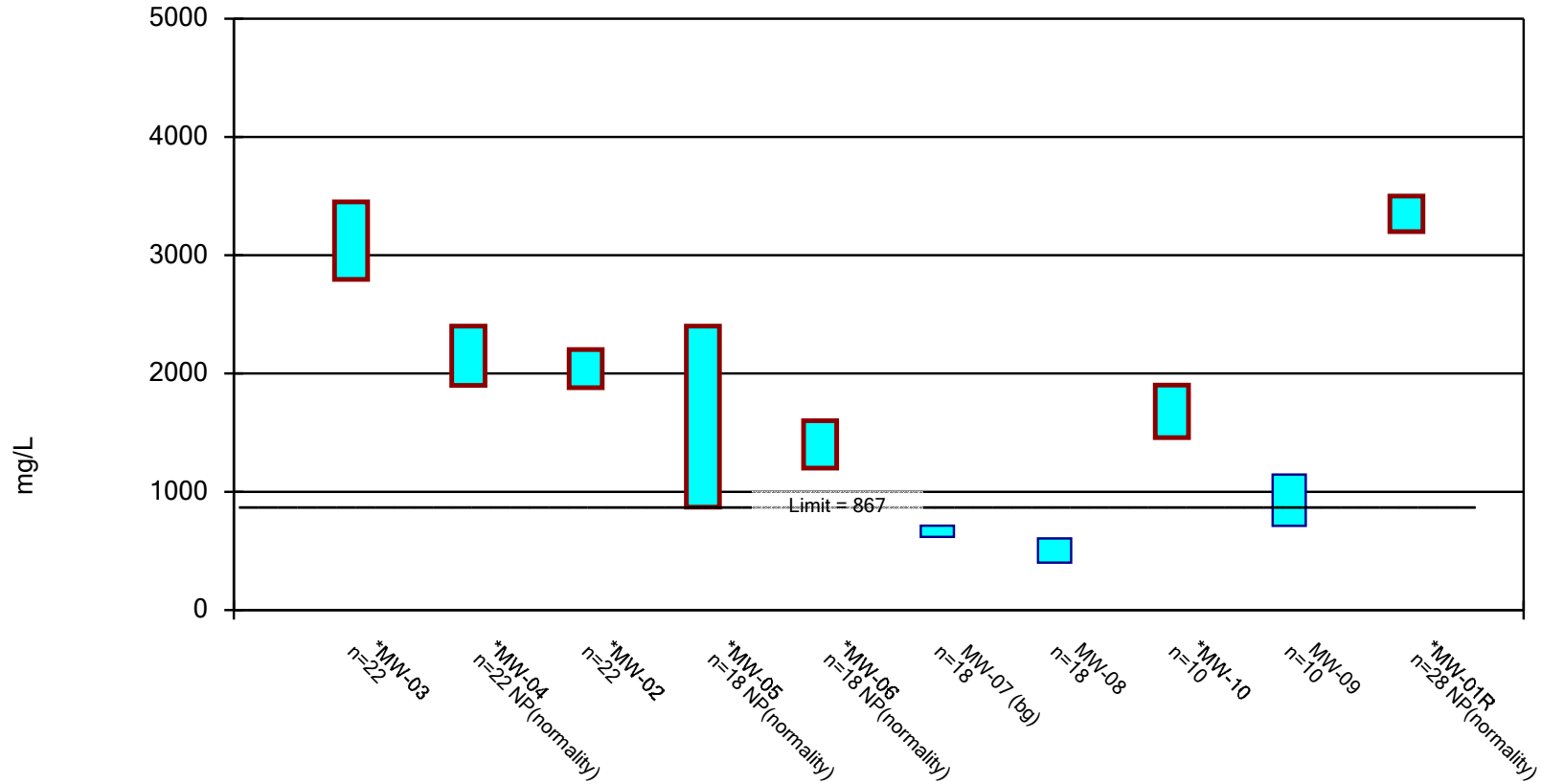
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Thallium Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

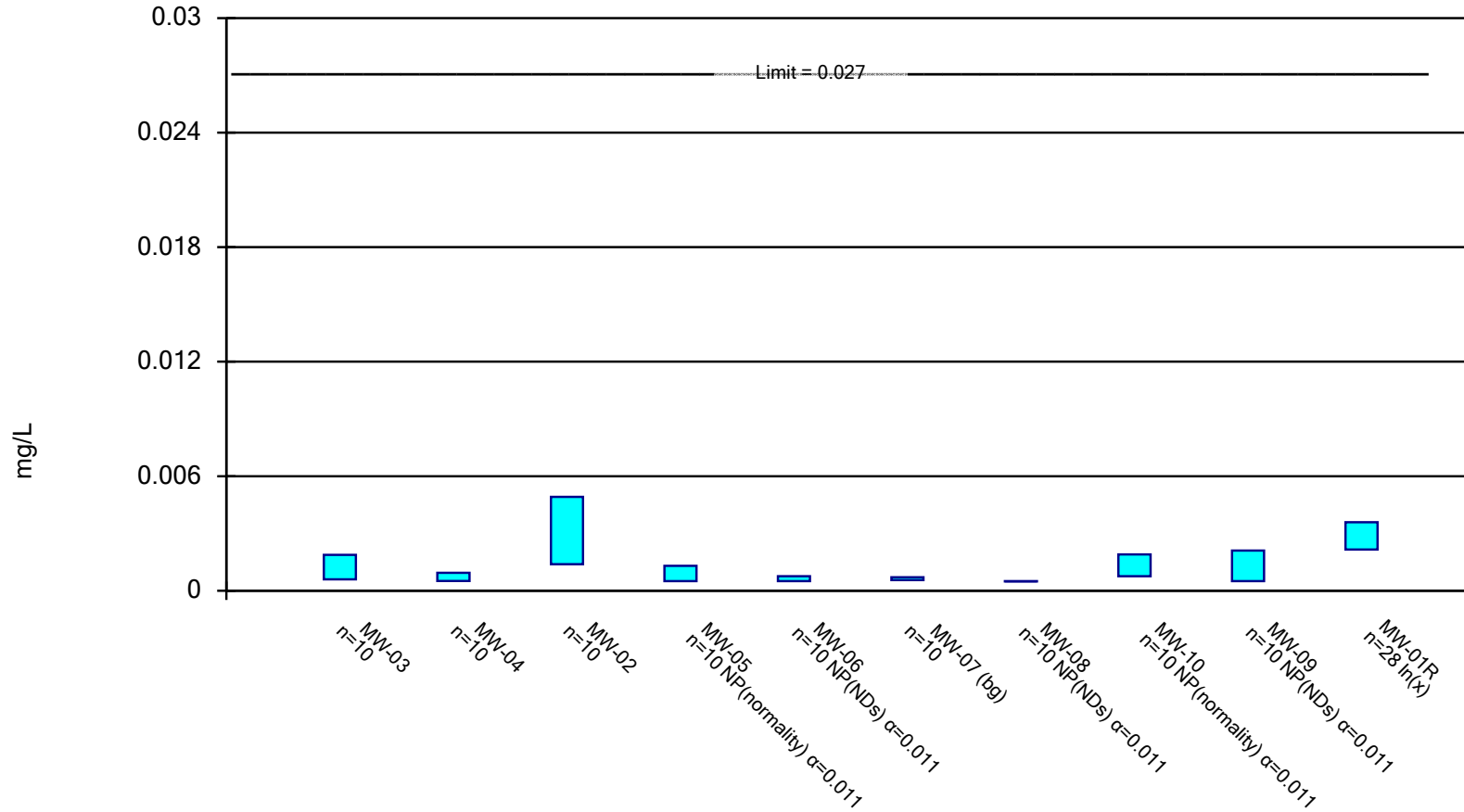


Constituent: Total Dissolved Solids Analysis Run 1/3/2022 1:24 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

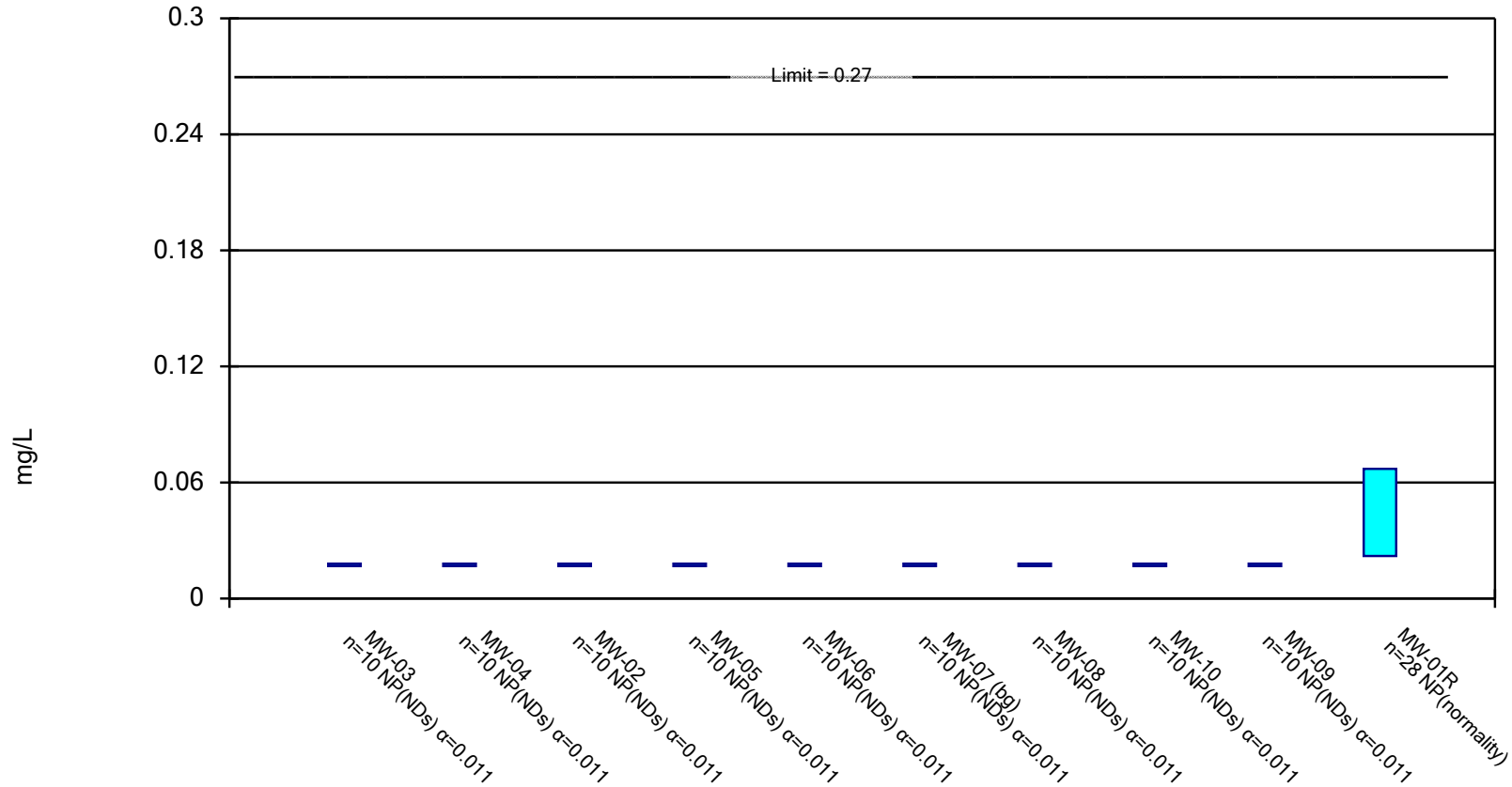
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Vanadium Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Zinc Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-03	0.000255	0.00021	0.006	No	21	0.0002217	0.00004425	95.24	No	0.01	NP (NDs)
Antimony (mg/L)	MW-04	0.00021	0.000091	0.006	No	21	0.0002043	0.00002597	95.24	No	0.01	NP (NDs)
Antimony (mg/L)	MW-02	0.00033	0.00021	0.006	No	21	0.0002814	0.0001471	66.67	No	0.01	NP (NDs)
Antimony (mg/L)	MW-05	0.000255	0.00021	0.006	No	18	0.000215	0.00001455	100	No	0.01	NP (NDs)
Antimony (mg/L)	MW-06	0.000255	0.00012	0.006	No	18	0.0002194	0.0000607	77.78	No	0.01	NP (NDs)
Antimony (mg/L)	MW-07 (bg)	0.000255	0.00013	0.006	No	18	0.0002853	0.0003289	88.89	No	0.01	NP (NDs)
Antimony (mg/L)	MW-08	0.000255	0.00012	0.006	No	18	0.0002156	0.00003564	88.89	No	0.01	NP (NDs)
Antimony (mg/L)	MW-10	0.00021	0.00021	0.006	No	10	0.000576	0.001168	80	No	0.011	NP (NDs)
Antimony (mg/L)	MW-09	0.00021	0.00021	0.006	No	10	0.00021	0	100	No	0.011	NP (NDs)
Antimony (mg/L)	MW-01R	0.003786	0.001079	0.006	No	28	0.004314	0.005538	10.71	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-03	0.002118	0.001453	0.01	No	21	0.001786	0.0006027	9.524	No	0.01	Param.
Arsenic (mg/L)	MW-04	0.001611	0.001217	0.01	No	21	0.001414	0.0003568	4.762	No	0.01	Param.
Arsenic (mg/L)	MW-02	0.009952	0.006543	0.01	No	21	0.008248	0.00309	4.762	No	0.01	Param.
Arsenic (mg/L)	MW-05	0.16	0.06333	0.01	Yes	18	0.1116	0.07986	0	No	0.01	Param.
Arsenic (mg/L)	MW-06	0.00149	0.0009801	0.01	No	18	0.001235	0.0004214	5.556	No	0.01	Param.
Arsenic (mg/L)	MW-07 (bg)	0.001	0.0005	0.01	No	17	0.001078	0.00114	47.06	No	0.01	NP (normality)
Arsenic (mg/L)	MW-08	0.005661	0.003736	0.01	No	18	0.004878	0.001844	0	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-10	0.001296	0.0008498	0.01	No	10	0.001073	0.0002502	0	No	0.01	Param.
Arsenic (mg/L)	MW-09	0.003558	0.002242	0.01	No	10	0.0029	0.0007379	0	No	0.01	Param.
Arsenic (mg/L)	MW-01R	0.0083	0.0067	0.01	No	28	0.006929	0.002187	3.571	No	0.01	NP (normality)
Barium (mg/L)	MW-03	0.4399	0.3268	1.2	No	21	0.3833	0.1025	0	No	0.01	Param.
Barium (mg/L)	MW-04	0.1514	0.1188	1.2	No	21	0.1351	0.02947	0	No	0.01	Param.
Barium (mg/L)	MW-02	0.4828	0.4429	1.2	No	21	0.4629	0.03621	0	No	0.01	Param.
Barium (mg/L)	MW-05	0.2237	0.09223	1.2	No	18	0.1846	0.1329	0	ln(x)	0.01	Param.
Barium (mg/L)	MW-06	1.4	0.89	1.2	No	18	1.099	0.379	0	No	0.01	NP (normality)
Barium (mg/L)	MW-07 (bg)	0.4002	0.3264	1.2	No	18	0.3633	0.06097	0	No	0.01	Param.
Barium (mg/L)	MW-08	0.8027	0.5762	1.2	No	18	0.6894	0.1871	0	No	0.01	Param.
Barium (mg/L)	MW-10	1.373	1.167	1.2	No	10	1.27	0.116	0	No	0.01	Param.
Barium (mg/L)	MW-09	3.021	0.9393	1.2	No	10	2.082	1.567	0	ln(x)	0.01	Param.
Barium (mg/L)	MW-01R	0.5967	0.3973	1.2	No	28	0.497	0.2134	0	No	0.01	Param.
Beryllium (mg/L)	MW-03	0.001	0.001	0.004	No	21	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-04	0.001	0.001	0.004	No	21	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-02	0.0015	0.00077	0.004	No	21	0.0009681	0.0002412	85.71	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-05	0.001	0.001	0.004	No	18	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-06	0.001	0.001	0.004	No	18	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-07 (bg)	0.001	0.001	0.004	No	18	0.001	0	100	No	0.01	NP (NDs)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Beryllium (mg/L)	MW-08	0.001	0.000089	0.004	No	18	0.0009494	0.0002147	94.44	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-10	0.001	0.001	0.004	No	10	0.001	0	100	No	0.011	NP (NDs)
Beryllium (mg/L)	MW-09	0.001	0.001	0.004	No	10	0.001	0	100	No	0.011	NP (NDs)
Beryllium (mg/L)	MW-01R	0.001	0.001	0.004	No	28	0.001	0	100	No	0.01	NP (NDs)
Boron (ug/L)	MW-03	5563	4580	16000	No	21	5071	890.6	0	No	0.01	Param.
Boron (ug/L)	MW-04	3900	3300	16000	No	21	3724	574.4	0	No	0.01	NP (normality)
Boron (ug/L)	MW-02	137592	98805	16000	Yes	21	122000	41539	0	In(x)	0.01	Param.
Boron (ug/L)	MW-05	4200	2700	16000	No	18	3906	2641	0	No	0.01	NP (normality)
Boron (ug/L)	MW-06	14000	9200	16000	No	18	11067	3542	0	No	0.01	NP (normality)
Boron (ug/L)	MW-07 (bg)	15000	11000	16000	No	18	12978	3368	0	No	0.01	NP (normality)
Boron (ug/L)	MW-08	3000	1200	16000	No	18	2192	1651	0	No	0.01	NP (normality)
Boron (ug/L)	MW-10	49555	39245	16000	Yes	10	44400	5777	0	No	0.01	Param.
Boron (ug/L)	MW-09	6385	4695	16000	No	10	5540	946.6	0	No	0.01	Param.
Boron (ug/L)	MW-01R	190000	140000	16000	Yes	28	165000	38442	0	No	0.01	NP (normality)
Cadmium (mg/L)	MW-03	0.0006	0.00033	0.0025	No	21	0.0005738	0.00008273	95.24	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-04	0.0006	0.000037	0.0025	No	21	0.0005463	0.0001696	90.48	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-02	0.0006	0.00021	0.0025	No	21	0.0004928	0.0002549	66.67	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-05	0.0006	0.00032	0.0025	No	18	0.0004888	0.0002229	83.33	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-06	0.0006	0.000063	0.0025	No	18	0.0003986	0.0002596	61.11	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-07 (bg)	0.0006	0.00032	0.0025	No	18	0.0005537	0.0001426	94.44	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-08	0.0006	0.00032	0.0025	No	18	0.000525	0.0001799	88.89	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-10	0.0006	0.0006	0.0025	No	10	0.000593	0.0002526	80	No	0.011	NP (NDs)
Cadmium (mg/L)	MW-09	0.0006	0.0006	0.0025	No	10	0.0006	0	100	No	0.011	NP (NDs)
Cadmium (mg/L)	MW-01R	0.0043	0.0006	0.0025	No	28	0.003946	0.005132	32.14	No	0.01	NP (normality)
Calcium (ug/L)	MW-03	620000	540000	200000	Yes	22	589545	86050	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-04	463546	420999	200000	Yes	22	442273	39633	0	No	0.01	Param.
Calcium (ug/L)	MW-02	210000	180000	200000	No	22	203182	34001	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-05	560000	240000	200000	Yes	18	444444	162597	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-06	250000	200000	200000	No	18	215072	59849	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-07 (bg)	150000	130000	200000	No	18	145000	15435	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-08	139933	122845	200000	No	18	131389	14122	0	No	0.01	Param.
Calcium (ug/L)	MW-10	160000	130000	200000	No	10	141000	11972	0	No	0.011	NP (normality)
Calcium (ug/L)	MW-09	257600	228400	200000	Yes	10	243000	16364	0	No	0.01	Param.
Calcium (ug/L)	MW-01R	256657	169040	200000	No	28	230393	114277	0	In(x)	0.01	Param.
Chloride (mg/L)	MW-03	453.6	359.9	150	Yes	22	413.6	97.57	0	In(x)	0.01	Param.
Chloride (mg/L)	MW-04	313.5	241	150	Yes	22	277.3	67.55	0	No	0.01	Param.

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Chloride (mg/L)	MW-02	150	140	150	No	22	145	8.018	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-05	22.5	15.62	150	No	18	19.06	5.681	0	No	0.01	Param.
Chloride (mg/L)	MW-06	300	150	150	No	18	227.2	66.32	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-07 (bg)	15	13	150	No	18	14.11	0.8324	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-08	44.32	18.9	150	No	18	36.92	28.77	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-10	603.7	412.3	150	Yes	10	508	107.3	0	No	0.01	Param.
Chloride (mg/L)	MW-09	13.95	10.29	150	No	10	12.15	2.31	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-01R	264.2	250.8	150	Yes	28	257.5	14.3	0	No	0.01	Param.
Chromium (mg/L)	MW-03	0.00256	0.001525	0.1	No	21	0.002202	0.001094	0	ln(x)	0.01	Param.
Chromium (mg/L)	MW-04	0.002257	0.001705	0.1	No	21	0.001981	0.0004996	4.762	No	0.01	Param.
Chromium (mg/L)	MW-02	0.05239	0.03262	0.1	No	21	0.0425	0.01791	0	No	0.01	Param.
Chromium (mg/L)	MW-05	0.0017	0.0008	0.1	No	18	0.0009139	0.0002103	77.78	No	0.01	NP (NDs)
Chromium (mg/L)	MW-06	0.0029	0.0012	0.1	No	18	0.001765	0.001003	0	No	0.01	NP (normality)
Chromium (mg/L)	MW-07 (bg)	0.001	0.00068	0.1	No	18	0.000925	0.0005008	66.67	No	0.01	NP (NDs)
Chromium (mg/L)	MW-08	0.0009586	0.0007158	0.1	No	18	0.0008372	0.0002006	27.78	No	0.01	Param.
Chromium (mg/L)	MW-10	0.01121	0.007332	0.1	No	10	0.00927	0.002172	0	No	0.01	Param.
Chromium (mg/L)	MW-09	0.002689	0.001971	0.1	No	10	0.00233	0.0004029	0	No	0.01	Param.
Chromium (mg/L)	MW-01R	0.006266	0.003249	0.1	No	28	0.005689	0.004133	3.571	ln(x)	0.01	Param.
Cobalt (mg/L)	MW-03	0.001178	0.0008524	0.006	No	21	0.0008833	0.0002917	23.81	No	0.01	Param.
Cobalt (mg/L)	MW-04	0.00058	0.00033	0.006	No	21	0.00051	0.0002227	38.1	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-02	0.007702	0.005441	0.006	No	21	0.006571	0.002049	0	No	0.01	Param.
Cobalt (mg/L)	MW-05	0.0041	0.0005	0.006	No	18	0.002205	0.001998	33.33	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-06	0.00099	0.00036	0.006	No	18	0.0006289	0.0002498	50	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-07 (bg)	0.00091	0.0007	0.006	No	18	0.0008239	0.0001295	16.67	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-08	0.00105	0.00035	0.006	No	18	0.00071	0.0005735	50	No	0.01	NP (normality)
Cobalt (mg/L)	MW-10	0.0011	0.00067	0.006	No	10	0.001027	0.0005839	0	No	0.011	NP (normality)
Cobalt (mg/L)	MW-09	0.0022	0.0005	0.006	No	10	0.000981	0.0007477	30	No	0.011	NP (normality)
Cobalt (mg/L)	MW-01R	0.01587	0.005758	0.006	No	28	0.01732	0.0221	0	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-03	1.68	0.666	5	No	21	1.21	0.8396	23.81	No	0.01	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	MW-04	0.97	0.671	5	No	21	0.8382	0.4338	38.1	No	0.01	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	MW-02	1.988	0.7317	5	No	21	1.565	0.8717	28.57	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-05	1.1	0.536	5	No	18	0.8472	0.3989	50	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-06	2.22	0.73	5	No	18	1.29	0.8637	33.33	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-07 (bg)	1.73	0.73	5	No	18	1.11	0.5214	50	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-08	2.31	0.73	5	No	18	1.607	1.125	33.33	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-10	2.213	0.7756	5	No	9	1.581	0.6146	22.22	No	0.01	Param.

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Combined Radium 226 + 228 (pCi/L)	MW-09	1.957	1.123	5	No	10	1.54	0.4674	10	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-01R	2.25	0.41	5	No	7	0.9557	0.5965	42.86	No	0.008	NP (Cohens/xfrm)
Copper (mg/L)	MW-03	0.0018	0.00078	0.02	No	10	0.001563	0.0005057	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-04	0.0018	0.0015	0.02	No	10	0.001695	0.0003201	70	No	0.011	NP (NDs)
Copper (mg/L)	MW-02	0.0022	0.0018	0.02	No	10	0.00193	0.0005376	70	No	0.011	NP (NDs)
Copper (mg/L)	MW-05	0.0018	0.0018	0.02	No	10	0.001738	0.0005852	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-06	0.0034	0.0018	0.02	No	10	0.00223	0.001153	70	No	0.011	NP (NDs)
Copper (mg/L)	MW-07 (bg)	0.0018	0.00059	0.02	No	10	0.001545	0.0005385	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-08	0.0018	0.00094	0.02	No	10	0.001618	0.0003844	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-10	0.0018	0.0018	0.02	No	10	0.002027	0.001085	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-09	0.0018	0.0018	0.02	No	10	0.00175	0.0001581	90	No	0.011	NP (NDs)
Copper (mg/L)	MW-01R	0.0056	0.0018	0.02	No	28	0.006071	0.008081	64.29	No	0.01	NP (NDs)
Fluoride (mg/L)	MW-03	1.51	1.017	2.67	No	21	1.263	0.447	0	No	0.01	Param.
Fluoride (mg/L)	MW-04	1.292	1.131	2.67	No	21	1.211	0.1461	0	No	0.01	Param.
Fluoride (mg/L)	MW-02	12.71	10.28	2.67	Yes	21	11.5	2.209	0	No	0.01	Param.
Fluoride (mg/L)	MW-05	3.412	2.377	2.67	No	18	2.894	0.8551	0	No	0.01	Param.
Fluoride (mg/L)	MW-06	1.693	1.452	2.67	No	18	1.572	0.1994	0	No	0.01	Param.
Fluoride (mg/L)	MW-07 (bg)	0.1335	0.07364	2.67	No	18	0.1079	0.04269	16.67	No	0.01	Param.
Fluoride (mg/L)	MW-08	0.4826	0.3318	2.67	No	18	0.4072	0.1246	0	No	0.01	Param.
Fluoride (mg/L)	MW-10	11.55	9.808	2.67	Yes	10	10.68	0.9773	0	No	0.01	Param.
Fluoride (mg/L)	MW-09	2.568	2.312	2.67	No	10	2.44	0.143	0	No	0.01	Param.
Fluoride (mg/L)	MW-01R	26	20	2.67	Yes	28	20.83	7.517	3.571	No	0.01	NP (normality)
Iron (mg/L)	MW-03	18.6	2.843	25.01	No	10	10.72	8.83	0	No	0.01	Param.
Iron (mg/L)	MW-04	8.715	6.265	25.01	No	10	7.49	1.373	0	No	0.01	Param.
Iron (mg/L)	MW-02	23	18	25.01	No	10	19.77	4.869	0	No	0.011	NP (normality)
Iron (mg/L)	MW-05	35.91	10.49	25.01	No	10	23.2	14.24	0	No	0.01	Param.
Iron (mg/L)	MW-06	17.77	10.67	25.01	No	10	14.22	3.983	0	No	0.01	Param.
Iron (mg/L)	MW-07 (bg)	19.67	15.53	25.01	No	10	17.6	2.319	0	No	0.01	Param.
Iron (mg/L)	MW-08	28.06	19.94	25.01	No	10	24	4.546	0	No	0.01	Param.
Iron (mg/L)	MW-10	11.86	9.06	25.01	No	10	10.46	1.569	0	No	0.01	Param.
Iron (mg/L)	MW-09	22.71	16.29	25.01	No	10	19.5	3.598	0	No	0.01	Param.
Iron (mg/L)	MW-01R	4.044	2.599	25.01	No	28	3.321	1.547	0	No	0.01	Param.
Lead (mg/L)	MW-03	0.0005	0.00038	0.014	No	21	0.0004395	0.0001571	66.67	No	0.01	NP (NDs)
Lead (mg/L)	MW-04	0.0005	0.00037	0.014	No	21	0.0004414	0.00009404	66.67	No	0.01	NP (NDs)
Lead (mg/L)	MW-02	0.0046	0.001745	0.014	No	21	0.003172	0.002587	14.29	No	0.01	Param.
Lead (mg/L)	MW-05	0.00075	0.00045	0.014	No	18	0.002287	0.006514	55.56	No	0.01	NP (NDs)

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Lead (mg/L)	MW-06	0.0023	0.0005	0.014	No	18	0.001507	0.00107	22.22	No	0.01	NP (normality)
Lead (mg/L)	MW-07 (bg)	0.00062	0.00045	0.014	No	18	0.0005756	0.0005995	72.22	No	0.01	NP (NDs)
Lead (mg/L)	MW-08	0.00067	0.00046	0.014	No	18	0.0008167	0.0008797	50	No	0.01	NP (normality)
Lead (mg/L)	MW-10	0.0089	0.0005	0.014	No	10	0.006608	0.01373	20	No	0.011	NP (Cohens/xfrm)
Lead (mg/L)	MW-09	0.0016	0.0005	0.014	No	10	0.000793	0.0005488	70	No	0.011	NP (NDs)
Lead (mg/L)	MW-01R	0.03128	0.01062	0.014	No	28	0.03329	0.04093	0	ln(x)	0.01	Param.
Lithium (mg/L)	MW-03	0.07409	0.04808	0.059	No	21	0.06108	0.02358	4.762	No	0.01	Param.
Lithium (mg/L)	MW-04	0.05878	0.04167	0.059	No	21	0.05022	0.0155	4.762	No	0.01	Param.
Lithium (mg/L)	MW-02	1.499	1.233	0.059	Yes	21	1.366	0.241	0	No	0.01	Param.
Lithium (mg/L)	MW-05	0.1286	0.07023	0.059	Yes	18	0.09939	0.0482	11.11	No	0.01	Param.
Lithium (mg/L)	MW-06	0.23	0.17	0.059	Yes	18	0.1909	0.06135	5.556	No	0.01	NP (normality)
Lithium (mg/L)	MW-07 (bg)	0.00835	0.0039	0.059	No	18	0.008872	0.01265	44.44	No	0.01	NP (normality)
Lithium (mg/L)	MW-08	0.03732	0.02431	0.059	No	18	0.03082	0.01075	5.556	No	0.01	Param.
Lithium (mg/L)	MW-10	1.481	0.9786	0.059	Yes	10	1.23	0.2818	0	No	0.01	Param.
Lithium (mg/L)	MW-09	0.26	0.16	0.059	Yes	10	0.235	0.04249	0	No	0.011	NP (normality)
Lithium (mg/L)	MW-01R	3.133	2.418	0.059	Yes	28	2.775	0.7644	0	No	0.01	Param.
Mercury (mg/L)	MW-03	8.0e-7	1.6e-7	0.00014	No	21	0.00001079	0.00002658	71.43	No	0.01	NP (NDs)
Mercury (mg/L)	MW-04	0.00006008	1.6e-7	0.00014	No	21	0.00000683	0.00002131	95.24	No	0.01	NP (NDs)
Mercury (mg/L)	MW-02	0.0000031	1.6e-7	0.00014	No	21	0.00001119	0.00002659	71.43	No	0.01	NP (NDs)
Mercury (mg/L)	MW-05	0.00017	1.6e-7	0.00014	No	18	0.000009596	0.00004003	94.44	No	0.01	NP (NDs)
Mercury (mg/L)	MW-06	0.000083	1.6e-7	0.00014	No	18	0.00002561	0.00004623	55.56	No	0.01	NP (NDs)
Mercury (mg/L)	MW-07 (bg)	0.00008	1.6e-7	0.00014	No	18	0.00002347	0.00004661	77.78	No	0.01	NP (NDs)
Mercury (mg/L)	MW-08	0.00006008	1.6e-7	0.00014	No	18	0.00001919	0.00003791	66.67	No	0.01	NP (NDs)
Mercury (mg/L)	MW-10	0.00008055	1.6e-7	0.00014	No	10	0.00001648	0.00003381	40	No	0.011	NP (normality)
Mercury (mg/L)	MW-09	8.8e-7	1.6e-7	0.00014	No	10	0.000008344	0.0000253	60	No	0.011	NP (NDs)
Mercury (mg/L)	MW-01R	0.00002335	0.000005832	0.00014	No	28	0.00002651	0.00003384	3.571	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-03	0.0049	0.000093	0.1	No	21	0.002009	0.003164	52.38	No	0.01	NP (NDs)
Molybdenum (mg/L)	MW-04	0.00158	0.000607	0.1	No	21	0.001178	0.0007406	19.05	No	0.01	Param.
Molybdenum (mg/L)	MW-02	0.009148	0.004689	0.1	No	21	0.006918	0.004042	9.524	No	0.01	Param.
Molybdenum (mg/L)	MW-05	0.01285	0.004305	0.1	No	18	0.008579	0.007063	11.11	No	0.01	Param.
Molybdenum (mg/L)	MW-06	0.001081	0.000237	0.1	No	18	0.0007473	0.0005699	22.22	No	0.01	Param.
Molybdenum (mg/L)	MW-07 (bg)	0.004	0.000093	0.1	No	18	0.001595	0.00211	27.78	No	0.01	NP (normality)
Molybdenum (mg/L)	MW-08	0.004627	0.002527	0.1	No	18	0.003577	0.001735	11.11	No	0.01	Param.
Molybdenum (mg/L)	MW-10	0.01203	0.004568	0.1	No	10	0.0083	0.004183	0	No	0.01	Param.
Molybdenum (mg/L)	MW-09	0.02601	0.01353	0.1	No	10	0.01977	0.006998	0	No	0.01	Param.
Molybdenum (mg/L)	MW-01R	0.01	0.008	0.1	No	28	0.008514	0.003256	0	No	0.01	NP (normality)

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<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Nickel (mg/L)	MW-03	0.003	0.002	0.11	No	10	0.00282	0.001522	20	No	0.011	NP (normality)
Nickel (mg/L)	MW-04	0.01853	0.01407	0.11	No	10	0.0163	0.002497	0	No	0.01	Param.
Nickel (mg/L)	MW-02	0.02424	0.01436	0.11	No	10	0.0193	0.005539	0	No	0.01	Param.
Nickel (mg/L)	MW-05	0.0039	0.0015	0.11	No	10	0.002594	0.001548	40	No	0.011	NP (Cohens/xfrm)
Nickel (mg/L)	MW-06	0.0022	0.0022	0.11	No	10	0.00219	0.0001197	70	No	0.011	NP (NDs)
Nickel (mg/L)	MW-07 (bg)	0.0022	0.00042	0.11	No	10	0.001842	0.0007547	80	No	0.011	NP (NDs)
Nickel (mg/L)	MW-08	0.0022	0.0013	0.11	No	10	0.002	0.0004243	80	No	0.011	NP (NDs)
Nickel (mg/L)	MW-10	0.0041	0.0022	0.11	No	10	0.00285	0.0011	50	No	0.011	NP (normality)
Nickel (mg/L)	MW-09	0.0032	0.0022	0.11	No	10	0.00246	0.000631	60	No	0.011	NP (NDs)
Nickel (mg/L)	MW-01R	0.01981	0.009064	0.11	No	28	0.0194	0.01951	0	ln(x)	0.01	Param.
pH (SU)	MW-03	7.466	6.91	9	No	20	7.188	0.4345	0	No	0.005	Param.
pH (SU)	MW-04	7.681	7.101	9	No	20	7.391	0.4537	0	No	0.005	Param.
pH (SU)	MW-02	7.742	7.095	9	No	20	7.419	0.5058	0	No	0.005	Param.
pH (SU)	MW-05	7.785	7.087	9	No	17	7.436	0.4927	0	No	0.005	Param.
pH (SU)	MW-06	7.767	7.243	9	No	17	7.509	0.3782	0	ln(x)	0.005	Param.
pH (SU)	MW-07 (bg)	7.501	6.873	9	No	17	7.187	0.4429	0	No	0.005	Param.
pH (SU)	MW-08	7.812	7.156	9	No	17	7.484	0.4631	0	No	0.005	Param.
pH (SU)	MW-10	8.044	7.5	9	No	10	7.772	0.2644	0	No	0.005	Param.
pH (SU)	MW-09	7.701	7.065	9	No	10	7.383	0.3094	0	No	0.005	Param.
pH (SU)	MW-01R	8.454	7.861	9	No	28	8.158	0.566	0	No	0.005	Param.
Selenium (mg/L)	MW-03	0.0012	0.0009	0.005	No	21	0.001026	0.0002179	66.67	No	0.01	NP (NDs)
Selenium (mg/L)	MW-04	0.0013	0.00065	0.005	No	21	0.0008943	0.0001214	85.71	No	0.01	NP (NDs)
Selenium (mg/L)	MW-02	0.0027	0.0012	0.005	No	21	0.002543	0.002738	19.05	No	0.01	NP (normality)
Selenium (mg/L)	MW-05	0.0009	0.0009	0.005	No	18	0.0009	0	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-06	0.0009	0.0009	0.005	No	18	0.0009	0	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-07 (bg)	0.0009	0.0009	0.005	No	18	0.0009	0	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-08	0.0009	0.0009	0.005	No	18	0.0009	0	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-10	0.0009	0.0009	0.005	No	10	0.0009	0	100	No	0.011	NP (NDs)
Selenium (mg/L)	MW-09	0.0009	0.0009	0.005	No	10	0.0009	0	100	No	0.011	NP (NDs)
Selenium (mg/L)	MW-01R	0.0021	0.0013	0.005	No	28	0.001949	0.001097	17.86	No	0.01	NP (Cohens/xfrm)
Silver (mg/L)	MW-03	0.0003	0.0003	0.001	No	10	0.0002726	0.00008665	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-04	0.0003	0.000015	0.001	No	10	0.0002429	0.0001204	80	No	0.011	NP (NDs)
Silver (mg/L)	MW-02	0.0003	0.0003	0.001	No	10	0.0002736	0.00008348	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-05	0.0003	0.0003	0.001	No	10	0.0002716	0.00008981	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-06	0.0003	0.0003	0.001	No	10	0.0002724	0.00008728	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-07 (bg)	0.0003	0.000034	0.001	No	10	0.0002456	0.0001147	80	No	0.011	NP (NDs)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Silver (mg/L)	MW-08	0.0003	0.0003	0.001	No	10	0.0002728	0.00008601	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-10	0.0003	0.0003	0.001	No	10	0.0003	0	100	No	0.011	NP (NDs)
Silver (mg/L)	MW-09	0.0003	0.0003	0.001	No	10	0.0003	0	100	No	0.011	NP (NDs)
Silver (mg/L)	MW-01R	0.0003	0.0003	0.001	No	28	0.0003	0	100	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-03	972	485.9	370	Yes	22	729	452.8	0	No	0.01	Param.
Sulfate (mg/L)	MW-04	801.8	639.1	370	Yes	22	720.5	151.5	0	No	0.01	Param.
Sulfate (mg/L)	MW-02	1.5	0.41	370	No	22	1.98	3.488	54.55	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-05	1100	100	370	No	18	694.8	446.6	0	No	0.01	NP (normality)
Sulfate (mg/L)	MW-06	50.27	6.247	370	No	18	45.39	50.74	5.556	ln(x)	0.01	Param.
Sulfate (mg/L)	MW-07 (bg)	47.04	25.3	370	No	18	36.17	17.96	0	No	0.01	Param.
Sulfate (mg/L)	MW-08	7.348	1.78	370	No	18	6.977	9.683	5.556	ln(x)	0.01	Param.
Sulfate (mg/L)	MW-10	5.8	0.41	370	No	10	7.538	16.09	30	No	0.011	NP (Cohens/xfrm)
Sulfate (mg/L)	MW-09	131	19.54	370	No	10	75.26	62.45	0	No	0.01	Param.
Sulfate (mg/L)	MW-01R	761.3	528	370	Yes	28	644.6	249.6	0	No	0.01	Param.
Thallium (mg/L)	MW-03	0.0003	0.0003	0.001	No	21	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-04	0.0003	0.0003	0.001	No	21	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-02	0.0003	0.0003	0.001	No	21	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-05	0.0003	0.0003	0.001	No	18	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-06	0.0003	0.0003	0.001	No	18	0.0002869	0.00005563	88.89	No	0.01	NP (NDs)
Thallium (mg/L)	MW-07 (bg)	0.0003	0.0003	0.001	No	18	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-08	0.0003	0.0003	0.001	No	18	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-10	0.0003	0.0003	0.001	No	10	0.0003	0	100	No	0.011	NP (NDs)
Thallium (mg/L)	MW-09	0.0003	0.0003	0.001	No	10	0.000355	0.0001739	90	No	0.011	NP (NDs)
Thallium (mg/L)	MW-01R	0.0028	0.0003	0.001	No	28	0.0003893	0.0004725	96.43	No	0.01	NP (NDs)
Total Dissolved Solids (mg/L)	MW-03	3450	2795	867	Yes	22	3123	610.2	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-04	2400	1900	867	Yes	22	2092	514.9	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-02	2202	1880	867	Yes	22	2041	300.3	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-05	2400	870	867	Yes	18	1760	629.5	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-06	1600	1200	867	Yes	18	1394	201.4	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-07 (bg)	713.3	618.9	867	No	18	666.1	78	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-08	605.9	400.8	867	No	18	503.3	169.5	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-10	1902	1458	867	Yes	10	1680	248.6	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-09	1146	712.3	867	No	10	929	242.9	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-01R	3500	3200	867	Yes	28	3214	470.4	0	No	0.01	NP (normality)
Vanadium (mg/L)	MW-03	0.00188	0.0005939	0.027	No	10	0.001237	0.0007208	10	No	0.01	Param.
Vanadium (mg/L)	MW-04	0.0009392	0.0005128	0.027	No	10	0.000726	0.000239	10	No	0.01	Param.

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:31 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Vanadium (mg/L)	MW-02	0.004916	0.00139	0.027	No	10	0.003153	0.001976	10	No	0.01	Param.
Vanadium (mg/L)	MW-05	0.0013	0.0005	0.027	No	10	0.000958	0.0007621	40	No	0.011	NP (normality)
Vanadium (mg/L)	MW-06	0.00076	0.0005	0.027	No	10	0.000554	0.0001553	60	No	0.011	NP (NDs)
Vanadium (mg/L)	MW-07 (bg)	0.0007082	0.0005598	0.027	No	10	0.000634	0.00008316	0	No	0.01	Param.
Vanadium (mg/L)	MW-08	0.0005	0.00049	0.027	No	10	0.000485	0.00004403	80	No	0.011	NP (NDs)
Vanadium (mg/L)	MW-10	0.0019	0.00076	0.027	No	10	0.001383	0.000535	0	No	0.011	NP (normality)
Vanadium (mg/L)	MW-09	0.0021	0.0005	0.027	No	10	0.00087	0.0007889	80	No	0.011	NP (NDs)
Vanadium (mg/L)	MW-01R	0.003589	0.002157	0.027	No	28	0.003179	0.00173	3.571	ln(x)	0.01	Param.
Zinc (mg/L)	MW-03	0.018	0.018	0.27	No	10	0.01628	0.005436	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-04	0.018	0.018	0.27	No	10	0.0165	0.004743	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-02	0.018	0.018	0.27	No	10	0.01719	0.002561	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-05	0.018	0.018	0.27	No	10	0.03665	0.06461	80	No	0.011	NP (NDs)
Zinc (mg/L)	MW-06	0.018	0.018	0.27	No	10	0.0173	0.002214	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-07 (bg)	0.018	0.018	0.27	No	10	0.01673	0.005157	80	No	0.011	NP (NDs)
Zinc (mg/L)	MW-08	0.018	0.018	0.27	No	10	0.01646	0.00487	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-10	0.018	0.018	0.27	No	10	0.0315	0.0452	80	No	0.011	NP (NDs)
Zinc (mg/L)	MW-09	0.018	0.018	0.27	No	10	0.01684	0.003668	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-01R	0.067	0.022	0.27	No	28	0.06954	0.07713	28.57	No	0.01	NP (normality)

APPENDIX B

Laboratory Report and Field Forms

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

November 09, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1032
Client Project Impoundment Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
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www.trace-labs.com

SAMPLE SUMMARY

Trace Project ID: 21J1032
Client Project ID: Impoundment Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1032-01	Unit 1/2 Near MW-5	Ground Water	TRACE-EB/TB	10/26/21 11:25	10/27/21 08:52
21J1032-02	Unit 1/2 Near SG-2	Ground Water	TRACE-EB/TB	10/26/21 15:25	10/27/21 08:52

CERTIFICATE OF ANALYSIS

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
 Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: 21J1032-01

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Chromium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Manganese	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Vanadium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.

Trace ID: 21J1032-02

Analysis: EPA 6020B

Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: T116174-MSD1

Analysis: EPA 6010D

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Calcium	Note 226 : The MS recovery was out of control, resulting in an out of control RPD between the MS and MSD. Because the background concentration of this analyte is greater than four times the spike amount, no data require qualification.
<i>Analysis: EPA 6020B</i>	
Chromium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Manganese	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Vanadium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-01 Matrix: Ground Water Date Collected: 10/26/21 11:25
 Sample ID: Unit 1/2 Near MW-5 Date Received: 10/27/21 08:52 Field pH: 7.11

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	1.5 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	1.8 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	470 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	0.28 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.039 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	34 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	12 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	20 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	0.00047 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0021 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.035 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0017 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs	206	
Cobalt	0.00086 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.072 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs	206	
Molybdenum	0.0064 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0032 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	0.0011 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.00094 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs	206	

CERTIFICATE OF ANALYSIS

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-01 Matrix: Ground Water Date Collected: 10/26/21 11:25
 Sample ID: Unit 1/2 Near MW-5 Date Received: 10/27/21 08:52 Field pH: 7.11

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	1300 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	1.8 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	480 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	0.098 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd	J	
Lithium	0.037 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	33 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	12 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	20 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0030 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00088 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Arsenic	0.0016 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.040 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00058 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00035 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.066 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0048 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0022 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00086 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00035 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-01 Matrix: Ground Water Date Collected: 10/26/21 11:25
 Sample ID: Unit 1/2 Near MW-5 Date Received: 10/27/21 08:52 Field pH: 7.11

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116092

Fluoride	3.1 mg/L	0.10	5	10/27/21	ans	10/28/21	ans		
Chloride	28 mg/L	0.75	5	10/27/21	ans	10/28/21	ans		
Sulfate as SO4	1300 mg/L	60	100	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116236

Bicarbonate Alkalinity as CaCO3 at pH 4.5	93 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1200 mg/L	20	2	10/28/21	gmr	10/28/21	gmr		
Total Dissolved Solids	1800 mg/L	20	2	11/01/21	mr	11/02/21	mr		

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-02 Matrix: Ground Water Date Collected: 10/26/21 15:25
 Sample ID: Unit 1/2 Near SG-2 Date Received: 10/27/21 08:52 Field pH: 8.39

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T116281

Mercury	3.3 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T116174

Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	4.6 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	280 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	0.25 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.061 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	56 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	15 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	48 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		

Analysis Method: EPA 6020B

Batch: T116174

Antimony	0.00045 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0024 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.044 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0013 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	0.0021 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs	J	
Lead	0.00083 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Manganese	0.082 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0048 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0037 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	0.00093 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0014 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-02 Matrix: Ground Water Date Collected: 10/26/21 15:25
 Sample ID: Unit 1/2 Near SG-2 Date Received: 10/27/21 08:52 Field pH: 8.39

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	940 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	4.7 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	280 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	0.056 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd	J	
Lithium	0.057 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	54 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	15 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	49 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0013 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.0012 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0018 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.061 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	0.000045 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00023 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00062 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.00028 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Manganese	0.054 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0042 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0017 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00075 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00038 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-02 Matrix: Ground Water Date Collected: 10/26/21 15:25
 Sample ID: Unit 1/2 Near SG-2 Date Received: 10/27/21 08:52 Field pH: 8.39

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116092

Fluoride	3.1 mg/L	0.10	5	10/27/21	ans	10/28/21	ans		
Chloride	81 mg/L	15	100	10/28/21	ans	10/28/21	ans		
Sulfate as SO4	770 mg/L	60	100	10/28/21	ans	10/28/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116236

Bicarbonate Alkalinity as CaCO3 at pH 4.5	91 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1500 mg/L	20	2	10/28/21	gmr	10/28/21	gmr		
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QUALITY CONTROL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116281	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T116281-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T116281-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	23.4	94	77-123	

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116098	Analysis Description: Zinc, Dissolved
QC Batch Method:	Analysis Method: EPA 6010D

METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	0.0023	0.050	J
Beryllium	mg/L	0.000061	0.0010	J
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	0.015	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	

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METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116098-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.966	97	80-120	
Beryllium	mg/L	0.0500	0.0510	102	80-120	
Calcium	mg/L	10.0	10.3	103	80-120	
Iron	mg/L	10.0	10.4	104	80-120	
Potassium	mg/L	10.0	10.4	104	80-120	
Lithium	mg/L	0.500	0.522	104	80-120	
Magnesium	mg/L	10.0	10.5	105	80-120	
Sodium	mg/L	10.0	10.6	106	80-120	
Zinc	mg/L	1.00	1.04	104	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116098-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	1.83	1.00	2.78	2.79	95	96	75-125	0.8	20	
Beryllium	mg/L	0	0.0500	0.0476	0.0479	95	96	75-125	0.6	20	
Iron	mg/L	0.0978	10.0	9.84	10.0	97	99	75-125	2	20	
Potassium	mg/L	11.6	10.0	21.8	21.9	102	104	75-125	2	20	
Lithium	mg/L	0.0370	0.500	0.568	0.573	106	107	75-125	0.9	20	
Magnesium	mg/L	33.4	10.0	42.3	42.3	90	90	75-125	0.2	20	
Sodium	mg/L	20.3	10.0	30.8	31.0	105	107	75-125	2	20	
Zinc	mg/L	0.00301	1.00	0.991	1.02	99	102	75-125	3	20	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116098-MSD2

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Calcium	mg/L	478	100	576	562	98	84	75-125	16	20	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116174

Analysis Description: Potassium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6010D

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METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	0.060	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.830	93	80-120	
Beryllium	mg/L	0.111	0.109	98	80-120	
Calcium	mg/L	8.89	8.74	98	80-120	
Iron	mg/L	8.89	9.02	101	80-120	
Potassium	mg/L	8.89	9.03	102	80-120	
Lithium	mg/L	0.889	0.880	99	80-120	
Magnesium	mg/L	8.89	9.09	102	80-120	
Sodium	mg/L	8.89	9.07	102	80-120	
Zinc	mg/L	0.889	0.894	101	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116174-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	1.81	0.889	2.72	2.61	102	90	75-125	13	20	
Beryllium	mg/L	0	0.111	0.113	0.110	101	99	75-125	2	20	
Calcium	mg/L	468	8.89	498	475	342	80	75-125	124	20	226
Iron	mg/L	0.275	8.89	9.42	9.20	103	100	75-125	2	20	
Potassium	mg/L	11.6	8.89	21.7	21.1	113	107	75-125	6	20	
Lithium	mg/L	0.0394	0.889	0.997	0.969	108	105	75-125	3	20	
Magnesium	mg/L	33.6	8.89	42.5	41.6	99	89	75-125	11	20	
Sodium	mg/L	20.0	8.89	30.3	29.6	116	108	75-125	8	20	
Zinc	mg/L	0	0.889	0.909	0.876	102	99	75-125	4	20	

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Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116167
 QC Batch Method:

Analysis Description: Vanadium, Dissolved
 Analysis Method: EPA 6020B

METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	0.000026	0.000040	J
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	0.00017	0.00020	J
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0612	102	80-120	
Arsenic	mg/L	0.0600	0.0630	105	80-120	
Barium	mg/L	0.0600	0.0588	98	80-120	
Cadmium	mg/L	0.0600	0.0613	102	80-120	
Cobalt	mg/L	0.0600	0.0604	101	80-120	
Chromium	mg/L	0.0600	0.0629	105	80-120	
Copper	mg/L	0.0600	0.0610	102	80-120	
Manganese	mg/L	0.0600	0.0615	102	80-120	
Molybdenum	mg/L	0.0600	0.0588	98	80-120	
Nickel	mg/L	0.0600	0.0602	100	80-120	
Lead	mg/L	0.0600	0.0616	103	80-120	
Antimony	mg/L	0.0600	0.0577	96	80-120	
Selenium	mg/L	0.0600	0.0630	105	80-120	
Thallium	mg/L	0.0600	0.0617	103	80-120	

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LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Vanadium	mg/L	0.0600	0.0581	97	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116167-MSD1

Original: 21J1032-02

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Silver	mg/L	0	0.0500	0.0435	0.0420	87	84	75-125	4	20	
Arsenic	mg/L	0.00177	0.0500	0.0600	0.0573	116	111	75-125	5	20	
Cadmium	mg/L	0.0000452	0.0500	0.0492	0.0482	98	96	75-125	2	20	
Cobalt	mg/L	0.000233	0.0500	0.0459	0.0450	91	89	75-125	2	20	
Chromium	mg/L	0	0.0500	0.0493	0.0481	99	96	75-125	3	20	
Copper	mg/L	0.000624	0.0500	0.0419	0.0408	83	80	75-125	3	20	
Manganese	mg/L	0.0537	0.0500	0.105	0.102	102	97	75-125	5	20	
Molybdenum	mg/L	0.00421	0.0500	0.0585	0.0556	109	103	75-125	6	20	
Nickel	mg/L	0.00170	0.0500	0.0455	0.0445	88	86	75-125	2	20	
Selenium	mg/L	0.000753	0.0500	0.0555	0.0537	109	106	75-125	3	20	
Vanadium	mg/L	0.000380	0.0500	0.0516	0.0499	103	99	75-125	4	20	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116167-MSD2

Original: 21J1032-02

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Barium	mg/L	0.0610	0.250	0.308	0.306	99	98	75-125	1	20	
Lead	mg/L	0.000275	0.250	0.258	0.257	103	103	75-125	0.3	20	
Antimony	mg/L	0.00115	0.250	0.260	0.259	104	103	75-125	0.7	20	
Thallium	mg/L	0	0.250	0.265	0.262	106	105	75-125	1	20	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116174

Analysis Description: Selenium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6020B

METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	

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METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cadmium	mg/L	<0.0010	0.0010	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	0.00027	0.00040	J
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0333	120	80-120	
Arsenic	mg/L	0.0556	0.0599	108	80-120	
Barium	mg/L	0.889	0.950	107	80-120	
Cadmium	mg/L	0.0278	0.0297	107	80-120	
Cobalt	mg/L	0.889	0.892	100	80-120	
Chromium	mg/L	0.0278	0.0288	104	80-120	
Copper	mg/L	0.890	0.863	97	80-120	
Manganese	mg/L	0.887	0.878	99	80-120	
Molybdenum	mg/L	0.889	0.942	106	80-120	
Nickel	mg/L	0.889	0.840	95	80-120	
Lead	mg/L	0.0556	0.0533	96	80-120	
Antimony	mg/L	0.0556	0.0608	109	80-120	
Selenium	mg/L	0.0556	0.0560	101	80-120	
Thallium	mg/L	0.0556	0.0542	98	80-120	
Vanadium	mg/L	0.889	0.915	103	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116174-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Silver	mg/L	0	0.0278	0.0308	0.0292	111	105	75-125	5	20	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116174-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Arsenic	mg/L	0.00212	0.0556	0.0711	0.0670	124	117	75-125	6	20	
Barium	mg/L	0.0351	0.889	1.06	0.994	115	108	75-125	7	20	
Cadmium	mg/L	0	0.0278	0.0298	0.0280	107	101	75-125	6	20	
Cobalt	mg/L	0.000863	0.889	1.05	0.997	118	112	75-125	5	20	
Chromium	mg/L	0.00175	0.0278	0.0404	0.0382	139	131	75-125	6	20	206
Copper	mg/L	0	0.890	0.944	0.887	106	100	75-125	6	20	
Manganese	mg/L	0.0718	0.887	1.30	1.22	139	130	75-125	7	20	206
Molybdenum	mg/L	0.00638	0.889	1.03	0.980	115	110	75-125	5	20	
Nickel	mg/L	0.00323	0.889	0.959	0.909	108	102	75-125	5	20	
Lead	mg/L	0	0.0556	0.0499	0.0476	90	86	75-125	5	20	
Antimony	mg/L	0.000470	0.0556	0.0643	0.0600	115	107	75-125	7	20	
Selenium	mg/L	0.00107	0.0556	0.0649	0.0605	115	107	75-125	7	20	
Thallium	mg/L	0	0.0556	0.0519	0.0491	93	88	75-125	6	20	
Vanadium	mg/L	0.000945	0.889	1.35	1.28	152	144	75-125	6	20	206

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: [CALC]

Analysis Description: Hardness (Metals)

QC Batch Method:

Analysis Method: SM 2340 B-11

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116092

Analysis Description: Fluoride

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116092-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116092-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.00	100	90-110	
Fluoride	mg/L	1.00	0.992	99	90-110	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

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QC Batch: T116163

Analysis Description: Sulfate

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116163-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116163-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.11	102	90-110	
Sulfate as SO4	mg/L	5.00	4.88	98	90-110	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116228

Analysis Description: Sulfate

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116228-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116228-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Sulfate as SO4	mg/L	5.00	4.89	98	90-110	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116236

Analysis Description: Alkalinity, Bicarbonate

QC Batch Method: SM 2320 B-11

Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T116236-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	100	100	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	100	100	88-112	

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SAMPLE DUPLICATE: T116236-DUP1

Original: 21J1032-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	93.1	91.8	1	200	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116175

Analysis Description: Total Dissolved Solids

QC Batch Method: SM 2540 C-11

Analysis Method: SM 2540 C-11

METHOD BLANK: T116175-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	1.0	10	J

LABORATORY CONTROL SAMPLE: T116175-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	543	109	80-120	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116265

Analysis Description: Total Dissolved Solids

QC Batch Method: SM 2540 C-11

Analysis Method: SM 2540 C-11

METHOD BLANK: T116265-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	9.0	10	J

LABORATORY CONTROL SAMPLE: T116265-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	527	105	80-120	

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21J1032
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6	✓				
Representative Sample Temp °C	1.8	1.9	✓				✓

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present

Trace Courier Client Drop-off

Yes No Custody seals intact (if applicable)

UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10-26-21
 Field Personnel: EB
 Impoundment ID: Unit 12 by MW5
 Depth to Point:
 Sample Tubing Depth: 28 FT
 Purge Start Time: 10:55
 Purge Rate: 300 WL

Reading Time	11:17	11:20	11:22						
Depth to Water	-	-	-						
Temperature (Celsius)	9.57	9.57	9.57						
Specific Conductivity	2.05	2.05	2.05						
Dissolved Oxygen	11.00	11.00	11.00						
ORP (mV)	-11	-11	-11						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.11	7.11	7.11						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 10-26-21 Field Personnel: EB
 Impoundment ID: Unit 1a by S&S Depth to Point: Sample Tubing Depth: 20 FT
 Purge Start Time: 14:55 Purge Rate: 300 mL/min

Reading Time	15:15	15:18	15:21						
Depth to Water	-	-	-						
Temperature (Celsius)	12.13	12.13	12.13						
Specific Conductivity	1.63	1.63	1.63						
Dissolved Oxygen	9.87	9.87	9.87						
ORP (mV)	100	160	100						
Turbidity(NTU)	3.7	3.8	3.7						
pH	8.39	8.39	8.39						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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November 09, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1034
Client Project MW Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 21J1034
Client Project ID: MW Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1034-01	MW-1R	Ground Water	TRACE-EB/TB	10/26/21 11:45	10/27/21 09:16
21J1034-02	MW-2	Ground Water	TRACE-EB/TB	10/26/21 13:55	10/27/21 09:16
21J1034-03	MW-3	Ground Water	TRACE-EB/TB	10/26/21 12:35	10/27/21 09:16
21J1034-04	MW-4	Ground Water	TRACE-EB/TB	10/26/21 12:00	10/27/21 09:16
21J1034-05	MW-5	Ground Water	TRACE-EB/TB	10/26/21 10:35	10/27/21 09:16
21J1034-06	MW-6	Ground Water	TRACE-EB/TB	10/26/21 11:00	10/27/21 09:16
21J1034-07	MW-7	Ground Water	TRACE-EB/TB	10/26/21 10:20	10/27/21 09:16
21J1034-08	MW-8	Ground Water	TRACE-EB/TB	10/26/21 15:35	10/27/21 09:16
21J1034-09	MW-9	Ground Water	TRACE-EB/TB	10/26/21 14:30	10/27/21 09:16
21J1034-10	MW-10	Ground Water	TRACE-EB/TB	10/26/21 15:05	10/27/21 09:16

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
 Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: 21J1034-01

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Cadmium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Silver	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: 21J1034-02

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: 21J1034-03

Analysis: EPA 6020B

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Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
-------------	---

Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
-----------------	---

Trace ID: 21J1034-04

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
-----------------	---

Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
-------------	---

Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
-----------------	---

Trace ID: 21J1034-10

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
-----------------	---

Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
-------------	---

Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
-----------------	---

Trace ID: T116175-DUP2

Analysis: SM 2540 C-11

Total Dissolved Solids	Note 623 : The relative percent difference between the sample and sample duplicate is out of control. The sample result should be considered estimated.
-------------------------------	---

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-01 Matrix: Ground Water Date Collected: 10/26/21 11:45
 Sample ID: MW-1R Date Received: 10/27/21 09:16 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	1.9 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	140 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	220 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	1.7 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	2.8 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	120 mg/L	2.0	10	10/28/21	mrh	11/02/21	ckd		
Potassium	92 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	480 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	0.00044 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0046 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.20 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0022 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0022 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	0.0024 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.40 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0016 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0039 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	0.00097 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0017 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-01 Matrix: Ground Water Date Collected: 10/26/21 11:45
 Sample ID: MW-1R Date Received: 10/27/21 09:16 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	1000 mg/L	8.2	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	130 mg/L	2.5	50	10/27/21	ckd	10/29/21	ckd		
Calcium	250 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	1.5 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	2.6 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	120 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	85 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	470 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0013 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00050 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Arsenic	0.0040 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.21 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Chromium	0.00099 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00073 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.29 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0011 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0019 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00066 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.00020 mg/L	0.00020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00092 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-01 Matrix: Ground Water Date Collected: 10/26/21 11:45
 Sample ID: MW-1R Date Received: 10/27/21 09:16 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	13 mg/L	2.0	100	10/27/21	ans	10/27/21	ans		
Chloride	230 mg/L	15	100	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	530 mg/L	60	100	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116236

Bicarbonate Alkalinity as CaCO3 at pH 4.5	1200 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	3600 mg/L	20	2	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-02 Matrix: Ground Water Date Collected: 10/26/21 13:55
 Sample ID: MW-2 Date Received: 10/27/21 09:16 Field pH: 6.48

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	2.8 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	100 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	190 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	22 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	1.2 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	62 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	50 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	300 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.012 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.50 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.040 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0055 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	0.0022 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs	J	
Lead	0.0018 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Manganese	0.80 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0045 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.017 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	0.0017 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0039 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-02 Matrix: Ground Water Date Collected: 10/26/21 13:55
 Sample ID: MW-2 Date Received: 10/27/21 09:16 Field pH: 6.48

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	740 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	98 mg/L	0.50	10	10/27/21	ckd	10/29/21	ckd		
Calcium	200 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	22 mg/L	1.0	10	10/27/21	ckd	10/29/21	ckd		
Lithium	1.1 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	65 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	48 mg/L	10	10	10/27/21	ckd	10/29/21	ckd		
Sodium	310 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0030 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.012 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.48 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	0.000054 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Chromium	0.028 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.0047 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd		
Copper	0.00072 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.0012 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Manganese	0.80 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0038 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.015 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.0013 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	0.000027 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd	J	
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.0029 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-02 Matrix: Ground Water Date Collected: 10/26/21 13:55
 Sample ID: MW-2 Date Received: 10/27/21 09:16 Field pH: 6.48

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	9.4 mg/L	0.50	25	10/27/21	ans	10/27/21	ans		
Chloride	140 mg/L	3.8	25	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	<3.0 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	2100 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	2000 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-03 Matrix: Ground Water Date Collected: 10/26/21 12:35
 Sample ID: MW-3 Date Received: 10/27/21 09:16 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.79 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	4.4 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	490 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	4.5 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.053 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	200 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	21 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	140 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0012 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.47 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0041 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0014 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	2.1 mg/L	0.25	10	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.00012 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	J, N	
Nickel	0.0027 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0014 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-03 Matrix: Ground Water Date Collected: 10/26/21 12:35
 Sample ID: MW-3 Date Received: 10/27/21 09:16 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	2100 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	4.3 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	500 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	4.4 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.053 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	220 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	21 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	140 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.00074 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.0011 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.45 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0018 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00063 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00046 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	1.6 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00010 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J, N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00048 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00068 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-03 Matrix: Ground Water Date Collected: 10/26/21 12:35
 Sample ID: MW-3 Date Received: 10/27/21 09:16 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	0.89 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	330 mg/L	15	100	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	23 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	2000 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	2500 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-04 Matrix: Ground Water Date Collected: 10/26/21 12:00
 Sample ID: MW-4 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	3.7 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	370 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	5.2 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.061 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	89 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	22 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	81 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0019 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.12 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0033 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00079 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	1.1 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0015 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.011 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0010 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-04 Matrix: Ground Water Date Collected: 10/26/21 12:00
 Sample ID: MW-4 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	1300 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	4.1 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	380 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	5.4 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.071 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	90 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	21 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	83 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd		

Analysis Method: EPA 6020B

Batch: T116167

Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.0012 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.13 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0021 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00048 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.83 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00089 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0080 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00063 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-04 Matrix: Ground Water Date Collected: 10/26/21 12:00
 Sample ID: MW-4 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	1.3 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	170 mg/L	7.5	50	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	450 mg/L	30	50	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	870 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1900 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-05 Matrix: Ground Water Date Collected: 10/26/21 10:35
 Sample ID: MW-5 Date Received: 10/27/21 09:16 Field pH: 7.43

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/02/21	ckd		
Boron	3.0 mg/L	0.035	1	10/28/21	mrh	11/02/21	ckd		
Calcium	340 mg/L	3.5	10	10/28/21	mrh	11/02/21	ckd		
Iron	2.5 mg/L	0.14	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.089 mg/L	0.0070	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	37 mg/L	0.14	1	10/28/21	mrh	11/02/21	ckd		
Potassium	9.3 mg/L	0.70	1	10/28/21	mrh	11/02/21	ckd		
Sodium	29 mg/L	0.35	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.014 mg/L	0.014	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00021 mg/L	0.00021	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.040 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Barium	0.087 mg/L	0.0070	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0017 mg/L	0.00063	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00069 mg/L	0.0011	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0028 mg/L	0.0028	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.90 mg/L	0.018	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0023 mg/L	0.00028	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0015 mg/L	0.0035	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.00089 mg/L	0.00056	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-05 Matrix: Ground Water Date Collected: 10/26/21 10:35
 Sample ID: MW-5 Date Received: 10/27/21 09:16 Field pH: 7.43

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	1000 mg/L	0.58	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	3.1 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	360 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	2.0 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.092 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	39 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	9.4 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	30 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd		
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00010 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd	J	
Arsenic	0.043 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.088 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00021 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	0.69 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0016 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.00017 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00066 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-05 Matrix: Ground Water Date Collected: 10/26/21 10:35
 Sample ID: MW-5 Date Received: 10/27/21 09:16 Field pH: 7.43

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	3.3 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	22 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	320 mg/L	15	25	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	750 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1300 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-06 Matrix: Ground Water Date Collected: 10/26/21 11:00
 Sample ID: MW-6 Date Received: 10/27/21 09:16 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.94 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/02/21	ckd		
Boron	13 mg/L	0.35	10	10/28/21	mrh	11/02/21	ckd		
Calcium	200 mg/L	3.5	10	10/28/21	mrh	11/02/21	ckd		
Iron	13 mg/L	0.14	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.23 mg/L	0.0070	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	100 mg/L	1.4	10	10/28/21	mrh	11/02/21	ckd		
Potassium	34 mg/L	0.70	1	10/28/21	mrh	11/02/21	ckd		
Sodium	110 mg/L	3.5	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.014 mg/L	0.014	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00021 mg/L	0.00021	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0017 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Barium	1.6 mg/L	0.035	5	10/28/21	mrh	11/04/21	acs		
Cadmium	0.00053 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs	J	
Chromium	0.0029 mg/L	0.00063	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00082 mg/L	0.0011	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0028 mg/L	0.0028	1	10/28/21	mrh	11/04/21	acs		
Lead	0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.41 mg/L	0.018	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.00076 mg/L	0.00028	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0022 mg/L	0.0035	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Thallium	0.00030 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs	J	
Vanadium	0.00083 mg/L	0.00056	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-06 Matrix: Ground Water Date Collected: 10/26/21 11:00
 Sample ID: MW-6 Date Received: 10/27/21 09:16 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	940 mg/L	5.8	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	13 mg/L	0.50	10	10/27/21	ckd	10/29/21	ckd		
Calcium	200 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	6.9 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.22 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	110 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	36 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	120 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0027 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00033 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0017 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	1.5 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	0.000072 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Chromium	0.0011 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00042 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00016 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	0.29 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00069 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00029 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-06 Matrix: Ground Water Date Collected: 10/26/21 11:00
 Sample ID: MW-6 Date Received: 10/27/21 09:16 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	1.6 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	200 mg/L	7.5	50	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	1.3 mg/L	3.0	5	10/27/21	ans	10/27/21	ans	J	

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	960 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1300 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-07 Matrix: Ground Water Date Collected: 10/26/21 10:20
 Sample ID: MW-7 Date Received: 10/27/21 09:16 Field pH: 7.01

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	15 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	130 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	16 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	<0.010 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	35 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	4.5 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	54 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.36 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0010 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00088 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	2.0 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	<0.00040 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.00067 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
Client Project ID: MW Sampling

Trace ID: 21J1034-07 Matrix: Ground Water Date Collected: 10/26/21 10:20
Sample ID: MW-7 Date Received: 10/27/21 09:16 Field pH: 7.01

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	470 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	16 mg/L	0.25	5	10/27/21	ckd	10/29/21	ckd		
Calcium	130 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd		
Iron	17 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.011 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	36 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	4.7 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	56 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd		
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00016 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd	J	
Arsenic	0.00033 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Barium	0.35 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00073 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	1.7 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.00013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00058 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-07 Matrix: Ground Water Date Collected: 10/26/21 10:20
 Sample ID: MW-7 Date Received: 10/27/21 09:16 Field pH: 7.01

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	0.094 mg/L	0.10	5	10/27/21	ans	10/27/21	ans	J	
Chloride	14 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	30 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	630 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	630 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-08 Matrix: Ground Water Date Collected: 10/26/21 15:35
 Sample ID: MW-8 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	1.4 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	130 mg/L	2.5	5	10/28/21	mrh	11/02/21	ckd		
Iron	29 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.043 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	25 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	9.4 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	27 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0067 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	1.0 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0012 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	1.5 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0037 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-08 Matrix: Ground Water Date Collected: 10/26/21 15:35
 Sample ID: MW-8 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	440 mg/L	0.82	5	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	1.4 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	140 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd		
Iron	28 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.043 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	26 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	9.3 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	28 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0015 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00033 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0062 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.96 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.00065 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Cobalt	0.00030 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	0.000042 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	1.3 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0033 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0010 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00038 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-08 Matrix: Ground Water Date Collected: 10/26/21 15:35
 Sample ID: MW-8 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	0.42 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	30 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	37 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	450 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	630 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-09 Matrix: Ground Water Date Collected: 10/26/21 14:30
 Sample ID: MW-9 Date Received: 10/27/21 09:16 Field pH: 7.31

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.62 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	6.8 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	220 mg/L	2.5	5	10/28/21	mrh	11/02/21	ckd		
Iron	19 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.26 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	36 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	16 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	32 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0025 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	5.0 mg/L	0.10	10	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0029 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.72 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.017 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-09 Matrix: Ground Water Date Collected: 10/26/21 14:30
 Sample ID: MW-9 Date Received: 10/27/21 09:16 Field pH: 7.31

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	690 mg/L	0.82	5	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	6.6 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	210 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	18 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.27 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	36 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	15 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	33 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0013 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00046 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0027 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	5.1 mg/L	0.0060	10	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0018 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00039 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	0.55 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.019 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.00080 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00037 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00031 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-09 Matrix: Ground Water Date Collected: 10/26/21 14:30
 Sample ID: MW-9 Date Received: 10/27/21 09:16 Field pH: 7.31

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	2.5 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	13 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	14 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	760 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	880 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-10 Matrix: Ground Water Date Collected: 10/26/21 15:05
 Sample ID: MW-10 Date Received: 10/27/21 09:16 Field pH: 7.42

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.80 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	52 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	140 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	10 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	1.4 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	65 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	52 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	480 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0011 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	1.5 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.011 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0011 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	0.0050 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	0.0012 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Manganese	0.50 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.012 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0027 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0018 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-10 Matrix: Ground Water Date Collected: 10/26/21 15:05
 Sample ID: MW-10 Date Received: 10/27/21 09:16 Field pH: 7.42

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	620 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	51 mg/L	0.50	10	10/27/21	ckd	10/29/21	ckd		
Calcium	140 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd		
Iron	8.2 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	1.4 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	65 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	48 mg/L	10	10	10/27/21	ckd	10/29/21	ckd		
Sodium	490 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0016 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	1.3 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0079 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00080 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00013 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.37 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0089 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0017 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00058 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.0013 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-10 Matrix: Ground Water Date Collected: 10/26/21 15:05
 Sample ID: MW-10 Date Received: 10/27/21 09:16 Field pH: 7.42

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116179

Fluoride	11 mg/L	0.20	10	10/28/21	ans	10/28/21	ans		
Chloride	520 mg/L	15	100	10/28/21	ans	10/28/21	ans		
Sulfate as SO4	53 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	970 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	2000 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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QUALITY CONTROL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116281	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T116281-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T116281-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	23.4	94	77-123	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116281-MSD1

Original: 21J1034-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Mercury	ng/L	1.88	10.0	10.1	9.92	82	80	71-125	2	24	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116098	Analysis Description: Sodium, Dissolved
QC Batch Method:	Analysis Method: EPA 6010D

METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	0.0023	0.050	J
Beryllium	mg/L	0.000061	0.0010	J
Calcium	mg/L	<0.50	0.50	

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METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	0.015	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116098-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.966	97	80-120	
Beryllium	mg/L	0.0500	0.0510	102	80-120	
Calcium	mg/L	10.0	10.3	103	80-120	
Iron	mg/L	10.0	10.4	104	80-120	
Potassium	mg/L	10.0	10.4	104	80-120	
Lithium	mg/L	0.500	0.522	104	80-120	
Magnesium	mg/L	10.0	10.5	105	80-120	
Sodium	mg/L	10.0	10.6	106	80-120	
Zinc	mg/L	1.00	1.04	104	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116174

Analysis Description: Lithium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6010D

METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	0.060	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

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LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.830	93	80-120	
Beryllium	mg/L	0.111	0.109	98	80-120	
Calcium	mg/L	8.89	8.74	98	80-120	
Iron	mg/L	8.89	9.02	101	80-120	
Potassium	mg/L	8.89	9.03	102	80-120	
Lithium	mg/L	0.889	0.880	99	80-120	
Magnesium	mg/L	8.89	9.09	102	80-120	
Sodium	mg/L	8.89	9.07	102	80-120	
Zinc	mg/L	0.889	0.894	101	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116167	Analysis Description: Barium, Dissolved
QC Batch Method:	Analysis Method: EPA 6020B

METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	0.000026	0.000040	J
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	0.00017	0.00020	J
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0612	102	80-120	
Arsenic	mg/L	0.0600	0.0630	105	80-120	

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LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Barium	mg/L	0.0600	0.0588	98	80-120	
Cadmium	mg/L	0.0600	0.0613	102	80-120	
Cobalt	mg/L	0.0600	0.0604	101	80-120	
Chromium	mg/L	0.0600	0.0629	105	80-120	
Copper	mg/L	0.0600	0.0610	102	80-120	
Manganese	mg/L	0.0600	0.0615	102	80-120	
Molybdenum	mg/L	0.0600	0.0588	98	80-120	
Nickel	mg/L	0.0600	0.0602	100	80-120	
Lead	mg/L	0.0600	0.0616	103	80-120	
Antimony	mg/L	0.0600	0.0577	96	80-120	
Selenium	mg/L	0.0600	0.0630	105	80-120	
Thallium	mg/L	0.0600	0.0617	103	80-120	
Vanadium	mg/L	0.0600	0.0581	97	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116174

Analysis Description: Selenium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6020B

METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	
Cadmium	mg/L	<0.0010	0.0010	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	0.00027	0.00040	J
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

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LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0333	120	80-120	
Arsenic	mg/L	0.0556	0.0599	108	80-120	
Barium	mg/L	0.889	0.950	107	80-120	
Cadmium	mg/L	0.0278	0.0297	107	80-120	
Cobalt	mg/L	0.889	0.892	100	80-120	
Chromium	mg/L	0.0278	0.0288	104	80-120	
Copper	mg/L	0.890	0.863	97	80-120	
Manganese	mg/L	0.887	0.878	99	80-120	
Molybdenum	mg/L	0.889	0.942	106	80-120	
Nickel	mg/L	0.889	0.840	95	80-120	
Lead	mg/L	0.0556	0.0533	96	80-120	
Antimony	mg/L	0.0556	0.0608	109	80-120	
Selenium	mg/L	0.0556	0.0560	101	80-120	
Thallium	mg/L	0.0556	0.0542	98	80-120	
Vanadium	mg/L	0.889	0.915	103	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: [CALC]
 QC Batch Method:

Analysis Description: Hardness (Metals)
 Analysis Method: SM 2340 B-11

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116121
 QC Batch Method: IC Prep W

Analysis Description: Sulfate
 Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116121-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116121-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.02	100	90-110	
Fluoride	mg/L	1.00	1.02	102	90-110	

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LABORATORY CONTROL SAMPLE: T116121-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Sulfate as SO4	mg/L	5.00	5.14	103	90-110	

MATRIX SPIKE: T116121-MS1 Original: **21J1034-01**

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Chloride	mg/L	233	500	794	112	80-120	
Fluoride	mg/L	12.6	100	107	94	80-120	
Sulfate as SO4	mg/L	533	500	1120	118	80-120	

MATRIX SPIKE: T116121-MS2 Original: **21J1034-07**

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Chloride	mg/L	13.9	25.0	39.6	103	80-120	
Fluoride	mg/L	0.0942	5.00	4.60	90	80-120	
Sulfate as SO4	mg/L	29.6	25.0	54.1	98	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116179
 QC Batch Method: IC Prep W

Analysis Description: Fluoride
 Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116179-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116179-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.03	101	90-110	
Fluoride	mg/L	1.00	1.01	101	90-110	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116236
 QC Batch Method: SM 2320 B-11

Analysis Description: Alkalinity, Bicarbonate
 Analysis Method: SM 2320 B-11

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LABORATORY CONTROL SAMPLE: T116236-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	100	100	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	100	100	88-112	

Trace Project ID: 21J1034
Client Project ID: MW Sampling

QC Batch: T116366	Analysis Description: Alkalinity, Carbonate
QC Batch Method: SM 2320 B-11	Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T116366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	97.3	97	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	97.3	97	88-112	

SAMPLE DUPLICATE: T116366-DUP1 Original: 21J1034-02

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	2150	218	163	200	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	0	<5.0		200	

Trace Project ID: 21J1034
Client Project ID: MW Sampling

QC Batch: T116175	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-11	Analysis Method: SM 2540 C-11

METHOD BLANK: T116175-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	1.0	10	J

LABORATORY CONTROL SAMPLE: T116175-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	543	109	80-120	

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SAMPLE DUPLICATE: T116175-DUP2

Original: 21J1034-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	3600	2800	25	10	623

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21J1034
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6					
Representative Sample Temp °C	1.8	1.9					

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present Yes No Custody seals intact (if applicable)

Trace Courier Client Drop-off UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace See below

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

HNO₃ added to 02-E, 03-E, 04-E, 05-E, 06-E, 10-E
 at 10:00 on 10/27/21

~~NaOH added to DH 10/27/21~~

HNO₃ Preserved radiums 10/27/21 @ 13:11

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: EB

Well No.: MW-1R

Depth to Point: 18.2ft

Depth to Water: 6.23

Purge Start Time: 11:25

Purge Rate: 300ml/min

Reading Time	11:38	11:41	11:44						
Depth to Water	7.51	7.51	7.51						
Temperature (Celsius)	17.07	17.07	17.07						
Specific Conductivity	3.44	3.44	3.44						
Dissolved Oxygen	1.01	1.01	1.01						
ORP (mV)	-23	-23	-23						
Turbidity(NTU)	22.6	22.6	22.6						
pH	7.80	7.80	7.80						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 2
 Date: 10-26-21
 Field Personnel: EB
 Depth to Water: 14.71
 Depth to Point: 23.51'
 Purge Start Time: 13:35
 Purge Rate: 30aw/min

Reading Time	13:47	13:50	13:52					
Depth to Water	15.21	15.23	15.23					
Temperature (Celsius)	14.17	14.17	14.17					
Specific Conductivity	4.12	4.12	4.12					
Dissolved Oxygen	0.0	0.0	0.0					
ORP (mV)	-129	-129	-129					
Turbidity(NTU)	0.0	0.0	0.0					
pH	6.48	6.48	6.48					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Trace Analytical Laboratories, Inc.

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 3

Depth to Point: 20.5'

Depth to Water: 11.90

Purge Start Time: 12:10

Purge Rate: 300ml/min

Reading Time	12:27	12:30	12:33						
Depth to Water	12.72	12.72	12.72						
Temperature (Celsius)	15.86	15.86	15.86						
Specific Conductivity	3.96	3.96	3.96						
Dissolved Oxygen	2.14	2.14	2.14						
ORP (mV)	-19	-19	-19						
Turbidity(NTU)	1.5	1.6	1.6						
pH	6.91	6.91	6.91						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 4

Depth to Point: 18.01'

Depth to Water: 10.22

Purge Start Time: 11:40

Purge Rate: 300ml/min

Reading Time	11:54	11:57	12:08					
Depth to Water	6.74 11.03	11.03	11.03					
Temperature (Celsius)	16.68	16.88	16.68					
Specific Conductivity	2.56	2.56	2.56					
Dissolved Oxygen	.47	.47	.48					
ORP (mV)	-116	-116	-116					
Turbidity(NTU)	0.0	0.0	0.0					
pH	6.74	6.74	6.74					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 5

Depth to Point: 11.5'

Depth to Water: 5.90

Purge Start Time: 10:15

Purge Rate: 300 mL/min

Reading Time	10:25	10:27	10:30					
Depth to Water	6.73	6.73	6.73					
Temperature (Celsius)	16.02	16.02	16.02					
Specific Conductivity	1.76	1.76	1.76					
Dissolved Oxygen	.56	.56	.56					
ORP (mV)	-148	-148	-148					
Turbidity(NTU)	0.0	0.0	0.0					
pH	7.41	7.43	7.43					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 6
 Date: 10-26-21
 Field Personnel: ERB
 Depth to Water: 8.50
 Depth to Point: 16.55'
 Purge Start Time: 10:40
 Purge Rate: 3000 L/min

Reading Time	10:50	10:53	10:56						
Depth to Water	9.31	9.31	9.31						
Temperature (Celsius)	17.59	17.59	17.59						
Specific Conductivity	2.06	2.06	2.06						
Dissolved Oxygen	.57	.57	.57						
ORP (mV)	-18	-18	-18						
Turbidity(NTU)	.3	.4	.3						
pH	7.60	7.60	7.60						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: ERB

Well No.: MW/7

Depth to Point: 18.81'

Depth to Water: 5.25

Purge Start Time: 10:00

Purge Rate: 3000ml/min

Reading Time	10:15	10:17	10:20						
Depth to Water	6.21	6.21	6.21						
Temperature (Celsius)	15.24	15.24	15.24						
Specific Conductivity	1.15	1.15	1.15						
Dissolved Oxygen	.73	.73	.73						
ORP (mV)	-27	-27	-27						
Turbidity(NTU)	4	4	3						
pH	7.01	7.01	7.01						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10/26/21

Field Personnel: ER

Well No.: MW 8

Depth to Point: 11.85

Depth to Water: 4.04

Purge Start Time: 15:10

Purge Rate: 300ml/min

Reading Time	15:25	15:28	15:31						
Depth to Water	4.86	4.86	4.86						
Temperature (Celsius)	15.72	15.72	15.72						
Specific Conductivity	.804	.805	.805						
Dissolved Oxygen	0.0	0.0	0.0						
ORP (mV)	-137	-137	-137						
Turbidity(NTU)	0.0	0.0	0.0						
pH	6.74	6.74	6.74						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: ER

Well No.: MW/9

Depth to Point: 14.9

Depth to Water: 8.49

Purge Start Time: 14:10

Purge Rate: 3000 L/min

Reading Time	14:20	14:24	14:27					
Depth to Water	9.31	9.31	9.31					
Temperature (Celsius)	16.12	16.12	16.13					
Specific Conductivity	1.25	1.25	1.25					
Dissolved Oxygen	.56	.56	.56					
ORP (mV)	-9	-9	-9					
Turbidity(NTU)	5.4	5.4	5.4					
pH	7.31	7.31	7.31					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 10

Depth to Point: 13.00

Depth to Water: 5.32

Purge Start Time: 14:45

Purge Rate: 300ml/min

Reading Time	14:55	14:58	15:01						
Depth to Water	6.07	6.07	6.07						
Temperature (Celsius)	16.66	16.66	16.66						
Specific Conductivity	3.65	3.65	3.65						
Dissolved Oxygen	0.28	0.28	0.28						
ORP (mV)	-198	-198	-198						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.42	7.42	7.42						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

November 30, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1032 & 21J1034
Client Project Impoundment & MW Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

The results were obtained from Eurofins.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink that reads "Jon Mink". The signature is written in a cursive style with a large initial "J".

Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



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SAMPLE SUMMARY

Trace Project ID: 21J1032
Client Project ID: Impoundment Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1032-01	Unit 1/2 Near MW-5	Ground Water	TRACE-EB/TB	10/26/21 11:25	10/27/21 08:52
21J1032-02	Unit 1/2 Near SG-2	Ground Water	TRACE-EB/TB	10/26/21 15:25	10/27/21 08:52

SAMPLE SUMMARY

Trace Project ID: 21J1034
Client Project ID: MW Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1034-01	MW-1R	Ground Water	TRACE-EB/TB	10/26/21 11:45	10/27/21 09:16
21J1034-02	MW-2	Ground Water	TRACE-EB/TB	10/26/21 13:55	10/27/21 09:16
21J1034-03	MW-3	Ground Water	TRACE-EB/TB	10/26/21 12:35	10/27/21 09:16
21J1034-04	MW-4	Ground Water	TRACE-EB/TB	10/26/21 12:00	10/27/21 09:16
21J1034-05	MW-5	Ground Water	TRACE-EB/TB	10/26/21 10:35	10/27/21 09:16
21J1034-06	MW-6	Ground Water	TRACE-EB/TB	10/26/21 11:00	10/27/21 09:16
21J1034-07	MW-7	Ground Water	TRACE-EB/TB	10/26/21 10:20	10/27/21 09:16
21J1034-08	MW-8	Ground Water	TRACE-EB/TB	10/26/21 15:35	10/27/21 09:16
21J1034-09	MW-9	Ground Water	TRACE-EB/TB	10/26/21 14:30	10/27/21 09:16
21J1034-10	MW-10	Ground Water	TRACE-EB/TB	10/26/21 15:05	10/27/21 09:16

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-6209-1
Client Project/Site: Trace-21J1034 & 21J1032
Revision: 1

For:
Trace Analytical Laboratories
2241 Black Creek Road
Muskegon, Michigan 49444

Attn: Jon Mink

Karen Fullmer

Authorized for release by:
11/29/2021 6:14:27 PM

Karen Fullmer, Project Manager
(574)233-4777
karen.fullmer@eurofinset.com

LINKS

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results through
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Qualifiers

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.
α	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

Case Narrative

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Job ID: 810-6209-1

Laboratory: Eurofins Eaton Analytical - South Bend

Narrative

Job Narrative 810-6209-1

Comments

No additional comments.

Revision

The report being provided is a revision of the original report sent on 11/22/2021. The report (revision 1) is being revised due to: Project was logged in as drinking water matrix by accident. Report revised to change matrix..

Receipt

The samples were received on 10/28/2021 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 14.0° C and 14.2° C.

RAD

Method SM7500 Ra D: The barium carrier recovery is outside the upper control limit (110%) <OR> lower control for the following sample(s): 6209-A-11-D Re-analysis is required.

Method SM7500 Ra D: The barium carrier recovery 69.2mg is outside the established limits of 40.5-64.8mg for the following sample: MW-9 (810-6209-11). Re-analysis is required.

Method SM7500 Ra D: The barium carrier recovery 69.2mg is outside the established limits of 40.5-64.8mg for the following sample: MW-9 (810-6209-11). Re-analysis is required. Insufficient sample was available for re-analysis and matrix is dirty; therefore, the data have been reported.

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

Detection Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: Unit 1/2 Near MW-5 **Lab Sample ID: 810-6209-1**

No Detections.

Client Sample ID: Unit 1/2 Near SG-2 **Lab Sample ID: 810-6209-2**

No Detections.

Client Sample ID: MW-1R **Lab Sample ID: 810-6209-3**

No Detections.

Client Sample ID: MW-2 **Lab Sample ID: 810-6209-4**

No Detections.

Client Sample ID: MW-3 **Lab Sample ID: 810-6209-5**

No Detections.

Client Sample ID: MW-4 **Lab Sample ID: 810-6209-6**

No Detections.

Client Sample ID: MW-5 **Lab Sample ID: 810-6209-7**

No Detections.

Client Sample ID: MW-6 **Lab Sample ID: 810-6209-8**

No Detections.

Client Sample ID: MW-7 **Lab Sample ID: 810-6209-9**

No Detections.

Client Sample ID: MW-8 **Lab Sample ID: 810-6209-10**

No Detections.

Client Sample ID: MW-9 **Lab Sample ID: 810-6209-11**

No Detections.

Client Sample ID: MW-10 **Lab Sample ID: 810-6209-12**

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical - South Bend



Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: Unit 1/2 Near MW-5

Lab Sample ID: 810-6209-1

Date Collected: 10/26/21 11:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.72719		1.00	0.620	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.290	U	0.380		1.00	0.410	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.500	U	0.620		1.00	0.620	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: Unit 1/2 Near SG-2

Lab Sample ID: 810-6209-2

Date Collected: 10/26/21 15:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.60745		1.00	0.550	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.310	U	0.330		1.00	0.330	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-0.410	U	0.510		1.00	0.550	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-1R

Lab Sample ID: 810-6209-3

Date Collected: 10/26/21 11:45

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.410		0.51088		1.00	0.410	pCi/L		11/12/21 13:20	1

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-1R

Date Collected: 10/26/21 11:45

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-3

Matrix: Ground Water

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.410		0.330		1.00	0.310	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.0800	U	0.390		1.00	0.410	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-2

Date Collected: 10/26/21 13:55

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-4

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.27		0.91351		1.00	0.610	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	1.00		0.680		1.00	0.610	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.27		0.610		1.00	0.580	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-3

Date Collected: 10/26/21 12:35

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-5

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.01		0.68593		1.00	0.540	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.310	U	0.490		1.00	0.540	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-3

Lab Sample ID: 810-6209-5

Date Collected: 10/26/21 12:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.01		0.480		1.00	0.460	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-4

Lab Sample ID: 810-6209-6

Date Collected: 10/26/21 12:00

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.87		0.67209		1.00	0.460	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.910		0.460		1.00	0.360	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.960		0.490		1.00	0.460	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-5

Lab Sample ID: 810-6209-7

Date Collected: 10/26/21 10:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.60539		1.00	0.530	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.160	U	0.310		1.00	0.350	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.340	U	0.520		1.00	0.530	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-6

Lab Sample ID: 810-6209-8

Date Collected: 10/26/21 11:00

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.76485		1.00	0.630	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.0600	U	0.570		1.00	0.370	pCi/L	11/02/21 14:10	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-2.15	U	0.510		1.00	0.630	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-7

Lab Sample ID: 810-6209-9

Date Collected: 10/26/21 10:20

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.33		0.70434		1.00	0.490	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.790		0.550		1.00	0.490	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.540		0.440		1.00	0.440	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-8

Lab Sample ID: 810-6209-10

Date Collected: 10/26/21 15:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.860		0.63640		1.00	0.530	pCi/L		11/12/21 13:20	1

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-8

Lab Sample ID: 810-6209-10

Date Collected: 10/26/21 15:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.860		0.450		1.00	0.350	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-1.22	U	0.450		1.00	0.530	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-9

Lab Sample ID: 810-6209-11

Date Collected: 10/26/21 14:30

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.56		0.69527		1.00	0.470	pCi/L		11/11/21 16:33	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.840		0.450		1.00	0.370	pCi/L	11/02/21 14:16	11/05/21 11:46	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.72		0.530		1.00	0.470	pCi/L	11/02/21 14:19	11/11/21 12:18	1

Client Sample ID: MW-10

Lab Sample ID: 810-6209-12

Date Collected: 10/26/21 15:05

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.03		0.71505		1.00	0.500	pCi/L		11/11/21 16:33	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.930		0.480		1.00	0.380	pCi/L	11/02/21 14:16	11/05/21 11:46	1

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-10
Date Collected: 10/26/21 15:05
Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-12
Matrix: Ground Water

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.10		0.530		1.00	0.500	pCi/L	11/02/21 14:19	11/11/21 12:18	1

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QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method: SM7500 Ra B - Radium-226

Lab Sample ID: MB 810-6416/1-A
Matrix: Drinking Water
Analysis Batch: 7018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6416

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.07000	U	0.250		1.00	0.310	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Lab Sample ID: LCS 810-6416/2-A
Matrix: Drinking Water
Analysis Batch: 7018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6416

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	8.73	7.940			1.00	0.370	pCi/L	91	90 - 110

Lab Sample ID: 810-6209-9 MS
Matrix: Ground Water
Analysis Batch: 7018

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 6416

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	0.790		9.11	8.750			1.00	0.360	pCi/L	96	80 - 120

Lab Sample ID: 810-6209-9 MSD
Matrix: Ground Water
Analysis Batch: 7018

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 6416

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RPD	RPD Limit
Ra-226	0.790		8.95	8.080			1.00	0.330	pCi/L	90	80 - 120	8	20

Lab Sample ID: MB 810-6420/1-A
Matrix: Drinking Water
Analysis Batch: 7017

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6420

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.5800		0.400		1.00	0.350	pCi/L	11/02/21 14:16	11/05/21 11:46	1

Lab Sample ID: LCS 810-6420/2-A
Matrix: Drinking Water
Analysis Batch: 7017

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6420

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	8.73	8.170			1.00	0.360	pCi/L	94	90 - 110

Lab Sample ID: 810-6209-11 MS
Matrix: Ground Water
Analysis Batch: 7017

Client Sample ID: MW-9
Prep Type: Total/NA
Prep Batch: 6420

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	0.840		9.04	8.630			1.00	0.400	pCi/L	95	80 - 120

Eurofins Eaton Analytical - South Bend

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method: SM7500 Ra B - Radium-226

Lab Sample ID: 810-6209-11 MSD
 Matrix: Ground Water
 Analysis Batch: 7017

Client Sample ID: MW-9
 Prep Type: Total/NA
 Prep Batch: 6420

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RPD	
											84	80 - 120	15	20
Ra-226	0.840		8.86	7.400			1.00	0.350	pCi/L	84	80 - 120	15	20	

Method: SM7500 Ra D - Radium-228

Lab Sample ID: MB 810-6417/1-A
 Matrix: Drinking Water
 Analysis Batch: 7201

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-0.3600	U	0.390		1.00	0.440	pCi/L	11/02/21 14:13	11/11/21 15:31	1

Lab Sample ID: LCS 810-6417/2-A
 Matrix: Drinking Water
 Analysis Batch: 7201

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									84	80 - 120
Ra-228	8.84	7.400			1.00	0.370	pCi/L	84	80 - 120	

Lab Sample ID: 810-6209-10 MS
 Matrix: Ground Water
 Analysis Batch: 7201

Client Sample ID: MW-8
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
											95	70 - 130
Ra-228	-1.22	U	8.98	8.550			1.00	0.370	pCi/L	95	70 - 130	

Lab Sample ID: 810-6209-10 MSD
 Matrix: Ground Water
 Analysis Batch: 7201

Client Sample ID: MW-8
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RPD	
											90	70 - 130	4	20
Ra-228	-1.22	U	9.15	8.240			1.00	0.490	pCi/L	90	70 - 130	4	20	

Lab Sample ID: MB 810-6421/1-A
 Matrix: Drinking Water
 Analysis Batch: 7161

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 6421

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.1000	U	0.430		1.00	0.450	pCi/L	11/02/21 14:19	11/11/21 12:18	1

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method: SM7500 Ra D - Radium-228 (Continued)

Lab Sample ID: LCS 810-6421/2-A
 Matrix: Drinking Water
 Analysis Batch: 7161

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 6421

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-228	8.84	9.590			1.00	0.470	pCi/L	108	80 - 120

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QC Association Summary

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Rad

Prep Batch: 6416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-1	Unit 1/2 Near MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-2	Unit 1/2 Near SG-2	Total/NA	Ground Water	RAD Prep	
810-6209-3	MW-1R	Total/NA	Ground Water	RAD Prep	
810-6209-4	MW-2	Total/NA	Ground Water	RAD Prep	
810-6209-5	MW-3	Total/NA	Ground Water	RAD Prep	
810-6209-6	MW-4	Total/NA	Ground Water	RAD Prep	
810-6209-7	MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-8	MW-6	Total/NA	Ground Water	RAD Prep	
810-6209-9	MW-7	Total/NA	Ground Water	RAD Prep	
810-6209-10	MW-8	Total/NA	Ground Water	RAD Prep	
MB 810-6416/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6416/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	
810-6209-9 MS	MW-7	Total/NA	Ground Water	RAD Prep	
810-6209-9 MSD	MW-7	Total/NA	Ground Water	RAD Prep	

Prep Batch: 6417

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-1	Unit 1/2 Near MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-2	Unit 1/2 Near SG-2	Total/NA	Ground Water	RAD Prep	
810-6209-3	MW-1R	Total/NA	Ground Water	RAD Prep	
810-6209-4	MW-2	Total/NA	Ground Water	RAD Prep	
810-6209-5	MW-3	Total/NA	Ground Water	RAD Prep	
810-6209-6	MW-4	Total/NA	Ground Water	RAD Prep	
810-6209-7	MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-8	MW-6	Total/NA	Ground Water	RAD Prep	
810-6209-9	MW-7	Total/NA	Ground Water	RAD Prep	
810-6209-10	MW-8	Total/NA	Ground Water	RAD Prep	
MB 810-6417/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6417/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	
810-6209-10 MS	MW-8	Total/NA	Ground Water	RAD Prep	
810-6209-10 MSD	MW-8	Total/NA	Ground Water	RAD Prep	

Prep Batch: 6420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-11	MW-9	Total/NA	Ground Water	RAD Prep	
810-6209-12	MW-10	Total/NA	Ground Water	RAD Prep	
MB 810-6420/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6420/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	
810-6209-11 MS	MW-9	Total/NA	Ground Water	RAD Prep	
810-6209-11 MSD	MW-9	Total/NA	Ground Water	RAD Prep	

Prep Batch: 6421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-11	MW-9	Total/NA	Ground Water	RAD Prep	
810-6209-12	MW-10	Total/NA	Ground Water	RAD Prep	
MB 810-6421/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6421/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	

Lab Chronicle

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: Unit 1/2 Near MW-5

Lab Sample ID: 810-6209-1

Date Collected: 10/26/21 11:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: Unit 1/2 Near SG-2

Lab Sample ID: 810-6209-2

Date Collected: 10/26/21 15:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-1R

Lab Sample ID: 810-6209-3

Date Collected: 10/26/21 11:45

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-2

Lab Sample ID: 810-6209-4

Date Collected: 10/26/21 13:55

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Lab Chronicle

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-3

Lab Sample ID: 810-6209-5

Date Collected: 10/26/21 12:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-4

Lab Sample ID: 810-6209-6

Date Collected: 10/26/21 12:00

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-5

Lab Sample ID: 810-6209-7

Date Collected: 10/26/21 10:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-6

Lab Sample ID: 810-6209-8

Date Collected: 10/26/21 11:00

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7223		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		

Lab Chronicle

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-6

Date Collected: 10/26/21 11:00

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-8

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-7

Date Collected: 10/26/21 10:20

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-9

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-8

Date Collected: 10/26/21 15:35

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-10

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-9

Date Collected: 10/26/21 14:30

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-11

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7165	11/11/21 16:33	JB	EA SB
Total/NA	Prep	RAD Prep			6420	11/02/21 14:16	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7017	11/05/21 11:46	JB	EA SB
Total/NA	Prep	RAD Prep			6421	11/02/21 14:19	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7161	11/11/21 12:18	OO	EA SB

Lab Chronicle

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-10

Lab Sample ID: 810-6209-12

Date Collected: 10/26/21 15:05

Matrix: Ground Water

Date Received: 10/28/21 09:45

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Analysis	7500 Ra D		1	7165	11/11/21 16:33	JB	EA SB
Total/NA	Prep	RAD Prep			6420	11/02/21 14:16	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7017	11/05/21 11:46	JB	EA SB
Total/NA	Prep	RAD Prep			6421	11/02/21 14:19	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7161	11/11/21 12:18	OO	EA SB

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Laboratory: Eurofins Eaton Analytical - South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	03-22-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7500 Ra D		Ground Water	Combined Radium 226 + 228
SM7500 Ra B	RAD Prep	Ground Water	Ra-226
SM7500 Ra D	RAD Prep	Ground Water	Ra-228



Method Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method	Method Description	Protocol	Laboratory
7500 Ra D	Radium 226 Radium 228 Combined	SM	EA SB
SM7500 Ra B	Radium-226	SM	EA SB
SM7500 Ra D	Radium-228	SM	EA SB
RAD Prep	Preparation, Radiologicals	None	EA SB

Protocol References:

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

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- 14

Sample Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

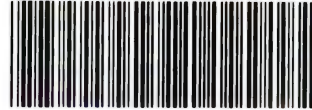
Job ID: 810-6209-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-6209-1	Unit 1/2 Near MW-5	Ground Water	10/26/21 11:25	10/28/21 09:45
810-6209-2	Unit 1/2 Near SG-2	Ground Water	10/26/21 15:25	10/28/21 09:45
810-6209-3	MW-1R	Ground Water	10/26/21 11:45	10/28/21 09:45
810-6209-4	MW-2	Ground Water	10/26/21 13:55	10/28/21 09:45
810-6209-5	MW-3	Ground Water	10/26/21 12:35	10/28/21 09:45
810-6209-6	MW-4	Ground Water	10/26/21 12:00	10/28/21 09:45
810-6209-7	MW-5	Ground Water	10/26/21 10:35	10/28/21 09:45
810-6209-8	MW-6	Ground Water	10/26/21 11:00	10/28/21 09:45
810-6209-9	MW-7	Ground Water	10/26/21 10:20	10/28/21 09:45
810-6209-10	MW-8	Ground Water	10/26/21 15:35	10/28/21 09:45
810-6209-11	MW-9	Ground Water	10/26/21 14:30	10/28/21 09:45
810-6209-12	MW-10	Ground Water	10/26/21 15:05	10/28/21 09:45

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- 14



Eaton Analytical



810-6209 Chain of Custody

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order #
Batch #

www.EurofinsUS.com/Eaton

CHAIN OF CUSTODY RECORD

Page of

Shaded area for EEA use only

Table with columns: REPORT TO, SAMPLER (Signature), PWS ID #, STATE (sample origin), PROJECT NAME, PO#, BILL TO, COMPLIANCE MONITORING, POPULATION SERVED, SOURCE WATER, LAB Number, COLLECTION (DATE, TIME, AM, PM), SAMPLING SITE, TEST NAME, SAMPLE REMARKS, CHLORINATED (YES, NO), # OF CONTAINERS, MATRIX CODE, TURNAROUND TIME. Includes handwritten 'pH Acceptable' and checkmarks.

RELINQUISHED BY: (Signature), DATE, TIME, RECEIVED BY: (Signature), DATE, TIME. Includes handwritten signatures, dates, and times. LAB COMMENTS: Liters Received = 4L jug each site. CONDITIONS UPON RECEIPT (check one): Iced/Wet/Blue X, Ambient 14.0, °C Upon Receipt X. MATRIX CODES, TURN-AROUND TIME (TAT) - SURCHARGES, and * Please call, expedited service not available for all testing.

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.



Eaton Analytical

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # _____
Batch # _____

www.EurofinsUS.com/Eaton

CHAIN OF CUSTODY RECORD

Page _____ of _____

Shaded area for EEA use only

REPORT TO:				SAMPLER (Signature)		PWS ID #	STATE (sample origin)	PROJECT NAME	PO#	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
Jon Mink, Tim Brewer (jmink@trace-labs.com, tbrewer@trace-labs.com) Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444 231-773-5998							MI		21J1034 & 21J1032			
BILL TO:				COMPLIANCE MONITORING		POPULATION SERVED	SOURCE WATER					
Accounts Payable, Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444												
LAB Number	COLLECTION				SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED		# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
	DATE	TIME	AM	PM				YES	NO			
1	10/28/21	11:25	x		Unit 1/2 Near MW-5	Radium 226/228			x	1	GW	SW
2	10/28/21	15:25		x	Unit 1/2 Near SG-2	Radium 226/228			x	1	GW	SW
3	10/28/21	11:45	x		MW-1R	Radium 226/228			x	1	GW	SW
4	10/28/21	13:55		x	MW-2	Radium 226/228			x	1	GW	SW
5	10/28/21	12:35		x	MW-3	Radium 226/228			x	1	GW	SW
6	10/28/21	12:00		x	MW-4	Radium 226/228			x	1	GW	SW
7	10/28/21	10:35	x		MW-5	Radium 226/228			x	1	GW	SW
8	10/28/21	11:00	x		MW-6	Radium 226/228			x	1	GW	SW
9	10/28/21	10:20	x		MW-7	Radium 226/228			x	1	GW	SW
10	10/28/21	15:35		x	MW-8	Radium 226/228			x	1	GW	SW
11	10/28/21	14:30		x	MW-9	Radium 226/228			x	1	GW	SW
12	10/28/21	15:05		x	MW-10	Radium 226/228			x	1	GW	SW
13												
14												

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT LAB COMMENTS
		AM PM			AM PM	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	CONDITIONS UPON RECEIPT (check one): ___ Iced: Wet/Blue ___ Ambient ___ °C Upon Receipt ___ N/A
		AM PM			AM PM	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME	
		AM PM			AM PM	
MATRIX CODES: DW-DRINKING WATER RW-REAGENT WATER GW-GROUND WATER EW-EXPOSURE WATER SW-SURFACE WATER PW-POOL WATER WW-WASTE WATER	TURN-AROUND TIME (TAT) - SURCHARGES SW = Standard Written: (15 working days) 0% RV = Rush Verbal: (5 working days) 50% RW = Rush Written: (5 working days) 75% IV = Immediate Verbal: (3 working days) 100% IW = Immediate Written: (3 working days) 125% SP = Weekend, Holiday CALL STAT = Less than 48 hours CALL					Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.

06-LO-F0435 Issue 6.0 Effective Date: 2016-09-20

Spurgeon, Sheri

From: Fullmer, Karen
Sent: Monday, November 01, 2021 1:37 PM
To: Spurgeon, Sheri
Subject: FW: Revised chain of custody for J6209
Attachments: Eurofins COC-Revised for Trace Labs 21J1034 and 21J1032.pdf

Sheri,

Here is a revised COC for Job 6209.

Best regards,

Karen Fullmer
Analytical Service Manager



Eurofins Eaton Analytical, LLC
110 South Hill Street
South Bend, IN 46617

Office: +1 574-472-5513
Mobile: +1 574-309-8853

E-Mail: karen.fullmer@eurofinset.com
Website: www.EurofinsUS.com/Env

From: Britani Wright <bwright@trace-labs.com>
Sent: Thursday, October 28, 2021 5:27 PM
To: Fullmer, Karen <Karen.Fullmer@eurofinset.com>; Jon Mink <jmink@trace-labs.com>
Subject: Revised chain of custody

EXTERNAL EMAIL*

Hi Karen,
I've attached a revised Chain of Custody for the radium samples that we sent in yesterday afternoon-for Trace Labs ID#'s 21J1034 & 21J1032. The only thing that needs to be changed is that the (FF) after each sampling site ID needs to be removed. Sorry for the inconvenience.

Thank you,

Britani Wright

Sample Receiving Supervisor/
Purchasing Coordinator
O: 231-773-5998 ext. 259
C: 616-916-4328
bwright@trace-labs.com



Trace Analytical Laboratories, Inc.
2241 Black Creek Rd.
Muskegon, MI 49444
231.773.5998 ext. 243

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Login Sample Receipt Checklist

Client: Trace Analytical Laboratories

Job Number: 810-6209-1

Login Number: 6209

List Source: Eurofins Eaton Analytical - South Bend

List Number: 1

Creator: Spurgeon, Sheri

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

21J1032
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6					
Representative Sample Temp °C	1.8	1.9					

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present

Trace Courier Client Drop-off

Yes No Custody seals intact (if applicable)

UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10-26-21
 Field Personnel: EB
 Impoundment ID: Unit 12 by MW5
~~Depth to Point:~~
 Sample Tubing Depth: 28 Ft
 Purge Start Time: 10:55
 Purge Rate: 300 W/L

Reading Time	11:17	11:20	11:22						
Depth to Water	-	-	-						
Temperature (Celsius)	9.57	9.57	9.57						
Specific Conductivity	2.05	2.05	2.05						
Dissolved Oxygen	11.00	11.00	11.00						
ORP (mV)	-11	-11	-11						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.11	7.11	7.11						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10.26.21
 Field Personnel: ER
 Impoundment ID: Unit 1a by S&S
 Depth to Point: _____
 Sample Tubing Depth: 20 FT
 Purge Start Time: 14:55
 Purge Rate: 300 mL/min

Reading Time	15:15	15:18	15:21						
Depth to Water	—	—	—						
Temperature (Celsius)	12.13	12.13	12.13						
Specific Conductivity	1.63	1.63	1.63						
Dissolved Oxygen	9.87	9.87	9.87						
ORP (mV)	100	100	100						
Turbidity(NTU)	3.7	3.8	3.7						
pH	8.39	8.39	8.39						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

21J1034
Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6					
Representative Sample Temp °C	1.8	1.9					

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present

Trace Courier Client Drop-off

Yes No Custody seals intact (if applicable)

UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace See below

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

HNO₃ added to 02-E, 03-E, 04-E, 05-E, 06-E, 10-E
 at 10:00 on 10/27/21

~~NaOH added to DH 10/27/21~~

HNO₃ Preserved radiums 10/27/21 @ 13:11

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: EB

Well No.: MW-1R

Depth to Point: 18.2ft

Depth to Water: 6.23

Purge Start Time: 11:25

Purge Rate: 300ml/min

Reading Time	11:38	11:41	11:44						
Depth to Water	7.51	7.51	7.51						
Temperature (Celsius)	17.07	17.07	17.07						
Specific Conductivity	3.44	3.44	3.44						
Dissolved Oxygen	1.01	1.01	1.01						
ORP (mV)	-23	-23	-23						
Turbidity(NTU)	22.6	22.6	22.6						
pH	7.80	7.80	7.80						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 10-26-21 Field Personnel: EB
 Well No.: MW 2 Depth to Point: 23.51' Purge Start Time: 13.35 Purge Rate: 30w/min
 Depth to Water: 14.71

Reading Time	13:47	13:50	13:52					
Depth to Water	15.21	15.23	15.23					
Temperature (Celsius)	14.17	14.17	14.17					
Specific Conductivity	4.12	4.12	4.12					
Dissolved Oxygen	0.0	0.0	0.0					
ORP (mV)	-129	-129	-129					
Turbidity(NTU)	0.0	0.0	0.0					
pH	6.48	6.48	6.48					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 3

Depth to Point: 20.5'

Depth to Water: 11.90

Purge Start Time: 12:10

Purge Rate: 300ml/min

Reading Time	12:27	12:30	12:38					
Depth to Water	12.72	12.72	12.72					
Temperature (Celsius)	15.86	15.86	15.86					
Specific Conductivity	3.96	3.96	3.96					
Dissolved Oxygen	2.14	2.14	2.14					
ORP (mV)	-19	-19	-19					
Turbidity(NTU)	1.5	1.6	1.6					
pH	6.91	6.91	6.91					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 4

Depth to Point: 18.01'

Depth to Water: 10.22

Purge Start Time: 11:40

Purge Rate: 300ml/min

Reading Time	11:54	11:57	12:00						
Depth to Water	6.74 11.03	11.03	11.03						
Temperature (Celsius)	16.68	16.88	16.68						
Specific Conductivity	2.56	2.56	2.56						
Dissolved Oxygen	.47	.47	.48						
ORP (mV)	-116	-116	-116						
Turbidity(NTU)	0.0	0.0	0.0						
pH	6.74	6.74	6.74						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 5

Depth to Point: 11.5'

Depth to Water: 5.90

Purge Start Time: 10:15

Purge Rate: 300 mL/min

Reading Time	10:25	10:27	10:30						
Depth to Water	6.73	6.73	6.73						
Temperature (Celsius)	16.02	16.02	16.02						
Specific Conductivity	1.76	1.76	1.76						
Dissolved Oxygen	.56	.56	.56						
ORP (mV)	-148	-148	-148						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.41	7.43	7.43						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: ERB

Well No.: MW 6

Depth to Point: 16.55'

Depth to Water: 8.50

Purge Start Time: 10:40

Purge Rate: 3500ml/min

Reading Time	10:50	10:53	10:56					
Depth to Water	9.31	9.31	9.31					
Temperature (Celsius)	17.59	17.59	17.59					
Specific Conductivity	2.06	2.06	2.06					
Dissolved Oxygen	.57	.57	.57					
ORP (mV)	-18	-18	-18					
Turbidity(NTU)	.3	.4	.3					
pH	7.60	7.60	7.60					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 7

Depth to Point: 18.81'

Depth to Water: 5.25

Purge Start Time: 10:00

Purge Rate: 3000 L/min

Reading Time	10:15	10:17	10:20						
Depth to Water	6.21	6.21	6.21						
Temperature (Celsius)	15.24	15.24	15.24						
Specific Conductivity	1.15	1.15	1.15						
Dissolved Oxygen	.73	.73	.73						
ORP (mV)	-27	-27	-27						
Turbidity(NTU)	4	4	3						
pH	7.01	7.01	7.01						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: ER

Well No.: MW 8

Depth to Point: 11.85

Depth to Water: 4.04

Purge Start Time: 15:10

Purge Rate: 300mL/min

Reading Time	15:25	15:28	15:31						
Depth to Water	4.86	4.86	4.86						
Temperature (Celsius)	15.72	15.72	15.72						
Specific Conductivity	.804	.805	.805						
Dissolved Oxygen	0.0	0.0	0.0						
ORP (mV)	-137	-137	-137						
Turbidity(NTU)	0.0	0.0	0.0						
pH	6.74	6.74	6.74						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: EB

Well No.: MW 9

Depth to Point: 14.9

Depth to Water: 8.49

Purge Start Time: 14:10

Purge Rate: 3000 L/min

Reading Time	14:20	14:24	14:27						
Depth to Water	9.31	9.31	9.31						
Temperature (Celsius)	16.12	16.12	16.13						
Specific Conductivity	1.25	1.25	1.25						
Dissolved Oxygen	.56	.56	.56						
ORP (mV)	-9	-9	-9						
Turbidity(NTU)	5.4	5.4	5.4						
pH	7.31	7.31	7.31						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 10

Depth to Point: 13.00

Depth to Water: 5.32

Purge Start Time: 14:45

Purge Rate: 300ml/min

Reading Time	14:55	14:58	15:01						
Depth to Water	6.07	6.07	6.07						
Temperature (Celsius)	16.66	16.66	16.66						
Specific Conductivity	3.65	3.65	3.65						
Dissolved Oxygen	0.28	0.28	0.28						
ORP (mV)	-198	-198	-198						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.42	7.42	7.42						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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November 09, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1157
Client Project Surface Water Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 21J1157
Client Project ID: Surface Water Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1157-01	SW-SG-1	Surface Water	TRACE-EB/TB	10/28/21 10:15	10/28/21 15:58
21J1157-02	SW-N-SG-2	Surface Water	TRACE-EB/TB	10/28/21 09:10	10/28/21 15:58
21J1157-03	SW-SE-MW-7	Surface Water	TRACE-EB/TB	10/28/21 12:05	10/28/21 15:58
21J1157-04	SW-NE-MW-10	Surface Water	TRACE-EB/TB	10/28/21 10:30	10/28/21 15:58

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: T116265-DUP1

Analysis: SM 2540 C-11

Total Dissolved Solids

Note 623 : The relative percent difference between the sample and sample duplicate is out of control. The sample result should be considered estimated.

Trace ID: T116384-MSD1

Analysis: EPA 6010D

Calcium

Note 207 : The RPD between the MS and the MSD was out of control. Because both spike recoveries were in control, no data require qualification.

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-01 Matrix: Surface Water Date Collected: 10/28/21 10:15
 Sample ID: SW-SG-1 Date Received: 10/28/21 15:58 Field pH: 8.46

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116283</i>									
Mercury	2.2 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116267</i>									
Beryllium	<0.0018 mg/L	0.0018	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.053 mg/L	0.045	1	11/01/21	mrh	11/02/21	ckd		
Calcium	72 mg/L	0.45	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.61 mg/L	0.18	1	11/01/21	mrh	11/02/21	ckd		
Lithium	0.0070 mg/L	0.0090	1	11/01/21	mrh	11/02/21	ckd	J, N	
Magnesium	22 mg/L	0.18	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.6 mg/L	0.90	1	11/01/21	mrh	11/02/21	ckd		
Sodium	24 mg/L	0.45	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.018 mg/L	0.018	1	11/01/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116267</i>									
Antimony	<0.00027 mg/L	0.00027	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.0014 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Barium	0.057 mg/L	0.0090	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.00090 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0016 mg/L	0.00081	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0014 mg/L	0.0014	1	11/01/21	mrh	11/04/21	acs		
Copper	0.0022 mg/L	0.0036	1	11/01/21	mrh	11/04/21	acs	J	
Lead	0.00086 mg/L	0.0018	1	11/01/21	mrh	11/04/21	acs	J	
Manganese	0.046 mg/L	0.022	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0013 mg/L	0.00036	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	0.0020 mg/L	0.0045	1	11/01/21	mrh	11/04/21	acs	J	
Selenium	<0.0018 mg/L	0.0018	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.00090 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.00090 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.0017 mg/L	0.00072	1	11/01/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-01 Matrix: Surface Water Date Collected: 10/28/21 10:15
 Sample ID: SW-SG-1 Date Received: 10/28/21 15:58 Field pH: 8.46

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	270 mg/L	0.74	1	11/01/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116384

Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.047 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd	J	
Calcium	69 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.058 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd	J	
Lithium	0.0033 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	J, N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.0 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	22 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	0.0018 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00035 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0013 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.051 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00017 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.0011 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	0.00011 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00053 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-01 Matrix: Surface Water Date Collected: 10/28/21 10:15
 Sample ID: SW-SG-1 Date Received: 10/28/21 15:58 Field pH: 8.46

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.094 mg/L	0.10	5	10/29/21	ans	10/29/21	ans	J	
Chloride	43 mg/L	0.75	5	10/29/21	ans	10/29/21	ans		
Sulfate as SO4	34 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	220 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	320 mg/L	40	4	11/01/21	mr	11/02/21	mr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-02 Matrix: Surface Water Date Collected: 10/28/21 09:10
 Sample ID: SW-N-SG-2 Date Received: 10/28/21 15:58 Field pH: 7.57

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116283</i>									
Mercury	7.5 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116267</i>									
Beryllium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.13 mg/L	0.050	1	11/01/21	mrh	11/02/21	ckd		
Calcium	59 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.41 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Lithium	0.011 mg/L	0.010	1	11/01/21	mrh	11/02/21	ckd	N	
Magnesium	22 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.6 mg/L	1.0	1	11/01/21	mrh	11/02/21	ckd		
Sodium	28 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/01/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116267</i>									
Antimony	<0.00030 mg/L	0.00030	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Barium	0.068 mg/L	0.010	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0021 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	11/01/21	mrh	11/04/21	acs		
Copper	0.0031 mg/L	0.0040	1	11/01/21	mrh	11/04/21	acs	J	
Lead	0.00086 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs	J	
Manganese	0.055 mg/L	0.025	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0010 mg/L	0.00040	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	11/01/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.00061 mg/L	0.00080	1	11/01/21	mrh	11/04/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-02 Matrix: Surface Water Date Collected: 10/28/21 09:10
 Sample ID: SW-N-SG-2 Date Received: 10/28/21 15:58 Field pH: 7.57

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	240 mg/L	0.82	1	11/01/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116384

Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.12 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd		
Calcium	59 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.14 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd		
Lithium	0.0073 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	J, N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.3 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	26 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	0.00092 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00029 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.00091 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Barium	0.066 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00015 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00034 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.000098 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.048 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0011 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0014 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00038 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-02 Matrix: Surface Water Date Collected: 10/28/21 09:10
 Sample ID: SW-N-SG-2 Date Received: 10/28/21 15:58 Field pH: 7.57

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.14 mg/L	0.10	5	10/29/21	ans	10/29/21	ans		
Chloride	52 mg/L	1.5	10	11/02/21	jma	11/02/21	jma		
Sulfate as SO4	<3.0 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	210 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	340 mg/L	40	4	11/01/21	mr	11/02/21	mr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-03 Matrix: Surface Water Date Collected: 10/28/21 12:05
 Sample ID: SW-SE-MW-7 Date Received: 10/28/21 15:58 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116283</i>									
Mercury	3.0 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116267</i>									
Beryllium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.049 mg/L	0.050	1	11/01/21	mrh	11/02/21	ckd	J	
Calcium	71 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.99 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Lithium	<0.010 mg/L	0.010	1	11/01/21	mrh	11/02/21	ckd	N	
Magnesium	21 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.7 mg/L	1.0	1	11/01/21	mrh	11/02/21	ckd		
Sodium	23 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/01/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116267</i>									
Antimony	<0.00030 mg/L	0.00030	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.0017 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Barium	0.058 mg/L	0.010	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0026 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	11/01/21	mrh	11/04/21	acs		
Copper	0.0033 mg/L	0.0040	1	11/01/21	mrh	11/04/21	acs	J	
Lead	0.0021 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Manganese	0.071 mg/L	0.025	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0013 mg/L	0.00040	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	0.0025 mg/L	0.0050	1	11/01/21	mrh	11/04/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.0023 mg/L	0.00080	1	11/01/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-03 Matrix: Surface Water Date Collected: 10/28/21 12:05
 Sample ID: SW-SE-MW-7 Date Received: 10/28/21 15:58 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	270 mg/L	0.82	1	11/01/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116384

Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.045 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd	J	
Calcium	70 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.067 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd	J	
Lithium	0.0034 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	J, N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.1 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	21 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	0.0016 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00023 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0013 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.051 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00018 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.0013 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	0.000089 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.022 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00054 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-03 Matrix: Surface Water Date Collected: 10/28/21 12:05
 Sample ID: SW-SE-MW-7 Date Received: 10/28/21 15:58 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.093 mg/L	0.10	5	10/29/21	ans	10/29/21	ans	J	
Chloride	41 mg/L	0.75	5	10/29/21	ans	10/29/21	ans		
Sulfate as SO4	32 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	220 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	330 mg/L	38	3.846154	11/01/21	mr	11/02/21	mr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-04 Matrix: Surface Water Date Collected: 10/28/21 10:30
 Sample ID: SW-NE-MW-10 Date Received: 10/28/21 15:58 Field pH: 7.89

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T116283

Mercury	8.8 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T116267

Beryllium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.20 mg/L	0.050	1	11/01/21	mrh	11/02/21	ckd		
Calcium	62 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.25 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Lithium	0.015 mg/L	0.010	1	11/01/21	mrh	11/02/21	ckd	N	
Magnesium	24 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.7 mg/L	1.0	1	11/01/21	mrh	11/02/21	ckd		
Sodium	29 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/01/21	mrh	11/02/21	ckd		

Analysis Method: EPA 6020B

Batch: T116267

Antimony	<0.00030 mg/L	0.00030	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.00091 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs	J	
Barium	0.067 mg/L	0.010	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0017 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	11/01/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	11/01/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Manganese	0.10 mg/L	0.025	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0010 mg/L	0.00040	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	11/01/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.00086 mg/L	0.00080	1	11/01/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-04 Matrix: Surface Water Date Collected: 10/28/21 10:30
 Sample ID: SW-NE-MW-10 Date Received: 10/28/21 15:58 Field pH: 7.89

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	250 mg/L	0.82	1	11/01/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116384

Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.18 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd		
Calcium	56 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.077 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd	J	
Lithium	0.010 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.4 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	27 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd		

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00032 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.00097 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Barium	0.059 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.00043 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Cobalt	0.00013 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00056 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.00013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.024 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00094 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00031 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-04 Matrix: Surface Water Date Collected: 10/28/21 10:30
 Sample ID: SW-NE-MW-10 Date Received: 10/28/21 15:58 Field pH: 7.89

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.12 mg/L	0.10	5	10/29/21	ans	10/29/21	ans		
Chloride	52 mg/L	1.5	10	11/02/21	jma	11/02/21	jma		
Sulfate as SO4	31 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	190 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	300 mg/L	40	4	11/01/21	mr	11/02/21	mr		
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QUALITY CONTROL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116283	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T116283-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116283-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116283-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T116283-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	23.4	94	77-123	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116267	Analysis Description: Beryllium, Total
QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids	Analysis Method: EPA 6010D

METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	0.17	0.50	J
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	0.18	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	0.057	0.20	J
Sodium	mg/L	0.39	0.50	J

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METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116267-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.857	96	80-120	
Beryllium	mg/L	0.111	0.110	99	80-120	
Calcium	mg/L	8.89	8.88	100	80-120	
Iron	mg/L	8.89	9.16	103	80-120	
Potassium	mg/L	8.89	9.15	103	80-120	
Lithium	mg/L	0.889	0.887	100	80-120	
Magnesium	mg/L	8.89	9.28	104	80-120	
Sodium	mg/L	8.89	9.42	106	80-120	
Zinc	mg/L	0.889	0.921	104	80-120	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116384
 QC Batch Method:

Analysis Description: Zinc, Dissolved
 Analysis Method: EPA 6010D

METHOD BLANK: T116384-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0010	0.0010	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	0.029	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116384-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.932	93	80-120	
Beryllium	mg/L	0.0500	0.0519	104	80-120	
Calcium	mg/L	10.0	10.0	100	80-120	

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LABORATORY CONTROL SAMPLE: T116384-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Iron	mg/L	10.0	10.1	101	80-120	
Potassium	mg/L	10.0	9.86	99	80-120	
Lithium	mg/L	0.500	0.493	99	80-120	
Magnesium	mg/L	10.0	10.0	100	80-120	
Sodium	mg/L	10.0	9.67	97	80-120	
Zinc	mg/L	1.00	1.01	101	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116384-MSD1

Original: 21J1157-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	0.0467	1.00	0.978	0.972	93	93	75-125	0.7	20	
Beryllium	mg/L	0	0.0500	0.0533	0.0522	107	104	75-125	2	20	
Calcium	mg/L	69.2	10.0	80.6	77.8	114	86	75-125	28	20	207
Iron	mg/L	0.0584	10.0	10.2	10.0	101	100	75-125	1	20	
Potassium	mg/L	4.00	10.0	14.1	14.0	101	100	75-125	1	20	
Lithium	mg/L	0.00333	0.500	0.499	0.493	99	98	75-125	1	20	
Magnesium	mg/L	20.8	10.0	31.2	30.2	104	94	75-125	10	20	
Sodium	mg/L	21.5	10.0	31.3	31.1	98	96	75-125	2	20	
Zinc	mg/L	0.00178	1.00	0.985	0.980	98	98	75-125	0.5	20	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: T116167

Analysis Description: Chromium, Dissolved

QC Batch Method:

Analysis Method: EPA 6020B

METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	0.000026	0.000040	J
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	

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METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	0.00017	0.00020	J
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0612	102	80-120	
Arsenic	mg/L	0.0600	0.0630	105	80-120	
Barium	mg/L	0.0600	0.0588	98	80-120	
Cadmium	mg/L	0.0600	0.0613	102	80-120	
Cobalt	mg/L	0.0600	0.0604	101	80-120	
Chromium	mg/L	0.0600	0.0629	105	80-120	
Copper	mg/L	0.0600	0.0610	102	80-120	
Manganese	mg/L	0.0600	0.0615	102	80-120	
Molybdenum	mg/L	0.0600	0.0588	98	80-120	
Nickel	mg/L	0.0600	0.0602	100	80-120	
Lead	mg/L	0.0600	0.0616	103	80-120	
Antimony	mg/L	0.0600	0.0577	96	80-120	
Selenium	mg/L	0.0600	0.0630	105	80-120	
Thallium	mg/L	0.0600	0.0617	103	80-120	
Vanadium	mg/L	0.0600	0.0581	97	80-120	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116267
 QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Description: Nickel, Total
 Analysis Method: EPA 6020B

METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	
Cadmium	mg/L	<0.0010	0.0010	

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METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116267-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0329	118	80-120	
Arsenic	mg/L	0.0556	0.0602	108	80-120	
Barium	mg/L	0.889	0.994	112	80-120	
Cadmium	mg/L	0.0278	0.0307	111	80-120	
Cobalt	mg/L	0.889	0.923	104	80-120	
Chromium	mg/L	0.0278	0.0303	109	80-120	
Copper	mg/L	0.890	0.882	99	80-120	
Manganese	mg/L	0.887	0.918	104	80-120	
Molybdenum	mg/L	0.889	0.945	106	80-120	
Nickel	mg/L	0.889	0.869	98	80-120	
Lead	mg/L	0.0556	0.0542	98	80-120	
Antimony	mg/L	0.0556	0.0634	114	80-120	
Selenium	mg/L	0.0556	0.0584	105	80-120	
Thallium	mg/L	0.0556	0.0552	99	80-120	
Vanadium	mg/L	0.889	0.974	110	80-120	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: [CALC]

Analysis Description: Hardness (Metals)

QC Batch Method:

Analysis Method: SM 2340 B-11

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

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QC Batch: T116228

Analysis Description: Chloride

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116228-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116228-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.16	103	90-110	
Fluoride	mg/L	1.00	1.03	103	90-110	
Sulfate as SO4	mg/L	5.00	4.89	98	90-110	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: T116313

Analysis Description: Chloride

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116313-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	

LABORATORY CONTROL SAMPLE: T116313-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	4.57	91	90-110	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: T116366

Analysis Description: Alkalinity, Carbonate

QC Batch Method: SM 2320 B-11

Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T116366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	97.3	97	88-112	

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 Muskegon, MI 49444-2673



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 www.trace-labs.com

LABORATORY CONTROL SAMPLE: T116366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	97.3	97	88-112	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116265	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-11	Analysis Method: SM 2540 C-11

METHOD BLANK: T116265-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	9.0	10	J

LABORATORY CONTROL SAMPLE: T116265-BS1

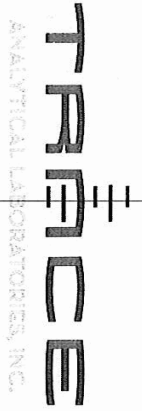
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	527	105	80-120	

SAMPLE DUPLICATE: T116265-DUP1 Original: 21J1157-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	320	368	14	10	623

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CHAIN-OF-CUSTODY RECORD

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 Muskegon, MI 49444-2673

Phone 231.773.5998
 Fax 888.979.4469
 www.trace-labs.com

Trace ID No.
 21J1157

Page _____ of _____

Report Results To:

Company Name: Grand Haven Board of Light & Power
 Report To: Paul Cederquist
 Mailing Address:
 City, State, Zip Code:
 Office Phone:
 Cell Phone:
 Email Address:
 PO #:
 Contact Name:
 Billing Address (if different):
 City, State, Zip Code:
 Phone Number:
 Billing Email Address:

Trace Use:

Logged By: BN
 Checked By: DA
 Soil Volatiles Preserved (circle if applicable):
 MeOH Low Level Lab
 Sampling Time:

Turnaround Requirements:

- Standard: 5-10 Days
- 3 Day*
- 1 Day*

*Results provided end of business day, requires prior approval

Matrix Key:

- S = Soil / Solid
- W = Water
- SL = Sludge
- OI = Oil
- WI = Wipes
- LW = Liquid Waste
- A = Air
- D = Drinking Water

Project Name: **Surface Water Sampling**

Sampled By: EB/TB

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y/N)	Matrix	Number of Containers	Preservation							Analysis Requested						Remarks	Possible Health Hazards?		
							Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other	T-B, Ca, Fe, Sb, As, Ba, Be, Cd, Cr	T- Co, Cu, Pb, Li, Mo, Ni Se, Ag	T- Ti, V, Zn, Mn, Mg, K, Na	Diss. Metals (Same as Totals)	Fluoride, Sulfate, TDS, Chlorides	pH	LLHg			Radiums 226/228	Bicarb-Alk, Carbonate-Alk
1	10/28/21	10:15	SW-SG-1	Y	W	5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	pH=8.46	
2	1	9:10	SW-N-SG-2	Y	W	5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	pH=7.57	
3	1	12:05	SW-SE-MW-7	Y	W	5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	pH=7.86	
4	1	16:30	SW-NE-MW-10	Y	W	5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	pH=7.89	

Please Sign

Released By: <u>[Signature]</u>	Received By: <u>[Signature]</u>	Date: <u>10/28/21</u>	Time: <u>1558</u>	Released By:	Received By:	Date:	Time:
---------------------------------	---------------------------------	-----------------------	-------------------	--------------	--------------	-------	-------

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10-28-21
 Field Personnel: EB/TB
 Surface Water ID: N-502
 Purge Start Time: 8:45
 Purge Rate: 300 gpm/min

Reading Time	9:00	9:03	9:06						
Temperature (Celsius)	9.93	9.93	9.93						
Specific Conductivity	.472	.472	.472						
Dissolved Oxygen	10.02	10.02	10.02						
ORP (mV)	6	6	6						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.57	7.57	7.57						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: ER/TB

Surface Water ID: 56-1

Purge Start Time: 9:55

Purge Rate: 3000 L/min

Reading Time	10:08	10:11	10:13					
Temperature (Celsius)	11.28	11.28	11.28					
Specific Conductivity	.581	.581	.581					
Dissolved Oxygen	7.91	7.91	7.91					
ORP (mV)	196	196	196					
Turbidity(NTU)	22.4	22.4	22.4					
pH	8.46	8.46	8.46					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: EB/TB

Surface Water ID: NE-MW-10

Purge Start Time: 10:05

Purge Rate: 300wL/min

Reading Time	10:20	10:23	10:26						
Temperature (Celsius)	10.20	10.20	10.20						
Specific Conductivity	.463	.463	.463						
Dissolved Oxygen	10.05	10.05	10.05						
ORP (mV)	53	53	53						
Turbidity(NTU)	14.9	14.9	14.9						
pH	7.89	7.89	7.89						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-28-21

Field Personnel: EB/TR

Surface Water ID: SE-MW7

Purge Start Time: 11:46

Purge Rate: 3000l/min

Reading Time	11:55	11:58	12:01						
Temperature (Celsius)	10.72	10.72	10.72						
Specific Conductivity	476	476	476						
Dissolved Oxygen	9.75	9.75	9.75						
ORP (mV)	52	52	52						
Turbidity(NTU)	10.1	10.1	10.1						
pH	7.80	7.80	7.80						

Stabilization Criteria:

Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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21J1157
Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10/29/21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20812743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:37							
Logged by: BW							
Package Description: Cobler							
Package Temp °C	-0.4	-0.3	✓	✓			
Representative Sample Temp °C	5.2	5.3	✓	✓			✓

Sample Receipt

- Yes No
- Received on ice or other coolant
- Ice still present upon receipt
- Custody seals present
- Trace Courier Client Drop-off
- Yes No Custody seals intact (if applicable)
- UPS Fed Ex US Mail Other

Sample Condition

- Yes No N/A
- All sample containers arrived unbroken and labeled
- Sufficient sample to run requested analyses
- Correct chemical preservative added to samples
- Samples preserved at Trace
- Chemical preservation verified, check EMD pH test strip used (if applicable)
- pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other
- Air bubbles absent from VOAs

Chain of Custody (COC)

- Yes No
- All bottle labels agree with COC
- COC filled out properly
- COC signed by client

Notes:

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November 30, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1157
Client Project Surface Water Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

The results were obtained from Eurofins.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink that reads "Jon Mink".

Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



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SAMPLE SUMMARY

Trace Project ID: 21J1157
Client Project ID: Surface Water Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1157-01	SW-SG-1	Surface Water	TRACE-EB/TB	10/28/21 10:15	10/28/21 15:58
21J1157-02	SW-N-SG-2	Surface Water	TRACE-EB/TB	10/28/21 09:10	10/28/21 15:58
21J1157-03	SW-SE-MW-7	Surface Water	TRACE-EB/TB	10/28/21 12:05	10/28/21 15:58
21J1157-04	SW-NE-MW-10	Surface Water	TRACE-EB/TB	10/28/21 10:30	10/28/21 15:58

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-6473-1
Client Project/Site: Trace - 21J1157
Revision: 1

For:
Trace Analytical Laboratories
2241 Black Creek Road
Muskegon, Michigan 49444

Attn: Jon Mink

Karen Fullmer

Authorized for release by:
11/30/2021 11:40:43 AM

Karen Fullmer, Project Manager
(574)233-4777
karen.fullmer@eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Qualifiers

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.
α	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

Case Narrative

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Job ID: 810-6473-1

Laboratory: Eurofins Eaton Analytical - South Bend

Narrative

Job Narrative 810-6473-1

Comments

No additional comments.

Revision

The report being provided is a revision of the original report sent on 11/18/2021. The report (revision 1) is being revised due to: Samples were logged in as drinking water by accident..

Receipt

The samples were received on 11/1/2021 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 12.4° C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. Bottles did not match coc at all and in-house coc was created. Client sent updated coc.

RAD

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

- 1
- 2
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- 14

Detection Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SG-1

Lab Sample ID: 810-6473-1

No Detections.

Client Sample ID: 21J1157/SW-N-SG-2

Lab Sample ID: 810-6473-2

No Detections.

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

No Detections.

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

No Detections.

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This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical - South Bend

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SG-1

Lab Sample ID: 810-6473-1

Date Collected: 10/28/21 10:15

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.80802		1.00	0.500	pCi/L		11/15/21 09:30	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	-0.820	U	0.650		1.00	0.340	pCi/L	11/04/21 13:22	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.150	U	0.480		1.00	0.500	pCi/L	11/12/21 10:12	11/15/21 12:05	1

Client Sample ID: 21J1157/SW-N-SG-2

Lab Sample ID: 810-6473-2

Date Collected: 10/28/21 09:10

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.76837		1.00	0.500	pCi/L		11/15/21 09:30	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.0800	U	0.600		1.00	0.350	pCi/L	11/04/21 13:22	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-0.0800	U	0.480		1.00	0.500	pCi/L	11/12/21 10:12	11/15/21 12:05	1

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

Date Collected: 10/28/21 12:05

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.670		0.83006		1.00	0.480	pCi/L		11/15/21 09:30	1

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

Date Collected: 10/28/21 12:05

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	-0.470	U	0.670		1.00	0.330	pCi/L	11/04/21 13:22	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.670		0.490		1.00	0.480	pCi/L	11/12/21 10:12	11/15/21 12:05	1

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

Date Collected: 10/28/21 10:30

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.45		0.54489		1.00	0.380	pCi/L		11/15/21 09:30	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.650		0.370		1.00	0.310	pCi/L	11/04/21 13:22	11/08/21 11:28	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.800		0.400		1.00	0.380	pCi/L	11/12/21 10:12	11/15/21 12:05	1

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Method: SM7500 Ra B - Radium-226

Lab Sample ID: MB 810-6604/1-A
 Matrix: Drinking Water
 Analysis Batch: 7022

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 6604

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Ra-226	0.5000		0.240		1.00	0.180	pCi/L	11/04/21 13:22	11/08/21 11:28	1

Lab Sample ID: LCS 810-6604/2-A
 Matrix: Drinking Water
 Analysis Batch: 7022

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 6604

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec.
		Result	Qual	Uncert. (2σ+/-)					Limits
Ra-226	8.73	9.470			1.00	0.190	pCi/L	108	90 - 110

Method: SM7500 Ra D - Radium-228

Lab Sample ID: MB 810-7205/1-A
 Matrix: Drinking Water
 Analysis Batch: 7351

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 7205

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Ra-228	-0.1600	U	0.430		1.00	0.460	pCi/L	11/12/21 10:12	11/15/21 12:18	1

Lab Sample ID: LCS 810-7205/2-A
 Matrix: Drinking Water
 Analysis Batch: 7351

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 7205

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec.
		Result	Qual	Uncert. (2σ+/-)					Limits
Ra-228	8.83	7.490			1.00	0.520	pCi/L	85	80 - 120

QC Association Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Rad

Prep Batch: 6604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6473-1	21J1157/SW-SG-1	Total/NA	Surface Water	RAD Prep	
810-6473-2	21J1157/SW-N-SG-2	Total/NA	Surface Water	RAD Prep	
810-6473-3	21J1157/SW-SE-MW-7	Total/NA	Surface Water	RAD Prep	
810-6473-4	21J1157/SW-NE-MW-10	Total/NA	Surface Water	RAD Prep	
MB 810-6604/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6604/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	

Prep Batch: 7205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6473-1	21J1157/SW-SG-1	Total/NA	Surface Water	RAD Prep	
810-6473-2	21J1157/SW-N-SG-2	Total/NA	Surface Water	RAD Prep	
810-6473-3	21J1157/SW-SE-MW-7	Total/NA	Surface Water	RAD Prep	
810-6473-4	21J1157/SW-NE-MW-10	Total/NA	Surface Water	RAD Prep	
MB 810-7205/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-7205/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	

Lab Chronicle

Client: Trace Analytical Laboratories
 Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SG-1

Lab Sample ID: 810-6473-1

Date Collected: 10/28/21 10:15

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7224		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Client Sample ID: 21J1157/SW-N-SG-2

Lab Sample ID: 810-6473-2

Date Collected: 10/28/21 09:10

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7224		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

Date Collected: 10/28/21 12:05

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7224		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

Date Collected: 10/28/21 10:30

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB

Lab Chronicle

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

Date Collected: 10/28/21 10:30

Matrix: Surface Water

Date Received: 11/01/21 09:00

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7022	11/08/21 11:28	JB	EA SB
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Laboratory: Eurofins Eaton Analytical - South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

<u>Authority</u>	<u>Program</u>	<u>Identification Number</u>	<u>Expiration Date</u>
Michigan	State	9926	03-22-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

<u>Analysis Method</u>	<u>Prep Method</u>	<u>Matrix</u>	<u>Analyte</u>
7500 Ra D		Surface Water	Combined Radium 226 + 228
SM7500 Ra B	RAD Prep	Surface Water	Ra-226
SM7500 Ra D	RAD Prep	Surface Water	Ra-228



Method Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Method	Method Description	Protocol	Laboratory
7500 Ra D	Radium 226 Radium 228 Combined	SM	EA SB
SM7500 Ra B	Radium-226	SM	EA SB
SM7500 Ra D	Radium-228	SM	EA SB
RAD Prep	Preparation, Radiologicals	None	EA SB

Protocol References:

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777



Sample Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-6473-1	21J1157/SW-SG-1	Surface Water	10/28/21 10:15	11/01/21 09:00
810-6473-2	21J1157/SW-N-SG-2	Surface Water	10/28/21 09:10	11/01/21 09:00
810-6473-3	21J1157/SW-SE-MW-7	Surface Water	10/28/21 12:05	11/01/21 09:00
810-6473-4	21J1157/SW-NE-MW-10	Surface Water	10/28/21 10:30	11/01/21 09:00

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Eaton Analytical



110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # _____
Batch # _____

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CHAIN OF CUSTODY RECORD

Page _____ of _____

Shaded area for EEA use only

REPORT TO:		SAMPLER (Signature)		PWS ID #	STATE (sample origin)	PROJECT NAME	PO#	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME			
Jon Mink, Tim Brewer (jmink@trace-labs.com, tbrewer@trace-labs.com) Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444 231-773-5998					MI		21J1157						
BILL TO:		COMPLIANCE MONITORING		Yes	No	POPULATION SERVED	SOURCE WATER						
Accounts Payable, Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444													
LAB Number	COLLECTION				SAMPLING SITE	TEST NAME	pH Acceptable	SAMPLE REMARKS	CHLORINATED		# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
	DATE	TIME	AM	PM					YES	NO			
1	10/28/21	10:15	x		SW-SG-1	Radium 226/228	✓			x	1	SW	SW
2	10/28/21	9:10	x		SW-N-SG-2	Radium 226/228	✓			x	1	SW	SW
3	10/28/21	12:05		x	SW-SE-MW-7	Radium 226/228	✓			x	1	SW	SW
4	10/28/21	10:30	x		SW-NE-MW-10	Radium 226/228	✓			x	1	SW	SW
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9													
10													
11													
12													
13													
14													

Liters Received = 4 jug each site

RELINQUISHED BY: (Signature) <i>RUB</i>	DATE 10/29/21	TIME	RECEIVED BY: (Signature)	DATE	TIME	LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME	



CONDITIONS UPON RECEIPT (check one):
 ___ Iced: Wet/Blue ___ Ambient 12.4 °C Upon Receipt ___ N/A

MATRIX CODES: DW-DRINKING WATER RW-REAGENT WATER GW-GROUND WATER EW-EXPOSURE WATER SW-SURFACE WATER PW-POOL WATER WW-WASTE WATER	TURN-AROUND TIME (TAT) - SURCHARGES SW = Standard Written: (15 working days) 0% RV = Rush Verbal: (5 working days) 50% RW = Rush Written: (5 working days) 75%	IV = Immediate Verbal: (3 working days) 100% IW = Immediate Written: (3 working days) 125% SP = Weekend, Holiday CALL STAT = Less than 48 hours CALL	Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.
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Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.

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South Bend, IN

110 S Hill Street
 South Bend, IN 46617
 Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record



Client Information		Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:			
Client Contact: <i>Trace</i>		Phone:		E-Mail:		State of Origin:		Page: Page 1 of			
Company:		PWSID:		Analysis Requested						Job #:	
Address:		Due Date Requested:		Field Filtered Sample (Yes or No) <i>Rad 226 & 238</i> Perform MS/MSD (Yes or No)						Total Number of containers ↓	
City:		TAT Requested (days):									
State, Zip:		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No									
Phone:		PO #:									
Email:		WO #:									
Project Name:		Project #:		pH Acceptable						Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)	
Site:		SSOW#:									
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/sol, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Special Instructions/Note:		
21J 1157-01											
↓ 02											
03											
04											
Liters Received = 4.6 jug Coc completed by SS											
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>sgl</i>		Date/Time: 11/21 0900		Company: EEA	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <i>Ambient 12.4°C</i>		IR 23 11/30/2021 (Rev. 1) Ver: 01/16/2019					

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Eaton Analytical

110 S. Hill Street
South Bend, IN 46617
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F: 1.574.233.8207

Order #
Batch #

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CHAIN OF CUSTODY RECORD

Page ___ of ___

Main data table with columns: REPORT TO, SAMPLER (Signature), PWS ID #, STATE (sample origin), PROJECT NAME, PO#, COMPLIANCE MONITORING, POPULATION SERVED, SOURCE WATER, LAB Number, COLLECTION (DATE, TIME, AM, PM), SAMPLING SITE, TEST NAME, SAMPLE REMARKS, CHLORINATED (YES, NO), # OF CONTAINERS, MATRIX CODE, TURNAROUND TIME.

Rec. 4 bottles w/ 21J1157-01 thru 04
SS 11/21

Handwritten signature and date table with columns: RELINQUISHED BY:(Signature), DATE, TIME, RECEIVED BY:(Signature), DATE, TIME.

MATRIX CODES, TURN-AROUND TIME (TAT) - SURCHARGES table with columns: CODE, TAT, SURCHARGE %, IV, IW, SP, STAT.

Login Sample Receipt Checklist

Client: Trace Analytical Laboratories

Job Number: 810-6473-1

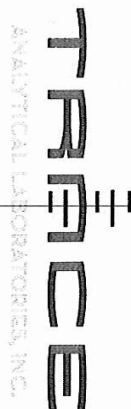
Login Number: 6473

List Source: Eurofins Eaton Analytical - South Bend

List Number: 1

Creator: Spurgeon, Sheri

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	False	Thermal preservation not required.
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	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	



Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673

Phone 231.773.5998
 Fax 888.979.4469
 www.trace-labs.com

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Trace ID No.
 211157

Report Results To:

Bill To:

Trace Use:

Company Name: Grand Haven Board of Light & Power
 Report To: Paul Cederquist
 Mailing Address:
 City, State, Zip Code:
 Office Phone: Call Phone:
 Email Address:
 PO #:
 Contact Name:
 Billing Address (if different):
 City, State, Zip Code:
 Phone Number:
 Billing Email Address:

Logged By: BN
 Checked By: DH
 Soil Volatiles Preserved (circle if applicable):
 MeOH Low Level Lab
 Sampling Time:

Turnaround Requirements:

- Standard 5-10 Days
- 3 Day*
- 1 Day*

Matrix Key:

- S = Soil / Solid
- W = Water
- SL = Sludge
- OI = Oil
- WI = Wipes
- LW = Liquid Waste
- A = Air
- D = Drinking Water

*Results provided end of business day, requires prior approval.

Project Name: Surface Water Sampling

Sampled By: EB/TB

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y/N)	Matrix	Number of Containers	Preservation						Analysis Requested	Remarks
							Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other		
1	10/28/21	10:15	SW-SG-1	Y	W	5	X	X	X	X	X	X	T-B, Ca, Fe, Sb, As, Ba, Be, Cd, Cr	pH=8.46
2	9/10		SW-N-SG-2	Y	W	5	X	X	X	X	X	X	T- Co, Cu, Pb, Li, Mo, Ni Se, Ag	pH=7.57
3	12:05		SW-SE-MW-7	Y	W	5	X	X	X	X	X	X	Diss. Metals (Same as Totals)	pH=7.86
4	10:30		SW-NE-MW-10	Y	W	5	X	X	X	X	X	X	Fluoride, Sulfate, TDS, Chlorides	pH=7.89
													pH	
													LLHg	
													Radiums 226/228	
													Bicarb-Alk, Carbonate-Alk	
														Possible Health Hazards?

Please Sign

Released By: [Signature] Received By: [Signature] Date: 10/28/21 Time: 1558

In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-28-21

Field Personnel: EB/TB

Surface Water ID: N-502

Purge Start Time: 8:45

Purge Rate: 30 GPM/min

Reading Time	9:00	9:03	9:06						
Temperature (Celsius)	9.93	9.93	9.93						
Specific Conductivity	.472	.472	.472						
Dissolved Oxygen	10.02	10.02	10.02						
ORP (mV)	6	6	6						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.57	7.57	7.57						

Stabilization Criteria:

Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: ER/TB

Surface Water ID: 56-1

Purge Start Time: 9:55

Purge Rate: Severe Chlorine

Reading Time	10:08	10:11	10:13						
Temperature (Celsius)	11.28	11.28	11.28						
Specific Conductivity	.581	.581	.581						
Dissolved Oxygen	7.91	7.91	7.91						
ORP (mV)	196	196	196						
Turbidity(NTU)	22.4	22.4	22.4						
pH	8.46	8.46	8.46						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: EB/TB

Surface Water ID: NE-MNW-10

Purge Start Time: 10:05

Purge Rate: 3000 L/min

Reading Time	10:20	10:23	10:26						
Temperature (Celsius)	10.20	10.20	10.20						
Specific Conductivity	.463	.463	.463						
Dissolved Oxygen	10.05	10.05	10.05						
ORP (mV)	53	53	53						
Turbidity(NTU)	14.9	14.9	14.9						
pH	7.89	7.89	7.89						

Stabilization Criteria:

Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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 2241 Black Creek Road
 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-28-21

Field Personnel: EB/TR

Surface Water ID: SE-MW7

Purge Start Time: 11:46

Purge Rate: 30000/min

Reading Time	11:55	11:58	12:01						
Temperature (Celsius)	10.72	10.72	10.72						
Specific Conductivity	476	476	476						
Dissolved Oxygen	9.75	9.75	9.75						
ORP (mV)	52	52	52						
Turbidity(NTU)	10.1	10.1	10.1						
pH	7.80	7.80	7.80						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

21J1157
Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10/29/21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20812743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:37							
Logged by: BW							
Package Description: Cobler							
Package Temp °C	-0.4	-0.3	✓	✓			
Representative Sample Temp °C	5.2	5.3	✓				✓

Sample Receipt

- Yes/ No
- Received on ice or other coolant
- Ice still present upon receipt
- Custody seals present
- Trace Courier Client Drop-off
- Yes No Custody seals intact (if applicable)
- UPS Fed Ex US Mail Other

Sample Condition

- Yes/ No/ N/A
- All sample containers arrived unbroken and labeled
- Sufficient sample to run requested analyses
- Correct chemical preservative added to samples
- Samples preserved at Trace
- Chemical preservation verified, check EMD pH test strip used (if applicable)
- pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other
- Air bubbles absent from VOAs

Chain of Custody (COC)

- Yes/ No
- All bottle labels agree with COC
- COC filled out properly
- COC signed by client

Notes:

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444



Phone: 231.773.5998
Fax: 888.979.4469
www.trace-labs.com

December 7, 2021

Paul Cederquist
Grand Haven Board of Light and Power
1700 Eaton Drive
Grand Haven, MI 49417

R.E. Missing Static Water Elevations for October

Paul,

Unfortunately do to a loss of the data sheets / notebook from the 25th of October not all of the measurements for static water elevations were available to be reported. All of the wells that were scheduled to be sampled had the results transferred to their respective sampling log sheets prior to starting sampling and were included in the spreadsheet. However those points that were measured but not sampled were only recorded on the missing log.

Trace has looked everywhere for the missing log but it unfortunately cannot be located.

Going forward we will be recording the field measurements into an excel spreadsheet as soon as the sampling event is completed.

Sorry for the inconvenience.

Sincerely,

Jon Mink
Senior Project Manager



golder.com

APPENDIX C

**2021 Annual Groundwater
Monitoring & Corrective Action
Report, Former JB Sims Generating
Station**



REPORT

2021 Annual Groundwater Monitoring & Corrective Action Report

Former JB Sims Generating Station

Submitted to:

Grand Haven Board of Light and Power

1231 N. Third St., Grand Haven, MI 49417

Submitted by:

Golder Associates Inc.

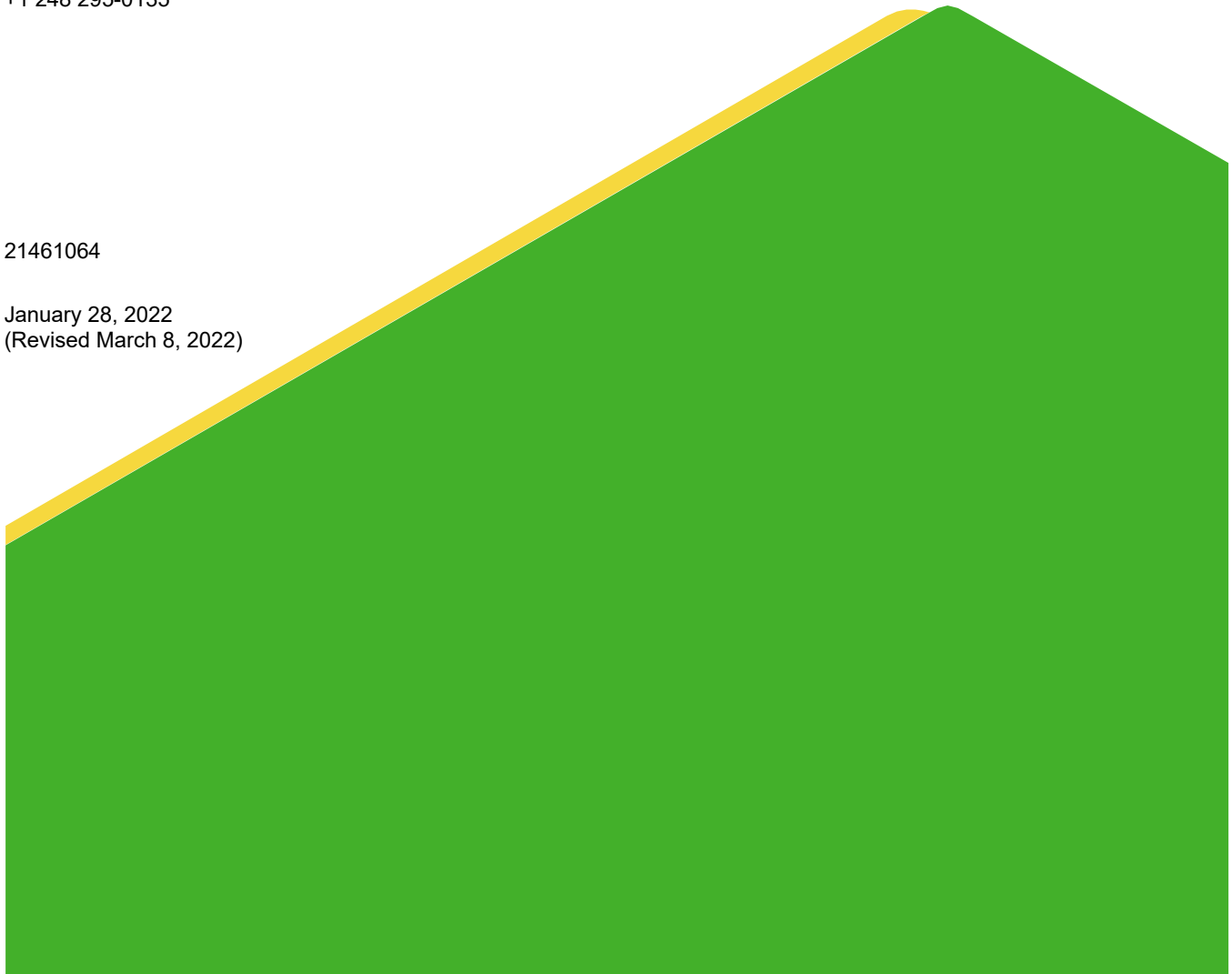
27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331-5719

+1 248 295-0135

21461064

January 28, 2022

(Revised March 8, 2022)



Distribution List

Michigan Department of Environment, Great Lakes, and Energy

Grand Haven Board of Light and Power

Golder Associates Inc.

Summary

This 2021 Annual Groundwater Monitoring & Corrective Action Report for the Former JB Sims Generating Station (Site) coal combustion residuals (CCR) Units located at 1231 North Third Street in Grand Haven, Michigan provides the status of groundwater monitoring and corrective program through December 2021. The CCR Units at the Site include: (1) the inactive Units 1/2 Impoundment (inactive 1/2 Impoundment) and (2) the former Unit 3 A and B Bottom Ash impoundments (former 3A/B Impoundments).

Groundwater monitoring is performed by Trace Laboratories, Inc. (Trace) and reporting is prepared by Golder Associates USA Inc. (Golder) for the Site CCR Units in accordance with the United States Environmental Protection Agency (USEPA) CCR Rule published in the Code of Federal Regulations Title 40 Part 257 (40 CFR Part 257, Subpart D) dated April 17, 2015 and revised July 2018, 40 CFR § 257.90 through § 257.98 and State of Michigan enacted Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (Part 115 amendment). As required in 40 CFR § 257.90(e) and the Part 115 amendment, this Annual Report describes the status of the groundwater monitoring program, summarizes key actions completed, describes any problems encountered, discusses actions to resolve the problems, and presents projected key activities for the upcoming year for the Site CCR Units.

The Site was a former coal-fired power generation facility which ceased operations in February 2020. The inactive 1/2 Impoundment ceased receiving CCR materials in 2012. In addition, the former 3A/B Impoundments ceased accepting CCR materials in July 2020 and were cleaned of CCR materials in December 2020. The Site is located on the southwestern portion of Harbor Island in Grand Haven, Michigan, and is operated by the Grand Haven Board of Light and Power. The portion of Harbor Island where the Site is situated is surrounded by the Grand River and South Channel of the Grand River which flow in a westerly direction toward Lake Michigan, which is about one mile west of the site.

Groundwater at the Site is currently monitored using two (2) groundwater monitoring systems comprised of a background well (for statistical purposes) and downgradient wells for each CCR Unit. The inactive 1/2 Impoundment's network currently consists of one (1) background (for statistical purposes) and eight (8) downgradient wells installed to meet federal and state monitoring requirements, while the former 3A/B Impoundments are monitored collectively, and their network consists of one (1) background (for statistical purposes) and four (4) downgradient wells installed to meet federal and state monitoring requirements. The monitoring well network for inactive 1/2 Impoundment is under review following agreement by the project team, the USEPA, and EGLE regarding the limits of the Impoundment. In addition, based on a recent groundwater flow study, the monitoring well network for the former 3A/B Impoundments may be expanded pending review of the background groundwater quality data to be collected in 2022. Based on current groundwater quality, an assessment monitoring program and assessment of corrective measures were initially established through notice April 10, 2018, and February 8, 2019, respectively. During the 2021 annual reporting period, the Site remains in assessment monitoring as Site closure, source control and corrective measures are being evaluated.

Groundwater elevation measurements were recorded from the site monitoring wells prior to each sampling event. In addition, field activities were implemented following the approved Work Plan – Piezometer Installation and Additional Data Collection (Golder, 2021). Details regarding the field activities is included in the summary below.

2021 Groundwater Monitoring Activities

- Groundwater monitoring sampling events for the two (2) interim groundwater monitoring networks were conducted in January, April, July, and October 2021. Groundwater samples were collected and analyzed for Appendix III and Appendix IV required monitoring parameters from each of the detection and assessment monitoring wells as well as additional state required monitoring constituents.
- Approved Work Plan – Piezometer Installation and Additional Data Collection (Golder 2021).
 - Installation of twenty-two (22) piezometers
 - Well development of nineteen (19) of the twenty-two (22) piezometers
 - Three (3) piezometers were not developed based on the lack of confirmed bentonite seal during construction.
 - Installation of three (3) stilling wells
 - Completed aquifer performance testing at six (6) monitoring wells and four (4) piezometers.
 - Conducted four (4) water level gauging events between (October and December 2021)
 - Prepared a Field Summary Report with a summary of the data collected in accordance with the Work Plan – Piezometer Installation and Additional Data Collection (Golder, 2021).
- Statistical Analyses were completed in 2021 using analytical data from the January, April, July, and October 2021 monitoring events. Statistical analysis is performed in accordance with the site's certified statistical analysis method. For the January, April, July, and October 2021 monitoring events, statistical analyses indicate statistically significant increases (SSIs) for Appendix III constituents above the statistical limits and statistically significant levels (SSLs) of Appendix IV constituents above the groundwater protection standards as summarized below.

Statistically Significant Increases (SSIs)	
Detection Monitoring Constituents	Inactive 1/2 Impoundment Network
Boron	MW-1R
Calcium	MW-1R, MW-5, and MW-6 (April and July only)
Chloride	MW-1R, MW-5, MW-6, MW-8
Fluoride	MW-1R, MW-5 (January and April only), MW-6 (January and April only), MW-8 (January only)
Iron	MW-5 (January and April only) and MW-8 (January, April, and July only)
pH	MW-1R (July only)
Sulfate	MW-1R and MW-5
Total Dissolved Solids	MW-1R, MW-5, and MW-6
Detection Monitoring Constituents	Former 3A/B Impoundments Network
Boron	MW-1R and MW-2
Calcium	MW-1R, MW-2 (April and July only), MW-3, MW-4
Chloride	MW-1R, MW-2, MW-3, and MW-4
Fluoride	MW-1R, MW-2, MW-3 (January and April only), and MW-4 (January and April Only)
Iron	MW-2 (July only) and MW-3 (January only)
pH	MW-1R (July only)
Sulfate	MW-1R, MW-3 (January, April and July only), and MW-4
Total Dissolved Solids	MW-1R, MW-2, MW-3, and MW-4 (January, April, and October only)

Statistically Significant Levels (SSLs) for the Inactive 1/2 Impoundment and the Former 3A/B Impoundments	
Assessment Monitoring Constituents	CCR Federal Rule and State of Michigan PA 640 Sec. 11519b(2)
Arsenic	MW-5
Chromium	MW-2 (January and April only)
Cobalt	MW-1R (April and July only)
Fluoride	MW-1R, MW-2, and MW-10
Lithium	MW-1R, MW-2, MW-5, MW-6, MW-9, and MW-10
Assessment Monitoring Constituents	State of Michigan PA 640 Sec. 11519b(2) only
Boron	MW-1R, MW-2, and MW-10
Calcium	MW-3, MW-4, MW-5, and MW-9
Chloride	MW-1R, MW-3, MW-4, and MW-10
Sulfate	MW-1R, MW-3, and MW-4
Total Dissolved Solids	MW-1R, MW-2, MW-3, MW-4, MW-5 (July and October), MW-6 (April, July, and October), and MW-10

Alternate Source Demonstration – Golder previously submitted an alternate source demonstration (ASD) to address groundwater impacts reported in wells around the former 3A/B Impoundments. The ASD concluded that the source of groundwater impacts is not the former 3A/B Impoundments but rather is the result of ash fill and comingled waste placed on the island well before the Impoundments were constructed or the regulatory regimes adopted. However, EGLE has not approved the ASD, stating that since the groundwater impacts cannot be differentiated between potential impacts from the former 3A/B Impoundments and the historical ash fill and comingled waste with 100 percent certainty.

Assessment of Corrective Measures – The Site has initiated an assessment of corrective measures (ACM) in response to groundwater impacts at the Site. Under EGLE direction, prior to the submittal of the ACM report, GHBLP must develop an alternate Monitoring Well Network for the Site. One step to the process (further evaluation of the hydrogeologic complexities at the Site) was completed in 2021 and described in detail in Section 2.1. As the ACM report is prepared, the Site continues to evaluate corrective action alternatives to address groundwater impacts resulting from the inactive 1/2 Impoundment as well as the former 3A/B Impoundments. In accordance with 40 CFR § 257.98, a public hearing to present remedial alternatives will be scheduled before a final remedy selection is proposed.

The Site will continue routine groundwater monitoring and reporting. Reports will be posted to the website:

[Environmental Compliance Reports - Grand Haven Board of Light & Power \(ghblp.org\)](https://www.ghblp.org).

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APPENDICES

- Appendix A Laboratory Analytical & Field Sampling Results
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Certification

This 2021 Annual Groundwater Monitoring & Corrective Action Report, JB Sims Generating Station (Site) has been prepared in general accordance with the United States Environmental Protection Agency (USEPA) coal combustion residual (CCR) rule (40 Code of Federal Regulations [CFR] 257 Subpart D; published in 80 FR 21302-21501, April 17, 2015) under the direction of an Engineer licensed in the State of Michigan as well as a professional geologist with Golder Associates USA Inc. (Golder).

Golder Associates Inc.



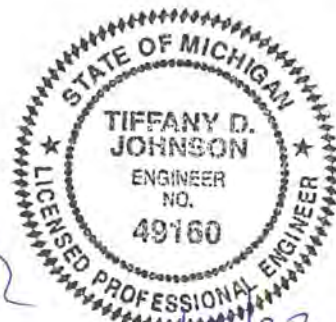
Carolyn E. Powrozek, CPG
Senior Geologist

I hereby certify that this 2021 Annual Groundwater Monitoring & Corrective Action Report, JB Sims Generating Station CCR Units located at 1231 North Third Street in Grand Haven, Michigan, has been prepared to meet the requirements of the 40 CFR § 257.90(e).

Golder Associates USA Inc.



Tiffany D. Johnson, PE
Michigan Registered Professional Engineer No. 6201049160



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1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (USEPA) coal combustion residual (CCR) rule (40 Code of Federal Regulations [CFR] 257 Subpart D; published in 80 FR 21302-21501, April 17, 2015) and the State of Michigan Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (Part 115 amendment), this *2021 Annual Groundwater Monitoring and Corrective Action Report* has been prepared to document groundwater monitoring activities conducted at the former JB Sims Generating Station (Site) CCR units. The CCR units include: (1) the inactive Units 1/2 Impoundment (inactive 1/2 Impoundment) and (2) the former Unit 3 Impoundments (former 3A/B Impoundments) (which have ceased accepting CCR material in July 2020). Groundwater monitoring and reporting for the CCR units is performed in accordance with the requirements of 40 CFR § 257.90 through § 257.98 and the Part 115 amendment. This report documents the activities completed to establish the groundwater monitoring programs and actions through the 2021 calendar year.

1.1 Site Description and Background

The Site is located on the southwestern portion of Harbor Island in Grand Haven, Michigan, and is operated by the Grand Haven Board of Light and Power (GHBLP). The Site is situated on Harbor Island with the Grand River and South Channel of the Grand River surrounding the island, which flow in a westerly direction toward Lake Michigan, which is about one mile west of the Site. Figure 1, Site Location Map, depicts the location of the Site relative to the surrounding area.

The Site is a former coal-fired power generation facility which ceased operations in February 2020. The inactive 1/2 Impoundment ceased receiving CCR materials in 2012. Although the former coal-fired power generation facility ceased operations in February 2020, the Site continued to use the now former 3A/B Impoundments to clean out the hoppers, vessels, etc. prior to demolition of the buildings. Following the clean out procedures, the Site ceased accepting CCR materials in the former 3A/B Impoundments in July 2020 and CCR materials were cleaned from the impoundments in December 2020. Figure 2, Site Plan depicts the general configuration of the former and inactive CCR units and site monitoring wells.

1.2 Regional Geology and Hydrogeologic Setting

The following paragraphs include a general description of regional geologic and hydrogeologic characteristics of formations that occur beneath the site. Information presented in this section is based on published literature, and Golder's experience working in this geologic terrain.

As described in the original Groundwater Monitoring System Certification, prepared by ERM dated November 2017 (ERM, 2017a), the Site is located in an area of glacial drift (consisting of fine to medium sand with occasional beds of gravel) which is underlain by Marshall Sandstone. The glacial drift is between 100 to 200 feet thick in the area.

The former 3A/B Impoundments were engineered clay lined above ground units built over a field of ash from Units 1 & 2. The inactive 1/2 Impoundment was a depression in the ground where sluiced ash was disposed. The site was also previously used as the city dump. Materials documented from the former dump consist of a layer of mixed debris which includes glass, wood, plastic, ceramic, concrete, hides, brick and metal within a matrix of dark-grey to black, fine grained sand. The extent of the historic trash dump is detailed in the ERM Report titled "Coal Ash Delineation Sampling Results, Grand Haven Board of Light & Power, Grand Haven, Michigan" dated February 8, 2016 (ERM, 2016).

Portions of Harbor Island were developed by creating land with the use of unconsolidated fill, beneficial use of historical ash fill, and municipal solid waste. Specifically, borings consist of a mixture of unconsolidated fine sand fill with intervals of silt and sand, historical ash fill, and municipal solid waste within the first 20 feet below ground surface (bgs). The fine sand fill was underlain by silt and clay to the bottom of each boring. The silt and clay represent the confining unit beneath the CCR units.

Groundwater was encountered between 5 and 15 feet bgs within the unconsolidated fill material, which consists of fine sand, ash, and municipal solid waste, located above the silt and clay unit. As described in the Groundwater Monitoring System Certification, (ERM, 2017b), sand in the uppermost aquifer assumes an effective porosity of 30 percent (%) and consists of poorly-graded fine sand with an estimated hydraulic conductivity of 27 feet per day and well-graded fine sand with an estimated hydraulic conductivity of 53 feet per day. Golder conducted site aquifer performance testing in September of 2021. The results of the aquifer performance testing provide additional data for updating the hydraulic conductivity. The recently calculated hydraulic conductivity for the areas west of the wetland is an average range of 0.19 ft per day to 242 ft per day. This wide range of variability is the result of the varying fill materials that form Harbor Island. In addition, a calculated hydraulic conductivity for the piezometers located on the eastern side of the wetland is an average 8.34 feet per day. A field summary report including the aquifer performance testing will be submitted under separate cover and is forth coming.

1.3 Groundwater Monitoring Well Network

Pursuant to 40 CFR § 257.91 as well as the Part 115 amendment, GHBLP installed a groundwater monitoring system within the uppermost aquifer for the CCR Units: (1) inactive 1/2 Impoundment and (2) former 3A/B Impoundments. The original Groundwater Monitoring System Certification by ERM, dated November 2017, was developed for the former 3A/B Impoundments, which consisted of 4 monitoring wells (1 upgradient and 3 downgradient monitoring wells). It was later determined that in accordance with 40 CFR § 257.90(a), inactive 1/2 Impoundment is subject to the groundwater monitoring and corrective action requirements listed under 40 CFR § 257.90 through § 257.98 and four additional monitoring wells were installed. Initially, a multi-unit monitoring system was considered for monitoring the Site. Since the construction of the inactive 1/2 Impoundment and former 3A/B Impoundments are different, and because closure of the CCR Units would be implemented following a separate schedule and design, it was determined at the time that a multi-unit monitoring system was not appropriate for the Site. Therefore, two groundwater monitoring networks are installed to monitor groundwater passing the CCR unit boundary of the inactive and former ash impoundments within the uppermost aquifer. Wells are located to serve as upgradient, background, and downgradient wells based on groundwater flow direction as determined by the groundwater contour maps (Figures 3-9, Groundwater Contour Map).

GHBLP, EPA, and EGLE discussed the boundary for the inactive 1/2 Impoundment on January 14, 2021. During that discussion, a revised boundary of the inactive 1/2 Impoundment was agreed upon that includes an area of sluiced ash disposal further east than the area identified in the October 14, 2019 CCR Impoundment Ash Delineation Report (Golder 2019a). The former northern NPDES outlet channel from the inactive 1/2 Impoundment was also agreed to be evaluated for potential inclusion of the revised boundary (Figure 3). As a result of this revised boundary established in 2021 and the hydrogeologic complexities at the Site, further evaluation of the monitoring well networks for both inactive 1/2 Impoundment and former 3A/B impoundments is ongoing. Specifically, piezometers and stilling wells were recently installed and a *Field Summary Report* with a summary of the data collected in accordance with the Work Plan – Piezometer Installation and Additional Data Collection (Golder, 2021) is forth coming. As such, statistical analysis results may change significantly based on a revised groundwater monitoring well network.

2.0 GROUNDWATER MONITORING ACTIVITIES

In accordance with 40 CFR § 257.90(e) and the Part 115 amendment, the following describes monitoring-related activities performed during the preceding year and discusses any change in status of the monitoring program. Groundwater sampling was performed in accordance with 40 CFR § 257.93 and the Part 115 amendment. Samples were collected from each well in the current certified monitoring system. The location of each of these monitoring wells is shown on Figure 2.

Groundwater sampling events were conducted in January, April, July, and October 2021. Results of sampling activities conducted in 2021 are presented in Appendix A, Analytical Results and Field Sampling Forms.

2.1 Monitoring Well Installation and Maintenance

In accordance with 40 CFR § 257.91, a groundwater monitoring system was installed that (1) consists of a sufficient number of wells based on the original delineation as well as updated as site conditions change and the delineation of the impoundments change, (2) installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer, and (3) meets the performance standards of 40 CFR § 257.91(a). In summary, monitoring well-related activities included the following:

- Visual inspection of well conditions prior to sampling, recording the site conditions, and performing exterior maintenance to perform sampling under safe and clean conditions.
- Additional Piezometer Installation and Additional Data Collection following an EPA/EGLE approved workplan (Golder, 2021).
 - Installation of twenty-two (22) piezometers
 - Well development of nineteen (19) of the twenty-two (22) piezometers
 - Installation of three (3) stilling wells
 - Completed aquifer performance testing at six (6) monitoring wells and four (4) piezometers.
 - Conducted four (4) water level measurement events between (October and December 2021, one of which was conducted during the fourth quarter sampling event, on October 25, 2021. The other three water level measurement events were conducted on October 1, November 23, and December 17, 2021. The Groundwater Contour Maps for the fourth quarter monitoring water level measurement only events are provided in Figures 6-9.
 - Prepare a *Field Summary Report* to document the installation of the additional site piezometers and field investigation efforts.

Following a review of the 2021 activities identified a proposed expanded groundwater monitoring network for the Units at GHBLP is anticipated in 2022.

2.2 Assessment Monitoring

Pursuant to 40 CFR § 257.94(e)(3), an assessment monitoring program has been established for the CCR units at the Site based on statistically significant levels originally documented in the *2017 Annual Groundwater Monitoring and Corrective Action Report*, (Golder, 2018a). A notice of assessment monitoring was placed in the operation record on April 10, 2018 (Golder, 2018b).

As per the requirements of 40 CFR § 257.95 and the Michigan Part 115 Amendment, sampling, analyses and statistical evaluation of assessment monitoring constituents was performed for each sampling event in 2021. Results of the assessment monitoring are discussed in Section 4.0 and presented in Appendix B.

2.3 Additional Sampling

Surface water samples were collected at four locations: (1) SW-SG-1 (surface water sample near staff gauge SG-1), (2) SW-N-SG-2 (surface water sample north of staff gauge SG-2 in the channel of the Grand River north of the Plant), (3) SW-SE-MW-7 (surface water sample southeast of monitoring well MW-7), and (4) SW-NE-MW-10 (surface water sample northeast of monitoring well MW-10). Samples were collected in January, April, July, and October 2021.

Samples were also collected from within the inactive impoundments at two locations: (1) Unit 1/2 SG-3 (sample collected from within the boundary of the inactive 1/2 Impoundment near staff gauge SG-3) and (2) Unit 1/2 MW-5 (sample collected from within the boundary of the inactive 1/2 Impoundment near monitoring well MW-5). Samples were collected in January, April, July, and October 2021.

Additionally, site monitoring wells, impoundment water, and surface water samples were sampled for a subset of cations/anions to aid in geochemical evaluation of site groundwater. Results of these analyses are provided in Appendix A.

3.0 SAMPLE METHODOLOGY & ANALYSIS

Sampling events completed during 2021 for the CCR units at the Site represent both detection monitoring and assessment monitoring. The following sections discuss each of the sampling event conducted during 2021.

3.1 Groundwater Level Measurement

Prior to each sampling event, groundwater elevations were recorded from each well and staff gauge. Groundwater elevations are summarized in Table 2, 2021 Groundwater Elevation Summary. The elevation data were used to develop quarterly groundwater contour maps as well as three additional water level gauging events between October and December 2021 (Figures 3-9, Groundwater Contour Maps).

The additional water level gauging that has occurred over the past year has provided additional information regarding the potentiometric surface at the Site. Groundwater flow across the island is influenced by the elevation of the Grand River and the south channel. Localized flow is radially inward when river levels are high and radially outward when river levels are low. Localized flow direction and gradients across the Site property are also influenced by precipitation and surface infiltration, particularly in wetland areas. The fill material that has historically been placed on the island is variable across the site in both thickness and permeability resulting in variably infiltration rates from precipitation also affecting groundwater flow. As a result, because the inactive 1/2 Impoundment is in direct connection with the groundwater, it will have a faster infiltration rate than other areas of the island causing a mounding effect. In the area surrounding the inactive 1/2 Impoundment, the groundwater flow direction shifts from a radial outward to radial inward depending on precipitation. Overall, the regional general direction of groundwater flow across the Harbor Island is west to southwest towards Lake Michigan.

3.2 Groundwater Gradient and Flow Velocity

Groundwater flow rates at the site have been calculated based on hydraulic gradients, hydraulic conductivity, and an estimated effective porosity of the screened horizon as provided in the Groundwater Monitoring System Certification (ERM, 2017a). Based on the information provided by ERM, hydraulic conductivity ranges from 27 to 53 feet per day with an assumed effective porosity of 30 percent. As described above, the recently calculated hydraulic conductivity for the “filled areas” of the Site is an average range of 0.19 ft per day to 242 ft per day and is highly dependent on the fill materials at each location. This wide range of variability is the result of the varying

fill materials that form Harbor Island. In addition, a calculated hydraulic conductivity for the piezometers located on the eastern side of the wetland is an average 8.34 feet per day.

Horizontal flow velocity was calculated using the commonly-used derivative of Darcy's Law:

Specifically,

$$V = \frac{K * i}{n_e}$$

V = Groundwater flow velocity
K = Average Permeability of the aquifer
i = Horizontal hydraulic gradient
N_e = Effective porosity

Using this equation, groundwater flow velocities are calculated for the site along the groundwater flow path of three well pairs (MW-01R/MW-03, MW-01R/PZ-13, and MW-01R/PZ-18). Groundwater flow velocity at the site ranges from 0.3 to 1,200 feet per year around the mounding observed around the substation. In addition, groundwater flow velocities were calculated along the groundwater flow path of three well pairs (PZ-12/PZ-27, PZ-27/PZ-25, and PZ-27/PZ-26) on the eastside of the wetland. Groundwater flow velocity at the site ranges from 0.01 to 7 feet per year on the eastside of the wetland. The calculated flow velocities are best estimates based on field data and default data for soils, and therefore, these velocities should not be taken as absolute values, but rather as estimated values that may vary with future data collected at the site. The field summary report will include the detailed aquifer performance testing. An updated Hydrogeologic Monitoring Plan (HMP) and Groundwater Monitoring System Certification will be submitted following the review of the background groundwater quality data.

3.3 Groundwater Sampling

Groundwater samples were collected in accordance with 40 CFR § 257.93(a) and the Part 115 amendment. Monitoring wells were purged and sampled using a peristaltic pump following low-flow sampling procedures. A multi parameter meter was used to monitor field parameters, namely: pH, temperature, conductivity, dissolved oxygen (DO), and oxidation-reduction potential (ORP), during well purging to verify stabilization prior to sampling. Turbidity is also recorded during purging using a field meter to verify stabilization. Groundwater samples were collected when the following general stabilization criteria were met:

- 0.2 standard units for pH
- 5% for specific conductance
- 0.2 milligrams per liter (mg/L) or 10% for DO > 0.5 mg/L (whichever is greater)
- Turbidity measurements less than 5 Nephelometric Turbidity Units (NTU)

Any deviation from stabilization criteria, if applicable, is identified on field sampling forms. Following well stabilization, unfiltered samples were collected directly into appropriately preserved laboratory supplied sample containers, placed in iced coolers, and submitted to the laboratory following standard chain-of-custody protocol. Field information forms as well as chain-of-custody records are included in Appendix A.

3.4 Laboratory Analyses

Groundwater samples collected for each monitoring event included both detection and assessment monitoring constituents pursuant to 40 CFR § 257.90 through 257.98 and Michigan Part 115 amendment. Analytical methods used for groundwater sample analysis are listed on the analytical laboratory reports included in Appendix A.

Laboratory analyses were performed by Trace Laboratories, Inc. (Trace) in Muskegon, Michigan with the radium laboratory analysis subcontracted to Eurofins, Eaton Analytical (Eurofins) in South Bend, Indiana. Groundwater data and chain of custody records for the monitoring events are presented in Appendix A.

3.5 Quality Assurance and Quality Control

Data validation generally consisted of reviewing sample integrity, holding times, laboratory method blanks, laboratory control samples, matrix spikes/matrix spike duplicate recoveries and relative percent differences, post digestions spikes, laboratory RPDs, and reporting limits. Following completion of the data review and validation, the data are acceptable for statistical analysis.

4.0 STATISTICAL ANALYSES

Statistical analysis of detection and assessment monitoring constituents was performed on samples collected from the certified groundwater monitoring network pursuant to 40 CFR § 257.93 and the Michigan Part 115 Amendment and following the appropriate certified statistical methodology. The statistical methodology used for the Site was developed in accordance with 40 CFR § 257.93(f) using methods presented in Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance, March 2009, EPA 530/R-09-007 (USEPA, 2009).

4.1 Statistical Methodology

The Sanitas™ groundwater statistical software (Sanitas, 2014) was used to perform the statistical analyses on detection and assessment monitoring constituents in 2021. Sanitas™ is a decision support software package that incorporates the statistical tests required of Subtitle C and D facilities by USEPA regulations. Although assessment monitoring has been implemented, statistical evaluation of detection monitoring constituents is performed to determine if constituents have returned to background conditions. Analysis of assessment monitoring constituents is performed to determine if the site requires corrective measures.

4.1.1 Detection Monitoring Constituents

Groundwater quality data was evaluated through use of interwell prediction limits for detection monitoring constituents. Using these methods, upgradient well data was pooled to establish a background statistical limit. Data are compared to the statistical limit to determine whether any concentrations exceed background levels. The selected statistical methodology uses an optional 1-of-2 verification resample plan. When an initial statistically significant increase (SSI) or questionable result occurs, a second sample may be collected to verify the initial result or determine if the result was an outlier.

If resampling is performed and the initial finding is not verified by resampling, the resampled value replaced the initial finding. When the resample confirms the initial finding, both values remain in the database and an SSI is declared. The following table provides a summary of the statistical methodology used at JB Sims for routine detection groundwater monitoring.

STATISTICAL METHODOLOGY SUMMARY		
Inactive 1/2 Impoundment Monitoring Well Network	Background Wells	MW-07 (interim background location)
	Downgradient Detection Monitoring Wells	MW-1R, MW-05, MW-06, MW-08 (pending further evaluation)
	Assessment Monitoring Wells	MW-02, MW-03, MW-04, MW-09, and MW-10 (pending further evaluation)

STATISTICAL METHODOLOGY SUMMARY		
Former 3A/B Impoundments Monitoring Well Network	Background Wells	MW-07 (interim background location)
	Downgradient Detection Monitoring Wells	MW-1R, MW-02, MW-03, and MW-04 (pending further evaluation)
	Assessment Monitoring Wells	MW-09 (pending further evaluation)
CCR Monitoring Constituents	Detection Monitoring (PA 640 Sec. 11511a(3)(c))	Boron, Calcium, Chloride, Fluoride, Iron, pH, Sulfate, and TDS
	Assessment Monitoring (PA 640 Sec. 11519b(2) plus above listed Detection Monitoring)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, combined Radium 226 + 228, Fluoride, Lead, Lithium, Nickel, Mercury, Molybdenum, Selenium, Silver, Thallium, Vanadium, and Zinc
Statistical Methodology	Data Screening on Proposed Background	Evaluate outliers, trends, and seasonality when sufficient data are available
	Statistical Limits	Interwell statistical limits will be applied on a constituent basis, depending on the appropriateness of the method as determined by the Analysis of Variance
	Confidence Intervals	Used in Assessment and Corrective Action monitoring.
	No Statistical Testing	Statistical testing is not required for constituents with 100% non-detects.
	Verification Resample Plan (Optional)	1-of-2 with minimum of 8 samples per well for interwell testing. <ul style="list-style-type: none"> ▪ Initial statistical exceedance warrants independent resampling within 90 days. ▪ If resample passes, well/constituents is not a confirmed SSI. ▪ If resample exceeds, well/constituents has a confirmed SSI. If no resample is collected, the original result is deemed verified.

The following guidance is also applicable to the statistical analysis methods:

- Statistical analyses are not performed on analytes containing 100% non-detects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain less than or equal to 15% non-detects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for non-detects is the practical quantitation limit (PQL) as reported by the laboratory.
- When data contain between 15-50% non-detects, a non-detect adjustment such as the Kaplan-Meier or Regression on Order Statistics (ROS) method for adjustment of the mean and standard deviation will be used prior to constructing a parametric prediction limit.
- Nonparametric prediction limits are used on data containing greater than 50% non-detects.

4.1.2 Assessment Monitoring Statistics

Following the above statistical methodology, groundwater protection standards (GWPS) have been established for statistical comparison of assessment monitoring constituents. Parametric tolerance limits were used to calculate background limits from pooled upgradient well data for assessment monitoring constituents with a target of 95% confidence and 95% coverage to determine the site-specific background level. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. These limits were used to identify the GWPS established under 40 CFR § 257.95(h).

As described in 40 CFR § 257.95(h)(1-3), the GWPS is:

- The maximum contaminant level (MCL) established under 40 CFR § 141.62 and § 141.66 of this title;
- Where an MCL has not been established, background concentration for the constituent established in accordance with 40 CFR § 257.91; or a rule specified limit (RSL) identified for Cobalt, Lead, Lithium, or Molybdenum; or
- Applicable Michigan Part 201 Generic Cleanup Criteria and Screening Levels
 - Ground Surface Water Interface (GSI) criteria is applicable
 - Drinking Water Criteria (residential and non-residential criteria) may not be an applicable criterion. It is Golder’s opinion that since drinking water wells will not be installed at the site nor on the Island since there is known impacts on Harbor Island that the DWC does not apply. Plus, the City of Grand Haven has a city ordinance preventing drinking water wells on properties with historical impacts. In addition, GHBLP may file a restrictive covenant for the property if it is deemed appropriate.
 - Indoor Air Criteria, Ambient Air Criteria, Direct Contact Criteria, and Soil Saturation Concentration Screening Levels (Csat) is not applicable since GSI is more strict.
- Background level for constituents where the background concentration is higher than the MCL, RSL, or Michigan Part 201 screening levels.

Following the above rule requirements, GWPS have been established for statistical comparison of assessment monitoring constituents. Summary of Site-Specific Groundwater Protection Standards summarizes the background limit established at each monitoring well and the GWPS used for statistical comparison.

Confidence intervals were then constructed on downgradient wells for each of the assessment monitoring constituents using the GWPS as discussed above. Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard.

Interim Site-Specific Groundwater Protection Standards						
Analyte	Units ^[1]	Screening Levels ^[2]				Interim GWPS
		RSL	MCL	Michigan Part 201 GSI	Interim Site-Specific Background	
Part 115 Detection Monitoring Constituents (PA 640 Sec. 11511a(3)(c))						
Boron ^[3]	mg/L	N/R	N/R	7.2	16	16
Calcium ^[3]	mg/L	N/R	N/R	N/R	200	200
Chloride ^[3]	mg/L	N/R	N/R	150	15	150
Fluoride ^[4]	mg/L	N/R	4	2.67	0.2254	2.67
pH ^[3]	S.U.	N/R	N/R	6.5-9.0	5.9-8.6	6.5-9.0
Iron ^[3]	mg/L	N/R	N/R	N/R	25.01	25.01
Sulfate ^[3]	mg/L	N/R	N/R	370	84.74	370
Total Dissolved Solids ^[3]	mg/L	N/R	N/R	500	867	867

Interim Site-Specific Groundwater Protection Standards						
Analyte	Units ^[1]	Screening Levels ^[2]				Interim GWPS
		RSL	MCL	Michigan Part 201 GSI	Interim Site-Specific Background	
Federal CCR Rule Appendix IV Constituents and Part 115 Assessment Monitoring Constituents (PA 640 Sec. 11519b(2) plus Detection Monitoring Constituents)						
Antimony	mg/L	N/R	0.006	0.13	0.0016	0.006
Arsenic	mg/L	N/R	0.01	0.01	0.0048	0.01
Barium ^[4]	mg/L	N/R	2	1.2	0.52	1.2
Beryllium	mg/L	N/R	0.004	0.031	0.002	0.004
Cadmium ^[4]	mg/L	N/R	0.005	0.0025	0.0006	0.0025
Chromium ^[4]	mg/L	N/R	0.1	0.011	0.0028	0.01
Cobalt	mg/L	0.006	N/R	0.1	0.001	0.006
Copper ^{[3][5]}	mg/L	N/R	1.3	0.020	0.0040	0.02
Fluoride ^[4]	mg/L	N/R	4	2.67	0.2254	2.67
Lead	mg/L	0.015	N/R	0.014	0.0029	0.014
Lithium	mg/L	0.04	N/R	0.44	0.059	0.059
Mercury	mg/L	N/R	0.002	0.0000013	0.00014	0.00014
Molybdenum	mg/L	0.1	N/R	3.2	0.007	0.1
Nickel ^{[3][5]}	mg/L	N/R	N/R	0.11	0.0022	0.11
Radium (226 + 228)	pCi/L	N/R	5	N/R	2.12	5
Selenium ^[4]	mg/L	N/R	0.05	0.005	0.002	0.005
Silver ^{[3][5]}	mg/L	N/R	0.1	0.00006	0.001	0.001
Thallium	mg/L	N/R	0.002	0.0037	0.001	0.002
Vanadium ^[3]	mg/L	N/R	N/R	0.027	0.00089	0.027
Zinc ^{[3][5]}	mg/L	N/R	5.0	0.27	0.021	0.27

Notes:

[1] – Units for each constituent: mg/L = milligram per liter, S.U. = standard units, pCi/L = picocuries per liter

[2] – N/R = no reported screening level.

[3] – State of Michigan only, not part of the Federal CCR Rule.

[4] – State of Michigan criteria is more strict than the applicable criteria for the Federal CCR Rule.

[5] – insufficient number of observations available for calculating site specific background using interwell tolerance limits, therefore interwell prediction limits is used.

Using the calculated GWPS as identified above, confidence intervals were then constructed on downgradient wells for each of the detection and assessment monitoring constituents. Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard and a statistically significant level (SSL) is declared.

4.2 Statistical Analysis Results

Analytical data from the four (4) monitoring events conducted in January, April, July, and October 2021 were statistically analyzed in accordance with the Statistical Analysis Plan (Golder, 2017).

Based on review of the detection monitoring statistical analysis presented in Appendix B, detection monitoring constituents have not returned to background levels and therefore assessment monitoring should continue pursuant to 40 CFR § 257.95(f).

4.2.1 2021 Statistical Analyses

Analytical data from the 2021 monitoring events at the Site have been statistically analyzed in accordance with the site's certified statistical analysis methods.

Review of the Sanitas™ results indicates that the following verified SSIs were identified in 2021:

Inter-Well Prediction Limit Statistically Significant Increase Summary	
Detection Monitoring Constituents	Inactive 1/2 Impoundment Network
Boron	MW-1R
Calcium	MW-1R, MW-5, and MW-6 (April and July only)
Chloride	MW-1R, MW-5, MW-6, MW-8
Fluoride	MW-1R, MW-5 (January and April only), MW-6 (January and April only), MW-8 (January only)
Iron	MW-5 (January and April only) and MW-8 (January, April, and July only)
pH	MW-1R (July only)
Sulfate	MW-1R and MW-5
Total Dissolved Solids	MW-1R, MW-5, and MW-6
Detection Monitoring Constituents	Former 3A/B Impoundments Network
Boron	MW-1R and MW-2
Calcium	MW-1R, MW-2 (April and July only), MW-3, MW-4
Chloride	MW-1R, MW-2, MW-3, and MW-4
Fluoride	MW-1R, MW-2, MW-3 (January and April only), and MW-4 (January and April Only)
Iron	MW-2 (July only) and MW-3 (January only)
pH	MW-1R (July only)
Sulfate	MW-1R, MW-3 (January, April and July only), and MW-4
Total Dissolved Solids	MW-1R, MW-2, MW-3, and MW-4 (January, April, and October only)

Pursuant to 40 CFR § 257.94(e), following determination of an SSI, the Site has implemented assessment monitoring per 40 CFR § 257.95.

Review of the Sanitas™ results indicates that the following SSLs were identified in 2021:

Statistically Significant Levels (SSLs) for the Inactive 1/2 Impoundment and the Former 3A/B Impoundments	
Assessment Monitoring Constituents	CCR Federal Rule and State of Michigan PA 640 Sec. 11519b(2)
Arsenic	MW-5
Chromium	MW-2 (January and April only)
Cobalt	MW-1R (April and July only)
Fluoride	MW-1R, MW-2, and MW-10
Lithium	MW-1R, MW-2, MW-5, MW-6, MW-9, and MW-10
Assessment Monitoring Constituents	State of Michigan PA 640 Sec. 11519b(2) only
Boron	MW-1R, MW-2, and MW-10
Calcium	MW-3, MW-4, MW-5, and MW-9
Chloride	MW-1R, MW-3, MW-4, and MW-10
Sulfate	MW-1R, MW-3, and MW-4
Total Dissolved Solids	MW-1R, MW-2, MW-3, MW-4, MW-5 (July and October), MW-6 (April, July, and October), and MW-10

Pursuant to 40 CFR § 257.95(g)(3), following determination of an SSL, the Site implemented an assessment of corrective measures on February 8, 2019 (Golder, 2019b) per 40 CFR § 257.96.

5.0 MONITORING PROGRAM STATUS

In accordance with 40 CFR § 257.94(e), the Site continued detection and assessment monitoring in 2021.

Inactive 1/2 Impoundment

SSIs for Appendix III constituents continue to be identified. SSLs of assessment monitoring constituents were identified in the inactive 1/2 Impoundment groundwater monitoring network; specifically, at monitoring wells MW-1R, MW-5, MW-6, and MW-10. In accordance with 40 CFR § 257.95(g)(3), the Site has implemented an assessment of corrective measures for the groundwater monitoring network for inactive 1/2 Impoundment to further evaluate the identified constituents of concern.

Former 3A/B Impoundments

SSIs for Appendix III constituents continue to be identified. SSLs of assessment monitoring constituents were identified in the former 3A/B Impoundments groundwater monitoring network; specifically, at monitoring wells MW-1R, MW-2, MW-3, MW-4, and MW-9. In accordance with 40 CFR § 257.95(g)(3) and Michigan 640 § 11519b(2), the site has prepared an alternate source demonstration (Golder, 2020a) for the groundwater impacts observed in groundwater monitoring wells in the former 3A/B Impoundments' groundwater monitoring network. However, EGLE has not approved the ASD, stating that since the groundwater impacts cannot be differentiated between potential impacts from the former 3A/B Impoundments and the historical ash fill and comingled waste with 100 percent certainty. In response, GHBLP is continuing to refine the groundwater flow across the site in effort to present an alternate groundwater monitoring network to EGLE/EPA for consideration and approval before moving forward with an evaluation of corrective measures alternatives.

6.0 CONCLUSIONS AND FUTURE ACTIONS

GHBLP is working with EPA and EGLE to further evaluate the groundwater monitoring well network for the inactive 1/2 Impoundment based on the recent revisions to the boundary for the inactive 1/2 Impoundment. This report *2021 Annual Groundwater Monitoring and Corrective Action Report, JB Sims Generating Station* has been prepared to fulfill the requirements of USEPA CCR rule 40 CFR 257 Subpart D.

Statistical evaluations of the groundwater monitoring data for the inactive 1/2 Impoundment and former 3 A/B Impoundments identified SSLs of detection monitoring constituents above prediction limits and SSLs of assessment monitoring constituents above the GWPS. Following guidelines presented in 40 CFR § 257.96, the Site has initiated an assessment of corrective measures for the groundwater monitoring networks. The objectives of the ACM will be to evaluate appropriate corrective actions to address the SSLs noted above the GWPS.

The most recent detection and assessment monitoring event was conducted in January 2022. The detection monitoring well network is currently being re-evaluated, alternate background monitoring wells are being considered, and statistical results are expected to change. As stated previously, a field summary report with a summary of the data collected in accordance with the Work Plan – Piezometer Installation and Additional Data Collection (Golder, 2021). GHBLP anticipates submitting a proposed expanded groundwater monitoring network in 2022.

7.0 REFERENCES

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TABLES AND FIGURES

Table 1 Monitoring Well Network
Table 2 Summary of Groundwater Elevations

Figure 1 Site Location Map
Figure 2 Site Plan and Monitoring Well Location Map
Figures 3-9 Groundwater Contour Maps

TABLE 1.
MONITORING WELL NETWORK SUMMARY
 Grand Haven Board of Light and Power
 JB Sims Generating Station

Location Identification	Current Groundwater Monitoring Networks		Coordinates		Date Installed	Ground Surface Elevation (feet MSL)	Top of Casing (Staff Gauge) Elevation (feet MSL)	Total Well Depth (Total Boring Depth)	Screen Interval (ft)	Comments
	Inactive 1/2 Impoundment	Former 3 A/B Impoundments	Northing	Easting						
Monitoring Wells										
MW-01R	Detection	Detection	578101.30	12624432.00	5/1/2020	585.73	588.45	10.00	5-10	
MW-02	Assessment	Detection	578241.91	12624222.64	1/18/2017	592.67	595.64	23.37	15-20	
MW-03	Assessment	Detection	578125.03	12624180.40	1/18/2017	590.42	593.08	20.34	12-17	
MW-04	Assessment	Detection	578003.96	12624165.24	1/18/2017	588.66	591.49	18.00	10-15	
MW-05	Detection	Piezometer	577970.06	12624634.16	5/22/2018	585.31	587.67	11.50	4-9	
MW-06	Detection	Piezometer	578229.40	12624525.24	5/22/2018	588.22	590.40	16.55	9-14	
MW-07	Detection	Detection/Background	577585.75	12625513.56	5/22/2018	583.65	586.49	18.80	11-16	
MW-08	Detection	Piezometer	578261.14	12625341.26	5/22/2018	582.74	585.40	11.85	4-9	
MW-09	Assessment	Assessment	578241.35	12624185.62	8/12/2019	586.80	589.65	12.00	7-12	
MW-10	Assessment	Piezometer	578367.40	12624470.20	8/12/2019	583.71	586.73	10.00	5-10	
Piezometers										
PZ-11	Site-wide Water Levels		578236.87	12624377.19	8/19/2021	592.46	595.27	15 (40)	10-15	
PZ-12	Site-wide Water Levels		577987.57	12624312.28	8/17/2021	584.94	588.03	8 (40)	3-8	
PZ-13	Site-wide Water Levels		577623.94	12624190.94	8/17/2021	583.23	586.08	9 (34)	4-9	
PZ-14	Site-wide Water Levels		577191.85	12624160.04	8/16/2021	583.46	586.39	8 (35)	3-8	
PZ-15	Site-wide Water Levels		577062.51	12624730.23	8/25/2021	589.32	592.38	20 (40)	15-20	
PZ-16	Site-wide Water Levels		577273.65	12625194.83	8/25/2021	582.18	584.87	8 (35)	3-8	
PZ-17	Site-wide Water Levels		577652.81	12624744.16	8/17/2021	584.03	587.02	8 (40)	3-8	
PZ-18	Site-wide Water Levels		577919.12	12624742.18	8/18/2021	584.12	587.22	8 (34)	3-8	
PZ-19	Site-wide Water Levels		577938.05	12624957.16	8/20/2021	583.06	585.86	8 (25)	3-8	
PZ-20	Site-wide Water Levels		577722.50	12625131.40	8/18/2021	582.43	585.74	8 (34)	3-8	
PZ-21	Site-wide Water Levels		577941.39	12625280.33	8/30/2021	NA	583.32	9 (30)	4-9	Located in standing water
PZ-22	Site-wide Water Levels		578056.88	12625387.96	8/31/2021	NA	583.42	9 (22)	4-9	Located in standing water

TABLE 1.
MONITORING WELL NETWORK SUMMARY
 Grand Haven Board of Light and Power
 JB Sims Generating Station

Location Identification	Current Groundwater Monitoring Networks		Coordinates		Date Installed	Ground Surface Elevation (feet MSL)	Top of Casing (Staff Gauge) Elevation (feet MSL)	Total Well Depth (Total Boring Depth)	Screen Interval (ft)	Comments
	Inactive 1/2 Impoundment	Former 3 A/B Impoundments	Northing	Easting						
Piezometers - continued										
PZ-23	Site-wide Water Levels		577627.71	12625841.35	8/25/2021	584.39	587.21	9 (25)	4-9	
PZ-24	Site-wide Water Levels		577884.70	12625979.33	8/24/2021	583.92	587.34	9 (30)	4-9	
PZ-25	Site-wide Water Levels		577703.65	12626240.18	8/24/2021	583.46	586.37	8 (30)	3-8	
PZ-26	Site-wide Water Levels		578114.39	12626145.22	8/23/2021	583.81	586.27	8 (30)	3-8	
PZ-27	Site-wide Water Levels		578303.89	12626551.81	8/23/2021	581.87	585.09	8 (40)	3-8	
PZ-28	Site-wide Water Levels		578314.93	12625722.71	8/23/2021	585.11	588.07	9 (29.5)	4-9	
PZ-29	Site-wide Water Levels		578138.08	12625241.56	8/30/2021	NA	583.49	9 (35)	4-9	Located in standing water
PZ-30	Site-wide Water Levels		578196.17	12624990.23	8/19/2021	583.02	585.80	8 (34)	3-8	
PZ-31	Site-wide Water Levels		578307.16	12624752.70	9/1/2021	582.56	585.85	8 (27)	3-8	
PZ-32	Site-wide Water Levels		578348.32	12624980.14	8/30/2021	583.08	586.26	8 (40)	3-8	
Staff Gauges										
SG-01	Site-wide Water Levels		578234.49	12624159.06	8/12/2019	NA	585.10	NA	NA	Located in standing water
SG-02	Site-wide Water Levels		578287.85	12624784.61	8/12/2019	NA	583.43	NA	NA	Located in standing water
SG-03	Site-wide Water Levels		578201.99	12624858.11	8/12/2019	NA	584.37	NA	NA	Located in standing water
SG-04R	Site-wide Water Levels		577966.13	12624647.67	6/9/2020	NA	585.04	NA	NA	Located in standing water
SG-05	Site-wide Water Levels		577717.81	12624888.51	8/12/2019	NA	584.83	NA	NA	Damaged in 2021
SG-06	Site-wide Water Levels		578227.56	12625365.56	8/12/2019	NA	584.88	NA	NA	Damaged in 2021
Stilling Wells										
STW-1	Site-wide Water Levels		578433.87	12625522.16	9/3/2021	NA	583.03	NA	NA	Located in standing water
STW-2	Site-wide Water Levels		577340.30	12625423.18	9/2/2021	NA	583.47	NA	NA	Located in standing water
STW-3	Site-wide Water Levels		577771.11	12624083.74	9/3/2021	NA	591.17	NA	NA	Located in standing water

Notes:

MSL = mean sea level.

NA = Not available

TABLE 2.

Summary of Groundwater Elevations - 2021
Grand Haven Board of Light and Power - JB Sims Generating Station
Grand Haven, Michigan

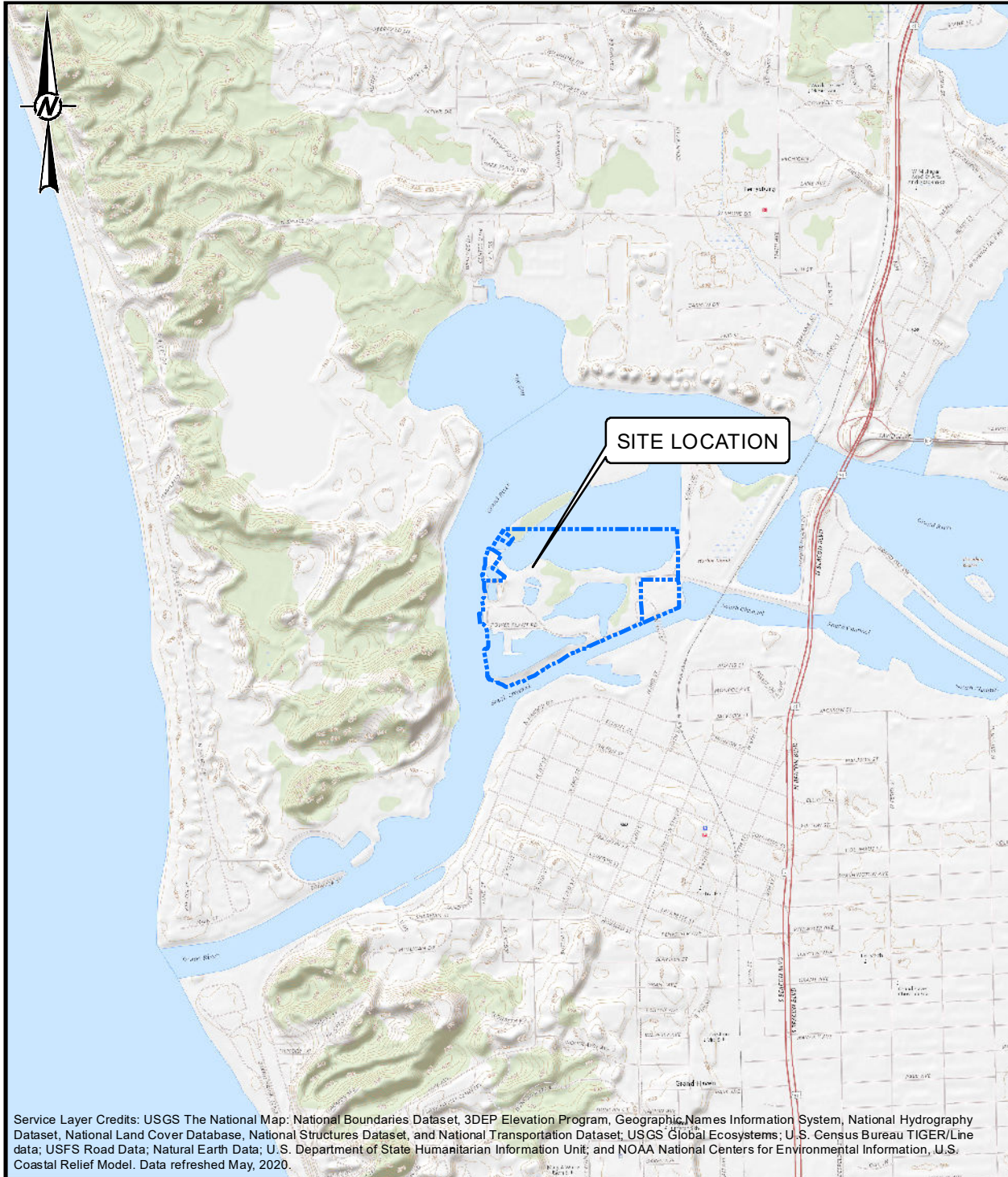
Well ID	Top of Casing Elevation ¹	2021 Groundwater Elevations						
		1/25/2021	4/23/2021	7/30/2021	10/1/2021	10/25/2021	11/23/2021	12/17/2021
Monitoring Wells								
MW-01R	588.45	582.62	582.02	582.29	582.24	582.01	582.30	582.35
MW-02	595.64	580.17	581.02	581.33	582.50	581.60	581.73	580.13
MW-03	593.08	581.53	581.08	580.41	582.67	582.31	582.52	581.87
MW-04	591.49	581.59	580.21	581.48	582.58	582.32	582.51	581.98
MW-05	587.67	582.30	581.70	582.00	582.24	582.16	582.44	582.46
MW-06	590.40	582.23	581.91	581.90	582.24	582.13	582.28	582.25
MW-07	586.49	581.54	581.07	581.54	582.76	582.37	582.60	582.00
MW-08	585.40	581.57	581.10	582.03	582.76	582.37	582.46	581.95
MW-09	589.65	581.58	581.16	581.38	583.04	582.27	582.56	581.29
MW-10	586.73	581.06	580.08	581.45	582.54	582.32	582.60	582.12
Piezometers								
PZ-11	595.27	Not Yet Installed			581.27	NM	581.27	581.52
PZ-12	588.03	Not Yet Installed			581.20	NM	581.18	581.75
PZ-13	586.08	Not Yet Installed			581.12	581.48	580.43	580.63
PZ-14	586.39	Not Yet Installed			581.07	581.69	580.75	580.99
PZ-15	592.38	Not Yet Installed			581.23	581.54	580.62	580.80
PZ-16	584.87	Not Yet Installed			581.01	581.20	580.23	580.39
PZ-17	587.02	Not Yet Installed			581.17	581.60	580.86	581.02
PZ-18	587.22	Not Yet Installed			581.07	581.60	580.71	580.81
PZ-19	585.86	Not Yet Installed			581.08	581.33	580.50	580.63
PZ-20	585.74	Not Yet Installed			580.96	581.21	580.44	580.43
PZ-21	583.32	Not Yet Installed			581.14	NM	NM	580.47
PZ-22	583.42	Not Yet Installed			581.07	NM	NM	580.52
PZ-23	587.21	Not Yet Installed			580.71	581.45	580.53	580.73
PZ-24	587.34	Not Yet Installed			580.73	581.21	580.70	581.03
PZ-25	586.37	Not Yet Installed			581.11	581.37	580.39	580.47
PZ-26	586.27	Not Yet Installed			580.75	581.67	580.80	581.13
PZ-27	585.09	Not Yet Installed			580.69	581.85	580.57	581.10
PZ-28	588.07	Not Yet Installed			581.12	581.37	580.29	580.39
PZ-29	583.49	Not Yet Installed			581.25	NM	580.41	580.66
PZ-30	585.80	Not Yet Installed			580.78	NM	580.52	580.85
PZ-31	585.85	Not Yet Installed			581.04	581.75	581.16	581.19
PZ-32	586.26	Not Yet Installed			581.01	581.31	580.67	580.81

TABLE 2.
Summary of Groundwater Elevations - 2021
 Grand Haven Board of Light and Power - JB Sims Generating Station
 Grand Haven, Michigan

Well ID	Top of Casing Elevation ¹	2021 Groundwater Elevations						
		1/25/2021	4/23/2021	7/30/2021	10/1/2021	10/25/2021	11/23/2021	12/17/2021
Staff Gauges								
SG-01	585.10	NM	NM	582.62	NM	NM	NM	NM
SG-02	583.43	NM	582.11	582.19	581.99	NM	581.93	581.75
SG-03	584.37	NM	581.85	582.95	NM	NM	581.65	581.57
SG-04R	585.04	NM	NM	NM	581.66	NM	581.56	581.48
SG-05	584.83	NM	581.70	NM	NM	NM	NM	NM
SG-06	584.88	NM	NM	581.58	NM	NM	NM	NM
Stilling Wells								
STW-1	583.03	Not Yet Installed			581.15	NM	580.20	580.53
STW-2	583.47	Not Yet Installed			581.06	NM	580.12	580.17
STW-3	591.17	Not Yet Installed			581.07	NM	580.24	580.29

Notes:

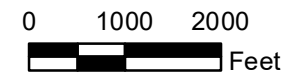
- 1 - Elevations based on Driesenga & Associates, Inc. Monitoring Well Survey, Dated 8-28-2019 and 6-17-2020.
 2 - Sampling events conducted by Trace Laboratories, Inc. (Trace)



Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.



MICHIGAN



CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
 GRAND HAVEN, MICHIGAN

PROJECT
JB SIMS GENERATING STATION
 2021 GROUNDWATER MONITORING

TITLE
SITE LOCATION MAP

CONSULTANT



YYYY-MM-DD 2021-04-05

PREPARED DJC

DESIGN CEP

REVIEW CEP

APPROVED DLP

PROJECT No.
 21461064

CONTROL
 20141048F000-GIS.mxd

Rev.
 0

FIGURE
 1







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 AERIAL PHOTOGRAPH COURTESY OF GOOGLE EARTH PRO; IMAGE DATE: 2021-03-18.

NOTES

- HORIZONTAL COORDINATE SYSTEM BASED ON MICHIGAN STATE PLANE SOUTH, INTERNATIONAL FEET. VERTICAL DATUM IS NAVD 1988.
- MONITORING WELLS AND STAFF GAUGES WERE SURVEYED BY DRIESENGA & ASSOCIATES, INC. ON AUGUST 28, 2019. MW-1R AND SG-4R WERE SURVEYED BY DRIESENGA & ASSOCIATES, INC. ON JUNE 17, 2020. PIEZOMETER AND STILLING WELLS WERE SURVEYED BY GOLDER ASSOCIATES ON OCTOBER 1, 2021.
- SG-05* HAS BEEN REMOVED

LEGEND

	MONITORING WELL
	STAFF GAUGE
	PIEZOMETER
	STILLING WELL

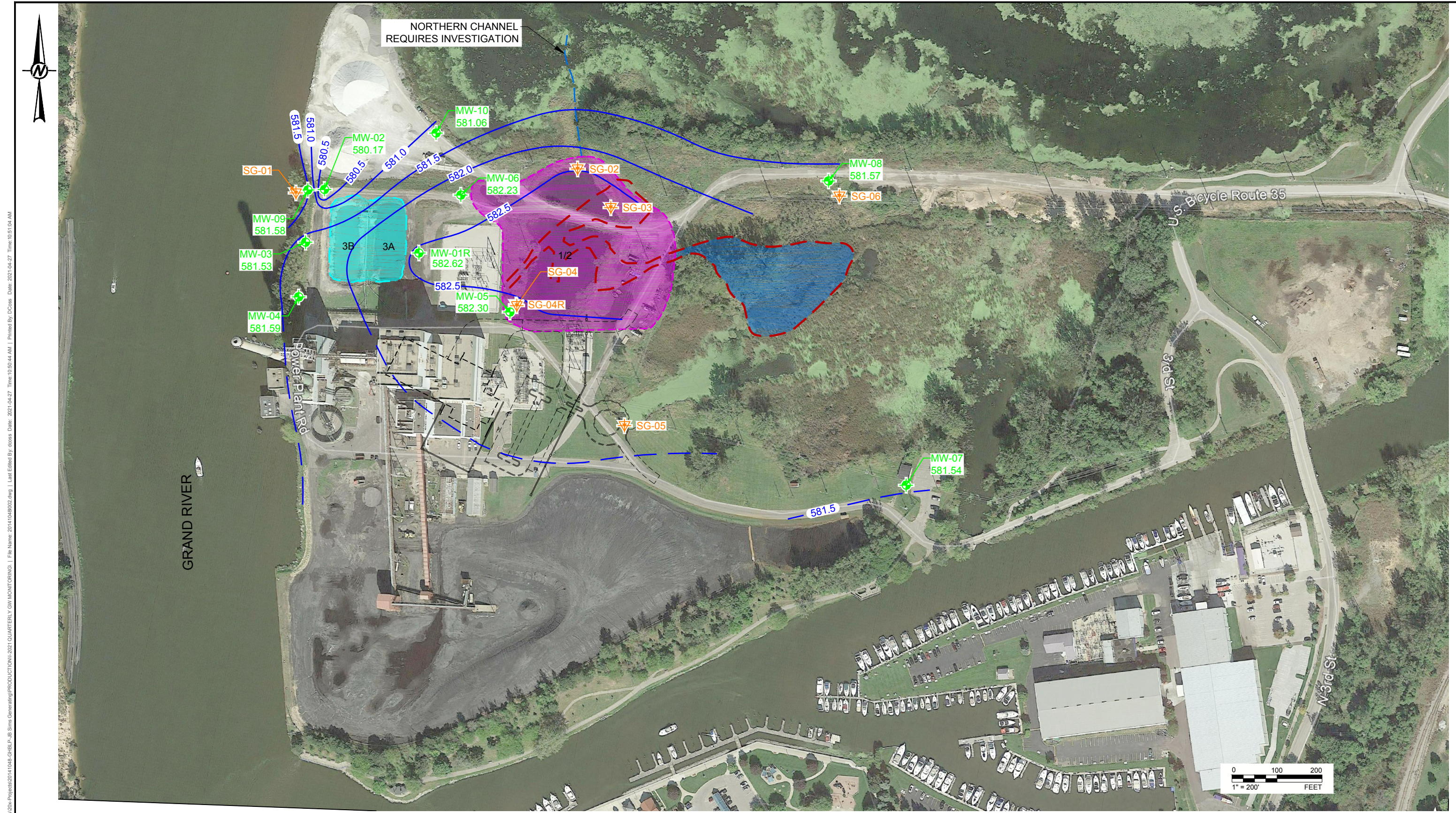
CLIENT
 GRAND HAVEN BOARD OF LIGHT AND POWER
 GRAND HAVEN, MICHIGAN

CONSULTANT	YYYY-MM-DD	2021-10-08
 GOLDER MEMBER OF WSP	DESIGNED	CEP
	PREPARED	DJC
	REVIEWED	CEP
	APPROVED	DLP

PROJECT
 JB SIMS GENERATING STATION
 2021 GROUNDWATER MONITORING

TITLE	SITE PLAN	
PROJECT NO.	CONTROL	REV.
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		FIGURE
		2

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NOTE(S)
 1. HORIZONTAL COORDINATE SYSTEM BASED ON MICHIGAN STATE PLANE SOUTH, INTERNATIONAL FEET. VERTICAL DATUM IS NAVD 1988.

- LEGEND**
- MONITORING WELL
 - ▽ STAFF GAUGE
 - LIMIT OF UNITS 1/2 ASH PLACEMENT ~1974-2012
 - UNIT 3 FORMER LIMITS OF ASH PLACEMENT
 - APPROXIMATE LIMIT OF UNITS OF 1/2 ASH DISPOSAL PRIOR TO 1974
 - 582 GROUNDWATER CONTOURS

CLIENT
 GRAND HAVEN BOARD OF LIGHT AND POWER
 GRAND HAVEN, MICHIGAN

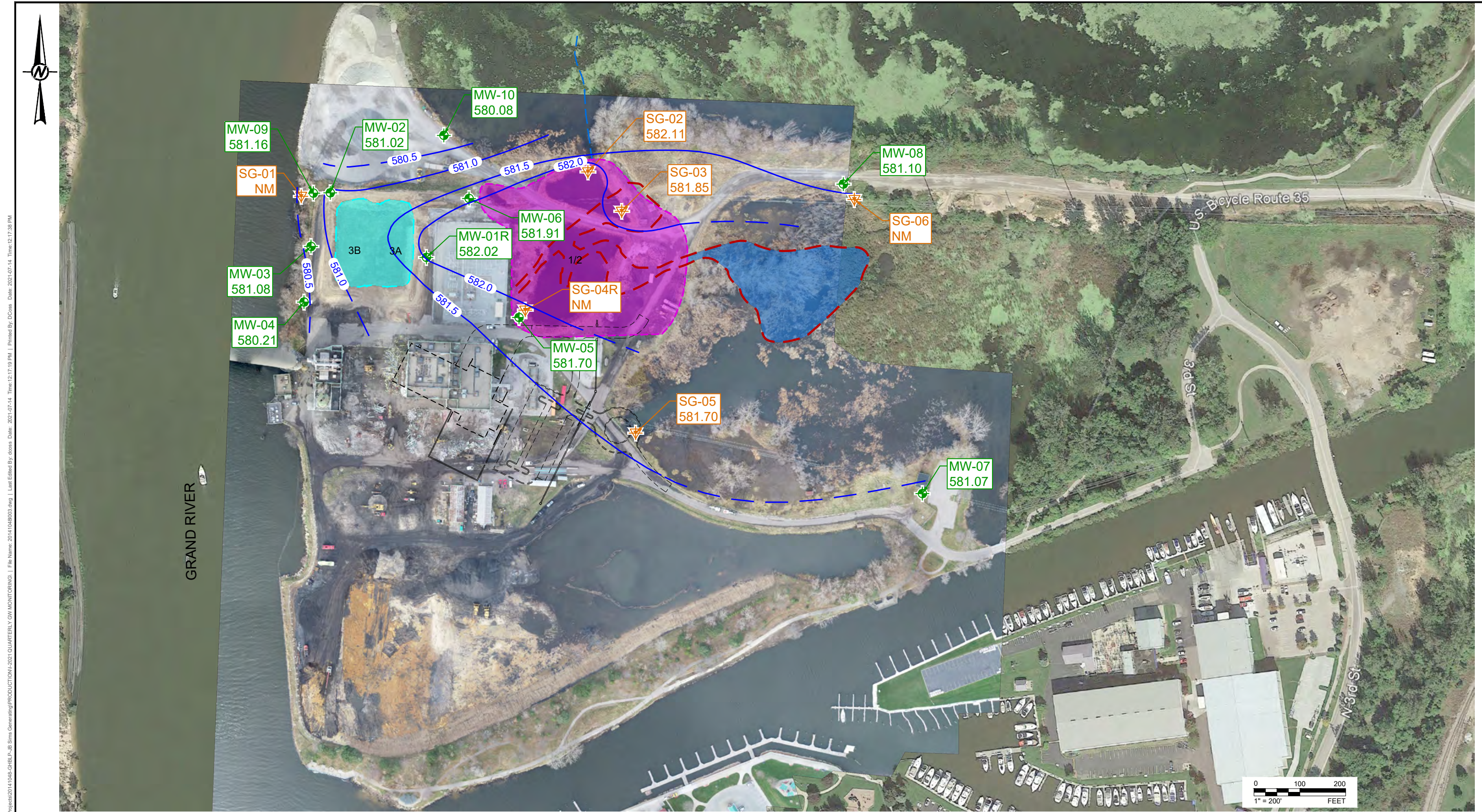
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	DESIGNED	CEP
	PREPARED	DJC
	REVIEWED	
	APPROVED	

PROJECT
 JB SIMS GENERATING STATION
 2021 GROUNDWATER MONITORING

TITLE
GROUNDWATER CONTOUR MAP

PROJECT NO.	CONTROL	REV.	FIGURE
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1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



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 AERIAL PHOTOGRAPH COURTESY OF GOOGLE EARTH PRO; IMAGE DATE: 2018-09-22.

NOTE(S)
 1. HORIZONTAL COORDINATE SYSTEM BASED ON MICHIGAN STATE PLANE SOUTH, INTERNATIONAL FEET. VERTICAL DATUM IS NAVD 1988.

LEGEND	
	MONITORING WELL
	STAFF GAUGE
	LIMIT OF UNITS 1/2 ASH PLACEMENT ~1974-2012
	UNIT 3 FORMER LIMITS OF ASH PLACEMENT
	APPROXIMATE LIMIT OF UNITS OF 1/2 ASH DISPOSAL PRIOR TO 1974
	582 GROUNDWATER CONTOURS

CLIENT
 GRAND HAVEN BOARD OF LIGHT AND POWER
 GRAND HAVEN, MICHIGAN

CONSULTANT	DATE	REVISION
	2021-06-08	
	DESIGNED	CEP
	PREPARED	DJC
	REVIEWED	CEP
	APPROVED	DLP

PROJECT
 JB SIMS GENERATING STATION
 2021 GROUNDWATER MONITORING

TITLE	
PROJECT NO.	CONTROL
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REV.	0

1in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSIB

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REFERENCE
AERIAL PHOTOGRAPH COURTESY OF GOOGLE EARTH PRO; IMAGE DATE: 2021-03-18.

LEGEND
 MONITORING WELL
 STAFF GAUGE
 582 — GROUNDWATER CONTOURS

NOTE(S)
 1. HORIZONTAL COORDINATE SYSTEM BASED ON MICHIGAN STATE PLANE SOUTH, INTERNATIONAL FEET. VERTICAL DATUM IS NAVD 1988.
 2. STAFF GAUGES WERE NOT USED TO GENERATE GROUNDWATER CONTOURS, DUE TO RECENT FREEZE AND THAW. THE PREVIOUS SURVEY DATA IS NO LONGER ACCURATE. PIEZOMETERS AND STILLING WELLS WERE INSTALLED TO REPLACE STAFF GAUGES.

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT	YYYY-MM-DD	2021-09-30
	DESIGNED	CEP
	PREPARED	DJC
	REVIEWED	CEP
	APPROVED	DLP

PROJECT
JB SIMS GENERATING STATION
2021 GROUNDWATER MONITORING

TITLE GROUNDWATER CONTOUR MAP		
PROJECT NO.	CONTROL	REV.
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REFERENCE
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- STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

LEGEND	
	MONITORING WELL
	STAFF GAUGE
	PIEZOMETER
	STILLING WELL
581.0	GROUNDWATER CONTOURS
	GROUNDWATER FLOW DIRECTION

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT	DATE	DESCRIPTION
	2021-10-08	DESIGNED CEP
		PREPARED DJC
		REVIEWED CEP
		APPROVED DLP

PROJECT
JB SIMS GENERATING STATION
2021 GROUNDWATER MONITORING

TITLE	PROJECT NO.	CONTROL	REV.	FIGURE
 GROUNDWATER ELEVATION MAP	21464427	21464427A002.dwg	0	6

1 in. IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



NORTHERN CHANNEL
REQUIRES INVESTIGATION

GRAND RIVER

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REFERENCE
AERIAL PHOTOGRAPH COURTESY OF GOOGLE EARTH PRO; IMAGE DATE: 2021-03-18.

NOTES

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- STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

- LEGEND**
- MONITORING WELL
 - STAFF GAUGE
 - PIEZOMETER
 - STILLING WELL
 - 581.0 GROUNDWATER CONTOURS
 - GROUNDWATER FLOW DIRECTION

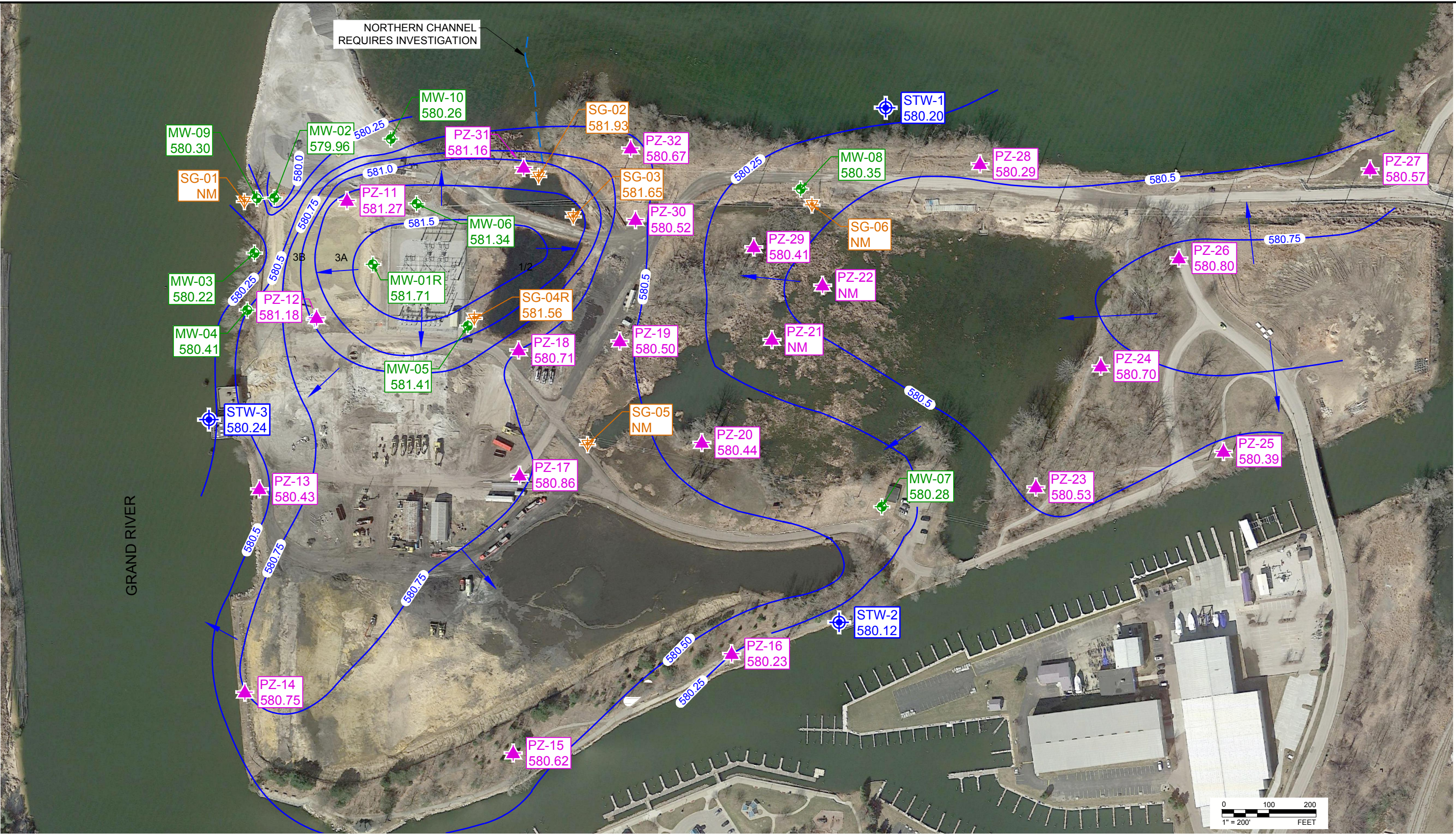
CLIENT		GRAND HAVEN BOARD OF LIGHT AND POWER GRAND HAVEN, MICHIGAN	
CONSULTANT		YYYY-MM-DD	2022-01-07
		DESIGNED	CEP
		PREPARED	DJC
		REVIEWED	CEP
		APPROVED	DLP

PROJECT		JB SIMS GENERATING STATION 2021 GROUNDWATER MONITORING	
		TITLE	
		GROUNDWATER ELEVATION MAP	
		OCTOBER 25, 2021	
PROJECT NO.	CONTROL	REV.	FIGURE
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



NORTHERN CHANNEL
REQUIRES INVESTIGATION



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NOTES
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3. STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

LEGEND

- MONITORING WELL
- STAFF GAUGE
- PIEZOMETER
- STILLING WELL
- 581.0 — GROUNDWATER CONTOURS
- GROUNDWATER FLOW DIRECTION

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT	YYYY-MM-DD	2021-12-10
	DESIGNED	CEP
	PREPARED	DJC
	REVIEWED	CEP
	APPROVED	DLP

PROJECT
JB SIMS GENERATING STATION
2021 GROUNDWATER MONITORING

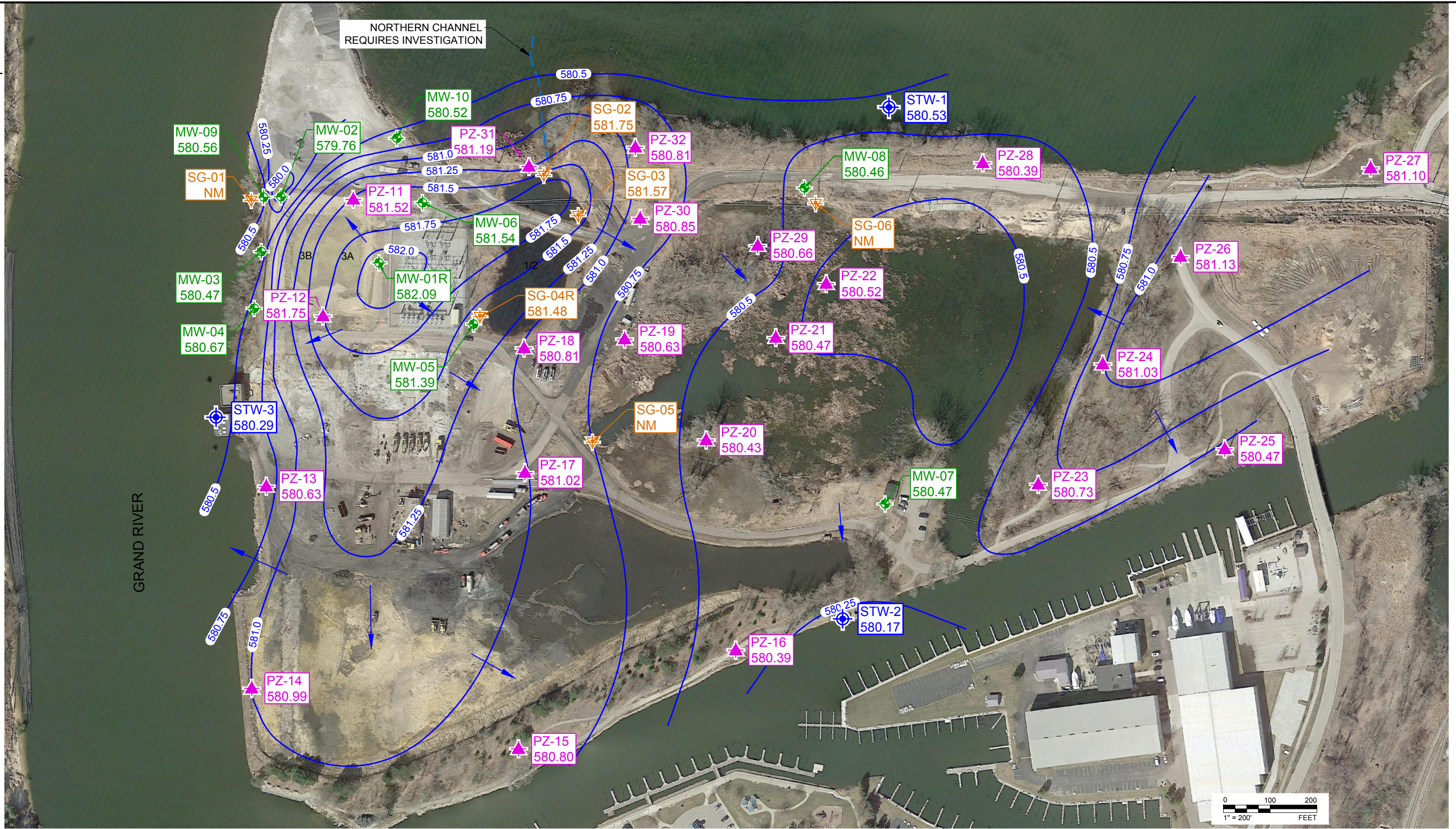
TITLE	GROUNDWATER ELEVATION MAP	
PROJECT NO.	CONTROL	REV.
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1 in. IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



NORTHERN CHANNEL
REQUIRES INVESTIGATION



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REFERENCE
AERIAL PHOTOGRAPH COURTESY OF GOOGLE EARTH PRO; IMAGE DATE: 2021-03-18.

NOTES
1. HORIZONTAL COORDINATE SYSTEM BASED ON MICHIGAN STATE PLANE SOUTH, INTERNATIONAL FEET. VERTICAL DATUM IS NAVD 1988.
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3. STAFF GAUGES WERE NOT INCLUDED IN EVALUATION OF GROUNDWATER CONTOURS.

LEGEND

	MONITORING WELL
	STAFF GAUGE
	PIEZOMETER
	STILLING WELL
	GROUNDWATER CONTOURS
	GROUNDWATER FLOW DIRECTION

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT

	GOLDER MEMBER OF WSP
YYYY-MM-DD	2022-01-07
DESIGNED	CEP
PREPARED	DJC
REVIEWED	CEP
APPROVED	DLP

PROJECT
JB SIMS GENERATING STATION
2021 GROUNDWATER MONITORING

TITLE
GROUNDWATER ELEVATION MAP
DECEMBER 17, 2021

PROJECT NO.	CONTROL	REV.	FIGURE
21464427	21464427A005.dwg	0	9

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

APPENDIX A

**Laboratory Analytical & Field
Sampling Reports**

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

February 12, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

Phone: 616-607-1292
Fax: (616) 842-3511

RE: Trace Project 21A0660
Client Project Monitoring Wells Sampling - 1/25/21

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 21A0660
Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21A0660-01	MW-1R	Ground Water	eb	01/25/21 09:10	01/25/21 15:47
21A0660-02	MW-2	Ground Water	eb	01/25/21 09:40	01/25/21 15:47
21A0660-03	MW-3	Ground Water	eb	01/25/21 10:25	01/25/21 15:47
21A0660-04	MW-4	Ground Water	eb	01/25/21 11:10	01/25/21 15:47
21A0660-05	MW-5	Ground Water	eb	01/25/21 07:50	01/25/21 15:47
21A0660-06	MW-6	Ground Water	eb	01/25/21 08:35	01/25/21 15:47
21A0660-07	MW-7	Ground Water	eb	01/25/21 07:20	01/25/21 15:47
21A0660-08	MW-8	Ground Water	eb	01/25/21 13:50	01/25/21 15:47
21A0660-09	MW-9	Ground Water	eb	01/25/21 12:55	01/25/21 15:47
21A0660-10	MW-10	Ground Water	eb	01/25/21 12:10	01/25/21 15:47

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
 Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: 21A0660-01

Analysis: EPA 6020B

	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Cadmium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Silver	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH	Note SITE : The analysis was performed on site at the time of sampling.
-----------	---

Trace ID: 21A0660-02

Analysis: EPA 6020B

	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
--	---

Analysis: SM 4500-H+ B-11

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pH Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21A0660-03

Analysis: EPA 6020B

Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Antimony Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Cadmium Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Lead Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Molybdenum Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Silver Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Thallium Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21A0660-04

Analysis: EPA 6020B

Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21A0660-05

Analysis: EPA 6020B

Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21A0660-06

Analysis: EPA 6020B

Silver Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21A0660-07

Analysis: EPA 6020B

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Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH

Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21A0660-08

Analysis: EPA 6020B

Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH

Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21A0660-09

Analysis: EPA 6020B

Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH

Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21A0660-10

Analysis: EPA 6020B

Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH

Note SITE : The analysis was performed on site at the time of sampling.

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-01 Matrix: Ground Water Date Collected: 01/25/21 09:10
 Sample ID: MW-1R Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 7470A									
<i>Batch: T106718</i>									
Mercury	<0.00020 mg/L	0.00020	1	01/27/21	dlo	01/28/21	rl	N	
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T106757</i>									
Mercury	9.4 ng/L	0.50	1	02/01/21	dc	02/02/21	dc	N	
Analysis Method: EPA 6010D									
<i>Batch: T106789</i>									
Beryllium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/05/21	rl		
Boron	110 mg/L	0.50	10	01/28/21	dlo	02/05/21	rl		
Calcium	370 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl		
Iron	3.7 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Lithium	2.4 mg/L	0.010	1	01/28/21	dlo	02/05/21	rl	N	
Magnesium	150 mg/L	2.0	10	01/28/21	dlo	02/05/21	rl		
Potassium	66 mg/L	10	10	01/28/21	dlo	02/05/21	rl		
Sodium	390 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl	N	
Zinc	<0.020 mg/L	0.020	1	01/28/21	dlo	02/05/21	rl		
Analysis Method: EPA 6020B									
<i>Batch: T106789</i>									
Antimony	<0.0015 mg/L	0.0015	5	01/28/21	dlo	02/01/21	dc	402.5	
Arsenic	0.0032 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Barium	0.22 mg/L	0.050	5	01/28/21	dlo	02/01/21	dc		
Cadmium	<0.0050 mg/L	0.0050	5	01/28/21	dlo	02/01/21	dc	402.5	
Chromium	0.0016 mg/L	0.00090	1	01/28/21	dlo	02/02/21	dc		
Cobalt	0.0035 mg/L	0.0016	1	01/28/21	dlo	02/02/21	dc		
Copper	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		
Lead	0.0072 mg/L	0.010	5	01/28/21	dlo	02/01/21	dc	402.5, J	
Manganese	0.50 mg/L	0.025	1	01/28/21	dlo	02/02/21	dc		
Molybdenum	0.0029 mg/L	0.00040	1	01/28/21	dlo	02/02/21	dc	N	
Nickel	0.0047 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc	J	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-01 Matrix: Ground Water Date Collected: 01/25/21 09:10
 Sample ID: MW-1R Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Selenium	0.0011 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc	J	
Silver	<0.0050 mg/L	0.0050	5	01/28/21	dlo	02/01/21	dc	402.5	
Thallium	<0.0050 mg/L	0.0050	5	01/28/21	dlo	02/01/21	dc	402.5	
Vanadium	0.0017 mg/L	0.00080	1	01/28/21	dlo	02/02/21	dc		

Analysis Method: SM 2340 B-11
 Batch: [CALC]

Hardness as CaCO3	1500 mg/L	8.2	10	01/28/21		02/05/21	rl	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D
 Batch: T106745

Beryllium	<0.0010 mg/L	0.0010	1	01/27/21	ckd	01/27/21	ckd		
Boron	88 mg/L	0.50	10	01/27/21	ckd	01/27/21	ckd		
Calcium	400 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd		
Iron	3.5 mg/L	0.10	1	01/27/21	ckd	01/27/21	ckd		
Lithium	1.8 mg/L	0.10	10	01/27/21	ckd	01/27/21	ckd	N	
Magnesium	140 mg/L	2.0	10	01/27/21	ckd	01/27/21	ckd		
Potassium	57 mg/L	10	10	01/27/21	ckd	01/27/21	ckd		
Sodium	330 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd	N	
Zinc	0.0022 mg/L	0.020	1	01/27/21	ckd	01/27/21	ckd	J	

Analysis Method: EPA 6020B
 Batch: T106741

Antimony	0.0012 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Arsenic	0.0027 mg/L	0.0050	5	01/27/21	ckd	01/28/21	dc	J	
Barium	0.21 mg/L	0.0030	5	01/27/21	ckd	01/28/21	dc		
Cadmium	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Chromium	<0.0040 mg/L	0.0040	5	01/27/21	ckd	01/28/21	dc		
Cobalt	0.00066 mg/L	0.0080	5	01/27/21	ckd	01/28/21	dc	J	
Copper	<0.0040 mg/L	0.0040	5	01/27/21	ckd	01/28/21	dc		
Lead	0.00049 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	J	
Manganese	0.59 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		
Molybdenum	0.0029 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-01 Matrix: Ground Water Date Collected: 01/25/21 09:10
 Sample ID: MW-1R Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0021 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		
Selenium	0.0014 mg/L	0.0044	5	01/27/21	ckd	01/28/21	dc	J	
Silver	<0.00020 mg/L	0.00020	5	01/27/21	ckd	01/28/21	dc		
Thallium	<0.00087 mg/L	0.00087	5	01/27/21	ckd	01/28/21	dc		
Vanadium	0.0017 mg/L	0.00080	1	01/27/21	ckd	02/02/21	dc		
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T106685</i>									
Fluoride	9.9 mg/L	0.10	5	01/26/21	ans	01/26/21	ans		
Chloride	260 mg/L	10	100	01/26/21	ans	01/26/21	ans		
Sulfate as SO4	1100 mg/L	60	100	01/26/21	ans	01/26/21	ans		
Analysis Method: SM 2320 B-11									
<i>Batch: T106775</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	1000 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T106690</i>									
Total Dissolved Solids	3000 mg/L	40	4	01/26/21	rg	01/26/21	rg		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T105995</i>									
pH	7.33 pH Units		1	01/25/21	jm	01/25/21	jm	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-02 Matrix: Ground Water Date Collected: 01/25/21 09:40
 Sample ID: MW-2 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T106718

Mercury	<0.00020 mg/L	0.00020	1	01/27/21	dlo	01/28/21	rl	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T106757

Mercury	3.4 ng/L	0.50	1	02/01/21	dc	02/02/21	dc	N	
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Analysis Method: EPA 6010D

Batch: T106789

Beryllium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/05/21	rl		
Boron	110 mg/L	0.50	10	01/28/21	dlo	02/05/21	rl		
Calcium	190 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl		
Iron	21 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Lithium	1.4 mg/L	0.010	1	01/28/21	dlo	02/05/21	rl	N	
Magnesium	58 mg/L	2.0	10	01/28/21	dlo	02/05/21	rl		
Potassium	46 mg/L	10	10	01/28/21	dlo	02/05/21	rl		
Sodium	290 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl	N	
Zinc	<0.020 mg/L	0.020	1	01/28/21	dlo	02/05/21	rl		

Analysis Method: EPA 6020B

Batch: T106789

Antimony	<0.00030 mg/L	0.00030	1	01/28/21	dlo	02/02/21	dc		
Arsenic	0.0089 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Barium	0.47 mg/L	0.010	1	01/28/21	dlo	02/02/21	dc		
Cadmium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Chromium	0.027 mg/L	0.00090	1	01/28/21	dlo	02/02/21	dc		
Cobalt	0.0052 mg/L	0.0016	1	01/28/21	dlo	02/02/21	dc		
Copper	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		
Lead	0.0013 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc	J	
Manganese	0.53 mg/L	0.025	1	01/28/21	dlo	02/02/21	dc		
Molybdenum	0.0054 mg/L	0.00040	1	01/28/21	dlo	02/02/21	dc	N	
Nickel	0.017 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-02 Matrix: Ground Water Date Collected: 01/25/21 09:40
 Sample ID: MW-2 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	0.0018 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc	J	
Silver	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Thallium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Vanadium	0.0027 mg/L	0.00080	1	01/28/21	dlo	02/02/21	dc		
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	720 mg/L	8.2	10	01/28/21		02/05/21	rl	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T106745</i>									
Beryllium	<0.0010 mg/L	0.0010	1	01/27/21	ckd	01/27/21	ckd		
Boron	95 mg/L	0.50	10	01/27/21	ckd	01/27/21	ckd		
Calcium	190 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd		
Iron	21 mg/L	1.0	10	01/27/21	ckd	01/27/21	ckd		
Lithium	1.2 mg/L	0.10	10	01/27/21	ckd	01/27/21	ckd	N	
Magnesium	60 mg/L	2.0	10	01/27/21	ckd	01/27/21	ckd		
Potassium	43 mg/L	10	10	01/27/21	ckd	01/27/21	ckd		
Sodium	250 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd	N	
Zinc	0.0065 mg/L	0.020	1	01/27/21	ckd	01/27/21	ckd	J	
Analysis Method: EPA 6020B									
<i>Batch: T106741</i>									
Antimony	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Arsenic	0.0096 mg/L	0.0050	5	01/27/21	ckd	01/28/21	dc		
Barium	0.48 mg/L	0.0030	5	01/27/21	ckd	01/28/21	dc		
Cadmium	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Chromium	0.015 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc		
Cobalt	0.0037 mg/L	0.0016	1	01/27/21	ckd	01/28/21	dc		
Copper	0.00067 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc	J	
Lead	0.0013 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	J	
Manganese	0.52 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Molybdenum	0.0057 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-02 Matrix: Ground Water Date Collected: 01/25/21 09:40
 Sample ID: MW-2 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.016 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Selenium	0.0017 mg/L	0.0044	5	01/27/21	ckd	01/28/21	dc	J	
Silver	<0.00020 mg/L	0.00020	5	01/27/21	ckd	01/28/21	dc		
Thallium	<0.00087 mg/L	0.00087	5	01/27/21	ckd	01/28/21	dc		
Vanadium	0.0019 mg/L	0.00080	1	01/27/21	ckd	02/02/21	dc		
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T106685</i>									
Fluoride	9.4 mg/L	0.10	5	01/26/21	ans	01/26/21	ans		
Chloride	140 mg/L	2.5	25	01/26/21	ans	01/26/21	ans		
Sulfate as SO4	1.9 mg/L	3.0	5	01/26/21	ans	01/26/21	ans	J	
Analysis Method: SM 2320 B-11									
<i>Batch: T106775</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	2200 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T106860</i>									
Total Dissolved Solids	1600 mg/L	50	5	02/01/21	acs	02/01/21	acs		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T105995</i>									
pH	6.91 pH Units		1	01/25/21	jm	01/25/21	jm	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-03 Matrix: Ground Water Date Collected: 01/25/21 10:25
 Sample ID: MW-3 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T106718

Mercury	<0.00020 mg/L	0.00020	1	01/27/21	dlo	01/28/21	rl	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T106757

Mercury	1.4 ng/L	0.50	1	02/01/21	dc	02/02/21	dc	N	
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Analysis Method: EPA 6010D

Batch: T106789

Beryllium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/05/21	rl		
Boron	4.7 mg/L	0.050	1	01/28/21	dlo	02/05/21	rl		
Calcium	650 mg/L	50	100	01/28/21	dlo	02/05/21	rl		
Iron	28 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Lithium	0.061 mg/L	0.010	1	01/28/21	dlo	02/05/21	rl	N	
Magnesium	230 mg/L	2.0	10	01/28/21	dlo	02/05/21	rl		
Potassium	12 mg/L	1.0	1	01/28/21	dlo	02/05/21	rl		
Sodium	130 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl	N	
Zinc	<0.020 mg/L	0.020	1	01/28/21	dlo	02/05/21	rl		

Analysis Method: EPA 6020B

Batch: T106789

Antimony	<0.0015 mg/L	0.0015	5	01/28/21	dlo	02/01/21	dc	402.5	
Arsenic	0.0015 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Barium	0.23 mg/L	0.050	5	01/28/21	dlo	02/01/21	dc		
Cadmium	<0.0050 mg/L	0.0050	5	01/28/21	dlo	02/01/21	dc	402.5	
Chromium	0.0028 mg/L	0.00090	1	01/28/21	dlo	02/02/21	dc		
Cobalt	<0.0016 mg/L	0.0016	1	01/28/21	dlo	02/02/21	dc		
Copper	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		
Lead	<0.010 mg/L	0.010	5	01/28/21	dlo	02/01/21	dc	402.5	
Manganese	5.5 mg/L	0.12	5	01/28/21	dlo	02/01/21	dc		
Molybdenum	<0.0020 mg/L	0.0020	5	01/28/21	dlo	02/01/21	dc	402.5, N	
Nickel	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-03 Matrix: Ground Water Date Collected: 01/25/21 10:25
 Sample ID: MW-3 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Selenium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Silver	<0.0050 mg/L	0.0050	5	01/28/21	dlo	02/01/21	dc	402.5	
Thallium	<0.0050 mg/L	0.0050	5	01/28/21	dlo	02/01/21	dc	402.5	
Vanadium	0.00074 mg/L	0.00080	1	01/28/21	dlo	02/02/21	dc	J	

Analysis Method: SM 2340 B-11
 Batch: [CALC]

Hardness as CaCO3	2500 mg/L	8.2	100	01/28/21		02/05/21	rl	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D
 Batch: T106745

Beryllium	0.00013 mg/L	0.0010	1	01/27/21	ckd	01/27/21	ckd	J	
Boron	5.9 mg/L	0.50	10	01/27/21	ckd	01/27/21	ckd		
Calcium	630 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd		
Iron	28 mg/L	1.0	10	01/27/21	ckd	01/27/21	ckd		
Lithium	0.051 mg/L	0.010	1	01/27/21	ckd	01/27/21	ckd	N	
Magnesium	230 mg/L	2.0	10	01/27/21	ckd	01/27/21	ckd		
Potassium	13 mg/L	1.0	1	01/27/21	ckd	01/27/21	ckd		
Sodium	130 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd	N	
Zinc	0.0043 mg/L	0.020	1	01/27/21	ckd	01/27/21	ckd	J	

Analysis Method: EPA 6020B
 Batch: T106741

Antimony	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Arsenic	0.0027 mg/L	0.0050	5	01/27/21	ckd	01/28/21	dc	J	
Barium	0.25 mg/L	0.0030	5	01/27/21	ckd	01/28/21	dc		
Cadmium	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Chromium	0.0027 mg/L	0.0040	5	01/27/21	ckd	01/28/21	dc	J	
Cobalt	<0.0080 mg/L	0.0080	5	01/27/21	ckd	01/28/21	dc		
Copper	<0.0040 mg/L	0.0040	5	01/27/21	ckd	01/28/21	dc		
Lead	0.00023 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	J	
Manganese	5.6 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		
Molybdenum	<0.0020 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		N

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-03 Matrix: Ground Water Date Collected: 01/25/21 10:25
 Sample ID: MW-3 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0022 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		
Selenium	<0.0044 mg/L	0.0044	5	01/27/21	ckd	01/28/21	dc		
Silver	<0.00020 mg/L	0.00020	5	01/27/21	ckd	01/28/21	dc		
Thallium	<0.00087 mg/L	0.00087	5	01/27/21	ckd	01/28/21	dc		
Vanadium	0.00077 mg/L	0.00080	1	01/27/21	ckd	02/02/21	dc	J	
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T106685</i>									
Fluoride	1.8 mg/L	0.10	5	01/26/21	ans	01/26/21	ans		
Chloride	290 mg/L	10	100	01/26/21	ans	01/26/21	ans		
Sulfate as SO4	1400 mg/L	60	100	01/26/21	ans	01/26/21	ans		
Analysis Method: SM 2320 B-11									
<i>Batch: T106775</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	1000 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T106860</i>									
Total Dissolved Solids	3400 mg/L	50	5	02/01/21	acs	02/01/21	acs		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T105995</i>									
pH	6.76 pH Units		1	01/25/21	jm	01/25/21	jm	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-04 Matrix: Ground Water Date Collected: 01/25/21 11:10
 Sample ID: MW-4 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T106718

Mercury	<0.00020 mg/L	0.00020	1	01/27/21	dlo	01/28/21	rl	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T106757

Mercury	0.63 ng/L	0.50	1	02/01/21	dc	02/02/21	dc	N	
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Analysis Method: EPA 6010D

Batch: T106789

Beryllium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/05/21	rl		
Boron	3.2 mg/L	0.050	1	01/28/21	dlo	02/05/21	rl		
Calcium	380 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl		
Iron	8.3 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Lithium	0.032 mg/L	0.010	1	01/28/21	dlo	02/05/21	rl	N	
Magnesium	100 mg/L	2.0	10	01/28/21	dlo	02/05/21	rl		
Potassium	23 mg/L	1.0	1	01/28/21	dlo	02/05/21	rl		
Sodium	78 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl	N	
Zinc	<0.020 mg/L	0.020	1	01/28/21	dlo	02/05/21	rl		

Analysis Method: EPA 6020B

Batch: T106789

Antimony	<0.00030 mg/L	0.00030	1	01/28/21	dlo	02/02/21	dc		
Arsenic	0.0014 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Barium	0.096 mg/L	0.010	1	01/28/21	dlo	02/02/21	dc		
Cadmium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Chromium	0.0019 mg/L	0.00090	1	01/28/21	dlo	02/02/21	dc		
Cobalt	<0.0016 mg/L	0.0016	1	01/28/21	dlo	02/02/21	dc		
Copper	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		
Lead	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Manganese	0.89 mg/L	0.025	1	01/28/21	dlo	02/02/21	dc		
Molybdenum	0.0011 mg/L	0.00040	1	01/28/21	dlo	02/02/21	dc	N	
Nickel	0.017 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-04 Matrix: Ground Water Date Collected: 01/25/21 11:10
 Sample ID: MW-4 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Silver	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Thallium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Vanadium	0.00064 mg/L	0.00080	1	01/28/21	dlo	02/02/21	dc	J	
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	1400 mg/L	8.2	10	01/28/21		02/05/21	rl	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T106745</i>									
Beryllium	0.000060 mg/L	0.0010	1	01/27/21	ckd	01/27/21	ckd	J	
Boron	3.6 mg/L	0.50	10	01/27/21	ckd	01/27/21	ckd		
Calcium	370 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd		
Iron	6.0 mg/L	0.10	1	01/27/21	ckd	01/27/21	ckd		
Lithium	0.029 mg/L	0.010	1	01/27/21	ckd	01/27/21	ckd	N	
Magnesium	100 mg/L	2.0	10	01/27/21	ckd	01/27/21	ckd		
Potassium	24 mg/L	1.0	1	01/27/21	ckd	01/27/21	ckd		
Sodium	74 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd	N	
Zinc	0.0017 mg/L	0.020	1	01/27/21	ckd	01/27/21	ckd	J	
Analysis Method: EPA 6020B									
<i>Batch: T106741</i>									
Antimony	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Arsenic	0.0013 mg/L	0.0050	5	01/27/21	ckd	01/28/21	dc	J	
Barium	0.087 mg/L	0.0030	5	01/27/21	ckd	01/28/21	dc		
Cadmium	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Chromium	0.0014 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc		
Cobalt	0.00017 mg/L	0.0016	1	01/27/21	ckd	01/28/21	dc	J	
Copper	<0.00080 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc		
Lead	0.00022 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	J	
Manganese	0.84 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Molybdenum	0.00093 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	J, N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-04 Matrix: Ground Water Date Collected: 01/25/21 11:10
 Sample ID: MW-4 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.016 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Selenium	<0.0044 mg/L	0.0044	5	01/27/21	ckd	01/28/21	dc		
Silver	<0.00020 mg/L	0.00020	5	01/27/21	ckd	01/28/21	dc		
Thallium	<0.00087 mg/L	0.00087	5	01/27/21	ckd	01/28/21	dc		
Vanadium	0.00057 mg/L	0.00080	1	01/27/21	ckd	02/02/21	dc	J	

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T106685

Fluoride	1.2 mg/L	0.10	5	01/26/21	ans	01/26/21	ans		
Chloride	210 mg/L	10	100	01/26/21	ans	01/26/21	ans		
Sulfate as SO4	570 mg/L	60	100	01/26/21	ans	01/26/21	ans		

Analysis Method: SM 2320 B-11

Batch: T106775

Bicarbonate Alkalinity as CaCO3 at pH 4.5	740 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	

Analysis Method: SM 2540 C-11

Batch: T106860

Total Dissolved Solids	2200 mg/L	50	5	02/01/21	acs	02/01/21	acs		
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Analysis Method: SM 4500-H+ B-11

Batch: T105995

pH	7.17 pH Units		1	01/25/21	jm	01/25/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-05 Matrix: Ground Water Date Collected: 01/25/21 07:50
 Sample ID: MW-5 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T106718

Mercury	<0.00020 mg/L	0.00020	1	01/27/21	dlo	01/28/21	rl	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T106757

Mercury	<0.50 ng/L	0.50	1	02/01/21	dc	02/02/21	dc	N	
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Analysis Method: EPA 6010D

Batch: T106789

Beryllium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/05/21	rl		
Boron	2.7 mg/L	0.050	1	01/28/21	dlo	02/05/21	rl		
Calcium	560 mg/L	50	100	01/28/21	dlo	02/05/21	rl		
Iron	37 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Lithium	0.095 mg/L	0.010	1	01/28/21	dlo	02/05/21	rl	N	
Magnesium	54 mg/L	2.0	10	01/28/21	dlo	02/05/21	rl		
Potassium	11 mg/L	1.0	1	01/28/21	dlo	02/05/21	rl		
Sodium	31 mg/L	0.50	1	01/28/21	dlo	02/05/21	rl	N	
Zinc	<0.020 mg/L	0.020	1	01/28/21	dlo	02/05/21	rl		

Analysis Method: EPA 6020B

Batch: T106789

Antimony	<0.00030 mg/L	0.00030	1	01/28/21	dlo	02/02/21	dc		
Arsenic	0.098 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Barium	0.060 mg/L	0.050	5	01/28/21	dlo	02/01/21	dc		
Cadmium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Chromium	<0.00090 mg/L	0.00090	1	01/28/21	dlo	02/02/21	dc		
Cobalt	0.0023 mg/L	0.0016	1	01/28/21	dlo	02/02/21	dc		
Copper	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		
Lead	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Manganese	2.6 mg/L	0.12	5	01/28/21	dlo	02/01/21	dc		
Molybdenum	0.0083 mg/L	0.00040	1	01/28/21	dlo	02/02/21	dc	N	
Nickel	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-05 Matrix: Ground Water Date Collected: 01/25/21 07:50
 Sample ID: MW-5 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Selenium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Silver	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Thallium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Vanadium	<0.00080 mg/L	0.00080	1	01/28/21	dlo	02/02/21	dc		

Analysis Method: SM 2340 B-11
 Batch: [CALC]

Hardness as CaCO3	1600 mg/L	8.2	100	01/28/21		02/05/21	rl	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D
 Batch: T106745

Beryllium	<0.0010 mg/L	0.0010	1	01/27/21	ckd	01/27/21	ckd		
Boron	2.7 mg/L	0.50	10	01/27/21	ckd	01/27/21	ckd		
Calcium	560 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd		
Iron	37 mg/L	1.0	10	01/27/21	ckd	01/27/21	ckd		
Lithium	0.085 mg/L	0.010	1	01/27/21	ckd	01/27/21	ckd	N	
Magnesium	53 mg/L	2.0	10	01/27/21	ckd	01/27/21	ckd		
Potassium	12 mg/L	1.0	1	01/27/21	ckd	01/27/21	ckd		
Sodium	24 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd	N	
Zinc	0.0042 mg/L	0.020	1	01/27/21	ckd	01/27/21	ckd	J	

Analysis Method: EPA 6020B
 Batch: T106741

Antimony	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Arsenic	0.085 mg/L	0.0050	5	01/27/21	ckd	01/28/21	dc		
Barium	0.066 mg/L	0.0030	5	01/27/21	ckd	01/28/21	dc		
Cadmium	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Chromium	<0.0040 mg/L	0.0040	5	01/27/21	ckd	01/28/21	dc		
Cobalt	0.0022 mg/L	0.0080	5	01/27/21	ckd	01/28/21	dc	J	
Copper	<0.0040 mg/L	0.0040	5	01/27/21	ckd	01/28/21	dc		
Lead	<0.0020 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		
Manganese	2.6 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		
Molybdenum	0.0082 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-05 Matrix: Ground Water Date Collected: 01/25/21 07:50
 Sample ID: MW-5 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0016 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	J	
Selenium	<0.0044 mg/L	0.0044	5	01/27/21	ckd	01/28/21	dc		
Silver	<0.00020 mg/L	0.00020	5	01/27/21	ckd	01/28/21	dc		
Thallium	<0.00087 mg/L	0.00087	5	01/27/21	ckd	01/28/21	dc		
Vanadium	0.00040 mg/L	0.00080	1	01/27/21	ckd	02/02/21	dc	J	
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T106685</i>									
Fluoride	3.7 mg/L	0.10	5	01/26/21	ans	01/26/21	ans		
Chloride	22 mg/L	0.50	5	01/26/21	ans	01/26/21	ans		
Sulfate as SO4	1000 mg/L	60	100	01/26/21	ans	01/26/21	ans		
Analysis Method: SM 2320 B-11									
<i>Batch: T106775</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	670 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T106860</i>									
Total Dissolved Solids	2400 mg/L	50	5	02/01/21	acs	02/01/21	acs		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T105995</i>									
pH	6.87 pH Units		1	01/25/21	jm	01/25/21	jm	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-06 Matrix: Ground Water Date Collected: 01/25/21 08:35
 Sample ID: MW-6 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T106718

Mercury	<0.00020 mg/L	0.00020	1	01/27/21	dlo	01/28/21	rl	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T106757

Mercury	33 ng/L	0.50	1	02/01/21	dc	02/02/21	dc	N	
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Analysis Method: EPA 6010D

Batch: T106789

Beryllium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/05/21	rl		
Boron	11 mg/L	0.050	1	01/28/21	dlo	02/05/21	rl		
Calcium	170 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl		
Iron	17 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Lithium	0.18 mg/L	0.010	1	01/28/21	dlo	02/05/21	rl	N	
Magnesium	85 mg/L	2.0	10	01/28/21	dlo	02/05/21	rl		
Potassium	33 mg/L	1.0	1	01/28/21	dlo	02/05/21	rl		
Sodium	69 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl	N	
Zinc	<0.020 mg/L	0.020	1	01/28/21	dlo	02/05/21	rl		

Analysis Method: EPA 6020B

Batch: T106789

Antimony	<0.00030 mg/L	0.00030	1	01/28/21	dlo	02/02/21	dc		
Arsenic	0.00092 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc	J	
Barium	1.4 mg/L	0.010	1	01/28/21	dlo	02/02/21	dc		
Cadmium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Chromium	0.0014 mg/L	0.00090	1	01/28/21	dlo	02/02/21	dc		
Cobalt	<0.0016 mg/L	0.0016	1	01/28/21	dlo	02/02/21	dc		
Copper	0.0051 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		
Lead	0.0016 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc	J	
Manganese	0.35 mg/L	0.025	1	01/28/21	dlo	02/02/21	dc		
Molybdenum	0.00061 mg/L	0.00040	1	01/28/21	dlo	02/02/21	dc	N	
Nickel	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-06 Matrix: Ground Water Date Collected: 01/25/21 08:35
 Sample ID: MW-6 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Silver	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Thallium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Vanadium	<0.00080 mg/L	0.00080	1	01/28/21	dlo	02/02/21	dc		
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	770 mg/L	8.2	10	01/28/21		02/05/21	rl	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T106745</i>									
Beryllium	0.000083 mg/L	0.0010	1	01/27/21	ckd	01/27/21	ckd	J	
Boron	9.6 mg/L	0.50	10	01/27/21	ckd	01/27/21	ckd		
Calcium	210 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd		
Iron	15 mg/L	0.10	1	01/27/21	ckd	01/27/21	ckd		
Lithium	0.18 mg/L	0.010	1	01/27/21	ckd	01/27/21	ckd	N	
Magnesium	110 mg/L	2.0	10	01/27/21	ckd	01/27/21	ckd		
Potassium	24 mg/L	10	10	01/27/21	ckd	01/27/21	ckd		
Sodium	85 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd	N	
Zinc	0.0019 mg/L	0.020	1	01/27/21	ckd	01/27/21	ckd	J	
Analysis Method: EPA 6020B									
<i>Batch: T106741</i>									
Antimony	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Arsenic	0.00080 mg/L	0.0050	5	01/27/21	ckd	01/28/21	dc	J	
Barium	1.3 mg/L	0.0030	5	01/27/21	ckd	01/28/21	dc		
Cadmium	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Chromium	0.00089 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc		
Cobalt	0.00027 mg/L	0.0016	1	01/27/21	ckd	01/28/21	dc	J	
Copper	<0.00080 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc		
Lead	<0.0020 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		
Manganese	0.32 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Molybdenum	0.00054 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	J, N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-06 Matrix: Ground Water Date Collected: 01/25/21 08:35
 Sample ID: MW-6 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0012 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Selenium	<0.0044 mg/L	0.0044	5	01/27/21	ckd	01/28/21	dc		
Silver	<0.00020 mg/L	0.00020	5	01/27/21	ckd	01/28/21	dc	402.5	
Thallium	<0.00087 mg/L	0.00087	5	01/27/21	ckd	01/28/21	dc		
Vanadium	0.00037 mg/L	0.00080	1	01/27/21	ckd	02/02/21	dc	J	
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T106685</i>									
Fluoride	1.6 mg/L	0.10	5	01/26/21	ans	01/26/21	ans		
Chloride	160 mg/L	2.5	25	01/26/21	ans	01/26/21	ans		
Sulfate as SO4	14 mg/L	3.0	5	01/26/21	ans	01/26/21	ans		
Analysis Method: SM 2320 B-11									
<i>Batch: T106775</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	1100 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T106690</i>									
Total Dissolved Solids	1000 mg/L	40	4	01/26/21	rg	01/26/21	rg		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T105995</i>									
pH	7.24 pH Units		1	01/25/21	jm	01/25/21	jm	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-07 Matrix: Ground Water Date Collected: 01/25/21 07:20
 Sample ID: MW-7 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T106718

Mercury	<0.00020 mg/L	0.00020	1	01/27/21	dlo	01/28/21	rl	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T106757

Mercury	0.51 ng/L	0.50	1	02/01/21	dc	02/02/21	dc	N	
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Analysis Method: EPA 6010D

Batch: T106789

Beryllium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/05/21	rl		
Boron	16 mg/L	0.050	1	01/28/21	dlo	02/05/21	rl		
Calcium	140 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl		
Iron	14 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Lithium	<0.010 mg/L	0.010	1	01/28/21	dlo	02/05/21	rl	N	
Magnesium	36 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Potassium	5.0 mg/L	1.0	1	01/28/21	dlo	02/05/21	rl		
Sodium	49 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl	N	
Zinc	<0.020 mg/L	0.020	1	01/28/21	dlo	02/05/21	rl		

Analysis Method: EPA 6020B

Batch: T106789

Antimony	<0.00030 mg/L	0.00030	1	01/28/21	dlo	02/02/21	dc		
Arsenic	0.00060 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc	J	
Barium	0.31 mg/L	0.010	1	01/28/21	dlo	02/02/21	dc		
Cadmium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Chromium	<0.00090 mg/L	0.00090	1	01/28/21	dlo	02/02/21	dc		
Cobalt	0.00069 mg/L	0.0016	1	01/28/21	dlo	02/02/21	dc	J	
Copper	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		
Lead	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Manganese	1.6 mg/L	0.025	1	01/28/21	dlo	02/02/21	dc		
Molybdenum	0.00016 mg/L	0.00040	1	01/28/21	dlo	02/02/21	dc	J, N	
Nickel	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-07 Matrix: Ground Water Date Collected: 01/25/21 07:20
 Sample ID: MW-7 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Silver	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Thallium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Vanadium	0.00061 mg/L	0.00080	1	01/28/21	dlo	02/02/21	dc	J	
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	490 mg/L	0.82	10	01/28/21		02/05/21	rl	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T106745</i>									
Beryllium	<0.0010 mg/L	0.0010	1	01/27/21	ckd	01/27/21	ckd		
Boron	14 mg/L	0.50	10	01/27/21	ckd	01/27/21	ckd		
Calcium	130 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd		
Iron	10 mg/L	0.10	1	01/27/21	ckd	01/27/21	ckd		
Lithium	<0.010 mg/L	0.010	1	01/27/21	ckd	01/27/21	ckd	N	
Magnesium	35 mg/L	2.0	10	01/27/21	ckd	01/27/21	ckd		
Potassium	5.2 mg/L	1.0	1	01/27/21	ckd	01/27/21	ckd		
Sodium	47 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd	N	
Zinc	0.0021 mg/L	0.020	1	01/27/21	ckd	01/27/21	ckd	J	
Analysis Method: EPA 6020B									
<i>Batch: T106741</i>									
Antimony	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Arsenic	0.00060 mg/L	0.0010	1	01/27/21	ckd	01/28/21	dc	J	
Barium	0.28 mg/L	0.0030	5	01/27/21	ckd	01/28/21	dc		
Cadmium	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Chromium	<0.00080 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc		
Cobalt	0.00052 mg/L	0.0016	1	01/27/21	ckd	01/28/21	dc	J	
Copper	<0.00080 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc		
Lead	<0.0020 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		
Manganese	1.8 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		
Molybdenum	0.00012 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc	J, N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-07 Matrix: Ground Water Date Collected: 01/25/21 07:20
 Sample ID: MW-7 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.00016 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc	J	
Selenium	<0.00087 mg/L	0.00087	1	01/27/21	ckd	01/28/21	dc		
Silver	<0.00020 mg/L	0.00020	5	01/27/21	ckd	01/28/21	dc		
Thallium	<0.00087 mg/L	0.00087	5	01/27/21	ckd	01/28/21	dc		
Vanadium	0.00046 mg/L	0.00080	1	01/27/21	ckd	02/02/21	dc	J	
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T106685</i>									
Fluoride	0.13 mg/L	0.10	5	01/26/21	ans	01/26/21	ans		
Chloride	14 mg/L	0.50	5	01/26/21	ans	01/26/21	ans		
Sulfate as SO4	26 mg/L	3.0	5	01/26/21	ans	01/26/21	ans		
Analysis Method: SM 2320 B-11									
<i>Batch: T106775</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	650 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T106690</i>									
Total Dissolved Solids	480 mg/L	40	4	01/26/21	rg	01/26/21	rg		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T105995</i>									
pH	6.72 pH Units		1	01/25/21	jm	01/25/21	jm	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-08 Matrix: Ground Water Date Collected: 01/25/21 13:50
 Sample ID: MW-8 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T106718

Mercury	<0.00020 mg/L	0.00020	1	01/27/21	dlo	01/28/21	rl	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T106757

Mercury	1.8 ng/L	0.50	1	02/01/21	dc	02/02/21	dc	N	
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Analysis Method: EPA 6010D

Batch: T106789

Beryllium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/05/21	rl		
Boron	1.2 mg/L	0.050	1	01/28/21	dlo	02/05/21	rl		
Calcium	140 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl		
Iron	31 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Lithium	0.026 mg/L	0.010	1	01/28/21	dlo	02/05/21	rl	N	
Magnesium	23 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Potassium	9.1 mg/L	1.0	1	01/28/21	dlo	02/05/21	rl		
Sodium	26 mg/L	0.50	1	01/28/21	dlo	02/05/21	rl	N	
Zinc	<0.020 mg/L	0.020	1	01/28/21	dlo	02/05/21	rl		

Analysis Method: EPA 6020B

Batch: T106789

Antimony	<0.00030 mg/L	0.00030	1	01/28/21	dlo	02/02/21	dc		
Arsenic	0.0044 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Barium	0.94 mg/L	0.010	1	01/28/21	dlo	02/02/21	dc		
Cadmium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Chromium	<0.00090 mg/L	0.00090	1	01/28/21	dlo	02/02/21	dc		
Cobalt	<0.0016 mg/L	0.0016	1	01/28/21	dlo	02/02/21	dc		
Copper	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		
Lead	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Manganese	1.3 mg/L	0.025	1	01/28/21	dlo	02/02/21	dc		
Molybdenum	0.0037 mg/L	0.00040	1	01/28/21	dlo	02/02/21	dc	N	
Nickel	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-08 Matrix: Ground Water Date Collected: 01/25/21 13:50
 Sample ID: MW-8 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Selenium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Silver	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Thallium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Vanadium	<0.00080 mg/L	0.00080	1	01/28/21	dlo	02/02/21	dc		

Analysis Method: SM 2340 B-11
 Batch: [CALC]

Hardness as CaCO3	440 mg/L	0.82	10	01/28/21		02/05/21	rl	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D
 Batch: T106745

Beryllium	<0.0010 mg/L	0.0010	1	01/27/21	ckd	01/27/21	ckd		
Boron	1.2 mg/L	0.50	10	01/27/21	ckd	01/27/21	ckd		
Calcium	130 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd		
Iron	9.3 mg/L	0.10	1	01/27/21	ckd	01/27/21	ckd		
Lithium	0.023 mg/L	0.010	1	01/27/21	ckd	01/27/21	ckd	N	
Magnesium	23 mg/L	2.0	10	01/27/21	ckd	01/27/21	ckd		
Potassium	9.1 mg/L	1.0	1	01/27/21	ckd	01/27/21	ckd		
Sodium	22 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd	N	
Zinc	0.0014 mg/L	0.020	1	01/27/21	ckd	01/27/21	ckd	J	

Analysis Method: EPA 6020B
 Batch: T106741

Antimony	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Arsenic	0.0020 mg/L	0.0010	1	01/27/21	ckd	01/28/21	dc		
Barium	0.67 mg/L	0.0030	5	01/27/21	ckd	01/28/21	dc		
Cadmium	<0.0010 mg/L	0.0010	1	01/27/21	ckd	01/28/21	dc		
Chromium	<0.00080 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc		
Cobalt	0.00025 mg/L	0.0016	1	01/27/21	ckd	01/28/21	dc	J	
Copper	0.00011 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc	J	
Lead	<0.0020 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc		
Manganese	1.3 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Molybdenum	0.0034 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc	N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-08 Matrix: Ground Water Date Collected: 01/25/21 13:50
 Sample ID: MW-8 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.00095 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Selenium	<0.00087 mg/L	0.00087	1	01/27/21	ckd	01/28/21	dc		
Silver	<0.000040 mg/L	0.000040	1	01/27/21	ckd	01/28/21	dc		
Thallium	<0.00087 mg/L	0.00087	5	01/27/21	ckd	01/28/21	dc		
Vanadium	<0.00080 mg/L	0.00080	1	01/27/21	ckd	02/02/21	dc		
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T106685</i>									
Fluoride	0.42 mg/L	0.10	5	01/26/21	ans	01/26/21	ans		
Chloride	40 mg/L	0.50	5	01/26/21	ans	01/26/21	ans		
Sulfate as SO4	7.9 mg/L	3.0	5	01/26/21	ans	01/26/21	ans		
Analysis Method: SM 2320 B-11									
<i>Batch: T106775</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	480 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T106690</i>									
Total Dissolved Solids	420 mg/L	40	4	01/26/21	rg	01/26/21	rg		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T105995</i>									
pH	7.11 pH Units		1	01/25/21	jm	01/25/21	jm	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-09 Matrix: Ground Water Date Collected: 01/25/21 12:55
 Sample ID: MW-9 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T106718

Mercury	<0.00020 mg/L	0.00020	1	01/27/21	dlo	01/28/21	rl	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T106757

Mercury	0.70 ng/L	0.50	1	02/01/21	dc	02/02/21	dc	N	
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Analysis Method: EPA 6010D

Batch: T106789

Beryllium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/05/21	rl		
Boron	3.9 mg/L	0.050	1	01/28/21	dlo	02/05/21	rl		
Calcium	250 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl		
Iron	26 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Lithium	0.16 mg/L	0.010	1	01/28/21	dlo	02/05/21	rl	N	
Magnesium	38 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Potassium	13 mg/L	1.0	1	01/28/21	dlo	02/05/21	rl		
Sodium	27 mg/L	0.50	1	01/28/21	dlo	02/05/21	rl	N	
Zinc	<0.020 mg/L	0.020	1	01/28/21	dlo	02/05/21	rl		

Analysis Method: EPA 6020B

Batch: T106789

Antimony	<0.00030 mg/L	0.00030	1	01/28/21	dlo	02/02/21	dc		
Arsenic	0.0040 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Barium	0.91 mg/L	0.010	1	01/28/21	dlo	02/02/21	dc		
Cadmium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Chromium	0.0022 mg/L	0.00090	1	01/28/21	dlo	02/02/21	dc		
Cobalt	0.0011 mg/L	0.0016	1	01/28/21	dlo	02/02/21	dc	J	
Copper	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		
Lead	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Manganese	0.73 mg/L	0.025	1	01/28/21	dlo	02/02/21	dc		
Molybdenum	0.025 mg/L	0.00040	1	01/28/21	dlo	02/02/21	dc	N	
Nickel	0.0036 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc	J	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-09 Matrix: Ground Water Date Collected: 01/25/21 12:55
 Sample ID: MW-9 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Selenium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Silver	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Thallium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Vanadium	<0.00080 mg/L	0.00080	1	01/28/21	dlo	02/02/21	dc		

Analysis Method: SM 2340 B-11
 Batch: [CALC]

Hardness as CaCO3	790 mg/L	0.82	10	01/28/21		02/05/21	rl	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D
 Batch: T106745

Beryllium	<0.0010 mg/L	0.0010	1	01/27/21	ckd	01/27/21	ckd		
Boron	3.7 mg/L	0.50	10	01/27/21	ckd	01/27/21	ckd		
Calcium	250 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd		
Iron	9.7 mg/L	0.10	1	01/27/21	ckd	01/27/21	ckd		
Lithium	0.16 mg/L	0.010	1	01/27/21	ckd	01/27/21	ckd	N	
Magnesium	38 mg/L	2.0	10	01/27/21	ckd	01/27/21	ckd		
Potassium	13 mg/L	1.0	1	01/27/21	ckd	01/27/21	ckd		
Sodium	23 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd	N	
Zinc	0.0014 mg/L	0.020	1	01/27/21	ckd	01/27/21	ckd	J	

Analysis Method: EPA 6020B
 Batch: T106741

Antimony	0.00046 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc	J	
Arsenic	0.0025 mg/L	0.0010	1	01/27/21	ckd	01/28/21	dc		
Barium	2.1 mg/L	0.0030	5	01/27/21	ckd	01/28/21	dc		
Cadmium	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Chromium	0.00069 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc	J	
Cobalt	0.00089 mg/L	0.0016	1	01/27/21	ckd	01/28/21	dc	J	
Copper	<0.00080 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc		
Lead	0.0011 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	J	
Manganese	0.75 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Molybdenum	0.023 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-09 Matrix: Ground Water Date Collected: 01/25/21 12:55
 Sample ID: MW-9 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0029 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Selenium	0.00050 mg/L	0.00087	1	01/27/21	ckd	01/28/21	dc	J	
Silver	<0.00020 mg/L	0.00020	5	01/27/21	ckd	01/28/21	dc		
Thallium	<0.00087 mg/L	0.00087	5	01/27/21	ckd	01/28/21	dc		
Vanadium	<0.00080 mg/L	0.00080	1	01/27/21	ckd	02/02/21	dc		

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T106685

Fluoride	2.2 mg/L	0.10	5	01/26/21	ans	01/26/21	ans		
Chloride	11 mg/L	0.50	5	01/26/21	ans	01/26/21	ans		
Sulfate as SO4	180 mg/L	15	25	01/26/21	ans	01/26/21	ans		

Analysis Method: SM 2320 B-11

Batch: T106775

Bicarbonate Alkalinity as CaCO3 at pH 4.5	710 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	

Analysis Method: SM 2540 C-11

Batch: T106690

Total Dissolved Solids	780 mg/L	40	4	01/26/21	rg	01/26/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T105995

pH	6.93 pH Units		1	01/25/21	jm	01/25/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-10 Matrix: Ground Water Date Collected: 01/25/21 12:10
 Sample ID: MW-10 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T106718

Mercury	<0.00020 mg/L	0.00020	1	01/27/21	dlo	01/28/21	rl	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T106757

Mercury	1.4 ng/L	0.50	1	02/01/21	dc	02/02/21	dc	N	
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Analysis Method: EPA 6010D

Batch: T106789

Beryllium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/05/21	rl		
Boron	41 mg/L	0.50	10	01/28/21	dlo	02/05/21	rl		
Calcium	130 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl		
Iron	12 mg/L	0.20	1	01/28/21	dlo	02/05/21	rl		
Lithium	1.5 mg/L	0.010	1	01/28/21	dlo	02/05/21	rl	N	
Magnesium	71 mg/L	2.0	10	01/28/21	dlo	02/05/21	rl		
Potassium	39 mg/L	10	10	01/28/21	dlo	02/05/21	rl		
Sodium	330 mg/L	5.0	10	01/28/21	dlo	02/05/21	rl	N	
Zinc	<0.020 mg/L	0.020	1	01/28/21	dlo	02/05/21	rl		

Analysis Method: EPA 6020B

Batch: T106789

Antimony	<0.00030 mg/L	0.00030	1	01/28/21	dlo	02/02/21	dc		
Arsenic	0.00078 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc	J	
Barium	1.3 mg/L	0.010	1	01/28/21	dlo	02/02/21	dc		
Cadmium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Chromium	0.0068 mg/L	0.00090	1	01/28/21	dlo	02/02/21	dc		
Cobalt	0.00073 mg/L	0.0016	1	01/28/21	dlo	02/02/21	dc	J	
Copper	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		
Lead	0.0024 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Manganese	0.40 mg/L	0.025	1	01/28/21	dlo	02/02/21	dc		
Molybdenum	0.017 mg/L	0.00040	1	01/28/21	dlo	02/02/21	dc	N	
Nickel	<0.0050 mg/L	0.0050	1	01/28/21	dlo	02/02/21	dc		

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-10 Matrix: Ground Water Date Collected: 01/25/21 12:10
 Sample ID: MW-10 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	01/28/21	dlo	02/02/21	dc		
Silver	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Thallium	<0.0010 mg/L	0.0010	1	01/28/21	dlo	02/02/21	dc		
Vanadium	0.00091 mg/L	0.00080	1	01/28/21	dlo	02/02/21	dc		
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	630 mg/L	8.2	10	01/28/21		02/05/21	rl	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T106745</i>									
Beryllium	<0.0010 mg/L	0.0010	1	01/27/21	ckd	01/27/21	ckd		
Boron	39 mg/L	0.50	10	01/27/21	ckd	01/27/21	ckd		
Calcium	130 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd		
Iron	1.2 mg/L	0.10	1	01/27/21	ckd	01/27/21	ckd		
Lithium	1.3 mg/L	0.10	10	01/27/21	ckd	01/27/21	ckd	N	
Magnesium	68 mg/L	2.0	10	01/27/21	ckd	01/27/21	ckd		
Potassium	38 mg/L	10	10	01/27/21	ckd	01/27/21	ckd		
Sodium	300 mg/L	5.0	10	01/27/21	ckd	01/27/21	ckd	N	
Zinc	0.0010 mg/L	0.020	1	01/27/21	ckd	01/27/21	ckd	J	
Analysis Method: EPA 6020B									
<i>Batch: T106741</i>									
Antimony	<0.0010 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc		
Arsenic	0.00065 mg/L	0.0050	5	01/27/21	ckd	01/28/21	dc	J	
Barium	0.85 mg/L	0.0030	5	01/27/21	ckd	01/28/21	dc		
Cadmium	0.00017 mg/L	0.0010	5	01/27/21	ckd	01/28/21	dc	J	
Chromium	0.0043 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc		
Cobalt	0.00049 mg/L	0.0016	1	01/27/21	ckd	01/28/21	dc	J	
Copper	0.00016 mg/L	0.00080	1	01/27/21	ckd	01/28/21	dc	J	
Lead	0.00092 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	J	
Manganese	0.32 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Molybdenum	0.016 mg/L	0.0020	5	01/27/21	ckd	01/28/21	dc	N	

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ANALYTICAL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

Trace ID: 21A0660-10 Matrix: Ground Water Date Collected: 01/25/21 12:10
 Sample ID: MW-10 Date Received: 01/25/21 15:47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0015 mg/L	0.00040	1	01/27/21	ckd	01/28/21	dc		
Selenium	<0.0044 mg/L	0.0044	5	01/27/21	ckd	01/28/21	dc		
Silver	<0.00020 mg/L	0.00020	5	01/27/21	ckd	01/28/21	dc		
Thallium	<0.00087 mg/L	0.00087	5	01/27/21	ckd	01/28/21	dc		
Vanadium	0.00048 mg/L	0.00080	1	01/27/21	ckd	02/02/21	dc	J	
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T106685</i>									
Fluoride	11 mg/L	1.0	50	01/26/21	ans	01/26/21	ans		
Chloride	400 mg/L	5.0	50	01/26/21	ans	01/26/21	ans		
Sulfate as SO4	5.5 mg/L	3.0	5	01/26/21	ans	01/26/21	ans		
Analysis Method: SM 2320 B-11									
<i>Batch: T106775</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	930 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	01/28/21	cm	01/28/21	cm	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T106690</i>									
Total Dissolved Solids	1200 mg/L	40	4	01/26/21	rg	01/26/21	rg		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T105995</i>									
pH	7.65 pH Units		1	01/25/21	jm	01/25/21	jm	SITE, N	

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QUALITY CONTROL RESULTS

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106718	Analysis Description: Mercury, Total, EPA 7470/7471
QC Batch Method: EPA 7470A Prep	Analysis Method: EPA 7470A

METHOD BLANK: T106718-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	mg/L	<0.00020	0.00020	

LABORATORY CONTROL SAMPLE: T106718-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	mg/L	0.00200	0.00206	103	77-122	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T106718-MSD1

Original: 21A0660-07

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Mercury	mg/L	0	0.00200	0.00226	0.00212	113	106	76-123	6	20	

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106757	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T106757-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T106757-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T106757-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

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METHOD BLANK: T106757-BLK4

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T106757-BLK5

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T106757-BLK6

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T106757-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	24.6	98	77-123	

LABORATORY CONTROL SAMPLE: T106757-BS2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	24.9	100	77-123	

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106745	Analysis Description: Sodium, Dissolved
QC Batch Method:	Analysis Method: EPA 6010D

METHOD BLANK: T106745-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	0.0030	0.050	J
Beryllium	mg/L	<0.0010	0.0010	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	0.0052	0.10	J
Potassium	mg/L	<1.0	1.0	
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

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LABORATORY CONTROL SAMPLE: T106745-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.961	96	80-120	
Beryllium	mg/L	0.0500	0.0482	96	80-120	
Calcium	mg/L	10.0	9.67	97	80-120	
Iron	mg/L	10.0	9.75	97	80-120	
Potassium	mg/L	10.0	9.30	93	80-120	
Lithium	mg/L	0.500	0.464	93	80-120	
Magnesium	mg/L	10.0	9.53	95	80-120	
Sodium	mg/L	10.0	9.30	93	80-120	
Zinc	mg/L	1.00	0.962	96	80-120	

Trace Project ID: 21A0660

Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106789

Analysis Description: Magnesium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6010D

METHOD BLANK: T106789-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	<1.0	1.0	
Lithium	mg/L	0.0011	0.010	J
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T106789-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.868	98	80-120	
Beryllium	mg/L	0.111	0.111	100	80-120	
Calcium	mg/L	8.89	9.03	102	80-120	
Iron	mg/L	8.89	9.20	104	80-120	
Potassium	mg/L	8.89	8.66	97	80-120	
Lithium	mg/L	0.889	0.879	99	80-120	
Magnesium	mg/L	8.89	9.04	102	80-120	

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LABORATORY CONTROL SAMPLE: T106789-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Sodium	mg/L	8.89	9.09	102	80-120	
Zinc	mg/L	0.889	0.882	99	80-120	

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106741
 QC Batch Method:

Analysis Description: Thallium, Dissolved
 Analysis Method: EPA 6020B

METHOD BLANK: T106741-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.000040	0.000040	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	0.00010	0.00020	J
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T106741-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0618	103	80-120	
Arsenic	mg/L	0.0600	0.0614	102	80-120	
Barium	mg/L	0.0600	0.0604	101	80-120	
Cadmium	mg/L	0.0600	0.0609	102	80-120	
Cobalt	mg/L	0.0600	0.0595	99	80-120	
Chromium	mg/L	0.0600	0.0595	99	80-120	
Copper	mg/L	0.0600	0.0611	102	80-120	
Manganese	mg/L	0.0600	0.0612	102	80-120	
Molybdenum	mg/L	0.0600	0.0581	97	80-120	

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LABORATORY CONTROL SAMPLE: T106741-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Nickel	mg/L	0.0600	0.0591	99	80-120	
Lead	mg/L	0.0600	0.0587	98	80-120	
Antimony	mg/L	0.0600	0.0595	99	80-120	
Selenium	mg/L	0.0600	0.0620	103	80-120	
Thallium	mg/L	0.0600	0.0590	98	80-120	
Vanadium	mg/L	0.0600	0.0567	94	80-120	

Trace Project ID: 21A0660
Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106789

Analysis Description: Selenium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6020B

METHOD BLANK: T106789-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	
Cadmium	mg/L	<0.0010	0.0010	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0050	0.0050	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T106789-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0556	0.0613	110	80-120	
Arsenic	mg/L	0.0556	0.0566	102	80-120	
Barium	mg/L	0.889	0.946	106	80-120	
Cadmium	mg/L	0.0278	0.0315	113	80-120	
Cobalt	mg/L	0.889	0.888	100	80-120	

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LABORATORY CONTROL SAMPLE: T106789-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chromium	mg/L	0.0278	0.0279	100	80-120	
Copper	mg/L	0.889	0.865	97	80-120	
Manganese	mg/L	0.889	0.922	104	80-120	
Molybdenum	mg/L	0.889	0.926	104	80-120	
Nickel	mg/L	0.889	0.890	100	80-120	
Lead	mg/L	0.0556	0.0540	97	80-120	
Antimony	mg/L	0.0556	0.0648	117	80-120	
Selenium	mg/L	0.0556	0.0571	103	80-120	
Thallium	mg/L	0.0556	0.0561	101	80-120	
Vanadium	mg/L	0.889	0.946	106	80-120	

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: [CALC]
 QC Batch Method:

Analysis Description: Hardness (Metals)
 Analysis Method: SM 2340 B-11

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106679
 QC Batch Method:

Analysis Description: Filtration for Dissolved Metals
 Analysis Method: Dissolved Metals

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106685
 QC Batch Method: IC Prep W

Analysis Description: Chloride
 Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T106685-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.10	0.10	
Fluoride	mg/L	<0.020	0.020	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T106685-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.34	107	90-110	
Fluoride	mg/L	1.00	1.04	104	90-110	

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LABORATORY CONTROL SAMPLE: T106685-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Sulfate as SO4	mg/L	5.00	5.15	103	90-110	

MATRIX SPIKE: T106685-MS1 Original: **21A0660-07**

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Chloride	mg/L	14.0	25.0	37.4	94	80-120	
Fluoride	mg/L	0.132	5.00	5.05	98	80-120	
Sulfate as SO4	mg/L	26.2	25.0	50.3	96	80-120	

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106775	Analysis Description: Alkalinity, Carbonate
QC Batch Method: SM 2320 B-11	Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T106775-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	98.4	98	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	98.4	98	88-112	

SAMPLE DUPLICATE: T106775-DUP1 Original: **21A0660-01**

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	1020	1020	0.03	200	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	0	<50		200	

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106690	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-11	Analysis Method: SM 2540 C-11

METHOD BLANK: T106690-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

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LABORATORY CONTROL SAMPLE: T106690-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	503	601	119	80-120	

LABORATORY CONTROL SAMPLE: T106690-BS2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	501	488	97	80-120	

LABORATORY CONTROL SAMPLE: T106690-BS3

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	502	533	106	80-120	

LABORATORY CONTROL SAMPLE: T106690-BS4

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	502	454	90	80-120	

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

QC Batch: T106860	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-11	Analysis Method: SM 2540 C-11

METHOD BLANK: T106860-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T106860-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	522	524	100	80-120	

SAMPLE DUPLICATE: T106860-DUP1 Original: 21A0660-02

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	1620	1570	3	10	

Trace Project ID: 21A0660
 Client Project ID: Monitoring Wells Sampling - 1/25/21

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Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

QC Batch: T105995

Analysis Description: pH, SM 4500

QC Batch Method: *** DEFAULT PREP ***

Analysis Method: SM 4500-H+ B-11

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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Colorado	IN00035	New Jersey*	IN598
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Kansas*	E-10233	Texas*	T104704187
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Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

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LABORATORY CASE NARRATIVE

Client: Trace Analytical Laboratories

Report #: 509005CN

All method QC was within acceptance limits.

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02/18/2021

Authorized Signature

Title

Date

110 South Hill Street
 South Bend, IN 46617
 Tel: (574) 233-4777
 Fax: (574) 233-8207
 1 800 332 4345

Laboratory Report

Client: Trace Analytical Laboratories
 Attn: Jon Mink
 2241 Black Creek Road
 Muskegon, MI 49444

Report: 509005
 Priority: Standard Written
 Status: Final

Project: MW Sampling-01-25-21

SUMMARY OF DETECTIONS

Sample ID: 4821585	Sample Site: 21A0660-01/MW-1R			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.21 +/- 0.26	pCi/L	285346
Radium-228	7500-Ra D	0.58 +/- 0.45	pCi/L	285328
Combined Radium	calc.	0.79 +/- 0.52	pCi/L	285346
Sample ID: 4821586	Sample Site: 21A0660-02/MW-2			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.48 +/- 0.37	pCi/L	285346
Radium-228	7500-Ra D	1.9 +/- 0.6	pCi/L	285328
Combined Radium	calc.	2.38 +/- 0.68	pCi/L	285346
Sample ID: 4821587	Sample Site: 21A0660-03/MW-3			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.80 +/- 0.35	pCi/L	285346
Radium-228	7500-Ra D	0.88 +/- 0.56	pCi/L	285328
Combined Radium	calc.	1.68 +/- 0.66	pCi/L	285346
Sample ID: 4821588	Sample Site: 21A0660-04/MW-4			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.45 +/- 0.24	pCi/L	285346
Radium-228	7500-Ra D	0.52 +/- 0.48	pCi/L	285328
Combined Radium	calc.	0.97 +/- 0.54	pCi/L	285346
Sample ID: 4821589	Sample Site: 21A0660-05/MW-5			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.17 +/- 0.18	pCi/L	285346
Radium-228	7500-Ra D	0.09 +/- 0.58	pCi/L	285328
Sample ID: 4821590	Sample Site: 21A0660-06/MW-6			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.63 +/- 0.35	pCi/L	285346
Radium-228	7500-Ra D	0.87 +/- 0.58	pCi/L	285328
Combined Radium	calc.	1.50 +/- 0.68	pCi/L	285346

SUMMARY OF DETECTIONS - Continued

Sample ID: 4821591	Sample Site: 21A0660-07/MW-7			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	1.1 +/- 0.4	pCi/L	285346
Radium-228	7500-Ra D	0.93 +/- 0.47	pCi/L	285328
Combined Radium	calc.	2.03 +/- 0.62	pCi/L	285346

Sample ID: 4821592	Sample Site: 21A0660-08/MW-8			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.50 +/- 0.28	pCi/L	285346
Radium-228	7500-Ra D	2.3 +/- 0.6	pCi/L	285328
Combined Radium	calc.	2.80 +/- 0.64	pCi/L	285346

Sample ID: 4821593	Sample Site: 21A0660-09/MW-9			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.44 +/- 0.28	pCi/L	285348
Radium-228	7500-Ra D	1.3 +/- 0.5	pCi/L	285326
Combined Radium	calc.	1.74 +/- 0.59	pCi/L	285348

Sample ID: 4821594	Sample Site: 21A0660-10/MW-10			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.40 +/- 0.26	pCi/L	285348
Radium-228	7500-Ra D	1.3 +/- 0.5	pCi/L	285326
Combined Radium	calc.	1.70 +/- 0.55	pCi/L	285348

Note: The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Karen Fullmer at (574) 233-4777.

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Dana M. Siz Reporter

2/18/2021

Reviewed By

Title

Date

Finalized By

Title

Date

110 South Hill Street
 South Bend, IN 46617
 Tel: (574) 233-4777
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 1 800 332 4345

Laboratory Report

Client: Trace Analytical Laboratories
 Attn: Jon Mink
 2241 Black Creek Road
 Muskegon, MI 49444

Report: 509005
 Priority: Standard Written
 Status: Final
 PWS ID: Not Supplied

Sample Information					
EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4821585	21A0660-01/MW-1R	7500-Ra B	01/25/21 09:10	Client	01/27/21 09:00
4821585	21A0660-01/MW-1R	7500-Ra D	01/25/21 09:10	Client	01/27/21 09:00
4821586	21A0660-02/MW-2	7500-Ra B	01/25/21 09:40	Client	01/27/21 09:00
4821586	21A0660-02/MW-2	7500-Ra D	01/25/21 09:40	Client	01/27/21 09:00
4821587	21A0660-03/MW-3	7500-Ra B	01/25/21 10:25	Client	01/27/21 09:00
4821587	21A0660-03/MW-3	7500-Ra D	01/25/21 10:25	Client	01/27/21 09:00
4821588	21A0660-04/MW-4	7500-Ra B	01/25/21 11:10	Client	01/27/21 09:00
4821588	21A0660-04/MW-4	7500-Ra D	01/25/21 11:10	Client	01/27/21 09:00
4821589	21A0660-05/MW-5	7500-Ra B	01/25/21 07:50	Client	01/27/21 09:00
4821589	21A0660-05/MW-5	7500-Ra D	01/25/21 07:50	Client	01/27/21 09:00
4821590	21A0660-06/MW-6	7500-Ra B	01/25/21 08:35	Client	01/27/21 09:00
4821590	21A0660-06/MW-6	7500-Ra D	01/25/21 08:35	Client	01/27/21 09:00
4821591	21A0660-07/MW-7	7500-Ra B	01/25/21 07:20	Client	01/27/21 09:00
4821591	21A0660-07/MW-7	7500-Ra D	01/25/21 07:20	Client	01/27/21 09:00
4821592	21A0660-08/MW-8	7500-Ra B	01/25/21 13:50	Client	01/27/21 09:00
4821592	21A0660-08/MW-8	7500-Ra D	01/25/21 13:50	Client	01/27/21 09:00
4821593	21A0660-09/MW-9	7500-Ra B	01/25/21 12:55	Client	01/27/21 09:00
4821593	21A0660-09/MW-9	7500-Ra D	01/25/21 12:55	Client	01/27/21 09:00
4821594	21A0660-10/MW-10	7500-Ra B	01/25/21 12:10	Client	01/27/21 09:00
4821594	21A0660-10/MW-10	7500-Ra D	01/25/21 12:10	Client	01/27/21 09:00

Report Summary

Note: See attached page for additional comments.
 Note: Sample containers were provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Karen Fullmer at (574) 233-4777.

Client Name: Trace Analytical Laboratories

Report #: 509005

Note: This report may not be reproduced, except in full, without written approval from EEA.

Karen Fullmer ASM

Authorized Signature

Title

02/18/2021

Date

Client Name: Trace Analytical Laboratories

Report #: 509005

Sampling Point: 21A0660-01/MW-1R

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.29	1.0	0.21 ± 0.26	pCi/L	01/28/21 10:55	02/05/21 11:43	4821585
15262-20-1	Radium-228	7500-Ra D	---	0.44	1.0	0.58 ± 0.45	pCi/L	01/28/21 10:55	02/10/21 13:19	4821585
---	Combined Radium	calc.	5 *	0.44	1.0	0.79 ± 0.52	pCi/L	01/28/21 10:55	02/10/21 13:19	4821585

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: 21A0660-02/MW-2

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.32	1.0	0.48 ± 0.37	pCi/L	01/28/21 10:55	02/05/21 11:43	4821586
15262-20-1	Radium-228	7500-Ra D	---	0.50	1.0	1.9 ± 0.6	pCi/L	01/28/21 10:55	02/10/21 13:19	4821586
---	Combined Radium	calc.	5 *	0.50	1.0	2.38 ± 0.68	pCi/L	01/28/21 10:55	02/10/21 13:19	4821586

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: 21A0660-03/MW-3

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.20	1.0	0.80 ± 0.35	pCi/L	01/28/21 10:55	02/05/21 11:43	4821587
15262-20-1	Radium-228	7500-Ra D	---	0.54	1.0	0.88 ± 0.56	pCi/L	01/28/21 10:55	02/10/21 13:19	4821587
---	Combined Radium	calc.	5 *	0.54	1.0	1.68 ± 0.66	pCi/L	01/28/21 10:55	02/10/21 13:19	4821587

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: 21A0660-04/MW-4

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.16	1.0	0.45 ± 0.24	pCi/L	01/28/21 10:55	02/05/21 11:43	4821588
15262-20-1	Radium-228	7500-Ra D	---	0.47	1.0	0.52 ± 0.48	pCi/L	01/28/21 10:55	02/10/21 13:19	4821588
---	Combined Radium	calc.	5 *	0.47	1.0	0.97 ± 0.54	pCi/L	01/28/21 10:55	02/10/21 13:19	4821588

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: 21A0660-05/MW-5

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.18	1.0	0.17 ± 0.18	pCi/L	01/28/21 10:55	02/05/21 11:43	4821589
15262-20-1	Radium-228	7500-Ra D	---	0.61	1.00	0.09 ± 0.58	pCi/L	01/28/21 10:55	02/10/21 13:19	4821589
---	Combined Radium	calc.	5 *	0.61	1.0	< 0.61	pCi/L	01/28/21 10:55	02/10/21 13:19	4821589

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: 21A0660-06/MW-6

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.24	1.0	0.63 ± 0.35	pCi/L	01/28/21 10:55	02/05/21 11:43	4821590
15262-20-1	Radium-228	7500-Ra D	---	0.56	1.0	0.87 ± 0.58	pCi/L	01/28/21 10:55	02/10/21 13:19	4821590
---	Combined Radium	calc.	5 *	0.56	1.0	1.50 ± 0.68	pCi/L	01/28/21 10:55	02/10/21 13:19	4821590

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: 21A0660-07/MW-7

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.21	1.0	1.1 ± 0.4	pCi/L	01/28/21 10:55	02/05/21 11:43	4821591
15262-20-1	Radium-228	7500-Ra D	---	0.44	1.0	0.93 ± 0.47	pCi/L	01/28/21 10:55	02/10/21 13:19	4821591
---	Combined Radium	calc.	5 *	0.44	1.0	2.03 ± 0.62	pCi/L	01/28/21 10:55	02/10/21 13:19	4821591

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: 21A0660-08/MW-8

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.20	1.0	0.50 ± 0.28	pCi/L	01/28/21 10:55	02/05/21 11:43	4821592
15262-20-1	Radium-228	7500-Ra D	---	0.49	1.0	2.3 ± 0.6	pCi/L	01/28/21 10:55	02/10/21 13:19	4821592
---	Combined Radium	calc.	5 *	0.49	1.0	2.80 ± 0.64	pCi/L	01/28/21 10:55	02/10/21 13:19	4821592

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: 21A0660-09/MW-9

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.21	1.0	0.44 ± 0.28	pCi/L	01/28/21 13:12	02/05/21 12:52	4821593
15262-20-1	Radium-228	7500-Ra D	---	0.48	1.0	1.3 ± 0.5	pCi/L	01/28/21 13:12	02/10/21 16:24	4821593
---	Combined Radium	calc.	5 *	0.48	1.0	1.74 ± 0.59	pCi/L	01/28/21 13:12	02/10/21 16:24	4821593

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: 21A0660-10/MW-10

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.20	1.0	0.40 ± 0.26	pCi/L	01/28/21 13:12	02/05/21 12:52	4821594
15262-20-1	Radium-228	7500-Ra D	---	0.43	1.0	1.3 ± 0.5	pCi/L	01/28/21 13:12	02/10/21 16:24	4821594
---	Combined Radium	calc.	5 *	0.43	1.0	1.70 ± 0.55	pCi/L	01/28/21 13:12	02/10/21 16:24	4821594

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: $(MS \text{ or } MSD \text{ value} - \text{Sample value}) * 100 / \text{spike target} / \text{dilution factor} = \text{Recovery } \%$

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.



Eaton Analytical

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # 409880
Batch # 509005

www.EurofinsUS.com/Eaton

CHAIN OF CUSTODY RECORD

Page 1 of 1

Shaded area for EEA use only					REPORT TO:		SAMPLER (Signature)		PWS ID #	STATE (sample origin)	PROJECT NAME	PO#	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME	
Jon Mink, Tim Brewer (jmink@trace-labs.com, tbrewer@trace-labs.com) Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444 231-773-5998					EB				MI	MW Sampling- 01-25-21	21A0660					
BILL TO:					COMPLIANCE MONITORING		Yes	No	POPULATION SERVED	SOURCE WATER						
Accounts Payable, Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444							x									
LAB Number		COLLECTION			SAMPLING SITE			TEST NAME	pH Acceptable	SAMPLE REMARKS	CHLORINATED		# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME	
DATE	TIME	AM	PM					YES			NO					
1	4821, 585	01/25/21	9:10	x		MW-1R	Radium 226/228	✓			x	3	GW	SW		
2	586	01/25/21	9:40	x		MW-2	Radium 226/228	✓			x	3	GW	SW		
3	587	01/25/21	10:25	x		MW-3	Radium 226/228	✓			x	3	GW	SW		
4	588	01/25/21	11:10	x		MW-4	Radium 226/228	✓			x	3	GW	SW		
5	589	01/25/21	7:50	x		MW-5	Radium 226/228	✓			x	3	GW	SW		
6	590	01/25/21	8:35	x		MW-6	Radium 226/228	✓			x	3	GW	SW		
7	591	01/25/21	7:20	x		MW-7	Radium 226/228	✓			x	3	GW	SW		
8	592	01/25/21	13:50		x	MW-8	Radium 226/228	✓			x	3	GW	SW		
9	593	01/25/21	12:55		x	MW-9	Radium 226/228	✓			x	3	GW	SW		
10	594	01/25/21	12:10		x	MW-10	Radium 226/228	✓			x	3	GW	SW		
11																
12																
13																
14																

Client Provided Sample Container

Liters Received = 3 each site

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME	LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT
	1/26/21	9:20 AM	FedEx			
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME	
						LAB COMMENTS
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME	CONDITIONS UPON RECEIPT (check one):
				1-27-21	0900	<input type="checkbox"/> Iced/Wet/Blue <input checked="" type="checkbox"/> Ambient <input type="checkbox"/> °C Upon Receipt <input checked="" type="checkbox"/> N/A

MATRIX CODES: DW-DRINKING WATER RW-REAGENT WATER GW-GROUND WATER EW-EXPOSURE WATER SW-SURFACE WATER PW-POOL WATER WW-WASTE WATER	TURN-AROUND TIME (TAT) - SURCHARGES SW = Standard Written: (15 working days) 0% RV* = Rush Verbal: (5 working days) 50% RW* = Rush Written: (5 working days) 75%	IV* = Immediate Verbal: (3 working days) 100% IW* = Immediate Written: (3 working days) 125% SP* = Weekend, Holiday CALL STAT* = Less than 48 hours CALL	Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.
--	--	---	---

* Please call, expedited service not available for all testing

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.

Eurofins Eaton Analytical Run Log

Run ID: **285346** Method: **7500-Ra B**

<u>Type</u>	<u>Sample Id</u>	<u>Sample Site</u>	<u>Matrix</u>	<u>Instrument ID</u>	<u>Analysis Date</u>	<u>Calibration File</u>
FS	4821585	21A0660-01/MW-1R	GW	CI	02/05/2021 11:43	
FS	4821586	21A0660-02/MW-2	GW	CI	02/05/2021 11:43	
FS	4821587	21A0660-03/MW-3	GW	CI	02/05/2021 11:43	
FS	4821588	21A0660-04/MW-4	GW	CI	02/05/2021 11:43	
FS	4821589	21A0660-05/MW-5	GW	CI	02/05/2021 11:43	
FS	4821590	21A0660-06/MW-6	GW	CI	02/05/2021 11:43	
FS	4821591	21A0660-07/MW-7	GW	CI	02/05/2021 11:43	
FS	4821592	21A0660-08/MW-8	GW	CI	02/05/2021 11:43	
LRB	4833011		RW	CI	02/05/2021 11:43	
LFB	4833012		RW	CI	02/05/2021 11:43	

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Radium-226	7500-Ra B	0.29	21A0660-01/MW-1R		0.21		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/05/2021 11:43	4821585
FS	Radium-226	7500-Ra B	0.32	21A0660-02/MW-2		0.48		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/05/2021 11:43	4821586
FS	Radium-226	7500-Ra B	0.20	21A0660-03/MW-3		0.80		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/05/2021 11:43	4821587
FS	Radium-226	7500-Ra B	0.16	21A0660-04/MW-4		0.45		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/05/2021 11:43	4821588
FS	Radium-226	7500-Ra B	0.18	21A0660-05/MW-5		0.17		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/05/2021 11:43	4821589
FS	Radium-226	7500-Ra B	0.24	21A0660-06/MW-6		0.63		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/05/2021 11:43	4821590
FS	Radium-226	7500-Ra B	0.21	21A0660-07/MW-7		1.1		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/05/2021 11:43	4821591
FS	Radium-226	7500-Ra B	0.20	21A0660-08/MW-8		0.50		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/05/2021 11:43	4821592
LRB	Radium-226	7500-Ra B	0.18	---		-0.01		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/05/2021 11:43	4833011
LFB	Radium-226	7500-Ra B	0.20	---		8.7200	9.06	pCi/L	96	90 - 110	---	---	1.0	01/28/2021 10:55	02/05/2021 11:43	4833012

Eurofins Eaton Analytical Run Log

Run ID: **285348** Method: **7500-Ra B**

<u>Type</u>	<u>Sample Id</u>	<u>Sample Site</u>	<u>Matrix</u>	<u>Instrument ID</u>	<u>Analysis Date</u>	<u>Calibration File</u>
FS	4821593	21A0660-09/MW-9	GW	CI	02/05/2021 12:52	
FS	4821594	21A0660-10/MW-10	GW	CI	02/05/2021 12:52	
LRB	4833075		RW	CI	02/05/2021 12:52	
LFB	4833076		RW	CI	02/05/2021 12:52	

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Radium-226	7500-Ra B	0.21	21A0660-09/MW-9		0.44		pCi/L	---	---	---	---	1.0	01/28/2021 13:12	02/05/2021 12:52	4821593
FS	Radium-226	7500-Ra B	0.20	21A0660-10/MW-10		0.40		pCi/L	---	---	---	---	1.0	01/28/2021 13:12	02/05/2021 12:52	4821594
LRB	Radium-226	7500-Ra B	0.22	---		-0.08		pCi/L	---	---	---	---	1.0	01/28/2021 13:12	02/05/2021 12:52	4833075
LFB	Radium-226	7500-Ra B	0.14	---		8.9800	9.06	pCi/L	99	90 - 110	---	---	1.0	01/28/2021 13:12	02/05/2021 12:52	4833076

Eurofins Eaton Analytical Run Log

Run ID: **285326** Method: **7500-Ra D**

<u>Type</u>	<u>Sample Id</u>	<u>Sample Site</u>	<u>Matrix</u>	<u>Instrument ID</u>	<u>Analysis Date</u>	<u>Calibration File</u>
FS	4821593	21A0660-09/MW-9	GW	CI	02/10/2021 16:24	
FS	4821594	21A0660-10/MW-10	GW	CI	02/10/2021 16:24	
LFB	4832583		RW	CI	02/10/2021 16:36	
LRB	4832582		RW	CI	02/10/2021 18:18	

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Radium-228	7500-Ra D	0.48	21A0660-09/MW-9		1.3		pCi/L	---	---	---	---	1.0	01/28/2021 13:12	02/10/2021 16:24	4821593
FS	Radium-228	7500-Ra D	0.43	21A0660-10/MW-10		1.3		pCi/L	---	---	---	---	1.0	01/28/2021 13:12	02/10/2021 16:24	4821594
LFB	Radium-228	7500-Ra D	0.55	---		6.9800	8.52	pCi/L	82	80 - 120	---	---	1.0	01/28/2021 13:12	02/10/2021 16:36	4832583
LRB	Radium-228	7500-Ra D	0.42	---		0.260		pCi/L	---	---	---	---	1.0	01/28/2021 13:12	02/10/2021 18:18	4832582

Eurofins Eaton Analytical Run Log

Run ID: **285328** Method: **7500-Ra D**

<u>Type</u>	<u>Sample Id</u>	<u>Sample Site</u>	<u>Matrix</u>	<u>Instrument ID</u>	<u>Analysis Date</u>	<u>Calibration File</u>
FS	4821585	21A0660-01/MW-1R	GW	CI	02/10/2021 13:19	
FS	4821586	21A0660-02/MW-2	GW	CI	02/10/2021 13:19	
FS	4821587	21A0660-03/MW-3	GW	CI	02/10/2021 13:19	
FS	4821588	21A0660-04/MW-4	GW	CI	02/10/2021 13:19	
FS	4821589	21A0660-05/MW-5	GW	CI	02/10/2021 13:19	
FS	4821590	21A0660-06/MW-6	GW	CI	02/10/2021 13:19	
FS	4821591	21A0660-07/MW-7	GW	CI	02/10/2021 13:19	
FS	4821592	21A0660-08/MW-8	GW	CI	02/10/2021 13:19	
LRB	4832640		RW	CI	02/10/2021 13:19	
LFB	4832641		RW	CI	02/10/2021 13:19	

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Radium-228	7500-Ra D	0.44	21A0660-01/MW-1R		0.58		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/10/2021 13:19	4821585
FS	Radium-228	7500-Ra D	0.50	21A0660-02/MW-2		1.9		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/10/2021 13:19	4821586
FS	Radium-228	7500-Ra D	0.54	21A0660-03/MW-3		0.88		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/10/2021 13:19	4821587
FS	Radium-228	7500-Ra D	0.47	21A0660-04/MW-4		0.52		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/10/2021 13:19	4821588
FS	Radium-228	7500-Ra D	0.61	21A0660-05/MW-5		0.09		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/10/2021 13:19	4821589
FS	Radium-228	7500-Ra D	0.56	21A0660-06/MW-6		0.87		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/10/2021 13:19	4821590
FS	Radium-228	7500-Ra D	0.44	21A0660-07/MW-7		0.93		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/10/2021 13:19	4821591
FS	Radium-228	7500-Ra D	0.49	21A0660-08/MW-8		2.3		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/10/2021 13:19	4821592
LRB	Radium-228	7500-Ra D	0.44	---		0.0600		pCi/L	---	---	---	---	1.0	01/28/2021 10:55	02/10/2021 13:19	4832640
LFB	Radium-228	7500-Ra D	0.51	---		8.4300	8.52	pCi/L	99	80 - 120	---	---	1.0	01/28/2021 10:55	02/10/2021 13:19	4832641

Sample Type Key

<u>Type (Abbr.)</u>	<u>Sample Type</u>
FS	Field Sample
LFB	Laboratory Fortified Blank
LRB	Laboratory Reagent Blank

END OF REPORT

**Eurofins Eaton Analytical
Laboratory Reagent Blank**

Sample Matrix: RW
Instrument: GPC - CI
Sample Number: 4833011
Sample Site: Not Available
Sample Location: Not Available
Run Status: Completed
Order Number: Not Available
Client: EEA-SBN / QA Department

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: Not Available
Project Manager: Not Available
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	-0.01	-0.01	+/-0.11	0.18	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Laboratory Fortified Blank**

Sample Matrix: RW
Instrument: GPC - CI
Sample Number: 4833012
Sample Site: Not Available
Sample Location: Not Available
Run Status: Completed
Order Number: Not Available
Client: EEA-SBN / QA Department

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: Not Available
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Units</u>	<u>Target</u>	<u>%Rec</u>	<u>Limits</u>		<u>Pass/Fail</u>
					<u>Lower</u>	<u>Upper</u>	
Radium-226	8.72	pCi/L	9.06	96	90	110	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Matrix Spike Report**

File Name: 82433CI
Today's Date: 02/11/2021
Instrument: GPC - CI
Sample Number: 4832642
Associated Sample: 4819814
Run Status: Completed
Order Number: Not Available

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: 508775
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Conc Units</u>	<u>Target</u>	<u>Sample Conc</u>	<u>MS Conc</u>	<u>MS %Rec</u>	<u>Pass/Fail</u>
Radium-226	pCi/L	10.06	1.4	10.91	95	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Matrix Spike - Matrix Spike Duplicate Report**

File Name: 82433CI
Today's Date: 02/11/2021
Instrument: GPC - CI
Sample Number: 4832643
Associated Sample: 4819814
Run Status: Completed
Order Number: Not Available

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: 508775
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Conc Units</u>	<u>Target</u>	<u>Sample Conc</u>	<u>MS Conc</u>	<u>MS %Rec</u>	<u>Pass/Fail</u>
Radium-226	pCi/L	10.06	1.4	10.27	88	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821585
Sample Site: 21A0660-01/MW-1R
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	0.21	0.21	+/-0.26	0.29	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821586
Sample Site: 21A0660-02/MW-2
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	0.48	0.48	+/-0.37	0.32	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821587
Sample Site: 21A0660-03/MW-3
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	0.8	0.80	+/-0.35	0.20	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821588
Sample Site: 21A0660-04/MW-4
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	0.45	0.45	+/-0.24	0.16	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821589
Sample Site: 21A0660-05/MW-5
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	0.17	0.17	+/-0.18	0.18	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821590
Sample Site: 21A0660-06/MW-6
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: 509005
Project Manager: fullmer
File Name: 82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	0.63	0.63	+/-0.35	0.24	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821591
Sample Site: 21A0660-07/MW-7
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	1.12	1.1	+/-0.4	0.2	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

Sample Comments:

1. Sample result is greater than 1 pCi/L and will be held 4 days from first count date, pending Ra-224 decay. Sample will be recounted on or after 02/09.

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821592
Sample Site: 21A0660-08/MW-8
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 11:43
Analyst: bolen
Results Submitted By: bolen
Run Number: 285346
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82433CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	0.5	0.50	+/-0.28	0.20	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

Ra 226 Batch Report by SM 7500 Ra-B

Instrument:	CI
Analyst:	Bolen
Prep Batch:	82433
Date:	02/11/21

filename: 2 11 2021 226 BATCH 82433

302/11/21

Calibration Data

2 11 2021 226 BATCH 82433 CI

LB4100 (CI)			226 Cal		
Background			Date Collected:	2/17/2020	
Date Collected:	1/30/2021				
	Alpha	Beta		Slope	Intercept
A1	0.1483	1.5200	A1	0.000106	0.2217672
A2	0.0767	1.1000	A2	-0.000091	0.2392097
A3	0.0700	1.9267	A3	-0.000106	0.2376181
A4	0.1267	1.6267	A4	-0.000006	0.245435
B1	0.1033	1.2650	B1	0.000064	0.2366137
B2	0.1700	1.6367	B2	0.000239	0.2183716
B3	0.1433	1.4983	B3	0.000194	0.2232439
B4	0.0767	1.7483	B4	0.000012	0.2309777
C1	0.0667	3.3867	C1	-0.000018	0.2450165
C2	0.0817	1.0500	C2	0.000044	0.2396955
C3	0.0767	1.3350	C3	-0.000029	0.235875
C4	0.0933	1.2300	C4	0.000123	0.2329013
D1	0.1067	1.2500	D1	-0.000098	0.2516045
D2	0.1933	2.0633	D2	0.000211	0.2146519
D3	0.0400	1.0750	D3	-0.000126	0.2407988
D4	0.2733	1.9467	D4	0.000196	0.2403726
E1	0.1583	0.9933	E1	-0.000811	0.2416731
E2	0.1850	1.0583	E2	-0.000824	0.2427347
E3	0.1150	1.4350	E3	-0.000689	0.2379716
E4	0.1450	1.0683	E4	-0.000746	0.2417898
F1	0.1217	1.1550	F1	-0.000768	0.2315517
F2	0.1667	1.0717	F2	-0.000633	0.2246939
F3	0.1650	4.2100	F3	-0.000759	0.2311511
F4	0.1717	1.2967	F4	-0.000775	0.2355018
G1	0.1150	1.1033	G1	-0.000889	0.2344666
G2	0.2017	1.2417	G2	-0.000852	0.2362288
G3	0.1517	1.4400	G3	-0.000849	0.240775
G4	0.1600	1.3550	G4	-0.000658	0.2282136
H1	0.1233	0.9150	H1	-0.000903	0.2294615
H2	0.1333	1.0700	H2	-0.000797	0.2380014
H3	0.1433	0.9017	H3	-0.000806	0.2363951
H4	0.1400	1.3767	H4	-0.000745	0.2385951
	Alpha	Beta		Slope	Intercept
LB4100 (DU)			226 Cal		
Background			Date Collected:	2/5/2020	
Date Collected:	1/27/2021				

302/11/21

Bench Sheet Data

File: 2 11 2021 226 BATCH 82433 CI

2021/11/20

Batch Prep Date: **1/28/2021 10:55**
 BasO4 precip Date: **1/29/2021 15:33**
 Ra-226 ID: **12:94-A**
 Activity (pCi/mL): **9.06**

#	Sample ID	Sample Volume Used (mL)	BaSO ₄ Planchet Tare (mg)	BaSO ₄ Planchet Final (mg)	BaSO ₄ Residue (mg)	Ra-226 added (mL)
1	LRB	1000.0	9317.1	9361.6	44.5	
2	LFB	1000.0	9363.1	9395.6	32.5	1.000
3	4819170	936.8	9317.5	9350.4	32.9	
4	4819814	901.0	9309.0	9340.7	31.7	
5	4821585	906.0	9334.8	9366.6	31.8	
6	4821586	902.6	9303.7	9330.3	26.6	
7	4821587	943.0	9295.9	9330.0	34.1	
8	4821588	921.0	9320.8	9361.2	40.4	
9	4821589	951.8	9334.3	9372.2	37.9	
10	4821590	925.8	9302.6	9332.0	29.4	
11	4821591	918.9	9323.1	9358.2	35.1	
12	4821592	936.0	9307.5	9342.4	34.9	
13	4819814MS	900.4	9365.7	9404.4	38.7	1.000
14	4819814MSD	900.2	9409.7	9448.0	38.3	1.000
15					0.0	
16					0.0	

Log ID Ba: **12:95-B** Vol (mL): **1.0** Conc. (mg/mL): **57.0**

QC limits established: 3/8/2018

	Lower limit	Upper limit	Lower Mass	Upper mass
Ba:	80.9 ± 40.9 %	0.401	1.218	22.9
				69.4

CI 226 BATCH 82433

17/2/11/2025

Detector	Sample	Assay Date	Livetime (min)	Alpha Counts	Beta Counts
A1	LRB	2/5/2021 11:13:03 AM	30	4	46
A2	LFB	2/5/2021 11:13:03 AM	30	247	219
A3	48198170	2/5/2021 11:13:03 AM	30	7	69
B1	4819814	2/5/2021 11:13:03 AM	30	38	109
B2	4821585	2/5/2021 11:13:03 AM	30	10	75
B3	4821586	2/5/2021 11:13:03 AM	30	14	98
B4	4821587	2/5/2021 11:13:03 AM	30	24	107
C1	4821588	2/5/2021 11:13:04 AM	30	17	117
C2	4821589	2/5/2021 11:13:04 AM	30	8	56
C3	4821590	2/5/2021 11:13:04 AM	30	17	81
C4	4821591	2/5/2021 11:13:04 AM	30	34	59
D1	4821592	2/5/2021 11:13:04 AM	30	18	77
D3	4819814MS	2/5/2021 11:13:04 AM	30	329	343
D4	4819814MSD	2/5/2021 11:13:04 AM	30	329	354

2/5/2021 12:05:26 PM

226 Raw Data

File: 2 11 2021 226 BATCH 82433 CI

502/11/2021

Sample ID	Detector	Last BaSO4 precip.	Analysis Start Date	Count Time	Counts	Ba Mass (mg)	Analysis End Date
LRB	A1	01/29/2021 15:33	02/05/2021 11:13	30	4	44.5	02/05/2021 11:43
LFB	A2	01/29/2021 15:33	02/05/2021 11:13	30	247	32.5	02/05/2021 11:43
4819170	A3	01/29/2021 15:33	02/05/2021 11:13	30	7	32.9	02/05/2021 11:43
4819814	B1	01/29/2021 15:33	02/05/2021 11:13	30	38	31.7	02/05/2021 11:43
4821585	B2	01/29/2021 15:33	02/05/2021 11:13	30	10	31.8	02/05/2021 11:43
4821586	B3	01/29/2021 15:33	02/05/2021 11:13	30	14	26.6	02/05/2021 11:43
4821587	B4	01/29/2021 15:33	02/05/2021 11:13	30	24	34.1	02/05/2021 11:43
4821588	C1	01/29/2021 15:33	02/05/2021 11:13	30	17	40.4	02/05/2021 11:43
4821589	C2	01/29/2021 15:33	02/05/2021 11:13	30	8	37.9	02/05/2021 11:43
4821590	C3	01/29/2021 15:33	02/05/2021 11:13	30	17	29.4	02/05/2021 11:43
4821591	C4	01/29/2021 15:33	02/05/2021 11:13	30	34	35.1	02/05/2021 11:43
4821592	D1	01/29/2021 15:33	02/05/2021 11:13	30	18	34.9	02/05/2021 11:43
4819814AMS	D3	01/29/2021 15:33	02/05/2021 11:13	30	329	38.7	02/05/2021 11:43
4819814MSD	D4	01/29/2021 15:33	02/05/2021 11:13	30	329	38.3	02/05/2021 11:43

226 Results

File: 2 11 2021 226 BATCH 82433 C1

302/11/2021

Sample ID	Detector	Analysis Start Date	Activity (pCi/L)	UNC (pCi/L)	DL (pCi/L)	Recovery	Recount	Ba Recovery	Analysis End Date
LRB	A1	02/05/21,11:13	-0.01 ±	0.11	0.18				02/05/21,11:43
LFB	A2	02/05/21,11:13	8.72 ±	1.10	0.20	0.96			02/05/21,11:43
4819170	A3	02/05/21,11:13	0.19 ±	0.20	0.21				02/05/21,11:43
4819814	B1	02/05/21,11:13	1.40 ±	0.49	0.24		X		02/05/21,11:43
4821585	B2	02/05/21,11:13	0.21 ±	0.26	0.29				02/05/21,11:43
4821586	B3	02/05/21,11:13	0.48 ±	0.37	0.32				02/05/21,11:43
4821587	B4	02/05/21,11:13	0.80 ±	0.35	0.20				02/05/21,11:43
4821588	C1	02/05/21,11:13	0.45 ±	0.24	0.16				02/05/21,11:43
4821589	C2	02/05/21,11:13	0.17 ±	0.18	0.18				02/05/21,11:43
4821590	C3	02/05/21,11:13	0.63 ±	0.35	0.24				02/05/21,11:43
4821591	C4	02/05/21,11:13	1.12 ±	0.41	0.21		X		02/05/21,11:43
4821592	D1	02/05/21,11:13	0.50 ±	0.28	0.20				02/05/21,11:43
4819814MS	D3	02/05/21,11:13	10.91 ±	1.18	0.16	1.08			02/05/21,11:43
4819814MMSD	D4	02/05/21,11:13	10.27 ±	1.14	0.26	1.02			02/05/21,11:43

QC

File: 2 11 2021 226 BATCH 82433 CI

	226
LRB Activity	-0.01
LFB Activity	8.72
LFB % Recovery	96.2
MS % Recovery	94.5
MSD % Recovery	88.1
RPD	6.0
RER	

MS Parent ID	4819814
Parent Activity	1.400753
Parent DL	0.238608
MS Target	10.06219
MSD Target	10.06443
MS Corr. Activity	9.506709
MSD Corr. Activity	8.867139
MS Activity	10.90746
MSD Activity	10.26789

LD ID	
Parent Activity	#N/A
Parent UNC	#N/A
LD Activity	#N/A
LD UNC	#N/A

302/11/2021

Radium Bench Sheet

Earliest Due Date/ Rush : 02/15/2021

Balance ID: B2

Balance ID: FX

Activity ID: 9.06

Prep Date/Analyst Initials: 1/22/2021 / Gno
 Prep Batch/Time: 82433 @ 1055
 BasO₄ Precip Date/Time: 6/27/2021 1533
 Ra-226 Source: N/A
 Ra-228 Source: N/A
 YOH Precip Date/Time: N/A

#	Sample ID	Sample Volume (mL)	YOX Planchet Tare Weight (mg)	YOX Planchet Final Weight (mg)	BaSO ₄ Planchet Tare Weight (mg)	BaSO ₄ Planchet Final Weight (mg)	Activity		Comments
							Ra-226 Added (mL)	Ra-228 Added (mL)	
1	LFB 82433	1000	X	X	9317.1	9361.6	X	X	
2	LFB 82433	1000	X	X	9363.1	9350.6	1.000	X	
3	4819170	931.8	X	X	9317.5	9350.4	X	X	
4	4819814	901.0	X	X	9309.0	9340.4	X	X	A dirty
5	4821585	901.0	X	X	9334.8	9366.6	X	X	" "
6	4821586	902.0	X	X	9303.7	9330.3	X	X	" "
7	4821587	903.0	X	X	9295.9	9330.0	X	X	" "
8	4821588	901.0	X	X	9320.8	9361.2	X	X	" "
9	4821589	901.8	X	X	9334.3	9372.2	X	X	A dirty
10	4821590	926.8	X	X	9302.6	9332.0	X	X	A dirty
11	4821591	918.0	X	X	9323.1	9358.2	X	X	" "
12	4821592	904.0	X	X	9307.5	9342.9	X	X	" "
13	4819814MS	900.2	X	X	9365.7	9404.4	1.000	X	A
14	4819814MSD	900.2	X	X	9409.7	9448.0	1.000	X	A
15									
16									

For 7500-Ra B or 7500-Ra D

Lot # Conc HNO₃: 204738 Reagent ID NH₄SO₄: N/A Reagent ID 0.25M EDTA: 12198-b
 Reagent ID 6N HNO₃: N/A Reagent ID (NH₄)₂S: N/A Reagent ID Lead Carrier A: N/A
 Reagent ID 1N HNO₃: 12198-a Reagent ID (NH₄)₂Ox: N/A Reagent ID Lead Carrier B: N/A
 Reagent ID 18N H₂SO₄: 203615 Lot # Conc NH₄OH: 203665 Reagent ID Lead Carrier: 12188-a
 Lot # Conc Acetic Acid: 12196-a Reagent ID 6N NH₄OH: 12193-b Reagent ID Sr-Y Carrier: N/A
 Reagent ID 1M Citric Acid: 12196-a Reagent ID 18N NaOH: N/A Reagent ID Ba Carrier: 12198-b Vol Used: 1.0 (mL) Conc: 57.0 (mg/mL)
 Reagent ID 10N NaOH: N/A Reagent ID Y Carrier: N/A Vol Used: N/A (mL) Conc: N/A (mg/mL)

**Eurofins Eaton Analytical
Laboratory Reagent Blank**

Sample Matrix: RW
Instrument: GPC - CI
Sample Number: 4833075
Sample Site: Not Available
Sample Location: Not Available
Run Status: Completed
Order Number: Not Available
Client: EEA-SBN / QA Department

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 12:52
Analyst: bolen
Results Submitted By: bolen
Run Number: 285348
Receipt Batch Number: Not Available
Project Manager: Not Available
File Name:82446CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	-0.08	-0.08	+/-0.10	0.22	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Laboratory Reagent Blank**

Sample Matrix: RW
Instrument: GPC - CI
Sample Number: 4833075
Sample Site: Not Available
Sample Location: Not Available
Run Status: Completed
Order Number: Not Available
Client: EEA-SBN / QA Department

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 12:52
Analyst: bolen
Results Submitted By: bolen
Run Number: 285348
Receipt Batch Number: Not Available
Project Manager: Not Available
File Name:82446CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	-0.08	-0.08	+/-0.10	0.22	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Laboratory Fortified Blank**

Sample Matrix: RW
Instrument: GPC - CI
Sample Number: 4833076
Sample Site: Not Available
Sample Location: Not Available
Run Status: Completed
Order Number: Not Available
Client: EEA-SBN / QA Department

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 12:52
Analyst: bolen
Results Submitted By: bolen
Run Number: 285348
Receipt Batch Number: Not Available
File Name:82446CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Units</u>	<u>Target</u>	<u>%Rec</u>	<u>Limits</u>		<u>Pass/Fail</u>
					<u>Lower</u>	<u>Upper</u>	
Radium-226	8.98	pCi/L	9.06	99	90	110	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Matrix Spike Report**

File Name: 82446CI
Today's Date: 02/11/2021
Instrument: GPC - CI
Sample Number: 4833077
Associated Sample: 4820834
Run Status: Completed
Order Number: Not Available

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 12:52
Analyst: bolen
Results Submitted By: bolen
Run Number: 285348
Receipt Batch Number: 508909
File Name:82446CI

Ordered Parameter Results

<u>Parameter</u>	<u>Conc Units</u>	<u>Target</u>	<u>Sample Conc</u>	<u>MS Conc</u>	<u>MS %Rec</u>	<u>Pass/Fail</u>
Radium-226	pCi/L	10.05	4.23	13.83	96	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

Eurofins Eaton Analytical
Matrix Spike - Matrix Spike Duplicate Report

File Name: 82446CI
Today's Date: 02/11/2021
Instrument: GPC - CI
Sample Number: 4833078
Associated Sample: 4820834
Run Status: Completed
Order Number: Not Available

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 12:52
Analyst: bolen
Results Submitted By: bolen
Run Number: 285348
Receipt Batch Number: 508909
File Name:82446CI

Ordered Parameter Results

<u>Parameter</u>	<u>Conc Units</u>	<u>Target</u>	<u>Sample Conc</u>	<u>MS Conc</u>	<u>MS %Rec</u>	<u>Pass/Fail</u>
Radium-226	pCi/L	10.06	4.23	13.31	90	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821593
Sample Site: 21A0660-09/MW-9
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 12:52
Analyst: bolen
Results Submitted By: bolen
Run Number: 285348
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82446CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	0.44	0.44	+/-0.28	0.21	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821594
Sample Site: 21A0660-10/MW-10
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra B
Analysis Date: 02/05/2021
Analysis Time: 12:52
Analyst: bolen
Results Submitted By: bolen
Run Number: 285348
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82446CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-226	0.4	0.40	+/-0.26	0.20	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

Ra 226 Batch Report by SM 7500 Ra-B

Instrument:	CI
Analyst:	Bolen
Prep Batch:	82446
Date:	02/11/21

filename: 2 11 2021 226 BATCH 82446

302/11/21

Calibration Data

2 11 2021 226 BATCH 82446 CI

LB4100 (CI)			226 Cal		
Background			Date Collected: 2/17/2020		
Date Collected:	1/30/2021		Date Collected:	2/17/2020	
	Alpha	Beta		Slope	Intercept
A1	0.1483	1.5200	A1	0.000106	0.2217672
A2	0.0767	1.1000	A2	-0.000091	0.2392097
A3	0.0700	1.9267	A3	-0.000106	0.2376181
A4	0.1267	1.6267	A4	-0.000006	0.245435
B1	0.1033	1.2650	B1	0.000064	0.2366137
B2	0.1700	1.6367	B2	0.000239	0.2183716
B3	0.1433	1.4983	B3	0.000194	0.2232439
B4	0.0767	1.7483	B4	0.000012	0.2309777
C1	0.0667	3.3867	C1	-0.000018	0.2450165
C2	0.0817	1.0500	C2	0.000044	0.2396955
C3	0.0767	1.3350	C3	-0.000029	0.235875
C4	0.0933	1.2300	C4	0.000123	0.2329013
D1	0.1067	1.2500	D1	-0.000098	0.2516045
D2	0.1933	2.0633	D2	0.000211	0.2146519
D3	0.0400	1.0750	D3	-0.000126	0.2407988
D4	0.2733	1.9467	D4	0.000196	0.2403726
E1	0.1583	0.9933	E1	-0.000811	0.2416731
E2	0.1850	1.0583	E2	-0.000824	0.2427347
E3	0.1150	1.4350	E3	-0.000689	0.2379716
E4	0.1450	1.0683	E4	-0.000746	0.2417898
F1	0.1217	1.1550	F1	-0.000768	0.2315517
F2	0.1667	1.0717	F2	-0.000633	0.2246939
F3	0.1650	4.2100	F3	-0.000759	0.2311511
F4	0.1717	1.2967	F4	-0.000775	0.2355018
G1	0.1150	1.1033	G1	-0.000889	0.2344666
G2	0.2017	1.2417	G2	-0.000852	0.2362288
G3	0.1517	1.4400	G3	-0.000849	0.240775
G4	0.1600	1.3550	G4	-0.000658	0.2282136
H1	0.1233	0.9150	H1	-0.000903	0.2294615
H2	0.1333	1.0700	H2	-0.000797	0.2380014
H3	0.1433	0.9017	H3	-0.000806	0.2363951
H4	0.1400	1.3767	H4	-0.000745	0.2385951
	Alpha	Beta		Slope	Intercept
LB4100 (DU)			226 Cal		
Background			Date Collected: 2/5/2020		
Date Collected:	1/27/2021		Date Collected:	2/5/2020	

302/11/021

Bench Sheet Data

File: 2 11 2021 226 BATCH 82446 CI

12/11/2021

Batch Prep Date: **1/28/2021 13:12**
 BasO4 precip Date: **1/29/2021 15:33**

Ra-226 ID: **12:94-A**
 Activity (pCi/mL): **9.06**

#	Sample ID	Sample Volume Used (mL)	BasO ₄ Planchet Tare (mg)	BasO ₄ Planchet Final (mg)	BasO ₄ Residue (mg)	Ra-226 added (mL)
1	LRB	1000.0	9325.0	9361.6	36.6	
2	LFB	1000.0	9313.4	9358.1	44.7	1.000
3	4819793	929.3	9288.2	9329.0	40.8	
4	4819795	902.6	9298.1	9343.0	44.9	
5	4819798	902.4	9308.1	9349.9	41.8	
6	4820825	900.9	9311.4	9352.2	40.8	
7	4820834	900.0	9328.9	9374.2	45.3	
8	4821593	962.5	9335.3	9368.0	32.7	
9	4821594	904.3	9303.0	9336.7	33.7	
10	4821619	919.6	9315.8	9342.0	26.2	
11	4821620	965.3	9285.7	9313.6	27.9	
12	4821621	950.1	9329.1	9352.2	23.1	
13	4820834MS	901.9	9289.5	9330.4	40.9	1.000
14	4820834MSD	900.4	9317.1	9358.7	41.6	1.000
15					0.0	
16					0.0	

Log ID Ba: **12:95-B** Vol (mL): **1.0** Conc. (mg/mL): **57.0**

QC limits established: 3/8/2018

Lower limit Upper limit Lower Mass Upper mass
 Ba: **80.9 ± 40.9 %** **0.401** **1.218** **22.9** **69.4**

CI 226 BATCH 82446

Detector	Sample	Assay Date	Livetime (min)	Alpha Counts	Beta Counts
A1	LRB	2/5/2021 12:22:49 PM	30	2	43
A2	LFB	2/5/2021 12:22:50 PM	30	348	289
A3	4819793	2/5/2021 12:22:50 PM	30	14	61
A4	4819795	2/5/2021 12:22:50 PM	30	29	58
B1	4819798	2/5/2021 12:22:50 PM	30	9	61
B2	4820825	2/5/2021 12:22:50 PM	30	9	45
B3	4820834	2/5/2021 12:22:50 PM	30	151	197
B4	4821593	2/5/2021 12:22:51 PM	30	14	77
C1	4821594	2/5/2021 12:22:51 PM	30	13	125
C2	4821619	2/5/2021 12:22:51 PM	30	4	42
C3	4821620	2/5/2021 12:22:51 PM	30	4	45
C4	4821621	2/5/2021 12:22:51 PM	30	3	37
D1	4820834MS	2/5/2021 12:22:51 PM	30	466	430
D2	4820834MSD	2/5/2021 12:22:51 PM	30	414	448

2/5/2021 1:20:28 PM

Page 1 of 1

2/27/2021

226 Raw Data

File: 2 11 2021 226 BATCH 82446 C1

302/11/2021

Sample ID	Detector	Last BaSO4 precip.	Analysis Start Date	Count Time	Counts	Ba Mass (mg)	Analysis End Date
LRB	A1	01/29/2021 15:33	02/05/2021 12:22	30	2	36.6	02/05/2021 12:52
LFB	A2	01/29/2021 15:33	02/05/2021 12:22	30	348	44.7	02/05/2021 12:52
4819793	A3	01/29/2021 15:33	02/05/2021 12:22	30	14	40.8	02/05/2021 12:52
4819795	A4	01/29/2021 15:33	02/05/2021 12:22	30	29	44.9	02/05/2021 12:52
4819798	B1	01/29/2021 15:33	02/05/2021 12:22	30	9	41.8	02/05/2021 12:52
4820825	B2	01/29/2021 15:33	02/05/2021 12:22	30	9	40.8	02/05/2021 12:52
4820834	B3	01/29/2021 15:33	02/05/2021 12:22	30	151	45.3	02/05/2021 12:52
4821593	B4	01/29/2021 15:33	02/05/2021 12:22	30	14	32.7	02/05/2021 12:52
4821594	C1	01/29/2021 15:33	02/05/2021 12:22	30	13	33.7	02/05/2021 12:52
4821619	C2	01/29/2021 15:33	02/05/2021 12:22	30	4	26.2	02/05/2021 12:52
4821620	C3	01/29/2021 15:33	02/05/2021 12:22	30	4	27.9	02/05/2021 12:52
4821621	C4	01/29/2021 15:33	02/05/2021 12:22	30	3	23.1	02/05/2021 12:52
4820834MS	D1	01/29/2021 15:33	02/05/2021 12:22	30	466	40.9	02/05/2021 12:52
4820834MSD	D2	01/29/2021 15:33	02/05/2021 12:22	30	414	41.6	02/05/2021 12:52

226 Results

File: 2 11 2021 226 BATCH 82446 C1

12/11/2016

Sample ID	Detector	Analysis Start Date	Activity (pCi/L)	UNC (pCi/L)	DL (pCi/L)	Recovery	Recount	Ba Recovery	Analysis End Date
LRB	A1	02/05/21, 12:22	-0.08 ±	0.10	0.22				02/05/21, 12:52
LF8	A2	02/05/21, 12:22	8.98 ±	0.95	0.14	0.99			02/05/21, 12:52
4819793	A3	02/05/21, 12:22	0.37 ±	0.23	0.17				02/05/21, 12:52
4819795	A4	02/05/21, 12:22	0.69 ±	0.29	0.17				02/05/21, 12:52
4819798	B1	02/05/21, 12:22	0.18 ±	0.18	0.18				02/05/21, 12:52
4820825	B2	02/05/21, 12:22	0.13 ±	0.19	0.22				02/05/21, 12:52
4820834	B3	02/05/21, 12:22	4.23 ±	0.70	0.19		X		02/05/21, 12:52
4821593	B4	02/05/21, 12:22	0.44 ±	0.28	0.21				02/05/21, 12:52
4821594	C1	02/05/21, 12:22	0.40 ±	0.26	0.20				02/05/21, 12:52
4821619	C2	02/05/21, 12:22	0.07 ±	0.19	0.26				02/05/21, 12:52
4821620	C3	02/05/21, 12:22	0.07 ±	0.17	0.24				02/05/21, 12:52
4821621	C4	02/05/21, 12:22	0.01 ±	0.18	0.31				02/05/21, 12:52
4820834MS	D1	02/05/21, 12:22	13.83 ±	1.26	0.18	1.38			02/05/21, 12:52
4820834MSD	D2	02/05/21, 12:22	13.31 ±	1.30	0.23	1.32			02/05/21, 12:52

QC

File: 2 11 2021 226 BATCH 82446 CI

	226
LRB Activity	-0.08
LFB Activity	8.98
LFB % Recovery	99.1
MS % Recovery	95.5
MSD % Recovery	90.2
RPD	3.8
RER	

MS Parent ID	4820834
Parent Activity	4.232279
Parent DL	0.18773
MS Target	10.04546
MSD Target	10.06219
MS Corr. Activity	9.59566
MSD Corr. Activity	9.078186
MS Activity	13.82794
MSD Activity	13.31046

LD ID	
Parent Activity	#N/A
Parent UNC	#N/A
LD Activity	#N/A
LD UNC	#N/A

302/11/21

Radium Bench Sheet

Earliest Due Date/ Rush : 02/17/2021

Balance ID: DR

Balance ID:

Activity

Ra-226 Source 9.06 pCi/ml

Ra-228 Source N/A pCi/ml

YOH Precip Date/Time: N/A

Prep Date/Analyst Initials: 1/29/2021 / em
 Prep Batch/Time: 82446 @ B/A
 BaSO₄ Precip Date/Time: 01/29/2021 15:33

#	Sample ID	Sample Volume (mL)	YOX Planchet Tare Weight (mg)	YOX Planchet Final Weight (mg)	BaSO ₄ Planchet Tare Weight (mg)	BaSO ₄ Planchet Final Weight (mg)	Ra-226 Added (mL)	Ra-228 Added (mL)	Comments
1	LRB 82446	1000	X	X	9325.0	9361.4			
2	LFB 82446	1000	X	X	9313.4	9358.1	1.000	X	
3	4819793	902.5	X	X	9288.2	9329.0		X	A Activity 929.3A,
4	4819795	902.6	X	X	9298.1	9343.0		X	A
5	4819798	902.9	X	X	9308.1	9349.9		X	
6	4820825	900.9	X	X	9311.4	9352.2		X	
7	4820834	900.0	X	X	9328.9	9374.2		X	
8	4821593	902.5	X	X	9335.3	9368.0		X	A Activity
9	4821594	904.3	X	X	9303.0	9336.7	2.11 2.11	X	A Activity
10	4821619	919.6	X	X	9315.8	9342.0		X	A
11	4821620	918.5	X	X	9285.7	9313.6		X	A
12	4821621	900.1	X	X	9329.1	9352.2		X	A
13	4820834MS	901.9	X	X	9289.5	9320.4	1.000	X	
14	4820834MSD	900.4	X	X	9317.1	9358.4	1.000	X	
15									
16									

For 7500-Ra B or 7500-Ra D

Lot # Conc HNO₃: 204738 Reagent ID NH₄SO₄: N/A Reagent ID 0.25M EDTA: 12198-B

Reagent ID 6N HNO₃: N/A Reagent ID (NH₄)₂S: N/A Reagent ID Lead Carrier A: N/A

Reagent ID 1N HNO₃: N/A Reagent ID (NH₄)₂OX: N/A Reagent ID Lead Carrier B: N/A

Reagent ID 18N H₂SO₄: 12198-9 Lot # Conc NH₄OH: 205668 Reagent ID Lead Carrier: 12182-9

Lot # Conc Acetic Acid: 203615 Reagent ID 6N NH₄OH: 12193-B Reagent ID Sr-Y Carrier: N/A

Reagent ID 1M Citric Acid: 12196-a Reagent ID 18N NaOH: N/A Reagent ID Ba Carrier: 12195-B Vol Used: 1.0 (mL) Conc: 57.0 (mg/mL)

Reagent ID 10N NaOH: N/A Reagent ID Y Carrier: N/A Vol Used: N/A (mL) Conc: N/A (mg/mL)

**Eurofins Eaton Analytical
Laboratory Reagent Blank**

Sample Matrix: RW
Instrument: GPC - CI
Sample Number: 4832582
Sample Site: Not Available
Sample Location: Not Available
Run Status: Completed
Order Number: Not Available
Client: EEA-SBN / QA Department

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 18:18
Analyst: oke
Results Submitted By: oke
Run Number: 285326
Receipt Batch Number: Not Available
Project Manager: Not Available
File Name:82444CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	0.26	0.26	+/-0.41	0.42	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Laboratory Reagent Blank**

Sample Matrix: RW
Instrument: GPC - CI
Sample Number: 4832582
Sample Site: Not Available
Sample Location: Not Available
Run Status: Completed
Order Number: Not Available
Client: EEA-SBN / QA Department

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 18:18
Analyst: oke
Results Submitted By: oke
Run Number: 285326
Receipt Batch Number: Not Available
Project Manager: Not Available
File Name:82444CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	0.26	0.26	+/-0.41	0.42	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Laboratory Fortified Blank**

Sample Matrix: RW
Instrument: GPC - CI
Sample Number: 4832583
Sample Site: Not Available
Sample Location: Not Available
Run Status: Completed
Order Number: Not Available
Client: EEA-SBN / QA Department

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 16:36
Analyst: oke
Results Submitted By: oke
Run Number: 285326
Receipt Batch Number: Not Available
File Name:82444CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Units</u>	<u>Target</u>	<u>%Rec</u>	<u>Limits</u>		<u>Pass/Fail</u>
					<u>Lower</u>	<u>Upper</u>	
Radium-228	6.98	pCi/L	8.52	82	80	120	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Matrix Spike Report**

File Name: 82444CI
Today's Date: 02/11/2021
Instrument: GPC - CI
Sample Number: 4832584
Associated Sample: 4820825
Run Status: Completed
Order Number: Not Available

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 16:25
Analyst: oke
Results Submitted By: oke
Run Number: 285326
Receipt Batch Number: 508905
File Name:82444CI

Ordered Parameter Results

<u>Parameter</u>	<u>Conc Units</u>	<u>Target</u>	<u>Sample Conc</u>	<u>MS Conc</u>	<u>MS %Rec</u>	<u>Pass/Fail</u>
Radium-228	pCi/L	9.46	0.9	9.4	99	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

Eurofins Eaton Analytical
Matrix Spike - Matrix Spike Duplicate Report

File Name: 82444CI
Today's Date: 02/11/2021
Instrument: GPC - CI
Sample Number: 4832585
Associated Sample: 4820825
Run Status: Completed
Order Number: Not Available

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 16:25
Analyst: oke
Results Submitted By: oke
Run Number: 285326
Receipt Batch Number: 508905
File Name:82444CI

Ordered Parameter Results

<u>Parameter</u>	<u>Conc</u> <u>Units</u>	<u>Target</u>	<u>Sample Conc</u>	<u>MS Conc</u>	<u>MS</u> <u>%Rec</u>	<u>Pass/Fail</u>
Radium-228	pCi/L	9.44	0.9	9.68	103	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821594
Sample Site: 21A0660-10/MW-10
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 16:24
Analyst: oke
Results Submitted By: oke
Run Number: 285326
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82444CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	1.33	1.3	+/-0.5	0.4	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821593
Sample Site: 21A0660-09/MW-9
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 16:24
Analyst: oke
Results Submitted By: oke
Run Number: 285326
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82444CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	1.3	1.3	+/-0.5	0.5	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

Ra 228 Batch Report by SM 7500 Ra-D

Instrument:	CI
Analyst:	Oke
Prep Batch:	82444
Date:	02/11/21

filename: 2 11 2021 228 BATCH 82444 CI

OK
2/11/2021

Calibration Data

File: 2 11 2021 228 BATCH 82444 CI

LB4100 (CI)			228 Cal	
Background			Date Collected: 2/18/2020	
Date Collected:	Alpha	Beta		Efficiency
2/8/2021	A1	0.0933	A1	0.436
	A2	0.2667	A2	0.432
	A3	0.0767	A3	0.437
	A4	0.4450	A4	0.436
	B1	0.0933	B1	0.457
	B2	0.1517	B2	0.459
	B3	0.1050	B3	0.421
	B4	0.1400	B4	0.435
	C1	0.0683	C1	0.401
	C2	0.0833	C2	0.400
	C3	0.0733	C3	0.387
	C4	0.1200	C4	0.398
	D1	0.0617	D1	0.397
	D2	0.0600	D2	0.438
	D3	0.0517	D3	0.419
	D4	0.1617	D4	0.441

LB4200 (DU)			228 Cal	
Background			Date Collected: 2/10/2020	
Date Collected:	Alpha	Beta		Efficiency
1/27/2021	E1	0.1583	E1	0.369
	E2	0.1850	E2	0.381
	E3	0.1150	E3	0.379
	E4	0.1450	E4	0.372
	F1	0.1217	F1	0.345
	F2	0.1667	F2	0.367
	F3	0.1650	F3	0.357
	F4	0.1717	F4	0.368
	G1	0.1150	G1	0.349
	G2	0.2017	G2	0.357
	G3	0.1517	G3	0.351
	G4	0.1600	G4	0.363
	H1	0.1233	H1	0.356
	H2	0.1333	H2	0.361
	H3	0.1433	H3	0.370
	H4	0.1400	H4	0.371

On
2/11/2021

Bench Sheet Data

File: 2 11 2021 228 BATCH 82444 CI

Batch Prep Date: **1/28/2021 13:12** Corrected Ra-228 Prep Date: **12-73c** Ra-228 Source
 BaSO₄ Precipitation Date: **2/3/2021 12:25** 228 Activity (pCi): **8.52** Ra-228 Prep Date: **8/6/2020** Ra-228 added (ml): **9.07**
 Y(OH)₃ Precipitations Date: **2/10/2021 9:48** Activity (pCi/mL)

#	Sample ID	Sample Volume Used (mL)	YOX Planchet Tare Weight (mg)	YOX Planchet Final Weight (mg)	YOX Residue (mg)	BaSO ₄ Planchet Tare Weight (mg)	BaSO ₄ Planchet Final Weight (mg)	BaSO ₄ Residue (mg)	Ra-228 added (ml)
1	LRB	1000.0	9307.1	9338.6	31.5	9319.9	9381.2	61.3	
2	LF8	1000.0	9333.6	9361.6	28.0	9281.5	9336.3	54.8	1.00
3	4819793	902.0	9332.1	9362.6	30.5	9324.1	9382.9	58.8	
4	4819795	932.4	9311.9	9340.2	28.3	9310.8	9364.4	53.6	
5	4819798	955.5	9330.2	9359.6	29.4	9324.1	9381.4	57.3	
6	4820825	915.9	9250.4	9280.3	29.9	9318.7	9375.4	56.7	
7	4820834	944.5	9323.3	9353.8	30.5	9309.8	9365.2	55.4	
8	4821593	927.4	9289.9	9319.0	29.1	9328.2	9384.3	56.1	
9	4821594	1016.6	9282.1	9312.2	30.1	9364.6	9425.7	61.1	
10	4821619	961.5	9317.9	9347.9	30.0	9322.9	9382.4	59.5	
11	4821620	993.3	9304.9	9335.2	30.3	9305.3	9361.6	56.3	
12	4821621	996.4	9293.4	9324.8	31.4	9352.1	9404.8	52.7	
13	4820825MS	900.6	9331.2	9360.5	29.3	9264.6	9315.6	51.0	1.00
14	4820825MSD	902.5	9364.7	9395.0	30.3	9258.6	9311.0	52.4	1.00
15					0.0			0.0	
16					0.0			0.0	

Log ID Ba: **12-95b** Vol (mL): **1.0** Conc. (mg/mL): **57.0**
 Log ID Y: **12-94c** Vol (mL): **0.5** Conc. (mg/mL): **66.7**

QC limits established: 12/11/2019
 Lower limit Upper limit Lower Mass Upper mass
 Ba: 94.2 ± 21.7% 0.73 1.16 41.3 66.1
 Y: 89.3 ± 22.8% 0.66 1.12 22.1 37.4

Ono
2/11/2021

CI 228 BATCH 82444

Detector	Sample	Assay Date	Livetime (min)	Alpha Counts	Beta Counts
A2	LRB	2/10/2021 3:18:18 PM	180	24	215
A3	LFB	2/10/2021 1:36:56 PM	180	60	880
A4	4819793	2/10/2021 1:36:56 PM	180	82	358
B1	4819795	2/10/2021 1:36:56 PM	180	34	313
B2	4819798	2/10/2021 1:36:56 PM	180	45	303
B3	4820825	2/10/2021 1:36:56 PM	180	40	334
B4	4820834	2/10/2021 1:36:56 PM	180	52	443
C2	4821593	2/10/2021 1:24:59 PM	180	37	303
C3	4821594	2/10/2021 1:24:59 PM	180	43	359
C4	4821619	2/10/2021 1:36:56 PM	180	49	324
D1	4821620	2/10/2021 1:36:56 PM	180	36	273
D2	4821621	2/10/2021 1:36:56 PM	180	45	417
D3	4820825MS	2/10/2021 1:25:00 PM	180	41	812
D4	4820825MSD	2/10/2021 1:25:00 PM	180	84	1009

2/11/2021 12:06:14 PM

Page 1 of 1

One
2/11/2021

228 Raw Data

File: 2 11 2021 228 BATCH 82444 CI

Sample ID	Detector	Last BaSO4 precip.	YOH precip.	Analysis Start Date	Count Time	Counts	Ba Mass (mg)	Y Mass (mg)	Analysis End Date
LRB	A2	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 15:18	180	215	61.3	31.5	02/10/2021 18:18
LFB	A3	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:36	180	880	54.8	28.0	02/10/2021 16:36
4819793	A4	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:36	180	358	58.8	30.5	02/10/2021 16:36
4819795	B1	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:36	180	313	53.6	28.3	02/10/2021 16:36
4819798	B2	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:36	180	303	57.3	29.4	02/10/2021 16:36
4820825	B3	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:36	180	334	56.7	29.9	02/10/2021 16:36
4820834	B4	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:36	180	443	55.4	30.5	02/10/2021 16:36
4821593	C2	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:24	180	303	56.1	29.1	02/10/2021 16:24
4821594	C3	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:24	180	359	61.1	30.1	02/10/2021 16:24
4821619	C4	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:36	180	324	59.5	30.0	02/10/2021 16:36
4821620	D1	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:36	180	273	56.3	30.3	02/10/2021 16:36
4821621	D2	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:36	180	417	52.7	31.4	02/10/2021 16:36
4820825MS	D3	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:25	180	812	51.0	29.3	02/10/2021 16:25
4820825MSD	D4	02/03/2021 12:25	02/10/2021 09:48	02/10/2021 13:25	180	1009	52.4	30.3	02/10/2021 16:25

One
2/11/2021

228 Results

File: 2 11 2021 228 BATCH 82444 CI

Sample ID	Detector	Analysis Start Date	Activity (pCi/L)	UNC (pCi/L)	DL (pCi/L)	Recovery	Ba QC	Y QC	Analysis End Date
LRB	A2	02/10/21, 15:18	0.262 ±	0.41	0.42				02/10/2021 18:18
LFB	A3	02/10/21, 13:36	6.981 ±	0.79	0.55	0.82			02/10/2021 16:36
4819793	A4	02/10/21, 13:36	0.846 ±	0.51	0.49				02/10/2021 16:36
4819795	B1	02/10/21, 13:36	1.128 ±	0.51	0.48				02/10/2021 16:36
4819798	B2	02/10/21, 13:36	0.386 ±	0.45	0.45				02/10/2021 16:36
4820825	B3	02/10/21, 13:36	0.898 ±	0.53	0.51				02/10/2021 16:36
4820834	B4	02/10/21, 13:36	1.417 ±	0.57	0.53				02/10/2021 16:36
4821593	C2	02/10/21, 13:24	1.295 ±	0.52	0.48				02/10/2021 16:24
4821594	C3	02/10/21, 13:24	1.326 ±	0.48	0.43				02/10/2021 16:24
4821619	C4	02/10/21, 13:36	1.080 ±	0.49	0.46				02/10/2021 16:36
4821620	D1	02/10/21, 13:36	1.113 ±	0.46	0.42				02/10/2021 16:36
4821621	D2	02/10/21, 13:36	1.573 ±	0.53	0.48				02/10/2021 16:36
4820825MS	D3	02/10/21, 13:25	9.397 ±	0.86	0.48	0.99			02/10/2021 16:25
4820825MSD	D4	02/10/21, 13:25	9.676 ±	0.87	0.53	1.02			02/10/2021 16:25

One
2/11/2021

QC

File: 2 11 2021 228 BATCH 82444 CI

228

LRB Activity	0.26	
LFB Activity	6.98	
LFB % Recovery	81.91	
MS % Recovery	99.30	
MSD % Recovery	102.46	
RPD	2.9	
RER		

MS Parent ID **4820825**

Parent value 0.8976096

Parent DL 0.5079729

MS Target 9.464

MSD Target 9.444

MS Corr. Activity 9.3973537

MSD Corr. Activity 9.6761356

MS Activity 9.3973537

MSD Activity 9.6761356

LD Parent ID: **[REDACTED]**

Parent value #N/A

Parent UNC #N/A

LD value #N/A

LD UNC #N/A

Radium Bench Sheet

Earliest Due Date/ Rush : 02/17/2021

Prep Date/Analyst Initials: 1/29/2021/Eno
 Prep Batch/Time: 82444 @ 1312
 Ra-226 Source: 12-228
 Ra-228 Source: 12-228
 BaSO₄ Precip Date/Time: 2/10/2021 @ 1416
 YOH Precip Date/Time: 2/10/2021 @ 1416
 ID: N/A Activity: 901 pCi/ml

#	Sample ID	Sample Volume (mL)	Balance ID:		Balance ID:		Activity		Comments
			YOX Planchet Take Weight (mg)	YOX Planchet Final Weight (mg)	BaSO ₄ Planchet Take Weight (mg)	BaSO ₄ Planchet Final Weight (mg)	Ra-226 Added (mL)	Ra-228 Added (mL)	
1	LRB 82444	1000	9307.1	9338.6	9319.9	9381.2	X		
2	LFB 82444	1000	9353.6	9361.6	9281.9	9336.3	X	1.000	all over
3	4819793	999.9	9358.1	9362.6	9329.1	9382.9	X		AB dirty 9020, A
4	4819795	999.9	9311.9	9340.2	9310.8	9364.4	X		
5	4819798	999.9	9330.2	9359.6	9329.1	9381.4	X		
6	4820825	999.9	9250.2	9280.3	9318.7	9375.4	X		
7	4820834	999.9	9328.5	9353.8	9309.8	9365.2	X		
8	4821593	999.9	9329.9	9319.0	9328.2	9384.3	X		AB dirty
9	4821594	1010.6	9328.1	9312.2	9329.1	9425.7	X		AB dirty
10	4821619	999.9	9317.9	9342.9	9322.9	9382.4	X		AB
11	4821620	999.9	9304.9	9335.2	9306.5	9361.6	X		AB
12	4821621	999.9	9299.4	9324.8	9308.1	9404.8	X		B
13	4820825MS	900.0	9331.8	9360.5	9329.1	9315.6	X	1.000	
14	4820825MSD	900.0	9309.7	9395.0	9268.6	9311.0	X	1.000	
15									
16									

For 7500-Ra B or 7500-Ra D

Lot # Conc HNO₃: 12-99b Reagent ID NH₄SO₄: 12-99C Reagent ID 0.25M EDTA: 12-100B
 Reagent ID 6N HNO₃: 12-99a Reagent ID (NH₄)₂S: 12-91b Reagent ID Lead Carrier A: 12-91c
 Reagent ID 1N HNO₃: 12-98g Reagent ID (NH₄)₂Ox: 203465 Reagent ID Lead Carrier B: 12-99c
 Reagent ID 18N H₂SO₄: 2033015 Reagent ID 6N NH₄OH: N/A Reagent ID Lead Carrier: N/A
 Lot # Conc Acetic Acid: 12-964 Reagent ID 18N NaOH: 12-97b Reagent ID Sr-Y Carrier: 12-95g
 Reagent ID 1M Citric Acid: 12-964 Reagent ID 10N NaOH: 12-99a Reagent ID Ba Carrier: 12-95b Vol Used: 10 (mL) Conc: 57 (mg/mL)
 Reagent ID Y Carrier: 12-99c Vol Used: 0.5 (mL) Conc: 66.7 (mg/mL)

**Eurofins Eaton Analytical
Laboratory Reagent Blank**

Sample Matrix: RW
Instrument: GPC - CI
Sample Number: 4832640
Sample Site: Not Available
Sample Location: Not Available
Run Status: Completed
Order Number: Not Available
Client: EEA-SBN / QA Department

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: Not Available
Project Manager: Not Available
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	0.06	0.06	+/-0.41	0.44	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Laboratory Fortified Blank**

Sample Matrix: RW
Instrument: GPC - CI
Sample Number: 4832641
Sample Site: Not Available
Sample Location: Not Available
Run Status: Completed
Order Number: Not Available
Client: EEA-SBN / QA Department

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: Not Available
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Units</u>	<u>Target</u>	<u>%Rec</u>	<u>Limits</u>		<u>Pass/Fail</u>
					<u>Lower</u>	<u>Upper</u>	
Radium-228	8.43	pCi/L	8.52	99	80	120	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Matrix Spike Report**

File Name: 82435CI
Today's Date: 02/11/2021
Instrument: GPC - CI
Sample Number: 4832642
Associated Sample: 4819814
Run Status: Completed
Order Number: Not Available

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: 508775
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Conc Units</u>	<u>Target</u>	<u>Sample Conc</u>	<u>MS Conc</u>	<u>MS %Rec</u>	<u>Pass/Fail</u>
Radium-228	pCi/L	9.47	2.3	11.3	95	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Matrix Spike - Matrix Spike Duplicate Report**

File Name: 82435CI
Today's Date: 02/11/2021
Instrument: GPC - CI
Sample Number: 4832643
Associated Sample: 4819814
Run Status: Completed
Order Number: Not Available

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: 508775
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Conc Units</u>	<u>Target</u>	<u>Sample Conc</u>	<u>MS Conc</u>	<u>MS %Rec</u>	<u>Pass/Fail</u>
Radium-228	pCi/L	9.46	2.3	12.5	108	PASS

Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821585
Sample Site: 21A0660-01/MW-1R
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	0.58	0.58	+/-0.45	0.44	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821587
Sample Site: 21A0660-03/MW-3
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	0.88	0.88	+/-0.56	0.54	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821591
Sample Site: 21A0660-07/MW-7
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	0.93	0.93	+/-0.47	0.44	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821589
Sample Site: 21A0660-05/MW-5
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	0.09	0.09	+/-0.58	0.61	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821586
Sample Site: 21A0660-02/MW-2
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	1.92	1.9	+/-0.6	0.5	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821592
Sample Site: 21A0660-08/MW-8
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	2.32	2.3	+/-0.6	0.5	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821590
Sample Site: 21A0660-06/MW-6
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	0.87	0.87	+/-0.58	0.56	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

**Eurofins Eaton Analytical
Sample Result Record Sheet**

Sample Matrix: GW
Instrument: GPC - CI
Sample Number: 4821588
Sample Site: 21A0660-04/MW-4
Sample Location: MW Sampling-01-25-21
Run Status: Completed
Order Number: 409880
Client: Trace Analytical Laboratories / Jon Mink

Method: 7500-Ra D
Analysis Date: 02/10/2021
Analysis Time: 13:19
Analyst: oke
Results Submitted By: oke
Run Number: 285328
Receipt Batch Number: 509005
Project Manager: fullmer
File Name:82435CI

Ordered Parameter Results

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
Radium-228	0.52	0.52	+/-0.48	0.47	pCi/L

Additional Searched For Parameters

<u>Parameter</u>	<u>Amount</u>	<u>Reported Amount</u>	<u>Uncertainty</u>	<u>MRL</u>	<u>Units</u>
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Comments:

NC = Not Confirmed, NS = Not Searched

Ra 228 Batch Report by SM 7500 Ra-D

Instrument:	CI
Analyst:	Oke
Prep Batch:	82435
Date:	02/11/21
filename:	2 11 2021 228 BATCH 82435 CI

Calibration Data

File: 2 11 2021 228 BATCH 82435 CI

LB4100 (CI)			228 Cal	
Background			Date Collected: 2/18/2020	
Date Collected:	Alpha	Beta		Efficiency
2/8/2021			A1	0.436
	A1	0.0933	A2	0.432
	A2	0.2667	A3	0.437
	A3	0.0767	A4	0.436
	A4	0.4450	B1	0.457
	B1	0.0933	B2	0.459
	B2	0.1517	B3	0.421
	B3	0.1050	B4	0.435
	B4	0.1400	C1	0.401
	C1	0.0683	C2	0.400
	C2	0.0833	C3	0.387
	C3	0.0733	C4	0.398
	C4	0.1200	D1	0.397
	D1	0.0617	D2	0.438
	D2	0.0600	D3	0.419
	D3	0.0517	D4	0.441
	D4	0.1617		

LB4200 (DU)			228 Cal	
Background			Date Collected: 2/10/2020	
Date Collected:	Alpha	Beta		Efficiency
1/27/2021			E1	0.369
	E1	0.1583	E2	0.381
	E2	0.1850	E3	0.379
	E3	0.1150	E4	0.372
	E4	0.1450	F1	0.345
	F1	0.1217	F2	0.367
	F2	0.1667	F3	0.357
	F3	0.1650	F4	0.368
	F4	0.1717	G1	0.349
	G1	0.1150	G2	0.357
	G2	0.2017	G3	0.351
	G3	0.1517	G4	0.363
	G4	0.1600	H1	0.356
	H1	0.1233	H2	0.361
	H2	0.1333	H3	0.370
	H3	0.1433	H4	0.371
	H4	0.1400		

One
ae/h/2021

Bench Sheet Data

File: 2 11 2021 228 BATCH 82435 CI

Batch Prep Date: 1/28/2021 10:55
 Corrected Ra-228 Activity (pCi) 8.52
 Ra-228 Source Ra-228 added (ml) 9.07
 BasO₄ Precipitation Date: 2/3/2021 12:20
 Ra-228 Activity (pCi) 228
 Prep Date 8/6/2020
 Y(OH)₃ Precipitations Date: 2/10/2021 7:25

#	Sample ID	Sample Volume Used (mL)	YOX Planchet Tare Weight (mg)	YOX Planchet Final Weight (mg)	YOX Residue (mg)	BasO ₄ Planchet Tare Weight (mg)	BasO ₄ Planchet Final Weight (mg)	BasO ₄ Residue (mg)	Ra-228 added (ml)
1	LRB	1000.0	9295.4	9320.6	25.2	9331.6	9386.1	54.5	
2	LEB	1000.0	9292.3	9318.1	25.8	9302.7	9360.8	58.1	1.00
3	4819170	935.0	9285.6	9312.1	26.5	9307.3	9365.4	58.1	
4	4819814	904.7	9340.6	9365.6	25.0	9365.9	9420.5	54.6	
5	4821585	929.8	9307.2	9334.5	27.3	9349.9	9408.8	58.9	
6	4821586	907.1	9305.7	9332.2	26.5	9339.2	9398.1	58.9	
7	4821587	993.4	9322.5	9347.5	25.0	9283.0	9339.5	56.5	
8	4821588	967.9	9314.1	9340.2	26.1	9303.2	9359.1	55.9	
9	4821589	954.8	9291.0	9315.1	24.1	9312.1	9365.2	53.1	
10	4821590	915.8	9298.4	9325.7	27.3	9375.4	9426.2	50.8	
11	4821591	976.2	9269.2	9295.1	25.9	9291.9	9349.3	57.4	
12	4821592	948.8	9329.9	9357.1	27.2	9272.5	9328.0	55.5	1.00
13	4819814MS	900.4	9296.8	9324.2	27.4	9319.2	9368.5	49.3	1.00
14	4819814MSD	900.7	9290.8	9315.9	25.1	9288.2	9342.9	54.7	1.00
15					0.0			0.0	
16					0.0			0.0	

Log ID Ba: 12-95b Vol (mL): 1.0 Conc. (mg/mL): 57.0
 Log ID Y: 12-94c Vol (mL): 0.5 Conc. (mg/mL): 66.7

QC limits established: 12/11/2019
 Lower limit Upper limit Lower Mass Upper mass
 Ba: 94.2 ± 21.7% 0.73 1.16 41.3 66.1
 Y: 89.3 ± 22.8% 0.66 1.12 22.1 37.4

Ono
 02/11/2021

CI 228 BATCH 82435

Detector	Sample	Assay Date	Livetime (min)	Alpha Counts	Beta Counts
A2	LRB	2/10/2021 10:19:52 AM	180	30	199
A3	LFB	2/10/2021 10:19:52 AM	180	14	1046
A4	48198170	2/10/2021 10:19:52 AM	180	40	284
B1	4819814	2/10/2021 10:19:52 AM	180	35	395
B2	4821585	2/10/2021 10:19:52 AM	180	38	321
B3	4821586	2/10/2021 10:19:52 AM	180	28	413
B4	4821587	2/10/2021 10:19:52 AM	180	47	398
C2	4821588	2/10/2021 10:19:52 AM	180	11	248
C3	4821589	2/10/2021 10:19:53 AM	180	19	251
C4	4821590	2/10/2021 10:19:53 AM	180	20	295
D1	4821591	2/10/2021 10:19:53 AM	180	13	255
D2	4821592	2/10/2021 10:19:53 AM	180	24	472
D3	4819814AMS	2/10/2021 10:19:53 AM	180	27	923
D4	4819814MSD	2/10/2021 10:19:53 AM	180	38	1159

2/11/2021 11:55:25 AM

Page 1 of 1

Ono
02/11/2021

228 Raw Data

File: 2 11 2021 228 BATCH 82435 CI

Sample ID	Detector	Last BaSO4 precip.	YOH precip.	Analysis Start Date	Count Time	Counts	Ba Mass (mg)	Y Mass (mg)	Analysis End Date
LRB	A2	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	199	54.5	25.2	02/10/2021 13:19
LFB	A3	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	1046	58.1	25.8	02/10/2021 13:19
4819170	A4	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	284	58.1	26.5	02/10/2021 13:19
4819814	B1	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	395	54.6	25.0	02/10/2021 13:19
4821585	B2	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	321	58.9	27.3	02/10/2021 13:19
4821586	B3	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	413	58.9	26.5	02/10/2021 13:19
4821587	B4	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	398	56.5	25.0	02/10/2021 13:19
4821588	C2	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	248	55.9	26.1	02/10/2021 13:19
4821589	C3	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	251	53.1	24.1	02/10/2021 13:19
4821590	C4	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	295	50.8	27.3	02/10/2021 13:19
4821591	D1	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	255	57.4	25.9	02/10/2021 13:19
4821592	D2	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	472	55.5	27.2	02/10/2021 13:19
4819814MS	D3	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	923	49.3	27.4	02/10/2021 13:19
4819814MSD	D4	02/03/2021 12:20	02/10/2021 07:25	02/10/2021 10:19	180	1159	54.7	25.1	02/10/2021 13:19

Omp
02/11/2021

228 Results

File: 2 11 2021 228 BATCH 82435 CI

Sample ID	Detector	Analysis Start Date	Activity (pCi/L)	UNC (pCi/L)	DL (pCi/L)	Recovery	Ba QC	Y QC	Analysis End Date
LRB	A2	02/10/21, 10:19	0.064 ± 0.41	0.44					02/10/2021 13:19
LFB	A3	02/10/21, 10:19	8.431 ± 0.79	0.51		0.99			02/10/2021 13:19
4819170	A4	02/10/21, 10:19	-0.061 ± 0.47	0.50					02/10/2021 13:19
4819814	B1	02/10/21, 10:19	2.301 ± 0.58	0.49					02/10/2021 13:19
4821585	B2	02/10/21, 10:19	0.580 ± 0.45	0.44					02/10/2021 13:19
4821586	B3	02/10/21, 10:19	1.923 ± 0.57	0.50					02/10/2021 13:19
4821587	B4	02/10/21, 10:19	0.881 ± 0.56	0.54					02/10/2021 13:19
4821588	C2	02/10/21, 10:19	0.524 ± 0.48	0.47					02/10/2021 13:19
4821589	C3	02/10/21, 10:19	0.092 ± 0.58	0.61					02/10/2021 13:19
4821590	C4	02/10/21, 10:19	0.871 ± 0.58	0.56					02/10/2021 13:19
4821591	D1	02/10/21, 10:19	0.930 ± 0.47	0.44					02/10/2021 13:19
4821592	D2	02/10/21, 10:19	2.320 ± 0.58	0.49					02/10/2021 13:19
4819814MS	D3	02/10/21, 10:19	11.303 ± 0.94	0.49		1.19			02/10/2021 13:19
4819814MSD	D4	02/10/21, 10:19	12.504 ± 0.99	0.57		1.32			02/10/2021 13:19

DL
02/11/2021

QC

File: 2 11 2021 228 BATCH 82435 CI

228

LRB Activity	0.06	
LFB Activity	8.43	
LFB % Recovery	98.92	
MS % Recovery	95.10	
MSD % Recovery	107.82	
RPD	10.1	
RER		

MS Parent ID **4819814**
Parent value 2.3008187
Parent DL 0.4945048
MS Target 9.466
MSD Target 9.463
MS Corr. Activity 9.0025596
MSD Corr. Activity 10.203087
MS Activity 11.303378
MSD Activity 12.503906

LD Parent ID: **[REDACTED]**
Parent value #N/A
Parent UNC #N/A
LD value #N/A
LD UNC #N/A

Qmg
09/1/2021

Radium Bench Sheet

Earliest Due Date/ Rush : 02/15/2021

Prep Date/Analyst Initials: 1/28/2021 / GND
 Prep Batch/Time: 82435 / 1055
 BasO₄ Precip Date/Time: 2/1/2021 / 12:20
 Ra-226 Source: 12:33:00
 Ra-228 Source: 12:33:00
 YOH Precip Date/Time: 2/1/2021 / 09:25

#	Sample ID	Sample Volume (mL)	Balance ID: DZ		Balance ID: CU		Activity		Comments
			YOX Planchet Tare Weight (mg)	YOX Planchet Final Weight (mg)	BasO ₄ Planchet Tare Weight (mg)	BasO ₄ Planchet Final Weight (mg)	N/A	pc/ml	
1	LRB 82435	1000	92954	9320.6	9351.4	9386.1	X		
2	LFB 82435	1000	9292.2	9318.1	9307.3	9360.8	X	1.000	
3	4819170	985.0	9386.0	9312.1	9307.3	9354.3	X	3.02/1/21	A
4	4819814	902.7	9390.0	9365.6	9316.9	9420.5	X		AB dirty
5	4821585	929.8	9304.2	9334.5	9329.9	9408.5	X		B dirty
6	4821586	907.1	9305.7	9332.2	9339.2	9398.1	X		B
7	4821587	905.4	9322.5	9347.5	9383.0	9339.5	X		" "
8	4821588	916.9	9324.1	9340.2	9302.2	9359.1	X		" "
9	4821589	909.8	9329.1	9315.1	9312.1	9365.2	X		B
10	4821590	915.8	9328.4	9325.7	9336.9	9326.2	X		B dirty
11	4821591	914.2	9326.4	9345.1	9329.9	9349.3	X		A, B dirty
12	4821592	918.8	9329.9	9352.1	9329.9	9328.0	X		" "
13	4819814MS	900.9	9329.9	9324.2	9318.9	9368.5	X	1.000	AB
14	4819814MSD	900.7	9329.9	9315.9	9388.2	9342.9	X	1.000	B
15									
16									

For 7500-Ra B or 7500-Ra D

Lot # Conc HNO₃: 8021784
 Reagent ID 6N HNO₃: 12-896
 Reagent ID 1N HNO₃: 12-899
 Reagent ID 18N H₂SO₄: 12-989
 Lot # Conc Acetic Acid: 203015
 Reagent ID 1M Citric Acid: 12-916
 Reagent ID NH₄SO₄: 12-966
 Reagent ID (NH₄)₂S: 12-916
 Reagent ID (NH₄)₂OX: 12-992
 Lot # Conc NH₄OH: 203015
 Reagent ID 6N NH₄OH: N/A
 Reagent ID 18N NaOH: 12-936
 Reagent ID 10N NaOH: 12-916
 Reagent ID 0.25M EDTA: 12-1006
 Reagent ID Lead Carrier A: 12-916
 Reagent ID Lead Carrier B: 12-992
 Reagent ID Lead Carrier: 12-992
 Reagent ID Sr-Y Carrier: 12-992
 Reagent ID Ba Carrier: 12-992
 Reagent ID Y Carrier: 12-992
 Vol Used: 1.0 (mL) Conc: 57.0 (mg/mL)
 Vol Used: 0.5 (mL) Conc: 16.7 (mg/mL)

QA - SDWA Detection Limit Study for Radionuclides

Approved by: Bruce Li Date: 02/10/2020
 Comments: Added Instrument HA on 04/07/2020
 Approved By: Dale Piechocki Date: 09/09/2020

Instrument	Method	Matrix Type	Analyzed By	Prepared By	Earliest Analysis date	Parameter	Rep 1 (pCi/L)	Rep 2 (pCi/L)	Rep 3 (pCi/L)	Rep 4 (pCi/L)	Rep 5 (pCi/L)	Rep 6 (pCi/L)	Rep 7 (pCi/L)	Mean (pCi/L)	Chi-Square	Acceptability	Target concentration (pCi/L)
Example						Example from Document Showing Correct Equation Results	2.89	5.51	2.88	3.72	3.42	3.11	3.17	3.53	2.0	Acceptable	3.13
CK	906	RW	Jon Bolen	Jon Bolen	1/22/2020	Tritium	1314.00	998.00	1075.00	883.00	865.00	1084.00	1223.00	1063.14	0.6	Acceptable	1015.00
DU	7110 C	RW	Jon Bolen	Jon Bolen	1/22/2020	Gross Alpha	2.52	3.08	2.40	3.61	2.41	3.10	2.19	2.76	0.7	Acceptable	3.00
CI	7110 B	RW	Jon Bolen	Jon Bolen	2/7/2020	Gross Alpha	2.67	3.85	2.25	2.84	2.25	3.19	2.68	2.82	0.7	Acceptable	3.15
CI	7110 B	RW	Jon Bolen	Jon Bolen	2/7/2020	Gross Beta	5.80	3.11	6.46	2.26	5.87	7.20	3.84	4.93	4.7	Acceptable	4.11
DU	7500-Ra D	RW	Jon Bolen	Jon Bolen	1/29/2020	Radium 228	1.03	0.89	0.47	0.92	0.90	1.07	0.47	0.82	1.3	Acceptable	1.06
DU	7500-Ra B	RW	Jon Bolen	Jon Bolen	1/22/2020	Radium 226	1.68	1.20	1.00	1.18	0.80	1.41	1.06	1.19	1.9	Acceptable	1.01
CK	906	RW	Jon Bolen	Jon Bolen	3/7/2020	Tritium	968.00	1080.00	916.00	855.00	1087.00	1098.00	1056.00	1008.57	0.2	Acceptable	1015.00
HA	906	RW	Jon Bolen	Jon Bolen	3/17/2020	Tritium	612.00	954.00	941.00	587.00	695.00	947.00	930.00	809.43	0.7	Acceptable	1007.00

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 Muskegon, MI 49444-2673



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CHAIN-OF-CUSTODY RECORD



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Page _____ of _____

Trace ID No.
21A0660

Report Results To:

Company Name: Grand Haven Board of Light & Power	PO #:
Report To: Paul Cederquist	Contact Name:
Mailing Address:	Billing Address (if different):
City, State, Zip Code:	City, State, Zip Code:
Office Phone:	Cell Phone:
Email Address:	Phone Number:
	Billing Email Address:

Trace Use:

Logged By: NC	Checked By:
Soil Volatiles Preserved (circle if applicable): MeOH Low Level Lab	
Sampling Time:	

Turnaround Requirements:
 Standard, 5-10 Days
 3 Day*
 1 Day*
 *Results provided end of business day, requires prior approval.

Matrix Key:
 S = Soil / Solid
 W = Water
 SL = Sludge
 OI = Oil
 WI = Wipes
 LW = Liquid Waste
 A = Air
 D = Drinking Water

Project Name: **MW Sampling- 1-25-21** Sampled By: **EB**

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y/N)	Matrix	Number of Containers	Preservation						Analysis Requested						pH	Remarks	Possible Health Hazards?	
							Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other	Total Metals	Dissolved Metals	Hardness	Cl, F, Sulfate, TDS,	Bicarb-Alk, Carbonate-Alk	Radium 226/228				LLHg
1	1-25-21	9:10	MW-1R	Y	W	7	X						X	X	X	X	X	X	X	7.33		
2	1-25-21	9:40	MW-2	Y	W	7	X						X	X	X	X	X	X	X	6.91		
3	1-25-21	10:35	MW-3	Y	W	7	X						X	X	X	X	X	X	X	6.76		
4	1-25-21	11:10	MW-4	Y	W	7	X						X	X	X	X	X	X	X	7.17		
5	1-25-21	7:50	MW-5	Y	W	7	X						X	X	X	X	X	X	X	6.87		
6	1-25-21	8:35	MW-6	Y	W	7	X						X	X	X	X	X	X	X	7.24		
7	1-25-21	7:20	MW-7	Y	W	7	X						X	X	X	X	X	X	X	6.72		
8	1-25-21	13:50	MW-8	Y	W	7	X						X	X	X	X	X	X	X	7.11		
9	1-25-21	12:55	MW-9	Y	W	7	X						X	X	X	X	X	X	X	6.93		
10	1-25-21	12:10	MW-10	Y	W	7	X						X	X	X	X	X	X	X	7.65		

Please Sign

Released By: <i>[Signature]</i>	Date: 1/25/21	Time: 15:47	Released By: <i>[Signature]</i>	Date: _____	Time: _____
In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.					

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 7
 Date: 1-25-21
 Field Personnel: JS
 Depth to Water: 4.95
 Depth to Point: 18.81'
 Sample Tubing Depth: 16'
 Purge Start Time: 7:00
 Purge Rate: 3000 L/min

Reading Time	Depth to Water	Temperature (Celsius)	Specific Conductivity	Dissolved Oxygen	ORP (mV)	Turbidity(NTU)	pH
7:15	5.04	11.79	1.117	1.57	-60	3.30	6.72
7:17	5.04	11.70	1.117	1.57	-60	3.35	6.72
7:20	5.04	11.70	1.117	1.57	-60	3.30	6.72

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 1-25-21

Field Personnel: EB

Well No.: MW 5

Depth to Point: 11.5'

Sample Tubing Depth: 10'

Depth to Water: 5.37

Purge Start Time: 7:25

Purge Rate: 200 mL

Reading Time	7:40	7:43	7:45	7:47					
Depth to Water	5.69	5.69	5.69						
Temperature (Celsius)	9.1	9.1	9.1						
Specific Conductivity	2.23	2.23	2.23						
Dissolved Oxygen	1.22	1.22	1.22						
ORP (mV)	-77	-77	-77						
Turbidity(NTU)	10.6	9.8	9.8	9.7					
pH	6.87	6.87	6.87						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 6
 Date: 1-25-21
 Field Personnel: EB
 Depth to Water: 6.17
 Depth to Point: 16.55'
 Purge Start Time: 8:10
 Sample Tubing Depth: 14'
 Purge Rate: 300 wvl
 Purge Rate: 300 wvl

Reading Time	8:25	8:27	8:30						
Depth to Water	8.29	8.35	8.35						
Temperature (Celsius)	9.83	9.83	9.83						
Specific Conductivity	2.17	2.17	2.17						
Dissolved Oxygen	.96	.95	.95						
ORP (mv)	-152	-152	-152						
Turbidity(NTU)	17.8	17.8	17.8						
pH	7.24	7.24	7.24						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW-1R
 Depth to Water: 5.83
 Date: 1-25-21
 Field Personnel: _____
 Depth to Point: 18.2ft
 Sample Tubing Depth: 10'
 Purge Start Time: 8:47
 Purge Rate: _____

Reading Time	9:02	9:04	9:06						
Depth to Water	6.12	6.12	6.12						
Temperature (Celsius)	7.06	7.06	7.06						
Specific Conductivity	3.92	3.92	3.92						
Dissolved Oxygen	1.19	1.19	1.19						
ORP (mV)	-99	-99	-99						
Turbidity(NTU)	9.7	9.7	9.7						
pH	7.33	7.33	7.33						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 2
 Date: 1-25-21
 Field Personnel: EB
 Depth to Water: 15.47
 Depth to Point: 23.51'
 Purge Start Time: 9:15
 Sample Tubing Depth: 20'
 Purge Rate: 300W

Reading Time	9:30	9:33	9:35						
Depth to Water	15.92	15.92	15.93						
Temperature (Celsius)	11.36	11.36	11.36						
Specific Conductivity	4.22	4.22	4.22						
Dissolved Oxygen	1.00	1.00	1.00						
ORP (mV)	-107	-107	-107						
Turbidity(NTU)	31.4	31.4	31.4						
pH	6.91	6.91	6.91						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 1-25-21

Field Personnel: EG

Well No.: MW 3

Depth to Point: 20.5'

Sample Tubing Depth: 18'

Depth to Water: ~~11.55~~
11.55

Purge Start Time: 10:00

Purge Rate: 300ml

Reading Time	10:15	10:17	10:20						
Depth to Water	11.91	11.91	11.91						
Temperature (Celsius)	8.05	8.05	8.05						
Specific Conductivity	4.40	4.40	4.40						
Dissolved Oxygen	1.17	1.17	1.17						
ORP (mV)	-61	-61	-61						
Turbidity(NTU)	8.2	8.2	8.2						
pH	6.76	6.76	6.76						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 4
 Date: 1-25-21
 Field Personnel: EB
 Depth to Water: 9.90
 Depth to Point: 18.01'
 Purge Start Time: 10:45
 Sample Tubing Depth: 16'
 Purge Rate: 300ml

Reading Time	11:00	11:03	11:05					
Depth to Water	10.14	10.14	10.14					
Temperature (Celsius)	9.46	9.46	9.46					
Specific Conductivity	2.60	2.60	2.60					
Dissolved Oxygen	.68	.68	.68					
ORP (mV)	-74	-74	-74					
Turbidity(NTU)	33.9	34.02	34.02					
pH	7.17	7.17	7.17					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 1-25-21

Field Personnel: EB

Well No.: MW 10

Depth to Point: 13.00

Sample Tubing Depth: 18

Depth to Water: 5.67

Purge Start Time: 11:45

Purge Rate: 300wL

Reading Time	12:00	12:03	12:05						
Depth to Water	6.12	6.12	6.12						
Temperature (Celsius)	6.8	6.8	6.8						
Specific Conductivity	2.93	2.93	2.93						
Dissolved Oxygen	1.04	1.04	1.04						
ORP (mV)	-169	-169	-169						
Turbidity(NTU)	13.7	13.7	13.7						
pH	7.65	7.65	7.65						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 1-25-21

Field Personnel: EB

Well No.: MW 9

Depth to Point: 14.9

Sample Tubing Depth: 18

Depth to Water: 8.07

Purge Start Time: 12:30

Purge Rate: 3000ml

Reading Time	12:45	12:48	12:50						
Depth to Water	8.43	8.43	8.43						
Temperature (Celsius)	9.69	9.69	9.69						
Specific Conductivity	1.45	1.45	1.45						
Dissolved Oxygen	.85	.85	.85						
ORP (mV)	-91	-91	-91						
Turbidity(NTU)	17.3	17.3	17.3						
pH	6.93	6.93	6.93						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBP
 Well No.: MW 8
 Date: 1-25-21
 Field Personnel: EB
 Depth to Water: 3.83
 Depth to Point: 11.85
 Sample Tubing Depth: 18ft
 Purge Start Time: 13:25
 Purge Rate: 300ml

Reading Time	13:40	13:42	13:45						
Depth to Water	5.11	5.11	5.11						
Temperature (Celsius)	7.05	7.05	7.05						
Specific Conductivity	936	936	936						
Dissolved Oxygen	.99	.99	.99						
ORP (mV)	-55	-55	-55						
Turbidity(NTU)	15.9	15.9	15.9						
pH	7.11	7.11	7.11						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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SAMPLE LOG IN CHECKLIST

Trace ID #: 21A0660 Date: 1/25/21 Package Description: Cooler Temperature: -1.2
 Client Name: Grand Haven BLP Time: 15:47 Logged in by: JS

Cooler Receipt

Cooler/samples delivered by: Trace courier Hand delivered Commercial courier Name of delivery person: Evan Brewer
 UPS FED EX US Mail
 Tracking Number: Not Applicable Tracking #: _____
 COC Seals present and intact on cooler? Not Applicable No Yes
 Custody seals signed by Client? No Yes Client custody seal # (if applicable): _____

Coolant and Temperature

Type of Coolant Used
 Slurry w/ crushed, cubed, or chip ice?
 Multiple bags of ice around samples?
 Ice Packs/ Blue Ice:
 No Coolant Present:
 Ice still present upon receipt (circle one): Yes No N/A

Cooler Temperature
 Correction Factors: •Digital Stick Thermometer CF = -0.2°C (030930)
 •IR Thermometer CF = -0.3°C (IR #8)
 Representative Sample Temperature: 9.5 °C (check one below)
 Temp Blank (Stick Thermometer)
 Client Sample (IR Thermometer)
 Melt Water: None °C (Use Digital Stick Thermometer)

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient sample to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
*pH checked - samples at correct pH and labeled as such?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>HNO₃ added @ 15:50</u>
Correct chemical preservative added to samples?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Notes:

***EMD pH Test Strips Used:**

pH 0-2.5 Lot: HC029115 pH 11.0-13.0 Lot: HC729101
 Other: _____

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May 18, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

Phone: 616-607-1292
Fax: (616) 842-3511

RE: Trace Project 21D0882
Client Project MW Sampling- April 2021

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 21D0882
Client Project ID: MW Sampling- April 2021

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21D0882-01	MW-1R	Ground Water	EB/Trace	04/23/21 09:15	04/26/21 08:45
21D0882-02	MW-2	Ground Water	EB/Trace	04/23/21 09:55	04/26/21 08:45
21D0882-03	MW-3	Ground Water	EB/Trace	04/23/21 10:20	04/26/21 08:45
21D0882-04	MW-4	Ground Water	EB/Trace	04/23/21 10:50	04/26/21 08:45
21D0882-05	MW-5	Ground Water	EB/Trace	04/23/21 07:50	04/26/21 08:45
21D0882-06	MW-6	Ground Water	EB/Trace	04/23/21 08:45	04/26/21 08:45
21D0882-07	MW-7	Ground Water	EB/Trace	04/23/21 07:30	04/26/21 08:45
21D0882-08	MW-8	Ground Water	EB/Trace	04/23/21 14:58	04/26/21 08:45
21D0882-09	MW-9	Ground Water	EB/Trace	04/23/21 14:30	04/26/21 08:45
21D0882-10	MW-10	Ground Water	EB/Trace	04/23/21 13:00	04/26/21 08:45

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
 Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: 21D0882-01

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Cadmium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Chromium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Copper	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Silver	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

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Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Vanadium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Analysis: SM 4500-H+ B-11

pH	Note SITE : The analysis was performed on site at the time of sampling.
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Trace ID: 21D0882-02

Analysis: EPA 6020B

Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Analysis: SM 4500-H+ B-11

pH	Note SITE : The analysis was performed on site at the time of sampling.
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Trace ID: 21D0882-03

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Arsenic	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Cadmium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Molybdenum	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Selenium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Silver	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Analysis: SM 4500-H+ B-11

pH	Note SITE : The analysis was performed on site at the time of sampling.
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Trace ID: 21D0882-04

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Analysis: EPA 6020B

Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH	Note SITE : The analysis was performed on site at the time of sampling.
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Trace ID: 21D0882-05

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Analysis: SM 4500-H+ B-11

pH	Note SITE : The analysis was performed on site at the time of sampling.
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Trace ID: 21D0882-06

Analysis: SM 4500-H+ B-11

pH	Note SITE : The analysis was performed on site at the time of sampling.
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Trace ID: 21D0882-07

Analysis: SM 4500-H+ B-11

pH	Note SITE : The analysis was performed on site at the time of sampling.
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Trace ID: 21D0882-08

Analysis: SM 4500-H+ B-11

pH	Note SITE : The analysis was performed on site at the time of sampling.
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Trace ID: 21D0882-09

Analysis: SM 4500-H+ B-11

pH	Note SITE : The analysis was performed on site at the time of sampling.
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Trace ID: 21D0882-10

Analysis: EPA 6020B

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Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Analysis: SM 4500-H+ B-11	
pH	Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: T109603-MSD1

Analysis: EPA 6010D

Boron	Note 225 : The MSD recovery was out of control. The MS recovery and associated RPD were in control. Because the background concentration of this analyte is greater than four times the spike amount, no data require qualification.
Magnesium	Note 209 : The MSD recovery was out of control. Because the MS recovery and the RPD between the MS and the MSD were in control, no data require qualification.
Potassium	Note 424 : The serial dilution for this analyte failed. Therefore, the analyte result in the original analysis should be considered estimated.

Trace ID: T109603-MSD2

Analysis: EPA 6010D

Calcium	Note 208 : The MS recovery was out of control. Because the MSD recovery and the RPD between the MS and the MSD were in control, no data require qualification.
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Trace ID: T109789-MSD1

Analysis: EPA 6010D

Boron	Note 222 : The MS and MSD recoveries were out of control. Because the sample background concentration of this analyte is greater than four times the spike amount, no data require qualification.
Calcium	Note 222 : The MS and MSD recoveries were out of control. Because the sample background concentration of this analyte is greater than four times the spike amount, no data require qualification.
Magnesium	Note 222 : The MS and MSD recoveries were out of control. Because the sample background concentration of this analyte is greater than four times the spike amount, no data require qualification.
Potassium	Note 209 : The MSD recovery was out of control. Because the MS recovery and the RPD between the MS and the MSD were in control, no data require qualification.
Potassium	Note 424 : The serial dilution for this analyte failed. Therefore, the analyte result in the original analysis should be considered estimated.
Sodium	Note 222 : The MS and MSD recoveries were out of control. Because the sample background concentration of this analyte is greater than four times the spike amount, no data require qualification.

Analysis: EPA 6020B

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Barium

Note 209 : The MSD recovery was out of control. Because the MS recovery and the RPD between the MS and the MSD were in control, no data require qualification.

Lead

Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-01 Matrix: Ground Water Date Collected: 04/23/21 09:15
 Sample ID: MW-1R Date Received: 04/26/21 08:45 Field pH: 7.25

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 7470A									
<i>Batch: T109519</i>									
Mercury	<0.00020 mg/L	0.00020	1	04/28/21	kbc	04/29/21	acs	N	
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T109489</i>									
Mercury	3.2 ng/L	0.50	1	04/27/21	ckd	04/28/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T109789</i>									
Beryllium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/07/21	dc		
Boron	40 mg/L	1.0	20	05/05/21	mrh	05/10/21	dc		
Calcium	590 mg/L	10	20	05/05/21	mrh	05/10/21	dc		
Iron	3.7 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Lithium	0.91 mg/L	0.010	1	05/05/21	mrh	05/07/21	dc	N	
Magnesium	140 mg/L	4.0	20	05/05/21	mrh	05/10/21	dc		
Potassium	48 mg/L	1.0	1	05/05/21	mrh	05/07/21	dc		
Sodium	220 mg/L	10	20	05/05/21	mrh	05/10/21	dc	N	
Zinc	0.13 mg/L	0.020	1	05/05/21	mrh	05/07/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T109789</i>									
Antimony	0.0031 mg/L	0.0015	5	05/05/21	mrh	05/05/21	acs	402.5	
Arsenic	0.0023 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Barium	0.075 mg/L	0.050	5	05/05/21	mrh	05/05/21	acs		
Cadmium	0.0053 mg/L	0.0050	5	05/05/21	mrh	05/05/21	acs	402.5	
Chromium	<0.0045 mg/L	0.0045	5	05/05/21	mrh	05/07/21	acs	402.5	
Cobalt	0.022 mg/L	0.0080	5	05/05/21	mrh	05/07/21	acs		
Copper	0.0099 mg/L	0.020	5	05/05/21	mrh	05/07/21	acs	402.5, J	
Lead	0.039 mg/L	0.010	5	05/05/21	mrh	05/05/21	acs	206, 402.5	
Manganese	0.72 mg/L	0.12	5	05/05/21	mrh	05/07/21	acs		
Molybdenum	0.0058 mg/L	0.00040	1	05/05/21	mrh	05/05/21	acs	N	
Nickel	0.025 mg/L	0.025	5	05/05/21	mrh	05/07/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-01 Matrix: Ground Water Date Collected: 04/23/21 09:15
Sample ID: MW-1R Date Received: 04/26/21 08:45 Field pH: 7.25

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	0.0021 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Silver	<0.0050 mg/L	0.0050	5	05/05/21	mrh	05/05/21	acs	402.5	
Thallium	<0.0050 mg/L	0.0050	5	05/05/21	mrh	05/05/21	acs	402.5	
Vanadium	<0.0040 mg/L	0.0040	5	05/05/21	mrh	05/07/21	acs	402.5	
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	2100 mg/L	16	20	05/05/21		05/10/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T109603</i>									
Beryllium	<0.0010 mg/L	0.0010	1	04/30/21	ckd	05/06/21	dc		
Boron	68 mg/L	0.50	10	04/30/21	ckd	05/06/21	dc		
Calcium	320 mg/L	5.0	10	04/30/21	ckd	05/06/21	dc		
Iron	0.069 mg/L	0.10	1	04/30/21	ckd	05/06/21	dc	J	
Lithium	2.0 mg/L	0.010	1	04/30/21	ckd	05/06/21	dc	N	
Magnesium	130 mg/L	0.20	1	04/30/21	ckd	05/06/21	dc		
Potassium	36 mg/L	10	10	04/30/21	ckd	05/06/21	dc		
Sodium	220 mg/L	5.0	10	04/30/21	ckd	05/06/21	dc	N	
Zinc	0.0064 mg/L	0.020	1	04/30/21	ckd	05/06/21	dc	J	
Analysis Method: EPA 6020B									
<i>Batch: T109749</i>									
Antimony	0.00060 mg/L	0.0010	5	05/04/21	ckd	05/05/21	acs	402.5, J	
Arsenic	0.0016 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Barium	0.13 mg/L	0.0030	5	05/04/21	ckd	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Chromium	<0.00080 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
Cobalt	0.0027 mg/L	0.0016	1	05/04/21	ckd	05/05/21	acs		
Copper	0.00011 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
Lead	<0.0020 mg/L	0.0020	5	05/04/21	ckd	05/05/21	acs	402.5	
Manganese	0.50 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Molybdenum	0.0033 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-01 Matrix: Ground Water Date Collected: 04/23/21 09:15
 Sample ID: MW-1R Date Received: 04/26/21 08:45 Field pH: 7.25

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0031 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Selenium	0.0011 mg/L	0.00087	1	05/04/21	ckd	05/05/21	acs		
Silver	<0.000040 mg/L	0.000040	1	05/04/21	ckd	05/05/21	acs		
Thallium	<0.00087 mg/L	0.00087	5	05/04/21	ckd	05/05/21	acs	402.5	
Vanadium	0.00065 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T109450

Fluoride	8.9 mg/L	0.10	5	04/26/21	rg	04/27/21	rg		
Chloride	230 mg/L	15	100	04/26/21	rg	04/27/21	rg		
Sulfate as SO4	1100 mg/L	60	100	04/26/21	rg	04/27/21	rg		

Analysis Method: SM 2320 B-11

Batch: T109705

Bicarbonate Alkalinity as CaCO3 at pH 4.5	800 mg/L	10	1	05/03/21	ats	05/04/21	ats	N	
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Analysis Method: SM 2540 C-11

Batch: T109546

Total Dissolved Solids	2900 mg/L	40	4	04/28/21	cm	04/28/21	cm		
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Analysis Method: SM 4500-H+ B-11

Batch: T109205

pH	7.25 pH Units		1	04/23/21	tb	04/23/21	tb	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-02 Matrix: Ground Water Date Collected: 04/23/21 09:55
 Sample ID: MW-2 Date Received: 04/26/21 08:45 Field pH: 6.94

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T109519

Mercury	<0.00020 mg/L	0.00020	1	04/28/21	kbc	04/29/21	acs	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T109489

Mercury	0.66 ng/L	0.50	1	04/27/21	ckd	04/28/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T109789

Beryllium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/07/21	dc		
Boron	65 mg/L	0.50	10	05/05/21	mrh	05/10/21	dc		
Calcium	220 mg/L	5.0	10	05/05/21	mrh	05/10/21	dc		
Iron	6.7 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Lithium	1.0 mg/L	0.010	1	05/05/21	mrh	05/07/21	dc	N	
Magnesium	73 mg/L	2.0	10	05/05/21	mrh	05/10/21	dc		
Potassium	48 mg/L	1.0	1	05/05/21	mrh	05/07/21	dc		
Sodium	210 mg/L	5.0	10	05/05/21	mrh	05/10/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	05/05/21	mrh	05/07/21	dc		

Analysis Method: EPA 6020B

Batch: T109789

Antimony	<0.00030 mg/L	0.00030	1	05/05/21	mrh	05/05/21	acs		
Arsenic	0.0051 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Barium	0.36 mg/L	0.010	1	05/05/21	mrh	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Chromium	0.0086 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs		
Cobalt	0.0030 mg/L	0.0016	1	05/05/21	mrh	05/05/21	acs		
Copper	<0.0040 mg/L	0.0040	1	05/05/21	mrh	05/05/21	acs		
Lead	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Manganese	0.75 mg/L	0.025	1	05/05/21	mrh	05/05/21	acs		
Molybdenum	0.0052 mg/L	0.00040	1	05/05/21	mrh	05/05/21	acs	N	
Nickel	0.016 mg/L	0.0050	1	05/05/21	mrh	05/05/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-02 Matrix: Ground Water Date Collected: 04/23/21 09:55
 Sample ID: MW-2 Date Received: 04/26/21 08:45 Field pH: 6.94

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Silver	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	05/05/21	mrh	05/05/21	acs		
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	850 mg/L	8.2	10	05/05/21		05/10/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T109603</i>									
Beryllium	<0.0010 mg/L	0.0010	1	04/30/21	ckd	05/06/21	dc		
Boron	43 mg/L	0.50	10	04/30/21	ckd	05/06/21	dc		
Calcium	140 mg/L	5.0	10	04/30/21	ckd	05/06/21	dc		
Iron	0.24 mg/L	0.10	1	04/30/21	ckd	05/06/21	dc		
Lithium	0.92 mg/L	0.010	1	04/30/21	ckd	05/06/21	dc	N	
Magnesium	44 mg/L	2.0	10	04/30/21	ckd	05/06/21	dc		
Potassium	19 mg/L	10	10	04/30/21	ckd	05/06/21	dc		
Sodium	130 mg/L	5.0	10	04/30/21	ckd	05/06/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	04/30/21	ckd	05/06/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T109749</i>									
Antimony	0.00024 mg/L	0.00020	1	05/04/21	ckd	05/05/21	acs		
Arsenic	0.0076 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Barium	0.20 mg/L	0.00060	1	05/04/21	ckd	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Chromium	0.0086 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
Cobalt	0.0032 mg/L	0.0016	1	05/04/21	ckd	05/05/21	acs		
Copper	0.00012 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
Lead	<0.0020 mg/L	0.0020	5	05/04/21	ckd	05/05/21	acs	402.5	
Manganese	0.91 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Molybdenum	0.0048 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-02 Matrix: Ground Water Date Collected: 04/23/21 09:55
 Sample ID: MW-2 Date Received: 04/26/21 08:45 Field pH: 6.94

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.014 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Selenium	0.00080 mg/L	0.00087	1	05/04/21	ckd	05/05/21	acs	J	
Silver	<0.000040 mg/L	0.000040	1	05/04/21	ckd	05/05/21	acs		
Thallium	<0.00087 mg/L	0.00087	5	05/04/21	ckd	05/05/21	acs	402.5	
Vanadium	0.00029 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T109450</i>									
Fluoride	8.0 mg/L	0.10	5	04/26/21	rg	04/27/21	rg		
Chloride	140 mg/L	3.8	25	04/26/21	rg	04/27/21	rg		
Sulfate as SO4	1.5 mg/L	3.0	5	04/26/21	rg	04/27/21	rg	J	
Analysis Method: SM 2320 B-11									
<i>Batch: T109705</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	1800 mg/L	20	4	05/03/21	ats	05/04/21	ats	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T109546</i>									
Total Dissolved Solids	1700 mg/L	40	4	04/28/21	cm	04/28/21	cm		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T109205</i>									
pH	6.94 pH Units		1	04/23/21	tb	04/23/21	tb	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-03 Matrix: Ground Water Date Collected: 04/23/21 10:20
 Sample ID: MW-3 Date Received: 04/26/21 08:45 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T109519

Mercury	<0.00020 mg/L	0.00020	1	04/28/21	kbc	04/29/21	acs	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T109489

Mercury	0.55 ng/L	0.50	1	04/27/21	ckd	04/28/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T109789

Beryllium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/07/21	dc		
Boron	4.3 mg/L	0.050	1	05/05/21	mrh	05/07/21	dc		
Calcium	680 mg/L	10	20	05/05/21	mrh	05/10/21	dc		
Iron	0.71 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Lithium	0.070 mg/L	0.010	1	05/05/21	mrh	05/07/21	dc	N	
Magnesium	290 mg/L	4.0	20	05/05/21	mrh	05/10/21	dc		
Potassium	22 mg/L	1.0	1	05/05/21	mrh	05/07/21	dc		
Sodium	160 mg/L	10	20	05/05/21	mrh	05/10/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	05/05/21	mrh	05/07/21	dc		

Analysis Method: EPA 6020B

Batch: T109789

Antimony	<0.0015 mg/L	0.0015	5	05/05/21	mrh	05/05/21	acs	402.5	
Arsenic	<0.0050 mg/L	0.0050	5	05/05/21	mrh	05/05/21	acs	402.5	
Barium	0.21 mg/L	0.050	5	05/05/21	mrh	05/05/21	acs		
Cadmium	<0.0050 mg/L	0.0050	5	05/05/21	mrh	05/05/21	acs	402.5	
Chromium	0.0017 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	05/05/21	mrh	05/05/21	acs		
Copper	<0.0040 mg/L	0.0040	1	05/05/21	mrh	05/05/21	acs		
Lead	<0.010 mg/L	0.010	5	05/05/21	mrh	05/05/21	acs	402.5	
Manganese	2.5 mg/L	0.12	5	05/05/21	mrh	05/05/21	acs		
Molybdenum	<0.0020 mg/L	0.0020	5	05/05/21	mrh	05/05/21	acs	402.5, N	
Nickel	0.0023 mg/L	0.0050	1	05/05/21	mrh	05/05/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-03 Matrix: Ground Water Date Collected: 04/23/21 10:20
Sample ID: MW-3 Date Received: 04/26/21 08:45 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.010 mg/L	0.010	5	05/05/21	mrh	05/05/21	acs	402.5	
Silver	<0.0050 mg/L	0.0050	5	05/05/21	mrh	05/05/21	acs	402.5	
Thallium	<0.0050 mg/L	0.0050	5	05/05/21	mrh	05/05/21	acs	402.5	
Vanadium	0.00054 mg/L	0.00080	1	05/05/21	mrh	05/05/21	acs	J	
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	2900 mg/L	16	20	05/05/21		05/10/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T109603</i>									
Beryllium	<0.0010 mg/L	0.0010	1	04/30/21	ckd	05/06/21	dc		
Boron	4.4 mg/L	0.050	1	04/30/21	ckd	05/06/21	dc		
Calcium	400 mg/L	5.0	10	04/30/21	ckd	05/06/21	dc		
Iron	0.078 mg/L	0.10	1	04/30/21	ckd	05/06/21	dc	J	
Lithium	0.069 mg/L	0.010	1	04/30/21	ckd	05/06/21	dc	N	
Magnesium	160 mg/L	2.0	10	04/30/21	ckd	05/06/21	dc		
Potassium	21 mg/L	1.0	1	04/30/21	ckd	05/06/21	dc		
Sodium	90 mg/L	5.0	10	04/30/21	ckd	05/06/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	04/30/21	ckd	05/06/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T109749</i>									
Antimony	<0.0010 mg/L	0.0010	5	05/04/21	ckd	05/05/21	acs	402.5	
Arsenic	0.0016 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Barium	0.21 mg/L	0.0030	5	05/04/21	ckd	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Chromium	0.0019 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
Cobalt	0.00066 mg/L	0.0016	1	05/04/21	ckd	05/05/21	acs	J	
Copper	0.00018 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
Lead	<0.0020 mg/L	0.0020	5	05/04/21	ckd	05/05/21	acs	402.5	
Manganese	2.6 mg/L	0.0020	5	05/04/21	ckd	05/05/21	acs		
Molybdenum	0.00010 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	J, N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-03 Matrix: Ground Water Date Collected: 04/23/21 10:20
 Sample ID: MW-3 Date Received: 04/26/21 08:45 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0025 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Selenium	0.00057 mg/L	0.00087	1	05/04/21	ckd	05/05/21	acs	J	
Silver	<0.000040 mg/L	0.000040	1	05/04/21	ckd	05/05/21	acs		
Thallium	<0.00087 mg/L	0.00087	5	05/04/21	ckd	05/05/21	acs	402.5	
Vanadium	0.00084 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1
 Batch: T109450

Fluoride	1.3 mg/L	0.10	5	04/26/21	rg	04/27/21	rg		
Chloride	380 mg/L	7.5	50	04/26/21	rg	04/27/21	rg		
Sulfate as SO4	570 mg/L	30	50	04/26/21	rg	04/27/21	rg		

Analysis Method: SM 2320 B-11
 Batch: T109705

Bicarbonate Alkalinity as CaCO3 at pH 4.5	1600 mg/L	20	4	05/03/21	ats	05/04/21	ats	N	
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Analysis Method: SM 2540 C-11
 Batch: T109546

Total Dissolved Solids	2900 mg/L	40	4	04/28/21	cm	04/28/21	cm		
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Analysis Method: SM 4500-H+ B-11
 Batch: T109205

pH	6.91 pH Units		1	04/23/21	tb	04/23/21	tb	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-04 Matrix: Ground Water Date Collected: 04/23/21 10:50
 Sample ID: MW-4 Date Received: 04/26/21 08:45 Field pH: 7.18

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 7470A									
<i>Batch: T109519</i>									
Mercury	<0.00020 mg/L	0.00020	1	04/28/21	kbc	04/29/21	acs	N	
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T109489</i>									
Mercury	<0.50 ng/L	0.50	1	04/27/21	ckd	04/28/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T109789</i>									
Beryllium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/07/21	dc		
Boron	3.3 mg/L	0.050	1	05/05/21	mrh	05/07/21	dc		
Calcium	380 mg/L	5.0	10	05/05/21	mrh	05/10/21	dc		
Iron	6.9 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Lithium	0.060 mg/L	0.010	1	05/05/21	mrh	05/07/21	dc	N	
Magnesium	100 mg/L	2.0	10	05/05/21	mrh	05/10/21	dc		
Potassium	22 mg/L	1.0	1	05/05/21	mrh	05/07/21	dc		
Sodium	78 mg/L	5.0	10	05/05/21	mrh	05/10/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	05/05/21	mrh	05/07/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T109789</i>									
Antimony	<0.00030 mg/L	0.00030	1	05/05/21	mrh	05/05/21	acs		
Arsenic	0.0012 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Barium	0.086 mg/L	0.010	1	05/05/21	mrh	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Chromium	0.0019 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	05/05/21	mrh	05/05/21	acs		
Copper	0.0020 mg/L	0.0040	1	05/05/21	mrh	05/05/21	acs	J	
Lead	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Manganese	0.83 mg/L	0.025	1	05/05/21	mrh	05/05/21	acs		
Molybdenum	0.00085 mg/L	0.00040	1	05/05/21	mrh	05/05/21	acs	N	
Nickel	0.018 mg/L	0.0050	1	05/05/21	mrh	05/05/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-04 Matrix: Ground Water Date Collected: 04/23/21 10:50
Sample ID: MW-4 Date Received: 04/26/21 08:45 Field pH: 7.18

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Silver	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Vanadium	0.00055 mg/L	0.00080	1	05/05/21	mrh	05/05/21	acs	J	
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	1400 mg/L	8.2	10	05/05/21		05/10/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T109603</i>									
Beryllium	<0.0010 mg/L	0.0010	1	04/30/21	ckd	05/06/21	dc		
Boron	3.3 mg/L	0.050	1	04/30/21	ckd	05/06/21	dc		
Calcium	340 mg/L	5.0	10	04/30/21	ckd	05/06/21	dc		
Iron	2.7 mg/L	0.10	1	04/30/21	ckd	05/06/21	dc		
Lithium	0.064 mg/L	0.010	1	04/30/21	ckd	05/06/21	dc	N	
Magnesium	90 mg/L	2.0	10	04/30/21	ckd	05/06/21	dc		
Potassium	22 mg/L	1.0	1	04/30/21	ckd	05/06/21	dc		
Sodium	64 mg/L	5.0	10	04/30/21	ckd	05/06/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	04/30/21	ckd	05/06/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T109749</i>									
Antimony	0.00025 mg/L	0.00020	1	05/04/21	ckd	05/05/21	acs		
Arsenic	0.00098 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs	J	
Barium	0.073 mg/L	0.00060	1	05/04/21	ckd	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Chromium	0.0020 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
Cobalt	0.00027 mg/L	0.0016	1	05/04/21	ckd	05/05/21	acs	J	
Copper	0.00027 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
Lead	<0.0020 mg/L	0.0020	5	05/04/21	ckd	05/05/21	acs	402.5	
Manganese	1.1 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Molybdenum	0.00078 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-04 Matrix: Ground Water Date Collected: 04/23/21 10:50
 Sample ID: MW-4 Date Received: 04/26/21 08:45 Field pH: 7.18

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.019 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Selenium	<0.00087 mg/L	0.00087	1	05/04/21	ckd	05/05/21	acs		
Silver	<0.000040 mg/L	0.000040	1	05/04/21	ckd	05/05/21	acs		
Thallium	<0.00087 mg/L	0.00087	5	05/04/21	ckd	05/05/21	acs	402.5	
Vanadium	0.00054 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1
 Batch: T109450

Fluoride	1.1 mg/L	0.10	5	04/26/21	rg	04/27/21	rg		
Chloride	220 mg/L	7.5	50	04/26/21	rg	04/27/21	rg		
Sulfate as SO4	530 mg/L	30	50	04/26/21	rg	04/27/21	rg		

Analysis Method: SM 2320 B-11
 Batch: T109705

Bicarbonate Alkalinity as CaCO3 at pH 4.5	660 mg/L	20	4	05/03/21	ats	05/04/21	ats	N	
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Analysis Method: SM 2540 C-11
 Batch: T109546

Total Dissolved Solids	1800 mg/L	40	4	04/28/21	cm	04/28/21	cm		
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Analysis Method: SM 4500-H+ B-11
 Batch: T109205

pH	7.18 pH Units		1	04/23/21	tb	04/23/21	tb	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-05 Matrix: Ground Water Date Collected: 04/23/21 07:50
 Sample ID: MW-5 Date Received: 04/26/21 08:45 Field pH: 6.76

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T109519

Mercury	<0.00020 mg/L	0.00020	1	04/28/21	kbc	04/29/21	acs	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T109489

Mercury	<0.50 ng/L	0.50	1	04/27/21	ckd	04/28/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T109789

Beryllium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/07/21	dc		
Boron	2.3 mg/L	0.050	1	05/05/21	mrh	05/07/21	dc		
Calcium	560 mg/L	10	20	05/05/21	mrh	05/10/21	dc		
Iron	24 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Lithium	0.12 mg/L	0.010	1	05/05/21	mrh	05/07/21	dc	N	
Magnesium	41 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Potassium	10 mg/L	1.0	1	05/05/21	mrh	05/07/21	dc		
Sodium	28 mg/L	0.50	1	05/05/21	mrh	05/07/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	05/05/21	mrh	05/07/21	dc		

Analysis Method: EPA 6020B

Batch: T109789

Antimony	<0.0015 mg/L	0.0015	5	05/05/21	mrh	05/05/21	acs	402.5	
Arsenic	0.076 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Barium	0.054 mg/L	0.050	5	05/05/21	mrh	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Chromium	<0.00090 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs		
Cobalt	0.0014 mg/L	0.0016	1	05/05/21	mrh	05/05/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	05/05/21	mrh	05/05/21	acs		
Lead	<0.010 mg/L	0.010	5	05/05/21	mrh	05/05/21	acs	402.5	
Manganese	1.8 mg/L	0.025	1	05/05/21	mrh	05/05/21	acs		
Molybdenum	0.0068 mg/L	0.00040	1	05/05/21	mrh	05/05/21	acs	N	
Nickel	0.0023 mg/L	0.0050	1	05/05/21	mrh	05/05/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-05 Matrix: Ground Water Date Collected: 04/23/21 07:50
 Sample ID: MW-5 Date Received: 04/26/21 08:45 Field pH: 6.76

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Silver	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Thallium	<0.0050 mg/L	0.0050	5	05/05/21	mrh	05/05/21	acs	402.5	
Vanadium	<0.00080 mg/L	0.00080	1	05/05/21	mrh	05/05/21	acs		
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	1600 mg/L	0.82	20	05/05/21		05/10/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T109603</i>									
Beryllium	0.00013 mg/L	0.0010	1	04/30/21	ckd	05/06/21	dc	J	
Boron	2.2 mg/L	0.050	1	04/30/21	ckd	05/06/21	dc		
Calcium	320 mg/L	12	25	04/30/21	ckd	05/06/21	dc		
Iron	22 mg/L	0.10	1	04/30/21	ckd	05/06/21	dc		
Lithium	0.12 mg/L	0.010	1	04/30/21	ckd	05/06/21	dc	N	
Magnesium	40 mg/L	0.20	1	04/30/21	ckd	05/06/21	dc		
Potassium	10 mg/L	1.0	1	04/30/21	ckd	05/06/21	dc		
Sodium	28 mg/L	0.50	1	04/30/21	ckd	05/06/21	dc	N	
Zinc	0.0023 mg/L	0.020	1	04/30/21	ckd	05/06/21	dc	J	
Analysis Method: EPA 6020B									
<i>Batch: T109749</i>									
Antimony	<0.0010 mg/L	0.0010	5	05/04/21	ckd	05/05/21	acs	402.5	
Arsenic	0.071 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Barium	0.058 mg/L	0.0030	5	05/04/21	ckd	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Chromium	<0.00080 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
Cobalt	0.0013 mg/L	0.0016	1	05/04/21	ckd	05/05/21	acs	J	
Copper	0.00094 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
Lead	<0.0020 mg/L	0.0020	5	05/04/21	ckd	05/05/21	acs	402.5	
Manganese	1.7 mg/L	0.0020	5	05/04/21	ckd	05/05/21	acs		
Molybdenum	0.0063 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-05 Matrix: Ground Water Date Collected: 04/23/21 07:50
 Sample ID: MW-5 Date Received: 04/26/21 08:45 Field pH: 6.76

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.00086 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Selenium	<0.00087 mg/L	0.00087	1	05/04/21	ckd	05/05/21	acs		
Silver	<0.000040 mg/L	0.000040	1	05/04/21	ckd	05/05/21	acs		
Thallium	<0.00087 mg/L	0.00087	5	05/04/21	ckd	05/05/21	acs	402.5	
Vanadium	0.00035 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1
 Batch: T109450

Fluoride	3.9 mg/L	0.10	5	04/26/21	rg	04/27/21	rg		
Chloride	28 mg/L	0.75	5	04/26/21	rg	04/27/21	rg		
Sulfate as SO4	540 mg/L	30	50	04/26/21	rg	04/27/21	rg		

Analysis Method: SM 2320 B-11
 Batch: T109705

Bicarbonate Alkalinity as CaCO3 at pH 4.5	400 mg/L	20	4	05/03/21	ats	05/04/21	ats	N	
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Analysis Method: SM 2540 C-11
 Batch: T109546

Total Dissolved Solids	2000 mg/L	40	4	04/28/21	cm	04/28/21	cm		
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Analysis Method: SM 4500-H+ B-11
 Batch: T109205

pH	6.76 pH Units		1	04/23/21	tb	04/23/21	tb	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-06 Matrix: Ground Water Date Collected: 04/23/21 08:45
 Sample ID: MW-6 Date Received: 04/26/21 08:45 Field pH: 7.17

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T109519

Mercury	<0.00020 mg/L	0.00020	1	04/28/21	kbc	04/29/21	acs	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T109489

Mercury	6.0 ng/L	0.50	1	04/27/21	ckd	04/28/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T109789

Beryllium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/07/21	dc		
Boron	8.6 mg/L	0.050	1	05/05/21	mrh	05/07/21	dc		
Calcium	230 mg/L	5.0	10	05/05/21	mrh	05/10/21	dc		
Iron	18 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Lithium	0.16 mg/L	0.010	1	05/05/21	mrh	05/07/21	dc	N	
Magnesium	110 mg/L	2.0	10	05/05/21	mrh	05/10/21	dc		
Potassium	27 mg/L	1.0	1	05/05/21	mrh	05/07/21	dc		
Sodium	80 mg/L	5.0	10	05/05/21	mrh	05/10/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	05/05/21	mrh	05/07/21	dc		

Analysis Method: EPA 6020B

Batch: T109789

Antimony	<0.00030 mg/L	0.00030	1	05/05/21	mrh	05/05/21	acs		
Arsenic	0.00083 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs	J	
Barium	1.3 mg/L	0.010	1	05/05/21	mrh	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Chromium	0.00089 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs	J	
Cobalt	<0.0016 mg/L	0.0016	1	05/05/21	mrh	05/05/21	acs		
Copper	<0.0040 mg/L	0.0040	1	05/05/21	mrh	05/05/21	acs		
Lead	0.0021 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Manganese	0.32 mg/L	0.025	1	05/05/21	mrh	05/05/21	acs		
Molybdenum	0.00045 mg/L	0.00040	1	05/05/21	mrh	05/05/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	05/05/21	mrh	05/05/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-06 Matrix: Ground Water Date Collected: 04/23/21 08:45
 Sample ID: MW-6 Date Received: 04/26/21 08:45 Field pH: 7.17

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Silver	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	05/05/21	mrh	05/05/21	acs		
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	1000 mg/L	8.2	10	05/05/21		05/10/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T109603</i>									
Beryllium	<0.0010 mg/L	0.0010	1	04/30/21	ckd	05/06/21	dc		
Boron	8.4 mg/L	0.050	1	04/30/21	ckd	05/06/21	dc		
Calcium	220 mg/L	5.0	10	04/30/21	ckd	05/10/21	dc		
Iron	0.23 mg/L	0.10	1	04/30/21	ckd	05/06/21	dc		
Lithium	0.17 mg/L	0.010	1	04/30/21	ckd	05/06/21	dc	N	
Magnesium	100 mg/L	2.0	10	04/30/21	ckd	05/10/21	dc		
Potassium	27 mg/L	1.0	1	04/30/21	ckd	05/06/21	dc		
Sodium	73 mg/L	5.0	10	04/30/21	ckd	05/10/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	04/30/21	ckd	05/06/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T109749</i>									
Antimony	0.000093 mg/L	0.00020	1	05/04/21	ckd	05/05/21	acs	J	
Arsenic	0.00031 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs	J	
Barium	1.3 mg/L	0.00060	1	05/04/21	ckd	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Chromium	<0.00080 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
Cobalt	0.00022 mg/L	0.0016	1	05/04/21	ckd	05/05/21	acs	J	
Copper	0.00029 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
Lead	<0.00040 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Manganese	0.38 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Molybdenum	0.00023 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	J, N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-06 Matrix: Ground Water Date Collected: 04/23/21 08:45
 Sample ID: MW-6 Date Received: 04/26/21 08:45 Field pH: 7.17

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0010 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Selenium	<0.00087 mg/L	0.00087	1	05/04/21	ckd	05/05/21	acs		
Silver	<0.000040 mg/L	0.000040	1	05/04/21	ckd	05/05/21	acs		
Thallium	<0.00017 mg/L	0.00017	1	05/04/21	ckd	05/05/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T109450</i>									
Fluoride	1.2 mg/L	0.10	5	04/26/21	rg	04/27/21	rg		
Chloride	150 mg/L	3.8	25	04/26/21	rg	04/27/21	rg		
Sulfate as SO4	5.7 mg/L	3.0	5	04/26/21	rg	04/27/21	rg		
Analysis Method: SM 2320 B-11									
<i>Batch: T109705</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	980 mg/L	20	4	05/03/21	ats	05/04/21	ats	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T109546</i>									
Total Dissolved Solids	1200 mg/L	40	4	04/28/21	cm	04/28/21	cm		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T109205</i>									
pH	7.17 pH Units		1	04/23/21	tb	04/23/21	tb	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-07 Matrix: Ground Water Date Collected: 04/23/21 07:30
 Sample ID: MW-7 Date Received: 04/26/21 08:45 Field pH: 6.47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T109519

Mercury	<0.00020 mg/L	0.00020	1	04/28/21	kbc	04/29/21	acs	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T109489

Mercury	<0.50 ng/L	0.50	1	04/27/21	ckd	04/28/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T109789

Beryllium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/07/21	dc		
Boron	13 mg/L	0.050	1	05/05/21	mrh	05/07/21	dc		
Calcium	140 mg/L	2.5	5	05/05/21	mrh	05/10/21	dc		
Iron	15 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Lithium	<0.010 mg/L	0.010	1	05/05/21	mrh	05/07/21	dc	N	
Magnesium	33 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Potassium	4.5 mg/L	1.0	1	05/05/21	mrh	05/07/21	dc		
Sodium	55 mg/L	2.5	5	05/05/21	mrh	05/10/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	05/05/21	mrh	05/07/21	dc		

Analysis Method: EPA 6020B

Batch: T109789

Antimony	<0.00030 mg/L	0.00030	1	05/05/21	mrh	05/05/21	acs		
Arsenic	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Barium	0.27 mg/L	0.010	1	05/05/21	mrh	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Chromium	<0.00090 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs		
Cobalt	0.00079 mg/L	0.0016	1	05/05/21	mrh	05/05/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	05/05/21	mrh	05/05/21	acs		
Lead	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Manganese	1.6 mg/L	0.025	1	05/05/21	mrh	05/05/21	acs		
Molybdenum	0.00017 mg/L	0.00040	1	05/05/21	mrh	05/05/21	acs	J, N	
Nickel	<0.0050 mg/L	0.0050	1	05/05/21	mrh	05/05/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-07 Matrix: Ground Water Date Collected: 04/23/21 07:30
 Sample ID: MW-7 Date Received: 04/26/21 08:45 Field pH: 6.47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Silver	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Vanadium	0.00065 mg/L	0.00080	1	05/05/21	mrh	05/05/21	acs	J	
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	480 mg/L	0.82	5	05/05/21		05/10/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T109603</i>									
Beryllium	<0.0010 mg/L	0.0010	1	04/30/21	ckd	05/06/21	dc		
Boron	13 mg/L	0.050	1	04/30/21	ckd	05/06/21	dc		
Calcium	150 mg/L	5.0	10	04/30/21	ckd	05/10/21	dc		
Iron	14 mg/L	0.10	1	04/30/21	ckd	05/06/21	dc		
Lithium	0.0046 mg/L	0.010	1	04/30/21	ckd	05/06/21	dc	J, N	
Magnesium	35 mg/L	0.20	1	04/30/21	ckd	05/06/21	dc		
Potassium	4.9 mg/L	1.0	1	04/30/21	ckd	05/06/21	dc		
Sodium	55 mg/L	5.0	10	04/30/21	ckd	05/10/21	dc	N	
Zinc	0.0021 mg/L	0.020	1	04/30/21	ckd	05/06/21	dc	J	
Analysis Method: EPA 6020B									
<i>Batch: T109749</i>									
Antimony	0.00032 mg/L	0.00020	1	05/04/21	ckd	05/05/21	acs		
Arsenic	0.00045 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs	J	
Barium	0.26 mg/L	0.00060	1	05/04/21	ckd	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Chromium	<0.00080 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
Cobalt	0.00076 mg/L	0.0016	1	05/04/21	ckd	05/05/21	acs	J	
Copper	0.00022 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
Lead	0.000096 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	J	
Manganese	1.6 mg/L	0.0020	5	05/04/21	ckd	05/05/21	acs		
Molybdenum	0.00011 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	J, N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-07 Matrix: Ground Water Date Collected: 04/23/21 07:30
 Sample ID: MW-7 Date Received: 04/26/21 08:45 Field pH: 6.47

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.00026 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	J	
Selenium	<0.00087 mg/L	0.00087	1	05/04/21	ckd	05/05/21	acs		
Silver	<0.000040 mg/L	0.000040	1	05/04/21	ckd	05/05/21	acs		
Thallium	<0.00017 mg/L	0.00017	1	05/04/21	ckd	05/05/21	acs		
Vanadium	0.00067 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T109450</i>									
Fluoride	0.084 mg/L	0.10	5	04/26/21	rg	04/27/21	rg	J	
Chloride	13 mg/L	0.75	5	04/26/21	rg	04/27/21	rg		
Sulfate as SO4	15 mg/L	3.0	5	04/26/21	rg	04/27/21	rg		
Analysis Method: SM 2320 B-11									
<i>Batch: T109705</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	610 mg/L	20	4	05/03/21	ats	05/04/21	ats	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T109546</i>									
Total Dissolved Solids	660 mg/L	40	4	04/28/21	cm	04/28/21	cm		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T109205</i>									
pH	6.47 pH Units		1	04/23/21	tb	04/23/21	tb	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-08 Matrix: Ground Water Date Collected: 04/23/21 14:58
 Sample ID: MW-8 Date Received: 04/26/21 08:45 Field pH: 7.18

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T109519

Mercury	<0.00020 mg/L	0.00020	1	04/28/21	kbc	04/29/21	acs	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T109489

Mercury	1.4 ng/L	0.50	1	04/27/21	ckd	04/28/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T109789

Beryllium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/07/21	dc		
Boron	0.96 mg/L	0.050	1	05/05/21	mrh	05/07/21	dc		
Calcium	130 mg/L	2.5	5	05/05/21	mrh	05/10/21	dc		
Iron	27 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Lithium	0.034 mg/L	0.010	1	05/05/21	mrh	05/07/21	dc	N	
Magnesium	23 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Potassium	8.6 mg/L	1.0	1	05/05/21	mrh	05/07/21	dc		
Sodium	25 mg/L	0.50	1	05/05/21	mrh	05/07/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	05/05/21	mrh	05/07/21	dc		

Analysis Method: EPA 6020B

Batch: T109789

Antimony	<0.00030 mg/L	0.00030	1	05/05/21	mrh	05/05/21	acs		
Arsenic	0.0028 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Barium	0.88 mg/L	0.010	1	05/05/21	mrh	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Chromium	<0.00090 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	05/05/21	mrh	05/05/21	acs		
Copper	<0.0040 mg/L	0.0040	1	05/05/21	mrh	05/05/21	acs		
Lead	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Manganese	1.3 mg/L	0.025	1	05/05/21	mrh	05/05/21	acs		
Molybdenum	0.0036 mg/L	0.00040	1	05/05/21	mrh	05/05/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	05/05/21	mrh	05/05/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-08 Matrix: Ground Water Date Collected: 04/23/21 14:58
 Sample ID: MW-8 Date Received: 04/26/21 08:45 Field pH: 7.18

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Silver	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	05/05/21	mrh	05/05/21	acs		
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	420 mg/L	0.82	5	05/05/21		05/10/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T109603</i>									
Beryllium	<0.0010 mg/L	0.0010	1	04/30/21	ckd	05/06/21	dc		
Boron	1.0 mg/L	0.50	10	04/30/21	ckd	05/10/21	dc		
Calcium	140 mg/L	5.0	10	04/30/21	ckd	05/10/21	dc		
Iron	27 mg/L	0.10	1	04/30/21	ckd	05/06/21	dc		
Lithium	0.037 mg/L	0.010	1	04/30/21	ckd	05/06/21	dc	N	
Magnesium	24 mg/L	0.20	1	04/30/21	ckd	05/06/21	dc		
Potassium	9.2 mg/L	1.0	1	04/30/21	ckd	05/06/21	dc		
Sodium	27 mg/L	0.50	1	04/30/21	ckd	05/06/21	dc	N	
Zinc	0.0031 mg/L	0.020	1	04/30/21	ckd	05/06/21	dc	J	
Analysis Method: EPA 6020B									
<i>Batch: T109749</i>									
Antimony	0.00028 mg/L	0.00020	1	05/04/21	ckd	05/05/21	acs		
Arsenic	0.0027 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Barium	0.89 mg/L	0.00060	1	05/04/21	ckd	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Chromium	0.00054 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
Cobalt	0.00028 mg/L	0.0016	1	05/04/21	ckd	05/05/21	acs	J	
Copper	0.00034 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
Lead	0.000071 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	J	
Manganese	1.5 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Molybdenum	0.0036 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-08 Matrix: Ground Water Date Collected: 04/23/21 14:58
 Sample ID: MW-8 Date Received: 04/26/21 08:45 Field pH: 7.18

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0011 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Selenium	<0.00087 mg/L	0.00087	1	05/04/21	ckd	05/05/21	acs		
Silver	<0.000040 mg/L	0.000040	1	05/04/21	ckd	05/05/21	acs		
Thallium	<0.00017 mg/L	0.00017	1	05/04/21	ckd	05/05/21	acs		
Vanadium	0.00037 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T109450

Fluoride	0.49 mg/L	0.10	5	04/26/21	rg	04/27/21	rg		
Chloride	40 mg/L	0.75	5	04/26/21	rg	04/27/21	rg		
Sulfate as SO4	11 mg/L	3.0	5	04/26/21	rg	04/27/21	rg		

Analysis Method: SM 2320 B-11

Batch: T109705

Bicarbonate Alkalinity as CaCO3 at pH 4.5	420 mg/L	20	4	05/03/21	ats	05/04/21	ats	N	
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Analysis Method: SM 2540 C-11

Batch: T109546

Total Dissolved Solids	540 mg/L	40	4	04/28/21	cm	04/28/21	cm		
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Analysis Method: SM 4500-H+ B-11

Batch: T109205

pH	7.18 pH Units		1	04/23/21	tb	04/23/21	tb	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-09 Matrix: Ground Water Date Collected: 04/23/21 14:30
 Sample ID: MW-9 Date Received: 04/26/21 08:45 Field pH: 7.14

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 7470A									
<i>Batch: T109519</i>									
Mercury	<0.00020 mg/L	0.00020	1	04/28/21	kbc	04/29/21	acs	N	
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T109489</i>									
Mercury	<0.50 ng/L	0.50	1	04/27/21	ckd	04/28/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T109789</i>									
Beryllium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/07/21	dc		
Boron	5.3 mg/L	0.050	1	05/05/21	mrh	05/07/21	dc		
Calcium	230 mg/L	5.0	10	05/05/21	mrh	05/10/21	dc		
Iron	23 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Lithium	0.26 mg/L	0.010	1	05/05/21	mrh	05/07/21	dc	N	
Magnesium	38 mg/L	0.20	1	05/05/21	mrh	05/07/21	dc		
Potassium	14 mg/L	1.0	1	05/05/21	mrh	05/07/21	dc		
Sodium	30 mg/L	0.50	1	05/05/21	mrh	05/07/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	05/05/21	mrh	05/07/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T109789</i>									
Antimony	<0.00030 mg/L	0.00030	1	05/05/21	mrh	05/05/21	acs		
Arsenic	0.0025 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Barium	1.0 mg/L	0.010	1	05/05/21	mrh	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Chromium	0.0024 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	05/05/21	mrh	05/05/21	acs		
Copper	<0.0040 mg/L	0.0040	1	05/05/21	mrh	05/05/21	acs		
Lead	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Manganese	0.60 mg/L	0.025	1	05/05/21	mrh	05/05/21	acs		
Molybdenum	0.028 mg/L	0.00040	1	05/05/21	mrh	05/05/21	acs	N	
Nickel	0.0031 mg/L	0.0050	1	05/05/21	mrh	05/05/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-09 Matrix: Ground Water Date Collected: 04/23/21 14:30
 Sample ID: MW-9 Date Received: 04/26/21 08:45 Field pH: 7.14

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0020 mg/L	0.0020	1	05/05/21	mrh	05/05/21	acs		
Silver	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	05/05/21	mrh	05/05/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	05/05/21	mrh	05/05/21	acs		
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	740 mg/L	0.82	10	05/05/21		05/10/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T109603</i>									
Beryllium	<0.0010 mg/L	0.0010	1	04/30/21	ckd	05/06/21	dc		
Boron	5.3 mg/L	0.050	1	04/30/21	ckd	05/06/21	dc		
Calcium	210 mg/L	5.0	10	04/30/21	ckd	05/10/21	dc		
Iron	23 mg/L	0.10	1	04/30/21	ckd	05/06/21	dc		
Lithium	0.27 mg/L	0.010	1	04/30/21	ckd	05/06/21	dc	N	
Magnesium	39 mg/L	0.20	1	04/30/21	ckd	05/06/21	dc		
Potassium	15 mg/L	1.0	1	04/30/21	ckd	05/06/21	dc		
Sodium	31 mg/L	0.50	1	04/30/21	ckd	05/06/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	04/30/21	ckd	05/06/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T109749</i>									
Antimony	0.00022 mg/L	0.00020	1	05/04/21	ckd	05/05/21	acs		
Arsenic	0.0023 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Barium	0.59 mg/L	0.00060	1	05/04/21	ckd	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Chromium	0.0021 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
Cobalt	0.00038 mg/L	0.0016	1	05/04/21	ckd	05/05/21	acs	J	
Copper	0.00020 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
Lead	<0.00040 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Manganese	0.67 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Molybdenum	0.027 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-09 Matrix: Ground Water Date Collected: 04/23/21 14:30
 Sample ID: MW-9 Date Received: 04/26/21 08:45 Field pH: 7.14

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0016 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Selenium	0.00033 mg/L	0.00087	1	05/04/21	ckd	05/05/21	acs	J	
Silver	<0.000040 mg/L	0.000040	1	05/04/21	ckd	05/05/21	acs		
Thallium	<0.00017 mg/L	0.00017	1	05/04/21	ckd	05/05/21	acs		
Vanadium	0.00036 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
WET CHEMISTRY									
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T109450</i>									
Fluoride	2.4 mg/L	0.10	5	04/26/21	rg	04/27/21	rg		
Chloride	12 mg/L	0.75	5	04/26/21	rg	04/27/21	rg		
Sulfate as SO4	71 mg/L	3.0	5	04/26/21	rg	04/27/21	rg		
Analysis Method: SM 2320 B-11									
<i>Batch: T109705</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	710 mg/L	10	2	05/03/21	ats	05/04/21	ats	N	
Analysis Method: SM 2540 C-11									
<i>Batch: T109546</i>									
Total Dissolved Solids	880 mg/L	40	4	04/28/21	cm	04/28/21	cm		
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T109205</i>									
pH	7.14 pH Units		1	04/23/21	tb	04/23/21	tb	SITE, N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-10 Matrix: Ground Water Date Collected: 04/23/21 13:00
 Sample ID: MW-10 Date Received: 04/26/21 08:45 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 7470A

Batch: T109519

Mercury	<0.00020 mg/L	0.00020	1	04/28/21	kbc	04/29/21	acs	N	
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T109489

Mercury	1.1 ng/L	0.50	1	04/27/21	ckd	04/28/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T109789

Beryllium	<0.0018 mg/L	0.0018	1	05/05/21	mrh	05/07/21	dc		
Boron	42 mg/L	0.45	10	05/05/21	mrh	05/10/21	dc		
Calcium	160 mg/L	4.5	10	05/05/21	mrh	05/10/21	dc		
Iron	12 mg/L	0.18	1	05/05/21	mrh	05/07/21	dc		
Lithium	1.4 mg/L	0.0090	1	05/05/21	mrh	05/07/21	dc	N	
Magnesium	78 mg/L	1.8	10	05/05/21	mrh	05/10/21	dc		
Potassium	42 mg/L	9.0	10	05/05/21	mrh	05/10/21	dc		
Sodium	410 mg/L	4.5	10	05/05/21	mrh	05/10/21	dc	N	
Zinc	<0.018 mg/L	0.018	1	05/05/21	mrh	05/07/21	dc		

Analysis Method: EPA 6020B

Batch: T109789

Antimony	<0.0014 mg/L	0.0014	5	05/05/21	mrh	05/05/21	acs	402.5	
Arsenic	0.00065 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs	J	
Barium	1.2 mg/L	0.045	5	05/05/21	mrh	05/05/21	acs		
Cadmium	<0.00090 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs		
Chromium	0.0073 mg/L	0.00081	1	05/05/21	mrh	05/05/21	acs		
Cobalt	0.00070 mg/L	0.0014	1	05/05/21	mrh	05/05/21	acs	J	
Copper	<0.0036 mg/L	0.0036	1	05/05/21	mrh	05/05/21	acs		
Lead	<0.0090 mg/L	0.0090	5	05/05/21	mrh	05/05/21	acs	402.5	
Manganese	0.53 mg/L	0.022	1	05/05/21	mrh	05/05/21	acs		
Molybdenum	0.0042 mg/L	0.00036	1	05/05/21	mrh	05/05/21	acs	N	
Nickel	0.0032 mg/L	0.0045	1	05/05/21	mrh	05/05/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-10 Matrix: Ground Water Date Collected: 04/23/21 13:00
Sample ID: MW-10 Date Received: 04/26/21 08:45 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Selenium	<0.0018 mg/L	0.0018	1	05/05/21	mrh	05/05/21	acs		
Silver	<0.00090 mg/L	0.00090	1	05/05/21	mrh	05/05/21	acs		
Thallium	<0.0045 mg/L	0.0045	5	05/05/21	mrh	05/05/21	acs	402.5	
Vanadium	0.00076 mg/L	0.00072	1	05/05/21	mrh	05/05/21	acs		
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	720 mg/L	7.4	10	05/05/21		05/10/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
<i>Batch: T109603</i>									
Beryllium	<0.0010 mg/L	0.0010	1	04/30/21	ckd	05/06/21	dc		
Boron	45 mg/L	0.50	10	04/30/21	ckd	05/10/21	dc		
Calcium	160 mg/L	5.0	10	04/30/21	ckd	05/10/21	dc		
Iron	2.3 mg/L	0.10	1	04/30/21	ckd	05/06/21	dc		
Lithium	1.4 mg/L	0.010	1	04/30/21	ckd	05/06/21	dc	N	
Magnesium	75 mg/L	2.0	10	04/30/21	ckd	05/10/21	dc		
Potassium	37 mg/L	10	10	04/30/21	ckd	05/10/21	dc		
Sodium	400 mg/L	5.0	10	04/30/21	ckd	05/10/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	04/30/21	ckd	05/06/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T109749</i>									
Antimony	0.00019 mg/L	0.00020	1	05/04/21	ckd	05/05/21	acs	J	
Arsenic	0.00045 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs	J	
Barium	1.2 mg/L	0.00060	1	05/04/21	ckd	05/05/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	05/04/21	ckd	05/05/21	acs		
Chromium	0.0060 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		
Cobalt	0.00062 mg/L	0.0016	1	05/04/21	ckd	05/05/21	acs	J	
Copper	0.00031 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs	J	
Lead	<0.0020 mg/L	0.0020	5	05/04/21	ckd	05/05/21	acs	402.5	
Manganese	0.64 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Molybdenum	0.0039 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs	N	

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ANALYTICAL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

Trace ID: 21D0882-10 Matrix: Ground Water Date Collected: 04/23/21 13:00
 Sample ID: MW-10 Date Received: 04/26/21 08:45 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, DISSOLVED									
Nickel	0.0015 mg/L	0.00040	1	05/04/21	ckd	05/05/21	acs		
Selenium	0.00042 mg/L	0.00087	1	05/04/21	ckd	05/05/21	acs	J	
Silver	<0.000040 mg/L	0.000040	1	05/04/21	ckd	05/05/21	acs		
Thallium	<0.00087 mg/L	0.00087	5	05/04/21	ckd	05/05/21	acs	402.5	
Vanadium	<0.00080 mg/L	0.00080	1	05/04/21	ckd	05/05/21	acs		

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T109450

Fluoride	11 mg/L	0.10	5	04/26/21	rg	04/27/21	rg		
Chloride	430 mg/L	7.5	50	04/26/21	rg	04/27/21	rg		
Sulfate as SO4	2.7 mg/L	3.0	5	04/26/21	rg	04/27/21	rg	J	

Analysis Method: SM 2320 B-11

Batch: T109705

Bicarbonate Alkalinity as CaCO3 at pH 4.5	940 mg/L	10	2	05/03/21	ats	05/04/21	ats	N	
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Analysis Method: SM 2540 C-11

Batch: T109546

Total Dissolved Solids	1700 mg/L	40	4	04/28/21	cm	04/28/21	cm		
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Analysis Method: SM 4500-H+ B-11

Batch: T109205

pH	7.60 pH Units		1	04/23/21	tb	04/23/21	tb	SITE, N	
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QUALITY CONTROL RESULTS

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

QC Batch: T109519	Analysis Description: Mercury, Total, EPA 7470/7471
QC Batch Method: EPA 7470A Prep	Analysis Method: EPA 7470A

METHOD BLANK: T109519-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	mg/L	<0.00020	0.00020	

LABORATORY CONTROL SAMPLE: T109519-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	mg/L	0.00200	0.00197	98	77-122	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T109519-MSD1

Original: 21D0882-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Mercury	mg/L	0	0.00200	0.00199	0.00234	100	117	76-123	16	20	

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

QC Batch: T109489	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T109489-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T109489-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T109489-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

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LABORATORY CONTROL SAMPLE: T109489-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	20.8	83	77-123	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T109489-MSD1

Original: 21D0882-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Mercury	ng/L	3.20	10.0	12.4	12.3	92	91	71-125	1	24	

Trace Project ID: 21D0882

Client Project ID: MW Sampling- April 2021

QC Batch: T109603
 QC Batch Method:

Analysis Description: Sodium, Dissolved
 Analysis Method: EPA 6010D

METHOD BLANK: T109603-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0010	0.0010	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	0.0091	0.10	J
Potassium	mg/L	<1.0	1.0	
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	0.018	0.20	J
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

METHOD BLANK: T109603-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	0.00018	0.0010	J
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	<1.0	1.0	
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

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LABORATORY CONTROL SAMPLE: T109603-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.980	98	80-120	
Beryllium	mg/L	0.0500	0.0483	97	80-120	
Calcium	mg/L	10.0	10.0	100	80-120	
Iron	mg/L	10.0	9.81	98	80-120	
Potassium	mg/L	10.0	9.59	96	80-120	
Lithium	mg/L	0.500	0.473	95	80-120	
Magnesium	mg/L	10.0	9.84	98	80-120	
Sodium	mg/L	10.0	9.88	99	80-120	
Zinc	mg/L	1.00	0.992	99	80-120	

LABORATORY CONTROL SAMPLE: T109603-BS2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	1.03	103	80-120	
Beryllium	mg/L	0.0500	0.0511	102	80-120	
Calcium	mg/L	10.0	10.4	104	80-120	
Iron	mg/L	10.0	10.2	102	80-120	
Potassium	mg/L	10.0	10.0	100	80-120	
Lithium	mg/L	0.500	0.479	96	80-120	
Magnesium	mg/L	10.0	10.3	103	80-120	
Sodium	mg/L	10.0	10.3	103	80-120	
Zinc	mg/L	1.00	1.03	103	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T109603-MSD1

Original: 21D0882-09

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	5.30	1.00	6.06	5.94	76	63	75-125	18	20	225
Beryllium	mg/L	0	0.0500	0.0465	0.0466	93	93	75-125	0.3	20	
Iron	mg/L	22.5	10.0	30.3	30.2	78	76	75-125	2	20	
Potassium	mg/L	14.8	10.0	25.0	25.3	103	105	75-125	2	20	424
Lithium	mg/L	0.267	0.500	0.775	0.771	102	101	75-125	0.8	20	
Magnesium	mg/L	38.5	10.0	46.2	46.0	77	74	75-125	3	20	209
Sodium	mg/L	31.3	10.0	39.7	39.5	84	83	75-125	2	20	
Zinc	mg/L	0	1.00	0.957	0.964	96	96	75-125	0.8	20	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T109603-MSD2

Original: 21D0882-09

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Calcium	mg/L	211	100	341	332	130	121	75-125	7	20	208

Trace Project ID: 21D0882

Client Project ID: MW Sampling- April 2021

QC Batch: T109789

Analysis Description: Lithium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6010D

METHOD BLANK: T109789-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	<1.0	1.0	
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T109789-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.862	97	80-120	
Beryllium	mg/L	0.111	0.108	97	80-120	
Calcium	mg/L	8.89	8.62	97	80-120	
Iron	mg/L	8.89	8.68	98	80-120	
Potassium	mg/L	8.89	8.27	93	80-120	
Lithium	mg/L	0.889	0.819	92	80-120	
Magnesium	mg/L	8.89	8.57	96	80-120	
Sodium	mg/L	8.89	8.47	95	80-120	
Zinc	mg/L	0.889	0.853	96	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T109789-MSD1

Original: 21D0882-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	40.0	0.889	38.3	38.0	-192	-225	75-125	-16	20	222
Beryllium	mg/L	0	0.111	0.117	0.118	105	106	75-125	0.5	20	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T109789-MSD1

Original: 21D0882-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Calcium	mg/L	587	8.89	552	544	-395	-480	75-125	-19	20	222
Iron	mg/L	3.70	8.89	12.5	12.4	99	98	75-125	1	20	
Potassium	mg/L	48.2	8.89	60.2	59.2	135	124	75-125	9	20	209, 424
Lithium	mg/L	0.910	0.889	2.01	2.00	124	122	75-125	2	20	
Magnesium	mg/L	144	8.89	142	140	-22	-44	75-125	-68	20	222
Sodium	mg/L	217	8.89	265	215	544	-15	75-125	212	20	222
Zinc	mg/L	0.130	0.889	1.04	1.04	102	103	75-125	0.3	20	

Trace Project ID: 21D0882

Client Project ID: MW Sampling- April 2021

QC Batch: T109749

Analysis Description: Molybdenum, Dissolved

QC Batch Method:

Analysis Method: EPA 6020B

METHOD BLANK: T109749-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.000040	0.000040	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	<0.00020	0.00020	
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T109749-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0577	96	80-120	
Arsenic	mg/L	0.0600	0.0617	103	80-120	
Barium	mg/L	0.0600	0.0600	100	80-120	
Cadmium	mg/L	0.0600	0.0628	105	80-120	

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LABORATORY CONTROL SAMPLE: T109749-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Cobalt	mg/L	0.0600	0.0584	97	80-120	
Chromium	mg/L	0.0600	0.0612	102	80-120	
Copper	mg/L	0.0600	0.0595	99	80-120	
Manganese	mg/L	0.0600	0.0599	100	80-120	
Molybdenum	mg/L	0.0600	0.0591	98	80-120	
Nickel	mg/L	0.0600	0.0580	97	80-120	
Lead	mg/L	0.0600	0.0596	99	80-120	
Antimony	mg/L	0.0600	0.0577	96	80-120	
Selenium	mg/L	0.0600	0.0599	100	80-120	
Thallium	mg/L	0.0600	0.0598	100	80-120	
Vanadium	mg/L	0.0600	0.0575	96	80-120	

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

QC Batch: T109789

Analysis Description: Vanadium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6020B

METHOD BLANK: T109789-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	
Cadmium	mg/L	<0.0010	0.0010	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T109789-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
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LABORATORY CONTROL SAMPLE: T109789-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0300	108	80-120	
Arsenic	mg/L	0.0556	0.0554	100	80-120	
Barium	mg/L	0.889	0.930	105	80-120	
Cadmium	mg/L	0.0278	0.0301	108	80-120	
Cobalt	mg/L	0.889	0.821	92	80-120	
Chromium	mg/L	0.0278	0.0270	97	80-120	
Copper	mg/L	0.889	0.792	89	80-120	
Manganese	mg/L	0.889	0.824	93	80-120	
Molybdenum	mg/L	0.889	0.863	97	80-120	
Nickel	mg/L	0.889	0.809	91	80-120	
Lead	mg/L	0.0556	0.0521	94	80-120	
Antimony	mg/L	0.0556	0.0599	108	80-120	
Selenium	mg/L	0.0556	0.0545	98	80-120	
Thallium	mg/L	0.0556	0.0529	95	80-120	
Vanadium	mg/L	0.889	0.859	97	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T109789-MSD1

Original: 21D0882-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Silver	mg/L	0	0.0278	0.0290	0.0285	104	103	75-125	2	20	
Arsenic	mg/L	0	0.0556	0.0621	0.0607	112	109	75-125	2	20	
Barium	mg/L	0.0749	0.889	1.18	1.25	125	132	75-125	6	20	209
Cadmium	mg/L	0.00525	0.0278	0.0351	0.0349	108	107	75-125	1	20	
Cobalt	mg/L	0.0222	0.889	0.796	0.814	87	89	75-125	2	20	
Chromium	mg/L	0	0.0278	0.0287	0.0296	103	106	75-125	3	20	
Copper	mg/L	0.00989	0.889	0.762	0.789	85	88	75-125	4	20	
Manganese	mg/L	0.723	0.889	1.44	1.47	81	84	75-125	4	20	
Molybdenum	mg/L	0.00585	0.889	0.946	0.937	106	105	75-125	1	20	
Nickel	mg/L	0.0246	0.889	0.794	0.813	87	89	75-125	2	20	
Lead	mg/L	0.0391	0.0556	0.116	0.117	138	141	75-125	2	20	206
Antimony	mg/L	0.00313	0.0556	0.0611	0.0623	104	107	75-125	2	20	
Selenium	mg/L	0	0.0556	0.0565	0.0543	102	98	75-125	4	20	
Thallium	mg/L	0	0.0556	0.0565	0.0557	102	100	75-125	1	20	
Vanadium	mg/L	0	0.889	0.820	0.823	92	93	75-125	0.4	20	

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Trace Project ID: 21D0882
Client Project ID: MW Sampling- April 2021

QC Batch: [CALC]	Analysis Description: Hardness (Metals)
QC Batch Method:	Analysis Method: SM 2340 B-11

Trace Project ID: 21D0882
Client Project ID: MW Sampling- April 2021

QC Batch: T109450	Analysis Description: Fluoride
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T109450-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T109450-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Fluoride	mg/L	1.00	0.916	92	90-110	
Sulfate as SO4	mg/L	5.00	5.08	102	90-110	

MATRIX SPIKE: T109450-MS1 Original: 21D0882-08

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Fluoride	mg/L	0.493	5.00	5.64	103	80-120	
Sulfate as SO4	mg/L	11.0	25.0	37.7	107	80-120	

MATRIX SPIKE: T109450-MS2 Original: 21D0882-09

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Fluoride	mg/L	2.44	5.00	8.17	115	80-120	
Sulfate as SO4	mg/L	70.6	25.0	100	118	80-120	

Trace Project ID: 21D0882
Client Project ID: MW Sampling- April 2021

QC Batch: T109705	Analysis Description: Alkalinity, Carbonate
QC Batch Method: SM 2320 B-11	Analysis Method: SM 2320 B-11

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LABORATORY CONTROL SAMPLE: T109705-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	99.8	100	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	96.9	97	88-112	

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

QC Batch: T109546	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-11	Analysis Method: SM 2540 C-11

METHOD BLANK: T109546-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	2.0	10	J

LABORATORY CONTROL SAMPLE: T109546-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	502	100	80-120	

SAMPLE DUPLICATE: T109546-DUP1 Original: 21D0882-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	2870	2940	2	10	

SAMPLE DUPLICATE: T109546-DUP2 Original: 21D0882-02

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	1680	1660	1	10	

Trace Project ID: 21D0882
 Client Project ID: MW Sampling- April 2021

QC Batch: T109205	Analysis Description: pH, SM 4500
QC Batch Method: *** DEFAULT PREP ***	Analysis Method: SM 4500-H+ B-11

CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Trace Analytical Laboratories, Inc.

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

This report may not be reproduced, except in full, without written approval from EEA.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

LABORATORY CASE NARRATIVE

Client: Trace Analytical Laboratories

Report #: 516239CN

All method QC was within acceptance limits.

Note: This report may not be reproduced, except in full, without written approval from EEA.



05/17/2021

Authorized Signature

Title

Date

110 South Hill Street
 South Bend, IN 46617
 Tel: (574) 233-4777
 Fax: (574) 233-8207
 1 800 332 4345

Laboratory Report

Client: Trace Analytical Laboratories
 Attn: Jon Mink
 2241 Black Creek Road
 Muskegon, MI 49444

Report: 516239
 Priority: Standard Written
 Status: Final

Project: MW Sampling-April 2021

SUMMARY OF DETECTIONS

Sample ID:	Sample Site:	Method	Result	Units	Run #
4886107	MW-10				
Parameter		Method	Result	Units	Run #
Radium-226		7500-Ra B	0.69 +/- 0.37	pCi/L	288766
Radium-228		7500-Ra D	0.68 +/- 0.40	pCi/L	288760
Combined Radium		calc.	1.37 +/- 0.54	pCi/L	288766
4886098	MW-1R				
Parameter		Method	Result	Units	Run #
Radium-226		7500-Ra B	0.58 +/- 0.68	pCi/L	288762
Radium-228		7500-Ra D	0.05 +/- 0.61	pCi/L	288769
4886099	MW-2				
Parameter		Method	Result	Units	Run #
Radium-226		7500-Ra B	0.45 +/- 1.46	pCi/L	288774
Radium-228		7500-Ra D	1.0 +/- 0.8	pCi/L	288769
Combined Radium		calc.	1.45 +/- 1.66	pCi/L	288774
4886100	MW-3				
Parameter		Method	Result	Units	Run #
Radium-226		7500-Ra B	0.61 +/- 1.14	pCi/L	288774
Radium-228		7500-Ra D	1.5 +/- 0.7	pCi/L	288769
Combined Radium		calc.	2.11 +/- 1.35	pCi/L	288774
4886101	MW-4				
Parameter		Method	Result	Units	Run #
Radium-226		7500-Ra B	0.19 +/- 0.22	pCi/L	288762
Radium-228		7500-Ra D	0.51 +/- 0.53	pCi/L	288769
Combined Radium		calc.	0.70 +/- 0.57	pCi/L	288762
4886102	MW-5				
Parameter		Method	Result	Units	Run #
Radium-226		7500-Ra B	0.56 +/- 0.28	pCi/L	288762
Radium-228		7500-Ra D	0.33 +/- 0.49	pCi/L	288769
Combined Radium		calc.	0.89 +/- 0.56	pCi/L	288762

SUMMARY OF DETECTIONS - Continued

Sample ID: 4886103	Sample Site: MW-6			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.85 +/- 1.01	pCi/L	288774
Radium-228	7500-Ra D	1.6 +/- 0.7	pCi/L	288769
Combined Radium	calc.	2.45 +/- 1.21	pCi/L	288774

Sample ID: 4886104	Sample Site: MW-7			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.82 +/- 0.39	pCi/L	288762
Radium-228	7500-Ra D	0.88 +/- 0.49	pCi/L	288769
Combined Radium	calc.	1.70 +/- 0.63	pCi/L	288762

Sample ID: 4886105	Sample Site: MW-8			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.29 +/- 0.29	pCi/L	288762
Radium-228	7500-Ra D	1.9 +/- 0.5	pCi/L	288769
Combined Radium	calc.	2.19 +/- 0.59	pCi/L	288762

Sample ID: 4886106	Sample Site: MW-9			
Parameter	Method	Result	Units	Run #
Radium-226	7500-Ra B	0.52 +/- 0.30	pCi/L	288766
Radium-228	7500-Ra D	0.89 +/- 0.39	pCi/L	288760
Combined Radium	calc.	1.41 +/- 0.49	pCi/L	288766

Note: The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Karen Fullmer at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Diana M. Siz Reporter

5/17/2021

Reviewed By

Title

Date

Finalized By

Title

Date

110 South Hill Street
 South Bend, IN 46617
 Tel: (574) 233-4777
 Fax: (574) 233-8207
 1 800 332 4345

Laboratory Report

Client: Trace Analytical Laboratories

 Attn: Jon Mink
 2241 Black Creek Road
 Muskegon, MI 49444

Report: 516239
 Priority: Standard Written
 Status: Final
 PWS ID: Not Supplied

Sample Information					
EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4886098	MW-1R	7500-Ra B	04/23/21 09:15	Client	04/27/21 09:45
4886098	MW-1R	7500-Ra D	04/23/21 09:15	Client	04/27/21 09:45
4886099	MW-2	7500-Ra B	04/23/21 09:55	Client	04/27/21 09:45
4886099	MW-2	7500-Ra D	04/23/21 09:55	Client	04/27/21 09:45
4886100	MW-3	7500-Ra B	04/23/21 10:20	Client	04/27/21 09:45
4886100	MW-3	7500-Ra D	04/23/21 10:20	Client	04/27/21 09:45
4886101	MW-4	7500-Ra B	04/23/21 10:50	Client	04/27/21 09:45
4886101	MW-4	7500-Ra D	04/23/21 10:50	Client	04/27/21 09:45
4886102	MW-5	7500-Ra B	04/23/21 07:50	Client	04/27/21 09:45
4886102	MW-5	7500-Ra D	04/23/21 07:50	Client	04/27/21 09:45
4886103	MW-6	7500-Ra B	04/23/21 08:45	Client	04/27/21 09:45
4886103	MW-6	7500-Ra D	04/23/21 08:45	Client	04/27/21 09:45
4886104	MW-7	7500-Ra B	04/23/21 07:30	Client	04/27/21 09:45
4886104	MW-7	7500-Ra D	04/23/21 07:30	Client	04/27/21 09:45
4886105	MW-8	7500-Ra B	04/23/21 14:58	Client	04/27/21 09:45
4886105	MW-8	7500-Ra D	04/23/21 14:58	Client	04/27/21 09:45
4886106	MW-9	7500-Ra B	04/23/21 14:30	Client	04/27/21 09:45
4886106	MW-9	7500-Ra D	04/23/21 14:30	Client	04/27/21 09:45
4886107	MW-10	7500-Ra B	04/23/21 13:00	Client	04/27/21 09:45
4886107	MW-10	7500-Ra D	04/23/21 13:00	Client	04/27/21 09:45

Report Summary

Note: See attached page for additional comments.
 Note: Sample containers were provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Karen Fullmer at (574) 233-4777.

Client Name: Trace Analytical Laboratories

Report #: 516239

Note: This report may not be reproduced, except in full, without written approval from EEA.

Karen Fullmer ASM

Authorized Signature

Title

05/17/2021

Date

Client Name: Trace Analytical Laboratories

Report #: 516239

Sampling Point: MW-1R

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.73	1.0	0.58 ± 0.68	pCi/L	04/29/21 04:35	05/07/21 16:49	4886098
15262-20-1	Radium-228	7500-Ra D	---	0.64	1.00	0.05 ± 0.61	pCi/L	04/29/21 04:35	05/11/21 16:49	4886098
---	Combined Radium	calc.	5 *	0.73	1.0	< 0.73	pCi/L	04/29/21 04:35	05/11/21 16:49	4886098

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-2

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.70	1.0	0.45 ± 1.46	pCi/L	04/29/21 04:35	05/12/21 09:55	4886099
15262-20-1	Radium-228	7500-Ra D	---	0.78	1.0	1.0 ± 0.8	pCi/L	04/29/21 04:35	05/11/21 16:49	4886099
---	Combined Radium	calc.	5 *	0.78	1.0	1.45 ± 1.66	pCi/L	04/29/21 04:35	05/12/21 09:55	4886099

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-3

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.63	1.0	0.61 ± 1.14	pCi/L	04/29/21 04:35	05/12/21 09:55	4886100
15262-20-1	Radium-228	7500-Ra D	---	0.69	1.0	1.5 ± 0.7	pCi/L	04/29/21 04:35	05/11/21 16:49	4886100
---	Combined Radium	calc.	5 *	0.69	1.0	2.11 ± 1.35	pCi/L	04/29/21 04:35	05/12/21 09:55	4886100

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-4

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.23	1.0	0.19 ± 0.22	pCi/L	04/29/21 04:35	05/07/21 16:49	4886101
15262-20-1	Radium-228	7500-Ra D	---	0.53	1.0	0.51 ± 0.53	pCi/L	04/29/21 04:35	05/11/21 16:49	4886101
---	Combined Radium	calc.	5 *	0.53	1.0	0.70 ± 0.57	pCi/L	04/29/21 04:35	05/11/21 16:49	4886101

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-5

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.17	1.0	0.56 ± 0.28	pCi/L	04/29/21 04:35	05/07/21 16:49	4886102
15262-20-1	Radium-228	7500-Ra D	---	0.50	1.0	0.33 ± 0.49	pCi/L	04/29/21 04:35	05/11/21 16:49	4886102
---	Combined Radium	calc.	5 *	0.50	1.0	0.89 ± 0.56	pCi/L	04/29/21 04:35	05/11/21 16:49	4886102

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-6

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.58	1.0	0.85 ± 1.01	pCi/L	04/29/21 04:35	05/12/21 09:55	4886103
15262-20-1	Radium-228	7500-Ra D	---	0.60	1.0	1.6 ± 0.7	pCi/L	04/29/21 04:35	05/11/21 16:49	4886103
---	Combined Radium	calc.	5 *	0.60	1.0	2.45 ± 1.21	pCi/L	04/29/21 04:35	05/12/21 09:55	4886103

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-7

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.24	1.0	0.82 ± 0.39	pCi/L	04/29/21 04:35	05/07/21 16:49	4886104
15262-20-1	Radium-228	7500-Ra D	---	0.47	1.0	0.88 ± 0.49	pCi/L	04/29/21 04:35	05/11/21 16:49	4886104
---	Combined Radium	calc.	5 *	0.47	1.0	1.70 ± 0.63	pCi/L	04/29/21 04:35	05/11/21 16:49	4886104

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-8

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.28	1.0	0.29 ± 0.29	pCi/L	04/29/21 04:35	05/07/21 16:49	4886105
15262-20-1	Radium-228	7500-Ra D	---	0.43	1.0	1.9 ± 0.5	pCi/L	04/29/21 04:35	05/11/21 16:49	4886105
---	Combined Radium	calc.	5 *	0.43	1.0	2.19 ± 0.59	pCi/L	04/29/21 04:35	05/11/21 16:49	4886105

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-9

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.21	1.0	0.52 ± 0.30	pCi/L	04/29/21 04:35	05/07/21 15:17	4886106
15262-20-1	Radium-228	7500-Ra D	---	0.36	1.0	0.89 ± 0.39	pCi/L	04/29/21 04:35	05/11/21 16:50	4886106
---	Combined Radium	calc.	5 *	0.36	1.0	1.41 ± 0.49	pCi/L	04/29/21 04:35	05/11/21 16:50	4886106

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-10

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.27	1.0	0.69 ± 0.37	pCi/L	04/29/21 04:35	05/07/21 15:17	4886107
15262-20-1	Radium-228	7500-Ra D	---	0.39	1.0	0.68 ± 0.40	pCi/L	04/29/21 04:35	05/11/21 16:50	4886107
---	Combined Radium	calc.	5 *	0.39	1.0	1.37 ± 0.54	pCi/L	04/29/21 04:35	05/11/21 16:50	4886107

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: $(MS \text{ or } MSD \text{ value} - \text{Sample value}) * 100 / \text{spike target} / \text{dilution factor} = \text{Recovery } \%$

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.



Eaton Analytical

110 S. Hill Street South Bend, IN 46617 T: 1.800.332.4345 F: 1.574.233.8207 Order # 424549 Batch # 516239

www.EurofinsUS.com/Eaton

CHAIN OF CUSTODY RECORD

Page 1 of 1

Table with columns: REPORT TO, BILL TO, LAB Number, COLLECTION (DATE, TIME, AM, PM), SAMPLING SITE, TEST NAME, SAMPLE REMARKS, CHLORINATED (YES, NO), # OF CONTAINERS, MATRIX CODE, TURNAROUND TIME. Includes handwritten sample numbers 098-107 and MW-1R-10.

Table for Chain of Custody with columns: RELINQUISHED BY (Signature), DATE, TIME, RECEIVED BY (Signature), DATE, TIME. Includes handwritten signatures and dates like 4/24/21 11:32 AM.

Table for Matrix Codes and Turn-Around Time (TAT) - SURCHARGES. Lists codes like DW-DRINKING WATER, SW = Standard Written (15 working days) 0%, etc.



Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673

Phone 231.773.5998
 Fax 888.979.4469
 www.trace-labs.com

Page 1 of _____
 Trace ID No.
 21D0882

CHAIN-OF-CUSTODY RECORD

Report Results To:

Bill To:

Trace Use:

Company Name: Grand Haven Board of Light & Power
 Report To: Paul Coderquist
 Mailing Address:
 City, State, Zip Code:
 Office Phone: Call Phone:
 Email Address:
 PO #:
 Contact Name:
 Billing Address: (if different):
 City, State, Zip Code:
 Phone Number:
 Billing Email Address:

Logged By: JS
 Checked By: RB
 Soil Volatiles Preserved (circle if applicable):
 MeOH Low Level Lab
 Sampling Time:

Standard Requirements:
 Standard, 5-10 Days
 3 Day*
 1 Day*
 *Results provided end of business day, requires prior approval.

Matrix Key:
 S = Soil / Solid
 W = Water
 SL = Sludge
 OI = Oil
 WI = Wipes
 LW = Liquid Waste
 A = Air
 D = Drinking Water

Trip No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y/N)	Matrix	Number of Containers	Preservation							Total Metals	Dissolved Metals	Hardness	Cl, F, Sulfate, TDS,	Bicarb-Alk, Carbonate-Alk	Radium 226/228	LLHg	pH	Remarks	Possible Health Hazards?	
							Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other												
1	4/23/21	9:15	MW-1R		W	7	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
2	1	9:55	MW-2																			6.94		
3	1	10:20	MW-3																				6.91	
4	1	10:50	MW-4																				7.18	
5	1	7:50	MW-5																				6.76	
6	1	8:45	MW-6																				7.17	
7	1	7:30	MW-7																				6.47	
8	1	14:59	MW-8																				7.18	
9	1	14:30	MW-9																				7.14	
10	1	13:06	MW-10																				7.60	
Please Sign				Released By:	Date:	Time:	Received By:	Date:	Time:															
				<u>JSB</u>	4/26/21	8:45	<u>CP</u>																	

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 4-23-21

Field Personnel: EB

Well No.: MW7

Depth to Point: 18.81'

Sample Tubing Depth: 16'

Depth to Water: 5.42

Purge Start Time: 7:15

Purge Rate: 3000 L/min

Reading Time	7:25	7:26	7:27					
Depth to Water	5.49	5.51	5.51					
Temperature (Celsius)	10.10	10.10	10.10					
Specific Conductivity	1.20	1.20	1.20					
Dissolved Oxygen	1.43	1.43	1.43					
ORP (mV)	-71	-71	-71					
Turbidity(NTU)	22.1	22.1	22.1					
pH	6.47	6.47	6.47					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 5
 Date: 4.23.21
 Field Personnel: EB
 Depth to Water: 5.97
 Depth to Point: 11.5'
 Sample Tubing Depth: 10'
 Purge Start Time: 7:35
 Purge Rate: 3000ml/min

Reading Time	7:45	7:47	7:48						
Depth to Water	6.03	6.03	6.03						
Temperature (Celsius)	8.58	8.58	8.58						
Specific Conductivity	2.30	2.30	2.30						
Dissolved Oxygen	1.04	1.04	1.04						
ORP (mV)	-93	-93	-93						
Turbidity(NTU)	1.3	1.3	1.3						
pH	6.76	6.76	6.76						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 6
 Date: 4.23.21
 Depth to Water: 8.49
 Depth to Point: 16.5'
 Purge Start Time: 8:30
 Field Personnel: EB
 Sample Tubing Depth: 14'
 Purge Rate: 3000 L/min

Reading Time	8:40	8:42	8:43					
Depth to Water	8.59	8.59	8.59					
Temperature (Celsius)	9.33	9.33	9.33					
Specific Conductivity	2.03	2.03	2.03					
Dissolved Oxygen	82	82	82					
ORP (mV)	-149	-149	-149					
Turbidity(NTU)	11.00	11.00	11.00					
pH	7.17	7.17	7.17					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 4.23.21 Field Personnel: EB
 Well No.: MW-1R Depth to Point: 18.2ft Sample Tubing Depth: 10'
 Depth to Water: 6.43 Purge Start Time: 9:00 Purge Rate: 300 ml/min

Reading Time	9:10	9:11	9:12						
Depth to Water	6.74	6.74	6.74						
Temperature (Celsius)	8.73	8.73	8.73						
Specific Conductivity	3.34	3.34	3.34						
Dissolved Oxygen	1.15	1.15	1.15						
ORP (mV)	-89	-89	-89						
Turbidity(NTU)	7.3	7.3	7.3						
pH	7.25	7.25	7.25						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 4-23-21 Field Personnel: EB
 Well No.: MW 2 Depth to Point: 23.51' Sample Tubing Depth: 20'
 Depth to Water: 14.62 Purge Start Time: 9:40 Purge Rate: 300ml/min

Reading Time	9:50	9:51	9:52						
Depth to Water	14.95	14.95	14.95						
Temperature (Celsius)	10.65	10.65	10.65						
Specific Conductivity	3.48	3.48	3.48						
Dissolved Oxygen	.71	.71	.71						
ORP (mV)	-103	-103	-103						
Turbidity(NTU)	7.6	7.6	7.6						
pH	6.94	6.94	6.94						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 4-23-21 Field Personnel: EB
 Well No.: MW 3 Depth to Point: 20.5' Sample Tubing Depth: 18'
 Depth to Water: 12.00 Purge Start Time: 10:05 Purge Rate: 300cc/min

Reading Time	10:15	10:16	10:17						
Depth to Water	12.17	12.17	12.17						
Temperature (Celsius)	9.88	9.88	9.88						
Specific Conductivity	3.90	3.90	3.90						
Dissolved Oxygen	.54	.54	.54						
ORP (mV)	-98	-98	-98						
Turbidity(NTU)	7.2	7.2	7.2						
pH	6.91	6.91	6.91						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 4-23-21

Field Personnel: EB

Well No.: MW 4

Depth to Point: 18.01'

Sample Tubing Depth: 16'

Depth to Water: 11.28

Purge Start Time: 10:35

Purge Rate: 300wvl/min

Reading Time	10:45	10:46	10:47						
Depth to Water	11.47	11.47	11.47						
Temperature (Celsius)	9.64	9.64	9.64						
Specific Conductivity	2.43	2.43	2.43						
Dissolved Oxygen	.60	.60	.60						
ORP (mV)	-92	-92	-92						
Turbidity(NTU)	19.9	19.9	19.9						
pH	7.18	7.18	7.18						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 4.23.21 Field Personnel: EB
 Well No.: MW 10 Depth to Point: 13.00 Sample Tubing Depth: 17 ft
 Depth to Water: 6.65 Purge Start Time: 12:40 Purge Rate: 300wt/min

Reading Time	12:55	12:56	12:57						
Depth to Water	6.89	6.89	6.89						
Temperature (Celsius)	9.05	9.05	9.05						
Specific Conductivity	2.96	2.96	2.96						
Dissolved Oxygen	.55	.55	.55						
ORP (mV)	-183	-183	-183						
Turbidity(NTU)	4.5	4.3	4.3						
pH	7.60	7.60	7.60						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 4-23-21 Field Personnel: EB
 Well No.: MW 9 Depth to Point: 14.9 Sample Tubing Depth: 17ft
 Depth to Water: 8.49 Purge Start Time: 19:15 Purge Rate: 300ml/min

Reading Time	14:25	14:26	14:28					
Depth to Water	8.57	8.57	8.57					
Temperature (Celsius)	12.50	12.50	12.50					
Specific Conductivity	1.25	1.25	1.25					
Dissolved Oxygen	1.66	1.66	1.66					
ORP (mV)	-100	-100	-100					
Turbidity(NTU)	41.7	41.7	41.7					
pH	7.14	7.14	7.14					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 4-23-21 Field Personnel: EB
 Well No.: MW 8 Depth to Point: 11.85 Sample Tubing Depth: 17ft
 Depth to Water: 4.30 Purge Start Time: 14:40 Purge Rate: 300ml/min

Reading Time	14:50	14:52	14:54					
Depth to Water	4.71	4.71	4.71					
Temperature (Celsius)	10.13	10.13	10.13					
Specific Conductivity	934	934	934					
Dissolved Oxygen	8.12 8.12	8.12	8.12					
ORP (mV)	-103	-103	-103					
Turbidity(NTU)	8.1	8.1	8.1					
pH	7.18	7.18	7.18					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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SAMPLE LOG IN CHECKLIST

Trace ID #: 21D0882 Date: 4/25/21 Package Description: Cooler Temperature: 7.9
 Client Name: GH BLP Time: 11:07 Logged in by: JS

Cooler Receipt

Cooler/samples delivered by: Trace courier Hand delivered Commercial courier Name of delivery person: Evan Brewer
 UPS FED EX US Mail
 Tracking Number: Not Applicable Tracking #: _____
 COC Seals present and intact on cooler? Not Applicable No Yes
 Custody seals signed by Client? No Yes Client custody seal # (if applicable): _____

Coolant and Temperature

Type of Coolant Used
 Slurry w/ crushed, cubed, or chip ice?
 Multiple bags of ice around samples?
 Ice Packs/ Blue Ice:
 No Coolant Present:
 Ice still present upon receipt (circle one): Yes **No** N/A

Cooler Temperature
 Correction Factors: •Digital Stick Thermometer CF = -0.4°C (20B12743)
 •IR Thermometer CF = -0.5°C (IR #8)
 Representative Sample Temperature: 5.6 °C (check one below)
 Temp Blank (Stick Thermometer)
 Client Sample (IR Thermometer)
 Melt Water: 7.8 °C (Use Digital Stick Thermometer)

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient sample to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
*pH checked - samples at correct pH and labeled as such?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>5/24/26/21 HNO₃ added @ 13:00</u>
Correct chemical preservative added to samples?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>5/24/26/21 Didn't mean to cross off.</u>
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Notes:

***EMD pH Test Strips Used:**

pH 0-2.5 Lot: HC029115 pH 11.0-13.0 Lot: HC729101
 Other: _____

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2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

September 02, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

Phone: 616-607-1292
Fax: (616) 842-3511

RE: Trace Project 21G1159
Client Project Monitoring Wells

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 21G1159
Client Project ID: Monitoring Wells

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21G1159-01	MW-1R	Ground Water	EB-Trace	07/30/21 09:25	07/30/21 15:32
21G1159-02	MW-2	Ground Water	EB-Trace	07/30/21 09:50	07/30/21 15:32
21G1159-03	MW-3	Ground Water	EB-Trace	07/30/21 10:25	07/30/21 15:32
21G1159-04	MW-4	Ground Water	EB-Trace	07/30/21 10:55	07/30/21 15:32
21G1159-05	MW-5	Ground Water	EB-Trace	07/30/21 08:35	07/30/21 15:32
21G1159-06	MW-6	Ground Water	EB-Trace	07/30/21 11:15	07/30/21 15:32
21G1159-07	MW-7	Ground Water	EB-Trace	07/30/21 08:05	07/30/21 15:32
21G1159-08	MW-8	Ground Water	EB-Trace	07/30/21 14:40	07/30/21 15:32
21G1159-09	MW-9	Ground Water	EB-Trace	07/30/21 12:10	07/30/21 15:32
21G1159-10	MW-10	Ground Water	EB-Trace	07/30/21 12:55	07/30/21 15:32

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: 21G1159-01

Analysis: SM 4500-H+ B-11

pH Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21G1159-02

Analysis: SM 4500-H+ B-11

pH Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21G1159-03

Analysis: SM 4500-H+ B-11

pH Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21G1159-04

Analysis: SM 4500-H+ B-11

pH Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21G1159-05

Analysis: SM 4500-H+ B-11

pH Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21G1159-06

Analysis: SM 4500-H+ B-11

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pH

Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21G1159-07

Analysis: SM 4500-H+ B-11

pH

Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21G1159-08

Analysis: SM 4500-H+ B-11

pH

Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21G1159-09

Analysis: SM 4500-H+ B-11

pH

Note SITE : The analysis was performed on site at the time of sampling.

Trace ID: 21G1159-10

Analysis: SM 4500-H+ B-11

pH

Note SITE : The analysis was performed on site at the time of sampling.

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-01 Matrix: Ground Water Date Collected: 07/30/21 09:25
 Sample ID: MW-1R Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T112873</i>									
Mercury	4.3 ng/L	0.50	1	07/30/21	dc	08/02/21	dc	N	
Analysis Method: EPA 6010D									
<i>Batch: T112897</i>									
Beryllium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/03/21	dc		
Boron	110 mg/L	1.2	25	08/02/21	gmr	08/04/21	dc		
Calcium	380 mg/L	12	25	08/02/21	gmr	08/04/21	dc		
Iron	3.3 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Lithium	2.3 mg/L	0.010	1	08/02/21	gmr	08/03/21	dc	N	
Magnesium	130 mg/L	5.0	25	08/02/21	gmr	08/04/21	dc		
Potassium	69 mg/L	25	25	08/02/21	gmr	08/04/21	dc		
Sodium	410 mg/L	12	25	08/02/21	gmr	08/04/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/02/21	gmr	08/03/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T112897</i>									
Antimony	0.0014 mg/L	0.00030	1	08/02/21	gmr	08/09/21	acs		
Arsenic	0.0042 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Barium	0.20 mg/L	0.010	1	08/02/21	gmr	08/09/21	acs		
Cadmium	0.00060 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs	J	
Chromium	0.0027 mg/L	0.00090	1	08/02/21	gmr	08/09/21	acs		
Cobalt	0.0037 mg/L	0.0016	1	08/02/21	gmr	08/09/21	acs		
Copper	<0.0040 mg/L	0.0040	1	08/02/21	gmr	08/09/21	acs		
Lead	0.0075 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Manganese	0.57 mg/L	0.025	1	08/02/21	gmr	08/09/21	acs		
Molybdenum	0.0025 mg/L	0.00040	1	08/02/21	gmr	08/09/21	acs	N	
Nickel	0.0057 mg/L	0.0050	1	08/11/21	mrh	08/12/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Silver	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Vanadium	0.0023 mg/L	0.00080	1	08/02/21	gmr	08/09/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-01 Matrix: Ground Water Date Collected: 07/30/21 09:25
 Sample ID: MW-1R Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
------------	---------------	-----	----------	----------	----	----------	----	-------	-----

METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	1500 mg/L	21	25	08/02/21		08/04/21	dc	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T113062

Beryllium	<0.0010 mg/L	0.0010	1	08/05/21	dc	08/06/21	dc		
Boron	79 mg/L	0.50	10	08/05/21	dc	08/06/21	dc		
Calcium	320 mg/L	5.0	10	08/05/21	dc	08/06/21	dc		
Iron	3.2 mg/L	0.10	1	08/05/21	dc	08/06/21	dc		
Lithium	2.2 mg/L	0.010	1	08/05/21	dc	08/09/21	dc	N	
Magnesium	100 mg/L	2.0	10	08/05/21	dc	08/06/21	dc		
Potassium	58 mg/L	10	10	08/05/21	dc	08/06/21	dc		
Sodium	300 mg/L	5.0	10	08/05/21	dc	08/06/21	dc	N	
Zinc	0.00096 mg/L	0.020	1	08/05/21	dc	08/06/21	dc	J	

Analysis Method: EPA 6020B

Batch: T112895

Antimony	0.00089 mg/L	0.00020	1	08/02/21	ckd	08/06/21	ckd		
Arsenic	0.0038 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Barium	0.17 mg/L	0.00060	1	08/02/21	ckd	08/06/21	ckd		
Cadmium	0.000049 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd	J	
Chromium	0.0016 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Cobalt	0.0011 mg/L	0.0016	1	08/02/21	ckd	08/06/21	ckd	J	
Copper	0.00015 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd	J	
Lead	0.00043 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Manganese	0.65 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Molybdenum	0.0019 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	N	
Nickel	0.0023 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Selenium	0.00081 mg/L	0.00087	1	08/02/21	ckd	08/06/21	ckd	J	
Silver	0.000015 mg/L	0.000040	1	08/02/21	ckd	08/06/21	ckd	J	
Thallium	0.000065 mg/L	0.00017	1	08/02/21	ckd	08/06/21	ckd	J	
Vanadium	0.0022 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-01 Matrix: Ground Water Date Collected: 07/30/21 09:25
 Sample ID: MW-1R Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T112875

Fluoride	12 mg/L	0.50	25	07/30/21	mr	07/31/21	mr		
Chloride	230 mg/L	15	100	07/30/21	mr	08/02/21	mr		
Sulfate as SO4	940 mg/L	60	100	07/30/21	mr	08/02/21	mr		

Analysis Method: SM 2320 B-11

Batch: T112905

Bicarbonate Alkalinity as CaCO3 at pH 4.5	980 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<25 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T113011

Total Dissolved Solids	3200 mg/L	40	4	08/04/21	rg	08/04/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T112949

pH	8.31 pH Units		1	07/30/21	jm	07/30/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-02 Matrix: Ground Water Date Collected: 07/30/21 09:50
 Sample ID: MW-2 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T112873</i>									
Mercury	0.92 ng/L	0.50	1	07/30/21	dc	08/02/21	dc	N	
Analysis Method: EPA 6010D									
<i>Batch: T112897</i>									
Beryllium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/03/21	dc		
Boron	93 mg/L	1.2	25	08/02/21	gmr	08/04/21	dc		
Calcium	230 mg/L	12	25	08/02/21	gmr	08/04/21	dc		
Iron	24 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Lithium	1.1 mg/L	0.010	1	08/02/21	gmr	08/03/21	dc	N	
Magnesium	71 mg/L	5.0	25	08/02/21	gmr	08/04/21	dc		
Potassium	40 mg/L	25	25	08/02/21	gmr	08/04/21	dc		
Sodium	270 mg/L	12	25	08/02/21	gmr	08/04/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/02/21	gmr	08/03/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T112897</i>									
Antimony	<0.00030 mg/L	0.00030	1	08/02/21	gmr	08/09/21	acs		
Arsenic	0.015 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Barium	0.48 mg/L	0.010	1	08/02/21	gmr	08/09/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Chromium	0.025 mg/L	0.00090	1	08/02/21	gmr	08/09/21	acs		
Cobalt	0.0041 mg/L	0.0016	1	08/02/21	gmr	08/09/21	acs		
Copper	<0.0040 mg/L	0.0040	1	08/02/21	gmr	08/09/21	acs		
Lead	0.00067 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs	J	
Manganese	0.83 mg/L	0.025	1	08/02/21	gmr	08/09/21	acs		
Molybdenum	0.0045 mg/L	0.00040	1	08/02/21	gmr	08/09/21	acs	N	
Nickel	0.015 mg/L	0.0050	1	08/11/21	mrh	08/12/21	acs		
Selenium	0.0013 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Vanadium	0.0026 mg/L	0.00080	1	08/02/21	gmr	08/09/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-02 Matrix: Ground Water Date Collected: 07/30/21 09:50
 Sample ID: MW-2 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED BY	ANALYZED BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	880 mg/L	21	25	08/02/21	08/04/21	dc	N
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T113062

Beryllium	<0.0010 mg/L	0.0010	1	08/05/21	08/06/21	dc	
Boron	88 mg/L	0.50	10	08/05/21	08/06/21	dc	
Calcium	200 mg/L	5.0	10	08/05/21	08/06/21	dc	
Iron	15 mg/L	0.10	1	08/05/21	08/06/21	dc	
Lithium	1.1 mg/L	0.010	1	08/05/21	08/09/21	dc	N
Magnesium	63 mg/L	2.0	10	08/05/21	08/06/21	dc	
Potassium	40 mg/L	10	10	08/05/21	08/06/21	dc	
Sodium	240 mg/L	5.0	10	08/05/21	08/06/21	dc	N
Zinc	0.0023 mg/L	0.020	1	08/05/21	08/06/21	dc	J

Analysis Method: EPA 6020B

Batch: T112895

Antimony	0.00084 mg/L	0.0010	5	08/02/21	08/06/21	ckd	J
Arsenic	0.011 mg/L	0.0010	1	08/02/21	08/06/21	ckd	
Barium	0.43 mg/L	0.0030	5	08/02/21	08/06/21	ckd	
Cadmium	0.000020 mg/L	0.0010	1	08/02/21	08/06/21	ckd	J
Chromium	0.016 mg/L	0.00080	1	08/02/21	08/06/21	ckd	
Cobalt	0.0032 mg/L	0.0016	1	08/02/21	08/06/21	ckd	
Copper	0.00042 mg/L	0.00080	1	08/02/21	08/06/21	ckd	J
Lead	0.00055 mg/L	0.0020	5	08/02/21	08/06/21	ckd	J
Manganese	0.67 mg/L	0.00040	1	08/02/21	08/06/21	ckd	
Molybdenum	0.0040 mg/L	0.00040	1	08/02/21	08/06/21	ckd	N
Nickel	0.011 mg/L	0.00040	1	08/02/21	08/06/21	ckd	
Selenium	0.0011 mg/L	0.00087	1	08/02/21	08/06/21	ckd	
Silver	0.000026 mg/L	0.000040	1	08/02/21	08/06/21	ckd	J
Thallium	0.00025 mg/L	0.00087	5	08/02/21	08/06/21	ckd	J
Vanadium	0.0014 mg/L	0.00080	1	08/02/21	08/06/21	ckd	

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-02 Matrix: Ground Water Date Collected: 07/30/21 09:50
 Sample ID: MW-2 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T112875

Fluoride	9.0 mg/L	0.10	5	07/30/21	mr	07/30/21	mr		
Chloride	140 mg/L	3.8	25	07/30/21	mr	07/31/21	mr		
Sulfate as SO4	0.81 mg/L	3.0	5	07/30/21	mr	07/30/21	mr	J	

Analysis Method: SM 2320 B-11

Batch: T112905

Bicarbonate Alkalinity as CaCO3 at pH 4.5	2000 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<25 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T113011

Total Dissolved Solids	1800 mg/L	40	4	08/04/21	rg	08/04/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T112949

pH	7.38 pH Units		1	07/30/21	jm	07/30/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-03 Matrix: Ground Water Date Collected: 07/30/21 10:25
 Sample ID: MW-3 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T112873</i>									
Mercury	0.64 ng/L	0.50	1	07/30/21	dc	08/02/21	dc	N	
Analysis Method: EPA 6010D									
<i>Batch: T112897</i>									
Beryllium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/03/21	dc		
Boron	4.8 mg/L	0.050	1	08/02/21	gmr	08/03/21	dc		
Calcium	570 mg/L	12	25	08/02/21	gmr	08/04/21	dc		
Iron	4.8 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Lithium	0.050 mg/L	0.010	1	08/02/21	gmr	08/03/21	dc	N	
Magnesium	260 mg/L	5.0	25	08/02/21	gmr	08/04/21	dc		
Potassium	27 mg/L	1.0	1	08/02/21	gmr	08/03/21	dc		
Sodium	150 mg/L	12	25	08/02/21	gmr	08/04/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/02/21	gmr	08/03/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T112897</i>									
Antimony	<0.00030 mg/L	0.00030	1	08/02/21	gmr	08/09/21	acs		
Arsenic	0.0017 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Barium	0.48 mg/L	0.010	1	08/02/21	gmr	08/09/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Chromium	0.0044 mg/L	0.00090	1	08/02/21	gmr	08/09/21	acs		
Cobalt	0.00086 mg/L	0.0016	1	08/02/21	gmr	08/09/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	08/02/21	gmr	08/09/21	acs		
Lead	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Manganese	2.0 mg/L	0.025	1	08/02/21	gmr	08/09/21	acs		
Molybdenum	<0.00040 mg/L	0.00040	1	08/02/21	gmr	08/09/21	acs	N	
Nickel	0.0016 mg/L	0.0035	1	08/11/21	mrh	08/12/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Silver	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Vanadium	0.0019 mg/L	0.00080	1	08/02/21	gmr	08/09/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-03 Matrix: Ground Water Date Collected: 07/30/21 10:25
 Sample ID: MW-3 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	2500 mg/L	21	25	08/02/21		08/04/21	dc	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T113062

Beryllium	<0.0010 mg/L	0.0010	1	08/05/21	dc	08/06/21	dc		
Boron	4.2 mg/L	0.050	1	08/05/21	dc	08/06/21	dc		
Calcium	440 mg/L	5.0	10	08/05/21	dc	08/06/21	dc		
Iron	0.18 mg/L	0.10	1	08/05/21	dc	08/06/21	dc		
Lithium	0.050 mg/L	0.010	1	08/05/21	dc	08/09/21	dc	N	
Magnesium	210 mg/L	2.0	10	08/05/21	dc	08/06/21	dc		
Potassium	24 mg/L	1.0	1	08/05/21	dc	08/06/21	dc		
Sodium	130 mg/L	5.0	10	08/05/21	dc	08/06/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/05/21	dc	08/06/21	dc		

Analysis Method: EPA 6020B

Batch: T112895

Antimony	0.00078 mg/L	0.0010	5	08/02/21	ckd	08/06/21	acs	J	
Arsenic	0.0019 mg/L	0.0050	5	08/02/21	ckd	08/06/21	acs	J	
Barium	0.38 mg/L	0.0030	5	08/02/21	ckd	08/06/21	acs		
Cadmium	<0.0010 mg/L	0.0010	5	08/02/21	ckd	08/06/21	acs		
Chromium	<0.0040 mg/L	0.0040	5	08/02/21	ckd	08/06/21	acs		
Cobalt	0.00084 mg/L	0.0080	5	08/02/21	ckd	08/06/21	acs	J	
Copper	<0.0040 mg/L	0.0040	5	08/02/21	ckd	08/06/21	acs		
Lead	<0.0020 mg/L	0.0020	5	08/02/21	ckd	08/06/21	acs		
Manganese	1.4 mg/L	0.0020	5	08/02/21	ckd	08/06/21	acs		
Molybdenum	<0.0020 mg/L	0.0020	5	08/02/21	ckd	08/06/21	acs	N	
Nickel	0.0017 mg/L	0.0020	5	08/02/21	ckd	08/06/21	acs	J	
Selenium	<0.0044 mg/L	0.0044	5	08/02/21	ckd	08/06/21	acs		
Silver	<0.00020 mg/L	0.00020	5	08/02/21	ckd	08/06/21	acs		
Thallium	<0.00087 mg/L	0.00087	5	08/02/21	ckd	08/06/21	acs		
Vanadium	0.0012 mg/L	0.0040	5	08/02/21	ckd	08/06/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-03 Matrix: Ground Water Date Collected: 07/30/21 10:25
 Sample ID: MW-3 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T112875

Fluoride	1.0 mg/L	0.10	5	07/30/21	mr	07/30/21	mr		
Chloride	380 mg/L	7.5	50	07/30/21	mr	08/02/21	mr		
Sulfate as SO4	85 mg/L	30	50	07/30/21	mr	08/02/21	mr		

Analysis Method: SM 2320 B-11

Batch: T112905

Bicarbonate Alkalinity as CaCO3 at pH 4.5	2000 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<25 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T113011

Total Dissolved Solids	2600 mg/L	40	4	08/04/21	rg	08/04/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T112949

pH	7.39 pH Units		1	07/30/21	jm	07/30/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-04 Matrix: Ground Water Date Collected: 07/30/21 10:55
 Sample ID: MW-4 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T112873</i>									
Mercury	<0.50 ng/L	0.50	1	07/30/21	dc	08/02/21	dc	N	
Analysis Method: EPA 6010D									
<i>Batch: T112897</i>									
Beryllium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/03/21	dc		
Boron	3.7 mg/L	0.050	1	08/02/21	gmr	08/03/21	dc		
Calcium	450 mg/L	12	25	08/02/21	gmr	08/04/21	dc		
Iron	6.3 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Lithium	0.065 mg/L	0.010	1	08/02/21	gmr	08/03/21	dc	N	
Magnesium	110 mg/L	5.0	25	08/02/21	gmr	08/04/21	dc		
Potassium	23 mg/L	1.0	1	08/02/21	gmr	08/03/21	dc		
Sodium	89 mg/L	12	25	08/02/21	gmr	08/04/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/02/21	gmr	08/03/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T112897</i>									
Antimony	<0.00030 mg/L	0.00030	1	08/02/21	gmr	08/09/21	acs		
Arsenic	0.0014 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Barium	0.11 mg/L	0.010	1	08/02/21	gmr	08/09/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Chromium	0.0028 mg/L	0.00090	1	08/02/21	gmr	08/09/21	acs		
Cobalt	0.00069 mg/L	0.0016	1	08/02/21	gmr	08/09/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	08/02/21	gmr	08/09/21	acs		
Lead	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Manganese	1.1 mg/L	0.025	1	08/02/21	gmr	08/09/21	acs		
Molybdenum	0.0018 mg/L	0.00040	1	08/02/21	gmr	08/09/21	acs	N	
Nickel	0.014 mg/L	0.0050	1	08/11/21	mrh	08/12/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Silver	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Vanadium	0.0012 mg/L	0.00080	1	08/02/21	gmr	08/09/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-04 Matrix: Ground Water Date Collected: 07/30/21 10:55
 Sample ID: MW-4 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	1600 mg/L	21	25	08/02/21		08/04/21	dc	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T113062

Beryllium	<0.0010 mg/L	0.0010	1	08/05/21	dc	08/06/21	dc		
Boron	3.3 mg/L	0.050	1	08/05/21	dc	08/06/21	dc		
Calcium	320 mg/L	5.0	10	08/05/21	dc	08/06/21	dc		
Iron	5.1 mg/L	0.10	1	08/05/21	dc	08/06/21	dc		
Lithium	0.070 mg/L	0.010	1	08/05/21	dc	08/09/21	dc	N	
Magnesium	83 mg/L	2.0	10	08/05/21	dc	08/06/21	dc		
Potassium	22 mg/L	1.0	1	08/05/21	dc	08/06/21	dc		
Sodium	72 mg/L	5.0	10	08/05/21	dc	08/06/21	dc	N	
Zinc	0.00085 mg/L	0.020	1	08/05/21	dc	08/06/21	dc	J	

Analysis Method: EPA 6020B

Batch: T112895

Antimony	0.00060 mg/L	0.00020	1	08/02/21	ckd	08/06/21	ckd		
Arsenic	0.0013 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Barium	0.10 mg/L	0.00060	1	08/02/21	ckd	08/06/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Chromium	0.0019 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Cobalt	0.00038 mg/L	0.0016	1	08/02/21	ckd	08/06/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Manganese	1.1 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Molybdenum	0.0012 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	N	
Nickel	0.013 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	08/02/21	ckd	08/06/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	08/02/21	ckd	08/06/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	08/02/21	ckd	08/06/21	ckd		
Vanadium	0.00078 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-04 Matrix: Ground Water Date Collected: 07/30/21 10:55
 Sample ID: MW-4 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T112875

Fluoride	1.3 mg/L	0.10	5	07/30/21	mr	07/30/21	mr		
Chloride	190 mg/L	7.5	50	07/30/21	mr	08/02/21	mr		
Sulfate as SO4	540 mg/L	30	50	07/30/21	mr	08/02/21	mr		

Analysis Method: SM 2320 B-11

Batch: T112905

Bicarbonate Alkalinity as CaCO3 at pH 4.5	750 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<25 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T113011

Total Dissolved Solids	320 mg/L	40	4	08/04/21	rg	08/04/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T112949

pH	7.43 pH Units		1	07/30/21	jm	07/30/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-05 Matrix: Ground Water Date Collected: 07/30/21 08:35
 Sample ID: MW-5 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T112873</i>									
Mercury	<0.50 ng/L	0.50	1	07/30/21	dc	08/02/21	dc	N	
Analysis Method: EPA 6010D									
<i>Batch: T112897</i>									
Beryllium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/03/21	dc		
Boron	2.9 mg/L	0.050	1	08/02/21	gmr	08/03/21	dc		
Calcium	510 mg/L	12	25	08/02/21	gmr	08/04/21	dc		
Iron	12 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Lithium	0.11 mg/L	0.010	1	08/02/21	gmr	08/03/21	dc	N	
Magnesium	41 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Potassium	10 mg/L	1.0	1	08/02/21	gmr	08/03/21	dc		
Sodium	30 mg/L	0.50	1	08/02/21	gmr	08/03/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/02/21	gmr	08/03/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T112897</i>									
Antimony	<0.00030 mg/L	0.00030	1	08/02/21	gmr	08/09/21	acs		
Arsenic	0.052 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Barium	0.077 mg/L	0.010	1	08/02/21	gmr	08/09/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Chromium	<0.00090 mg/L	0.00090	1	08/02/21	gmr	08/09/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	08/02/21	gmr	08/09/21	acs		
Copper	<0.0040 mg/L	0.0040	1	08/02/21	gmr	08/09/21	acs		
Lead	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Manganese	1.5 mg/L	0.025	1	08/02/21	gmr	08/09/21	acs		
Molybdenum	0.00063 mg/L	0.00040	1	08/02/21	gmr	08/09/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	08/11/21	mrh	08/12/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Silver	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Vanadium	0.00070 mg/L	0.00080	1	08/02/21	gmr	08/09/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-05 Matrix: Ground Water Date Collected: 07/30/21 08:35
 Sample ID: MW-5 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	1500 mg/L	0.82	25	08/02/21		08/04/21	dc	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T113062

Beryllium	<0.0010 mg/L	0.0010	1	08/05/21	dc	08/06/21	dc		
Boron	2.5 mg/L	0.050	1	08/05/21	dc	08/06/21	dc		
Calcium	410 mg/L	5.0	10	08/05/21	dc	08/06/21	dc		
Iron	11 mg/L	0.10	1	08/05/21	dc	08/06/21	dc		
Lithium	0.12 mg/L	0.010	1	08/05/21	dc	08/09/21	dc	N	
Magnesium	37 mg/L	0.20	1	08/05/21	dc	08/06/21	dc		
Potassium	9.8 mg/L	1.0	1	08/05/21	dc	08/06/21	dc		
Sodium	28 mg/L	0.50	1	08/05/21	dc	08/06/21	dc	N	
Zinc	0.0011 mg/L	0.020	1	08/05/21	dc	08/06/21	dc	J	

Analysis Method: EPA 6020B

Batch: T112895

Antimony	0.00011 mg/L	0.00020	1	08/02/21	ckd	08/06/21	ckd	J	
Arsenic	0.054 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Barium	0.096 mg/L	0.00060	1	08/02/21	ckd	08/06/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Cobalt	0.00027 mg/L	0.0016	1	08/02/21	ckd	08/06/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Manganese	1.5 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Molybdenum	0.00056 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	N	
Nickel	0.00024 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	J	
Selenium	<0.00087 mg/L	0.00087	1	08/02/21	ckd	08/06/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	08/02/21	ckd	08/06/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	08/02/21	ckd	08/06/21	ckd		
Vanadium	0.00063 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-05 Matrix: Ground Water Date Collected: 07/30/21 08:35
 Sample ID: MW-5 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T112875

Fluoride	3.9 mg/L	0.10	5	07/30/21	mr	07/30/21	mr		
Chloride	24 mg/L	0.75	5	07/30/21	mr	07/30/21	mr		
Sulfate as SO4	690 mg/L	30	50	07/30/21	mr	08/02/21	mr		

Analysis Method: SM 2320 B-11

Batch: T112905

Bicarbonate Alkalinity as CaCO3 at pH 4.5	590 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<25 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T113011

Total Dissolved Solids	1700 mg/L	40	4	08/04/21	rg	08/04/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T112949

pH	6.96 pH Units		1	07/30/21	jm	07/30/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-06 Matrix: Ground Water Date Collected: 07/30/21 11:15
 Sample ID: MW-6 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T112873</i>									
Mercury	0.73 ng/L	0.50	1	07/30/21	dc	08/02/21	dc	N	
Analysis Method: EPA 6010D									
<i>Batch: T112897</i>									
Beryllium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/03/21	dc		
Boron	11 mg/L	0.050	1	08/02/21	gmr	08/03/21	dc		
Calcium	210 mg/L	12	25	08/02/21	gmr	08/04/21	dc		
Iron	7.2 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Lithium	0.19 mg/L	0.010	1	08/02/21	gmr	08/03/21	dc	N	
Magnesium	110 mg/L	5.0	25	08/02/21	gmr	08/04/21	dc		
Potassium	33 mg/L	1.0	1	08/02/21	gmr	08/03/21	dc		
Sodium	110 mg/L	12	25	08/02/21	gmr	08/04/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/02/21	gmr	08/03/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T112897</i>									
Antimony	<0.00030 mg/L	0.00030	1	08/02/21	gmr	08/09/21	acs		
Arsenic	0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Barium	1.3 mg/L	0.010	1	08/02/21	gmr	08/09/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Chromium	0.0017 mg/L	0.00090	1	08/02/21	gmr	08/09/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	08/02/21	gmr	08/09/21	acs		
Copper	<0.0040 mg/L	0.0040	1	08/02/21	gmr	08/09/21	acs		
Lead	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Manganese	0.28 mg/L	0.025	1	08/02/21	gmr	08/09/21	acs		
Molybdenum	0.00059 mg/L	0.00040	1	08/02/21	gmr	08/09/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	08/11/21	mrh	08/12/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Silver	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	08/02/21	gmr	08/09/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-06 Matrix: Ground Water Date Collected: 07/30/21 11:15
 Sample ID: MW-6 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	960 mg/L	21	25	08/02/21		08/04/21	dc	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T113062

Beryllium	<0.0010 mg/L	0.0010	1	08/05/21	dc	08/06/21	dc		
Boron	9.9 mg/L	0.050	1	08/05/21	dc	08/06/21	dc		
Calcium	180 mg/L	5.0	10	08/05/21	dc	08/06/21	dc		
Iron	6.9 mg/L	0.10	1	08/05/21	dc	08/06/21	dc		
Lithium	0.21 mg/L	0.010	1	08/05/21	dc	08/09/21	dc	N	
Magnesium	98 mg/L	2.0	10	08/05/21	dc	08/06/21	dc		
Potassium	30 mg/L	1.0	1	08/05/21	dc	08/06/21	dc		
Sodium	100 mg/L	5.0	10	08/05/21	dc	08/06/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/05/21	dc	08/06/21	dc		

Analysis Method: EPA 6020B

Batch: T112895

Antimony	0.00073 mg/L	0.00020	1	08/02/21	ckd	08/06/21	ckd		
Arsenic	0.0010 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Barium	1.3 mg/L	0.00060	1	08/02/21	ckd	08/06/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Chromium	0.00057 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd	J	
Cobalt	0.00029 mg/L	0.0016	1	08/02/21	ckd	08/06/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Manganese	0.24 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Molybdenum	0.00057 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	N	
Nickel	0.0012 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	08/02/21	ckd	08/06/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	08/02/21	ckd	08/06/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	08/02/21	ckd	08/06/21	ckd		
Vanadium	0.00037 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-06 Matrix: Ground Water Date Collected: 07/30/21 11:15
 Sample ID: MW-6 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T112875

Fluoride	1.6 mg/L	0.10	5	07/30/21	mr	07/30/21	mr		
Chloride	210 mg/L	3.8	25	07/30/21	mr	07/31/21	mr		
Sulfate as SO4	14 mg/L	3.0	5	07/30/21	mr	07/30/21	mr		

Analysis Method: SM 2320 B-11

Batch: T112905

Bicarbonate Alkalinity as CaCO3 at pH 4.5	920 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<25 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T113011

Total Dissolved Solids	1400 mg/L	40	4	08/04/21	rg	08/04/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T112949

pH	7.49 pH Units		1	07/30/21	jm	07/30/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-07 Matrix: Ground Water Date Collected: 07/30/21 08:05
 Sample ID: MW-7 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T112873</i>									
Mercury	<0.50 ng/L	0.50	1	07/30/21	dc	08/02/21	dc	N	
Analysis Method: EPA 6010D									
<i>Batch: T112897</i>									
Beryllium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/03/21	dc		
Boron	15 mg/L	0.050	1	08/02/21	gmr	08/03/21	dc		
Calcium	150 mg/L	12	25	08/02/21	gmr	08/04/21	dc		
Iron	17 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Lithium	<0.010 mg/L	0.010	1	08/02/21	gmr	08/03/21	dc	N	
Magnesium	35 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Potassium	4.6 mg/L	1.0	1	08/02/21	gmr	08/03/21	dc		
Sodium	53 mg/L	12	25	08/02/21	gmr	08/04/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/02/21	gmr	08/03/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T112897</i>									
Antimony	<0.00030 mg/L	0.00030	1	08/02/21	gmr	08/09/21	acs		
Arsenic	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Barium	0.32 mg/L	0.010	1	08/02/21	gmr	08/09/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Chromium	<0.00090 mg/L	0.00090	1	08/02/21	gmr	08/09/21	acs		
Cobalt	0.00074 mg/L	0.0016	1	08/02/21	gmr	08/09/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	08/02/21	gmr	08/09/21	acs		
Lead	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Manganese	2.0 mg/L	0.050	2	08/02/21	gmr	08/09/21	acs		
Molybdenum	<0.00040 mg/L	0.00040	1	08/02/21	gmr	08/09/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	08/11/21	mrh	08/12/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Silver	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Vanadium	0.00061 mg/L	0.00080	1	08/02/21	gmr	08/09/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-07 Matrix: Ground Water Date Collected: 07/30/21 08:05
 Sample ID: MW-7 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	520 mg/L	0.82	25	08/02/21		08/04/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T113062									
Beryllium	<0.0010 mg/L	0.0010	1	08/05/21	dc	08/06/21	dc		
Boron	14 mg/L	0.050	1	08/05/21	dc	08/06/21	dc		
Calcium	120 mg/L	5.0	10	08/05/21	dc	08/06/21	dc		
Iron	12 mg/L	0.10	1	08/05/21	dc	08/06/21	dc		
Lithium	0.0059 mg/L	0.010	1	08/05/21	dc	08/09/21	dc	J, N	
Magnesium	32 mg/L	0.20	1	08/05/21	dc	08/06/21	dc		
Potassium	4.5 mg/L	1.0	1	08/05/21	dc	08/06/21	dc		
Sodium	48 mg/L	5.0	10	08/05/21	dc	08/06/21	dc	N	
Zinc	0.0013 mg/L	0.020	1	08/05/21	dc	08/06/21	dc	J	
Analysis Method: EPA 6020B									
Batch: T112895									
Antimony	0.00071 mg/L	0.00020	1	08/02/21	ckd	08/06/21	ckd		
Arsenic	0.00049 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd	J	
Barium	0.26 mg/L	0.00060	1	08/02/21	ckd	08/06/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Cobalt	0.00055 mg/L	0.0016	1	08/02/21	ckd	08/06/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Manganese	1.9 mg/L	0.0020	5	08/02/21	ckd	08/06/21	ckd		
Molybdenum	<0.00040 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	N	
Nickel	0.000091 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	J	
Selenium	<0.00087 mg/L	0.00087	1	08/02/21	ckd	08/06/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	08/02/21	ckd	08/06/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	08/02/21	ckd	08/06/21	ckd		
Vanadium	0.00046 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-07 Matrix: Ground Water Date Collected: 07/30/21 08:05
 Sample ID: MW-7 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T112875

Fluoride	0.082 mg/L	0.10	5	07/30/21	mr	07/30/21	mr	J	
Chloride	13 mg/L	0.75	5	07/30/21	mr	07/30/21	mr		
Sulfate as SO4	26 mg/L	3.0	5	07/30/21	mr	07/30/21	mr		

Analysis Method: SM 2320 B-11

Batch: T112905

Bicarbonate Alkalinity as CaCO3 at pH 4.5	620 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<25 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T113011

Total Dissolved Solids	740 mg/L	40	4	08/04/21	rg	08/04/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T112949

pH	6.66 pH Units		1	07/30/21	jm	07/30/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-08 Matrix: Ground Water Date Collected: 07/30/21 14:40
 Sample ID: MW-8 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T112873</i>									
Mercury	0.64 ng/L	0.50	1	07/30/21	dc	08/02/21	dc	N	
Analysis Method: EPA 6010D									
<i>Batch: T112897</i>									
Beryllium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/03/21	dc		
Boron	1.3 mg/L	0.050	1	08/02/21	gmr	08/03/21	dc		
Calcium	140 mg/L	12	25	08/02/21	gmr	08/04/21	dc		
Iron	22 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Lithium	0.039 mg/L	0.010	1	08/02/21	gmr	08/03/21	dc	N	
Magnesium	22 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Potassium	9.1 mg/L	1.0	1	08/02/21	gmr	08/03/21	dc		
Sodium	26 mg/L	0.50	1	08/02/21	gmr	08/03/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/02/21	gmr	08/03/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T112897</i>									
Antimony	<0.00030 mg/L	0.00030	1	08/02/21	gmr	08/09/21	acs		
Arsenic	0.0035 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Barium	0.83 mg/L	0.010	1	08/02/21	gmr	08/09/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Chromium	0.00076 mg/L	0.00090	1	08/02/21	gmr	08/09/21	acs	J	
Cobalt	<0.0016 mg/L	0.0016	1	08/02/21	gmr	08/09/21	acs		
Copper	<0.0040 mg/L	0.0040	1	08/02/21	gmr	08/09/21	acs		
Lead	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Manganese	1.3 mg/L	0.025	1	08/02/21	gmr	08/09/21	acs		
Molybdenum	0.0028 mg/L	0.00040	1	08/02/21	gmr	08/09/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	08/11/21	mrh	08/12/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Silver	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	08/02/21	gmr	08/09/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-08 Matrix: Ground Water Date Collected: 07/30/21 14:40
 Sample ID: MW-8 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	440 mg/L	0.82	25	08/02/21		08/04/21	dc	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T113062									
Beryllium	<0.0010 mg/L	0.0010	1	08/05/21	dc	08/06/21	dc		
Boron	1.2 mg/L	0.050	1	08/05/21	dc	08/06/21	dc		
Calcium	120 mg/L	5.0	10	08/05/21	dc	08/06/21	dc		
Iron	20 mg/L	0.10	1	08/05/21	dc	08/06/21	dc		
Lithium	0.043 mg/L	0.010	1	08/05/21	dc	08/09/21	dc	N	
Magnesium	21 mg/L	0.20	1	08/05/21	dc	08/06/21	dc		
Potassium	8.8 mg/L	1.0	1	08/05/21	dc	08/06/21	dc		
Sodium	24 mg/L	0.50	1	08/05/21	dc	08/06/21	dc	N	
Zinc	0.0018 mg/L	0.020	1	08/05/21	dc	08/06/21	dc	J	
Analysis Method: EPA 6020B									
Batch: T112895									
Antimony	0.00065 mg/L	0.00020	1	08/02/21	ckd	08/06/21	ckd		
Arsenic	0.0036 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Barium	0.81 mg/L	0.00060	1	08/02/21	ckd	08/06/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Cobalt	0.00023 mg/L	0.0016	1	08/02/21	ckd	08/06/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Manganese	1.2 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Molybdenum	0.0023 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	N	
Nickel	0.00073 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	08/02/21	ckd	08/06/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	08/02/21	ckd	08/06/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	08/02/21	ckd	08/06/21	ckd		
Vanadium	0.00028 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-08 Matrix: Ground Water Date Collected: 07/30/21 14:40
 Sample ID: MW-8 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T112875

Fluoride	0.38 mg/L	0.10	5	07/30/21	mr	07/30/21	mr		
Chloride	33 mg/L	0.75	5	07/30/21	mr	07/30/21	mr		
Sulfate as SO4	1.8 mg/L	3.0	5	07/30/21	mr	07/30/21	mr	J	

Analysis Method: SM 2320 B-11

Batch: T112905

Bicarbonate Alkalinity as CaCO3 at pH 4.5	440 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<25 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T113011

Total Dissolved Solids	530 mg/L	40	4	08/04/21	rg	08/04/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T112949

pH	7.16 pH Units		1	07/30/21	jm	07/30/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-09 Matrix: Ground Water Date Collected: 07/30/21 12:10
 Sample ID: MW-9 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T112873

Mercury	<0.50 ng/L	0.50	1	07/30/21	dc	08/02/21	dc	N	
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Analysis Method: EPA 6010D

Batch: T112897

Beryllium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/03/21	dc		
Boron	6.4 mg/L	0.050	1	08/02/21	gmr	08/03/21	dc		
Calcium	240 mg/L	12	25	08/02/21	gmr	08/04/21	dc		
Iron	21 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Lithium	0.26 mg/L	0.010	1	08/02/21	gmr	08/03/21	dc	N	
Magnesium	37 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Potassium	15 mg/L	1.0	1	08/02/21	gmr	08/03/21	dc		
Sodium	30 mg/L	0.50	1	08/02/21	gmr	08/03/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/02/21	gmr	08/03/21	dc		

Analysis Method: EPA 6020B

Batch: T112897

Antimony	<0.00030 mg/L	0.00030	1	08/02/21	gmr	08/09/21	acs		
Arsenic	0.0034 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Barium	4.8 mg/L	0.050	5	08/11/21	acs	08/12/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Chromium	0.0024 mg/L	0.00090	1	08/02/21	gmr	08/09/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	08/02/21	gmr	08/09/21	acs		
Copper	<0.0040 mg/L	0.0040	1	08/02/21	gmr	08/09/21	acs		
Lead	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Manganese	0.61 mg/L	0.025	1	08/02/21	gmr	08/09/21	acs		
Molybdenum	0.026 mg/L	0.00040	1	08/02/21	gmr	08/09/21	acs	N	
Nickel	0.0032 mg/L	0.0050	1	08/11/21	mrh	08/12/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Silver	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	08/02/21	gmr	08/09/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-09 Matrix: Ground Water Date Collected: 07/30/21 12:10
 Sample ID: MW-9 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	750 mg/L	0.82	25	08/02/21		08/04/21	dc	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T113062

Beryllium	<0.0010 mg/L	0.0010	1	08/05/21	dc	08/06/21	dc		
Boron	5.9 mg/L	0.050	1	08/05/21	dc	08/06/21	dc		
Calcium	200 mg/L	5.0	10	08/05/21	dc	08/06/21	dc		
Iron	19 mg/L	0.10	1	08/05/21	dc	08/06/21	dc		
Lithium	0.30 mg/L	0.010	1	08/05/21	dc	08/09/21	dc	N	
Magnesium	33 mg/L	0.20	1	08/05/21	dc	08/06/21	dc		
Potassium	15 mg/L	1.0	1	08/05/21	dc	08/06/21	dc		
Sodium	28 mg/L	0.50	1	08/05/21	dc	08/06/21	dc	N	
Zinc	0.0023 mg/L	0.020	1	08/05/21	dc	08/06/21	dc	J	

Analysis Method: EPA 6020B

Batch: T112895

Antimony	0.00058 mg/L	0.00020	1	08/02/21	ckd	08/06/21	ckd		
Arsenic	0.0034 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Barium	4.6 mg/L	0.0030	5	08/02/21	ckd	08/06/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Chromium	0.0015 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Cobalt	0.00039 mg/L	0.0016	1	08/02/21	ckd	08/06/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Manganese	0.52 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Molybdenum	0.023 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	N	
Nickel	0.0011 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Selenium	0.00028 mg/L	0.00087	1	08/02/21	ckd	08/06/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	08/02/21	ckd	08/06/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	08/02/21	ckd	08/06/21	ckd		
Vanadium	0.00039 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-09 Matrix: Ground Water Date Collected: 07/30/21 12:10
 Sample ID: MW-9 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T112875

Fluoride	2.4 mg/L	0.10	5	07/30/21	mr	07/30/21	mr		
Chloride	13 mg/L	0.75	5	07/30/21	mr	07/30/21	mr		
Sulfate as SO4	21 mg/L	3.0	5	07/30/21	mr	07/30/21	mr		

Analysis Method: SM 2320 B-11

Batch: T112905

Bicarbonate Alkalinity as CaCO3 at pH 4.5	760 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<25 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T113011

Total Dissolved Solids	830 mg/L	40	4	08/04/21	rg	08/04/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T112949

pH	7.25 pH Units		1	07/30/21	jm	07/30/21	jm	SITE, N	
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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-10 Matrix: Ground Water Date Collected: 07/30/21 12:55
 Sample ID: MW-10 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T112965</i>									
Mercury	0.97 ng/L	0.50	1	08/03/21	dc	08/06/21	dc	N	
Analysis Method: EPA 6010D									
<i>Batch: T112897</i>									
Beryllium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/03/21	dc		
Boron	52 mg/L	1.2	25	08/02/21	gmr	08/04/21	dc		
Calcium	140 mg/L	12	25	08/02/21	gmr	08/04/21	dc		
Iron	13 mg/L	0.20	1	08/02/21	gmr	08/03/21	dc		
Lithium	1.4 mg/L	0.010	1	08/02/21	gmr	08/03/21	dc	N	
Magnesium	67 mg/L	5.0	25	08/02/21	gmr	08/04/21	dc		
Potassium	41 mg/L	25	25	08/02/21	gmr	08/04/21	dc		
Sodium	500 mg/L	12	25	08/02/21	gmr	08/04/21	dc	N	
Zinc	<0.020 mg/L	0.020	1	08/02/21	gmr	08/03/21	dc		
Analysis Method: EPA 6020B									
<i>Batch: T112897</i>									
Antimony	<0.00030 mg/L	0.00030	1	08/02/21	gmr	08/09/21	acs		
Arsenic	0.0011 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Barium	1.4 mg/L	0.010	1	08/02/21	gmr	08/09/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Chromium	0.011 mg/L	0.00090	1	08/02/21	gmr	08/09/21	acs		
Cobalt	0.0011 mg/L	0.0016	1	08/02/21	gmr	08/09/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	08/02/21	gmr	08/09/21	acs		
Lead	0.00089 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs	J	
Manganese	0.64 mg/L	0.025	1	08/02/21	gmr	08/09/21	acs		
Molybdenum	0.0071 mg/L	0.00040	1	08/02/21	gmr	08/09/21	acs	N	
Nickel	0.0041 mg/L	0.0050	1	08/11/21	mrh	08/12/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	08/02/21	gmr	08/09/21	acs		
Silver	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	08/02/21	gmr	08/09/21	acs		
Vanadium	0.0018 mg/L	0.00080	1	08/02/21	gmr	08/09/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-10 Matrix: Ground Water Date Collected: 07/30/21 12:55
 Sample ID: MW-10 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	640 mg/L	21	25	08/02/21		08/04/21	dc	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T113062

Beryllium	<0.0010 mg/L	0.0010	1	08/05/21	dc	08/06/21	dc		
Boron	42 mg/L	0.50	10	08/05/21	dc	08/06/21	dc		
Calcium	120 mg/L	5.0	10	08/05/21	dc	08/06/21	dc		
Iron	10 mg/L	0.10	1	08/05/21	dc	08/06/21	dc		
Lithium	1.6 mg/L	0.010	1	08/05/21	dc	08/09/21	dc	N	
Magnesium	56 mg/L	2.0	10	08/05/21	dc	08/06/21	dc		
Potassium	38 mg/L	10	10	08/05/21	dc	08/06/21	dc		
Sodium	410 mg/L	5.0	10	08/05/21	dc	08/06/21	dc	N	
Zinc	0.0021 mg/L	0.020	1	08/05/21	dc	08/06/21	dc	J	

Analysis Method: EPA 6020B

Batch: T112895

Antimony	0.00092 mg/L	0.00020	1	08/02/21	ckd	08/06/21	ckd		
Arsenic	0.0013 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Barium	1.3 mg/L	0.00060	1	08/02/21	ckd	08/06/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	08/02/21	ckd	08/06/21	ckd		
Chromium	0.0078 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Cobalt	0.00077 mg/L	0.0016	1	08/02/21	ckd	08/06/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		
Lead	0.000059 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	J	
Manganese	0.52 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Molybdenum	0.0067 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd	N	
Nickel	0.0016 mg/L	0.00040	1	08/02/21	ckd	08/06/21	ckd		
Selenium	0.00062 mg/L	0.00087	1	08/02/21	ckd	08/06/21	ckd	J	
Silver	0.000022 mg/L	0.000040	1	08/02/21	ckd	08/06/21	ckd	J	
Thallium	<0.00017 mg/L	0.00017	1	08/02/21	ckd	08/06/21	ckd		
Vanadium	0.0011 mg/L	0.00080	1	08/02/21	ckd	08/06/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

Trace ID: 21G1159-10 Matrix: Ground Water Date Collected: 07/30/21 12:55
 Sample ID: MW-10 Date Received: 07/30/21 15:32

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T112875

Fluoride	12 mg/L	0.50	25	07/30/21	mr	07/31/21	mr		
Chloride	670 mg/L	15	100	08/04/21	ans	08/04/21	ans		
Sulfate as SO4	0.60 mg/L	3.0	5	07/30/21	mr	07/30/21	mr	J	

Analysis Method: SM 2320 B-11

Batch: T112905

Bicarbonate Alkalinity as CaCO3 at pH 4.5	1000 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<25 mg/L	25	5	08/02/21	mr	08/02/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T113011

Total Dissolved Solids	1700 mg/L	40	4	08/04/21	rg	08/04/21	rg		
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Analysis Method: SM 4500-H+ B-11

Batch: T112949

pH	7.70 pH Units		1	07/30/21	jm	07/30/21	jm	SITE, N	
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QUALITY CONTROL RESULTS

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

QC Batch: T112873	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T112873-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T112873-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T112873-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T112873-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	25.5	102	77-123	

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

QC Batch: T112965	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T112965-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T112965-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

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METHOD BLANK: T112965-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T112965-BLK4

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T112965-BLK5

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T112965-BLK6

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T112965-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	25.8	103	77-123	

LABORATORY CONTROL SAMPLE: T112965-BS2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	24.2	97	77-123	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T112965-MSD1

Original: 21G1159-10

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Mercury	ng/L	0.968	10.0	9.32	9.04	84	81	71-125	3	24	

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

QC Batch: T112897
 QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Description: Magnesium, Total
 Analysis Method: EPA 6010D

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METHOD BLANK: T112897-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	<1.0	1.0	
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T112897-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.883	99	80-120	
Beryllium	mg/L	0.111	0.115	104	80-120	
Calcium	mg/L	8.89	9.09	102	80-120	
Iron	mg/L	8.89	9.19	103	80-120	
Potassium	mg/L	8.89	8.39	94	80-120	
Lithium	mg/L	0.889	0.868	98	80-120	
Magnesium	mg/L	8.89	8.89	100	80-120	
Sodium	mg/L	8.89	8.70	98	80-120	
Zinc	mg/L	0.889	0.911	102	80-120	

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

QC Batch: T113062
 QC Batch Method:

Analysis Description: Potassium, Dissolved
 Analysis Method: EPA 6010D

METHOD BLANK: T113062-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0010	0.0010	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	<1.0	1.0	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

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METHOD BLANK: T113062-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Calcium	mg/L	<0.50	0.50	
Lithium	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T113062-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.949	95	80-120	
Beryllium	mg/L	0.0500	0.0465	93	80-120	
Calcium	mg/L	10.0	9.44	94	80-120	
Iron	mg/L	10.0	9.65	96	80-120	
Potassium	mg/L	10.0	9.42	94	80-120	
Magnesium	mg/L	10.0	9.50	95	80-120	
Sodium	mg/L	10.0	9.83	98	80-120	
Zinc	mg/L	1.00	0.946	95	80-120	

LABORATORY CONTROL SAMPLE: T113062-BS2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Calcium	mg/L	10.0	9.86	99	80-120	
Lithium	mg/L	0.500	0.477	95	80-120	

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

QC Batch: T112895
 QC Batch Method:

Analysis Description: Lead, Dissolved
 Analysis Method: EPA 6020B

METHOD BLANK: T112895-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.000040	0.000040	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.00040	0.00040	

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METHOD BLANK: T112895-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	<0.00020	0.00020	
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T112895-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0631	105	80-120	
Arsenic	mg/L	0.0600	0.0644	107	80-120	
Barium	mg/L	0.0600	0.0629	105	80-120	
Cadmium	mg/L	0.0600	0.0628	105	80-120	
Cobalt	mg/L	0.0600	0.0590	98	80-120	
Chromium	mg/L	0.0600	0.0640	107	80-120	
Copper	mg/L	0.0600	0.0623	104	80-120	
Manganese	mg/L	0.0600	0.0635	106	80-120	
Molybdenum	mg/L	0.0600	0.0621	103	80-120	
Nickel	mg/L	0.0600	0.0611	102	80-120	
Lead	mg/L	0.0600	0.0627	104	80-120	
Antimony	mg/L	0.0600	0.0606	101	80-120	
Selenium	mg/L	0.0600	0.0621	103	80-120	
Thallium	mg/L	0.0600	0.0624	104	80-120	
Vanadium	mg/L	0.0600	0.0605	101	80-120	

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

QC Batch: T112897
 QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Description: Nickel, Total
 Analysis Method: EPA 6020B

METHOD BLANK: T112897-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	
Cadmium	mg/L	<0.0010	0.0010	
Cobalt	mg/L	<0.0016	0.0016	

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METHOD BLANK: T112897-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T112897-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0303	109	80-120	
Arsenic	mg/L	0.0556	0.0588	106	80-120	
Barium	mg/L	0.889	0.965	109	80-120	
Cadmium	mg/L	0.0278	0.0288	104	80-120	
Cobalt	mg/L	0.889	0.861	97	80-120	
Chromium	mg/L	0.0278	0.0323	116	80-120	
Copper	mg/L	0.889	0.871	98	80-120	
Manganese	mg/L	0.889	0.937	105	80-120	
Molybdenum	mg/L	0.889	0.913	103	80-120	
Lead	mg/L	0.0556	0.0585	105	80-120	
Antimony	mg/L	0.0556	0.0606	109	80-120	
Selenium	mg/L	0.0556	0.0562	101	80-120	
Thallium	mg/L	0.0556	0.0591	106	80-120	
Vanadium	mg/L	0.889	0.968	109	80-120	

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

QC Batch: T113253

Analysis Description: Nickel, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions
 for Liquids

Analysis Method: EPA 6020B

METHOD BLANK: T113253-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Barium	mg/L	<0.010	0.010	
Nickel	mg/L	<0.0050	0.0050	

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LABORATORY CONTROL SAMPLE: T113253-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Barium	mg/L	0.889	0.968	109	80-120	
Nickel	mg/L	0.889	0.847	95	80-120	

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

QC Batch: [CALC]	Analysis Description: Hardness (Metals)
QC Batch Method:	Analysis Method: SM 2340 B-11

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

QC Batch: T112875	Analysis Description: Sulfate
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T112875-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T112875-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	4.90	98	90-110	
Fluoride	mg/L	1.00	1.01	101	90-110	
Sulfate as SO4	mg/L	5.00	4.90	98	90-110	

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

QC Batch: T113009	Analysis Description: Chloride
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T113009-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	

Trace Project ID: 21G1159
 Client Project ID: Monitoring Wells

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QC Batch: T112905

Analysis Description: Alkalinity, Bicarbonate

QC Batch Method: SM 2320 B-11

Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T112905-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO ₃ at pH 4.5	mg/L	100	103	103	88-112	
Carbonate Alkalinity as CaCO ₃ at pH 8.2	mg/L	100	103	103	88-112	

Trace Project ID: 21G1159

Client Project ID: Monitoring Wells

QC Batch: T113011

Analysis Description: Total Dissolved Solids

QC Batch Method: SM 2540 C-11

Analysis Method: SM 2540 C-11

METHOD BLANK: T113011-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T113011-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	515	103	80-120	

Trace Project ID: 21G1159

Client Project ID: Monitoring Wells

QC Batch: T112949

Analysis Description: pH, SM 4500

QC Batch Method: *** DEFAULT PREP ***

Analysis Method: SM 4500-H+ B-11

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LABORATORY REPORT

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Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

110 South Hill Street
 South Bend, IN 46617
 Tel: (574) 233-4777
 Fax: (574) 233-8207
 1 800 332 4345

Laboratory Report

Client: Trace Analytical Laboratories

 Attn: Jon Mink
 2241 Black Creek Road
 Muskegon, MI 49444

Report: 526141
 Priority: Standard Written
 Status: Final
 PWS ID: Not Supplied

Sample Information					
EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4971970	MW-1R	7500-Ra B	07/30/21 09:25	Client	08/03/21 09:00
4971970	MW-1R	7500-Ra D	07/30/21 09:25	Client	08/03/21 09:00
4971971	MW-2	7500-Ra B	07/30/21 09:50	Client	08/03/21 09:00
4971971	MW-2	7500-Ra D	07/30/21 09:50	Client	08/03/21 09:00
4971972	MW-3	7500-Ra B	07/30/21 10:25	Client	08/03/21 09:00
4971972	MW-3	7500-Ra D	07/30/21 10:25	Client	08/03/21 09:00
4971973	MW-4	7500-Ra B	07/30/21 10:55	Client	08/03/21 09:00
4971973	MW-4	7500-Ra D	07/30/21 10:55	Client	08/03/21 09:00
4971974	MW-5	7500-Ra B	07/30/21 08:35	Client	08/03/21 09:00
4971974	MW-5	7500-Ra D	07/30/21 08:35	Client	08/03/21 09:00
4971975	MW-6	7500-Ra B	07/30/21 11:15	Client	08/03/21 09:00
4971975	MW-6	7500-Ra D	07/30/21 11:15	Client	08/03/21 09:00
4971976	MW-7	7500-Ra B	07/30/21 08:05	Client	08/03/21 09:00
4971976	MW-7	7500-Ra D	07/30/21 08:05	Client	08/03/21 09:00
4971977	MW-8	7500-Ra B	07/30/21 14:40	Client	08/03/21 09:00
4971977	MW-8	7500-Ra D	07/30/21 14:40	Client	08/03/21 09:00
4971978	MW-9	7500-Ra B	07/30/21 12:10	Client	08/03/21 09:00
4971978	MW-9	7500-Ra D	07/30/21 12:10	Client	08/03/21 09:00
4971979	MW-10	7500-Ra B	07/30/21 12:55	Client	08/03/21 09:00
4971979	MW-10	7500-Ra D	07/30/21 12:55	Client	08/03/21 09:00

Report Summary

Note: In the Method 7500-Ra D analysis, Radium-228 in the FS had a MRL of 1.7 which is outside the acceptance limit of 1.0.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Karen Fullmer at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Karen Fullmer ASM

Authorized Signature

Title

09/01/2021

Date

Client Name: Trace Analytical Laboratories

Report #: 526141

Sampling Point: MW-1R

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.20	1.0	0.61 ± 0.28	pCi/L	08/06/21 16:15	08/09/21 14:28	4971970
15262-20-1	Radium-228	7500-Ra D	---	0.49	1.0	0.17 ± 0.47	pCi/L	08/06/21 16:15	08/13/21 16:17	4971970
---	Combined Radium	calc.	5 *	0.49	1.0	0.78 ± 0.55	pCi/L	08/06/21 16:15	08/13/21 16:17	4971970

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-2

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.37	1.0	0.77 ± 0.45	pCi/L	08/06/21 16:15	08/09/21 14:28	4971971
15262-20-1	Radium-228	7500-Ra D	---	0.47	1.0	1.5 ± 0.5	pCi/L	08/06/21 16:15	08/13/21 16:17	4971971
---	Combined Radium	calc.	5 *	0.47	1.0	2.27 ± 0.69	pCi/L	08/06/21 16:15	08/13/21 16:17	4971971

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-3

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.25	1.0	0.82 ± 0.55	pCi/L	08/06/21 16:15	08/17/21 10:48	4971972
15262-20-1	Radium-228	7500-Ra D	---	1.7	1.0	2.9 ± 1.8	pCi/L	08/23/21 12:30	08/27/21 17:46	4971972
---	Combined Radium	calc.	5 *	1.7	1.0	3.72 ± 1.86	pCi/L	08/06/21 16:15	08/27/21 17:46	4971972

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-4

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.19	1.0	0.51 ± 0.40	pCi/L	08/06/21 16:15	08/17/21 10:48	4971973
15262-20-1	Radium-228	7500-Ra D	---	0.45	1.0	0.23 ± 0.44	pCi/L	08/06/21 16:15	08/13/21 16:17	4971973
---	Combined Radium	calc.	5 *	0.45	1.0	0.74 ± 0.59	pCi/L	08/06/21 16:15	08/17/21 10:48	4971973

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-5

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.39	1.0	0.40 ± 0.56	pCi/L	08/07/21 10:00	08/17/21 10:07	4971974
15262-20-1	Radium-228	7500-Ra D	---	0.70	1.0	0.90 ± 0.71	pCi/L	08/07/21 10:00	08/13/21 18:06	4971974
---	Combined Radium	calc.	5 *	0.70	1.0	1.30 ± 0.90	pCi/L	08/07/21 10:00	08/17/21 10:07	4971974

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-6

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.37	1.0	0.70 ± 0.72	pCi/L	08/07/21 10:00	08/17/21 10:07	4971975
15262-20-1	Radium-228	7500-Ra D	---	0.72	1.0	0.80 ± 0.72	pCi/L	08/07/21 10:00	08/13/21 18:06	4971975
---	Combined Radium	calc.	5 *	0.72	1.0	1.50 ± 1.02	pCi/L	08/07/21 10:00	08/17/21 10:07	4971975

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-7

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.37	1.0	0.46 ± 0.57	pCi/L	08/07/21 10:00	08/17/21 10:07	4971976
15262-20-1	Radium-228	7500-Ra D	---	0.74	1.0	1.3 ± 0.8	pCi/L	08/07/21 10:00	08/13/21 18:06	4971976
---	Combined Radium	calc.	5 *	0.74	1.0	1.76 ± 0.95	pCi/L	08/07/21 10:00	08/17/21 10:07	4971976

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-8

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.28	1.0	1.2 ± 0.7	pCi/L	08/07/21 10:00	08/17/21 10:07	4971977
15262-20-1	Radium-228	7500-Ra D	---	0.86	1.0	2.2 ± 0.9	pCi/L	08/07/21 10:00	08/13/21 18:06	4971977
---	Combined Radium	calc.	5 *	0.86	1.0	3.4 ± 1.1	pCi/L	08/07/21 10:00	08/17/21 10:07	4971977

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-9

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.30	1.0	0.26 ± 0.64	pCi/L	08/07/21 10:00	08/17/21 10:07	4971978
15262-20-1	Radium-228	7500-Ra D	---	0.67	1.0	1.5 ± 0.7	pCi/L	08/07/21 10:00	08/13/21 18:06	4971978
---	Combined Radium	calc.	5 *	0.67	1.0	1.76 ± 0.96	pCi/L	08/07/21 10:00	08/17/21 10:07	4971978

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: MW-10

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.33	1.0	0.59 ± 0.68	pCi/L	08/07/21 10:00	08/17/21 10:07	4971979
15262-20-1	Radium-228	7500-Ra D	---	0.62	1.0	1.9 ± 0.7	pCi/L	08/07/21 10:00	08/13/21 18:06	4971979
---	Combined Radium	calc.	5 *	0.62	1.0	2.49 ± 0.97	pCi/L	08/07/21 10:00	08/17/21 10:07	4971979

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: $(MS \text{ or } MSD \text{ value} - \text{Sample value}) * 100 / \text{spike target} / \text{dilution factor} = \text{Recovery } \%$

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.



Eaton Analytical

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pm 8/12
Order # 432274
Batch # 526141

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CHAIN OF CUSTODY RECORD

Page _____ of _____

LAB Number	COLLECTION		SAMPLER (Signature)	COMPLIANCE MONITORING		POPULATION SERVED	STATE (sample origin)	PROJECT NAME	PO#	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
	DATE	TIME		AM	PM							
1	07/30/21	9:25				MW-1R	MI			1	GW	SW
2	07/30/21	9:50		X		MW-2 *				1	GW	SW
3	07/30/21	10:25		X		MW-3				1	GW	SW
4	07/30/21	10:55		X		MW-4				1	GW	SW
5	07/30/21	8:35		X		MW-5				1	GW	SW
6	07/30/21	11:15		X		MW-6				1	GW	SW
7	07/30/21	8:05		X		MW-7				1	GW	SW
8	07/30/21	14:40		X		MW-8				1	GW	SW
9	07/30/21	12:10		X		MW-9				1	GW	SW
10	07/30/21	12:55		X		MW-10				1	GW	SW
11												
12												
13												
14												

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	LAB COMMENTS
<i>Mtr</i>	8/2/21	9:24 AM	Fedex	8/2/21	9:24 AM	LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT
Fedex						* preferred upon receipt Pt 8.3.21
						CONDITIONS UPON RECEIPT (check one): _____ °C Upon Receipt _____ Ambient

MATRIX CODES:	TURN-AROUND TIME (TAT) - SURCHARGES
DW-DRINKING WATER	SW = Standard Written: (15 working days) 0%
RW-REAGENT WATER	RV* = Rush Verbal: (5 working days) 50%
GW-GROUND WATER	RW* = Rush Written: (5 working days) 75%
EW-EXPOSURE WATER	
SW-SURFACE WATER	
PW-POOL WATER	
WW-WASTE WATER	

IV* = Immediate Verbal: (3 working days) 100%
 IV** = Immediate Written: (3 working days) 125%
 SP* = Weekend, Holiday CALL
 STAT* = Less than 48 hours CALL

* Please call, expedited service not available for all testing

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.

06-LO-F0435 Issue 6.0 Effective Date: 2016-09-20



Eaton Analytical

Eurofins Eaton Analytical

Run Log

Run ID: 292640 Method: 7500-Ra B

<u>Type</u>	<u>Sample Id</u>	<u>Sample Site</u>	<u>Matrix</u>	<u>Instrument ID</u>	<u>Analysis Date</u>	<u>Calibration File</u>
FS	4971970	MW-1R	GW	DU	08/09/2021 14:28	
FS	4971971	MW-2	GW	DU	08/09/2021 14:28	
LRB	4979297		RW	DU	08/09/2021 14:28	
LFB	4979298		RW	DU	08/09/2021 14:28	
MS	4979303	MW-4	GW	DU	08/09/2021 14:28	
MSD	4979304	MW-4	GW	DU	08/09/2021 14:28	

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Radium-226	7500-Ra B	0.20	MW-1R		0.61		pCi/L	---	---	---	---	1.0	08/06/2021 16:15	08/09/2021 14:28	4971970
FS	Radium-226	7500-Ra B	0.37	MW-2		0.77		pCi/L	---	---	---	---	1.0	08/06/2021 16:15	08/09/2021 14:28	4971971
LRB	Radium-226	7500-Ra B	0.21	---		0.260		pCi/L	---	---	---	---	1.0	08/06/2021 16:15	08/09/2021 14:28	4979297
LFB	Radium-226	7500-Ra B	0.19	---		8.8000	8.73	pCi/L	101	90 - 110	---	---	1.0	08/06/2021 16:15	08/09/2021 14:28	4979298
MS	Radium-226	7500-Ra B	0.19	MW-4		9.7200	9.42	pCi/L	103	80 - 120	---	---	1.0	08/06/2021 16:15	08/09/2021 14:28	4979303
MSD	Radium-226	7500-Ra B	0.27	MW-4		9.6000	9.37	pCi/L	103	80 - 120	1.2	20	1.0	08/06/2021 16:15	08/09/2021 14:28	4979304



Eaton Analytical

Eurofins Eaton Analytical

Run Log

Run ID: 293066 Method: 7500-Ra B

<u>Type</u>	<u>Sample Id</u>	<u>Sample Site</u>	<u>Matrix</u>	<u>Instrument ID</u>	<u>Analysis Date</u>	<u>Calibration File</u>
FS	4971972	MW-3	GW	CI	08/17/2021 10:48	
FS	4971973	MW-4	GW	CI	08/17/2021 10:48	

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Radium-226	7500-Ra B	0.25	MW-3		0.82		pCi/L	---	---	---	---	1.0	08/06/2021 16:15	08/17/2021 10:48	4971972
FS	Radium-226	7500-Ra B	0.19	MW-4		0.51		pCi/L	---	---	---	---	1.0	08/06/2021 16:15	08/17/2021 10:48	4971973



Eurofins Eaton Analytical

Run Log

Run ID: 293069 Method: 7500-Ra B

<u>Type</u>	<u>Sample Id</u>	<u>Sample Site</u>	<u>Matrix</u>	<u>Instrument ID</u>	<u>Analysis Date</u>	<u>Calibration File</u>
FS	4971974	MW-5	GW	CI	08/17/2021 10:07	
FS	4971975	MW-6	GW	CI	08/17/2021 10:07	
FS	4971976	MW-7	GW	CI	08/17/2021 10:07	
FS	4971977	MW-8	GW	CI	08/17/2021 10:07	
FS	4971978	MW-9	GW	CI	08/17/2021 10:07	
FS	4971979	MW-10	GW	CI	08/17/2021 10:07	

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Radium-226	7500-Ra B	0.39	MW-5		0.40		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/17/2021 10:07	4971974
FS	Radium-226	7500-Ra B	0.37	MW-6		0.70		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/17/2021 10:07	4971975
FS	Radium-226	7500-Ra B	0.37	MW-7		0.46		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/17/2021 10:07	4971976
FS	Radium-226	7500-Ra B	0.28	MW-8		1.2		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/17/2021 10:07	4971977
FS	Radium-226	7500-Ra B	0.30	MW-9		0.26		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/17/2021 10:07	4971978
FS	Radium-226	7500-Ra B	0.33	MW-10		0.59		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/17/2021 10:07	4971979



Eurofins Eaton Analytical

Run Log

Run ID: 292914 Method: 7500-Ra D

<u>Type</u>	<u>Sample Id</u>	<u>Sample Site</u>	<u>Matrix</u>	<u>Instrument ID</u>	<u>Analysis Date</u>	<u>Calibration File</u>
FS	4971970	MW-1R	GW	DU	08/13/2021 16:17	
FS	4971971	MW-2	GW	DU	08/13/2021 16:17	
FS	4971973	MW-4	GW	DU	08/13/2021 16:17	
MS	4986284	MW-3	GW	DU	08/13/2021 16:17	
MSD	4986285	MW-3	GW	DU	08/13/2021 16:17	
LFB	4986283		RW	DU	08/13/2021 16:32	
LRB	4986282		RW	DU	08/13/2021 16:58	

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Radium-228	7500-Ra D	0.49	MW-1R		0.17		pCi/L	---	---	---	---	1.0	08/06/2021 16:15	08/13/2021 16:17	4971970
FS	Radium-228	7500-Ra D	0.47	MW-2		1.5		pCi/L	---	---	---	---	1.0	08/06/2021 16:15	08/13/2021 16:17	4971971
FS	Radium-228	7500-Ra D	0.45	MW-4		0.23		pCi/L	---	---	---	---	1.0	08/06/2021 16:15	08/13/2021 16:17	4971973
MS	Radium-228	7500-Ra D	0.49	MW-3		9.2100	11.52	pCi/L	73	70 - 130	---	---	1.0	08/06/2021 16:15	08/13/2021 16:17	4986284
MSD	Radium-228	7500-Ra D	0.590	MW-3		11.7000	11.61	pCi/L	101	70 - 130	24	20	1.0	08/06/2021 16:15	08/13/2021 16:17	4986285
LFB	Radium-228	7500-Ra D	0.46	--		9.0500	8.47	pCi/L	107	80 - 120	---	---	1.0	08/06/2021 16:15	08/13/2021 16:32	4986283
LRB	Radium-228	7500-Ra D	0.48	--		-0.04		pCi/L	---	---	---	---	1.0	08/06/2021 16:15	08/13/2021 16:58	4986282

Eurofins Eaton Analytical

Run Log

Run ID: 292917 Method: 7500-Ra D

<u>Type</u>	<u>Sample Id</u>	<u>Sample Site</u>	<u>Matrix</u>	<u>Instrument ID</u>	<u>Analysis Date</u>	<u>Calibration File</u>
FS	4971974	MW-5	GW	CI	08/13/2021 18:06	
FS	4971975	MW-6	GW	CI	08/13/2021 18:06	
FS	4971976	MW-7	GW	CI	08/13/2021 18:06	
FS	4971977	MW-8	GW	CI	08/13/2021 18:06	
FS	4971978	MW-9	GW	CI	08/13/2021 18:06	
FS	4971979	MW-10	GW	CI	08/13/2021 18:06	
LFB	4986296		RW	CI	08/13/2021 18:45	
LRB	4986295		RW	CI	08/13/2021 19:01	

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Radium-228	7500-Ra D	0.70	MW-5		0.90		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/13/2021 18:06	4971974
FS	Radium-228	7500-Ra D	0.72	MW-6		0.80		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/13/2021 18:06	4971975
FS	Radium-228	7500-Ra D	0.74	MW-7		1.3		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/13/2021 18:06	4971976
FS	Radium-228	7500-Ra D	0.86	MW-8		2.2		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/13/2021 18:06	4971977
FS	Radium-228	7500-Ra D	0.67	MW-9		1.5		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/13/2021 18:06	4971978
FS	Radium-228	7500-Ra D	0.62	MW-10		1.9		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/13/2021 18:06	4971979
LFB	Radium-228	7500-Ra D	0.43	---		8.5100	8.47	pCi/L	100	80 - 120	---	---	1.0	08/07/2021 10:00	08/13/2021 18:45	4986296
LRB	Radium-228	7500-Ra D	0.46	---		0.510		pCi/L	---	---	---	---	1.0	08/07/2021 10:00	08/13/2021 19:01	4986295



Eaton Analytical

Eurofins Eaton Analytical

Run Log

Run ID: 293590 Method: 7500-Ra D

<u>Type</u>	<u>Sample Id</u>	<u>Sample Site</u>	<u>Matrix</u>	<u>Instrument ID</u>	<u>Analysis Date</u>	<u>Calibration File</u>
LRB	4999670		RW	CI	08/27/2021 13:28	
LFB	4999671		RW	CI	08/27/2021 13:29	
FS	4971972	MW-3	GW	CI	08/27/2021 17:46	

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
LRB	Radium-228	7500-Ra D	0.53	---		-0.57		pCi/L	---	---	---	---	1.0	08/23/2021 12:30	08/27/2021 13:28	4999670
LFB	Radium-228	7500-Ra D	0.67	---		7.3400	8.43	pCi/L	87	80 - 120	---	---	1.0	08/23/2021 12:30	08/27/2021 13:29	4999671
FS	Radium-228	7500-Ra D	1.7	MW-3		2.9		pCi/L	---	---	---	---	1.0	08/23/2021 12:30	08/27/2021 17:46	4971972

Sample Type Key

<u>Type (Abbr.)</u>	<u>Sample Type</u>	<u>Type (Abbr.)</u>	<u>Sample Type</u>
FS	Field Sample		
LFB	Laboratory Fortified Blank		
LRB	Laboratory Reagent Blank		
MS	Matrix Spike		
MSD	Matrix Spike Duplicate		

END OF REPORT



CHAIN-OF-CUSTODY RECORD

Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673

Phone 231.773.5998
 Fax 888.979.4469
 www.trace-labs.com

Trace ID No.
21G1159

Page _____ of _____

Report Results To:

Company Name: Grand Haven Board of Light & Power
 Report To: Paul Cederquist
 Mailing Address:
 City, State, Zip Code:
 Office Phone: Cell Phone:
 Email Address: Billing Email Address:

Trace Use:

Logged By: NE
 Checked By: WGR
 Soil Volatiles Preserved (circle if applicable):
 MeOH Low Level Lab
 Sampling Time:

Turnaround Requirements:

Standard, 5-10 Days
 3 Day*
 1 Day*

Matrix Key:

S = Soil / Solid
 W = Water
 SL = Sludge
 OI = Oil
 WI = Wipes
 LW = Liquid Waste
 A = Air
 D = Drinking Water

*Results provided end of business day, requires prior approval.

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y/N)	Matrix	Number of Containers	Preservation							Analysis Requested						Remarks	Possible Health Hazards?			
							Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other	T-B, Ca, Fe, Sb, As, Ba, Be, Cd, Cr	T- Co, Cu, Pb, Li, Mo, Ni Se, Ag	T- Ti, V, Zn, Mn, Mg, K, Na	Diss. Metals (Same as Totals)	Fluoride, Sulfate, TDS, Chlorides	pH	LLHg			Radiums 226/228	Bicarb-Alk, Carbonate-Alk	
1	7/30/21	9:25	MW-1R	Y	W	5	X	X	X	X	X	X	X	X	X	X	X	X	X	pH=8.31				
2	7/30/21	9:50	MW-2																			7.38		
3	7/30/21	10:25	MW-3																				7.39	
4	7/30/21	10:55	MW-4																				7.43	
5	7/30/21	8:35	MW-5																				6.96	
6	7/30/21	11:15	MW-6																				7.49	
7	7/30/21	8:05	MW-7																				6.66	
8	7/30/21	14:40	MW-8																				7.16	
9	7/30/21	12:10	MW-9																				7.25	
10	7/30/21	12:55	MW-10																				7.7	

Please Sign

Released By: <u>[Signature]</u>	Received By: <u>[Signature]</u>	Date: 7/30/21	Time: 15:32
Released By:	Received By:	Date:	Time:

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

CERTIFICATE OF ANALYSIS

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 7-30-21

Field Personnel: EB

Well No.: MW-1R

Depth to Point: 18.2ft

Depth to Water: 6.16

Purge Start Time: 9:05

Purge Rate: 300ml/min

Reading Time	9:15	9:18	9:21						
Depth to Water	6.61	6.61	6.61						
Temperature (Celsius)	17.26	17.26	17.26						
Specific Conductivity	3.56	3.56	3.56						
Dissolved Oxygen	.83	.83	.83						
ORP (mV)	-83	-83	-83						
Turbidity(NTU)	5.6	5.7	5.8						
pH	8.31	8.31	8.31						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 2
 Date: 7-30-21
 Depth to Point: 23.51'
 Field Personnel: EB
 Depth to Water: 14.31
 Purge Start Time: 9:30
 Purge Rate: 300 mL/min

Reading Time	9:40	9:45	9:46						
Depth to Water	14.83	14.83	14.83						
Temperature (Celsius)	13.28	13.28	13.28						
Specific Conductivity	3.66	3.66	3.66						
Dissolved Oxygen	1.21	1.21	1.21						
ORP (mV)	-92	-92	-92						
Turbidity(NTU)	12.4	12.5	12.4						
pH	7.38	7.38	7.38						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 3
 Date: 7-30-21
 Field Personnel: EB
 Depth to Water: 12.67
 Depth to Point: 20.5'
 Purge Start Time: 10:05
 Purge Rate: 300ml/min

Reading Time	10:15	10:18	10:21						
Depth to Water	13.03	13.03	13.03						
Temperature (Celsius)	14.24	14.24	14.24						
Specific Conductivity	3.87	3.87	3.87						
Dissolved Oxygen	.79	.79	.79						
ORP (mV)	-96	-96	-96						
Turbidity(NTU)	10.1	10.1	10.1						
pH	7.35	7.39	7.39						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 7-30-21

Field Personnel: EB

Well No.: MW 4

Depth to Point: 18.01'

Depth to Water: 10.01

Purge Start Time: 10:30

Purge Rate: 300 mL/min

Reading Time	10:40	10:43	10:46						
Depth to Water	10.31	10.31	10.31						
Temperature (Celsius)	16.22	16.22	16.22						
Specific Conductivity	2.40	2.40	2.26						
Dissolved Oxygen	76	76	76						
ORP (mV)	-76	-79	-79						
Turbidity(NTU)	10.1	10.1	10.1						
pH	7.43	7.43	7.43						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 5
 Date: 7-30-21
 Depth to Point: 11.5'
 Field Personnel: EB
 Depth to Water: 5.67
 Purge Start Time: 8:15
 Purge Rate: 300ml/min

Reading Time	8:25	8:28	8:31						
Depth to Water	5.93	5.93	5.93						
Temperature (Celsius)	16.43	16.43	16.43						
Specific Conductivity	1.98	1.98	1.98						
Dissolved Oxygen	.99	.99	.99						
ORP (mV)	-20	-20	-20						
Turbidity(NTU)	3.1	3.1	3.1						
pH	6.96	6.96	6.96						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 6
 Date: 7-30-21
 Field Personnel: EB
 Depth to Water: 8.5
 Depth to Point: 16.5'
 Purge Start Time: 10:55
 Purge Rate: 3000 L/min

Reading Time	11:05	11:08	11:11						
Depth to Water	8.93	8.93	8.93						
Temperature (Celsius)	17.78	17.78	17.78						
Specific Conductivity	1.87	1.87	1.87						
Dissolved Oxygen	1.63	1.63	1.63						
ORP (mV)	-100	-100	-100						
Turbidity(NTU)	4.5	4.5	4.5						
pH	7.49	7.49	7.49						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 7.30.21

Field Personnel: EB

Well No.: MW/7

Depth to Point: 18.81'

Depth to Water: 4.95

Purge Start Time: 7.45

Purge Rate: 3000 L/min

Reading Time	7:55	7:58	8:01					
Depth to Water	4.95	4.95	4.95					
Temperature (Celsius)	13.94 13.94	13.94	13.94					
Specific Conductivity	1.18	1.18	1.18					
Dissolved Oxygen	1.26	1.26	1.26					
ORP (mV)	4	4	4					
Turbidity(NTU)	2.8	2.7	2.8					
pH	6.66	6.66	6.66					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or < 1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 8
 Date: 7.30.21
 Field Personnel: EB
 Depth to Water: 3.37
 Depth to Point: 11.85
 Purge Start Time: 14:20
 Purge Rate: 300 mL/min

Reading Time	14:30	14:33	14:33						
Depth to Water	3.61	3.61	3.61						
Temperature (Celsius)	18.10	18.10	18.10						
Specific Conductivity	850	850	850						
Dissolved Oxygen	1.85	1.85	1.85						
ORP (mV)	-63	-63	-63						
Turbidity(NTU)	11.4	11.4	11.4						
pH	7.16	7.16	7.16						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 7.30.21

Field Personnel: EB

Well No.: MW 9

Depth to Point: 14.9

Depth to Water: 8.27

Purge Start Time: 11:50

Purge Rate: 3000 L/min

Reading Time	12:00	12:03	12:06						
Depth to Water	8.62	8.62	8.62						
Temperature (Celsius)	18.01	18.01	18.01						
Specific Conductivity	1.15	1.15	1.15						
Dissolved Oxygen	7.5	7.5	7.5						
ORP (mV)	-70	-70	-70						
Turbidity(NTU)	7.2	7.2	7.2						
pH	7.25	7.25	7.25						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 10
 Date: 7-30-21
 Field Personnel: EB
 Depth to Water: 5.28
 Depth to Point: 13.00
 Purge Start Time: 12:35
 Purge Rate: 3000 L/min

Reading Time	12:45	12:48	12:51						
Depth to Water	5.52	5.52	5.52						
Temperature (Celsius)	19.99	19.99	19.99						
Specific Conductivity	3.38	3.38	3.38						
Dissolved Oxygen	.49	.49	.49						
ORP (mV)	-140	-140	-140						
Turbidity(NTU)	6.1	6.1	6.1						
pH	7.7	7.7	7.7						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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21G1159
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 7/30/21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.3°C)	Temp Blank	Client Sample
Time: 1732							
Logged by: JME Package Description: Cooler							
Package Temp °C	2.9	3.0	<input checked="" type="checkbox"/>				
Representative Sample Temp °C	10.7	10.8					

Sample Receipt

- Yes No Received on ice or other coolant
 Yes No Ice still present upon receipt
 Yes No Custody seals present
 Yes No Custody seals intact (if applicable)
 Yes No Trace Courier Yes No Client Drop-off
 Yes No UPS Yes No Fex Ex Yes No US Mail Yes No Other

Sample Condition

- Yes No N/A All sample containers arrived unbroken and labeled
 Yes No N/A Sufficient sample to run requested analyses
 Yes No N/A Correct chemical preservative added to samples
 Yes No N/A Samples preserved at Trace HNO3 added @ 1550 on 7/30/21
 Yes No N/A Chemical preservation verified, check EMD pH test strip used (if applicable)
 Yes No pH 0-2.5 (Lot: HC029115) Yes No pH 11.0-13.0 (Lot: HC022540) Yes No Other
 Yes No N/A Air bubbles absent from VOAs

Chain of Custody (COC)

- Yes No All bottle labels agree with COC
 Yes No COC filled out properly
 Yes No COC signed by client

Notes:

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2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

November 09, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1032
Client Project Impoundment Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



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888-979-4469 Fax
www.trace-labs.com

SAMPLE SUMMARY

Trace Project ID: 21J1032
Client Project ID: Impoundment Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1032-01	Unit 1/2 Near MW-5	Ground Water	TRACE-EB/TB	10/26/21 11:25	10/27/21 08:52
21J1032-02	Unit 1/2 Near SG-2	Ground Water	TRACE-EB/TB	10/26/21 15:25	10/27/21 08:52

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
 Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: 21J1032-01

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Chromium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Manganese	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Vanadium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.

Trace ID: 21J1032-02

Analysis: EPA 6020B

Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: T116174-MSD1

Analysis: EPA 6010D

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Calcium	Note 226 : The MS recovery was out of control, resulting in an out of control RPD between the MS and MSD. Because the background concentration of this analyte is greater than four times the spike amount, no data require qualification.
<i>Analysis: EPA 6020B</i>	
Chromium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Manganese	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.
Vanadium	Note 206 : The MS and MSD recoveries were out of control high. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-01 Matrix: Ground Water Date Collected: 10/26/21 11:25
 Sample ID: Unit 1/2 Near MW-5 Date Received: 10/27/21 08:52 Field pH: 7.11

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	1.5 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	1.8 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	470 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	0.28 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.039 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	34 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	12 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	20 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	0.00047 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0021 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.035 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0017 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs	206	
Cobalt	0.00086 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.072 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs	206	
Molybdenum	0.0064 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0032 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	0.0011 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.00094 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs	206	

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-01 Matrix: Ground Water Date Collected: 10/26/21 11:25
 Sample ID: Unit 1/2 Near MW-5 Date Received: 10/27/21 08:52 Field pH: 7.11

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	1300 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	1.8 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	480 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	0.098 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd	J	
Lithium	0.037 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	33 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	12 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	20 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0030 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00088 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Arsenic	0.0016 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.040 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00058 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00035 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.066 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0048 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0022 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00086 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00035 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-01 Matrix: Ground Water Date Collected: 10/26/21 11:25
 Sample ID: Unit 1/2 Near MW-5 Date Received: 10/27/21 08:52 Field pH: 7.11

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116092

Fluoride	3.1 mg/L	0.10	5	10/27/21	ans	10/28/21	ans		
Chloride	28 mg/L	0.75	5	10/27/21	ans	10/28/21	ans		
Sulfate as SO4	1300 mg/L	60	100	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116236

Bicarbonate Alkalinity as CaCO3 at pH 4.5	93 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1200 mg/L	20	2	10/28/21	gmr	10/28/21	gmr		
Total Dissolved Solids	1800 mg/L	20	2	11/01/21	mr	11/02/21	mr		

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-02 Matrix: Ground Water Date Collected: 10/26/21 15:25
 Sample ID: Unit 1/2 Near SG-2 Date Received: 10/27/21 08:52 Field pH: 8.39

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	3.3 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	4.6 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	280 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	0.25 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.061 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	56 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	15 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	48 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	0.00045 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0024 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.044 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0013 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	0.0021 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs	J	
Lead	0.00083 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Manganese	0.082 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0048 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0037 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	0.00093 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0014 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-02 Matrix: Ground Water Date Collected: 10/26/21 15:25
 Sample ID: Unit 1/2 Near SG-2 Date Received: 10/27/21 08:52 Field pH: 8.39

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	940 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	4.7 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	280 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	0.056 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd	J	
Lithium	0.057 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	54 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	15 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	49 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0013 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.0012 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0018 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.061 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	0.000045 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00023 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00062 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.00028 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Manganese	0.054 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0042 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0017 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00075 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00038 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

Trace ID: 21J1032-02 Matrix: Ground Water Date Collected: 10/26/21 15:25
 Sample ID: Unit 1/2 Near SG-2 Date Received: 10/27/21 08:52 Field pH: 8.39

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116092

Fluoride	3.1 mg/L	0.10	5	10/27/21	ans	10/28/21	ans		
Chloride	81 mg/L	15	100	10/28/21	ans	10/28/21	ans		
Sulfate as SO4	770 mg/L	60	100	10/28/21	ans	10/28/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116236

Bicarbonate Alkalinity as CaCO3 at pH 4.5	91 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1500 mg/L	20	2	10/28/21	gmr	10/28/21	gmr		
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QUALITY CONTROL RESULTS

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116281	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T116281-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T116281-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	23.4	94	77-123	

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116098	Analysis Description: Zinc, Dissolved
QC Batch Method:	Analysis Method: EPA 6010D

METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	0.0023	0.050	J
Beryllium	mg/L	0.000061	0.0010	J
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	0.015	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	

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METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116098-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.966	97	80-120	
Beryllium	mg/L	0.0500	0.0510	102	80-120	
Calcium	mg/L	10.0	10.3	103	80-120	
Iron	mg/L	10.0	10.4	104	80-120	
Potassium	mg/L	10.0	10.4	104	80-120	
Lithium	mg/L	0.500	0.522	104	80-120	
Magnesium	mg/L	10.0	10.5	105	80-120	
Sodium	mg/L	10.0	10.6	106	80-120	
Zinc	mg/L	1.00	1.04	104	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116098-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	1.83	1.00	2.78	2.79	95	96	75-125	0.8	20	
Beryllium	mg/L	0	0.0500	0.0476	0.0479	95	96	75-125	0.6	20	
Iron	mg/L	0.0978	10.0	9.84	10.0	97	99	75-125	2	20	
Potassium	mg/L	11.6	10.0	21.8	21.9	102	104	75-125	2	20	
Lithium	mg/L	0.0370	0.500	0.568	0.573	106	107	75-125	0.9	20	
Magnesium	mg/L	33.4	10.0	42.3	42.3	90	90	75-125	0.2	20	
Sodium	mg/L	20.3	10.0	30.8	31.0	105	107	75-125	2	20	
Zinc	mg/L	0.00301	1.00	0.991	1.02	99	102	75-125	3	20	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116098-MSD2

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Calcium	mg/L	478	100	576	562	98	84	75-125	16	20	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116174

Analysis Description: Potassium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6010D

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METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	0.060	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.830	93	80-120	
Beryllium	mg/L	0.111	0.109	98	80-120	
Calcium	mg/L	8.89	8.74	98	80-120	
Iron	mg/L	8.89	9.02	101	80-120	
Potassium	mg/L	8.89	9.03	102	80-120	
Lithium	mg/L	0.889	0.880	99	80-120	
Magnesium	mg/L	8.89	9.09	102	80-120	
Sodium	mg/L	8.89	9.07	102	80-120	
Zinc	mg/L	0.889	0.894	101	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116174-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	1.81	0.889	2.72	2.61	102	90	75-125	13	20	
Beryllium	mg/L	0	0.111	0.113	0.110	101	99	75-125	2	20	
Calcium	mg/L	468	8.89	498	475	342	80	75-125	124	20	226
Iron	mg/L	0.275	8.89	9.42	9.20	103	100	75-125	2	20	
Potassium	mg/L	11.6	8.89	21.7	21.1	113	107	75-125	6	20	
Lithium	mg/L	0.0394	0.889	0.997	0.969	108	105	75-125	3	20	
Magnesium	mg/L	33.6	8.89	42.5	41.6	99	89	75-125	11	20	
Sodium	mg/L	20.0	8.89	30.3	29.6	116	108	75-125	8	20	
Zinc	mg/L	0	0.889	0.909	0.876	102	99	75-125	4	20	

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Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116167
 QC Batch Method:

Analysis Description: Vanadium, Dissolved
 Analysis Method: EPA 6020B

METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	0.000026	0.000040	J
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	0.00017	0.00020	J
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0612	102	80-120	
Arsenic	mg/L	0.0600	0.0630	105	80-120	
Barium	mg/L	0.0600	0.0588	98	80-120	
Cadmium	mg/L	0.0600	0.0613	102	80-120	
Cobalt	mg/L	0.0600	0.0604	101	80-120	
Chromium	mg/L	0.0600	0.0629	105	80-120	
Copper	mg/L	0.0600	0.0610	102	80-120	
Manganese	mg/L	0.0600	0.0615	102	80-120	
Molybdenum	mg/L	0.0600	0.0588	98	80-120	
Nickel	mg/L	0.0600	0.0602	100	80-120	
Lead	mg/L	0.0600	0.0616	103	80-120	
Antimony	mg/L	0.0600	0.0577	96	80-120	
Selenium	mg/L	0.0600	0.0630	105	80-120	
Thallium	mg/L	0.0600	0.0617	103	80-120	

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LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Vanadium	mg/L	0.0600	0.0581	97	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116167-MSD1

Original: 21J1032-02

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Silver	mg/L	0	0.0500	0.0435	0.0420	87	84	75-125	4	20	
Arsenic	mg/L	0.00177	0.0500	0.0600	0.0573	116	111	75-125	5	20	
Cadmium	mg/L	0.0000452	0.0500	0.0492	0.0482	98	96	75-125	2	20	
Cobalt	mg/L	0.000233	0.0500	0.0459	0.0450	91	89	75-125	2	20	
Chromium	mg/L	0	0.0500	0.0493	0.0481	99	96	75-125	3	20	
Copper	mg/L	0.000624	0.0500	0.0419	0.0408	83	80	75-125	3	20	
Manganese	mg/L	0.0537	0.0500	0.105	0.102	102	97	75-125	5	20	
Molybdenum	mg/L	0.00421	0.0500	0.0585	0.0556	109	103	75-125	6	20	
Nickel	mg/L	0.00170	0.0500	0.0455	0.0445	88	86	75-125	2	20	
Selenium	mg/L	0.000753	0.0500	0.0555	0.0537	109	106	75-125	3	20	
Vanadium	mg/L	0.000380	0.0500	0.0516	0.0499	103	99	75-125	4	20	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116167-MSD2

Original: 21J1032-02

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Barium	mg/L	0.0610	0.250	0.308	0.306	99	98	75-125	1	20	
Lead	mg/L	0.000275	0.250	0.258	0.257	103	103	75-125	0.3	20	
Antimony	mg/L	0.00115	0.250	0.260	0.259	104	103	75-125	0.7	20	
Thallium	mg/L	0	0.250	0.265	0.262	106	105	75-125	1	20	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116174

Analysis Description: Selenium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6020B

METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	

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METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cadmium	mg/L	<0.0010	0.0010	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	0.00027	0.00040	J
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0333	120	80-120	
Arsenic	mg/L	0.0556	0.0599	108	80-120	
Barium	mg/L	0.889	0.950	107	80-120	
Cadmium	mg/L	0.0278	0.0297	107	80-120	
Cobalt	mg/L	0.889	0.892	100	80-120	
Chromium	mg/L	0.0278	0.0288	104	80-120	
Copper	mg/L	0.890	0.863	97	80-120	
Manganese	mg/L	0.887	0.878	99	80-120	
Molybdenum	mg/L	0.889	0.942	106	80-120	
Nickel	mg/L	0.889	0.840	95	80-120	
Lead	mg/L	0.0556	0.0533	96	80-120	
Antimony	mg/L	0.0556	0.0608	109	80-120	
Selenium	mg/L	0.0556	0.0560	101	80-120	
Thallium	mg/L	0.0556	0.0542	98	80-120	
Vanadium	mg/L	0.889	0.915	103	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116174-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Silver	mg/L	0	0.0278	0.0308	0.0292	111	105	75-125	5	20	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116174-MSD1

Original: 21J1032-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Arsenic	mg/L	0.00212	0.0556	0.0711	0.0670	124	117	75-125	6	20	
Barium	mg/L	0.0351	0.889	1.06	0.994	115	108	75-125	7	20	
Cadmium	mg/L	0	0.0278	0.0298	0.0280	107	101	75-125	6	20	
Cobalt	mg/L	0.000863	0.889	1.05	0.997	118	112	75-125	5	20	
Chromium	mg/L	0.00175	0.0278	0.0404	0.0382	139	131	75-125	6	20	206
Copper	mg/L	0	0.890	0.944	0.887	106	100	75-125	6	20	
Manganese	mg/L	0.0718	0.887	1.30	1.22	139	130	75-125	7	20	206
Molybdenum	mg/L	0.00638	0.889	1.03	0.980	115	110	75-125	5	20	
Nickel	mg/L	0.00323	0.889	0.959	0.909	108	102	75-125	5	20	
Lead	mg/L	0	0.0556	0.0499	0.0476	90	86	75-125	5	20	
Antimony	mg/L	0.000470	0.0556	0.0643	0.0600	115	107	75-125	7	20	
Selenium	mg/L	0.00107	0.0556	0.0649	0.0605	115	107	75-125	7	20	
Thallium	mg/L	0	0.0556	0.0519	0.0491	93	88	75-125	6	20	
Vanadium	mg/L	0.000945	0.889	1.35	1.28	152	144	75-125	6	20	206

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: [CALC]

Analysis Description: Hardness (Metals)

QC Batch Method:

Analysis Method: SM 2340 B-11

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116092

Analysis Description: Fluoride

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116092-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116092-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.00	100	90-110	
Fluoride	mg/L	1.00	0.992	99	90-110	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

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QC Batch: T116163

Analysis Description: Sulfate

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116163-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116163-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.11	102	90-110	
Sulfate as SO4	mg/L	5.00	4.88	98	90-110	

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116228

Analysis Description: Sulfate

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116228-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116228-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Sulfate as SO4	mg/L	5.00	4.89	98	90-110	

Trace Project ID: 21J1032
 Client Project ID: Impoundment Sampling

QC Batch: T116236

Analysis Description: Alkalinity, Bicarbonate

QC Batch Method: SM 2320 B-11

Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T116236-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	100	100	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	100	100	88-112	

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SAMPLE DUPLICATE: T116236-DUP1

Original: 21J1032-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	93.1	91.8	1	200	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116175

Analysis Description: Total Dissolved Solids

QC Batch Method: SM 2540 C-11

Analysis Method: SM 2540 C-11

METHOD BLANK: T116175-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	1.0	10	J

LABORATORY CONTROL SAMPLE: T116175-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	543	109	80-120	

Trace Project ID: 21J1032

Client Project ID: Impoundment Sampling

QC Batch: T116265

Analysis Description: Total Dissolved Solids

QC Batch Method: SM 2540 C-11

Analysis Method: SM 2540 C-11

METHOD BLANK: T116265-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	9.0	10	J

LABORATORY CONTROL SAMPLE: T116265-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	527	105	80-120	

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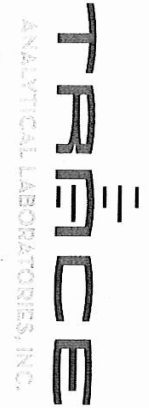
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CHAIN-OF-CUSTODY RECORD



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 Phone 231.773.5998
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Trace ID No. 21J1032

Report Results To: Grand Haven Board of Light & Power
Company Name: Grand Haven Board of Light & Power
Report To: Paul Cederquist
Mailing Address:
City, State, Zip Code:
Office Phone:
Cell Phone:
Email Address:
PO #:
Contact Name:
Billing Address (if different):
City, State, Zip Code:
Phone Number:
Billing Email Address:

Trace Use: *ENV*
Logged By: *DH*
Checked By: *DH*
 Soil Volatiles Preserved (circle if applicable):
 MeOH Low Level Lab
Sampling Time:

Turnaround Requirements:
 Standard, 5-10 Days
 3 Day*
 1 Day*
Matrix Key:
 S = Soil / Solid
 W = Water
 SL = Sludge
 OI = Oil
 WI = Wipes
 LW = Liquid Waste
 A = Air
 D = Drinking Water
Results provided end of business day, requires prior approval.

Project Name: Impoundment Sampling				Sampled By: <i>EB</i>	Analysis Requested												Remarks							
Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y/N)	Matrix	Number of Containers	Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other	T-B, Ca, Fe, Sb, As, Ba, Be, Cd, Cr	T- Co, Cu, Pb, Li, Mo, Ni Se, Ag	T- Ti, V, Zn, Mn, Mg, K, Na	Diss. Metals (Same as Totals)	Fluoride, Sulfate, TDS, Chlorides	pH	LLHg	Radiums 226/228	Bicarb- Alk, Carbonate- Alk	Possible Health Hazards?		
1	10-26-21	11:25	Unit 1/2 Near MW-5	Y	W	5	X						X	X	X	X	X	X	X	X	X		pH = 7.11	
2	11-25	5:25	Unit 1/2 Near SG-2																					pH = 8.39
Please Sign			Released By: <i>SSB</i>	Received By: <i>Blick</i>	Date: <i>10/27/21</i>	Time: <i>8:26</i>	Released By:		Received By:		Date:	Time:												

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

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21J1032
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6	✓				
Representative Sample Temp °C	1.8	1.9	✓				✓

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present

Trace Courier Client Drop-off

Yes No Custody seals intact (if applicable)

UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10-26-21
 Field Personnel: EB
 Impoundment ID: Unit 12 by MW5
 Depth to Point:
 Sample Tubing Depth: 28 FT
 Purge Start Time: 10:55
 Purge Rate: 300 WL

Reading Time	11:17	11:20	11:22						
Depth to Water	-	-	-						
Temperature (Celsius)	9.57	9.57	9.57						
Specific Conductivity	2.05	2.05	2.05						
Dissolved Oxygen	11.00	11.00	11.00						
ORP (mV)	-11	-11	-11						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.11	7.11	7.11						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 10-26-21 Field Personnel: EB
 Impoundment ID: Unit 2 by S&D Depth to Point: _____ Sample Tubing Depth: 20 FT
 Purge Start Time: 14:55 Purge Rate: 300 mL/min

Reading Time	15:15	15:18	15:21						
Depth to Water	-	-	-						
Temperature (Celsius)	12.13	12.13	12.13						
Specific Conductivity	1.63	1.63	1.63						
Dissolved Oxygen	9.87	9.87	9.87						
ORP (mV)	100	160	100						
Turbidity(NTU)	3.7	3.8	3.7						
pH	8.39	8.39	8.39						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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November 09, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1034
Client Project MW Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 21J1034
Client Project ID: MW Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1034-01	MW-1R	Ground Water	TRACE-EB/TB	10/26/21 11:45	10/27/21 09:16
21J1034-02	MW-2	Ground Water	TRACE-EB/TB	10/26/21 13:55	10/27/21 09:16
21J1034-03	MW-3	Ground Water	TRACE-EB/TB	10/26/21 12:35	10/27/21 09:16
21J1034-04	MW-4	Ground Water	TRACE-EB/TB	10/26/21 12:00	10/27/21 09:16
21J1034-05	MW-5	Ground Water	TRACE-EB/TB	10/26/21 10:35	10/27/21 09:16
21J1034-06	MW-6	Ground Water	TRACE-EB/TB	10/26/21 11:00	10/27/21 09:16
21J1034-07	MW-7	Ground Water	TRACE-EB/TB	10/26/21 10:20	10/27/21 09:16
21J1034-08	MW-8	Ground Water	TRACE-EB/TB	10/26/21 15:35	10/27/21 09:16
21J1034-09	MW-9	Ground Water	TRACE-EB/TB	10/26/21 14:30	10/27/21 09:16
21J1034-10	MW-10	Ground Water	TRACE-EB/TB	10/26/21 15:05	10/27/21 09:16

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
 Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: 21J1034-01

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Cadmium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Silver	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: 21J1034-02

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.

Trace ID: 21J1034-03

Analysis: EPA 6020B

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Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Trace ID: 21J1034-04

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
-----------------	---

Trace ID: 21J1034-10

Analysis: EPA 6020B

Antimony	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Lead	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Thallium	Note 402.5 : The reporting limit was raised due to a dilution required because of sample matrix interference with the internal standards.
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Trace ID: T116175-DUP2

Analysis: SM 2540 C-11

Total Dissolved Solids	Note 623 : The relative percent difference between the sample and sample duplicate is out of control. The sample result should be considered estimated.
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-01 Matrix: Ground Water Date Collected: 10/26/21 11:45
 Sample ID: MW-1R Date Received: 10/27/21 09:16 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	1.9 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	140 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	220 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	1.7 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	2.8 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	120 mg/L	2.0	10	10/28/21	mrh	11/02/21	ckd		
Potassium	92 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	480 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	0.00044 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0046 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.20 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0022 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0022 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	0.0024 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.40 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0016 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0039 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	0.00097 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0017 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-01 Matrix: Ground Water Date Collected: 10/26/21 11:45
 Sample ID: MW-1R Date Received: 10/27/21 09:16 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	1000 mg/L	8.2	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	130 mg/L	2.5	50	10/27/21	ckd	10/29/21	ckd		
Calcium	250 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	1.5 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	2.6 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	120 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	85 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	470 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0013 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00050 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Arsenic	0.0040 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.21 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Chromium	0.00099 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00073 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.29 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0011 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0019 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00066 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.00020 mg/L	0.00020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00092 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-01 Matrix: Ground Water Date Collected: 10/26/21 11:45
 Sample ID: MW-1R Date Received: 10/27/21 09:16 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	13 mg/L	2.0	100	10/27/21	ans	10/27/21	ans		
Chloride	230 mg/L	15	100	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	530 mg/L	60	100	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116236

Bicarbonate Alkalinity as CaCO3 at pH 4.5	1200 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	10/29/21	mr	10/29/21	mr	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	3600 mg/L	20	2	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-02 Matrix: Ground Water Date Collected: 10/26/21 13:55
 Sample ID: MW-2 Date Received: 10/27/21 09:16 Field pH: 6.48

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	2.8 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	100 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	190 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	22 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	1.2 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	62 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	50 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	300 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.012 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.50 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.040 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0055 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	0.0022 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs	J	
Lead	0.0018 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Manganese	0.80 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0045 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.017 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	0.0017 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0039 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-02 Matrix: Ground Water Date Collected: 10/26/21 13:55
 Sample ID: MW-2 Date Received: 10/27/21 09:16 Field pH: 6.48

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	740 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	98 mg/L	0.50	10	10/27/21	ckd	10/29/21	ckd		
Calcium	200 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	22 mg/L	1.0	10	10/27/21	ckd	10/29/21	ckd		
Lithium	1.1 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	65 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	48 mg/L	10	10	10/27/21	ckd	10/29/21	ckd		
Sodium	310 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0030 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.012 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.48 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	0.000054 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Chromium	0.028 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.0047 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd		
Copper	0.00072 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.0012 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5, J	
Manganese	0.80 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0038 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.015 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.0013 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	0.000027 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd	J	
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.0029 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-02 Matrix: Ground Water Date Collected: 10/26/21 13:55
 Sample ID: MW-2 Date Received: 10/27/21 09:16 Field pH: 6.48

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	9.4 mg/L	0.50	25	10/27/21	ans	10/27/21	ans		
Chloride	140 mg/L	3.8	25	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	<3.0 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	2100 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	2000 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-03 Matrix: Ground Water Date Collected: 10/26/21 12:35
 Sample ID: MW-3 Date Received: 10/27/21 09:16 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.79 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	4.4 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	490 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	4.5 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.053 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	200 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	21 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	140 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0012 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.47 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0041 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0014 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	2.1 mg/L	0.25	10	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.00012 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	J, N	
Nickel	0.0027 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0014 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
Client Project ID: MW Sampling

Trace ID: 21J1034-03 Matrix: Ground Water Date Collected: 10/26/21 12:35
Sample ID: MW-3 Date Received: 10/27/21 09:16 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	2100 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	4.3 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	500 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	4.4 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.053 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	220 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	21 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	140 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.00074 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.0011 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.45 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0018 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00063 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00046 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	1.6 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00010 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J, N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00048 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00068 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-03 Matrix: Ground Water Date Collected: 10/26/21 12:35
 Sample ID: MW-3 Date Received: 10/27/21 09:16 Field pH: 6.91

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	0.89 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	330 mg/L	15	100	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	23 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	2000 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	2500 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-04 Matrix: Ground Water Date Collected: 10/26/21 12:00
 Sample ID: MW-4 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	3.7 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	370 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	5.2 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.061 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	89 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	22 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	81 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0019 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.12 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0033 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00079 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	1.1 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0015 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.011 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0010 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-04 Matrix: Ground Water Date Collected: 10/26/21 12:00
 Sample ID: MW-4 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	1300 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	4.1 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	380 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	5.4 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.071 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	90 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	21 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	83 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd		

Analysis Method: EPA 6020B

Batch: T116167

Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.0012 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.13 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0021 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00048 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.83 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00089 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0080 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.00063 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-04 Matrix: Ground Water Date Collected: 10/26/21 12:00
 Sample ID: MW-4 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	1.3 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	170 mg/L	7.5	50	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	450 mg/L	30	50	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	870 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1900 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-05 Matrix: Ground Water Date Collected: 10/26/21 10:35
 Sample ID: MW-5 Date Received: 10/27/21 09:16 Field pH: 7.43

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/02/21	ckd		
Boron	3.0 mg/L	0.035	1	10/28/21	mrh	11/02/21	ckd		
Calcium	340 mg/L	3.5	10	10/28/21	mrh	11/02/21	ckd		
Iron	2.5 mg/L	0.14	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.089 mg/L	0.0070	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	37 mg/L	0.14	1	10/28/21	mrh	11/02/21	ckd		
Potassium	9.3 mg/L	0.70	1	10/28/21	mrh	11/02/21	ckd		
Sodium	29 mg/L	0.35	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.014 mg/L	0.014	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00021 mg/L	0.00021	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.040 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Barium	0.087 mg/L	0.0070	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0017 mg/L	0.00063	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00069 mg/L	0.0011	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0028 mg/L	0.0028	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.90 mg/L	0.018	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0023 mg/L	0.00028	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0015 mg/L	0.0035	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.00089 mg/L	0.00056	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-05 Matrix: Ground Water Date Collected: 10/26/21 10:35
 Sample ID: MW-5 Date Received: 10/27/21 09:16 Field pH: 7.43

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	1000 mg/L	0.58	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	3.1 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	360 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	2.0 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.092 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	39 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	9.4 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	30 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd		

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00010 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd	J	
Arsenic	0.043 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.088 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00021 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	0.69 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0016 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.00017 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00066 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-05 Matrix: Ground Water Date Collected: 10/26/21 10:35
 Sample ID: MW-5 Date Received: 10/27/21 09:16 Field pH: 7.43

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	3.3 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	22 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	320 mg/L	15	25	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	750 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1300 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-06 Matrix: Ground Water Date Collected: 10/26/21 11:00
 Sample ID: MW-6 Date Received: 10/27/21 09:16 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.94 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/02/21	ckd		
Boron	13 mg/L	0.35	10	10/28/21	mrh	11/02/21	ckd		
Calcium	200 mg/L	3.5	10	10/28/21	mrh	11/02/21	ckd		
Iron	13 mg/L	0.14	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.23 mg/L	0.0070	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	100 mg/L	1.4	10	10/28/21	mrh	11/02/21	ckd		
Potassium	34 mg/L	0.70	1	10/28/21	mrh	11/02/21	ckd		
Sodium	110 mg/L	3.5	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.014 mg/L	0.014	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00021 mg/L	0.00021	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0017 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Barium	1.6 mg/L	0.035	5	10/28/21	mrh	11/04/21	acs		
Cadmium	0.00053 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs	J	
Chromium	0.0029 mg/L	0.00063	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00082 mg/L	0.0011	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0028 mg/L	0.0028	1	10/28/21	mrh	11/04/21	acs		
Lead	0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.41 mg/L	0.018	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.00076 mg/L	0.00028	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0022 mg/L	0.0035	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0014 mg/L	0.0014	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.00070 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs		
Thallium	0.00030 mg/L	0.00070	1	10/28/21	mrh	11/04/21	acs	J	
Vanadium	0.00083 mg/L	0.00056	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-06 Matrix: Ground Water Date Collected: 10/26/21 11:00
 Sample ID: MW-6 Date Received: 10/27/21 09:16 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	940 mg/L	5.8	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	13 mg/L	0.50	10	10/27/21	ckd	10/29/21	ckd		
Calcium	200 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	6.9 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.22 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	110 mg/L	2.0	10	10/27/21	ckd	10/29/21	ckd		
Potassium	36 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	120 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0027 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00033 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0017 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	1.5 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	0.000072 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Chromium	0.0011 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00042 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00016 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	0.29 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00069 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00029 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-06 Matrix: Ground Water Date Collected: 10/26/21 11:00
 Sample ID: MW-6 Date Received: 10/27/21 09:16 Field pH: 7.60

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	1.6 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	200 mg/L	7.5	50	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	1.3 mg/L	3.0	5	10/27/21	ans	10/27/21	ans	J	

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	960 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	1300 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-07 Matrix: Ground Water Date Collected: 10/26/21 10:20
 Sample ID: MW-7 Date Received: 10/27/21 09:16 Field pH: 7.01

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	15 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	130 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	16 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	<0.010 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	35 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	4.5 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	54 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	0.36 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0010 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.00088 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	2.0 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	<0.00040 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.00067 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-07 Matrix: Ground Water Date Collected: 10/26/21 10:20
 Sample ID: MW-7 Date Received: 10/27/21 09:16 Field pH: 7.01

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	470 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	16 mg/L	0.25	5	10/27/21	ckd	10/29/21	ckd		
Calcium	130 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd		
Iron	17 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.011 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	36 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	4.7 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	56 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd		

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00016 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd	J	
Arsenic	0.00033 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Barium	0.35 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00073 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	1.7 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.00013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00058 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-07 Matrix: Ground Water Date Collected: 10/26/21 10:20
 Sample ID: MW-7 Date Received: 10/27/21 09:16 Field pH: 7.01

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	0.094 mg/L	0.10	5	10/27/21	ans	10/27/21	ans	J	
Chloride	14 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	30 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	630 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	630 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-08 Matrix: Ground Water Date Collected: 10/26/21 15:35
 Sample ID: MW-8 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	<0.50 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	1.4 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	130 mg/L	2.5	5	10/28/21	mrh	11/02/21	ckd		
Iron	29 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.043 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	25 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	9.4 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	27 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0067 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	1.0 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0012 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	1.5 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.0037 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-08 Matrix: Ground Water Date Collected: 10/26/21 15:35
 Sample ID: MW-8 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	440 mg/L	0.82	5	10/28/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116098

Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	1.4 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	140 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd		
Iron	28 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.043 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	26 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	9.3 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	28 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0015 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00033 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0062 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.96 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.00065 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Cobalt	0.00030 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	0.000042 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	1.3 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0033 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0010 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00038 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-08 Matrix: Ground Water Date Collected: 10/26/21 15:35
 Sample ID: MW-8 Date Received: 10/27/21 09:16 Field pH: 6.74

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	0.42 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	30 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	37 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	450 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	630 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-09 Matrix: Ground Water Date Collected: 10/26/21 14:30
 Sample ID: MW-9 Date Received: 10/27/21 09:16 Field pH: 7.31

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.62 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	6.8 mg/L	0.050	1	10/28/21	mrh	11/02/21	ckd		
Calcium	220 mg/L	2.5	5	10/28/21	mrh	11/02/21	ckd		
Iron	19 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	0.26 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	36 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	16 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	32 mg/L	0.50	1	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0025 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	5.0 mg/L	0.10	10	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.0029 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Manganese	0.72 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.017 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	<0.00080 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-09 Matrix: Ground Water Date Collected: 10/26/21 14:30
 Sample ID: MW-9 Date Received: 10/27/21 09:16 Field pH: 7.31

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	690 mg/L	0.82	5	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	6.6 mg/L	0.050	1	10/27/21	ckd	10/29/21	ckd		
Calcium	210 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd		
Iron	18 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	0.27 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	36 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	15 mg/L	1.0	1	10/27/21	ckd	10/29/21	ckd		
Sodium	33 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0013 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00046 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0027 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	5.1 mg/L	0.0060	10	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0018 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00039 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	<0.00040 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Manganese	0.55 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.019 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.00080 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00037 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00031 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-09 Matrix: Ground Water Date Collected: 10/26/21 14:30
 Sample ID: MW-9 Date Received: 10/27/21 09:16 Field pH: 7.31

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116121

Fluoride	2.5 mg/L	0.10	5	10/27/21	ans	10/27/21	ans		
Chloride	13 mg/L	0.75	5	10/27/21	ans	10/27/21	ans		
Sulfate as SO4	14 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	760 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	880 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-10 Matrix: Ground Water Date Collected: 10/26/21 15:05
 Sample ID: MW-10 Date Received: 10/27/21 09:16 Field pH: 7.42

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116281</i>									
Mercury	0.80 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116174</i>									
Beryllium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/02/21	ckd		
Boron	52 mg/L	0.50	10	10/28/21	mrh	11/02/21	ckd		
Calcium	140 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd		
Iron	10 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Lithium	1.4 mg/L	0.010	1	10/28/21	mrh	11/02/21	ckd	N	
Magnesium	65 mg/L	0.20	1	10/28/21	mrh	11/02/21	ckd		
Potassium	52 mg/L	1.0	1	10/28/21	mrh	11/02/21	ckd		
Sodium	480 mg/L	5.0	10	10/28/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	10/28/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116174</i>									
Antimony	<0.00030 mg/L	0.00030	1	10/28/21	mrh	11/04/21	acs		
Arsenic	0.0011 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Barium	1.5 mg/L	0.010	1	10/28/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Chromium	0.011 mg/L	0.00090	1	10/28/21	mrh	11/04/21	acs		
Cobalt	0.0011 mg/L	0.0016	1	10/28/21	mrh	11/04/21	acs	J	
Copper	0.0050 mg/L	0.0040	1	10/28/21	mrh	11/04/21	acs		
Lead	0.0012 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs	J	
Manganese	0.50 mg/L	0.025	1	10/28/21	mrh	11/04/21	acs		
Molybdenum	0.012 mg/L	0.00040	1	10/28/21	mrh	11/04/21	acs	N	
Nickel	0.0027 mg/L	0.0050	1	10/28/21	mrh	11/04/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	10/28/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	10/28/21	mrh	11/04/21	acs		
Vanadium	0.0018 mg/L	0.00080	1	10/28/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-10 Matrix: Ground Water Date Collected: 10/26/21 15:05
 Sample ID: MW-10 Date Received: 10/27/21 09:16 Field pH: 7.42

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	620 mg/L	0.82	10	10/28/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116098									
Beryllium	<0.0010 mg/L	0.0010	1	10/27/21	ckd	10/29/21	ckd		
Boron	51 mg/L	0.50	10	10/27/21	ckd	10/29/21	ckd		
Calcium	140 mg/L	0.50	1	10/27/21	ckd	10/29/21	ckd		
Iron	8.2 mg/L	0.10	1	10/27/21	ckd	10/29/21	ckd		
Lithium	1.4 mg/L	0.010	1	10/27/21	ckd	10/29/21	ckd	N	
Magnesium	65 mg/L	0.20	1	10/27/21	ckd	10/29/21	ckd		
Potassium	48 mg/L	10	10	10/27/21	ckd	10/29/21	ckd		
Sodium	490 mg/L	5.0	10	10/27/21	ckd	10/29/21	ckd	N	
Zinc	0.0016 mg/L	0.020	1	10/27/21	ckd	10/29/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	<0.0010 mg/L	0.0010	5	11/08/21	ckd	11/08/21	ckd	402.5	
Arsenic	0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	1.3 mg/L	0.0030	5	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.0079 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00080 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00013 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	<0.0020 mg/L	0.0020	5	11/08/21	ckd	11/08/21	ckd	402.5	
Manganese	0.37 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0089 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0017 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	0.00058 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd	J	
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00087 mg/L	0.00087	5	11/08/21	ckd	11/08/21	ckd	402.5	
Vanadium	0.0013 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		

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ANALYTICAL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

Trace ID: 21J1034-10 Matrix: Ground Water Date Collected: 10/26/21 15:05
 Sample ID: MW-10 Date Received: 10/27/21 09:16 Field pH: 7.42

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116179

Fluoride	11 mg/L	0.20	10	10/28/21	ans	10/28/21	ans		
Chloride	520 mg/L	15	100	10/28/21	ans	10/28/21	ans		
Sulfate as SO4	53 mg/L	3.0	5	10/27/21	ans	10/27/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	970 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<50 mg/L	50	10	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116175

Total Dissolved Solids	2000 mg/L	40	4	10/28/21	gmr	10/28/21	gmr		
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QUALITY CONTROL RESULTS

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116281	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T116281-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116281-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T116281-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	23.4	94	77-123	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116281-MSD1 Original: 21J1034-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Mercury	ng/L	1.88	10.0	10.1	9.92	82	80	71-125	2	24	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116098	Analysis Description: Sodium, Dissolved
QC Batch Method:	Analysis Method: EPA 6010D

METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	0.0023	0.050	J
Beryllium	mg/L	0.000061	0.0010	J
Calcium	mg/L	<0.50	0.50	

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METHOD BLANK: T116098-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	0.015	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116098-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.966	97	80-120	
Beryllium	mg/L	0.0500	0.0510	102	80-120	
Calcium	mg/L	10.0	10.3	103	80-120	
Iron	mg/L	10.0	10.4	104	80-120	
Potassium	mg/L	10.0	10.4	104	80-120	
Lithium	mg/L	0.500	0.522	104	80-120	
Magnesium	mg/L	10.0	10.5	105	80-120	
Sodium	mg/L	10.0	10.6	106	80-120	
Zinc	mg/L	1.00	1.04	104	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116174

Analysis Description: Lithium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6010D

METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	0.060	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

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LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.830	93	80-120	
Beryllium	mg/L	0.111	0.109	98	80-120	
Calcium	mg/L	8.89	8.74	98	80-120	
Iron	mg/L	8.89	9.02	101	80-120	
Potassium	mg/L	8.89	9.03	102	80-120	
Lithium	mg/L	0.889	0.880	99	80-120	
Magnesium	mg/L	8.89	9.09	102	80-120	
Sodium	mg/L	8.89	9.07	102	80-120	
Zinc	mg/L	0.889	0.894	101	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116167
 QC Batch Method:

Analysis Description: Barium, Dissolved
 Analysis Method: EPA 6020B

METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	0.000026	0.000040	J
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	0.00017	0.00020	J
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0612	102	80-120	
Arsenic	mg/L	0.0600	0.0630	105	80-120	

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LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Barium	mg/L	0.0600	0.0588	98	80-120	
Cadmium	mg/L	0.0600	0.0613	102	80-120	
Cobalt	mg/L	0.0600	0.0604	101	80-120	
Chromium	mg/L	0.0600	0.0629	105	80-120	
Copper	mg/L	0.0600	0.0610	102	80-120	
Manganese	mg/L	0.0600	0.0615	102	80-120	
Molybdenum	mg/L	0.0600	0.0588	98	80-120	
Nickel	mg/L	0.0600	0.0602	100	80-120	
Lead	mg/L	0.0600	0.0616	103	80-120	
Antimony	mg/L	0.0600	0.0577	96	80-120	
Selenium	mg/L	0.0600	0.0630	105	80-120	
Thallium	mg/L	0.0600	0.0617	103	80-120	
Vanadium	mg/L	0.0600	0.0581	97	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116174

Analysis Description: Selenium, Total

QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Method: EPA 6020B

METHOD BLANK: T116174-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	
Cadmium	mg/L	<0.0010	0.0010	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	0.00027	0.00040	J
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

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LABORATORY CONTROL SAMPLE: T116174-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0333	120	80-120	
Arsenic	mg/L	0.0556	0.0599	108	80-120	
Barium	mg/L	0.889	0.950	107	80-120	
Cadmium	mg/L	0.0278	0.0297	107	80-120	
Cobalt	mg/L	0.889	0.892	100	80-120	
Chromium	mg/L	0.0278	0.0288	104	80-120	
Copper	mg/L	0.890	0.863	97	80-120	
Manganese	mg/L	0.887	0.878	99	80-120	
Molybdenum	mg/L	0.889	0.942	106	80-120	
Nickel	mg/L	0.889	0.840	95	80-120	
Lead	mg/L	0.0556	0.0533	96	80-120	
Antimony	mg/L	0.0556	0.0608	109	80-120	
Selenium	mg/L	0.0556	0.0560	101	80-120	
Thallium	mg/L	0.0556	0.0542	98	80-120	
Vanadium	mg/L	0.889	0.915	103	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: [CALC]
 QC Batch Method:

Analysis Description: Hardness (Metals)
 Analysis Method: SM 2340 B-11

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116121
 QC Batch Method: IC Prep W

Analysis Description: Sulfate
 Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116121-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116121-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.02	100	90-110	
Fluoride	mg/L	1.00	1.02	102	90-110	

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LABORATORY CONTROL SAMPLE: T116121-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Sulfate as SO4	mg/L	5.00	5.14	103	90-110	

MATRIX SPIKE: T116121-MS1 Original: **21J1034-01**

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Chloride	mg/L	233	500	794	112	80-120	
Fluoride	mg/L	12.6	100	107	94	80-120	
Sulfate as SO4	mg/L	533	500	1120	118	80-120	

MATRIX SPIKE: T116121-MS2 Original: **21J1034-07**

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Chloride	mg/L	13.9	25.0	39.6	103	80-120	
Fluoride	mg/L	0.0942	5.00	4.60	90	80-120	
Sulfate as SO4	mg/L	29.6	25.0	54.1	98	80-120	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116179
 QC Batch Method: IC Prep W

Analysis Description: Fluoride
 Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116179-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116179-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.03	101	90-110	
Fluoride	mg/L	1.00	1.01	101	90-110	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116236
 QC Batch Method: SM 2320 B-11

Analysis Description: Alkalinity, Bicarbonate
 Analysis Method: SM 2320 B-11

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LABORATORY CONTROL SAMPLE: T116236-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	100	100	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	100	100	88-112	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116366	Analysis Description: Alkalinity, Carbonate
QC Batch Method: SM 2320 B-11	Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T116366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	97.3	97	88-112	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	97.3	97	88-112	

SAMPLE DUPLICATE: T116366-DUP1 Original: 21J1034-02

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	2150	218	163	200	
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	0	<5.0		200	

Trace Project ID: 21J1034
 Client Project ID: MW Sampling

QC Batch: T116175	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-11	Analysis Method: SM 2540 C-11

METHOD BLANK: T116175-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	1.0	10	J

LABORATORY CONTROL SAMPLE: T116175-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	543	109	80-120	

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Muskegon, MI 49444-2673



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SAMPLE DUPLICATE: T116175-DUP2

Original: 21J1034-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	3600	2800	25	10	623

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CHAIN-OF-CUSTODY RECORD

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 2241 Black Creek Road
 Muskegon, MI 49444-2673

Phone 231.773.5998
 Fax 888.979.4469
 www.trace-labs.com

Trace ID No.
21J1034

Report Results To:

Company Name: Grand Haven Board of Light & Power
 Report To: Paul Cederquist
 Mailing Address:
 City, State, Zip Code:
 Office Phone: Cell Phone:
 Email Address:
 Billing Email Address:

Trace Use:

Logged By: BW
 Checked By: DH
 Soil Volatiles Preserved (circle if applicable):
 MeOH Low Level Lab
 Sampling Time:

Turnaround Requirements:

Standard, 5-10 Days
 3 Day*
 1 Day*
 *Results provided end of business day, requires prior approval.

Matrix Key:

S = Soil / Solid
 W = Water
 SL = Sludge
 OI = Oil
 WI = Wipes
 LW = Liquid Waste
 A = Air
 D = Drinking Water

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y/N)	Matrix	Number of Containers	Preservation							Analysis Requested	Remarks	Possible Health Hazards?
							Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other				
	10/26/21	11:45	MW-1R	Y	W	5	X						X	T-B, Ca, Fe, Sb, As, Ba, Be, Cd, Cr		
		13:55	MW-2										X	T- Co, Cu, Pb, Li, Mo, Ni Se, Ag		
		12:35	MW-3										X	T- Ti, V, Zn, Mn, Mg, K, Na		
		12:00	MW-4										X	Diss. Metals (Same as Totals)		
		16:35	MW-5										X	Fluoride, Sulfate, TDS, Chlorides		
		11:00	MW-6										X	pH		
		10:20	MW-7										X	LLHg		
		15:35	MW-8										X	Radiums 226/228		
		14:30	MW-9										X	Bicarb-Alk, Carbonate-Alk		
		15:05	MW-10										X			
Released By: <u>[Signature]</u> Date: <u>10/27/21</u> Time: <u>8:26</u> Received By: <u>[Signature]</u> Date: <u>10/27/21</u> Time: <u>8:26</u>																

Please Sign
 In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.
 Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

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21J1034
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6					
Representative Sample Temp °C	1.8	1.9					

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present

Trace Courier Client Drop-off

Yes No Custody seals intact (if applicable)

UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace See below

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

HNO₃ added to 02-E, 03-E, 04-E, 05-E, 06-E, 10-E
 at 10:00 on 10/27/21

~~NaOH added to DH 10/27/21~~

HNO₃ Preserved radiums 10/27/21 @ 13:11

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This report shall not be reproduced, except in full, without the written consent of Trace Analytical Laboratories, Inc.

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: EB

Well No.: MW-1R

Depth to Point: 18.2ft

Depth to Water: 6.23

Purge Start Time: 11:25

Purge Rate: 300ml/min

Reading Time	11:38	11:41	11:44						
Depth to Water	7.51	7.51	7.51						
Temperature (Celsius)	17.07	17.07	17.07						
Specific Conductivity	3.44	3.44	3.44						
Dissolved Oxygen	1.01	1.01	1.01						
ORP (mV)	-23	-23	-23						
Turbidity(NTU)	22.6	22.6	22.6						
pH	7.80	7.80	7.80						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Well No.: MW 2
 Date: 10-26-21
 Field Personnel: EB
 Depth to Water: 14.71
 Depth to Point: 23.51'
 Purge Start Time: 13:35
 Purge Rate: 30aw/min

Reading Time	13:47	13:50	13:52					
Depth to Water	15.21	15.23	15.23					
Temperature (Celsius)	14.17	14.17	14.17					
Specific Conductivity	4.12	4.12	4.12					
Dissolved Oxygen	0.0	0.0	0.0					
ORP (mV)	-129	-129	-129					
Turbidity(NTU)	0.0	0.0	0.0					
pH	6.48	6.48	6.48					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 10-26-21 Field Personnel: EB

Well No.: MW 3 Depth to Point: 20.5'

Depth to Water: 11.90 Purge Start Time: 12:10 Purge Rate: 300ml/min

Reading Time	12:27	12:30	12:33						
Depth to Water	12.72	12.72	12.72						
Temperature (Celsius)	15.86	15.86	15.86						
Specific Conductivity	3.96	3.96	3.96						
Dissolved Oxygen	2.14	2.14	2.14						
ORP (mV)	-19	-19	-19						
Turbidity(NTU)	1.5	1.6	1.6						
pH	6.91	6.91	6.91						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 10-26-21 Field Personnel: EB

Well No.: MW 4 Depth to Point: 18.01'

Depth to Water: 10.22 Purge Start Time: 11:40 Purge Rate: 300ml/min

Reading Time	11:54	11:57	12:08					
Depth to Water	6.74 11.03	11.03	11.03					
Temperature (Celsius)	16.68	16.88	16.68					
Specific Conductivity	2.56	2.56	2.56					
Dissolved Oxygen	.47	.47	.48					
ORP (mV)	-116	-116	-116					
Turbidity(NTU)	0.0	0.0	0.0					
pH	6.74	6.74	6.74					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 5

Depth to Point: 11.5'

Depth to Water: 5.90

Purge Start Time: 10:15

Purge Rate: 300 mL/min

Reading Time	10:25	10:27	10:30						
Depth to Water	6.73	6.73	6.73						
Temperature (Celsius)	16.02	16.02	16.02						
Specific Conductivity	1.76	1.76	1.76						
Dissolved Oxygen	.56	.56	.56						
ORP (mV)	-148	-148	-148						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.41	7.43	7.43						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: ERB

Well No.: MW 6

Depth to Point: 16.55'

Depth to Water: 8.50

Purge Start Time: 10:40

Purge Rate: 3000 L/min

Reading Time	10:50	10:53	10:56						
Depth to Water	9.31	9.31	9.31						
Temperature (Celsius)	17.59	17.59	17.59						
Specific Conductivity	2.06	2.06	2.06						
Dissolved Oxygen	.57	.57	.57						
ORP (mV)	-18	-18	-18						
Turbidity(NTU)	.3	.4	.3						
pH	7.60	7.60	7.60						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: ERB

Well No.: MW/7

Depth to Point: 18.81'

Depth to Water: 5.25

Purge Start Time: 10:00

Purge Rate: 3000ml/min

Reading Time	10:15	10:17	10:20						
Depth to Water	6.21	6.21	6.21						
Temperature (Celsius)	15.24	15.24	15.24						
Specific Conductivity	1.15	1.15	1.15						
Dissolved Oxygen	.73	.73	.73						
ORP (mV)	-27	-27	-27						
Turbidity(NTU)	4	4	3						
pH	7.01	7.01	7.01						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10/26/21

Field Personnel: ER

Well No.: MW 8

Depth to Point: 11.85

Depth to Water: 4.04

Purge Start Time: 15:10

Purge Rate: 300ml/min

Reading Time	15:25	15:28	15:31						
Depth to Water	4.86	4.86	4.86						
Temperature (Celsius)	15.72	15.72	15.72						
Specific Conductivity	.804	.805	.805						
Dissolved Oxygen	0.0	0.0	0.0						
ORP (mV)	-137	-137	-137						
Turbidity(NTU)	0.0	0.0	0.0						
pH	6.74	6.74	6.74						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: ER

Well No.: MW/9

Depth to Point: 14.9

Depth to Water: 8.49

Purge Start Time: 14:10

Purge Rate: 3000 L/min

Reading Time	14:20	14:24	14:27					
Depth to Water	9.31	9.31	9.31					
Temperature (Celsius)	16.12	16.12	16.13					
Specific Conductivity	1.25	1.25	1.25					
Dissolved Oxygen	.56	.56	.56					
ORP (mV)	-9	-9	-9					
Turbidity(NTU)	5.4	5.4	5.4					
pH	7.31	7.31	7.31					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 10

Depth to Point: 13.00

Depth to Water: 5.32

Purge Start Time: 14:45

Purge Rate: 300ml/min

Reading Time	14:55	14:58	15:01						
Depth to Water	6.07	6.07	6.07						
Temperature (Celsius)	16.66	16.66	16.66						
Specific Conductivity	3.65	3.65	3.65						
Dissolved Oxygen	0.28	0.28	0.28						
ORP (mV)	-198	-198	-198						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.42	7.42	7.42						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Muskegon, MI 49444-2673



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November 30, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1032 & 21J1034
Client Project Impoundment & MW Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

The results were obtained from Eurofins.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink that reads "Jon Mink". The signature is written in a cursive, flowing style.

Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



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SAMPLE SUMMARY

Trace Project ID: 21J1032
Client Project ID: Impoundment Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1032-01	Unit 1/2 Near MW-5	Ground Water	TRACE-EB/TB	10/26/21 11:25	10/27/21 08:52
21J1032-02	Unit 1/2 Near SG-2	Ground Water	TRACE-EB/TB	10/26/21 15:25	10/27/21 08:52

SAMPLE SUMMARY

Trace Project ID: 21J1034
Client Project ID: MW Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1034-01	MW-1R	Ground Water	TRACE-EB/TB	10/26/21 11:45	10/27/21 09:16
21J1034-02	MW-2	Ground Water	TRACE-EB/TB	10/26/21 13:55	10/27/21 09:16
21J1034-03	MW-3	Ground Water	TRACE-EB/TB	10/26/21 12:35	10/27/21 09:16
21J1034-04	MW-4	Ground Water	TRACE-EB/TB	10/26/21 12:00	10/27/21 09:16
21J1034-05	MW-5	Ground Water	TRACE-EB/TB	10/26/21 10:35	10/27/21 09:16
21J1034-06	MW-6	Ground Water	TRACE-EB/TB	10/26/21 11:00	10/27/21 09:16
21J1034-07	MW-7	Ground Water	TRACE-EB/TB	10/26/21 10:20	10/27/21 09:16
21J1034-08	MW-8	Ground Water	TRACE-EB/TB	10/26/21 15:35	10/27/21 09:16
21J1034-09	MW-9	Ground Water	TRACE-EB/TB	10/26/21 14:30	10/27/21 09:16
21J1034-10	MW-10	Ground Water	TRACE-EB/TB	10/26/21 15:05	10/27/21 09:16

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-6209-1
Client Project/Site: Trace-21J1034 & 21J1032
Revision: 1

For:
Trace Analytical Laboratories
2241 Black Creek Road
Muskegon, Michigan 49444

Attn: Jon Mink

Karen Fullmer

Authorized for release by:
11/29/2021 6:14:27 PM

Karen Fullmer, Project Manager
(574)233-4777
karen.fullmer@eurofinset.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Qualifiers

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.
α	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

Case Narrative

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Job ID: 810-6209-1

Laboratory: Eurofins Eaton Analytical - South Bend

Narrative

Job Narrative 810-6209-1

Comments

No additional comments.

Revision

The report being provided is a revision of the original report sent on 11/22/2021. The report (revision 1) is being revised due to: Project was logged in as drinking water matrix by accident. Report revised to change matrix..

Receipt

The samples were received on 10/28/2021 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 14.0° C and 14.2° C.

RAD

Method SM7500 Ra D: The barium carrier recovery is outside the upper control limit (110%) <OR> lower control for the following sample(s): 6209-A-11-D Re-analysis is required.

Method SM7500 Ra D: The barium carrier recovery 69.2mg is outside the established limits of 40.5-64.8mg for the following sample: MW-9 (810-6209-11). Re-analysis is required.

Method SM7500 Ra D: The barium carrier recovery 69.2mg is outside the established limits of 40.5-64.8mg for the following sample: MW-9 (810-6209-11). Re-analysis is required. Insufficient sample was available for re-analysis and matrix is dirty; therefore, the data have been reported.

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

Detection Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: Unit 1/2 Near MW-5 **Lab Sample ID: 810-6209-1**

No Detections.

Client Sample ID: Unit 1/2 Near SG-2 **Lab Sample ID: 810-6209-2**

No Detections.

Client Sample ID: MW-1R **Lab Sample ID: 810-6209-3**

No Detections.

Client Sample ID: MW-2 **Lab Sample ID: 810-6209-4**

No Detections.

Client Sample ID: MW-3 **Lab Sample ID: 810-6209-5**

No Detections.

Client Sample ID: MW-4 **Lab Sample ID: 810-6209-6**

No Detections.

Client Sample ID: MW-5 **Lab Sample ID: 810-6209-7**

No Detections.

Client Sample ID: MW-6 **Lab Sample ID: 810-6209-8**

No Detections.

Client Sample ID: MW-7 **Lab Sample ID: 810-6209-9**

No Detections.

Client Sample ID: MW-8 **Lab Sample ID: 810-6209-10**

No Detections.

Client Sample ID: MW-9 **Lab Sample ID: 810-6209-11**

No Detections.

Client Sample ID: MW-10 **Lab Sample ID: 810-6209-12**

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical - South Bend



Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: Unit 1/2 Near MW-5

Lab Sample ID: 810-6209-1

Date Collected: 10/26/21 11:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.72719		1.00	0.620	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.290	U	0.380		1.00	0.410	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.500	U	0.620		1.00	0.620	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: Unit 1/2 Near SG-2

Lab Sample ID: 810-6209-2

Date Collected: 10/26/21 15:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.60745		1.00	0.550	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.310	U	0.330		1.00	0.330	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-0.410	U	0.510		1.00	0.550	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-1R

Lab Sample ID: 810-6209-3

Date Collected: 10/26/21 11:45

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.410		0.51088		1.00	0.410	pCi/L		11/12/21 13:20	1

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-1R

Date Collected: 10/26/21 11:45

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-3

Matrix: Ground Water

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.410		0.330		1.00	0.310	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.0800	U	0.390		1.00	0.410	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-2

Date Collected: 10/26/21 13:55

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-4

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.27		0.91351		1.00	0.610	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	1.00		0.680		1.00	0.610	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.27		0.610		1.00	0.580	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-3

Date Collected: 10/26/21 12:35

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-5

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.01		0.68593		1.00	0.540	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.310	U	0.490		1.00	0.540	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-3

Date Collected: 10/26/21 12:35

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-5

Matrix: Ground Water

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.01		0.480		1.00	0.460	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-4

Date Collected: 10/26/21 12:00

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-6

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.87		0.67209		1.00	0.460	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.910		0.460		1.00	0.360	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.960		0.490		1.00	0.460	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-5

Date Collected: 10/26/21 10:35

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-7

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.60539		1.00	0.530	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.160	U	0.310		1.00	0.350	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.340	U	0.520		1.00	0.530	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-6

Date Collected: 10/26/21 11:00

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-8

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.76485		1.00	0.630	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.0600	U	0.570		1.00	0.370	pCi/L	11/02/21 14:10	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-2.15	U	0.510		1.00	0.630	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-7

Date Collected: 10/26/21 10:20

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-9

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.33		0.70434		1.00	0.490	pCi/L		11/12/21 13:20	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.790		0.550		1.00	0.490	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.540		0.440		1.00	0.440	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-8

Date Collected: 10/26/21 15:35

Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-10

Matrix: Ground Water

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.860		0.63640		1.00	0.530	pCi/L		11/12/21 13:20	1

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-8

Lab Sample ID: 810-6209-10

Date Collected: 10/26/21 15:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.860		0.450		1.00	0.350	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-1.22	U	0.450		1.00	0.530	pCi/L	11/02/21 14:13	11/11/21 14:44	1

Client Sample ID: MW-9

Lab Sample ID: 810-6209-11

Date Collected: 10/26/21 14:30

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.56		0.69527		1.00	0.470	pCi/L		11/11/21 16:33	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.840		0.450		1.00	0.370	pCi/L	11/02/21 14:16	11/05/21 11:46	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.72		0.530		1.00	0.470	pCi/L	11/02/21 14:19	11/11/21 12:18	1

Client Sample ID: MW-10

Lab Sample ID: 810-6209-12

Date Collected: 10/26/21 15:05

Matrix: Ground Water

Date Received: 10/28/21 09:45

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.03		0.71505		1.00	0.500	pCi/L		11/11/21 16:33	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.930		0.480		1.00	0.380	pCi/L	11/02/21 14:16	11/05/21 11:46	1

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-10
Date Collected: 10/26/21 15:05
Date Received: 10/28/21 09:45

Lab Sample ID: 810-6209-12
Matrix: Ground Water

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	1.10		0.530		1.00	0.500	pCi/L	11/02/21 14:19	11/11/21 12:18	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method: SM7500 Ra B - Radium-226

Lab Sample ID: MB 810-6416/1-A
Matrix: Drinking Water
Analysis Batch: 7018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6416

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.07000	U	0.250		1.00	0.310	pCi/L	11/02/21 14:10	11/05/21 10:31	1

Lab Sample ID: LCS 810-6416/2-A
Matrix: Drinking Water
Analysis Batch: 7018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6416

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	8.73	7.940			1.00	0.370	pCi/L	91	90 - 110

Lab Sample ID: 810-6209-9 MS
Matrix: Ground Water
Analysis Batch: 7018

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 6416

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	0.790		9.11	8.750			1.00	0.360	pCi/L	96	80 - 120

Lab Sample ID: 810-6209-9 MSD
Matrix: Ground Water
Analysis Batch: 7018

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 6416

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RPD	RPD Limit
Ra-226	0.790		8.95	8.080			1.00	0.330	pCi/L	90	80 - 120	8	20

Lab Sample ID: MB 810-6420/1-A
Matrix: Drinking Water
Analysis Batch: 7017

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6420

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.5800		0.400		1.00	0.350	pCi/L	11/02/21 14:16	11/05/21 11:46	1

Lab Sample ID: LCS 810-6420/2-A
Matrix: Drinking Water
Analysis Batch: 7017

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6420

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	8.73	8.170			1.00	0.360	pCi/L	94	90 - 110

Lab Sample ID: 810-6209-11 MS
Matrix: Ground Water
Analysis Batch: 7017

Client Sample ID: MW-9
Prep Type: Total/NA
Prep Batch: 6420

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-226	0.840		9.04	8.630			1.00	0.400	pCi/L	95	80 - 120

Eurofins Eaton Analytical - South Bend

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method: SM7500 Ra B - Radium-226

Lab Sample ID: 810-6209-11 MSD
 Matrix: Ground Water
 Analysis Batch: 7017

Client Sample ID: MW-9
 Prep Type: Total/NA
 Prep Batch: 6420

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RPD	
											Min	Max	RPD	Limit
Ra-226	0.840		8.86	7.400			1.00	0.350	pCi/L	84	80 - 120	15	20	

Method: SM7500 Ra D - Radium-228

Lab Sample ID: MB 810-6417/1-A
 Matrix: Drinking Water
 Analysis Batch: 7201

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac

Lab Sample ID: LCS 810-6417/2-A
 Matrix: Drinking Water
 Analysis Batch: 7201

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									Min	Max
Ra-228	8.84	7.400			1.00	0.370	pCi/L	84	80 - 120	

Lab Sample ID: 810-6209-10 MS
 Matrix: Ground Water
 Analysis Batch: 7201

Client Sample ID: MW-8
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
											Min	Max
Ra-228	-1.22	U	8.98	8.550			1.00	0.370	pCi/L	95	70 - 130	

Lab Sample ID: 810-6209-10 MSD
 Matrix: Ground Water
 Analysis Batch: 7201

Client Sample ID: MW-8
 Prep Type: Total/NA
 Prep Batch: 6417

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RPD	
											Min	Max	RPD	Limit
Ra-228	-1.22	U	9.15	8.240			1.00	0.490	pCi/L	90	70 - 130	4	20	

Lab Sample ID: MB 810-6421/1-A
 Matrix: Drinking Water
 Analysis Batch: 7161

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 6421

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method: SM7500 Ra D - Radium-228 (Continued)

Lab Sample ID: LCS 810-6421/2-A
 Matrix: Drinking Water
 Analysis Batch: 7161

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 6421

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Ra-228	8.84	9.590			1.00	0.470	pCi/L	108	80 - 120

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QC Association Summary

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Rad

Prep Batch: 6416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-1	Unit 1/2 Near MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-2	Unit 1/2 Near SG-2	Total/NA	Ground Water	RAD Prep	
810-6209-3	MW-1R	Total/NA	Ground Water	RAD Prep	
810-6209-4	MW-2	Total/NA	Ground Water	RAD Prep	
810-6209-5	MW-3	Total/NA	Ground Water	RAD Prep	
810-6209-6	MW-4	Total/NA	Ground Water	RAD Prep	
810-6209-7	MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-8	MW-6	Total/NA	Ground Water	RAD Prep	
810-6209-9	MW-7	Total/NA	Ground Water	RAD Prep	
810-6209-10	MW-8	Total/NA	Ground Water	RAD Prep	
MB 810-6416/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6416/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	
810-6209-9 MS	MW-7	Total/NA	Ground Water	RAD Prep	
810-6209-9 MSD	MW-7	Total/NA	Ground Water	RAD Prep	

Prep Batch: 6417

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-1	Unit 1/2 Near MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-2	Unit 1/2 Near SG-2	Total/NA	Ground Water	RAD Prep	
810-6209-3	MW-1R	Total/NA	Ground Water	RAD Prep	
810-6209-4	MW-2	Total/NA	Ground Water	RAD Prep	
810-6209-5	MW-3	Total/NA	Ground Water	RAD Prep	
810-6209-6	MW-4	Total/NA	Ground Water	RAD Prep	
810-6209-7	MW-5	Total/NA	Ground Water	RAD Prep	
810-6209-8	MW-6	Total/NA	Ground Water	RAD Prep	
810-6209-9	MW-7	Total/NA	Ground Water	RAD Prep	
810-6209-10	MW-8	Total/NA	Ground Water	RAD Prep	
MB 810-6417/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6417/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	
810-6209-10 MS	MW-8	Total/NA	Ground Water	RAD Prep	
810-6209-10 MSD	MW-8	Total/NA	Ground Water	RAD Prep	

Prep Batch: 6420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-11	MW-9	Total/NA	Ground Water	RAD Prep	
810-6209-12	MW-10	Total/NA	Ground Water	RAD Prep	
MB 810-6420/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6420/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	
810-6209-11 MS	MW-9	Total/NA	Ground Water	RAD Prep	
810-6209-11 MSD	MW-9	Total/NA	Ground Water	RAD Prep	

Prep Batch: 6421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6209-11	MW-9	Total/NA	Ground Water	RAD Prep	
810-6209-12	MW-10	Total/NA	Ground Water	RAD Prep	
MB 810-6421/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6421/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	

Lab Chronicle

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: Unit 1/2 Near MW-5

Lab Sample ID: 810-6209-1

Date Collected: 10/26/21 11:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: Unit 1/2 Near SG-2

Lab Sample ID: 810-6209-2

Date Collected: 10/26/21 15:25

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-1R

Lab Sample ID: 810-6209-3

Date Collected: 10/26/21 11:45

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-2

Lab Sample ID: 810-6209-4

Date Collected: 10/26/21 13:55

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Lab Chronicle

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-3

Lab Sample ID: 810-6209-5

Date Collected: 10/26/21 12:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-4

Lab Sample ID: 810-6209-6

Date Collected: 10/26/21 12:00

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-5

Lab Sample ID: 810-6209-7

Date Collected: 10/26/21 10:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-6

Lab Sample ID: 810-6209-8

Date Collected: 10/26/21 11:00

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7223		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		

Lab Chronicle

Client: Trace Analytical Laboratories
 Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-6

Lab Sample ID: 810-6209-8

Date Collected: 10/26/21 11:00

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-7

Lab Sample ID: 810-6209-9

Date Collected: 10/26/21 10:20

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-8

Lab Sample ID: 810-6209-10

Date Collected: 10/26/21 15:35

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7233	11/12/21 13:20	JB	EA SB
Total/NA	Prep	RAD Prep			6416	11/02/21 14:10	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7018	11/05/21 10:31	JB	EA SB
Total/NA	Prep	RAD Prep			6417	11/02/21 14:13	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7201		OO	EA SB
					(Start)	11/11/21 14:44		
					(End)	11/11/21 17:44		

Client Sample ID: MW-9

Lab Sample ID: 810-6209-11

Date Collected: 10/26/21 14:30

Matrix: Ground Water

Date Received: 10/28/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7165	11/11/21 16:33	JB	EA SB
Total/NA	Prep	RAD Prep			6420	11/02/21 14:16	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7017	11/05/21 11:46	JB	EA SB
Total/NA	Prep	RAD Prep			6421	11/02/21 14:19	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7161	11/11/21 12:18	OO	EA SB

Lab Chronicle

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Client Sample ID: MW-10

Lab Sample ID: 810-6209-12

Date Collected: 10/26/21 15:05

Matrix: Ground Water

Date Received: 10/28/21 09:45

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Analysis	7500 Ra D		1	7165	11/11/21 16:33	JB	EA SB
Total/NA	Prep	RAD Prep			6420	11/02/21 14:16	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7017	11/05/21 11:46	JB	EA SB
Total/NA	Prep	RAD Prep			6421	11/02/21 14:19	ML	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7161	11/11/21 12:18	OO	EA SB

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Laboratory: Eurofins Eaton Analytical - South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	03-22-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7500 Ra D		Ground Water	Combined Radium 226 + 228
SM7500 Ra B	RAD Prep	Ground Water	Ra-226
SM7500 Ra D	RAD Prep	Ground Water	Ra-228



Method Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

Job ID: 810-6209-1

Method	Method Description	Protocol	Laboratory
7500 Ra D	Radium 226 Radium 228 Combined	SM	EA SB
SM7500 Ra B	Radium-226	SM	EA SB
SM7500 Ra D	Radium-228	SM	EA SB
RAD Prep	Preparation, Radiologicals	None	EA SB

Protocol References:

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

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Sample Summary

Client: Trace Analytical Laboratories
Project/Site: Trace-21J1034 & 21J1032

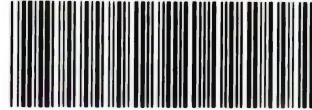
Job ID: 810-6209-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-6209-1	Unit 1/2 Near MW-5	Ground Water	10/26/21 11:25	10/28/21 09:45
810-6209-2	Unit 1/2 Near SG-2	Ground Water	10/26/21 15:25	10/28/21 09:45
810-6209-3	MW-1R	Ground Water	10/26/21 11:45	10/28/21 09:45
810-6209-4	MW-2	Ground Water	10/26/21 13:55	10/28/21 09:45
810-6209-5	MW-3	Ground Water	10/26/21 12:35	10/28/21 09:45
810-6209-6	MW-4	Ground Water	10/26/21 12:00	10/28/21 09:45
810-6209-7	MW-5	Ground Water	10/26/21 10:35	10/28/21 09:45
810-6209-8	MW-6	Ground Water	10/26/21 11:00	10/28/21 09:45
810-6209-9	MW-7	Ground Water	10/26/21 10:20	10/28/21 09:45
810-6209-10	MW-8	Ground Water	10/26/21 15:35	10/28/21 09:45
810-6209-11	MW-9	Ground Water	10/26/21 14:30	10/28/21 09:45
810-6209-12	MW-10	Ground Water	10/26/21 15:05	10/28/21 09:45

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Eaton Analytical



810-6209 Chain of Custody

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order #
Batch #

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CHAIN OF CUSTODY RECORD

Page of

Shaded area for EEA use only

Table with columns: REPORT TO, SAMPLER (Signature), PWS ID #, STATE (sample origin), PROJECT NAME, PO#, BILL TO, COMPLIANCE MONITORING, POPULATION SERVED, SOURCE WATER, LAB Number, COLLECTION (DATE, TIME, AM, PM), SAMPLING SITE, TEST NAME, SAMPLE REMARKS, CHLORINATED (YES, NO), # OF CONTAINERS, MATRIX CODE, TURNAROUND TIME. Includes handwritten 'pH Acceptable' and checkmarks.

RELINQUISHED BY: (Signature), DATE, TIME, RECEIVED BY: (Signature), DATE, TIME. Includes handwritten signatures, dates, and times. LAB COMMENTS: Liters Received = 4L jug each site. CONDITIONS UPON RECEIPT (check one): Iced/Wet/Blue X, Ambient 14.0, °C Upon Receipt X. MATRIX CODES, TURN-AROUND TIME (TAT) - SURCHARGES, and * Please call, expedited service not available for all testing.

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.



Eaton Analytical

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # _____

Batch # _____

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CHAIN OF CUSTODY RECORD

Page _____ of _____

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REPORT TO:				SAMPLER (Signature)				PWS ID #	STATE (sample origin)	PROJECT NAME	PO#	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
Jon Mink, Tim Brewer (jmink@trace-labs.com, tbrewer@trace-labs.com) Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444 231-773-5998									MI		21J1034 & 21J1032			
BILL TO:				COMPLIANCE MONITORING		Yes	No	POPULATION SERVED	SOURCE WATER			# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
Accounts Payable, Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444														
LAB Number	COLLECTION				SAMPLING SITE			TEST NAME	SAMPLE REMARKS	CHLORINATED		# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
	DATE	TIME	AM	PM						YES	NO			
1	10/28/21	11:25	x		Unit 1/2 Near MW-5			Radium 226/228			x	1	GW	SW
2	10/28/21	15:25		x	Unit 1/2 Near SG-2			Radium 226/228			x	1	GW	SW
3	10/28/21	11:45	x		MW-1R			Radium 226/228			x	1	GW	SW
4	10/28/21	13:55		x	MW-2			Radium 226/228			x	1	GW	SW
5	10/28/21	12:35		x	MW-3			Radium 226/228			x	1	GW	SW
6	10/28/21	12:00		x	MW-4			Radium 226/228			x	1	GW	SW
7	10/28/21	10:35	x		MW-5			Radium 226/228			x	1	GW	SW
8	10/28/21	11:00	x		MW-6			Radium 226/228			x	1	GW	SW
9	10/28/21	10:20	x		MW-7			Radium 226/228			x	1	GW	SW
10	10/28/21	15:35		x	MW-8			Radium 226/228			x	1	GW	SW
11	10/28/21	14:30		x	MW-9			Radium 226/228			x	1	GW	SW
12	10/28/21	15:05		x	MW-10			Radium 226/228			x	1	GW	SW
13														
14														

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT LAB COMMENTS
		AM PM			AM PM	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	CONDITIONS UPON RECEIPT (check one): ____ Iced: Wet/Blue ____ Ambient ____ °C Upon Receipt ____ N/A
		AM PM			AM PM	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME	
		AM PM			AM PM	
MATRIX CODES: DW-DRINKING WATER RW-REAGENT WATER GW-GROUND WATER EW-EXPOSURE WATER SW-SURFACE WATER PW-POOL WATER WW-WASTE WATER	TURN-AROUND TIME (TAT) - SURCHARGES SW = Standard Written: (15 working days) 0% RV = Rush Verbal: (5 working days) 50% RW = Rush Written: (5 working days) 75% IV = Immediate Verbal: (3 working days) 100% IW = Immediate Written: (3 working days) 125% SP = Weekend, Holiday CALL STAT = Less than 48 hours CALL					Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.

06-LO-F0435 Issue 6.0 Effective Date: 2016-09-20

Spurgeon, Sheri

From: Fullmer, Karen
Sent: Monday, November 01, 2021 1:37 PM
To: Spurgeon, Sheri
Subject: FW: Revised chain of custody for J6209
Attachments: Eurofins COC-Revised for Trace Labs 21J1034 and 21J1032.pdf

Sheri,

Here is a revised COC for Job 6209.

Best regards,

Karen Fullmer
Analytical Service Manager



Eurofins Eaton Analytical, LLC
110 South Hill Street
South Bend, IN 46617

Office: +1 574-472-5513
Mobile: +1 574-309-8853

E-Mail: karen.fullmer@eurofinset.com
Website: www.EurofinsUS.com/Env

From: Britani Wright <bwright@trace-labs.com>
Sent: Thursday, October 28, 2021 5:27 PM
To: Fullmer, Karen <Karen.Fullmer@eurofinset.com>; Jon Mink <jmink@trace-labs.com>
Subject: Revised chain of custody

EXTERNAL EMAIL*

Hi Karen,
I've attached a revised Chain of Custody for the radium samples that we sent in yesterday afternoon-for Trace Labs ID#'s 21J1034 & 21J1032. The only thing that needs to be changed is that the (FF) after each sampling site ID needs to be removed. Sorry for the inconvenience.

Thank you,

Britani Wright

Sample Receiving Supervisor/
Purchasing Coordinator
O: 231-773-5998 ext. 259
C: 616-916-4328
bwright@trace-labs.com



Trace Analytical Laboratories, Inc.
2241 Black Creek Rd.
Muskegon, MI 49444
231.773.5998 ext. 243

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Login Sample Receipt Checklist

Client: Trace Analytical Laboratories

Job Number: 810-6209-1

Login Number: 6209

List Source: Eurofins Eaton Analytical - South Bend

List Number: 1

Creator: Spurgeon, Sheri

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

21J1032
 Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6					
Representative Sample Temp °C	1.8	1.9	✓	✓			✓

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present

Trace Courier Client Drop-off

Yes No Custody seals intact (if applicable)

UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10.26.21
 Field Personnel: EB
 Impoundment ID: Unit 12 by MW5
~~Depth to Point:~~
 Sample Tubing Depth: 28 Ft
 Purge Start Time: 10:55
 Purge Rate: 300 W/L

Reading Time	11:17	11:20	11:22						
Depth to Water	-	-	-						
Temperature (Celsius)	9.57	9.57	9.57						
Specific Conductivity	2.05	2.05	2.05						
Dissolved Oxygen	11.00	11.00	11.00						
ORP (mV)	-11	-11	-11						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.11	7.11	7.11						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10.26.21
 Field Personnel: ER
 Impoundment ID: Unit 1a by S&S
 Depth to Point: _____
 Sample Tubing Depth: 20 FT
 Purge Start Time: 14:55
 Purge Rate: 300 mL/min

Reading Time	15:15	15:18	15:21						
Depth to Water	—	—	—						
Temperature (Celsius)	12.13	12.13	12.13						
Specific Conductivity	1.63	1.63	1.63						
Dissolved Oxygen	9.87	9.87	9.87						
ORP (mV)	100	100	100						
Turbidity(NTU)	3.7	3.8	3.7						
pH	8.39	8.39	8.39						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic



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 2241 Black Creek Road
 Muskegon, MI 49444-2673

Phone 231.773.5998
 Fax 888.979.4469
 www.trace-labs.com

CHAIN-OF-CUSTODY RECORD

Report Results To:

Company Name: Grand Haven Board of Light & Power
 Report To: Paul Cederquist
 Mailing Address:
 City, State, Zip Code:
 Office Phone: Cell Phone:
 Email Address:

Bill To:

PO #:
 Contact Name:
 Billing Address (if different):
 City, State, Zip Code:
 Phone Number:
 Billing Email Address:

Trace Use:

Logged By: BW
 Checked By: DH
 Soil Volatiles Preserved (circle if applicable):
 MeOH Low Level Lab
 Sampling Time:

Trace ID No.
2101034

Turnaround Requirements:

- Standard, 5-10 Days
 3 Day*
 1 Day*

*Results provided end of business day, requires prior approval.

Matrix Key:

- S = Soil / Solid
 W = Water
 SL = Sludge
 OI = Oil
 WI = Wipes
 LW = Liquid Waste
 A = Air
 D = Drinking Water

Trace No.	Date Collected	Time Collected	Client Sample ID	Sampled By: <u>EB/TB</u>	Metals Field Filtered (Y/N)		Matrix	Number of Containers	Preservation						Analysis Requested	Remarks
					Y	N			Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other		
	10/26/21	11:45	MMW-1R		Y	W	5	X						X	T-B, Ca, Fe, Sb, As, Ba, Be, Cd, Cr	
		13:55	MMW-2											X	T- Co, Cu, Pb, Li, Mo, Ni Se, Ag	
		12:35	MMW-3											X	T- Ti, V, Zn, Mn, Mg, K, Na	
		12:00	MMW-4											X	Diss. Metals (Same as Totals)	
		16:35	MMW-5											X	Fluoride, Sulfate, TDS, Chlorides	
		11:00	MMW-6											X	pH	
		10:20	MMW-7											X	LLHg	
		15:35	MMW-8											X	Radiums 226/228	
		14:30	MMW-9											X	Bicarb-Alk, Carbonate-Alk	
		15:05	MMW-10													

Please Sign

Released By: [Signature]

Received By: [Signature]

Date: 10/27/21 Time: 8:26

Released By: [Signature]

Received By: [Signature]

Date: 10/27/21 Time: 7:42

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

21J1034
Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10-27-21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:20							
Logged by: DH							
Package Description: Cooler							
Package Temp °C	-1.7	-1.6					
Representative Sample Temp °C	1.8	1.9					

Sample Receipt

Yes No

Received on ice or other coolant

Ice still present upon receipt

Custody seals present

Trace Courier Client Drop-off

Yes No Custody seals intact (if applicable)

UPS Fed Ex US Mail Other

Sample Condition

Yes No N/A

All sample containers arrived unbroken and labeled

Sufficient sample to run requested analyses

Correct chemical preservative added to samples

Samples preserved at Trace See below

Chemical preservation verified, check EMD pH test strip used (if applicable)

pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other

Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

All bottle labels agree with COC

COC filled out properly

COC signed by client

Notes:

HNO₃ added to 02-E, 03-E, 04-E, 05-E, 06-E, 10-E
 at 10:00 on 10/27/21

~~NaOH added to DH 10/27/21~~

HNO₃ Preserved radiums 10/27/21 @ 13:11

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: EB

Well No.: MW-1R

Depth to Point: 18.2ft

Depth to Water: 6.23

Purge Start Time: 11:25

Purge Rate: 300ml/min

Reading Time	11:38	11:41	11:44						
Depth to Water	7.51	7.51	7.51						
Temperature (Celsius)	17.07	17.07	17.07						
Specific Conductivity	3.44	3.44	3.44						
Dissolved Oxygen	1.01	1.01	1.01						
ORP (mV)	-23	-23	-23						
Turbidity(NTU)	22.6	22.6	22.6						
pH	7.80	7.80	7.80						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP Date: 10-26-21 Field Personnel: EB
 Well No.: MW 2 Depth to Point: 23.51' Purge Start Time: 13.35
 Depth to Water: 14.71 Purge Rate: 30w/min

Reading Time	13:47	13:50	13:52					
Depth to Water	15.21	15.23	15.23					
Temperature (Celsius)	14.17	14.17	14.17					
Specific Conductivity	4.12	4.12	4.12					
Dissolved Oxygen	0.0	0.0	0.0					
ORP (mV)	-129	-129	-129					
Turbidity(NTU)	0.0	0.0	0.0					
pH	6.48	6.48	6.48					

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 3

Depth to Point: 20.5'

Depth to Water: 11.90

Purge Start Time: 12:10

Purge Rate: 300ml/min

Reading Time	12:27	12:30	12:38						
Depth to Water	12.72	12.72	12.72						
Temperature (Celsius)	15.86	15.86	15.86						
Specific Conductivity	3.96	3.96	3.96						
Dissolved Oxygen	2.14	2.14	2.14						
ORP (mV)	-19	-19	-19						
Turbidity(NTU)	1.5	1.6	1.6						
pH	6.91	6.91	6.91						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 4

Depth to Point: 18.01'

Depth to Water: 10.22

Purge Start Time: 11:40

Purge Rate: 300ml/min

Reading Time	11:54	11:57	12:00					
Depth to Water	6.74 11.03	11.03	11.03					
Temperature (Celsius)	16.68	16.88	16.68					
Specific Conductivity	2.56	2.56	2.56					
Dissolved Oxygen	.47	.47	.48					
ORP (mV)	-116	-116	-116					
Turbidity(NTU)	0.0	0.0	0.0					
pH	6.74	6.74	6.74					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 5

Depth to Point: 11.5'

Depth to Water: 5.90

Purge Start Time: 10:15

Purge Rate: 300 mL/min

Reading Time	10:25	10:27	10:30						
Depth to Water	6.73	6.73	6.73						
Temperature (Celsius)	16.02	16.02	16.02						
Specific Conductivity	1.76	1.76	1.76						
Dissolved Oxygen	.56	.56	.56						
ORP (mV)	-148	-148	-148						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.41	7.43	7.43						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: ER

Well No.: MW 6

Depth to Point: 16.55'

Depth to Water: 8.50

Purge Start Time: 10:40

Purge Rate: 3000 L/min

Reading Time	10:50	10:53	10:56					
Depth to Water	9.31	9.31	9.31					
Temperature (Celsius)	17.59	17.59	17.59					
Specific Conductivity	2.06	2.06	2.06					
Dissolved Oxygen	.57	.57	.57					
ORP (mV)	-18	-18	-18					
Turbidity(NTU)	.3	.4	.3					
pH	7.60	7.60	7.60					

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 7

Depth to Point: 18.81'

Depth to Water: 5.25

Purge Start Time: 10:00

Purge Rate: 3000 L/min

Reading Time	10:15	10:17	10:20						
Depth to Water	6.21	6.21	6.21						
Temperature (Celsius)	15.24	15.24	15.24						
Specific Conductivity	1.15	1.15	1.15						
Dissolved Oxygen	.73	.73	.73						
ORP (mV)	-27	-27	-27						
Turbidity(NTU)	4	4	3						
pH	7.01	7.01	7.01						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: ER

Well No.: MW 8

Depth to Point: 11.85

Depth to Water: 4.04

Purge Start Time: 15:10

Purge Rate: 300mL/min

Reading Time	15:25	15:28	15:31						
Depth to Water	4.86	4.86	4.86						
Temperature (Celsius)	15.72	15.72	15.72						
Specific Conductivity	.804	.805	.805						
Dissolved Oxygen	0.0	0.0	0.0						
ORP (mV)	-137	-137	-137						
Turbidity(NTU)	0.0	0.0	0.0						
pH	6.74	6.74	6.74						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.26.21

Field Personnel: EB

Well No.: MW 9

Depth to Point: 14.9

Depth to Water: 8.49

Purge Start Time: 14:10

Purge Rate: 3000 L/min

Reading Time	14:20	14:24	14:27						
Depth to Water	9.31	9.31	9.31						
Temperature (Celsius)	16.12	16.12	16.13						
Specific Conductivity	1.25	1.25	1.25						
Dissolved Oxygen	.56	.56	.56						
ORP (mV)	-9	-9	-9						
Turbidity(NTU)	5.4	5.4	5.4						
pH	7.31	7.31	7.31						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-26-21

Field Personnel: EB

Well No.: MW 10

Depth to Point: 13.00

Depth to Water: 5.32

Purge Start Time: 14:45

Purge Rate: 300ml/min

Reading Time	14:55	14:58	15:01						
Depth to Water	6.07	6.07	6.07						
Temperature (Celsius)	16.66	16.66	16.66						
Specific Conductivity	3.65	3.65	3.65						
Dissolved Oxygen	0.28	0.28	0.28						
ORP (mV)	-198	-198	-198						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.42	7.42	7.42						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Muskegon, MI 49444-2673



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November 09, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1157
Client Project Surface Water Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 21J1157
Client Project ID: Surface Water Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1157-01	SW-SG-1	Surface Water	TRACE-EB/TB	10/28/21 10:15	10/28/21 15:58
21J1157-02	SW-N-SG-2	Surface Water	TRACE-EB/TB	10/28/21 09:10	10/28/21 15:58
21J1157-03	SW-SE-MW-7	Surface Water	TRACE-EB/TB	10/28/21 12:05	10/28/21 15:58
21J1157-04	SW-NE-MW-10	Surface Water	TRACE-EB/TB	10/28/21 10:30	10/28/21 15:58

CERTIFICATE OF ANALYSIS

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: T116265-DUP1

Analysis: SM 2540 C-11

Total Dissolved Solids

Note 623 : The relative percent difference between the sample and sample duplicate is out of control. The sample result should be considered estimated.

Trace ID: T116384-MSD1

Analysis: EPA 6010D

Calcium

Note 207 : The RPD between the MS and the MSD was out of control. Because both spike recoveries were in control, no data require qualification.

CERTIFICATE OF ANALYSIS

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-01 Matrix: Surface Water Date Collected: 10/28/21 10:15
 Sample ID: SW-SG-1 Date Received: 10/28/21 15:58 Field pH: 8.46

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116283</i>									
Mercury	2.2 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116267</i>									
Beryllium	<0.0018 mg/L	0.0018	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.053 mg/L	0.045	1	11/01/21	mrh	11/02/21	ckd		
Calcium	72 mg/L	0.45	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.61 mg/L	0.18	1	11/01/21	mrh	11/02/21	ckd		
Lithium	0.0070 mg/L	0.0090	1	11/01/21	mrh	11/02/21	ckd	J, N	
Magnesium	22 mg/L	0.18	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.6 mg/L	0.90	1	11/01/21	mrh	11/02/21	ckd		
Sodium	24 mg/L	0.45	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.018 mg/L	0.018	1	11/01/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116267</i>									
Antimony	<0.00027 mg/L	0.00027	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.0014 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Barium	0.057 mg/L	0.0090	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.00090 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0016 mg/L	0.00081	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0014 mg/L	0.0014	1	11/01/21	mrh	11/04/21	acs		
Copper	0.0022 mg/L	0.0036	1	11/01/21	mrh	11/04/21	acs	J	
Lead	0.00086 mg/L	0.0018	1	11/01/21	mrh	11/04/21	acs	J	
Manganese	0.046 mg/L	0.022	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0013 mg/L	0.00036	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	0.0020 mg/L	0.0045	1	11/01/21	mrh	11/04/21	acs	J	
Selenium	<0.0018 mg/L	0.0018	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.00090 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.00090 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.0017 mg/L	0.00072	1	11/01/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-01 Matrix: Surface Water Date Collected: 10/28/21 10:15
 Sample ID: SW-SG-1 Date Received: 10/28/21 15:58 Field pH: 8.46

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
Batch: [CALC]									
Hardness as CaCO3	270 mg/L	0.74	1	11/01/21		11/02/21	ckd	N	
METALS, DISSOLVED									
Analysis Method: EPA 6010D									
Batch: T116384									
Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.047 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd	J	
Calcium	69 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.058 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd	J	
Lithium	0.0033 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	J, N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.0 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	22 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	0.0018 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd	J	
Analysis Method: EPA 6020B									
Batch: T116167									
Antimony	0.00035 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0013 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.051 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00017 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.0011 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	0.00011 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00053 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-01 Matrix: Surface Water Date Collected: 10/28/21 10:15
 Sample ID: SW-SG-1 Date Received: 10/28/21 15:58 Field pH: 8.46

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.094 mg/L	0.10	5	10/29/21	ans	10/29/21	ans	J	
Chloride	43 mg/L	0.75	5	10/29/21	ans	10/29/21	ans		
Sulfate as SO4	34 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	220 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	320 mg/L	40	4	11/01/21	mr	11/02/21	mr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-02 Matrix: Surface Water Date Collected: 10/28/21 09:10
 Sample ID: SW-N-SG-2 Date Received: 10/28/21 15:58 Field pH: 7.57

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116283</i>									
Mercury	7.5 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116267</i>									
Beryllium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.13 mg/L	0.050	1	11/01/21	mrh	11/02/21	ckd		
Calcium	59 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.41 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Lithium	0.011 mg/L	0.010	1	11/01/21	mrh	11/02/21	ckd	N	
Magnesium	22 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.6 mg/L	1.0	1	11/01/21	mrh	11/02/21	ckd		
Sodium	28 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/01/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116267</i>									
Antimony	<0.00030 mg/L	0.00030	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Barium	0.068 mg/L	0.010	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0021 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	11/01/21	mrh	11/04/21	acs		
Copper	0.0031 mg/L	0.0040	1	11/01/21	mrh	11/04/21	acs	J	
Lead	0.00086 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs	J	
Manganese	0.055 mg/L	0.025	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0010 mg/L	0.00040	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	11/01/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.00061 mg/L	0.00080	1	11/01/21	mrh	11/04/21	acs	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-02 Matrix: Surface Water Date Collected: 10/28/21 09:10
 Sample ID: SW-N-SG-2 Date Received: 10/28/21 15:58 Field pH: 7.57

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	240 mg/L	0.82	1	11/01/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116384

Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.12 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd		
Calcium	59 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.14 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd		
Lithium	0.0073 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	J, N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.3 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	26 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	0.00092 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00029 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.00091 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Barium	0.066 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00015 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00034 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.000098 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.048 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0011 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0014 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00038 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-02 Matrix: Surface Water Date Collected: 10/28/21 09:10
 Sample ID: SW-N-SG-2 Date Received: 10/28/21 15:58 Field pH: 7.57

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.14 mg/L	0.10	5	10/29/21	ans	10/29/21	ans		
Chloride	52 mg/L	1.5	10	11/02/21	jma	11/02/21	jma		
Sulfate as SO4	<3.0 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	210 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	340 mg/L	40	4	11/01/21	mr	11/02/21	mr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-03 Matrix: Surface Water Date Collected: 10/28/21 12:05
 Sample ID: SW-SE-MW-7 Date Received: 10/28/21 15:58 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 1631E									
<i>Batch: T116283</i>									
Mercury	3.0 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
Analysis Method: EPA 6010D									
<i>Batch: T116267</i>									
Beryllium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.049 mg/L	0.050	1	11/01/21	mrh	11/02/21	ckd	J	
Calcium	71 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.99 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Lithium	<0.010 mg/L	0.010	1	11/01/21	mrh	11/02/21	ckd	N	
Magnesium	21 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.7 mg/L	1.0	1	11/01/21	mrh	11/02/21	ckd		
Sodium	23 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/01/21	mrh	11/02/21	ckd		
Analysis Method: EPA 6020B									
<i>Batch: T116267</i>									
Antimony	<0.00030 mg/L	0.00030	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.0017 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Barium	0.058 mg/L	0.010	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0026 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	11/01/21	mrh	11/04/21	acs		
Copper	0.0033 mg/L	0.0040	1	11/01/21	mrh	11/04/21	acs	J	
Lead	0.0021 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Manganese	0.071 mg/L	0.025	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0013 mg/L	0.00040	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	0.0025 mg/L	0.0050	1	11/01/21	mrh	11/04/21	acs	J	
Selenium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.0023 mg/L	0.00080	1	11/01/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-03 Matrix: Surface Water Date Collected: 10/28/21 12:05
 Sample ID: SW-SE-MW-7 Date Received: 10/28/21 15:58 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	270 mg/L	0.82	1	11/01/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116384

Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.045 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd	J	
Calcium	70 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.067 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd	J	
Lithium	0.0034 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	J, N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.1 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	21 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	0.0016 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd	J	

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00023 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.0013 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Barium	0.051 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	<0.00080 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Cobalt	0.00018 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.0013 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd		
Lead	0.000089 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.022 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.0012 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00054 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-03 Matrix: Surface Water Date Collected: 10/28/21 12:05
 Sample ID: SW-SE-MW-7 Date Received: 10/28/21 15:58 Field pH: 7.80

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.093 mg/L	0.10	5	10/29/21	ans	10/29/21	ans	J	
Chloride	41 mg/L	0.75	5	10/29/21	ans	10/29/21	ans		
Sulfate as SO4	32 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	220 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	330 mg/L	38	3.846154	11/01/21	mr	11/02/21	mr		
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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-04 Matrix: Surface Water Date Collected: 10/28/21 10:30
 Sample ID: SW-NE-MW-10 Date Received: 10/28/21 15:58 Field pH: 7.89

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T116283

Mercury	8.8 ng/L	0.50	1	11/01/21	ckd	11/02/21	ckd	N	
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Analysis Method: EPA 6010D

Batch: T116267

Beryllium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/02/21	ckd		
Boron	0.20 mg/L	0.050	1	11/01/21	mrh	11/02/21	ckd		
Calcium	62 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd		
Iron	0.25 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Lithium	0.015 mg/L	0.010	1	11/01/21	mrh	11/02/21	ckd	N	
Magnesium	24 mg/L	0.20	1	11/01/21	mrh	11/02/21	ckd		
Potassium	4.7 mg/L	1.0	1	11/01/21	mrh	11/02/21	ckd		
Sodium	29 mg/L	0.50	1	11/01/21	mrh	11/02/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/01/21	mrh	11/02/21	ckd		

Analysis Method: EPA 6020B

Batch: T116267

Antimony	<0.00030 mg/L	0.00030	1	11/01/21	mrh	11/04/21	acs		
Arsenic	0.00091 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs	J	
Barium	0.067 mg/L	0.010	1	11/01/21	mrh	11/04/21	acs		
Cadmium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Chromium	0.0017 mg/L	0.00090	1	11/01/21	mrh	11/04/21	acs		
Cobalt	<0.0016 mg/L	0.0016	1	11/01/21	mrh	11/04/21	acs		
Copper	<0.0040 mg/L	0.0040	1	11/01/21	mrh	11/04/21	acs		
Lead	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Manganese	0.10 mg/L	0.025	1	11/01/21	mrh	11/04/21	acs		
Molybdenum	0.0010 mg/L	0.00040	1	11/01/21	mrh	11/04/21	acs	N	
Nickel	<0.0050 mg/L	0.0050	1	11/01/21	mrh	11/04/21	acs		
Selenium	<0.0020 mg/L	0.0020	1	11/01/21	mrh	11/04/21	acs		
Silver	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Thallium	<0.0010 mg/L	0.0010	1	11/01/21	mrh	11/04/21	acs		
Vanadium	0.00086 mg/L	0.00080	1	11/01/21	mrh	11/04/21	acs		

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-04 Matrix: Surface Water Date Collected: 10/28/21 10:30
 Sample ID: SW-NE-MW-10 Date Received: 10/28/21 15:58 Field pH: 7.89

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340 B-11

Batch: [CALC]

Hardness as CaCO3	250 mg/L	0.82	1	11/01/21		11/02/21	ckd	N	
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METALS, DISSOLVED

Analysis Method: EPA 6010D

Batch: T116384

Beryllium	<0.0010 mg/L	0.0010	1	11/03/21	ckd	11/04/21	ckd		
Boron	0.18 mg/L	0.050	1	11/03/21	ckd	11/04/21	ckd		
Calcium	56 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd		
Iron	0.077 mg/L	0.10	1	11/03/21	ckd	11/04/21	ckd	J	
Lithium	0.010 mg/L	0.010	1	11/03/21	ckd	11/04/21	ckd	N	
Magnesium	21 mg/L	0.20	1	11/03/21	ckd	11/04/21	ckd		
Potassium	4.4 mg/L	1.0	1	11/03/21	ckd	11/04/21	ckd		
Sodium	27 mg/L	0.50	1	11/03/21	ckd	11/04/21	ckd	N	
Zinc	<0.020 mg/L	0.020	1	11/03/21	ckd	11/04/21	ckd		

Analysis Method: EPA 6020B

Batch: T116167

Antimony	0.00032 mg/L	0.00020	1	11/08/21	ckd	11/08/21	ckd		
Arsenic	0.00097 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd	J	
Barium	0.059 mg/L	0.00060	1	11/08/21	ckd	11/08/21	ckd		
Cadmium	<0.0010 mg/L	0.0010	1	11/08/21	ckd	11/08/21	ckd		
Chromium	0.00043 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Cobalt	0.00013 mg/L	0.0016	1	11/08/21	ckd	11/08/21	ckd	J	
Copper	0.00056 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	
Lead	0.00013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	J	
Manganese	0.024 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Molybdenum	0.00094 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd	N	
Nickel	0.0013 mg/L	0.00040	1	11/08/21	ckd	11/08/21	ckd		
Selenium	<0.00087 mg/L	0.00087	1	11/08/21	ckd	11/08/21	ckd		
Silver	<0.000040 mg/L	0.000040	1	11/08/21	ckd	11/08/21	ckd		
Thallium	<0.00017 mg/L	0.00017	1	11/08/21	ckd	11/08/21	ckd		
Vanadium	0.00031 mg/L	0.00080	1	11/08/21	ckd	11/08/21	ckd	J	

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ANALYTICAL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

Trace ID: 21J1157-04 Matrix: Surface Water Date Collected: 10/28/21 10:30
 Sample ID: SW-NE-MW-10 Date Received: 10/28/21 15:58 Field pH: 7.89

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, DISSOLVED

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T116228

Fluoride	0.12 mg/L	0.10	5	10/29/21	ans	10/29/21	ans		
Chloride	52 mg/L	1.5	10	11/02/21	jma	11/02/21	jma		
Sulfate as SO4	31 mg/L	3.0	5	10/29/21	ans	10/29/21	ans		

Analysis Method: SM 2320 B-11

Batch: T116366

Bicarbonate Alkalinity as CaCO3 at pH 4.5	190 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	
Carbonate Alkalinity as CaCO3 at pH 8.2	<10 mg/L	10	1	11/03/21	ans	11/04/21	ans	N	

Analysis Method: SM 2540 C-11

Batch: T116265

Total Dissolved Solids	300 mg/L	40	4	11/01/21	mr	11/02/21	mr		
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QUALITY CONTROL RESULTS

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116283	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T116283-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116283-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

METHOD BLANK: T116283-BLK3

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.20	0.20	

LABORATORY CONTROL SAMPLE: T116283-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	23.4	94	77-123	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116267	Analysis Description: Beryllium, Total
QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids	Analysis Method: EPA 6010D

METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0020	0.0020	
Calcium	mg/L	0.17	0.50	J
Iron	mg/L	<0.20	0.20	
Potassium	mg/L	0.18	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	0.057	0.20	J
Sodium	mg/L	0.39	0.50	J

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METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116267-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	0.889	0.857	96	80-120	
Beryllium	mg/L	0.111	0.110	99	80-120	
Calcium	mg/L	8.89	8.88	100	80-120	
Iron	mg/L	8.89	9.16	103	80-120	
Potassium	mg/L	8.89	9.15	103	80-120	
Lithium	mg/L	0.889	0.887	100	80-120	
Magnesium	mg/L	8.89	9.28	104	80-120	
Sodium	mg/L	8.89	9.42	106	80-120	
Zinc	mg/L	0.889	0.921	104	80-120	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116384
 QC Batch Method:

Analysis Description: Zinc, Dissolved
 Analysis Method: EPA 6010D

METHOD BLANK: T116384-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	mg/L	<0.050	0.050	
Beryllium	mg/L	<0.0010	0.0010	
Calcium	mg/L	<0.50	0.50	
Iron	mg/L	<0.10	0.10	
Potassium	mg/L	0.029	1.0	J
Lithium	mg/L	<0.010	0.010	
Magnesium	mg/L	<0.20	0.20	
Sodium	mg/L	<0.50	0.50	
Zinc	mg/L	<0.020	0.020	

LABORATORY CONTROL SAMPLE: T116384-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	mg/L	1.00	0.932	93	80-120	
Beryllium	mg/L	0.0500	0.0519	104	80-120	
Calcium	mg/L	10.0	10.0	100	80-120	

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LABORATORY CONTROL SAMPLE: T116384-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Iron	mg/L	10.0	10.1	101	80-120	
Potassium	mg/L	10.0	9.86	99	80-120	
Lithium	mg/L	0.500	0.493	99	80-120	
Magnesium	mg/L	10.0	10.0	100	80-120	
Sodium	mg/L	10.0	9.67	97	80-120	
Zinc	mg/L	1.00	1.01	101	80-120	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T116384-MSD1

Original: 21J1157-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	mg/L	0.0467	1.00	0.978	0.972	93	93	75-125	0.7	20	
Beryllium	mg/L	0	0.0500	0.0533	0.0522	107	104	75-125	2	20	
Calcium	mg/L	69.2	10.0	80.6	77.8	114	86	75-125	28	20	207
Iron	mg/L	0.0584	10.0	10.2	10.0	101	100	75-125	1	20	
Potassium	mg/L	4.00	10.0	14.1	14.0	101	100	75-125	1	20	
Lithium	mg/L	0.00333	0.500	0.499	0.493	99	98	75-125	1	20	
Magnesium	mg/L	20.8	10.0	31.2	30.2	104	94	75-125	10	20	
Sodium	mg/L	21.5	10.0	31.3	31.1	98	96	75-125	2	20	
Zinc	mg/L	0.00178	1.00	0.985	0.980	98	98	75-125	0.5	20	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: T116167

Analysis Description: Chromium, Dissolved

QC Batch Method:

Analysis Method: EPA 6020B

METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	0.000026	0.000040	J
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.00060	0.00060	
Cadmium	mg/L	<0.00020	0.00020	
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00080	0.00080	
Copper	mg/L	<0.00080	0.00080	
Manganese	mg/L	<0.00040	0.00040	
Molybdenum	mg/L	<0.00040	0.00040	

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METHOD BLANK: T116167-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Nickel	mg/L	<0.00040	0.00040	
Lead	mg/L	<0.00040	0.00040	
Antimony	mg/L	0.00017	0.00020	J
Selenium	mg/L	<0.00087	0.00087	
Thallium	mg/L	<0.00017	0.00017	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116167-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0600	0.0612	102	80-120	
Arsenic	mg/L	0.0600	0.0630	105	80-120	
Barium	mg/L	0.0600	0.0588	98	80-120	
Cadmium	mg/L	0.0600	0.0613	102	80-120	
Cobalt	mg/L	0.0600	0.0604	101	80-120	
Chromium	mg/L	0.0600	0.0629	105	80-120	
Copper	mg/L	0.0600	0.0610	102	80-120	
Manganese	mg/L	0.0600	0.0615	102	80-120	
Molybdenum	mg/L	0.0600	0.0588	98	80-120	
Nickel	mg/L	0.0600	0.0602	100	80-120	
Lead	mg/L	0.0600	0.0616	103	80-120	
Antimony	mg/L	0.0600	0.0577	96	80-120	
Selenium	mg/L	0.0600	0.0630	105	80-120	
Thallium	mg/L	0.0600	0.0617	103	80-120	
Vanadium	mg/L	0.0600	0.0581	97	80-120	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116267
 QC Batch Method: EPA 3015 Microwave Assisted Digestions for Liquids

Analysis Description: Nickel, Total
 Analysis Method: EPA 6020B

METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.0010	0.0010	
Arsenic	mg/L	<0.0010	0.0010	
Barium	mg/L	<0.010	0.010	
Cadmium	mg/L	<0.0010	0.0010	

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METHOD BLANK: T116267-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cobalt	mg/L	<0.0016	0.0016	
Chromium	mg/L	<0.00090	0.00090	
Copper	mg/L	<0.0040	0.0040	
Manganese	mg/L	<0.025	0.025	
Molybdenum	mg/L	<0.00040	0.00040	
Nickel	mg/L	<0.0050	0.0050	
Lead	mg/L	<0.0020	0.0020	
Antimony	mg/L	<0.00030	0.00030	
Selenium	mg/L	<0.0020	0.0020	
Thallium	mg/L	<0.0010	0.0010	
Vanadium	mg/L	<0.00080	0.00080	

LABORATORY CONTROL SAMPLE: T116267-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	0.0329	118	80-120	
Arsenic	mg/L	0.0556	0.0602	108	80-120	
Barium	mg/L	0.889	0.994	112	80-120	
Cadmium	mg/L	0.0278	0.0307	111	80-120	
Cobalt	mg/L	0.889	0.923	104	80-120	
Chromium	mg/L	0.0278	0.0303	109	80-120	
Copper	mg/L	0.890	0.882	99	80-120	
Manganese	mg/L	0.887	0.918	104	80-120	
Molybdenum	mg/L	0.889	0.945	106	80-120	
Nickel	mg/L	0.889	0.869	98	80-120	
Lead	mg/L	0.0556	0.0542	98	80-120	
Antimony	mg/L	0.0556	0.0634	114	80-120	
Selenium	mg/L	0.0556	0.0584	105	80-120	
Thallium	mg/L	0.0556	0.0552	99	80-120	
Vanadium	mg/L	0.889	0.974	110	80-120	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: [CALC]

Analysis Description: Hardness (Metals)

QC Batch Method:

Analysis Method: SM 2340 B-11

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

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QC Batch: T116228

Analysis Description: Chloride

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116228-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	
Fluoride	mg/L	<0.020	0.020	
Sulfate as SO4	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T116228-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	5.16	103	90-110	
Fluoride	mg/L	1.00	1.03	103	90-110	
Sulfate as SO4	mg/L	5.00	4.89	98	90-110	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: T116313

Analysis Description: Chloride

QC Batch Method: IC Prep W

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T116313-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Chloride	mg/L	<0.15	0.15	

LABORATORY CONTROL SAMPLE: T116313-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Chloride	mg/L	5.00	4.57	91	90-110	

Trace Project ID: 21J1157

Client Project ID: Surface Water Sampling

QC Batch: T116366

Analysis Description: Alkalinity, Carbonate

QC Batch Method: SM 2320 B-11

Analysis Method: SM 2320 B-11

LABORATORY CONTROL SAMPLE: T116366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Bicarbonate Alkalinity as CaCO3 at pH 4.5	mg/L	100	97.3	97	88-112	

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LABORATORY CONTROL SAMPLE: T116366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Carbonate Alkalinity as CaCO3 at pH 8.2	mg/L	100	97.3	97	88-112	

Trace Project ID: 21J1157
 Client Project ID: Surface Water Sampling

QC Batch: T116265	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-11	Analysis Method: SM 2540 C-11

METHOD BLANK: T116265-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	9.0	10	J

LABORATORY CONTROL SAMPLE: T116265-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	527	105	80-120	

SAMPLE DUPLICATE: T116265-DUP1 Original: 21J1157-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	320	368	14	10	623

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP
 Date: 10-28-21
 Field Personnel: EB/TB
 Surface Water ID: N-502
 Purge Start Time: 8:45
 Purge Rate: 300 gpm/min

Reading Time	9:00	9:03	9:06						
Temperature (Celsius)	9.93	9.93	9.93						
Specific Conductivity	.472	.472	.472						
Dissolved Oxygen	10.02	10.02	10.02						
ORP (mV)	6	6	6						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.57	7.57	7.57						

Stabilization Criteria:
 Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:
 Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: ER/TB

Surface Water ID: 56-1

Purge Start Time: 9:55

Purge Rate: 3000 L/min

Reading Time	10:08	10:11	10:13						
Temperature (Celsius)	11.28	11.28	11.28						
Specific Conductivity	.581	.581	.581						
Dissolved Oxygen	7.91	7.91	7.91						
ORP (mV)	196	196	196						
Turbidity(NTU)	22.4	22.4	22.4						
pH	8.46	8.46	8.46						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: EB/TB

Surface Water ID: NE-MW-10

Purge Start Time: 10:05

Purge Rate: 300wL/min

Reading Time	10:20	10:23	10:26						
Temperature (Celsius)	10.20	10.20	10.20						
Specific Conductivity	.463	.463	.463						
Dissolved Oxygen	10.05	10.05	10.05						
ORP (mV)	53	53	53						
Turbidity(NTU)	14.9	14.9	14.9						
pH	7.89	7.89	7.89						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-28-21

Field Personnel: EB/TR

Surface Water ID: SE-MW7

Purge Start Time: 11:46

Purge Rate: 3000l/min

Reading Time	11:55	11:58	12:01						
Temperature (Celsius)	10.72	10.72	10.72						
Specific Conductivity	476	476	476						
Dissolved Oxygen	9.75	9.75	9.75						
ORP (mV)	52	52	52						
Turbidity(NTU)	10.1	10.1	10.1						
pH	7.80	7.80	7.80						

Stabilization Criteria:

Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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21J1157
Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date: 10/29/21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20812743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: 9:37							
Logged by: BW							
Package Description: Cobler							
Package Temp °C	-0.4	-0.3	✓	✓			
Representative Sample Temp °C	5.2	5.3	✓	✓			✓

Sample Receipt

- Yes No
- Received on ice or other coolant
- Ice still present upon receipt
- Custody seals present
- Trace Courier Client Drop-off
- Yes No Custody seals intact (if applicable)
- UPS Fed Ex US Mail Other

Sample Condition

- Yes No N/A
- All sample containers arrived unbroken and labeled
- Sufficient sample to run requested analyses
- Correct chemical preservative added to samples
- Samples preserved at Trace
- Chemical preservation verified, check EMD pH test strip used (if applicable)
- pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other
- Air bubbles absent from VOAs

Chain of Custody (COC)

- Yes No
- All bottle labels agree with COC
- COC filled out properly
- COC signed by client

Notes:

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2241 Black Creek Road
Muskegon, MI 49444-2673



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888-979-4469 Fax
www.trace-labs.com

November 30, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

RE: Trace Project 21J1157
Client Project Surface Water Sampling

Dear Mr. Cederquist:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

The results were obtained from Eurofins.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink that reads "Jon Mink".

Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
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www.trace-labs.com

SAMPLE SUMMARY

Trace Project ID: 21J1157
Client Project ID: Surface Water Sampling

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21J1157-01	SW-SG-1	Surface Water	TRACE-EB/TB	10/28/21 10:15	10/28/21 15:58
21J1157-02	SW-N-SG-2	Surface Water	TRACE-EB/TB	10/28/21 09:10	10/28/21 15:58
21J1157-03	SW-SE-MW-7	Surface Water	TRACE-EB/TB	10/28/21 12:05	10/28/21 15:58
21J1157-04	SW-NE-MW-10	Surface Water	TRACE-EB/TB	10/28/21 10:30	10/28/21 15:58

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-6473-1
Client Project/Site: Trace - 21J1157
Revision: 1

For:
Trace Analytical Laboratories
2241 Black Creek Road
Muskegon, Michigan 49444

Attn: Jon Mink

Karen Fullmer

Authorized for release by:
11/30/2021 11:40:43 AM

Karen Fullmer, Project Manager
(574)233-4777
karen.fullmer@eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Qualifiers

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.
α	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

Case Narrative

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Job ID: 810-6473-1

Laboratory: Eurofins Eaton Analytical - South Bend

Narrative

Job Narrative 810-6473-1

Comments

No additional comments.

Revision

The report being provided is a revision of the original report sent on 11/18/2021. The report (revision 1) is being revised due to: Samples were logged in as drinking water by accident..

Receipt

The samples were received on 11/1/2021 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 12.4° C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. Bottles did not match coc at all and in-house coc was created. Client sent updated coc.

RAD

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



Detection Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SG-1

Lab Sample ID: 810-6473-1

No Detections.

Client Sample ID: 21J1157/SW-N-SG-2

Lab Sample ID: 810-6473-2

No Detections.

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

No Detections.

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

No Detections.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical - South Bend

Client Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SG-1

Lab Sample ID: 810-6473-1

Date Collected: 10/28/21 10:15

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.80802		1.00	0.500	pCi/L		11/15/21 09:30	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	-0.820	U	0.650		1.00	0.340	pCi/L	11/04/21 13:22	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.150	U	0.480		1.00	0.500	pCi/L	11/12/21 10:12	11/15/21 12:05	1

Client Sample ID: 21J1157/SW-N-SG-2

Lab Sample ID: 810-6473-2

Date Collected: 10/28/21 09:10

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.000	U	0.76837		1.00	0.500	pCi/L		11/15/21 09:30	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.0800	U	0.600		1.00	0.350	pCi/L	11/04/21 13:22	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	-0.0800	U	0.480		1.00	0.500	pCi/L	11/12/21 10:12	11/15/21 12:05	1

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

Date Collected: 10/28/21 12:05

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.670		0.83006		1.00	0.480	pCi/L		11/15/21 09:30	1

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

Date Collected: 10/28/21 12:05

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	-0.470	U	0.670		1.00	0.330	pCi/L	11/04/21 13:22	11/12/21 11:43	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.670		0.490		1.00	0.480	pCi/L	11/12/21 10:12	11/15/21 12:05	1

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

Date Collected: 10/28/21 10:30

Matrix: Surface Water

Date Received: 11/01/21 09:00

Method: 7500 Ra D - Radium 226 Radium 228 Combined

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.45		0.54489		1.00	0.380	pCi/L		11/15/21 09:30	1

Method: SM7500 Ra B - Radium-226

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-226	0.650		0.370		1.00	0.310	pCi/L	11/04/21 13:22	11/08/21 11:28	1

Method: SM7500 Ra D - Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ra-228	0.800		0.400		1.00	0.380	pCi/L	11/12/21 10:12	11/15/21 12:05	1

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Method: SM7500 Ra B - Radium-226

Lab Sample ID: MB 810-6604/1-A
 Matrix: Drinking Water
 Analysis Batch: 7022

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 6604

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Ra-226	0.5000		0.240		1.00	0.180	pCi/L	11/04/21 13:22	11/08/21 11:28	1

Lab Sample ID: LCS 810-6604/2-A
 Matrix: Drinking Water
 Analysis Batch: 7022

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 6604

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec.
		Result	Qual	Uncert. (2σ+/-)					Limits
Ra-226	8.73	9.470			1.00	0.190	pCi/L	108	90 - 110

Method: SM7500 Ra D - Radium-228

Lab Sample ID: MB 810-7205/1-A
 Matrix: Drinking Water
 Analysis Batch: 7351

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 7205

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Ra-228	-0.1600	U	0.430		1.00	0.460	pCi/L	11/12/21 10:12	11/15/21 12:18	1

Lab Sample ID: LCS 810-7205/2-A
 Matrix: Drinking Water
 Analysis Batch: 7351

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 7205

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec.
		Result	Qual	Uncert. (2σ+/-)					Limits
Ra-228	8.83	7.490			1.00	0.520	pCi/L	85	80 - 120

QC Association Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Rad

Prep Batch: 6604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6473-1	21J1157/SW-SG-1	Total/NA	Surface Water	RAD Prep	
810-6473-2	21J1157/SW-N-SG-2	Total/NA	Surface Water	RAD Prep	
810-6473-3	21J1157/SW-SE-MW-7	Total/NA	Surface Water	RAD Prep	
810-6473-4	21J1157/SW-NE-MW-10	Total/NA	Surface Water	RAD Prep	
MB 810-6604/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-6604/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	

Prep Batch: 7205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6473-1	21J1157/SW-SG-1	Total/NA	Surface Water	RAD Prep	
810-6473-2	21J1157/SW-N-SG-2	Total/NA	Surface Water	RAD Prep	
810-6473-3	21J1157/SW-SE-MW-7	Total/NA	Surface Water	RAD Prep	
810-6473-4	21J1157/SW-NE-MW-10	Total/NA	Surface Water	RAD Prep	
MB 810-7205/1-A	Method Blank	Total/NA	Drinking Water	RAD Prep	
LCS 810-7205/2-A	Lab Control Sample	Total/NA	Drinking Water	RAD Prep	

Lab Chronicle

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-SG-1

Lab Sample ID: 810-6473-1

Date Collected: 10/28/21 10:15

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7224		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Client Sample ID: 21J1157/SW-N-SG-2

Lab Sample ID: 810-6473-2

Date Collected: 10/28/21 09:10

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7224		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Client Sample ID: 21J1157/SW-SE-MW-7

Lab Sample ID: 810-6473-3

Date Collected: 10/28/21 12:05

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7224		JB	EA SB
					(Start)	11/12/21 11:43		
					(End)	11/12/21 12:13		
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

Date Collected: 10/28/21 10:30

Matrix: Surface Water

Date Received: 11/01/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7500 Ra D		1	7295	11/15/21 09:30	JB	EA SB

Lab Chronicle

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Client Sample ID: 21J1157/SW-NE-MW-10

Lab Sample ID: 810-6473-4

Date Collected: 10/28/21 10:30

Matrix: Surface Water

Date Received: 11/01/21 09:00

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	RAD Prep			6604	11/04/21 13:22	ML	EA SB
Total/NA	Analysis	SM7500 Ra B		1	7022	11/08/21 11:28	JB	EA SB
Total/NA	Prep	RAD Prep			7205	11/12/21 10:12	OO	EA SB
Total/NA	Analysis	SM7500 Ra D		1	7351		OO	EA SB
					(Start)	11/15/21 12:05		
					(End)	11/15/21 15:05		

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Laboratory: Eurofins Eaton Analytical - South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	03-22-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7500 Ra D		Surface Water	Combined Radium 226 + 228
SM7500 Ra B	RAD Prep	Surface Water	Ra-226
SM7500 Ra D	RAD Prep	Surface Water	Ra-228



Method Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Method	Method Description	Protocol	Laboratory
7500 Ra D	Radium 226 Radium 228 Combined	SM	EA SB
SM7500 Ra B	Radium-226	SM	EA SB
SM7500 Ra D	Radium-228	SM	EA SB
RAD Prep	Preparation, Radiologicals	None	EA SB

Protocol References:

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

- 1
- 2
- 3
- 4
- 5
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- 13
- 14

Sample Summary

Client: Trace Analytical Laboratories
Project/Site: Trace - 21J1157

Job ID: 810-6473-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-6473-1	21J1157/SW-SG-1	Surface Water	10/28/21 10:15	11/01/21 09:00
810-6473-2	21J1157/SW-N-SG-2	Surface Water	10/28/21 09:10	11/01/21 09:00
810-6473-3	21J1157/SW-SE-MW-7	Surface Water	10/28/21 12:05	11/01/21 09:00
810-6473-4	21J1157/SW-NE-MW-10	Surface Water	10/28/21 10:30	11/01/21 09:00

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- 12
- 13
- 14



Eaton Analytical



110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

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Batch # _____

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Shaded area for EEA use only

REPORT TO:		SAMPLER (Signature)		PWS ID #	STATE (sample origin)	PROJECT NAME	PO#	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME			
Jon Mink, Tim Brewer (jmink@trace-labs.com, tbrewer@trace-labs.com) Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444 231-773-5998					MI		21J1157						
BILL TO:		COMPLIANCE MONITORING		Yes	No	POPULATION SERVED	SOURCE WATER						
Accounts Payable, Trace Analytical Laboratories, Inc., 2241 Black Creek Rd., Muskegon, MI 49444													
LAB Number	COLLECTION				SAMPLING SITE	TEST NAME	pH Acceptable	SAMPLE REMARKS	CHLORINATED		# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
	DATE	TIME	AM	PM					YES	NO			
1	10/28/21	10:15	x		SW-SG-1	Radium 226/228	✓			x	1	SW	SW
2	10/28/21	9:10	x		SW-N-SG-2	Radium 226/228	✓			x	1	SW	SW
3	10/28/21	12:05		x	SW-SE-MW-7	Radium 226/228	✓			x	1	SW	SW
4	10/28/21	10:30	x		SW-NE-MW-10	Radium 226/228	✓			x	1	SW	SW
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

Liters Received = 4 jug each site

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE 10/29/21	TIME	RECEIVED BY: (Signature)	DATE	TIME	LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT LAB COMMENTS
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME	
			<i>[Signature]</i>	11-1-21	0900	CONDITIONS UPON RECEIPT (check one): <input type="checkbox"/> Iced/Wet/Blue <input checked="" type="checkbox"/> Ambient 12.4 °C Upon Receipt <input type="checkbox"/> N/A



MATRIX CODES:
 DW-DRINKING WATER
 RW-REAGENT WATER
 GW-GROUND WATER
 EW-EXPOSURE WATER
 SW-SURFACE WATER
 PW-PPOOL WATER
 WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days) 0%	IV* = Immediate Verbal: (3 working days) 100%
RV* = Rush Verbal: (5 working days) 50%	IW* = Immediate Written: (3 working days) 125%
RW* = Rush Written: (5 working days) 75%	SP* = Weekend, Holiday CALL
	STAT* = Less than 48 hours CALL

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.



South Bend, IN

110 S Hill Street
 South Bend, IN 46617
 Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record



Client Information		Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:			
Client Contact: <i>Trace</i>		Phone:		E-Mail:		State of Origin:		Page: Page 1 of			
Company:		PWSID:		Analysis Requested						Job #:	
Address:		Due Date Requested:		Field Filtered Sample (Yes or No) <i>Rad 226 & 238</i> Perform MS/MSD (Yes or No)						Total Number of containers ↓	
City:		TAT Requested (days):									
State, Zip:		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No									
Phone:		PO #:									
Email:		WO #:									
Project Name:		Project #:		pH Acceptable						Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)	
Site:		SSOW#:									
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/sol, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Special Instructions/Note:		
				Preservation Code:							
<i>21J 1157-01</i>											
<i>↓ 02</i>											
<i>03</i>											
<i>04</i>											
Liters Received = 4.6 jug											
<i>Coc completed by SS</i>											
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>sgl</i>		Date/Time: <i>11/21 0900</i>		Company: <i>EEA</i>	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <i>Ambient 12.4°C</i>							





Eaton Analytical

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CHAIN OF CUSTODY RECORD

Page ___ of ___

Main data table with columns: REPORT TO, SAMPLER (Signature), PWS ID #, STATE (sample origin), PROJECT NAME, PO#, COMPLIANCE MONITORING, POPULATION SERVED, SOURCE WATER, LAB Number, COLLECTION (DATE, TIME, AM, PM), SAMPLING SITE, TEST NAME, SAMPLE REMARKS, CHLORINATED (YES, NO), # OF CONTAINERS, MATRIX CODE, TURNAROUND TIME.

Rec. 4 bottles w/ 21J1157-01 thru 04
SS 11/21

Handwritten signature and date table with columns: RELINQUISHED BY:(Signature), DATE, TIME, RECEIVED BY:(Signature), DATE, TIME.

MATRIX CODES and TURN-AROUND TIME (TAT) - SURCHARGES table with columns: MATRIX CODES, TAT, SURCHARGES, IV*, IV**, SP*, STAT*.

Login Sample Receipt Checklist

Client: Trace Analytical Laboratories

Job Number: 810-6473-1

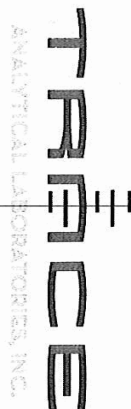
Login Number: 6473

List Source: Eurofins Eaton Analytical - South Bend

List Number: 1

Creator: Spurgeon, Sheri

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	False	Thermal preservation not required.
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	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	



Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673

Phone 231.773.5998
 Fax 888.979.4469
 www.trace-labs.com

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Trace ID No.
 211157

Report Results To:

Company Name: Grand Haven Board of Light & Power
 Report To: Paul Cederquist
 Mailing Address:
 City, State, Zip Code:
 Office Phone: Call Phone:
 Email Address: Billing Email Address:

Bill To:

PO #:
 Contact Name:
 Billing Address (if different):
 City, State, Zip Code:
 Phone Number:

Trace Use:

Logged By: BN
 Checked By: DH
 Soil Vapors Preserved (circle if applicable):
 MeOH Low Level Lab
 Sampling Time:

Turnaround Requirements:

Standard 5-10 Days
 3 Day*
 1 Day*

Matrix Key:

S = Soil / Solid W = Wipes
 W = Water LW = Liquid Waste
 SL = Sludge A = Air
 OI = Oil D = Drinking Water

*Results provided end of business day, requires prior approval.

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y/N)	Matrix	Number of Containers	Preservation						Analysis Requested	Remarks	
							Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other			
1	10/28/21	10:15	SW-SG-1	Y	W	5	X	X					X	T-B,Ca,Fe,Sb,As,Ba, Be,Cd,Cr	
2	9:10		SW-N-SG-2	Y	W	5	X	X					X	T- Co,Cu, Pb, Li,Mo,Ni Se,Ag	
3	12:05		SW-SE-MW-7	Y	W	5	X	X					X	T- Ti, V,Zn, Mn,Mg,K,Na	
4	10:30		SW-NE-MW-10	Y	W	5	X	X					X	Diss.Metals (Same as Totals)	
													X	Fluoride,Sulfate,TDS, Chlorides	
													X	pH	
													X	LLHg	
													X	Radiums 226/228	
													X	Bicarb-Alk, Carbonate-Alk	
															pH=8.46
															pH=7.57
															pH=7.86
															pH=7.89

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

Project Name: Surface Water Sampling **Sampled By:** EB/TB

Please Sign		Date	Time
Released By: <u>[Signature]</u>	Received By: <u>[Signature]</u>	10/28/21	1558
In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.			

Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-28-21

Field Personnel: EB/TB

Surface Water ID: N-502

Purge Start Time: 8:45

Purge Rate: 300 gpm/min

Reading Time	9:00	9:03	9:06						
Temperature (Celsius)	9.93	9.93	9.93						
Specific Conductivity	.472	.472	.472						
Dissolved Oxygen	10.02	10.02	10.02						
ORP (mV)	6	6	6						
Turbidity(NTU)	0.0	0.0	0.0						
pH	7.57	7.57	7.57						

Stabilization Criteria:

Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: ER/TB

Surface Water ID: 56-1

Purge Start Time: 9:55

Purge Rate: Severe Chlorine

Reading Time	10:08	10:11	10:13						
Temperature (Celsius)	11.28	11.28	11.28						
Specific Conductivity	.581	.581	.581						
Dissolved Oxygen	7.91	7.91	7.91						
ORP (mV)	196	196	196						
Turbidity(NTU)	22.4	22.4	22.4						
pH	8.46	8.46	8.46						

Stabilization Criteria:

- Temperature: 3%
- Spec. Conductivity: 3%
- Dissolved Oxygen: 10%
- ORP: +/- 10 mV
- Turbidity: 10% or <1
- pH: +/- 0.1

Notes:

Pump Used: Peristaltic

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10.28.21

Field Personnel: EB/TB

Surface Water ID: NE-MNW-10

Purge Start Time: 10:05

Purge Rate: 3000 L/min

Reading Time	10:20	10:23	10:26						
Temperature (Celsius)	10.20	10.20	10.20						
Specific Conductivity	.463	.463	.463						
Dissolved Oxygen	10.05	10.05	10.05						
ORP (mV)	53	53	53						
Turbidity(NTU)	14.9	14.9	14.9						
pH	7.89	7.89	7.89						

Stabilization Criteria:

Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

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 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

Trace Analytical Laboratories: Low Flow Well Purging Field Measurements Form

Client: GHBLP

Date: 10-28-21

Field Personnel: EB/TR

Surface Water ID: SE-MW7

Purge Start Time: 11:46

Purge Rate: 30000/min

Reading Time	11:55	11:58	12:01						
Temperature (Celsius)	10.72	10.72	10.72						
Specific Conductivity	476	476	476						
Dissolved Oxygen	9.75	9.75	9.75						
ORP (mV)	52	52	52						
Turbidity(NTU)	10.1	10.1	10.1						
pH	7.80	7.80	7.80						

Stabilization Criteria:

Temperature: 3%
 Spec. Conductivity: 3%
 Dissolved Oxygen: 10%
 ORP: +/- 10 mV
 Turbidity: 10% or <1
 pH: +/- 0.1

Notes:

Pump Used: Peristaltic

21J1157
Grand Haven Board of Light
 Project Manager: Jon Mink

Sample Log In Checklist

Date:	10/29/21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20812743 (CF: -0.4°C)	Temp Blank	Client Sample
Time:	9:37							
Logged by:	BW							
Package Description:	Cobler							
Package Temp °C	-0.4		-0.3	✓	✓			
Representative Sample Temp °C	5.2		5.3	✓	✓			✓

Sample Receipt

- Yes/ No
- Received on ice or other coolant
- Ice still present upon receipt
- Custody seals present
- Trace Courier Client Drop-off
- Yes No Custody seals intact (if applicable)
- UPS Fed Ex US Mail Other

Sample Condition

- Yes/ No/ N/A
- All sample containers arrived unbroken and labeled
- Sufficient sample to run requested analyses
- Correct chemical preservative added to samples
- Samples preserved at Trace
- Chemical preservation verified, check EMD pH test strip used (if applicable)
- pH 0-2.5 (Lot: HC029115) pH 11.0-13.0 (Lot: HC022540) Other
- Air bubbles absent from VOAs

Chain of Custody (COC)

- Yes/ No
- All bottle labels agree with COC
- COC filled out properly
- COC signed by client

Notes:

APPENDIX B

**Analytical Summary and Statistical
Analysis**

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

Analyte	Units	MW-1R											
		Sample Date:	6/17/2020	7/22/2020	7/24/2020	7/27/2020	7/31/2020	8/3/2020	8/7/2020	8/10/2020	8/14/2020	8/18/2020	8/21/2020
Detection Monitoring (Shaded exceeds prediction limit and is considered an SSI)													
BORON, TOTAL	mg/L	200	210	200	190	140	180	140	180	180	180	180	140
CALCIUM, TOTAL	mg/L	170	140	150	180	380	220	270	220	170	200	240	310
CHLORIDE, TOTAL	mg/L	270	270	260	260	260	260	250	250	260	260	270	280
FLUORIDE, TOTAL	mg/L	29	28	28	25	22	4.5	22	25	26	24	22	21
IRON, TOTAL	mg/L	5.8	5.5	4	5.8	7.9	4.2	3.8	3.6	4.4	3.3	3.2	3.1
pH	S.U.	8.76	8.42	9.02	9.21	8.92	9.21	8.91	8.91	8.41	8.21	8.16	8.12
SULFATE, TOTAL	mg/L	410	430	430	550	870	580	860	660	600	730	790	960
TOTAL DISSOLVED SOLIDS	mg/L	3,300	3,500	3,300	3,500	3,600	3,400	3,400	3,500	3,500	3,400	3,500	3,700
Assessment Monitoring													
ANTIMONY, TOTAL	mg/L	0.021	0.014	0.0028	0.014	0.018	0.002	<0.0015	0.0033	0.0057	0.0031	0.0038	0.0035
ARSENIC, TOTAL	mg/L	0.0095	0.01	0.0079	0.0091	0.0067	0.007	0.0065	0.0074	0.008	0.0072	0.0076	0.0072
BARIUM, TOTAL	mg/L	0.89	0.85	0.58	0.85	0.8	0.45	0.51	0.61	0.71	0.58	0.63	0.5
BERYLLIUM, TOTAL	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CADMIUM, TOTAL	mg/L	0.0088	0.015	0.0021	0.015	0.021	0.0013 J	0.0043 J	0.0026	0.062	<0.003	0.003 J	<0.003
CHROMIUM, TOTAL	mg/L	0.014 B	0.013	0.0084	0.014	0.017	0.0061	0.003	0.0058	0.0069	0.0047	0.0048	0.0032
COBALT, TOTAL	mg/L	0.088	0.056	0.012	0.056	0.069	0.007	0.0083	0.013	0.022	0.0095	0.011	0.0092
COPPER, TOTAL	mg/L	0.022	0.023	<0.010	0.022	0.031	<0.0086	<0.0043	0.005	<0.022	<0.022	0.005	<0.0043
LEAD, TOTAL	mg/L	0.11	0.1	0.02	0.1	0.18	0.018	0.023	0.018	0.042	0.023	0.027	0.021
LITHIUM, TOTAL	mg/L	3.9	2.8	2.6	2.6	2.1	3.3	2.2	3.5	2.6	2.2	2.3	1.9
MERCURY, TOTAL	mg/L	<0.00016	0.00011	0.000012	0.000059	0.00012	0.0000074	0.000015	0.000012	0.000058	0.000019	0.000022	0.0014
MOLYBDENUM, TOTAL	mg/L	0.0095 B	0.0096	0.0092	0.0093	0.0052 B	0.0097 B	0.008	0.0098	0.01	0.0092	0.0096	0.0088
NICKEL, TOTAL	mg/L	0.069	0.059	0.016	0.057	0.07	0.01	0.01	0.016	0.025	0.013 J	0.014	0.012
RADIUM (226 + 228)	pCi/L	1.0 U	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SELENIUM, TOTAL	mg/L	0.0039	0.0045	0.0024 J	0.0043	0.0047	<0.0018	0.0014 J	0.0019 J	<0.0045	<0.0045	0.0019 J	0.0016 J
SILVER, TOTAL	mg/L	< 0.0003	< 0.0006	< 0.0006	< 0.0006	<0.0015	<0.0006	<0.0015	<0.0003	<0.0015	<0.0015	<0.0015	<0.0015
THALLIUM, TOTAL	mg/L	< 0.0003	< 0.0006	< 0.0006	< 0.0006	<0.0015	<0.0006	0.0028 J	<0.0003	<0.0015	<0.0015	<0.0015	<0.0015
VANADIUM, TOTAL	mg/L	0.0032	0.0062	0.0044	0.0069	0.0086	0.0028	0.0019	0.0041	0.004	0.0026 J	0.0027	0.0017
ZINC, TOTAL	mg/L	0.22	0.21	0.035	0.22	0.31	0.029	0.033	0.042	0.1	0.039	0.053	0.044

NOTES:

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. NA - Not available, constituent does not have criteria available
4. NT - Not Tested
5. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
6. < - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect. Value is displayed as less than the PQL.
7. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

Analyte	Units	MW-1R																
		Sample Date:	8/28/2020	8/31/2020	9/4/2020	9/8/2020	9/11/2020	9/14/2020	9/25/2020	9/29/2020	10/5/2020	10/9/2020	10/12/2020	11/20/2020	1/25/2021	4/23/2021	7/30/2021	10/25/2021
Detection Monitoring (Shaded exceeds pre																		
BORON, TOTAL	mg/L	160	170	170	160	180	210	160	190	200	210	180	110	110	40	110	140	
CALCIUM, TOTAL	mg/L	200	180	170	180	120	130	270	140	81	120	200	450	370	590	380	220	
CHLORIDE, TOTAL	mg/L	270	240	280	270	240	250	240	260	270	270	260	260	260	230	230	230	
FLUORIDE, TOTAL	mg/L	25	22	25	24	25	26	20	26	25	27	18	<0.055	9.9	8.9	12	13	
IRON, TOTAL	mg/L	3.2	2.9	2.8	2.8	1.8	1.8	2.2	1.7	1.3	1.3	1.6	2.6	3.7	3.7	3.3	1.7	
pH	S.U.	7.8	7.78	7.86	7.81	7.87	7.86	7.66	7.89	7.93	7.83	7.71	7.46	7.33	7.25	8.31	7.8	
SULFATE, TOTAL	mg/L	730	670	610	650	360	330	750	420	130	280	580	1,000	1,100	1,100	940	530	
TOTAL DISSOLVED SOLIDS	mg/L	1,300	3,300	3,300	3,300	3,300	2,300	3,100	3,400	2,800	3,200	3,300	3,100	3,000	2,900	3,200	3,600	
Assessment Monitoring																		
ANTIMONY, TOTAL	mg/L	0.0056	0.004	0.0043	0.004	0.0016	0.0016	0.00073	0.00052	0.00065	0.00059	0.00044	<0.0015	<0.0015	0.0031	0.0014	0.00044	
ARSENIC, TOTAL	mg/L	0.0079	0.0079	0.0084	0.0086	0.0078	0.0085	0.0068	0.0084	0.0083	0.0068	0.0057	<0.0025	0.0032	0.0023	0.0042	0.0046	
BARIUM, TOTAL	mg/L	0.6	0.58	0.56	0.53	0.39	0.39	0.19	0.41	0.51	0.43	0.39	0.28	0.22	0.075	0.2	0.20	
BERYLLIUM, TOTAL	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.0020	<0.0010	<0.0010	
CADMIUM, TOTAL	mg/L	0.0043 J	0.0031 J	0.0043 J	0.0039 J	0.0017	0.0016	0.001	<0.0006	<0.0006	<0.0006	<0.0006	<0.003	<0.0050	0.0053	0.0006	<0.00060	
CHROMIUM, TOTAL	mg/L	0.0048	0.0044	0.0065	0.007	0.0052	0.0061	0.0029	0.0031	0.0028	0.0037	0.003	0.0015	0.0016	<0.0045	0.0027	0.0022	
COBALT, TOTAL	mg/L	0.012	0.0099	0.018	0.017	0.0086	0.0095	0.0051	0.0021	0.0025	0.0021	0.002	0.0037	0.0035	0.022	0.0037	0.0022	
COPPER, TOTAL	mg/L	0.0056	<0.0043	0.0071	0.007	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0050	0.0099 J	<0.0018	< 0.0018	
LEAD, TOTAL	mg/L	0.033	0.025	0.037	0.035	0.017	0.017	0.0064	0.0032	0.0042	0.0033	0.0028	0.01	0.0072	0.039	0.0075	0.0024	
LITHIUM, TOTAL	mg/L	2.5	2.6	2.3	2.3	2.4	4.2	3.2	3.7	3.5	4.2	3.9	2.5	2.4	0.91	2.3	2.8	
MERCURY, TOTAL	mg/L	0.000016	0.000019	0.000013	0.000021	0.000015	0.000015	0.0000089	0.0000026	0.000004	0.0000019	0.0000024	0.0000025	0.0000094	0.0000032	0.0000043	0.0000019	
MOLYBDENUM, TOTAL	mg/L	0.0099	0.01	0.01	0.01	0.012	0.015	0.0081	0.012	0.011	0.011	0.0075	0.0012 J	0.0029	0.0058	0.0025	0.0016	
NICKEL, TOTAL	mg/L	0.015	0.013	0.022	0.021	0.012	0.014	0.0084	0.0061	0.0061	0.0056	0.0049 J	0.0047 J	0.0047	0.025	0.0057	0.0039 J	
RADIUM (226 + 228)	pCi/L	NT	NT	NT	NT	NT	NT	2.25	NT	NT	NT	NT	1.0 U	0.79	<0.73	0.78 J	0.41	
SELENIUM, TOTAL	mg/L	0.0023	0.002	0.002	0.0017 J	0.0017 J	0.002	0.0013 J	0.0016 J	0.0016 J	0.0016 J	0.0015 J	<0.0045	0.0011	0.0021	<0.00090	0.00097 J	
SILVER, TOTAL	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0015	<0.0050	<0.0050	<0.00030	<0.00030	
THALLIUM, TOTAL	mg/L	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0015	<0.0050	<0.0050	<0.00030	<0.00030	
VANADIUM, TOTAL	mg/L	0.003	0.003	0.004	0.0037	0.0029	0.0041	0.0026	0.0024	0.0017	0.0022	0.0022	0.0019	0.0017	<0.0040	0.0023	0.0017	
ZINC, TOTAL	mg/L	0.063	0.048	0.068	0.067	0.032	0.038	0.022	<0.018	<0.018	<0.018	<0.018	<0.018	<0.020	0.13	<0.018	<0.018	

- NOTES:
1. mg/L - Milligrams per Liter
 2. pCi/L - picocuries per Liter
 3. NA - Not available, constituent does not hav
 4. NT - Not Tested
 5. J - Result is an estimated value. The result
 6. < - Constituent was analyzed for, but was n
 7. Radium data is a combination of radium isc

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

Analyte	Units	MW-2																				
		Sample Date:	3/13/2017	4/5/2017	4/24/2017	5/15/2017	6/5/2017	6/26/2017	7/17/2017	8/7/2017	8/27/2018	9/26/2018	10/22/2018	3/27/2019	9/27/2019	3/27/2020	6/17/2020	9/25/2020	11/20/2020	1/25/2021	4/23/2021	7/30/2021
Detection Monitoring (Shaded exceeds prediction limit and is considered an SSI)																						
BORON, TOTAL	mg/L	110	110	110	110	130	120	130	160	150	270	130	88	130	66	110	140	130	110	65	93	100
CALCIUM, TOTAL	mg/L	190	170	200	190	190	180	180	190	200	340	190	210	200	210	210	190	220	190	220	230	190
CHLORIDE, TOTAL	mg/L	140	150	130	140	150	160	150	160	150	150	150	130	150	140	140	140	150	140	140	140	140
FLUORIDE, TOTAL	mg/L	10	12	11	14	12	14	14	12	14	15	14	8.4	13	8.2	12	11	11	9.4	8	9	9.4
IRON, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	21	18	23	21	21	20	21	6.7	24	22
pH	S.U.	8.09	8.21	6.90	7.22	7.31	7.72	7.35	7.80	7.24	7.32	7.87	7.52	7.91	7.28	8.42	7.08	6.94	6.91	6.94	7.38	6.48
SULFATE, TOTAL	mg/L	13 J	12	<20	<20	<5	<10	<20	<10	0.77	0.96 J	1.4	0.95 J	<3.0	<3	3.3	2.2 J	1 J	1.9	1.5 J	0.81 J	< 0.41
TOTAL DISSOLVED SOLIDS	mg/L	2,100	1,900	2,000	1,900	2,300	2,000	2,100	2,400	2,700	2,500	2,200	1,700	2,100	1,400	2,100	2,100	2,000	1,600	1,700	1,800	2,000
Assessment Monitoring																						
ANTIMONY, TOTAL	mg/L	0.00042 J	<0.0020	0.00060 J	<0.020	0.00068 J	<0.002	<0.002	<0.020	0.00033	0.00033	<0.00009	0.00011 J	0.0005	<0.0003	<0.0003	<0.0003	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030
ARSENIC, TOTAL	mg/L	0.0079	0.0056	0.0059	<0.050	0.007	0.0067	0.0061	0.010 J	0.009	0.013	0.0097	0.0064	0.0085	0.011	0.0081	0.0088	0.008	0.0089	0.0051	0.015	0.012
BARIUM, TOTAL	mg/L	0.48 B	0.45 B	0.47	0.44	0.47	0.45	0.44	0.48	0.43	0.48	0.51	0.41	0.45	0.46	0.47	0.53	0.49	0.47	0.36	0.48	0.50
BERYLLIUM, TOTAL	mg/L	<0.0010	<0.0010	<0.0010	<0.010	0.00077 J	<0.0010	<0.0010	<0.010	< 0.0010	0.0015	<0.00006	<0.0010	0.000061 J	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.0020	<0.0010	<0.0010
CADMIUM, TOTAL	mg/L	<0.0010	<0.0010	<0.0010	<0.010	0.00025 J	<0.0010	0.00021 J	<0.010	0.000082	0.00014	0.00012	0.000047	0.0011	< 0.001	< 0.0006	< 0.0006	<0.003	<0.0010	<0.0010	<0.00060	<0.00060
CHROMIUM, TOTAL	mg/L	0.046	0.037 B	0.043	0.048	0.06	0.053	0.053	0.073	0.047	0.076	0.053	0.02	0.054	0.011	0.029 B	0.052	0.037	0.27	0.0086	0.025	0.040
COBALT, TOTAL	mg/L	0.0092	0.0067	0.0074	0.0084 J	0.0087	0.0072	0.0068	0.0092 J	0.0086	0.0086	0.0066	0.0034	0.0075	0.0027	0.0046	0.0076	0.007 J	0.0052	0.003	0.0041	0.0055
COPPER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0012	0.0033	<0.005	<0.0043	<0.0043	<0.022	<0.0050	<0.0040	<0.0018	0.0022 J
LEAD, TOTAL	mg/L	0.0038	0.0027 B	0.0026	0.01	0.0057	0.0042	0.0034	0.0084 J	0.0049	0.0052	0.0036	0.00045	0.0026	< 0.002	0.0016 J	0.0022	<0.0025	0.0013	<0.0020	0.00067 J	0.0018 J
LITHIUM, TOTAL	mg/L	1.6 B	1.5	1.6 B	1.3	1.7	1.6	1.2	1.5	1.4	1.4	1.6	1.2	1.4	0.98	1	1.2	1.8	1.4	1	1.1	1.2
MERCURY, TOTAL	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.002	0.00010 J	< 0.000041	<0.000041	<0.0002	<0.0002	< 0.0002	<0.00016	0.0000031	0.0000038	0.0000034	0.00000066	0.00000092	0.0000028
MOLYBDENUM, TOTAL	mg/L	0.017	0.014	0.012	<0.10	0.0069 J	0.0074 J	0.0051 J	<0.10	0.0053	0.0076	0.012	0.0076	0.007	0.0047	0.0065 B	0.0062	0.0062	0.0054	0.0052	0.0045	0.0045
NICKEL, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.017	0.028 B	0.012	0.02	0.029	0.022 J	0.017	0.016	0.015	0.017
RADIUM (226 + 228)	pCi/L	1.34	0.43	1.02	1.56	1.89	1.85	2.27	3.01	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.76	1.72	1.26	2.38	1.45 J	2.27	2.27
SELENIUM, TOTAL	mg/L	0.0025 J	0.0017 J	0.0022 J	<0.050	0.0027 J	0.0023 J	0.0028 J	0.014 J	0.0028	0.0038	0.0021	0.0012	0.0024	<0.0009	0.0019 J	0.0026	<0.0045	0.0018	<0.0020	0.0013 J	0.0017 J
SILVER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.000040	0.000036 J	< 0.0003	< 0.0003	< 0.0003	<0.0015	<0.0010	<0.0010	<0.00030	<0.00030
THALLIUM, TOTAL	mg/L	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.010	< 0.000029	< 0.000029	<0.000029	<0.000087	<0.000087	< 0.0003	<0.0003	<0.0003	<0.0015	<0.0010	<0.0010	<0.00030	<0.00030
VANADIUM, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0013	0.0059	0.00093	0.003	0.0062	0.0045	0.0027	<0.00080	0.0026	0.0039
ZINC, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<2.0	0.0099 J	< 0.02	< 0.018	< 0.018	< 0.018	<0.020	<0.020	<0.018	<0.018

NOTES:

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. NA - Not available, constituent does not have criteria available
4. NT - Not Tested
5. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
6. < - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect. Value is displayed as less than the PQL.
7. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

Analyte	Units	MW-3																				
		Sample Date:	3/13/2017	4/5/2017	4/24/2017	5/15/2017	6/5/2017	6/26/2017	7/17/2017	8/7/2017	8/27/2018	9/26/2018	10/22/2018	3/27/2019	9/30/2019	3/27/2020	6/17/2020	9/25/2020	11/20/2020	1/25/2021	4/23/2021	7/30/2021
Detection Monitoring (Shaded exceeds prediction limit and is considered an SSI)																						
BORON, TOTAL	mg/L	5	4.9	5.6	6.4	5.9	4.8	4.9	4.7	4.9	5.3	4.9	7.7	3.3	4.9	4.5	4.6	6	4.7	4.3	4.8	4.4
CALCIUM, TOTAL	mg/L	660	620	600	620	590	540	590	520	530	560	550	560	500	590	590	550	900	650	680	570	490
CHLORIDE, TOTAL	mg/L	570	620	450	480	450	370	400	370	340	340	660	430	360	340	360	380	480	290	380	380	330
FLUORIDE, TOTAL	mg/L	0.74 J	0.97	1.3	1.9	1.7	1.6	1.2	1.2	1.1	0.88	0.84	2.5	0.61	1.4	1.2	1	1.4	1.8	1.3	1	0.89
IRON, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	20	8.1	19	11	2.9	8.2	28	0.71	4.8	4.5
pH	S.U.	7.91	7.14	6.27	6.92	7.07	7.70	7.44	7.61	7.02	7.01	7.19	7.81	7.74	7.03	7.99	6.92	6.8	6.76	6.91	7.39	6.91
SULFATE, TOTAL	mg/L	1,300	1,200	1,200	1,500	990	580	820	600	450	520	990	280	49	890	720	220	1,200	1,400	570	85	23
TOTAL DISSOLVED SOLIDS	mg/L	4,000	3,600	3,900	4,100	3,600	3,000	3,100	2,700	3,000	3,100	2,900	2,800	2,900	3,200	3,400	1,400	3,900	3,400	2,900	2,600	2,500
Assessment Monitoring																						
ANTIMONY, TOTAL	mg/L	<0.0020	<0.0020	0.00041 J	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00012 J	<0.00009	<0.00009	<0.00030	<0.00030	<0.0003	<0.0003	<0.0003	<0.0015	<0.0015	<0.0015	<0.00030	<0.00030
ARSENIC, TOTAL	mg/L	0.0024 J	0.0021 J	0.0017 J	0.0020 J	0.0027 J	0.0029 J	0.0025 J	0.0021 J	0.0017	0.0016	0.0013	0.0019	0.0018	0.0018	0.0017	0.0019	<0.0025	0.0015	<0.0050	0.0017	0.0012
BARIUM, TOTAL	mg/L	0.31 B	0.36 B	0.25	0.21	0.31	0.37	0.41	0.4	0.4	0.4	0.44	0.51	0.51	0.31	0.44	0.53	0.5	0.23	0.21	0.48	0.47
BERYLLIUM, TOTAL	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.000060	0.00031 J	<0.00006	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.0020	<0.0010	<0.0010
CADMIUM, TOTAL	mg/L	<0.0010	<0.0010	<0.0010	0.00033 J	<0.0010	<0.0010	<0.0010	<0.0010	0.000024 J	<0.000017	<0.000017	<0.000040	<0.000040	<0.001	<0.00060	<0.00060	<0.003	<0.0050	<0.0050	<0.00060	<0.00060
CHROMIUM, TOTAL	mg/L	0.0014 J	0.0014 J B	0.0014 J	0.0015 J	0.0018 J	0.0015 J	0.0014 J	0.0013 J	0.0013	0.00085	0.0014	0.002	0.0023	0.0028	0.0031 B	0.0041	0.0037 J	0.0028	0.0017	0.0044	0.0041
COBALT, TOTAL	mg/L	0.00097 J	0.00097 J	0.00080 J	0.00099 J	0.0016	0.0013	0.00079 J	0.00081 J	0.00084 J	0.0007 J	0.00072 J	0.00067 J	0.00098 J	0.00062 J	0.00067 J	0.0008 J	<0.0025	<0.0016	<0.0016	0.00086 J	0.0014 J
COPPER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.00045 J	0.00078 J	<0.005	<0.0043	<0.0043	<0.022	<0.0050	<0.0040	<0.0018	<0.0018
LEAD, TOTAL	mg/L	0.00038 J	0.00045 J B	0.00026 J	0.00079 J	<0.0010	<0.0010	<0.0010	<0.0010	0.000094 J	<0.00004	0.00019 J	0.00012 J	0.000089 J	<0.002	<0.0005	<0.0005	<0.0025	<0.010	<0.010	<0.00050	<0.00050
LITHIUM, TOTAL	mg/L	0.079 B	0.064	0.081 B	0.097	0.076	0.066	0.057	0.054	0.064	0.069	0.026	0.025	<0.010	0.076	0.054	0.044	0.11	0.061	0.07	0.05	0.053
MERCURY, TOTAL	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00011 J	<0.000041	<0.000041	<0.0002	<0.00020	<0.00020	<0.00016	0.0000008	0.00000099	0.0000014	0.00000055	0.00000064	0.00000079
MOLYBDENUM, TOTAL	mg/L	0.0070 J	0.0049 J	0.0076 J	0.0099 J	0.0065 J	0.0034 J	0.0015 J	<0.010	<0.000093	<0.000093	<0.000093	<0.0010	<0.0010	<0.001	0.00013 JB	0.00012 J	<0.00046	<0.0020	<0.0020	<0.00093	0.00012 J
NICKEL, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.002	0.003 B	0.007	0.0025 J	0.0027 J	<0.011	<0.0050	0.0023 J	0.0016 J	0.0027 J
RADIUM (226 + 228)	pCi/L	0.731	0.392	0.190 U	0.666	0.502	0.874	1.38	1.96	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.04 J	1.38	1.51	2.62	1.68	2.11	3.72	1.01
SELENIUM, TOTAL	mg/L	0.0012 J	0.0012 J	0.0013 J	0.0016 J	0.0012 J	<0.0050	0.00094 J	0.0015 J	<0.00028	<0.00028	<0.00028	<0.00087	<0.00087	<0.0009	<0.0009	<0.0009	<0.0045	<0.0020	<0.010	<0.00090	<0.00090
SILVER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.000040	0.000026 J	<0.0003	<0.0003	<0.0003	<0.0015	<0.0050	<0.0050	<0.00030	<0.00030
THALLIUM, TOTAL	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.000029	<0.000029	<0.000029	<0.000087	<0.000087	<0.0003	<0.0003	<0.0003	<0.0015	<0.0050	<0.0050	<0.00030	<0.00030
VANADIUM, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.00081	0.002	0.00068 J	0.0012	0.0026	<0.0025	0.00074	0.00054 J	0.0019	0.0014
ZINC, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<2	0.00081 J	<0.02	<0.018	<0.018	<0.018	<0.020	<0.020	<0.018	<0.018

- NOTES:
1. mg/L - Milligrams per Liter
 2. pCi/L - picocuries per Liter
 3. NA - Not available, constituent does not have criteria available
 4. NT - Not Tested
 5. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
 6. < - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect. Value is displayed as less than the PQL.
 7. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

Analyte	Units	MW-4																				
		Sample Date:	3/13/2017	4/5/2017	4/24/2017	5/15/2017	6/5/2017	6/26/2017	7/17/2017	8/7/2017	8/27/2018	9/26/2018	10/22/2018	3/27/2019	9/30/2019	3/27/2020	6/17/2020	9/25/2020	11/20/2020	1/25/2021	4/23/2021	7/30/2021
Detection Monitoring (Shaded exceeds prediction limit and is considered an SSI)																						
BORON, TOTAL	mg/L	3.2	3.4	3.8	3.6	3.9	3.6	3.7	4	3.6	4.4	4.1	5.8	3.7	3.1	3.2	3.6	3.6	3.2	3.3	3.7	3.7
CALCIUM, TOTAL	mg/L	480	470	500	450	450	460	510	470	430	490	440	420	440	390	410	420	440	380	380	450	370
CHLORIDE, TOTAL	mg/L	360	390	350	370	360	360	340	280	260	270	280	310	250	220	210	210	220	210	220	190	170
FLUORIDE, TOTAL	mg/L	0.84	1.3	1	1.2	1.4	1.2	1.3	1.3	1.1	1.2	1.3	1	1.2	1.5	1.3	1.2	1.2	1.2	1.1	1.3	1.3
IRON, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	8.7 J	7.4	10	7.2	8.3	6.6	8.3	6.9	6.3	5.2
pH	S.U.	8.34	8.10	6.37	7.20	7.36	7.76	7.51	7.72	7.11	7.13	7.35	7.9	7.69	7.46	7.92	7.11	7.17	7.17	7.18	7.43	6.74
SULFATE, TOTAL	mg/L	890	940	830	940	880	920	940	740	550	770	600	610	700	680	700	650	690	570	530	540	450
TOTAL DISSOLVED SOLIDS	mg/L	2,200	2,400	2,500	2,100	2,400	3,100	2,600	2,000	2,300	2,400	2,200	1,900	2,000	1,500	1,900	2,000	2,000	2,200	1,800	320	1,900
Assessment Monitoring																						
ANTIMONY, TOTAL	mg/L	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.000090	< 0.00009	< 0.000091	< 0.00030	< 0.00030	< 0.0003	< 0.0003	< 0.0003	< 0.0015	< 0.00030	< 0.00030	< 0.00030	< 0.00030
ARSENIC, TOTAL	mg/L	0.0013 J	0.0013 J	0.0012 J	0.0015 J	0.0019 J	0.0020 J	0.0020 J	0.0018 J	0.0016	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0011	< 0.0025	0.0014	0.0012	0.0014	0.0019
BARIUM, TOTAL	mg/L	0.13 B	0.13 B	0.14	0.14	0.16	0.18	0.17	0.19	0.17	0.15	0.16	0.095	0.14	0.1	0.11	0.13	0.13	0.096	0.086	0.11	0.12
BERYLLIUM, TOTAL	mg/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0005 J	< 0.00006	< 0.0010	< 0.0010	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0020	< 0.0020	< 0.0010	< 0.0010
CADMIUM, TOTAL	mg/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.000040	< 0.000017	0.000037 J	0.000035 J	< 0.000040	< 0.001	< 0.00060	< 0.0006	< 0.003	< 0.0010	< 0.0010	< 0.00060	< 0.00060
CHROMIUM, TOTAL	mg/L	0.0019 J	0.0018 J B	0.0021	0.0021	0.0021	0.0017 J	0.0019 J	0.0016 J	0.0013	0.0017	0.0021	0.0019	0.0026	0.0019	0.0018 B	0.0023	< 0.0035	0.0019	0.0019	0.0028	0.0033
COBALT, TOTAL	mg/L	0.00033 J	0.00033 J	0.00039 J	0.00031 J	0.00040 J	0.00058 J	0.00048 J	0.00045 J	0.00049 J	0.0003 J	0.00032 J	0.00022 J	0.00032 J	< 0.0016	< 0.0005	< 0.0005	< 0.0025	< 0.0016	< 0.0016	0.00069 J	0.00079 J
COPPER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0015	0.00085	< 0.005	< 0.0043	< 0.0043	< 0.022	< 0.0050	0.0020 J	< 0.0018	< 0.0018
LEAD, TOTAL	mg/L	0.00028 J	0.00032 J B	0.00019 J	0.00051 J	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.00014 J	0.00033 J	0.0004	0.00037 J	0.00030 J	< 0.002	< 0.0005	< 0.0005	< 0.0025	< 0.0020	< 0.0020	< 0.00050	< 0.00050
LITHIUM, TOTAL	mg/L	0.053 B	0.047	0.058 B	0.051	0.049	0.051	0.048	0.046	0.056	0.073	0.026	0.036	< 0.010	0.056	0.052	0.052	0.076	0.032	0.06	0.065	0.061
MERCURY, TOTAL	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.00010 J	< 0.000041	< 0.000041	< 0.0002	< 0.0002	< 0.00020	< 0.00016	< 0.00000016	< 0.00000016	0.00000063	< 0.00000050	< 0.00000016	< 0.00000016
MOLYBDENUM, TOTAL	mg/L	0.0014 J	0.0015 J	0.0017 J	0.0015 J	0.0012 J	0.0032 J	0.0016 J	< 0.010	< 0.000093	0.0011	0.0012	< 0.0010	0.0017	< 0.001	0.001 B	0.00051	0.0015 J	0.0011	0.00085	0.0018	0.0015
NICKEL, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.02	0.017 B	0.017	0.016	0.018	0.015 J	0.017	0.018	0.014	0.011
RADIUM (226 + 228)	pCi/L	1.05	0.515	0.413	0.252 U	0.342	0.671	0.879	1.99	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.37	1.0 U	0.97	0.70 J	0.74 J	1.87
SELENIUM, TOTAL	mg/L	0.00063 J	< 0.0050	0.00065 J	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0013 J	< 0.00028	< 0.00028	< 0.00028	< 0.00087	< 0.00087	< 0.0009	< 0.0009	< 0.0009	< 0.0045	< 0.0020	< 0.0020	< 0.00090	< 0.00090
SILVER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.000015 J	0.000014 J	< 0.0003	< 0.0003	< 0.0003	< 0.0015	< 0.0010	< 0.0010	< 0.00030	< 0.00030
THALLIUM, TOTAL	mg/L	< 0.0010	< 0.0010	< 0.0010	0.00039 J	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.000029	< 0.000029	< 0.000029	< 0.000087	< 0.000087	< 0.0003	< 0.0003	< 0.0003	< 0.0015	< 0.0010	< 0.0010	< 0.00030	< 0.00030
VANADIUM, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.00057 J	0.00088	0.00056 J	0.00053 J	0.00083	< 0.0025	0.00064	0.00055 J	0.0012	0.0010
ZINC, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	< 2	0.0030 J	< 0.02	< 0.018	< 0.018	< 0.018	< 0.020	< 0.020	< 0.018	< 0.018

NOTES:

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. NA - Not available, constituent does not have criteria available
4. NT - Not Tested
5. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
6. < - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect. Value is displayed as less than the PQL.
7. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

Analyte	Units	MW-5																	
		Sample Date:	6/27/2018	7/30/2018	8/27/2018	9/27/2018	10/22/2018	11/12/2018	11/28/2018	12/7/2018	3/27/2019	9/27/2019	3/27/2020	6/17/2020	9/25/2020	11/20/2020	1/25/2021	4/23/2021	7/30/2021
Detection Monitoring (Shaded exceeds prediction limit and is considered an SSI)																			
BORON, TOTAL	mg/L	2.5	14	2.6	3.7	4.6	4.2	5	4.2	4.1	2.8	2.9	2.7	3.2	2.9	2.7	2.3	2.9	3.0
CALCIUM, TOTAL	mg/L	210	130	190	310	510	460	540	530	630	240	620	610	490	560	560	560	510	340
CHLORIDE, TOTAL	mg/L	24	20	19	25	23	17	24	17	10	13	8.1	12	14	21	22	28	24	22
FLUORIDE, TOTAL	mg/L	1.8	2.6	1.7	2.3	2.8	1.8	2.3	2.1	2.7	2.4	3.1	4.2	3.1	4.4	3.7	3.9	3.9	3.3
IRON, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	32	1.5	41	31	17	34	37	24	12	2.5
pH	S.U.	8.2	7.66	7.30	7.31	7.46	7.54	7.62	7.90	7.97	7.29	7.99	8.41	6.86	6.85	6.87	6.76	6.96	7.43
SULFATE, TOTAL	mg/L	45	83	29	260	950	1,000	1,100	980	1,300	100	1,200	1,200	760	950	1,000	540	690	320
TOTAL DISSOLVED SOLIDS	mg/L	780	820	810	1,200	2,200	2,100	2,400	2,100	2,600	870	2,400	2,200	1,800	2,000	2,400	2000	1,700	1,300
Assessment Monitoring																			
ANTIMONY, TOTAL	mg/L	< 0.00009	0.00011 J	0.00010 J	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00030	< 0.00030	< 0.0003	< 0.0003	< 0.0003	< 0.0015	< 0.00030	< 0.0015	< 0.00030	< 0.00021
ARSENIC, TOTAL	mg/L	0.0086	0.0036	0.0014	0.21	0.28	0.21	0.16	0.16	0.098	0.076	0.097	0.2	0.089	0.15	0.098	0.076	0.052	0.04
BARIUM, TOTAL	mg/L	0.3	0.42	0.28	0.45	0.35	0.3	0.16	0.23	0.082	0.14	0.067	0.07	0.11	0.086	0.06	0.054	0.077	0.087
BERYLLIUM, TOTAL	mg/L	< 0.00006	< 0.00006	< 0.000060	< 0.000060	< 0.000060	< 0.000060	< 0.000060	< 0.000060	< 0.0010	< 0.0010	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0020	< 0.0020	< 0.0010	< 0.00070
CADMIUM, TOTAL	mg/L	< 0.000017	0.000035 J	< 0.000017	< 0.000017	0.000028 J	< 0.000017	0.000032 J	< 0.000017	0.000018 J	< 0.000040	< 0.001	< 0.00060	< 0.00060	< 0.003	< 0.0010	< 0.0010	< 0.00060	< 0.00042
CHROMIUM, TOTAL	mg/L	0.00063 J	0.0008	< 0.00034	< 0.00034	0.00072 J	< 0.00034	< 0.00034	< 0.00034	< 0.0008	< 0.00080	< 0.00090	< 0.00070	< 0.00070	< 0.0035	< 0.00090	< 0.00090	< 0.00070	0.0017
COBALT, TOTAL	mg/L	0.0002 J	0.00096 J	0.000089 J	0.00017 J	0.0025	0.003	0.0043	0.0041	0.006	0.00015 J	0.0064	0.004	< 0.0005	< 0.0025	0.0023	0.0014 J	< 0.00050	0.00069 J
COPPER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.0027	0.00028 J	< 0.005	< 0.0043	< 0.0043	< 0.022	< 0.0050	< 0.0040	< 0.0018	< 0.0013
LEAD, TOTAL	mg/L	0.00029 J	0.001	0.00028 J	0.00058	0.0052	0.028	0.00011 J	< 0.00004	0.00075	0.00029 J	< 0.002	< 0.00004	< 0.0005	< 0.0025	< 0.0020	< 0.010	< 0.00050	< 0.00035
LITHIUM, TOTAL	mg/L	0.049	0.0016 J	0.051	0.099	0.0096	0.14	0.16	0.13	0.11	< 0.010	0.17	0.075	0.11	0.17	0.095	0.12	0.11	0.089
MERCURY, TOTAL	mg/L	< 0.000041	0.00017	0.00011 J	< 0.000041	< 0.000041	< 0.000041	< 0.000041	< 0.000041	< 0.0002	< 0.0002	< 0.00020	< 0.00016	< 0.00000016	< 0.00000016	< 0.00000050	< 0.00000050	< 0.00000016	< 0.00000016
MOLYBDENUM, TOTAL	mg/L	< 0.000093	0.0044	< 0.000093	0.015	0.017	0.013	0.014	0.011	0.011	0.0029	0.0064	0.027 B	0.0035	0.011	0.0083	0.0068	0.00063	0.0023
NICKEL, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.0063	0.00054 JB	0.0039 J	0.0026 J	< 0.0022	< 0.011	< 0.0050	0.0023 J	< 0.0022	0.0015 J
RADIUM (226 + 228)	pCi/L	1.0 U	1.0 U	1.39	1.0 U	1.0 U	1.0 U	0.536 U	0.344 U	1.0 U	1.1	1.0 U	1.0 U	2.03	0.75	< 0.61	0.89 J	1.3	0.34 J
SELENIUM, TOTAL	mg/L	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00087	< 0.00087	< 0.0009	< 0.0009	< 0.0009	< 0.0045	< 0.0020	< 0.0020	< 0.00090	< 0.00063
SILVER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	< 0.000040	0.000016 J	< 0.0003	< 0.0003	< 0.0003	< 0.0015	< 0.0010	< 0.0010	< 0.00030	< 0.00021
THALLIUM, TOTAL	mg/L	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000087	< 0.000087	< 0.0003	< 0.0003	< 0.0003	< 0.0015	< 0.0010	< 0.0010	< 0.00030	< 0.00021
VANADIUM, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.003	0.0013	0.00089	< 0.0005	0.0008	< 0.0025	< 0.00080	< 0.00080	0.00070 J	0.00089
ZINC, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.22 J	0.0025 J	< 0.02	< 0.018	< 0.018	< 0.018	< 0.020	< 0.020	< 0.018	< 0.012

NOTES:

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. NA - Not available, constituent does not have criteria available
4. NT - Not Tested
5. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
6. < - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect. Value is displayed as less than the PQL.
7. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

Analyte	Units	MW-6																	
		Sample Date:	6/27/2018	7/30/2018	8/27/2018	9/26/2018	10/22/2018	11/12/2018	11/28/2018	12/7/2018	3/27/2019	9/27/2019	3/27/2020	6/17/2020	9/25/2020	11/20/2020	1/25/2021	4/23/2021	7/30/2021
Detection Monitoring (Shaded exceeds prediction limit and is considered an SSI)																			
BORON, TOTAL	mg/L	13	0.21	14	14	12	11	11	11	9.7	15	8.5	9.2	17	10	11	8.6	11	13
CALCIUM, TOTAL	mg/L	250	1.3	190	220	250	220	250	260	270	210	250	260	220	210	170	230	210	200
CHLORIDE, TOTAL	mg/L	310	310	260	290	300	280	300	280	250	210	140	130	160	150	160	150	210	200
FLUORIDE, TOTAL	mg/L	1.7	1.7	1.8	1.8	1.7	1.4	1.3	1.3	1.4	1.7	1.5	1.4	1.9	1.7	1.6	1.2	1.6	1.6
IRON, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	13	11	18	14	11	20	17	18	7.2	13
pH	S.U.	8.41	7.89	7.46	7.42	7.50	7.89	7.10	7.16	7.78	7.16	7.61	8.13	7.23	7.2	7.24	7.17	7.49	7.6
SULFATE, TOTAL	mg/L	110	1,500	19	44	97	70	130	90	160	<3.0	25	5.1	1.6 J	11	14	5.7	14	1.3 J
TOTAL DISSOLVED SOLIDS	mg/L	1,600	820	1,500	1,600	1,600	1,500	1,600	1,600	1,600	1,400	1,200	1,200	1,200	1,100	1,000	1,200	1,400	1,300
Assessment Monitoring																			
ANTIMONY, TOTAL	mg/L	0.00012 J	0.00022 J	0.00014 J	0.00033	<0.00009	<0.00009	0.00037	<0.00009	<0.00030	0.00010 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.00030	<0.00030	<0.00030	<0.00021
ARSENIC, TOTAL	mg/L	0.0011	0.00029 J	0.0016	0.0013	0.0011	0.0023	0.0014	0.0014	0.00097 J	0.00098 J	0.00074 J	0.0016	0.00084 J	0.0017	0.00092	0.00083 J	0.001	0.0017
BARIUM, TOTAL	mg/L	0.56	0.0054	0.89	1.1	1	1.1	1	1.1	0.82	1.1	1.3	1.4	1.2	1.6	1.4	1.3	1.3	1.6
BERYLLIUM, TOTAL	mg/L	< 0.00006	< 0.00006	< 0.000060	0.00021 J	< 0.000060	< 0.000060	< 0.000060	< 0.000060	< 0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.0020	<0.0010	<0.00070
CADMIUM, TOTAL	mg/L	0.000089	< 0.000017	0.000034 J	< 0.000017	0.000057	0.000021 J	0.000017 J	0.000063	0.000077	<0.000040	< 0.001	< 0.00060	< 0.00060	< 0.00060	<0.0010	<0.0010	<0.00060	0.00053 J
CHROMIUM, TOTAL	mg/L	0.0017	0.00089	0.0017	0.0012	0.0014	0.0013	0.0012	0.0017	0.0016	0.0038	0.0012	0.0016 B	0.0046	0.00099	0.0014	0.00089 J	0.0017	0.0029
COBALT, TOTAL	mg/L	0.00062 J	0.00089 J	0.00050 J	0.0004 J	0.00036 J	0.00035 J	0.00031 J	0.00099 J	0.00058 J	0.00055 J	<0.0016	<0.0005	0.00059 J	<0.0005	<0.0016	<0.0016	<0.00050	0.00082 J
COPPER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.0034	0.0012	<0.005	<0.0043	<0.0043	<0.0043	0.0051	<0.0040	<0.0018	< 0.0013
LEAD, TOTAL	mg/L	0.0036	0.0016	0.0023	0.00056	0.0023	0.0018	0.00052	0.0033 J	0.00071	0.0031	<0.002	<0.0005	0.0032	<0.001	0.0016	0.0021	<0.00050	0.0014
LITHIUM, TOTAL	mg/L	0.24	< 0.00095	0.23	0.21	0.18	0.19	0.18	0.18	0.17	0.2	0.17	0.16	0.33	0.23	0.18	0.16	0.19	0.23
MERCURY, TOTAL	mg/L	<0.000041	0.00012	0.00013	<0.000041	<0.000041	<0.000041	<0.000041	<0.000041	<0.0002	<0.0002	<0.00020	<0.00016	0.000025	0.0000033	0.000033	0.000006	0.00000073	0.00000094
MOLYBDENUM, TOTAL	mg/L	< 0.000093	0.0016	0.0018	0.0015	0.0014	0.001	0.0011	0.0011	< 0.0010	<0.0010	<0.001	0.00023 JB	0.00023 J	0.00071	0.00061	0.00045	0.00059	0.00076
NICKEL, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.0019	0.0024 B	<0.005	<0.0022	<0.0022	<0.0022	<0.0050	<0.0050	<0.0022	0.0022 J
RADIUM (226 + 228)	pCi/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.86 U	0.931 U	0.71 U	0.87 J	1.0 U	3.44	2.34	2.22	1.95	1.5	2.45	1.5	0.06 J
SELENIUM, TOTAL	mg/L	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00087	< 0.00087	<0.0009	<0.0009	<0.0009	<0.0009	<0.0020	<0.0020	<0.00090	< 0.00063
SILVER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	<0.000040	0.000024 J	< 0.0003	< 0.0003	< 0.0003	< 0.0003	<0.0010	<0.0010	<0.00030	<0.00021
THALLIUM, TOTAL	mg/L	< 0.00028	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	0.000064 J	<0.000087	< 0.0003	< 0.0003	< 0.0003	<0.0006	<0.0010	<0.0010	<0.00030	0.00030 J
VANADIUM, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.00029 J	0.00066 J	<0.0008	<0.0005	0.00076 J	<0.0005	<0.00080	<0.00080	<0.00050	0.00083
ZINC, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	<2.0	0.011 J	<0.02	<0.018	<0.018	<0.018	<0.020	<0.020	<0.018	<0.012

NOTES:

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. NA - Not available, constituent does not have criteria available
4. NT - Not Tested
5. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
6. < - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect. Value is displayed as less than the PQL.
7. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

Analyte	Units	MW-7 (Interim Background Well)																	
		Sample Date:	6/27/2018	7/30/2018	8/27/2018	9/26/2018	10/22/2018	11/12/2018	11/28/2018	12/7/2018	3/27/2019	9/27/2019	3/27/2020	6/17/2020	9/25/2020	11/20/2020	1/25/2021	4/23/2021	7/30/2021
Detection Monitoring (Shaded exceeds prediction limit and is considered an SSI)																			
BORON, TOTAL	mg/L	16	2.4	9	15	13	14	14	14	9.2	11	12	15	15	15	16	13	15	15
CALCIUM, TOTAL	mg/L	150	200	150	150	140	130	140	150	140	140	140	140	130	150	140	140	150	130
CHLORIDE, TOTAL	mg/L	15	15	13	15	15	14	15	15	14	14	13	14	13	15	14	13	13	14
FLUORIDE, TOTAL	mg/L	0.1	0.1	0.11	0.14	0.16	0.066 J	< 0.055	< 0.055	0.092 J	0.14	< 0.1	0.2	0.18	0.1	0.13	0.084 J	0.082 J	0.094 J
IRON, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	19	21	20	19	19	16	14	15	17	16
pH	S.U.	7.65	7.30	6.99	7.14	7.31	7.21	7.51	7.34	8.05	7.57	7.54	8.22	6.77	6.77	6.72	6.47	6.66	7.01
SULFATE, TOTAL	mg/L	68	52	24	57	57	50	61	51	14	26	11	32	23	28	26	15	26	30
TOTAL DISSOLVED SOLIDS	mg/L	690	700	750	690	740	800	720	680	610	690	610	650	540	610	480	660	740	630
Assessment Monitoring																			
ANTIMONY, TOTAL	mg/L	< 0.00009	0.0016	0.00017 J	< 0.00009	< 0.00009	< 0.00009	0.00013 J	< 0.00009	< 0.00030	< 0.00030	< 0.0003	< 0.0003	< 0.0003	< 0.00030	< 0.00030	< 0.00030	< 0.00030	< 0.00030
ARSENIC, TOTAL	mg/L	0.0019	0.029	0.0048	0.0009 J	0.001	0.0009 J	0.0028	0.0004 J	0.00082 J	0.00085 J	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0006	< 0.0010	< 0.00050	< 0.0005
BARIUM, TOTAL	mg/L	0.47	0.3	0.36	0.42	0.41	0.43	0.44	0.45	0.28	0.35	0.31	0.33	0.37	0.36	0.31	0.27	0.32	0.36
BERYLLIUM, TOTAL	mg/L	< 0.00006	< 0.00006	< 0.000060	0.00016 J	< 0.000060	< 0.000060	< 0.000060	< 0.000060	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0020	< 0.0020	< 0.0010	< 0.0010
CADMIUM, TOTAL	mg/L	0.000047	< 0.000017	0.000023 J	< 0.000017	< 0.000017	< 0.000017	< 0.000017	< 0.000017	< 0.00030	< 0.000040	< 0.0010	< 0.00060	< 0.00060	< 0.00060	< 0.0010	< 0.0010	< 0.00060	< 0.00060
CHROMIUM, TOTAL	mg/L	0.00055 J	0.0028	< 0.00034	< 0.00034	0.00068 J	< 0.00034	0.00045 J	< 0.00034	0.00037 J	< 0.00080	< 0.00090	< 0.00070	< 0.00070	< 0.00070	< 0.00090	< 0.00090	< 0.00070	0.0010
COBALT, TOTAL	mg/L	0.00079 J	0.0006 J	0.00099 J	0.0007 J	0.00075 J	0.0007 J	0.0007 J	0.00076 J	0.00088 J	0.00091 J	0.0009 J	0.00067 J	0.00084 J	0.00068 J	0.00069	0.00079 J	0.00074 J	0.00088 J
COPPER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.00059 J	0.00046 J	< 0.005	< 0.0043	< 0.0043	< 0.0043	< 0.0050	< 0.0040	< 0.0018	< 0.0018
LEAD, TOTAL	mg/L	0.00062	0.0029	0.000071 J	< 0.00004	0.00026 J	< 0.00004	< 0.00004	< 0.00004	0.000074 J	0.000057 J	< 0.002	< 0.0005	< 0.0005	< 0.0005	< 0.0020	< 0.0020	< 0.00050	< 0.00050
LITHIUM, TOTAL	mg/L	0.0052 J	0.059	0.0074 J	0.0055 J	< 0.00095	0.0034 J	0.0035 J	0.0061 J	0.0094 J	< 0.010	0.0044 J	0.0039 J	0.00057 J	0.00022 J	< 0.010	< 0.010	< 0.0067	< 0.0067
MERCURY, TOTAL	mg/L	< 0.000041	0.00014	0.00012	< 0.000041	0.00008 J	< 0.000041	< 0.000041	< 0.000041	< 0.0002	< 0.0002	< 0.00020	< 0.00016	< 0.00000016	< 0.00000016	0.00000051	< 0.00000050	< 0.00000016	< 0.00000016
MOLYBDENUM, TOTAL	mg/L	< 0.000093	0.0054	0.0066	0.0027	0.004	0.0014	0.0019	0.0011	0.0043	< 0.0010	< 0.001	0.00012 JB	0.00017 J	0.00023 J	0.00016	0.00017 J	< 0.000093	< 0.000093
NICKEL, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.0004	0.00042 JB	< 0.005	< 0.0022	< 0.0022	< 0.0022	< 0.0050	< 0.0050	< 0.0022	< 0.0022
RADIUM (226 + 228)	pCi/L	1.0 U	1.0 U	1.0 U	1.0 U	0.762 U	1.0 U	1.0 U	0.72 U	1.0 U	1.0 U	1.0 U	1.3	2.12	1.65	2.03	1.7	1.76	1.33
SELENIUM, TOTAL	mg/L	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00087	< 0.00087	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0020	< 0.0020	< 0.00090	< 0.00090
SILVER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.000034 J	0.000022 J	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0010	< 0.0010	< 0.00030	< 0.00030
THALLIUM, TOTAL	mg/L	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000087	< 0.000087	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0010	< 0.0010	< 0.00030	< 0.00030
VANADIUM, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.00057 J	0.00076 J	0.0006 J	0.00052 J	0.00078 J	0.00057 J	0.00061	0.00065 J	0.00061 J	0.00067 J
ZINC, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	< 2.0	0.0023 J	< 0.02	< 0.018	< 0.018	0.021	< 0.020	< 0.020	< 0.018	< 0.018

NOTES:

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. NA - Not available, constituent does not have criteria available
4. NT - Not Tested
5. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
6. < - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect. Value is displayed as less than the PQL.
7. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

Analyte	Units	MW-8																	
		Sample Date:	6/27/2018	7/30/2018	8/27/2018	9/26/2018	10/22/2018	11/12/2018	11/28/2018	12/7/2018	3/27/2019	9/30/2019	3/27/2020	6/17/2020	9/25/2020	11/20/2020	1/25/2021	4/23/2021	7/30/2021
Detection Monitoring (Shaded exceeds prediction limit and is considered an SSI)																			
BORON, TOTAL	mg/L	6	6.2	4.4	3	2.1	1.4	1.2	1.3	0.9	1.6	1.1	2	2	1.4	1.2	0.96	1.3	1.4
CALCIUM, TOTAL	mg/L	140	150	140	130	120	120	120	120	95	130	130	140	130	160	140	130	140	130
CHLORIDE, TOTAL	mg/L	94	110	78	41	23	17	15	14	8.5	18	14	17	35	37	40	40	33	30
FLUORIDE, TOTAL	mg/L	0.18	0.12	0.39	0.57	0.57	0.34	0.34	0.36	0.4	0.57	0.34	0.5	0.4	0.54	0.42	0.49	0.38	0.42
IRON, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	15	21	24	23	22	26	31	27	22	29
pH	S.U.	8.74	7.69	7.25	7.28	7.57	7.74	7.96	7.61	7.81	7.96	7.4	7.59	7.18	7.07	7.11	7.18	7.16	6.74
SULFATE, TOTAL	mg/L	2.2	27	8.2	5.1	4.7	3.4	3.6	3.1	4.7	<3.0	0.63 J	2.1 J	0.95 J	1.8 J	7.9	11	1.8 J	37
TOTAL DISSOLVED SOLIDS	mg/L	720	860	800	490	490	410	290	420	180	480	430	550	340	480	420	540	530	630
Assessment Monitoring																			
ANTIMONY, TOTAL	mg/L	<0.00009	0.00026 J	0.00012 J	<0.00009	<0.00009	<0.00009	0.00012 J	<0.00009	<0.00030	<0.00030	<0.0003	<0.0003	<0.0003	<0.0003	<0.00030	<0.00030	<0.00030	<0.00030
ARSENIC, TOTAL	mg/L	0.0064	0.0041	0.008	0.0047	0.0047	0.004	0.0037	0.0041	0.0028	0.0065	0.0033	0.0096	0.0043	0.0042	0.0044	0.0028	0.0035	0.0067
BARIUM, TOTAL	mg/L	0.42	0.38	0.48	0.51	0.62	0.61	0.69	0.62	0.5	0.68	0.8	0.91	0.7	0.84	0.94	0.88	0.83	1.0
BERYLLIUM, TOTAL	mg/L	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	0.000089 J	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0010	<0.0010
CADMIUM, TOTAL	mg/L	0.000051	<0.000017	0.000031 J	<0.000017	<0.000017	<0.000017	<0.000017	0.000079	<0.000040	<0.000040	<0.0010	<0.00060	<0.00060	<0.00060	<0.0010	<0.0010	<0.00060	<0.00060
CHROMIUM, TOTAL	mg/L	0.00085	0.00049 J	0.00084	0.00059 J	0.00075 J	0.00065 J	0.00058 J	0.0009	0.00050 J	0.00051 J	0.00083 J	0.0012 B	<0.0007	0.0011	<0.00090	<0.00090	0.00076 J	0.0012
COBALT, TOTAL	mg/L	0.0018	0.0019	0.002	0.00058 J	0.00044 J	0.00034 J	0.00032 J	0.00035 J	0.00022 J	0.00036 J	<0.0016	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.00050	<0.00050
COPPER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.00094	0.00084	<0.005	<0.0043	<0.0043	<0.0043	<0.0050	<0.0040	<0.0018	<0.0018
LEAD, TOTAL	mg/L	0.002	0.0039	0.0015	0.00036 J	0.00067	0.00025 J	0.0003 J	0.00058	0.00059	0.00046	<0.002	<0.0005	<0.0005	<0.0005	<0.0020	<0.0020	<0.00050	<0.00050
LITHIUM, TOTAL	mg/L	0.021	0.01	0.04	0.039	0.029	0.034	0.032	0.032	0.024	<0.010	0.028	0.049	0.03	0.038	0.026	0.034	0.039	0.043
MERCURY, TOTAL	mg/L	<0.000041	0.00012	0.000093 J	<0.000041	<0.000041	<0.000041	<0.000041	<0.000041	<0.00020	<0.00020	<0.00020	<0.00016	0.00000062	0.00000078	0.0000018	0.0000014	0.00000064	<0.0000016
MOLYBDENUM, TOTAL	mg/L	<0.000093	<0.000093	0.0069	0.0034	0.0045	0.005	0.0053	0.0052	0.0045	0.0046	0.0038	0.0025 B	0.0018	0.0029	0.0037	0.0036	0.0028	0.0037
NICKEL, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.0011	0.0013 JB	<0.005	<0.0022	<0.0022	<0.0022	<0.0050	<0.0050	<0.0022	<0.0022
RADIUM (226 + 228)	pCi/L	1.0 U	1.36	1.0 U	1.0 U	1.0 U	1.0 U	0.952 U	0.8 U	1.0 U	1.08	2.21	1.99	4.6	2.31	2.8	2.19	3.4	0.86
SELENIUM, TOTAL	mg/L	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028	<0.00087	<0.00087	<0.0009	<0.0009	<0.0009	<0.0009	<0.0020	<0.0020	<0.00090	<0.00090
SILVER, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.000028 J	<0.000040	<0.0003	<0.0003	<0.0003	<0.0003	<0.0010	<0.0010	<0.00030	<0.00030
THALLIUM, TOTAL	mg/L	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000087	<0.000087	<0.0003	<0.0003	<0.0003	<0.0003	<0.0010	<0.0010	<0.00030	<0.00030
VANADIUM, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.00036 J	<0.00049 J	<0.0008	<0.0005	<0.0005	<0.0005	<0.00080	<0.00080	<0.00050	<0.00050
ZINC, TOTAL	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	<2.0	0.0026 J	<0.02	<0.018	<0.018	<0.018	<0.020	<0.020	<0.018	<0.018

- NOTES:**
1. mg/L - Milligrams per Liter
 2. pCi/L - picocuries per Liter
 3. NA - Not available, constituent does not have criteria available
 4. NT - Not Tested
 5. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
 6. < - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect. Value is displayed as less than the PQL.
 7. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

Analyte	Units	MW-9													
		Sample Date:	9/30/2019	3/27/2020	6/17/2020	7/22/2020	9/25/2020	11/20/2020	1/25/2021	4/23/2021	7/30/2021	10/25/2021			
Detection Monitoring (Shaded exceeds prediction limit and is considered an SSI)															
BORON, TOTAL	mg/L	6.9	5	5.1	5.2	5.9	4.9	3.9	5.3	6.4	6.8				
CALCIUM, TOTAL	mg/L	280	250	250	230	240	240	250	230	240	220				
CHLORIDE, TOTAL	mg/L	18	11	11	9.5	11	12	11	12	13	13				
FLUORIDE, TOTAL	mg/L	2.3	2.4	2.5	2.4	2.6	2.7	2.2	2.4	2.4	2.5				
IRON, TOTAL	mg/L	20	29	17	15	14	19	26	23	21	19				
pH	S.U.	7.75	7.41	7.91	7.63	7.07	7.43	6.93	7.14	7.25	7.31				
SULFATE, TOTAL	mg/L	9.6	94	100	74	19	170	180	71	21	14				
TOTAL DISSOLVED SOLIDS	mg/L	1,100	890	1,500	960	560	910	780	880	830	880				
Assessment Monitoring															
ANTIMONY, TOTAL	mg/L	<0.00030	<0.0003	<0.0003	<0.0006	<0.0006	<0.0006	<0.00030	<0.00030	<0.00030	<0.00030				
ARSENIC, TOTAL	mg/L	0.0035	0.002	0.0022	0.003	0.0021	0.0038	0.004	0.0025	0.0034	0.0025				
BARIUM, TOTAL	mg/L	1.8	1.1	1.4	1.5	2.5	0.81	0.91	1	4.8	5.0				
BERYLLIUM, TOTAL	mg/L	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.0020	<0.0010	<0.0010				
CADMIUM, TOTAL	mg/L	<0.000040	< 0.001	<0.0006	<0.0012	<0.0006	<0.0006	<0.0010	<0.0010	<0.00060	<0.00060				
CHROMIUM, TOTAL	mg/L	0.0025	0.0022	0.0018 B	0.003	0.0018	0.0021	0.0022	0.0024	0.0024	0.0029				
COBALT, TOTAL	mg/L	0.0022	0.0005 J	0.0006 J	0.0025 J	0.00068 J	0.00073 J	0.0011	<0.0016	<0.00050	< 0.00050				
COPPER, TOTAL	mg/L	0.0013	<0.005	<0.0043	<0.0086	<0.0043	<0.0043	<0.0050	<0.0040	<0.0018	< 0.0018				
LEAD, TOTAL	mg/L	0.002	<0.002	0.00083 J	0.0016 J	<0.0005	<0.0005	<0.0020	<0.0020	<0.00050	< 0.00050				
LITHIUM, TOTAL	mg/L	0.16	0.28	0.049	0.24	0.25	0.26	0.16	0.26	0.26	0.26				
MERCURY, TOTAL	mg/L	<0.00020	<0.00020	<0.00016	0.00000088	<0.00000016	0.00000063	<u>0.0000007</u>	<u><0.00000050</u>	<u><0.00000016</u>	<u>0.00000062</u>				
MOLYBDENUM, TOTAL	mg/L	0.012	0.027	0.017 B	0.015	0.0077	0.023	0.025	0.028	0.026	0.017				
NICKEL, TOTAL	mg/L	0.0015 JB	<0.005	<0.0022	<0.0044	<0.0022	<0.0022	0.0036	0.0031 J	0.0032 J	< 0.0022				
RADIUM (226 + 228)	pCi/L	1.18	1.45	1.43	1.0 U	1.65	1.49	1.74	1.41	1.76	2.56				
SELENIUM, TOTAL	mg/L	<0.00087	<0.0009	<0.0009	<0.0018	<0.0009	<0.0009	<0.0020	<0.0020	<0.00090	< 0.00090				
SILVER, TOTAL	mg/L	<0.000040	< 0.0003	< 0.0003	<0.0006	< 0.0003	< 0.0003	<0.0010	<0.0010	<0.00030	<0.00030				
THALLIUM, TOTAL	mg/L	<0.000087	< 0.0003	< 0.0003	0.00085 J	< 0.0003	< 0.0003	<0.0010	<0.0010	<0.00030	<0.00030				
VANADIUM, TOTAL	mg/L	0.0021	< 0.0008	<0.0005	0.0026	<0.0005	<0.0005	<0.00080	<0.00080	<0.00050	< 0.00050				
ZINC, TOTAL	mg/L	0.0064 J	<0.02	<0.018	<0.018	<0.018	<0.018	<0.020	<0.020	<0.018	<0.018				

NOTES:

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. NA - Not available, constituent does not have criteria available
4. NT - Not Tested
5. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
6. < - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect. Value is displayed as less than the PQL.
7. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

APPENDIX B.
Summary of Background Events
GRAND HAVEN BLP
Grand Haven, Michigan

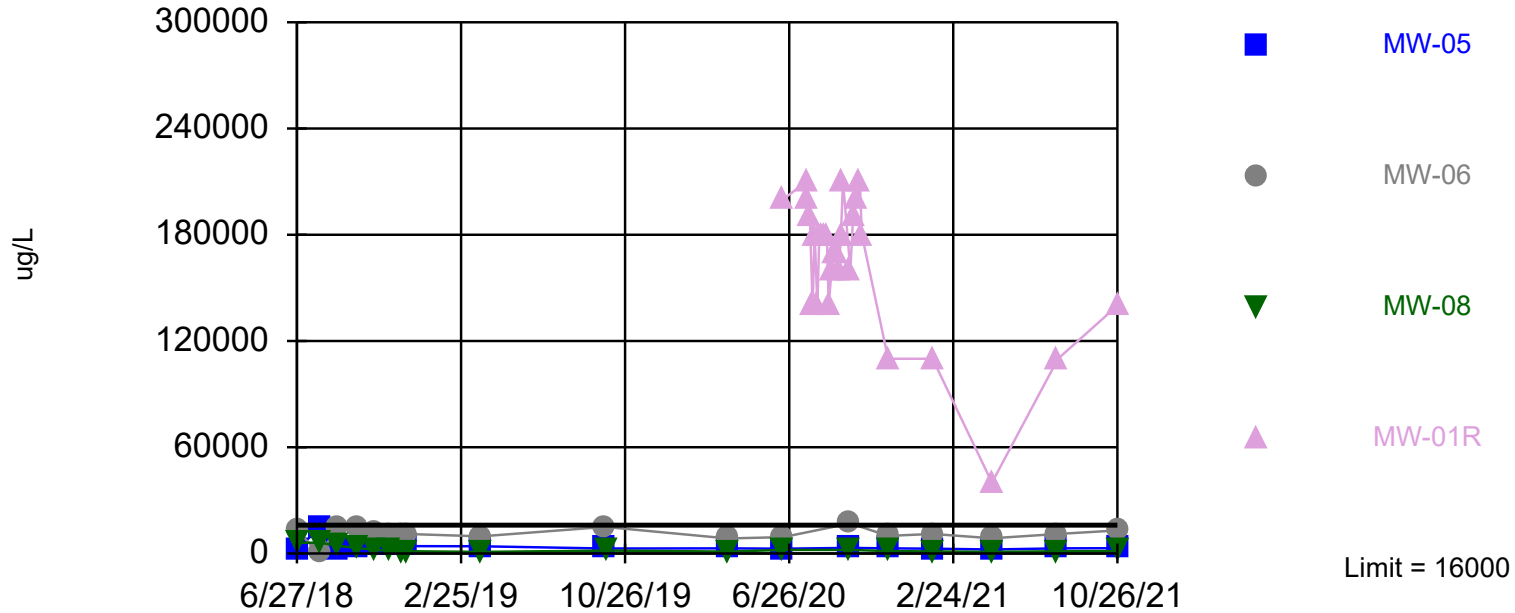
Analyte	Units	MW-10										
		Sample Date:	9/30/2019	3/27/2020	6/17/2020	7/22/2020	9/25/2020	11/20/2020	1/25/2021	4/23/2021	7/30/2021	10/25/2021
Detection Monitoring (Shaded exceeds prediction limit and is considered an SSI)												
BORON, TOTAL	mg/L	46	35	39	43	43	51	41	42	52	52	
CALCIUM, TOTAL	mg/L	150	130	130	140	130	160	130	160	140	140	
CHLORIDE, TOTAL	mg/L	550	94	430	600	610	540	400	430	670	520	
FLUORIDE, TOTAL	mg/L	10	11	10	9.9	8.9	12	11	11	12	11	
IRON, TOTAL	mg/L	8.4	11	9.2	11	9.2	8.8	12	12	13	10	
pH	S.U.	7.66	7.92	8.4	7.93	7.74	7.71	7.65	7.6	7.7	7.42	
SULFATE, TOTAL	mg/L	<3.0	5.8	2.9 J	0.56 J	1.1 J	<0.41	5.5	2.7 J	0.60 J	53	
TOTAL DISSOLVED SOLIDS	mg/L	1,700	1,500	1,600	2,100	1,600	1,700	1,200	1,700	1,700	2,000	
Assessment Monitoring												
ANTIMONY, TOTAL	mg/L	0.00018 J	0.0039	<0.0003	<0.00060	<0.0003	<0.0015	<0.00030	<0.0014	<0.00030	<0.00030	
ARSENIC, TOTAL	mg/L	0.00097 J	0.0014	0.0011	0.0014 J	0.0013	0.00093 J	0.00078	0.00065 J	0.0011	0.0011	
BARIIUM, TOTAL	mg/L	1.2	1.1	1.2	1.2	1.3	1.3	1.3	1.2	1.4	1.5	
BERYLLIUM, TOTAL	mg/L	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.0020	<0.0010	<0.0010	
CADMIUM, TOTAL	mg/L	0.000030 J	0.0011	< 0.00060	<0.0012	< 0.00060	<0.003	<0.0010	<0.00090	<0.00060	<0.00060	
CHROMIUM, TOTAL	mg/L	0.0078	0.013	0.0079 B	0.011	0.0099	0.007	0.0068	0.0073	0.011	0.011	
COBALT, TOTAL	mg/L	0.00076 J	0.0026	0.00067 J	0.0011 J	0.00089 J	0.00062 J	0.00073	0.00070 J	0.0011 J	0.0011 J	
COPPER, TOTAL	mg/L	0.00087	<0.005	<0.0043	<0.0086	<0.0043	<0.0043	<0.0050	<0.0036	<0.0018	0.0050	
LEAD, TOTAL	mg/L	0.0039	0.045	0.0011 J	0.0018 J	0.00078 J	<0.0025	0.0024	<0.0090	0.00089 J	0.0012 J	
LITHIUM, TOTAL	mg/L	1.2	1.2	0.22	0.88	0.96	1.6	1.5	1.5	1.4	1.4	
MERCURY, TOTAL	mg/L	<0.00020	<0.00020	<0.00016	0.00000051	0.0000006	<0.00000016	<u>0.0000014</u>	<u>0.0000011</u>	<u>0.00000097</u>	<u>0.0000008</u>	
MOLYBDENUM, TOTAL	mg/L	0.011	0.0076	0.005 B	0.0043	0.0048	0.01	0.017	0.0042	0.0071	0.012	
NICKEL, TOTAL	mg/L	0.0021 B	0.0054	<0.0022	<0.0044	<0.0022	<0.0022	<0.0050	0.0032 J	0.0041 J	0.0027 J	
RADIUM (226 + 228)	pCi/L	1.0 U	1.0 U	1.72	1.0 U	1.27	2.19	1.7	1.37	2.49	2.03	
SELENIUM, TOTAL	mg/L	<0.00087	<0.0009	<0.0009	<0.0018	<0.0009	<0.0009	<0.0020	<0.0018	<0.00090	< 0.00090	
SILVER, TOTAL	mg/L	<0.000040	< 0.0003	< 0.0003	<0.0006	< 0.0003	<0.0015	<0.0010	<0.00090	<0.00030	<0.00030	
THALLIUM, TOTAL	mg/L	<0.000087	< 0.0003	< 0.0003	<0.0006	< 0.0003	<0.0015	<0.0010	<0.0045	<0.00030	<0.00030	
VANADIUM, TOTAL	mg/L	0.0011	0.0019	0.0009	0.002	0.0019	0.00076 J	0.00091	0.00076	0.0018	0.0018	
ZINC, TOTAL	mg/L	0.011 J	0.16	<0.018	<0.018	<0.018	<0.018	<0.020	<0.020	<0.018	<0.018	

NOTES:

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. NA - Not available, constituent does not have criteria available
4. NT - Not Tested
5. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
6. < - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect. Value is displayed as less than the PQL.
7. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

Exceeds Limit: MW-01R

Prediction Limit Interwell Non-parametric

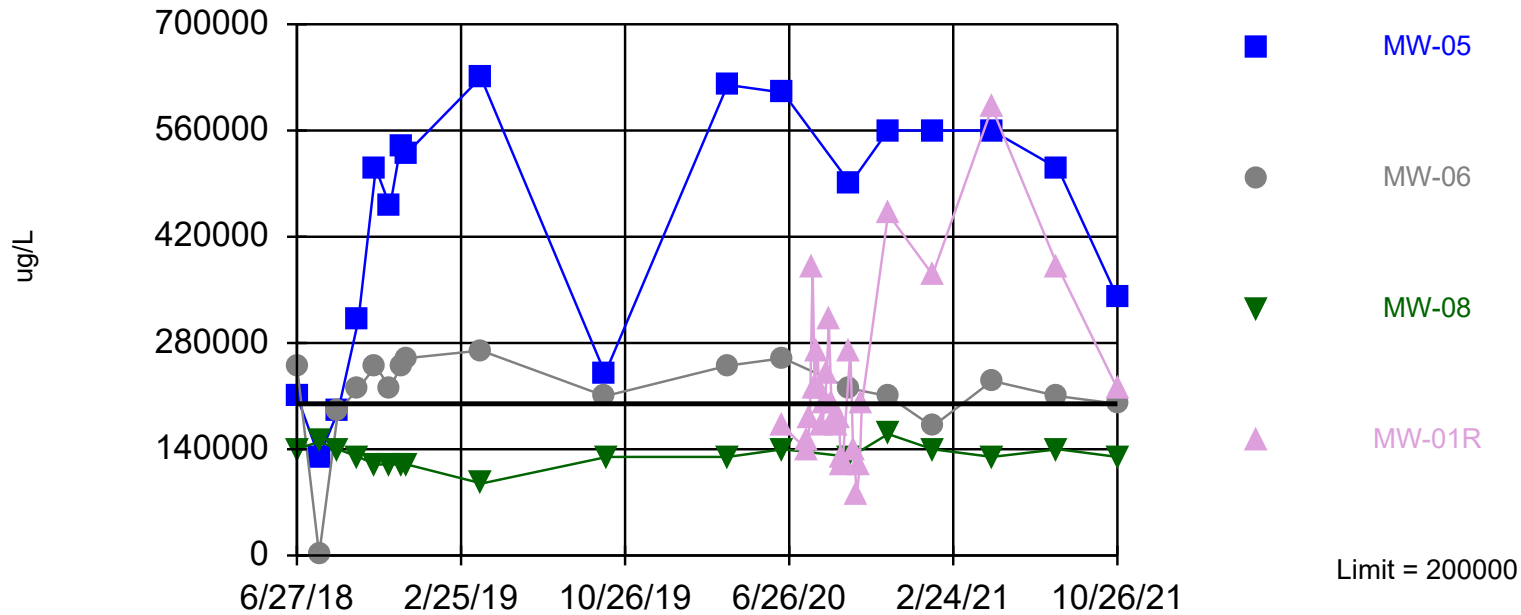


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Constituent: Boron Analysis Run 1/3/2022 1:12 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-05, MW-01R

Prediction Limit Interwell Non-parametric

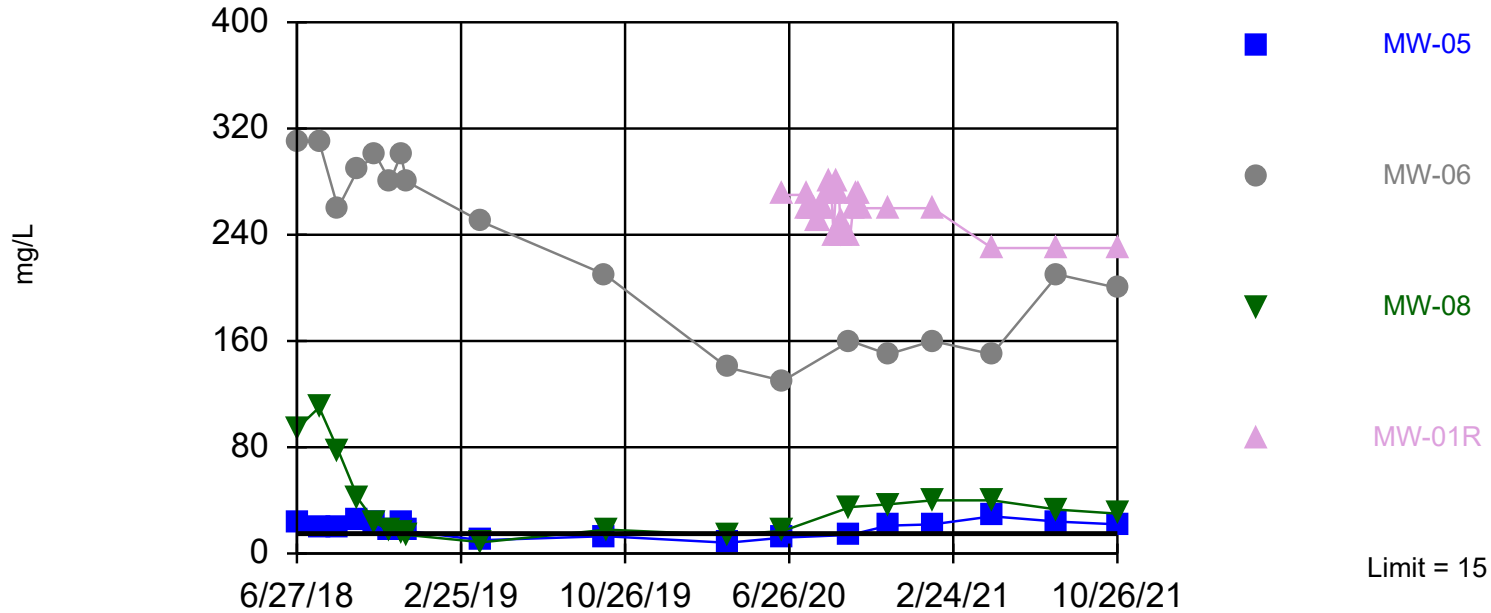


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Constituent: Calcium Analysis Run 1/3/2022 1:12 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-05, MW-06, MW-08,
MW-01R

Prediction Limit Interwell Non-parametric

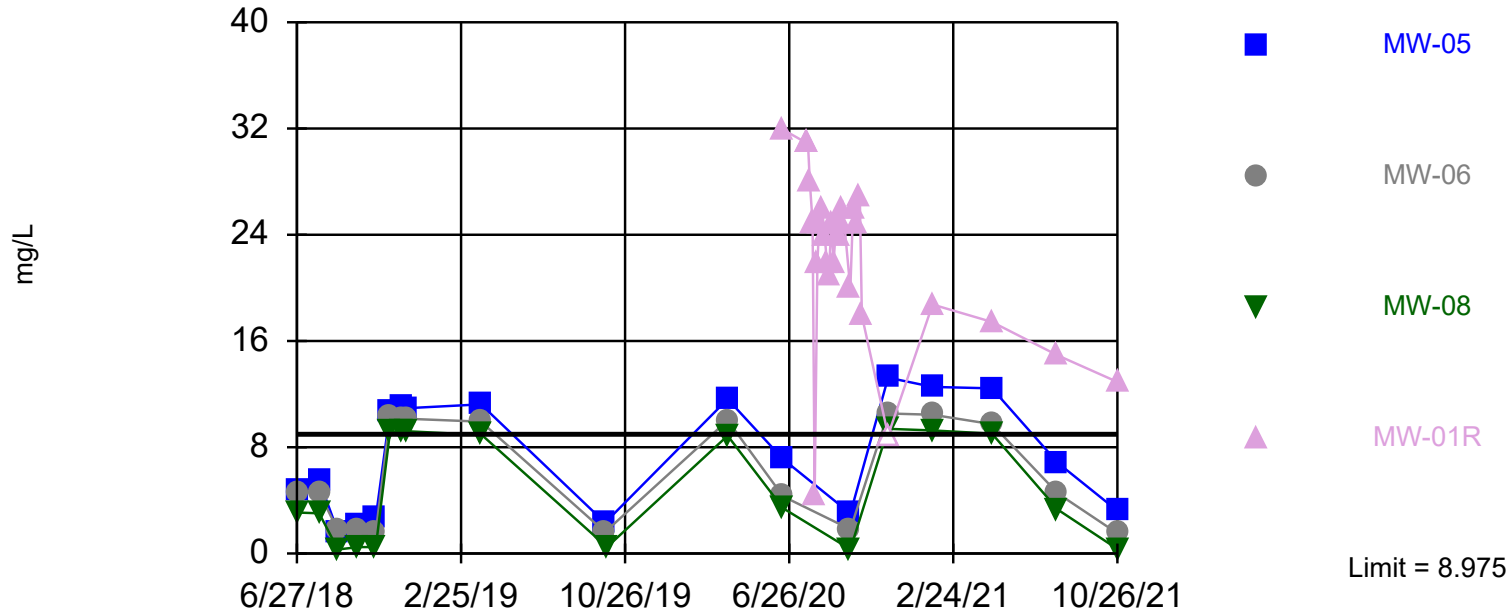


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Constituent: Chloride Analysis Run 1/3/2022 1:12 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-01R

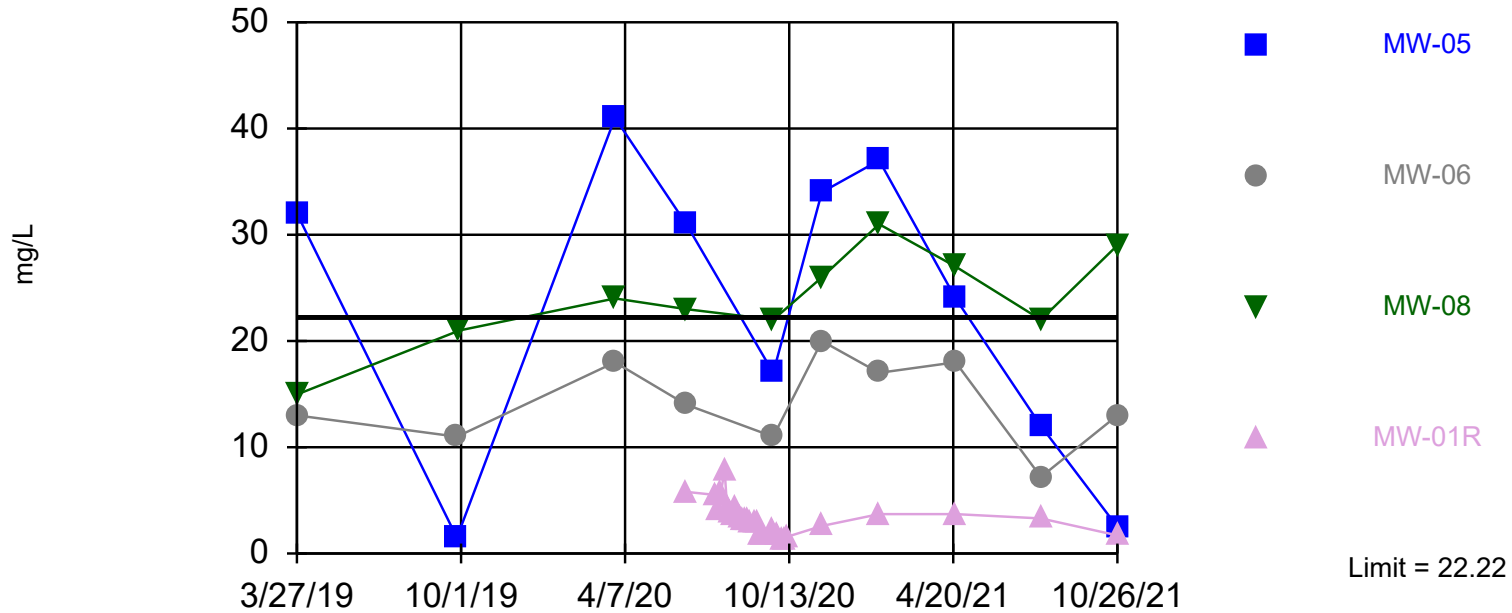
Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. 16.67% NDs. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Data were deseasonalized.

Exceeds Limit: MW-08

Prediction Limit Interwell Parametric

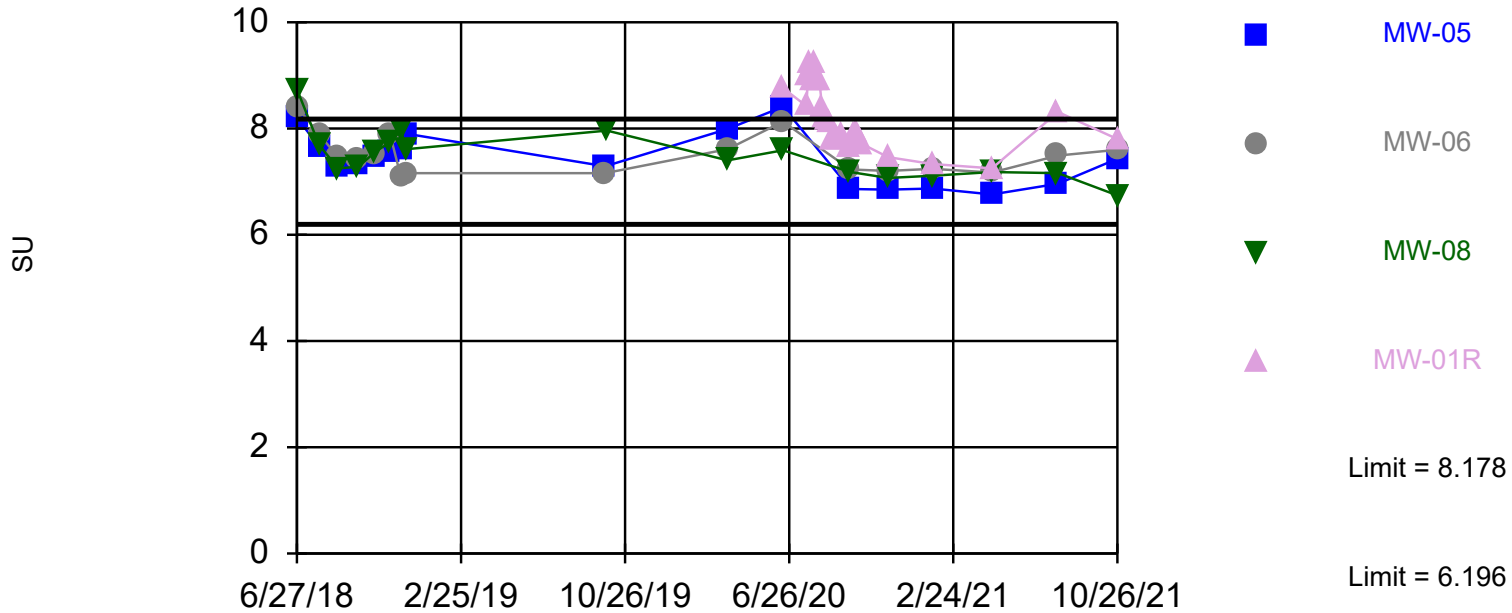


Background Data Summary: Mean=17.6, Std. Dev.=2.319, n=10. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.942, critical = 0.842. Report alpha = 0.1682. Individual comparison alpha = 0.045. Most recent point for each compliance well compared to limit.

Constituent: Iron Analysis Run 1/3/2022 1:12 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Within Limits

Prediction Limit Interwell Parametric

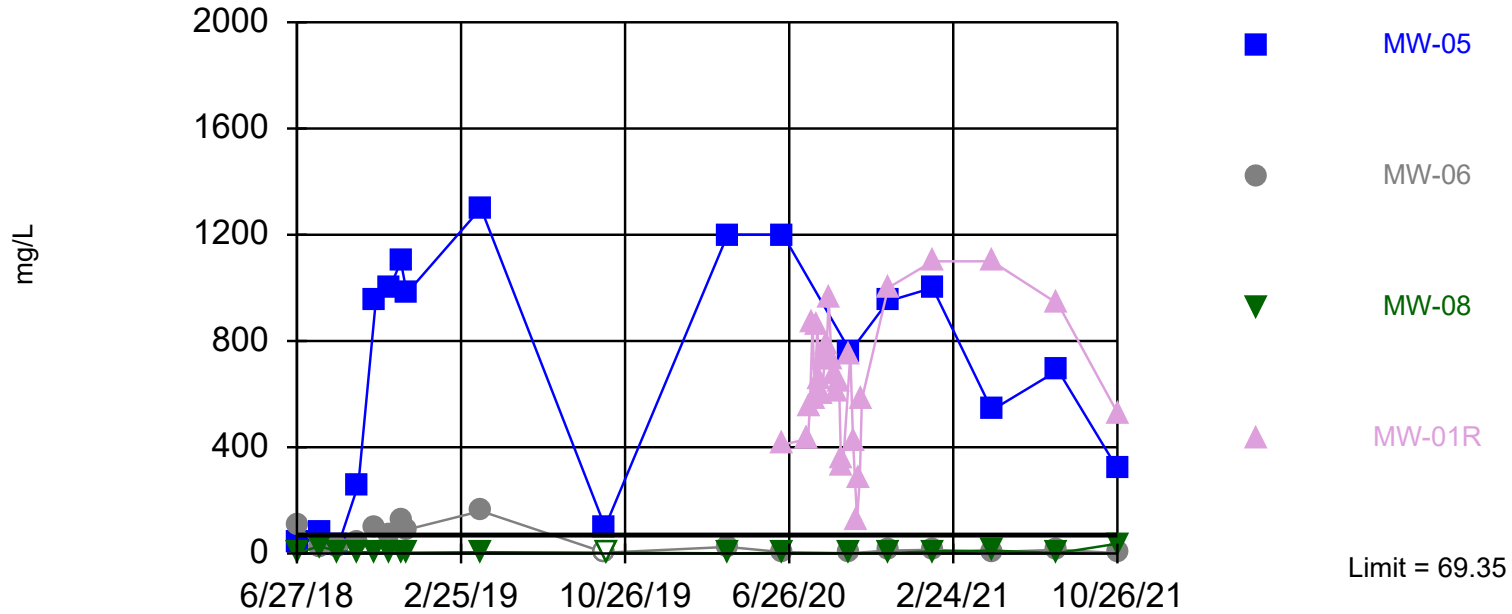


Background Data Summary: Mean=7.187, Std. Dev.=0.4429, n=17. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9662, critical = 0.892. Report alpha = 0.1682. Individual comparison alpha = 0.0225. Most recent point for each compliance well compared to limit.

Constituent: pH Analysis Run 1/3/2022 1:12 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-05, MW-01R

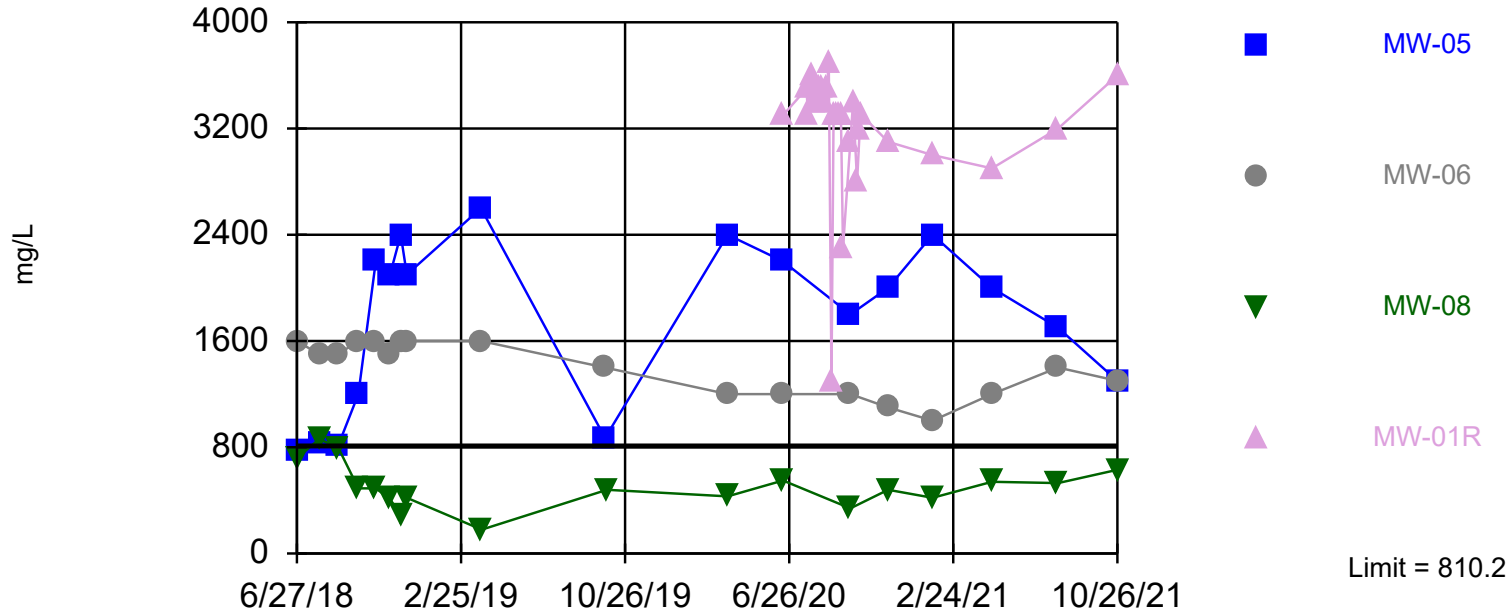
Prediction Limit Interwell Parametric



Background Data Summary: Mean=36.17, Std. Dev.=17.96, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9066, critical = 0.897. Report alpha = 0.1682. Individual comparison alpha = 0.045. Most recent point for each compliance well compared to limit.

Exceeds Limit: MW-05, MW-06, MW-01R

Prediction Limit Interwell Parametric



Background Data Summary: Mean=666.1, Std. Dev.=78, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9596, critical = 0.897. Report alpha = 0.1682. Individual comparison alpha = 0.045. Most recent point for each compliance well compared to limit.

Constituent: Total Dissolved Solids Analysis Run 1/3/2022 1:12 PM View: Appendix III

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

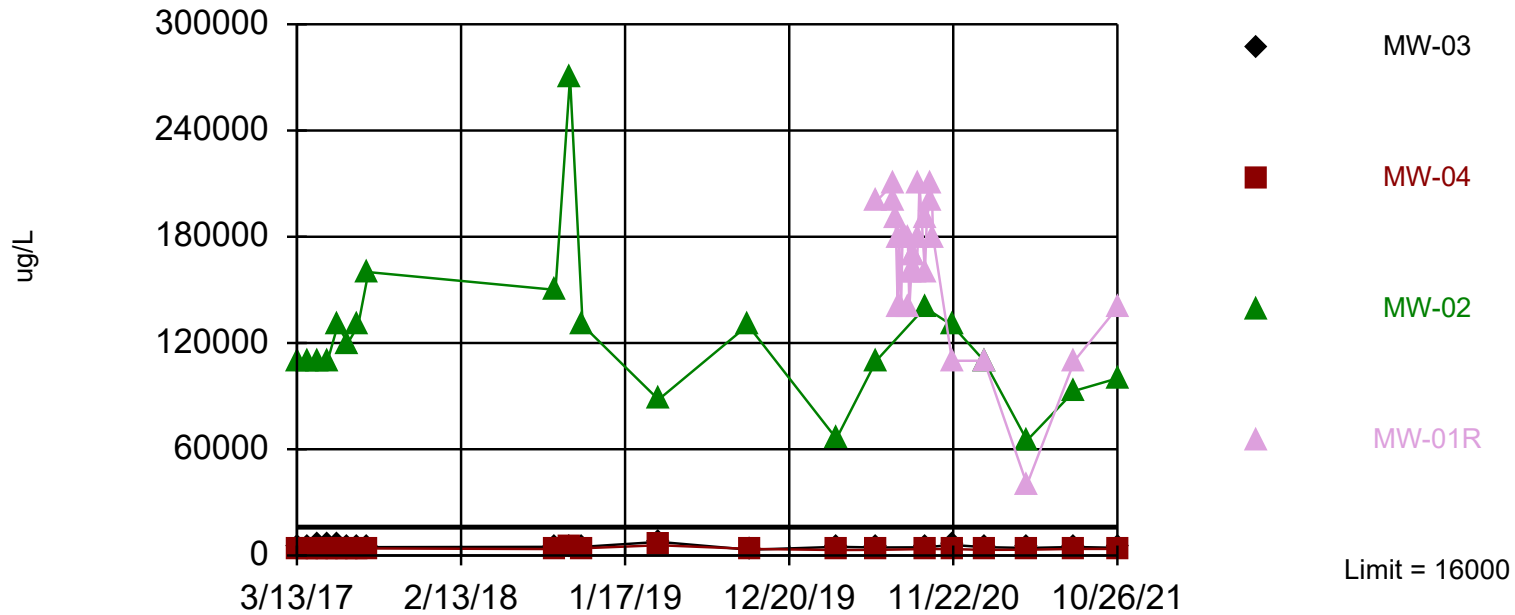
Interwell Prediction Limit

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:13 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Bg N	Bg Wells	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (ug/L)	MW-05	16000	n/a	10/26/2021	3000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-06	16000	n/a	10/26/2021	13000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-08	16000	n/a	10/26/2021	1400	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-01R	16000	n/a	10/26/2021	140000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-05	200000	n/a	10/26/2021	340000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-06	200000	n/a	10/26/2021	200000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-08	200000	n/a	10/26/2021	130000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-01R	200000	n/a	10/26/2021	220000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-05	15	n/a	10/26/2021	22	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-06	15	n/a	10/26/2021	200	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-08	15	n/a	10/26/2021	30	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-01R	15	n/a	10/26/2021	230	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Fluoride (mg/L)	MW-05	8.975	n/a	10/26/2021	3.216	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-06	8.975	n/a	10/26/2021	1.516	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-08	8.975	n/a	10/26/2021	0.336	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-01R	8.975	n/a	10/26/2021	12.92	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Iron (mg/L)	MW-05	22.22	n/a	10/26/2021	2.5	10	MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-06	22.22	n/a	10/26/2021	13	10	MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-08	22.22	n/a	10/26/2021	29	10	MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-01R	22.22	n/a	10/26/2021	1.7	10	MW-07	17.6	2.319	0	None	No	0.045	Param
pH (SU)	MW-05	8.178	6.196	10/26/2021	7.43	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-06	8.178	6.196	10/26/2021	7.6	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-08	8.178	6.196	10/26/2021	6.74	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-01R	8.178	6.196	10/26/2021	7.8	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
Sulfate (mg/L)	MW-05	69.35	n/a	10/26/2021	320	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-06	69.35	n/a	10/26/2021	1.3J	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-08	69.35	n/a	10/26/2021	137	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-01R	69.35	n/a	10/26/2021	530	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-05	810.2	n/a	10/26/2021	1300	18	MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-06	810.2	n/a	10/26/2021	1300	18	MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-08	810.2	n/a	10/26/2021	630	18	MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-01R	810.2	n/a	10/26/2021	3600	18	MW-07	666.1	78	0	None	No	0.045	Param

Exceeds Limit: MW-02, MW-01R

Prediction Limit Interwell Non-parametric

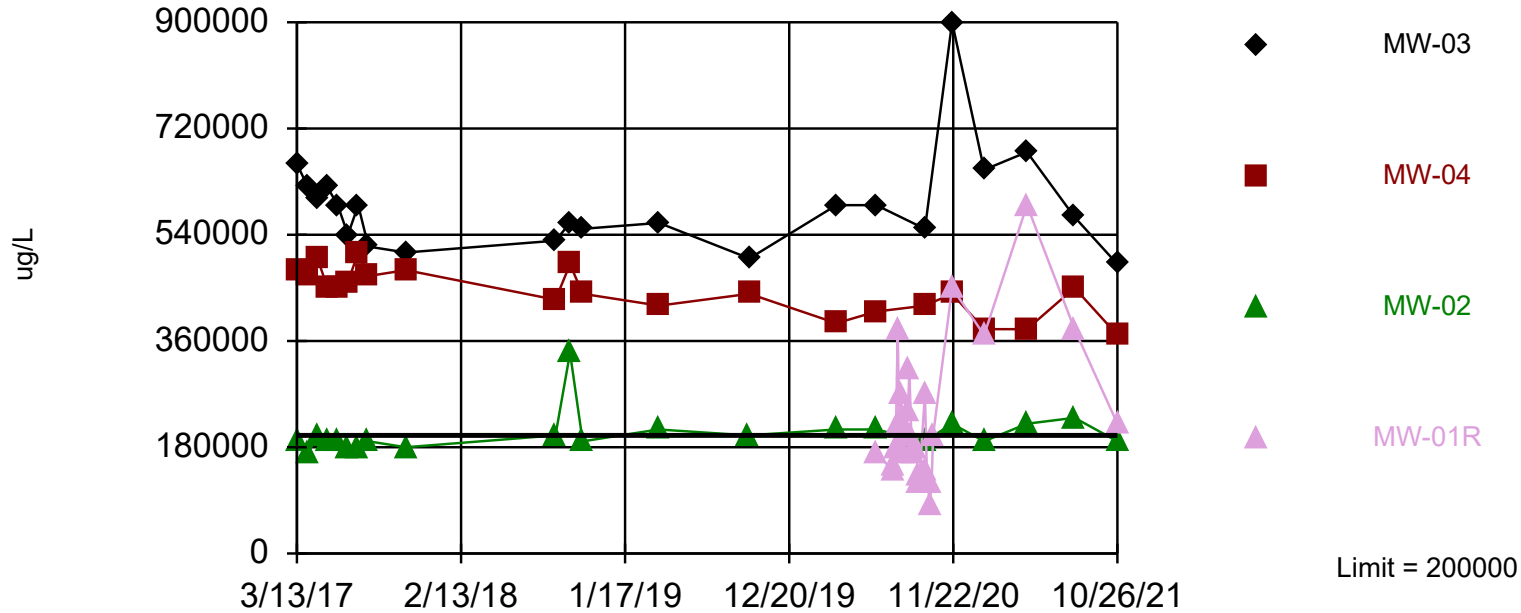


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Constituent: Boron Analysis Run 1/3/2022 1:17 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-03, MW-04, MW-01R

Prediction Limit Interwell Non-parametric

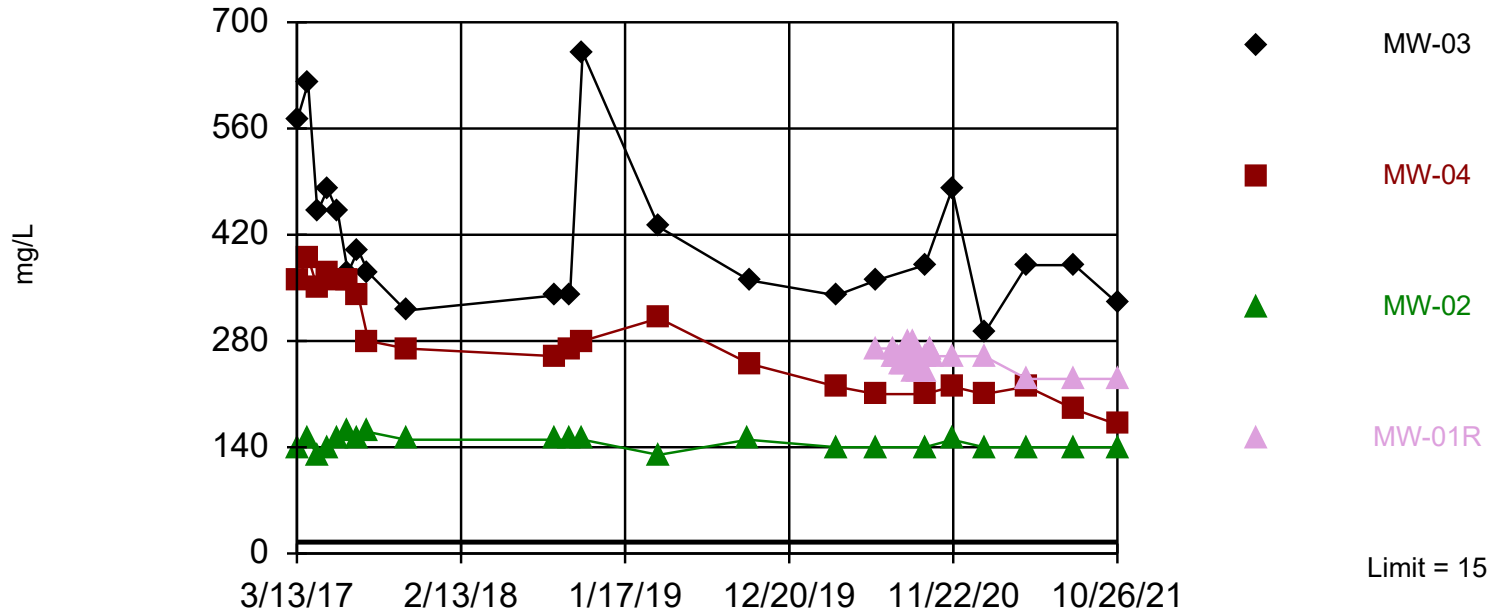


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Constituent: Calcium Analysis Run 1/3/2022 1:17 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-03, MW-04, MW-02,
MW-01R

Prediction Limit Interwell Non-parametric

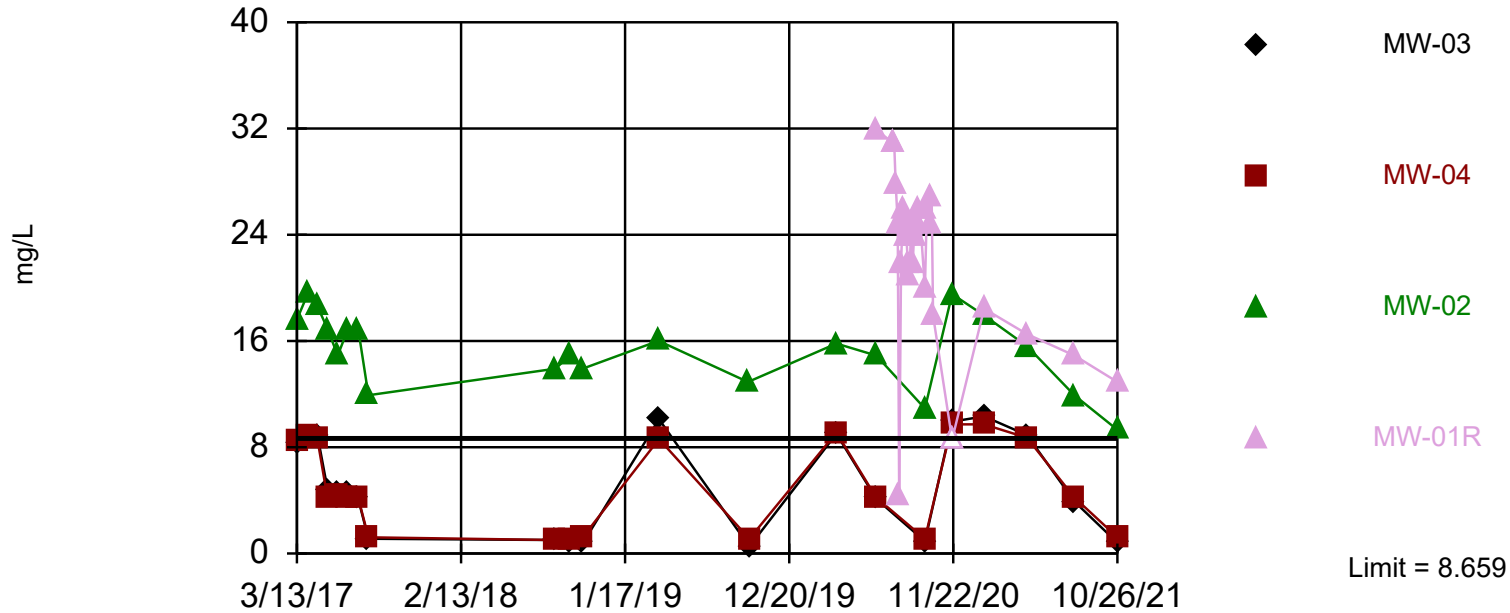


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 18 background values. Report alpha = 0.1818. Individual comparison alpha = 0.04893. Most recent point for each compliance well compared to limit. Seasonality was not detected with 95% confidence.

Constituent: Chloride Analysis Run 1/3/2022 1:17 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

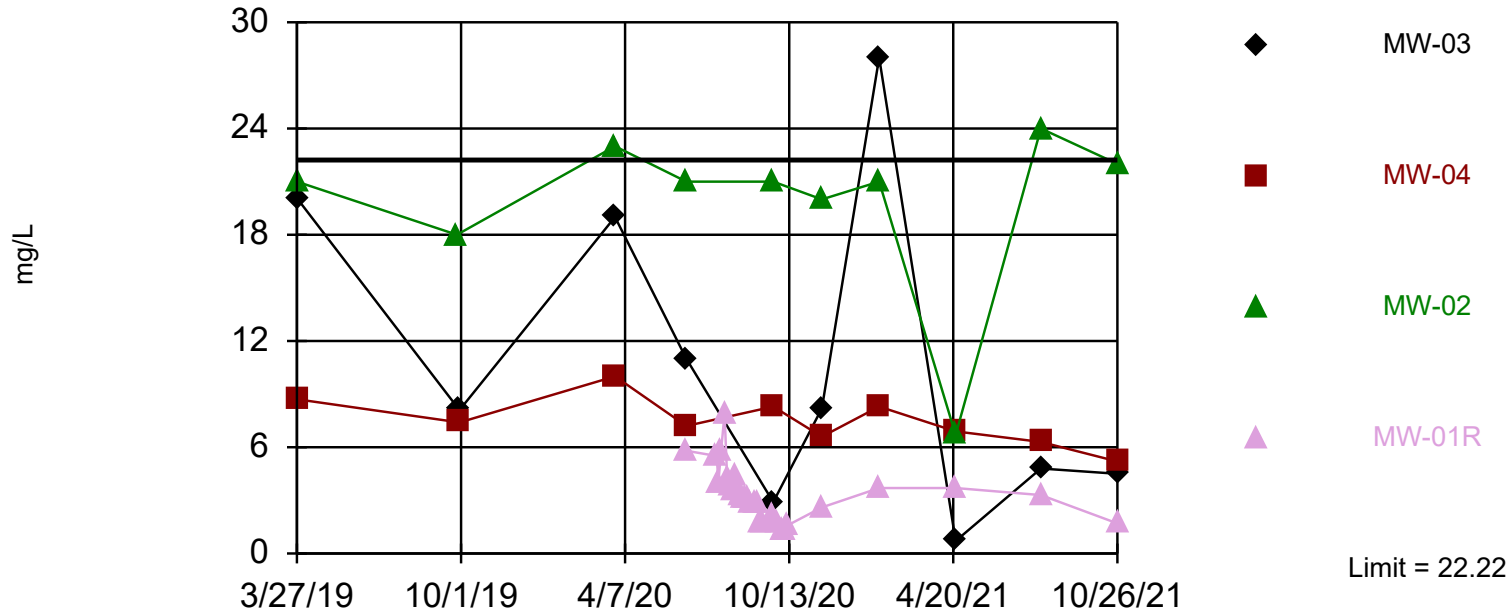
Exceeds Limit: MW-02, MW-01R

Prediction Limit Interwell Non-parametric



Within Limit

Prediction Limit Interwell Parametric

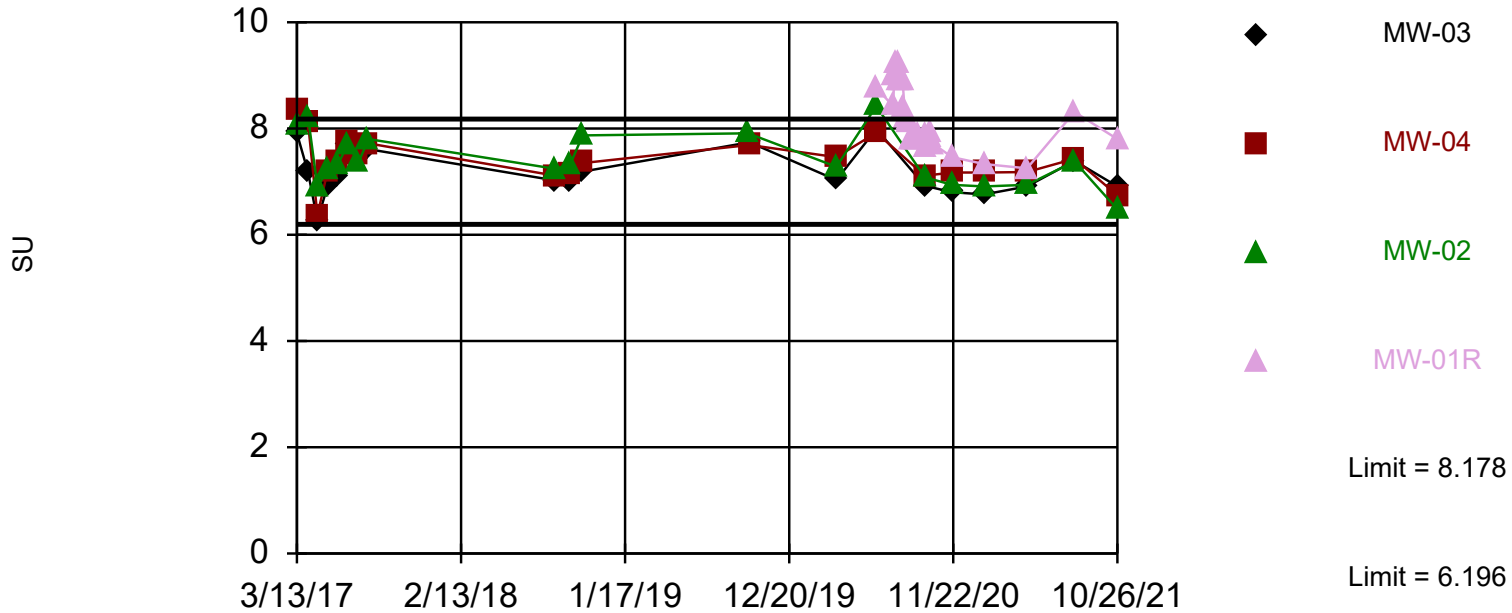


Background Data Summary: Mean=17.6, Std. Dev.=2.319, n=10. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.942, critical = 0.842. Report alpha = 0.1682. Individual comparison alpha = 0.045. Most recent point for each compliance well compared to limit.

Constituent: Iron Analysis Run 1/3/2022 1:17 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Within Limits

Prediction Limit Interwell Parametric

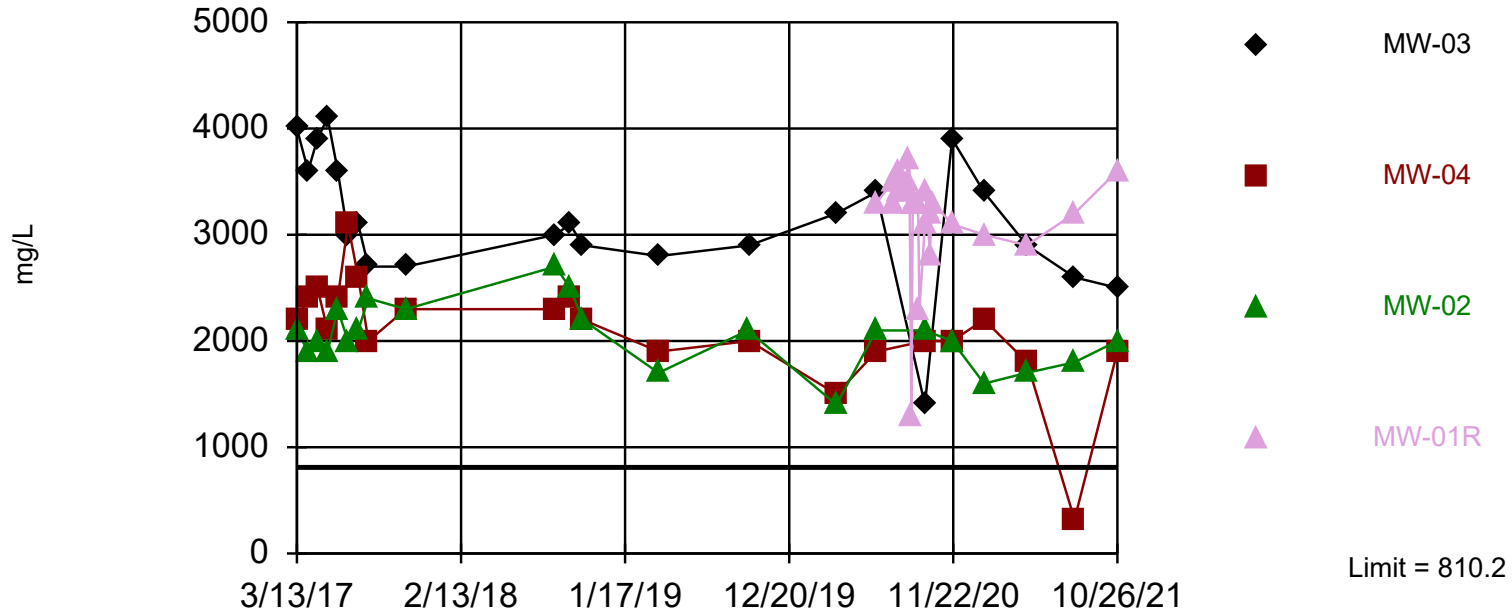


Background Data Summary: Mean=7.187, Std. Dev.=0.4429, n=17. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9662, critical = 0.892. Report alpha = 0.1682. Individual comparison alpha = 0.0225. Most recent point for each compliance well compared to limit.

Constituent: pH Analysis Run 1/3/2022 1:17 PM View: Appendix III
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Exceeds Limit: MW-03, MW-04, MW-02,
MW-01R

Prediction Limit Interwell Parametric



Background Data Summary: Mean=666.1, Std. Dev.=78, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9596, critical = 0.897. Report alpha = 0.1682. Individual comparison alpha = 0.045. Most recent point for each compliance well compared to limit.

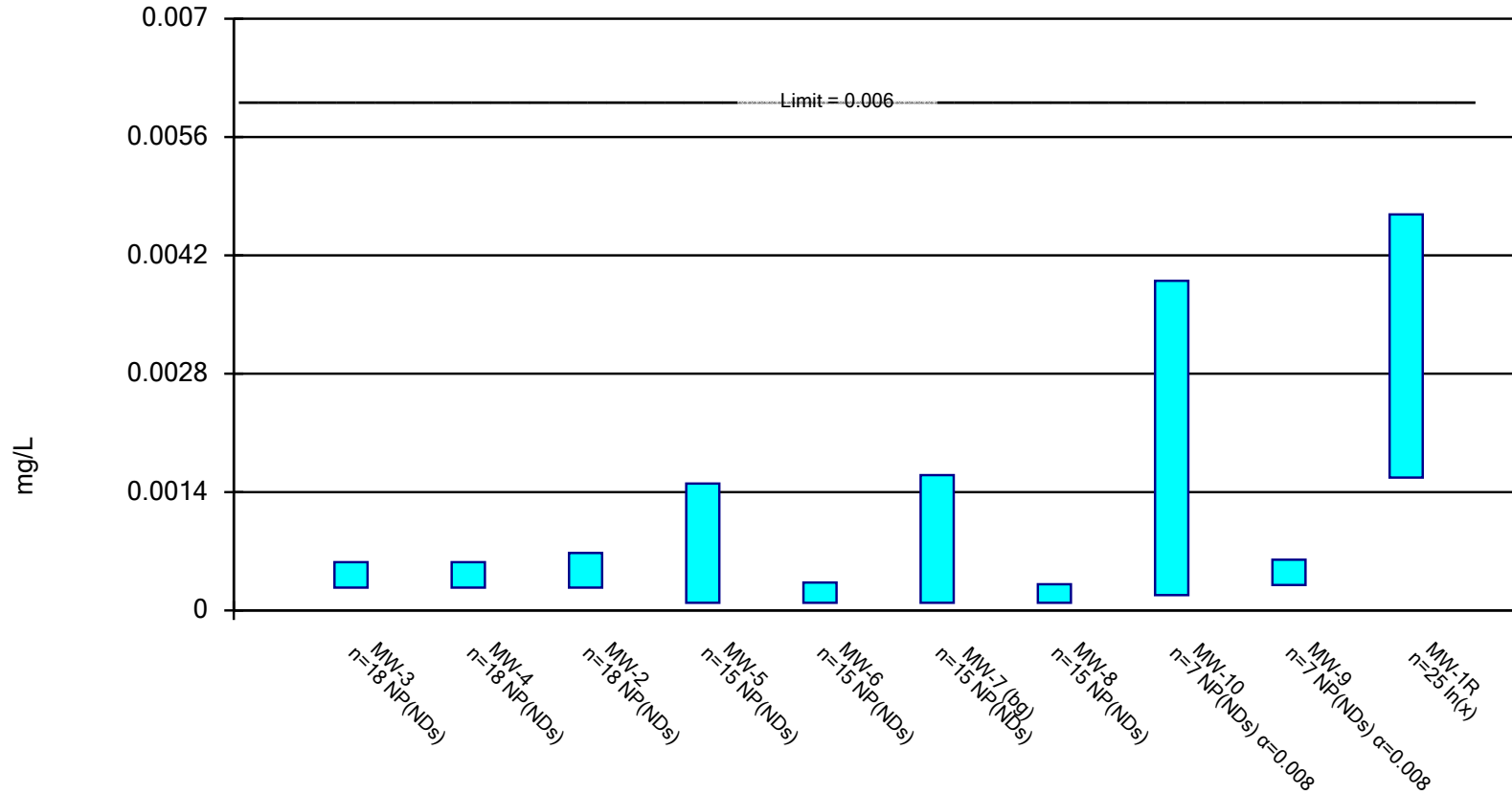
Interwell Prediction Limit

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:18 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Bg N	Bg Wells	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (ug/L)	MW-03	16000	n/a	10/26/2021	4400	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-04	16000	n/a	10/26/2021	3700	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-02	16000	n/a	10/26/2021	100000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Boron (ug/L)	MW-01R	16000	n/a	10/26/2021	140000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-03	200000	n/a	10/26/2021	490000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-04	200000	n/a	10/26/2021	370000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-02	200000	n/a	10/26/2021	190000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Calcium (ug/L)	MW-01R	200000	n/a	10/26/2021	220000	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-03	15	n/a	10/26/2021	330	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-04	15	n/a	10/26/2021	170	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-02	15	n/a	10/26/2021	140	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Chloride (mg/L)	MW-01R	15	n/a	10/26/2021	230	18	MW-07	n/a	n/a	0	n/a	n/a	0.04893	NP (normality)
Fluoride (mg/L)	MW-03	8.659	n/a	10/26/2021	10.806	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-04	8.659	n/a	10/26/2021	11.216	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-02	8.659	n/a	10/26/2021	19.316	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Fluoride (mg/L)	MW-01R	8.659	n/a	10/26/2021	12.92	18	MW-07	n/a	n/a	16.67	n/a	n/a	0.04893	NP (normality) Deseas
Iron (mg/L)	MW-03	22.22	n/a	10/26/2021	4.5	10	MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-04	22.22	n/a	10/26/2021	5.2	10	MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-02	22.22	n/a	10/26/2021	22	10	MW-07	17.6	2.319	0	None	No	0.045	Param
Iron (mg/L)	MW-01R	22.22	n/a	10/26/2021	1.7	10	MW-07	17.6	2.319	0	None	No	0.045	Param
pH (SU)	MW-03	8.178	6.196	10/26/2021	6.91	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-04	8.178	6.196	10/26/2021	6.74	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-02	8.178	6.196	10/26/2021	6.48	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
pH (SU)	MW-01R	8.178	6.196	10/26/2021	7.8	17	MW-07	7.187	0.4429	0	None	No	0.0225	Param
Sulfate (mg/L)	MW-03	69.35	n/a	10/26/2021	23	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-04	69.35	n/a	10/26/2021	450	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-02	69.35	n/a	10/26/2021	10.41ND	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Sulfate (mg/L)	MW-01R	69.35	n/a	10/26/2021	530	18	MW-07	36.17	17.96	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-03	810.2	n/a	10/26/2021	2500	18	MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-04	810.2	n/a	10/26/2021	1900	18	MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-02	810.2	n/a	10/26/2021	2000	18	MW-07	666.1	78	0	None	No	0.045	Param
Total Dissolved Solids (mg/L)	MW-01R	810.2	n/a	10/26/2021	3600	18	MW-07	666.1	78	0	None	No	0.045	Param

Parametric and Non-Parametric (NP) Confidence Interval

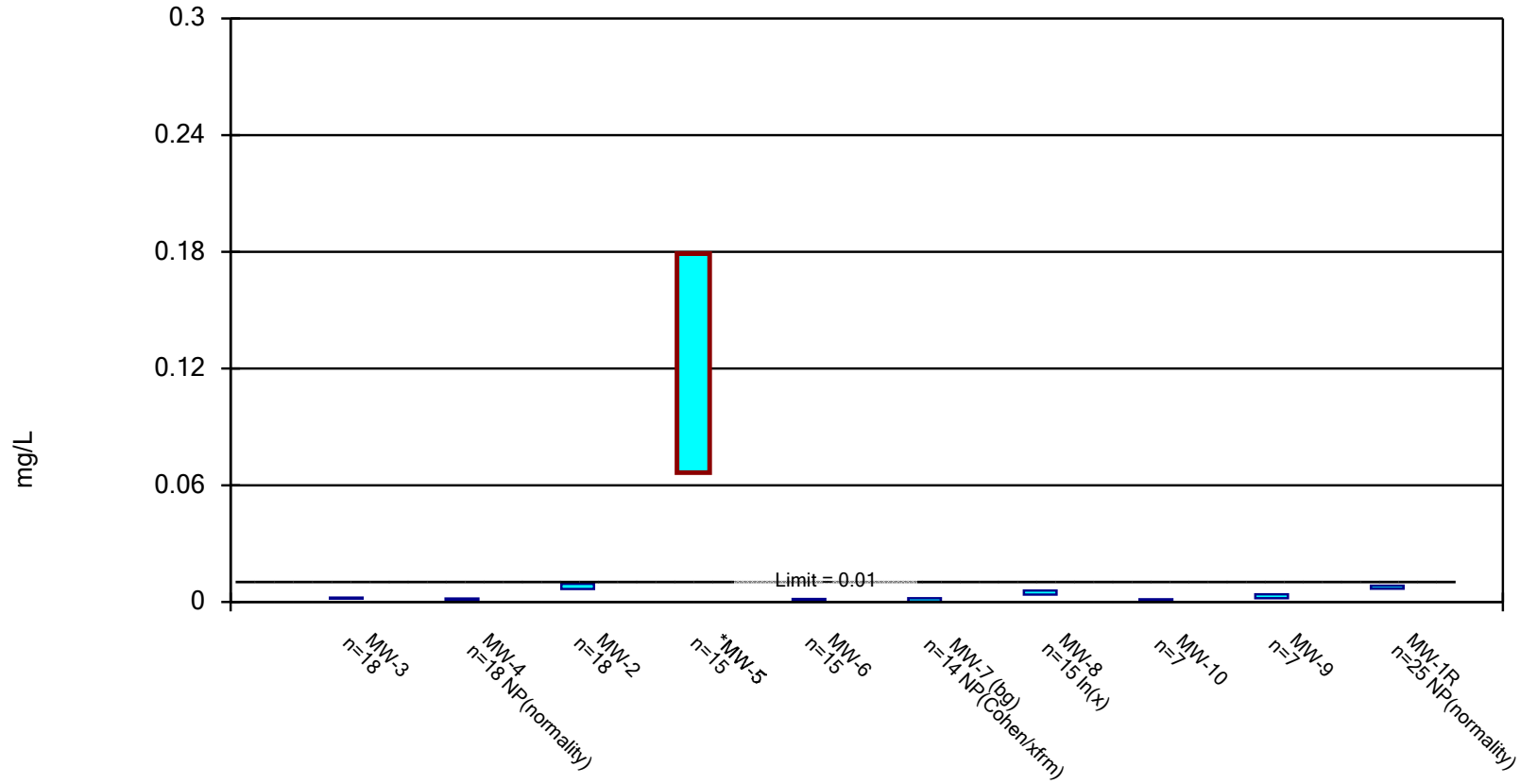
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Antimony Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

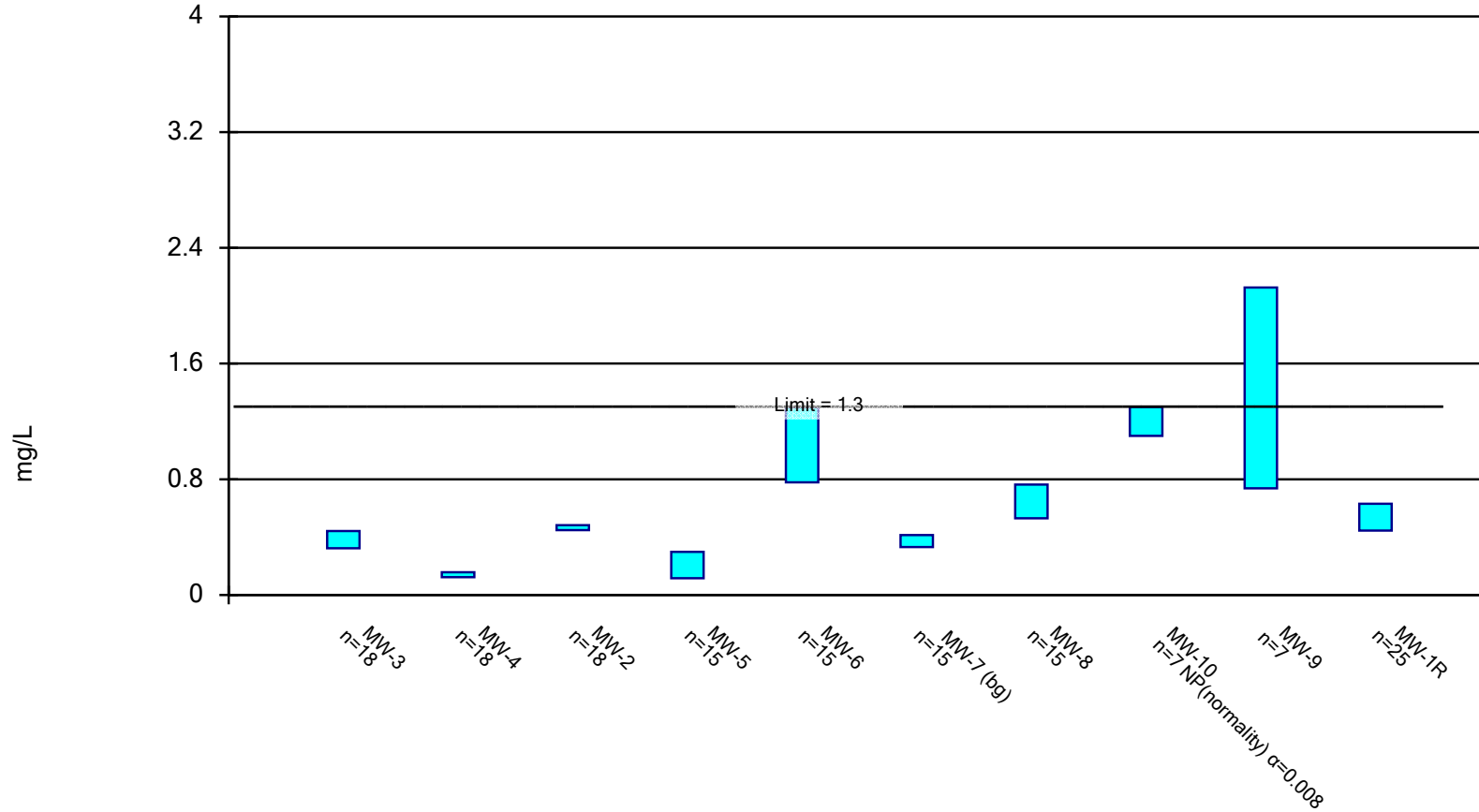
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

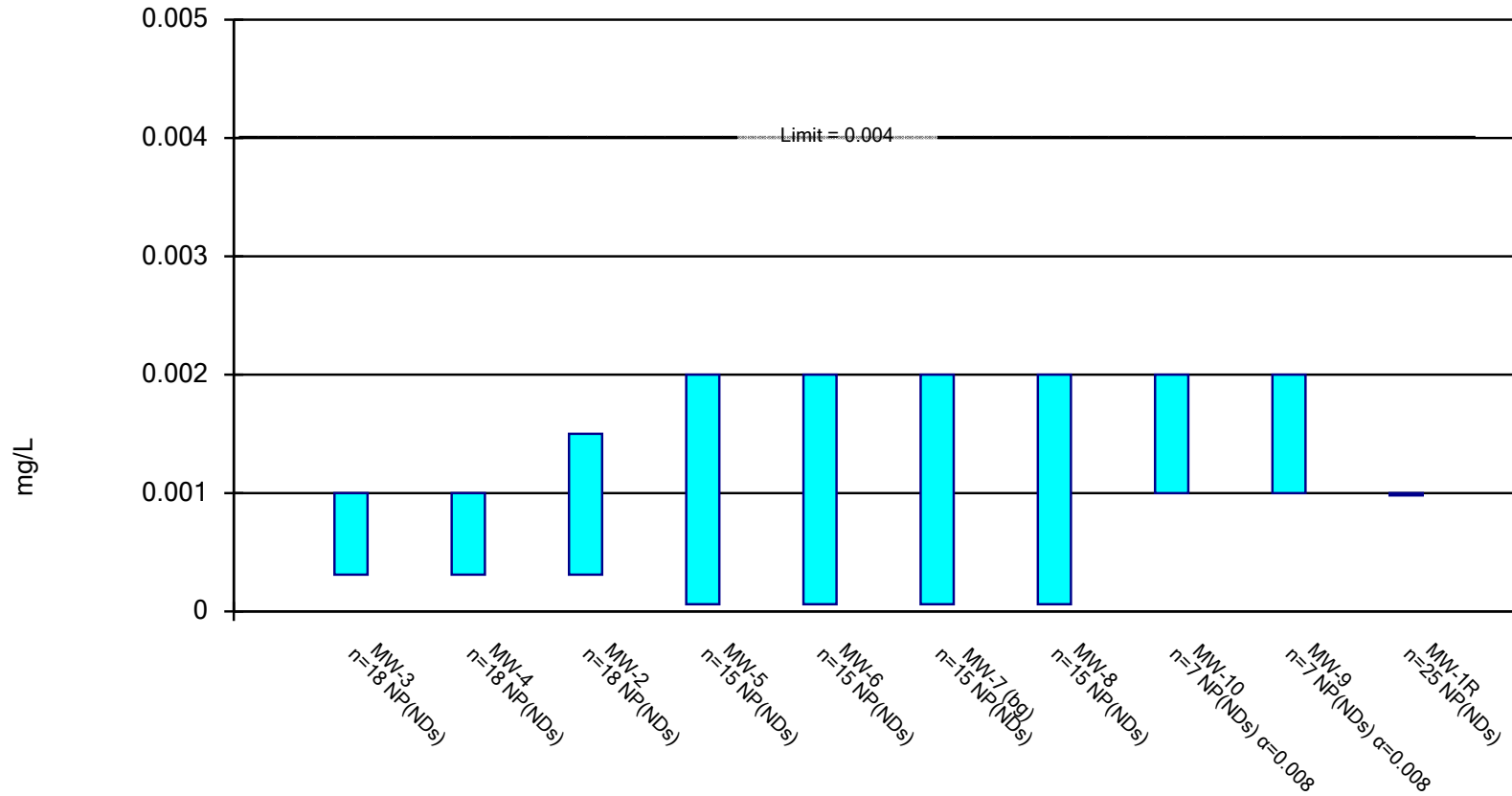
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

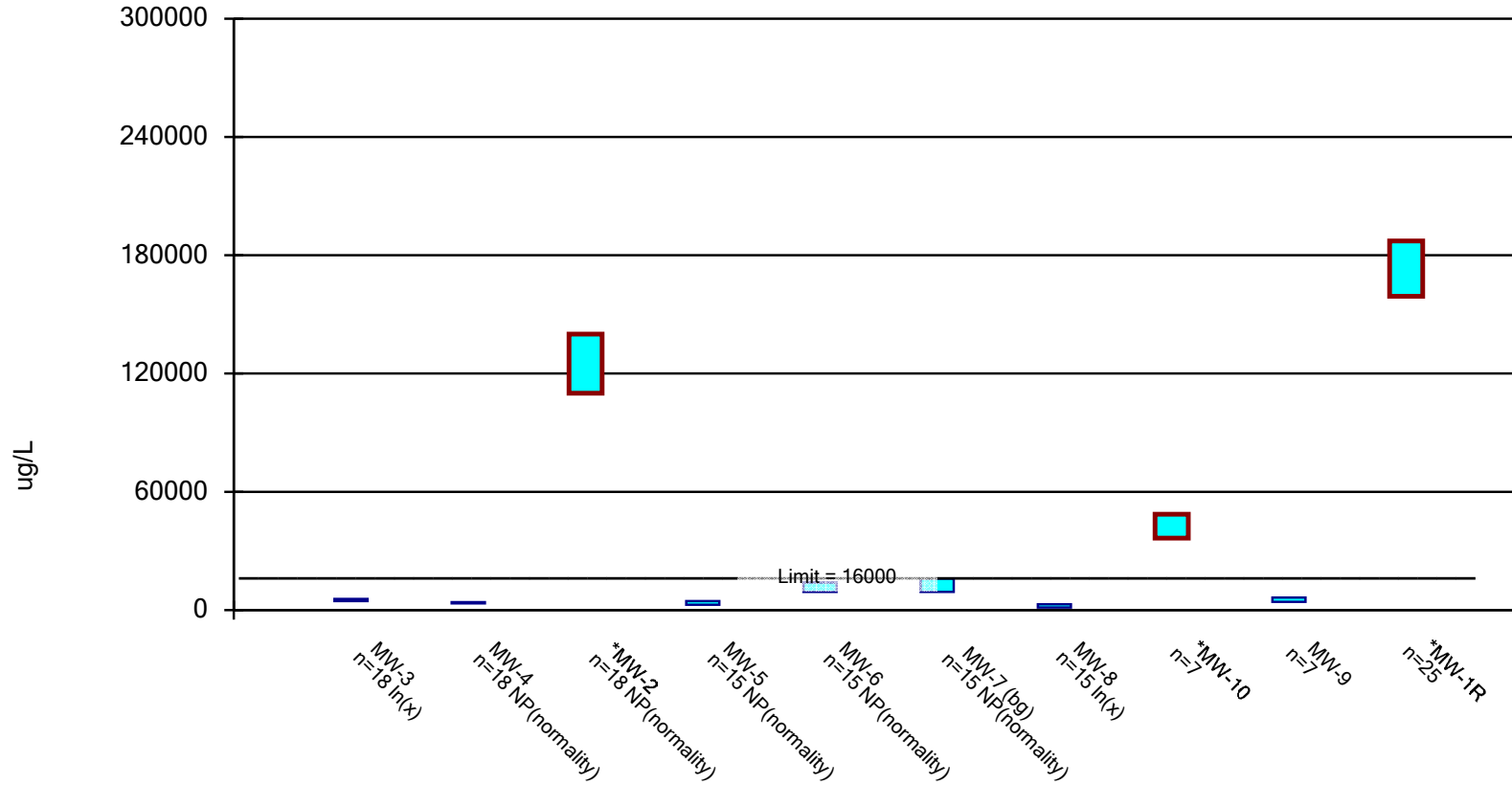
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Beryllium Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

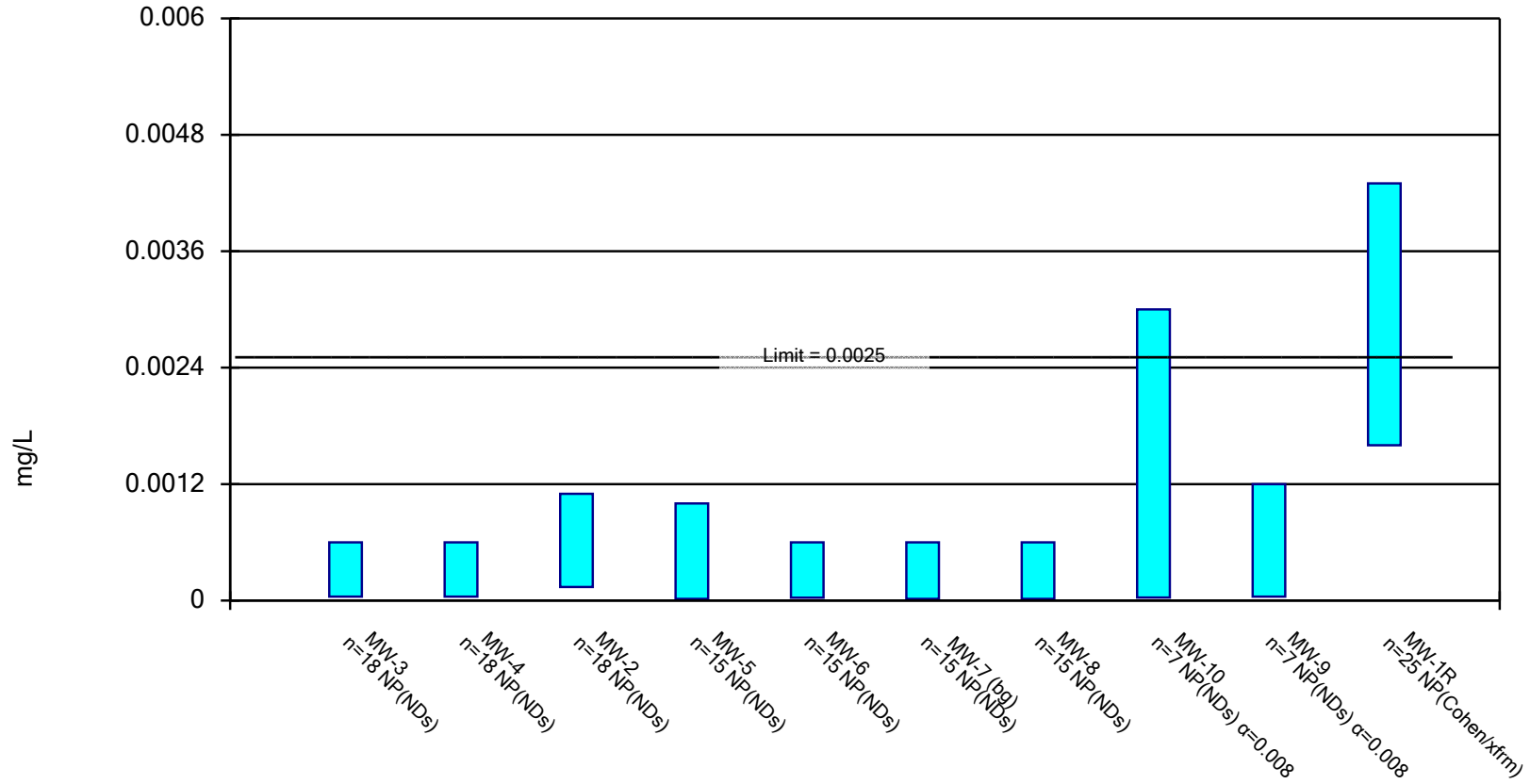
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

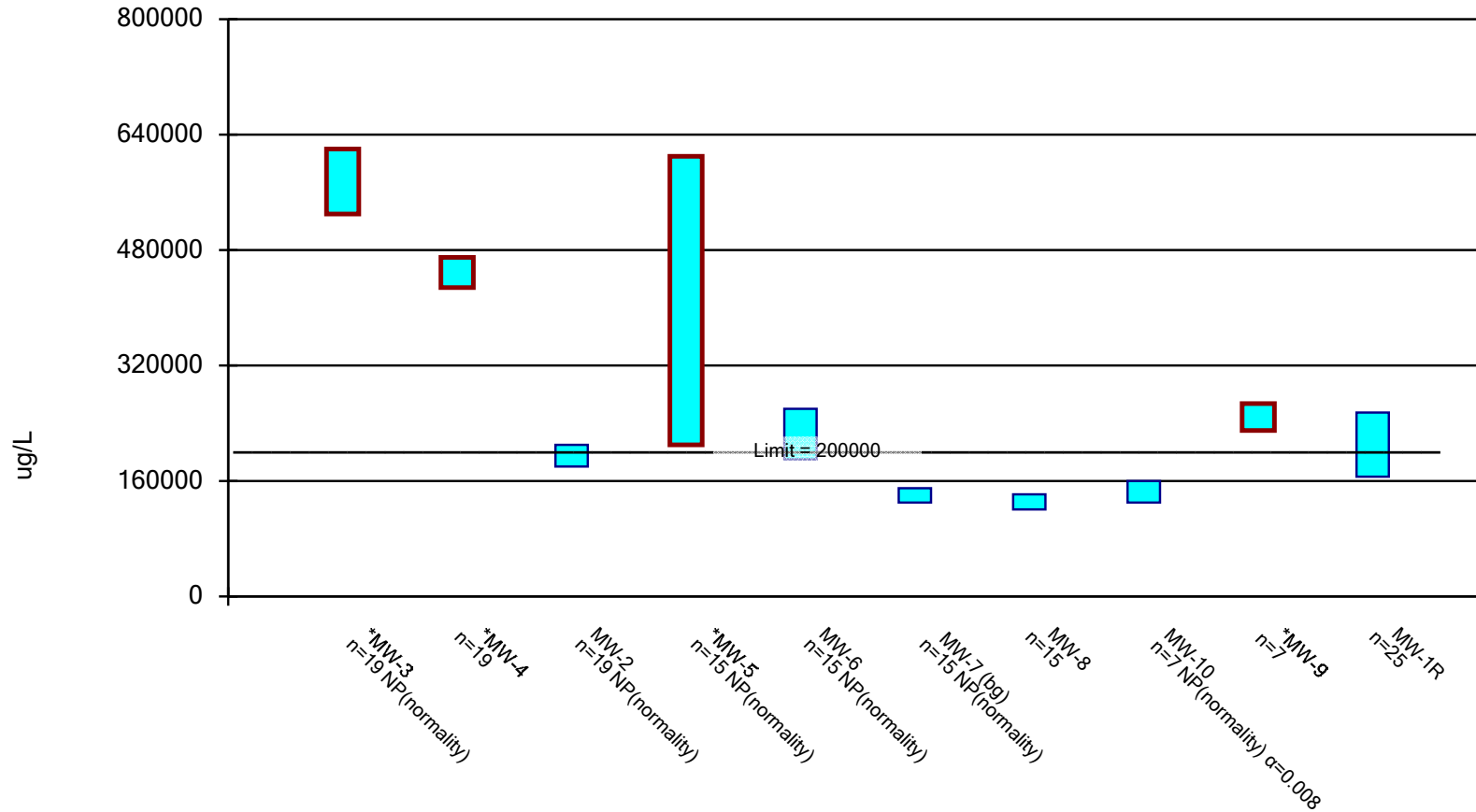
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Cadmium Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

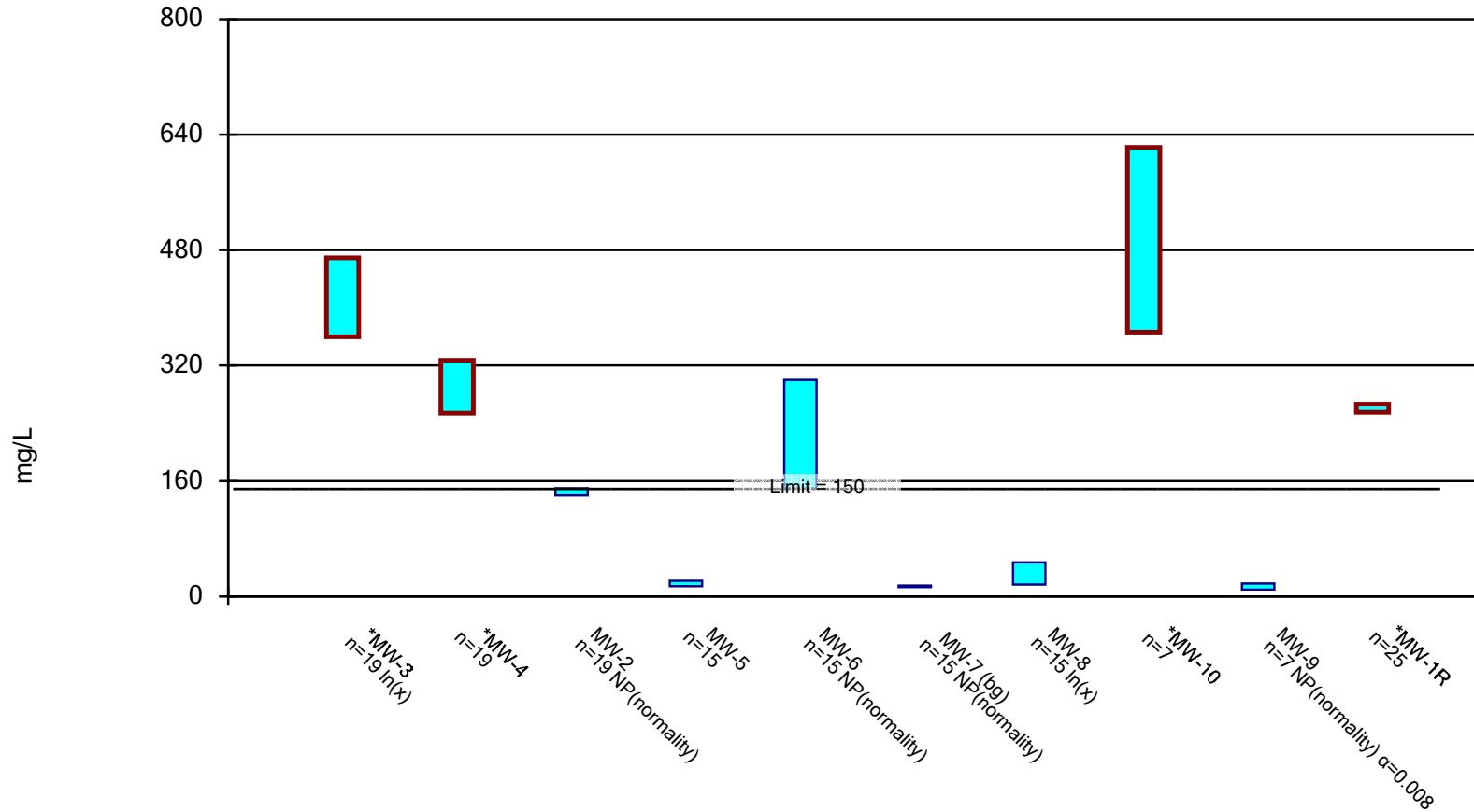
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

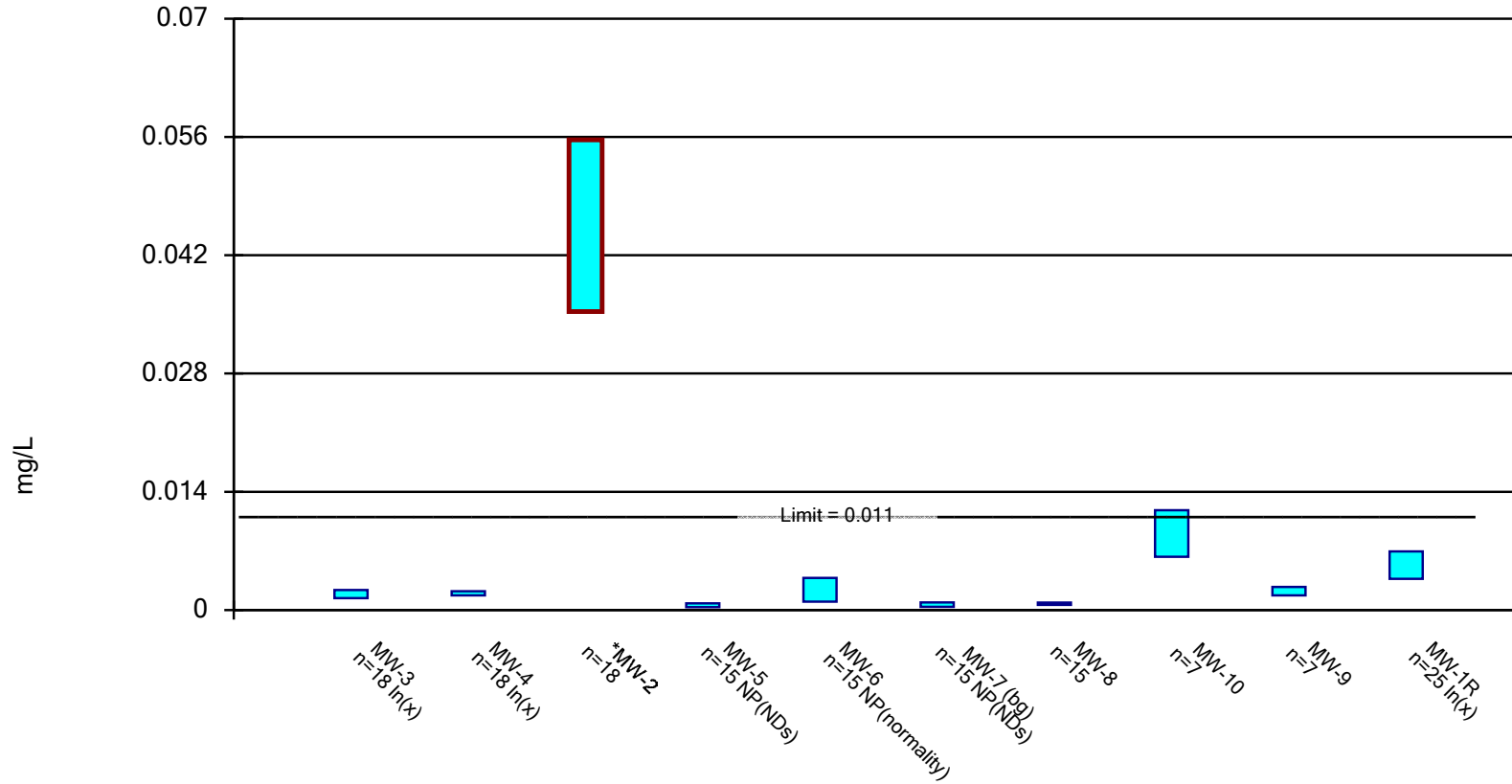
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chloride Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

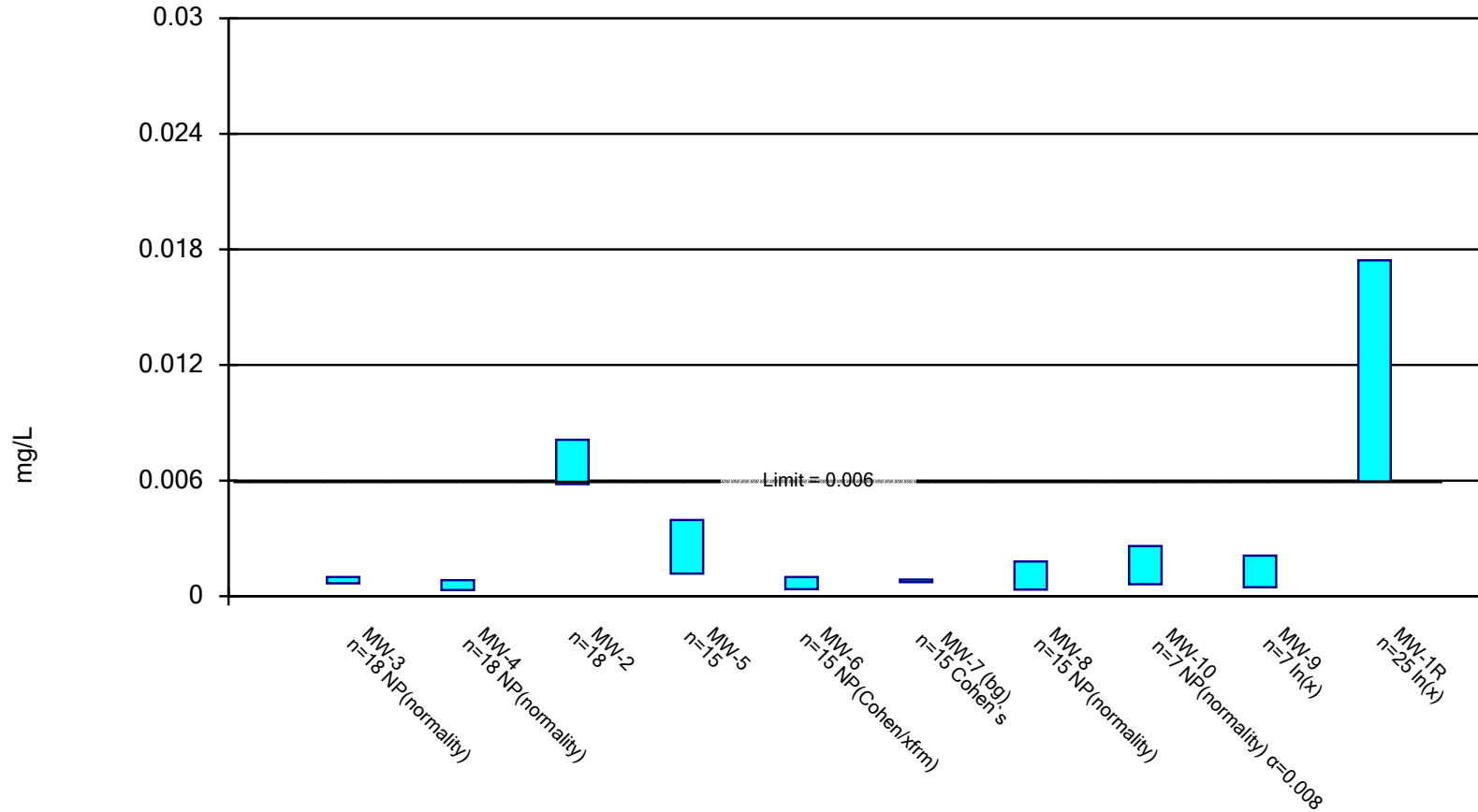
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

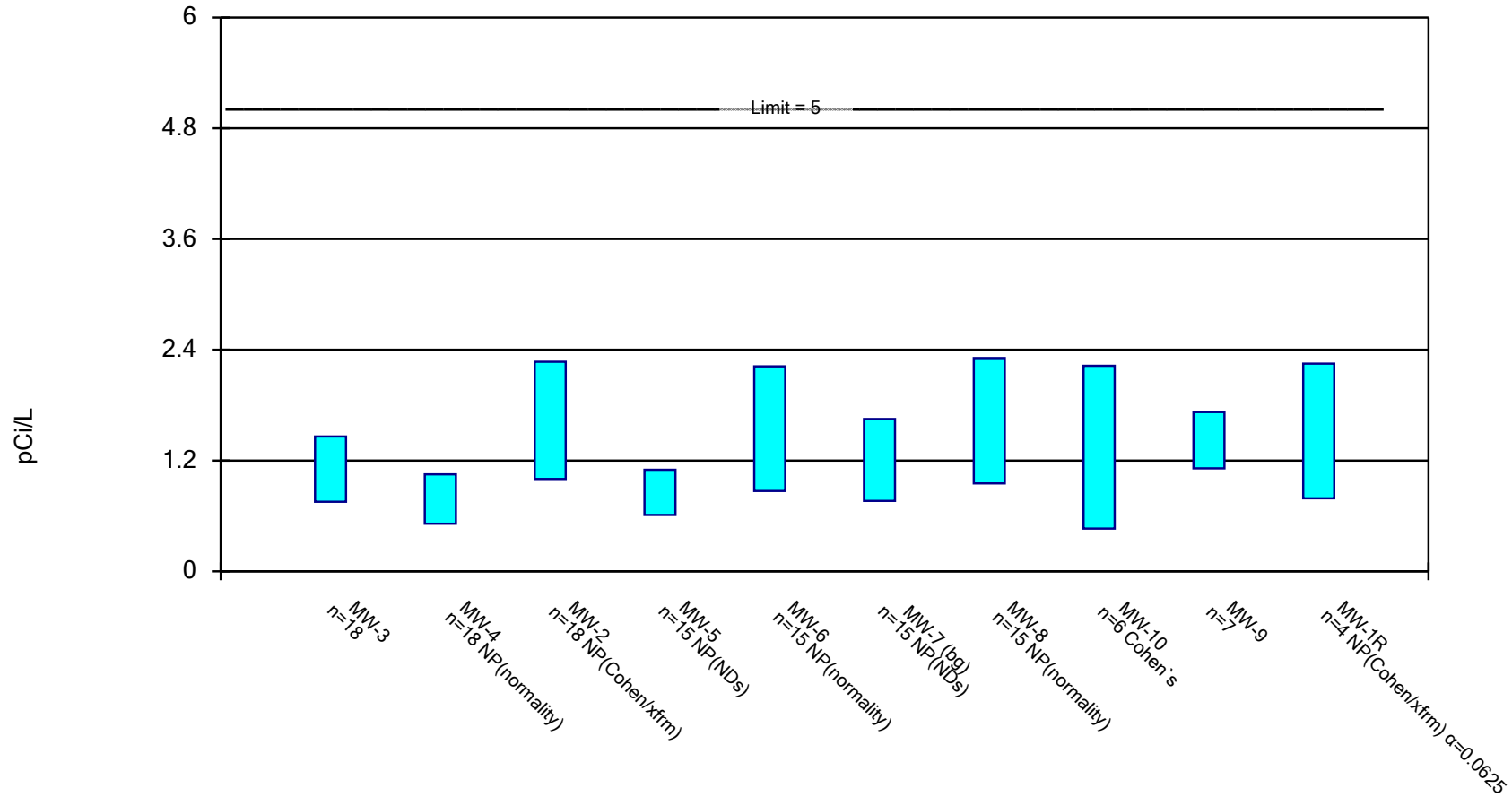
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

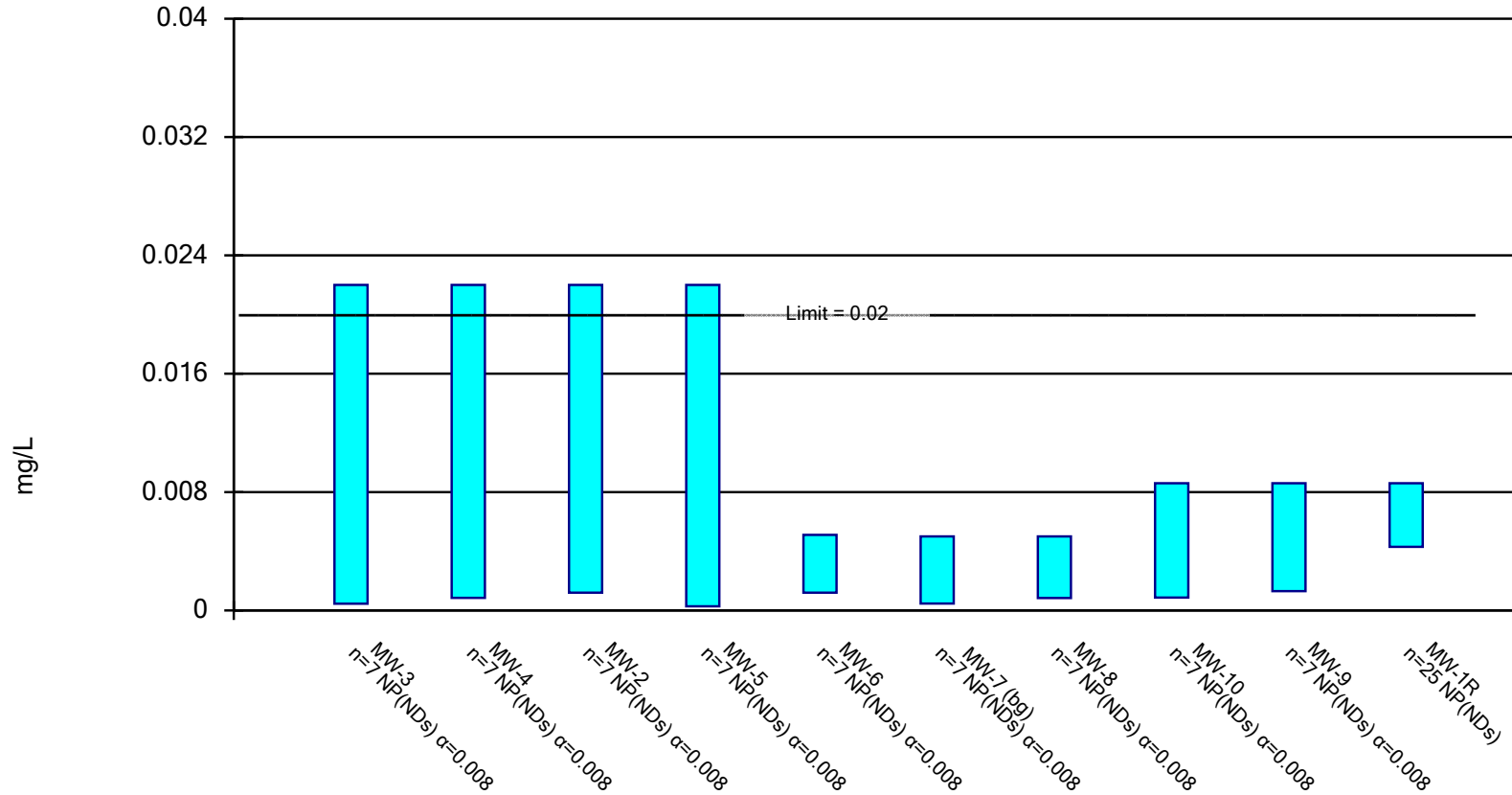


Constituent: Combined Radium 226 + 228 Analysis Run 4/27/2021 1:09 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

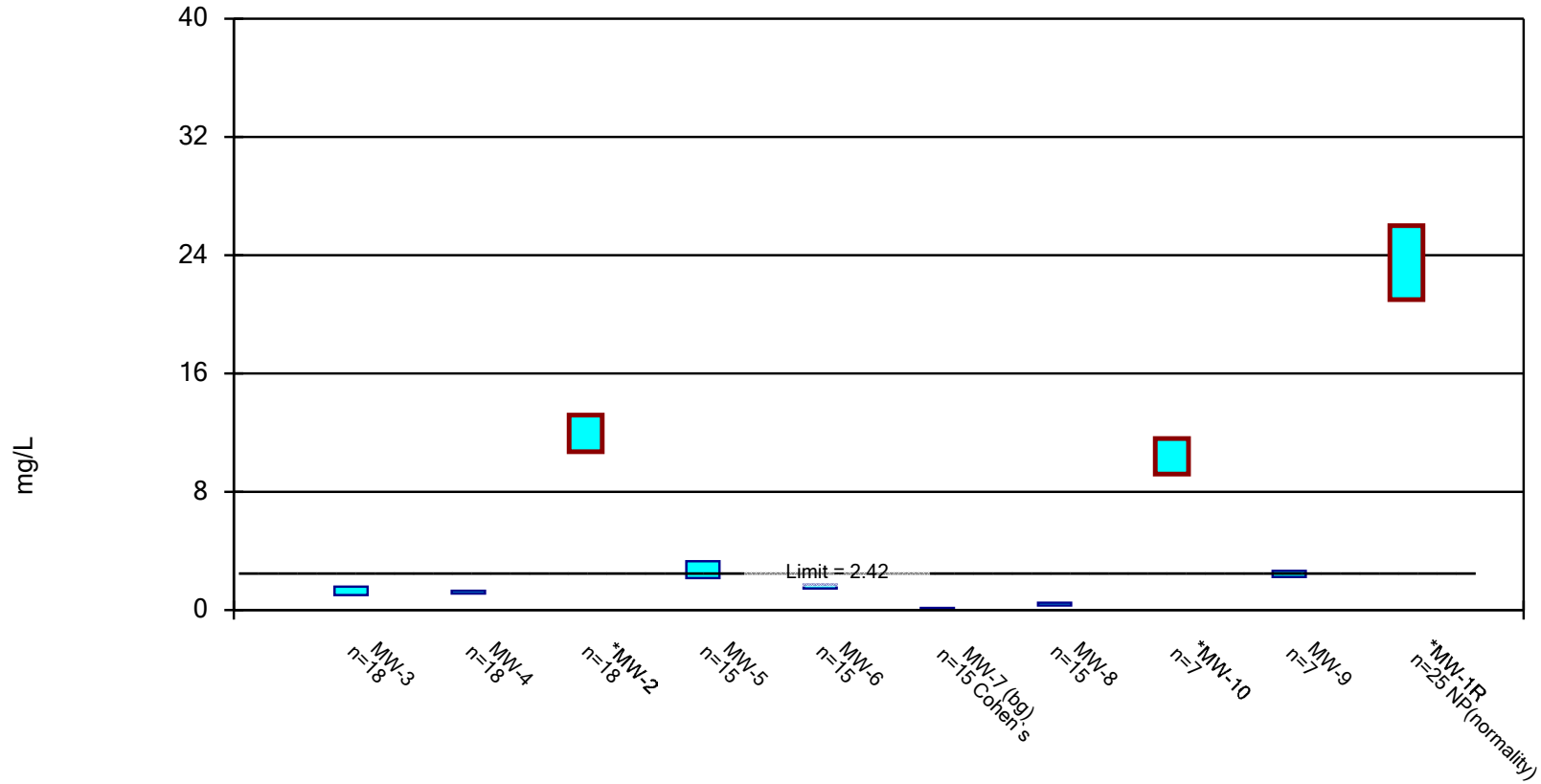
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Copper Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

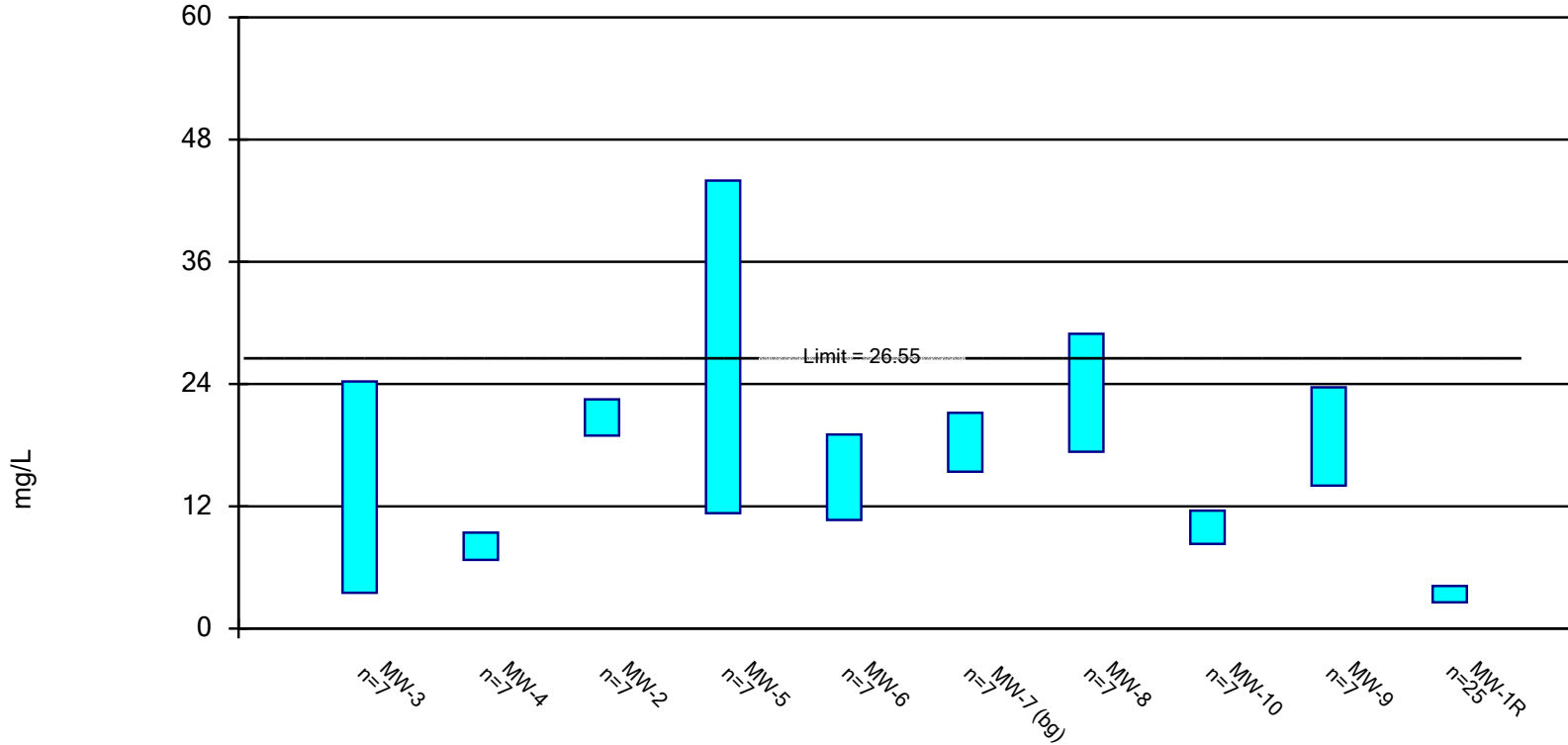
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric Confidence Interval

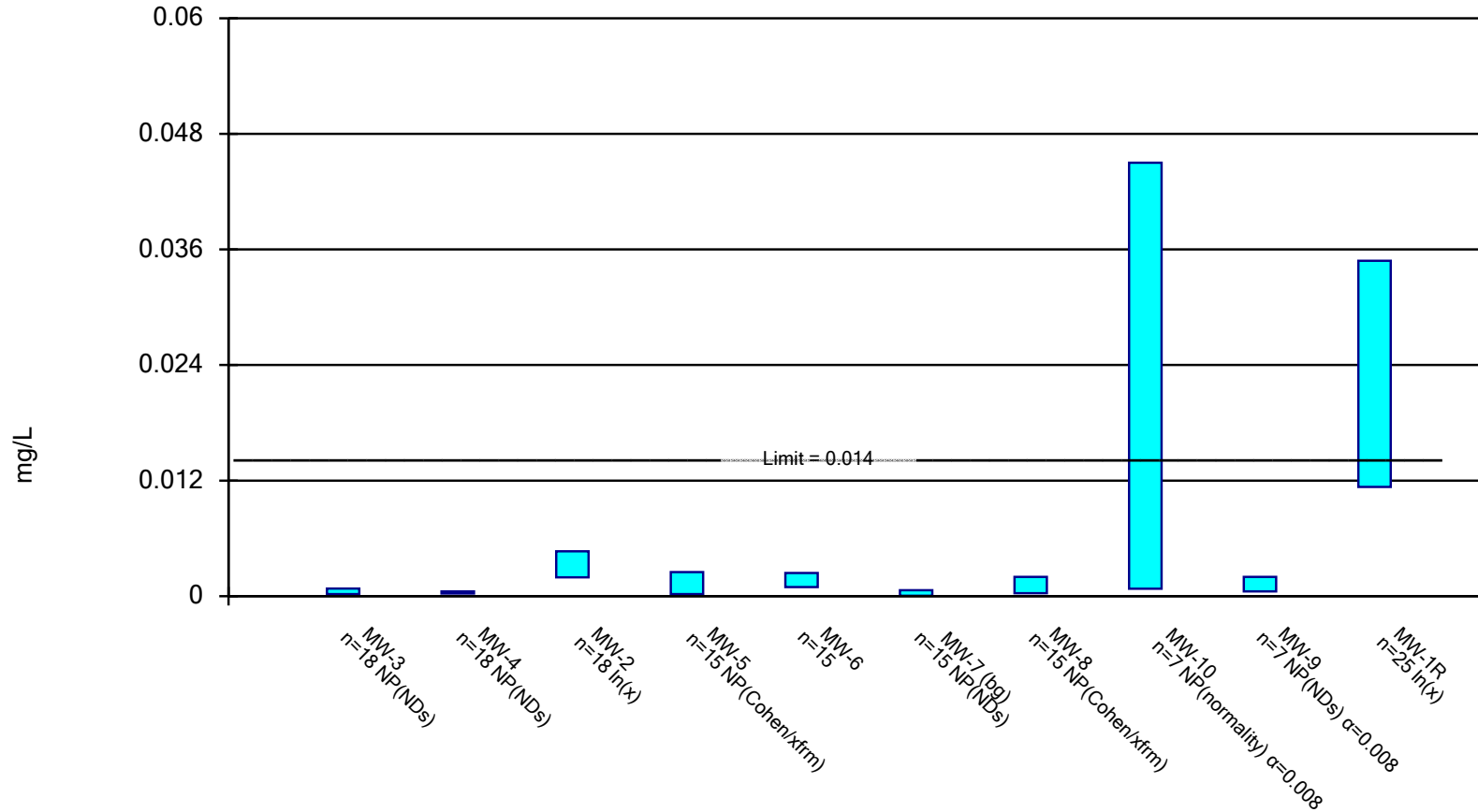
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Iron Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

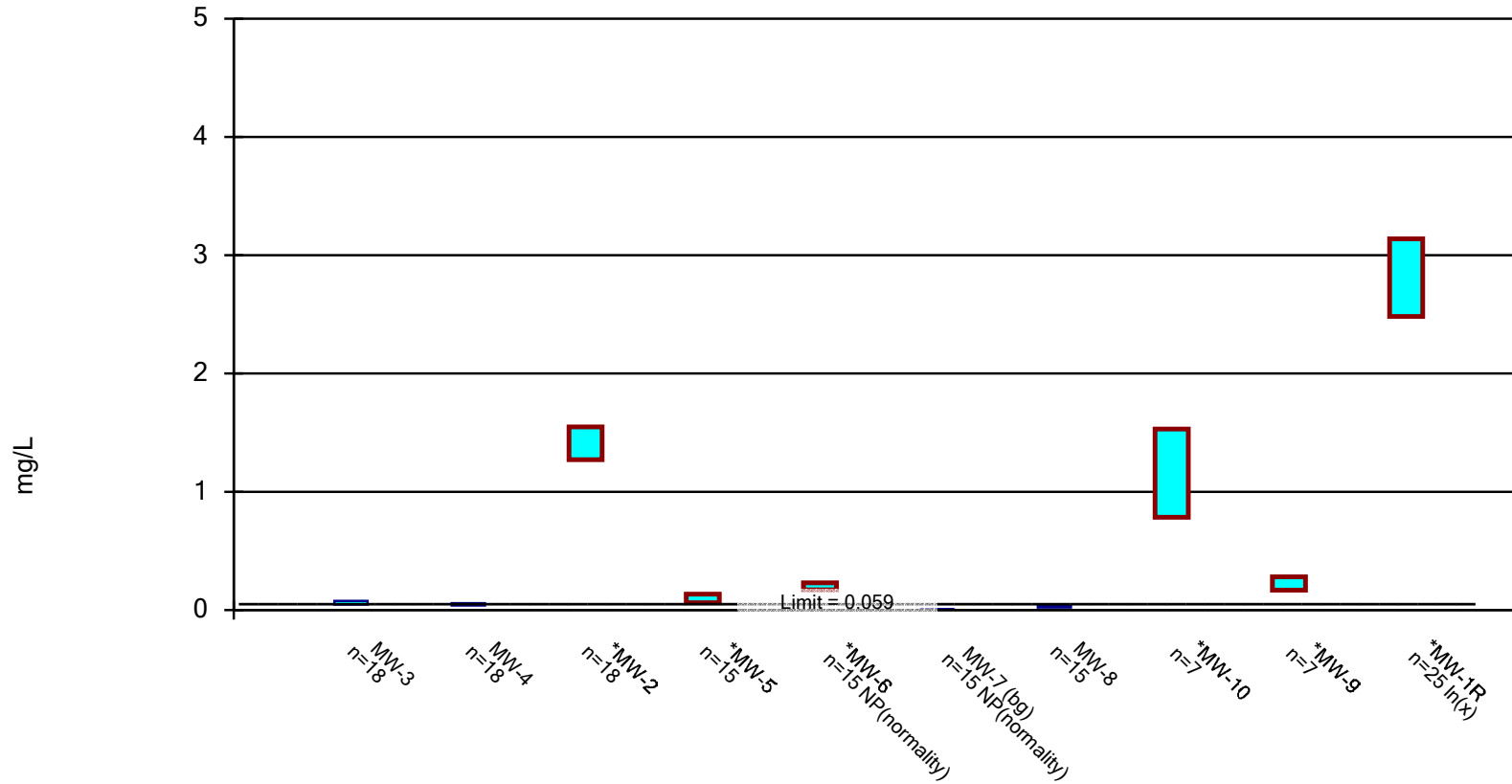
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

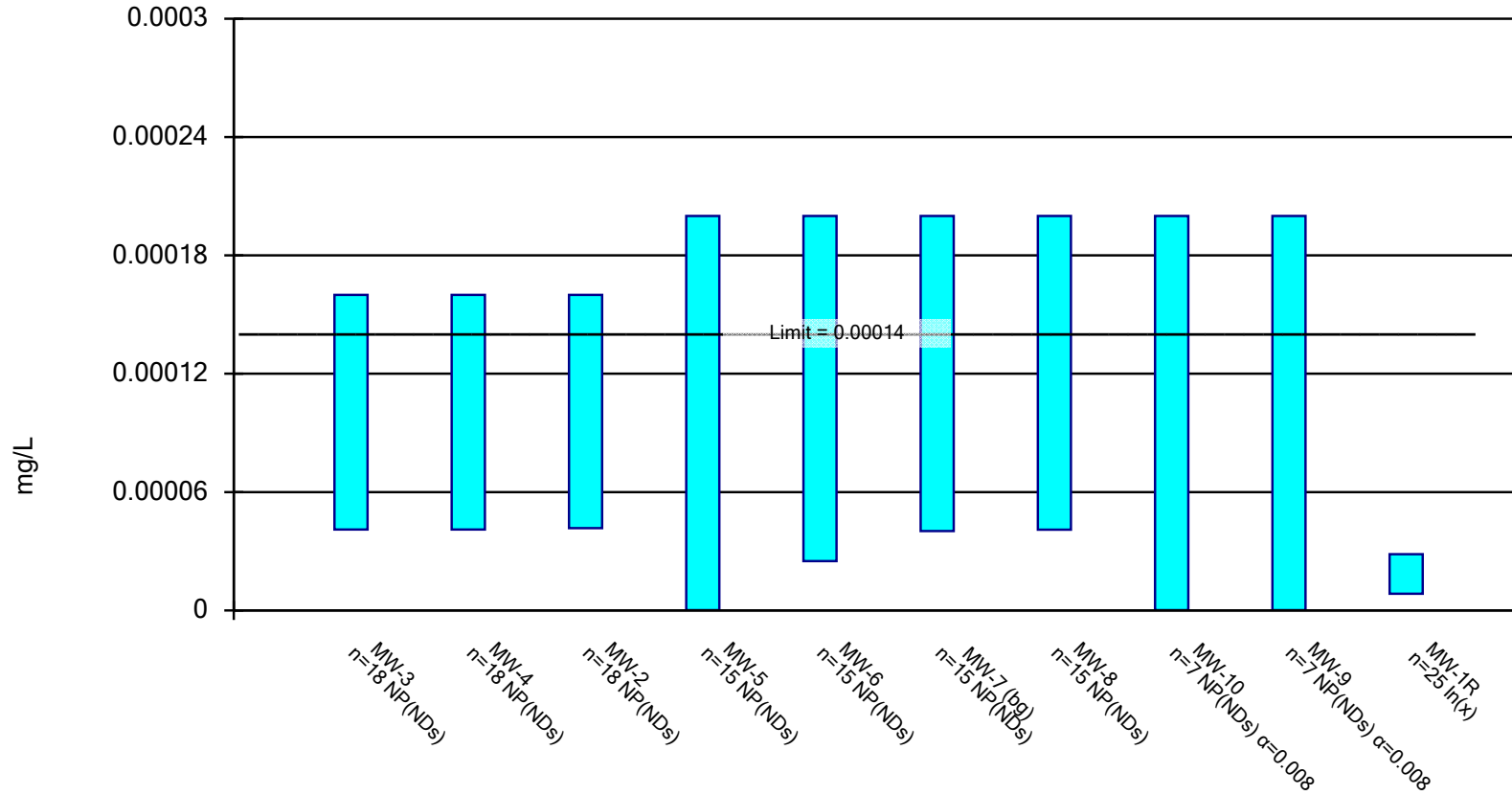
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

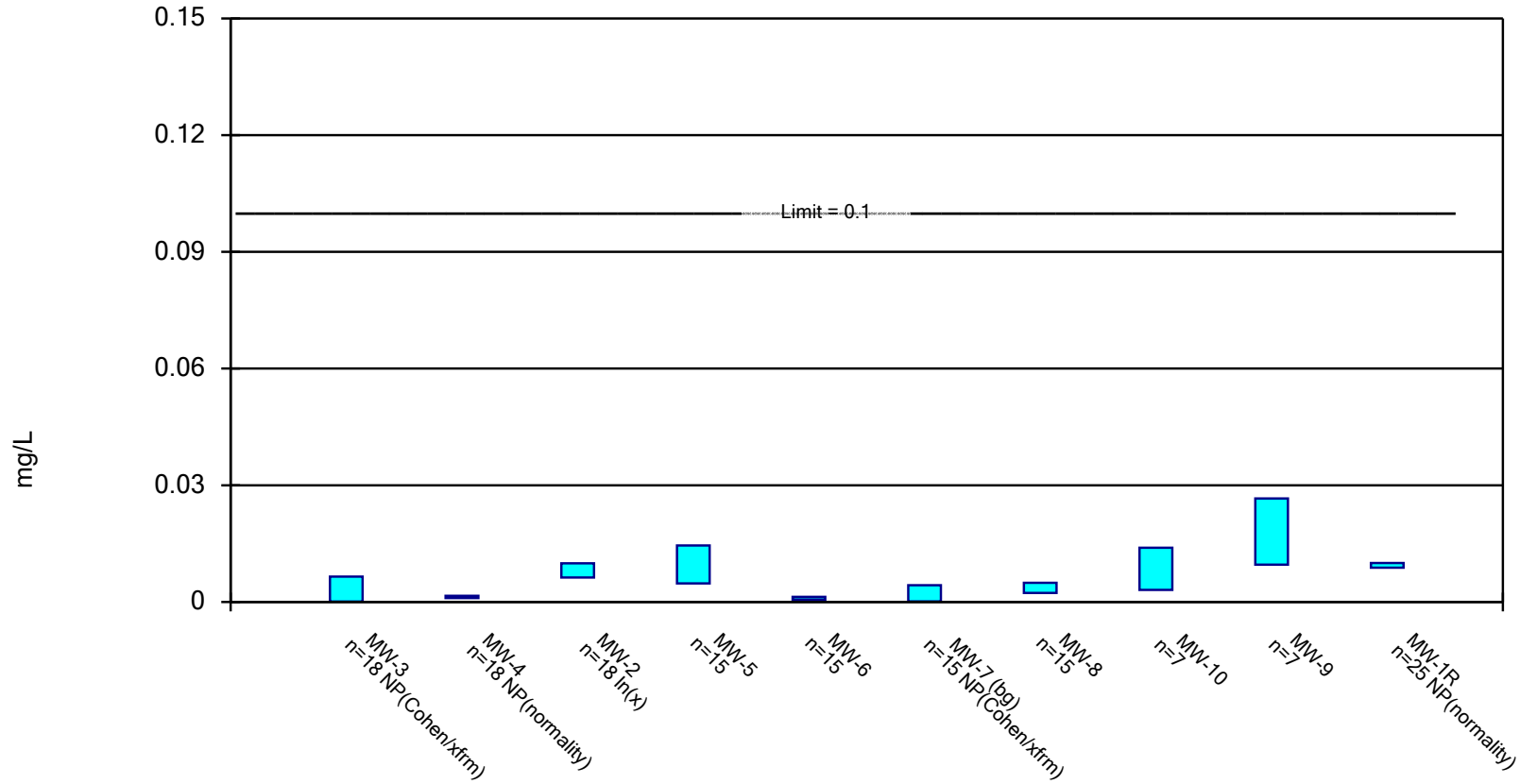
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

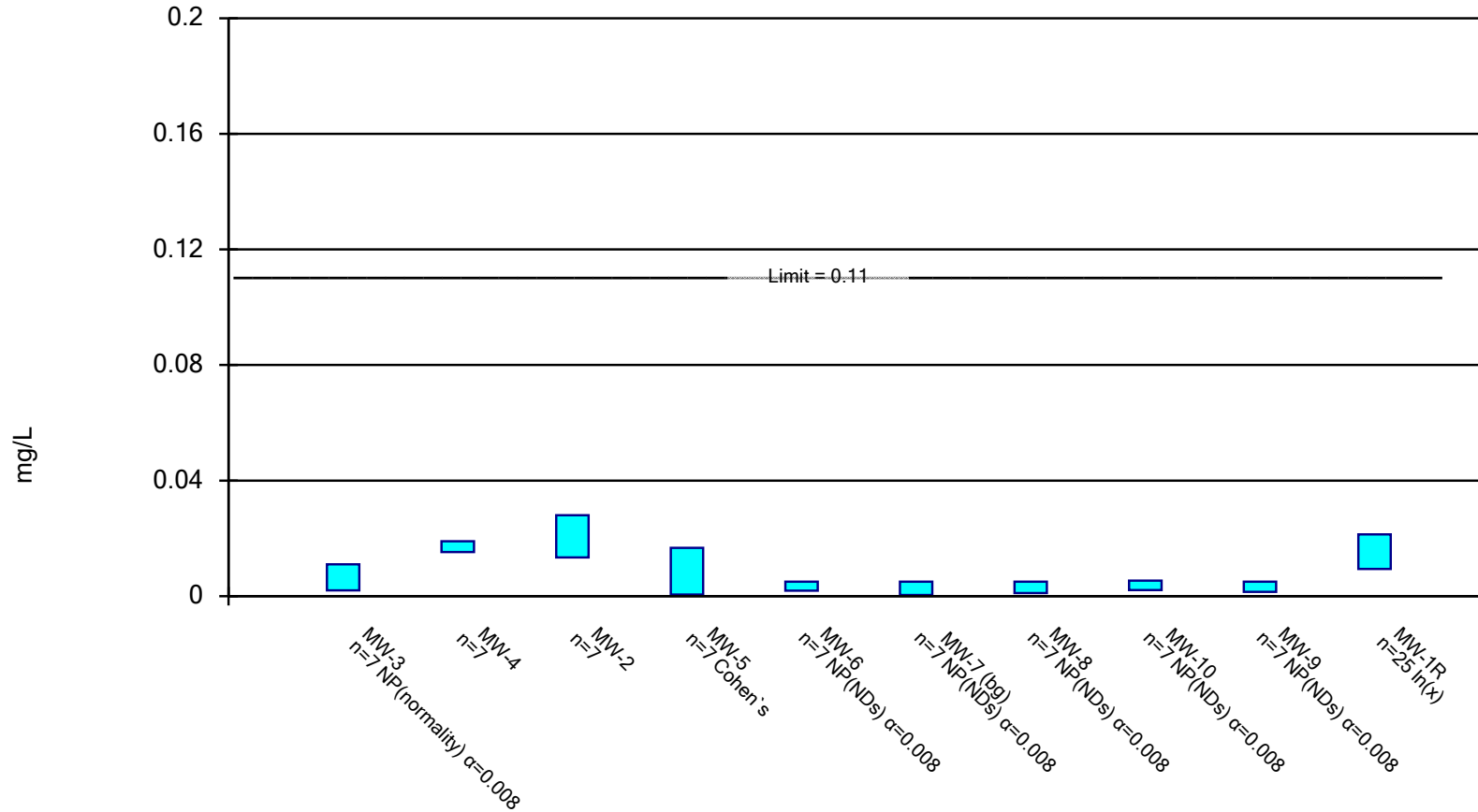


Constituent: Molybdenum Analysis Run 4/27/2021 1:09 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

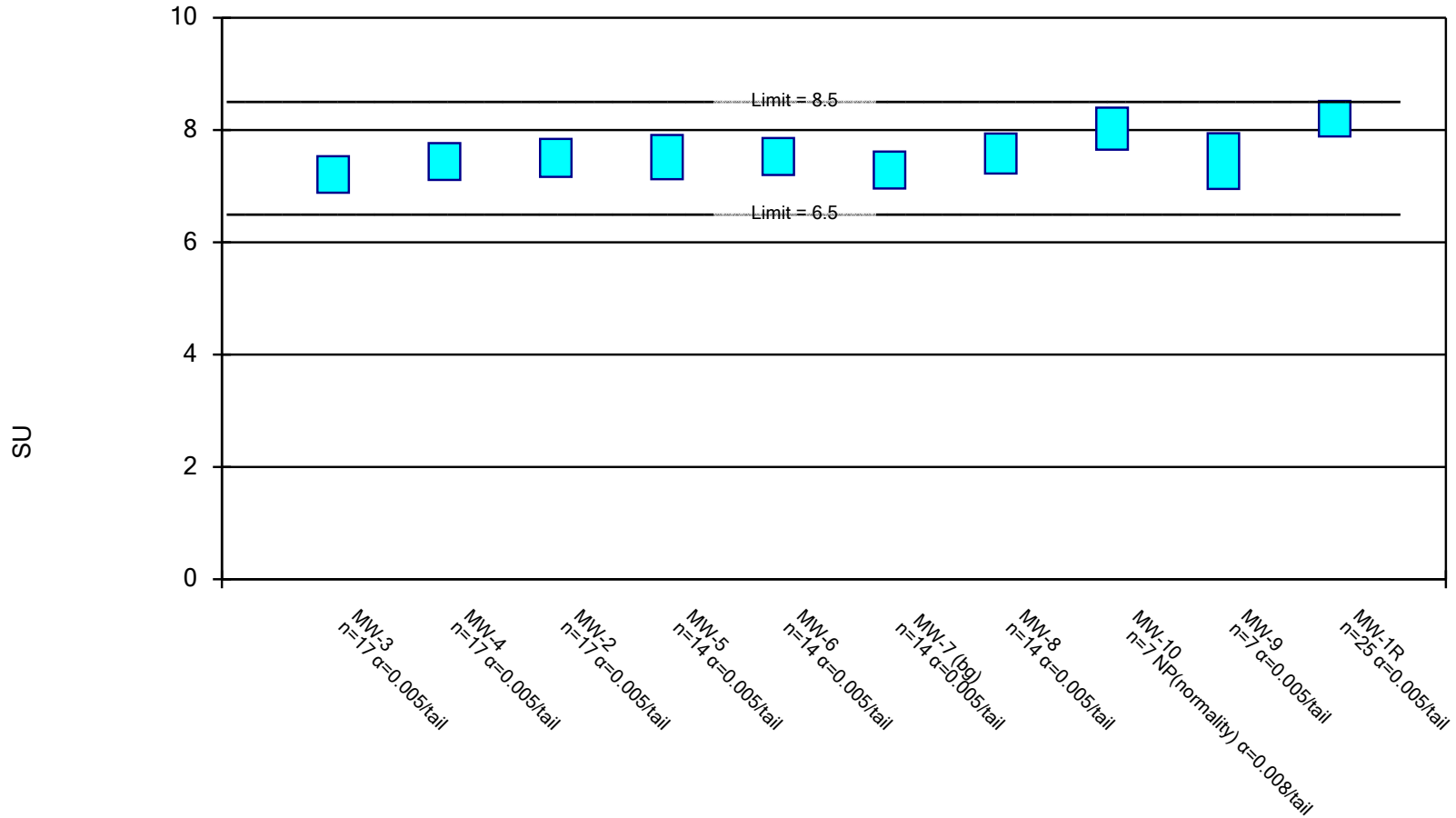
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Nickel Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

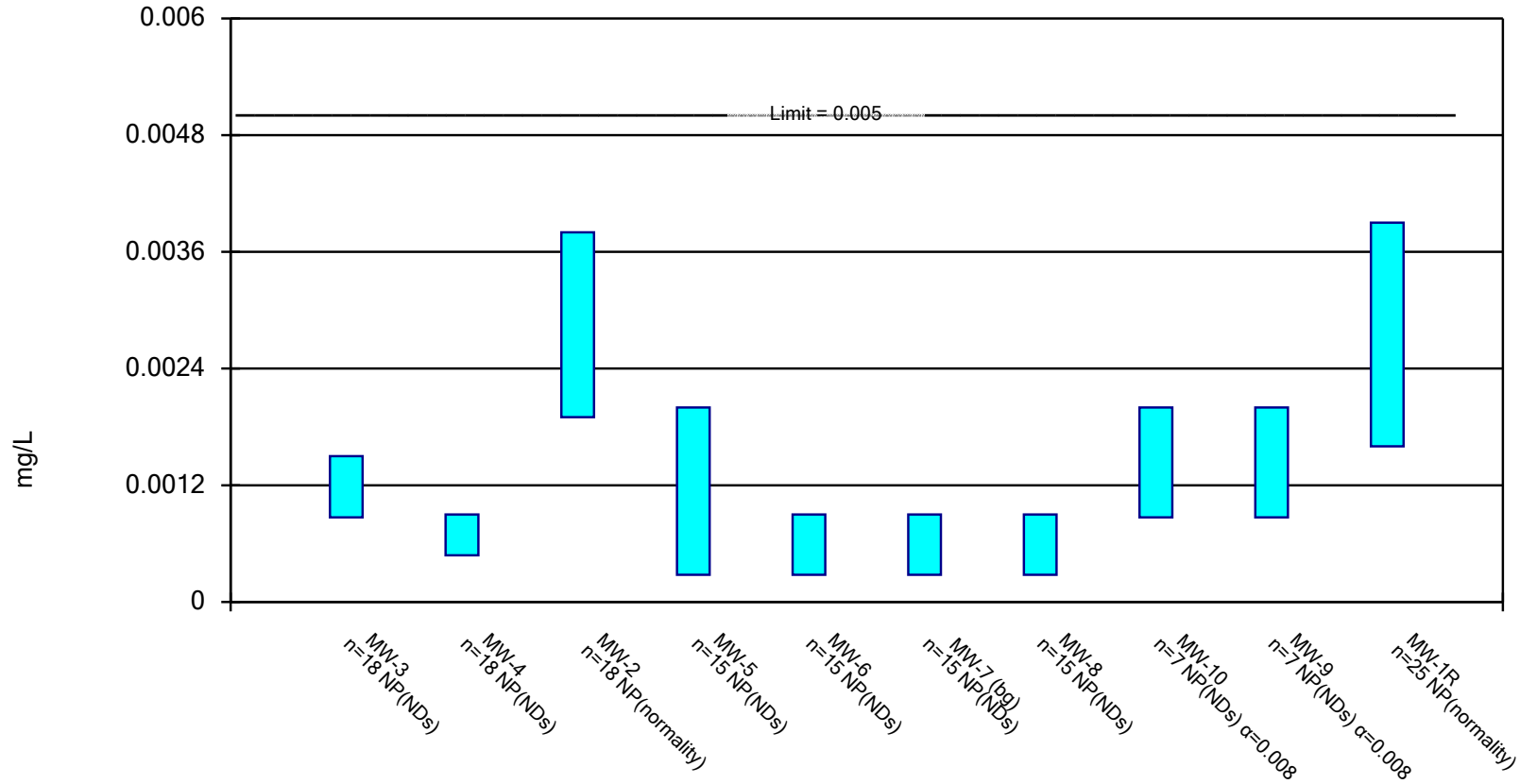
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: pH Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

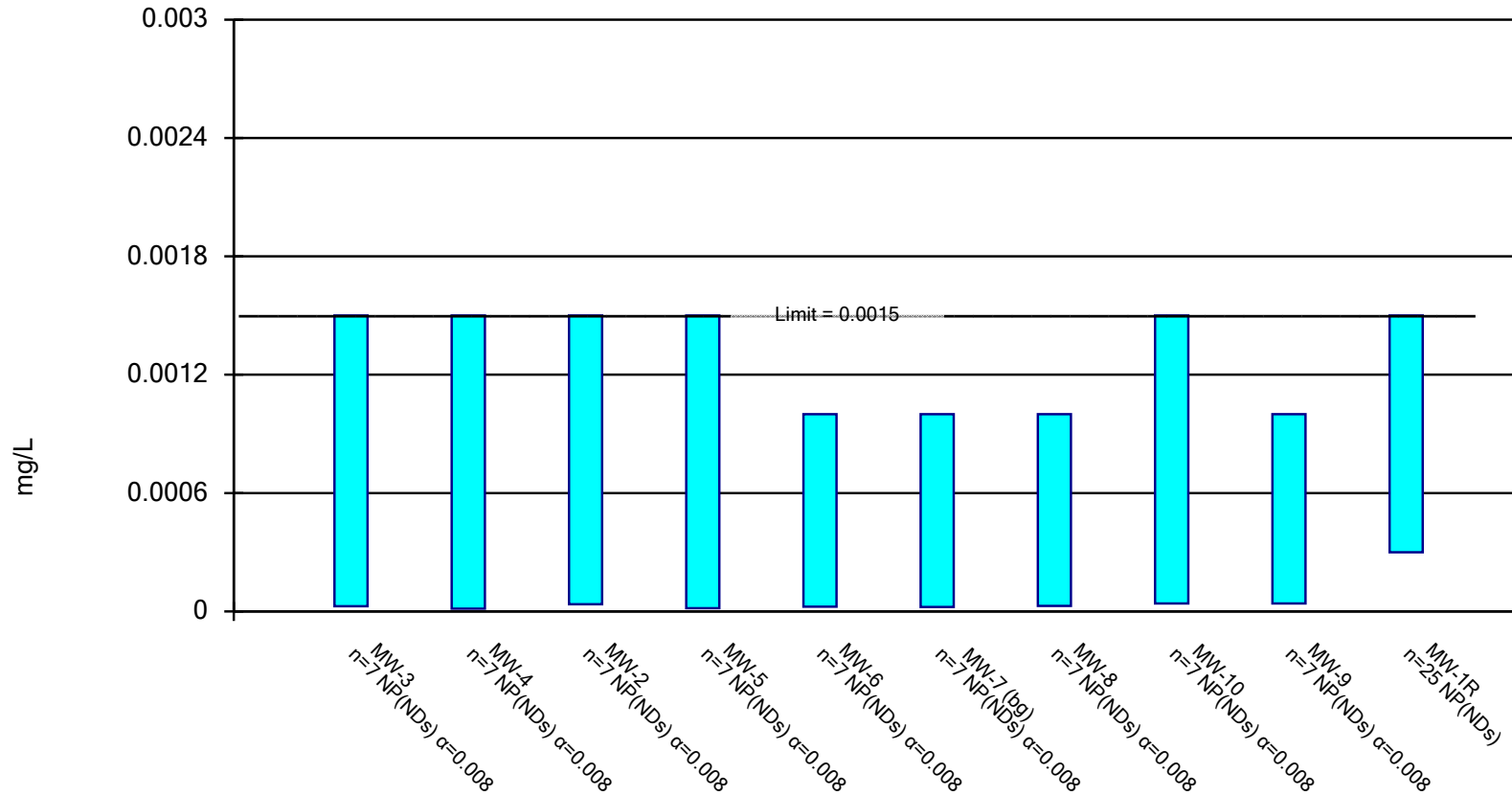
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Selenium Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

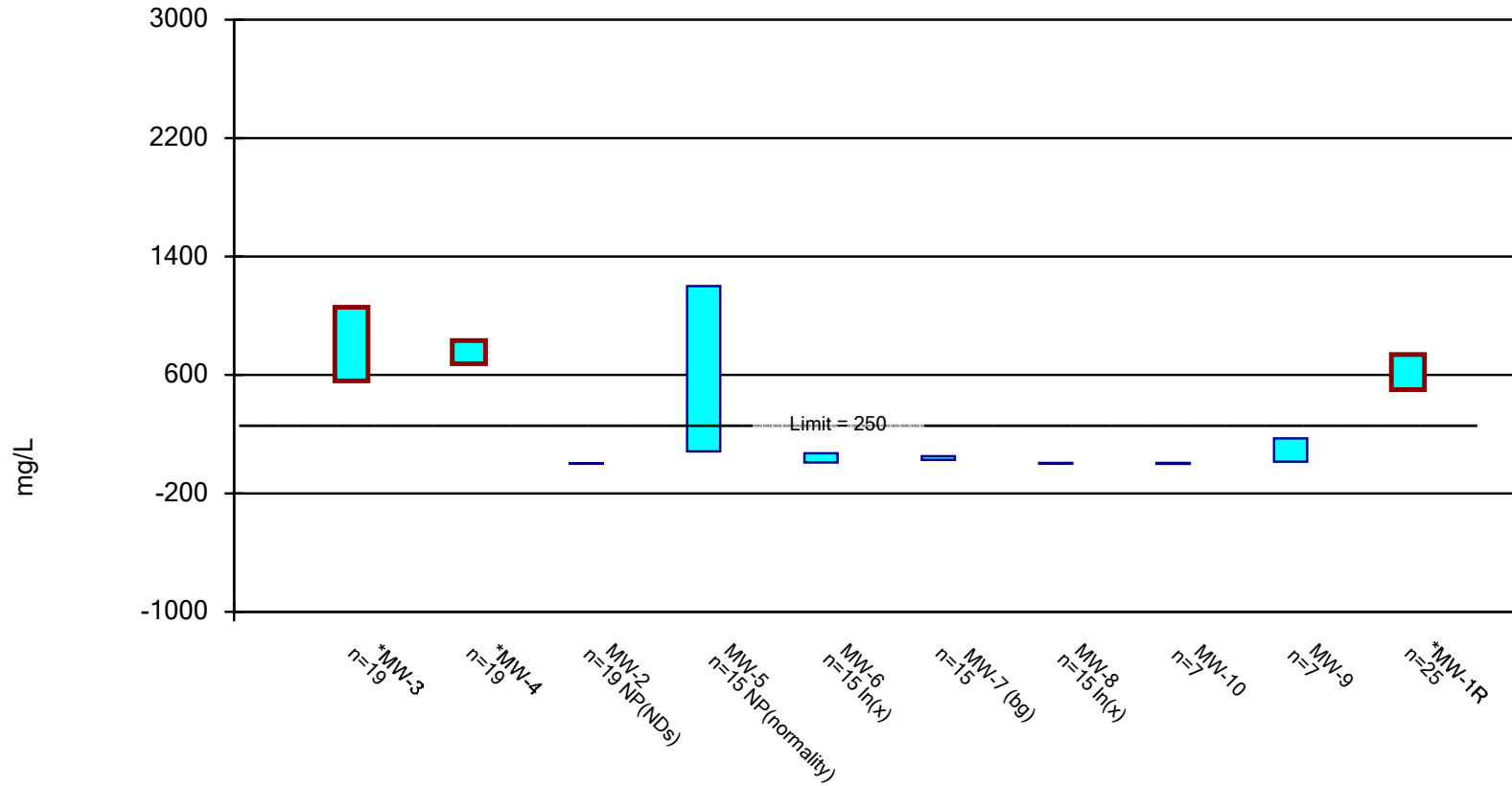
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Silver Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

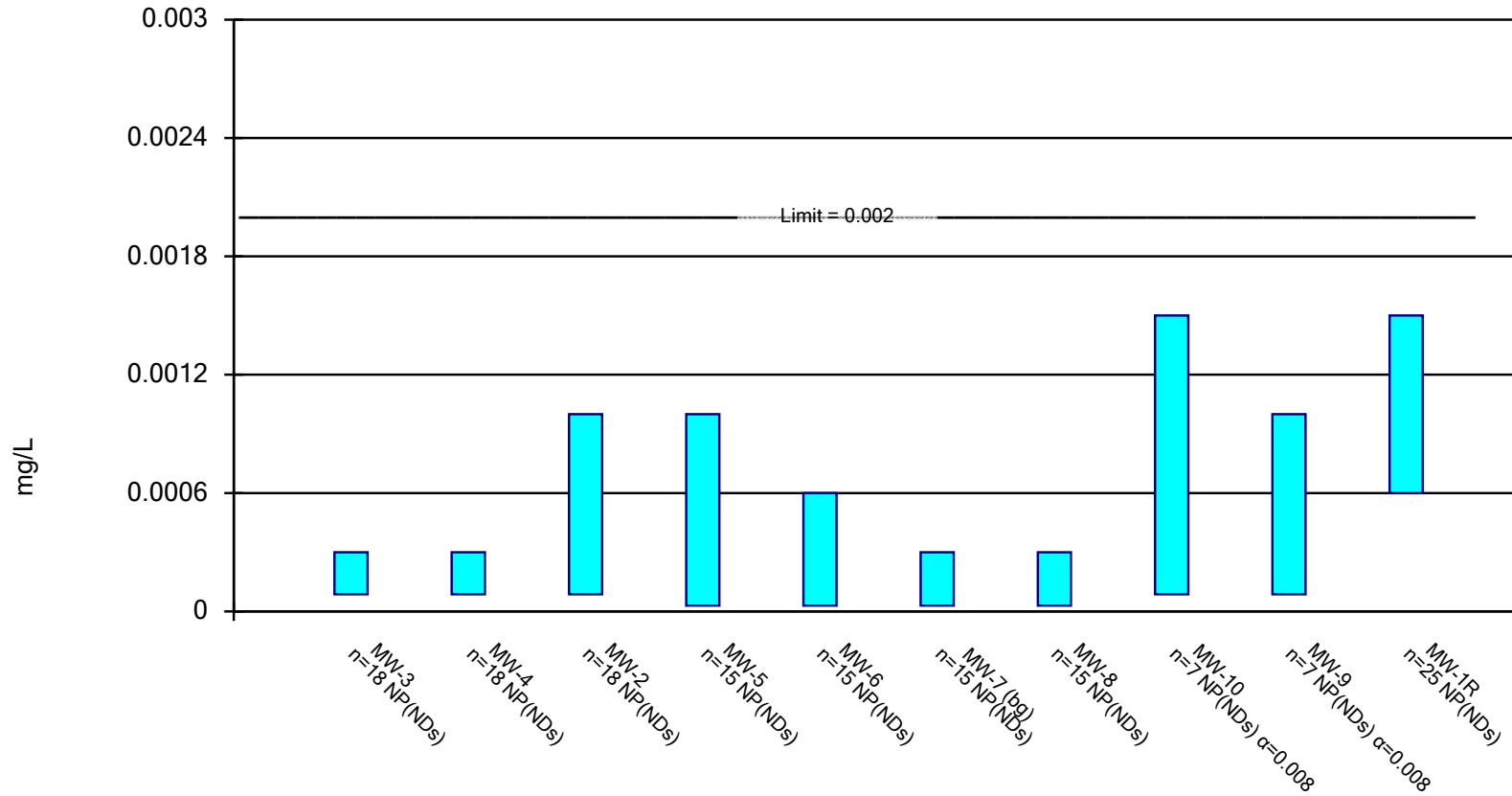
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Sulfate Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

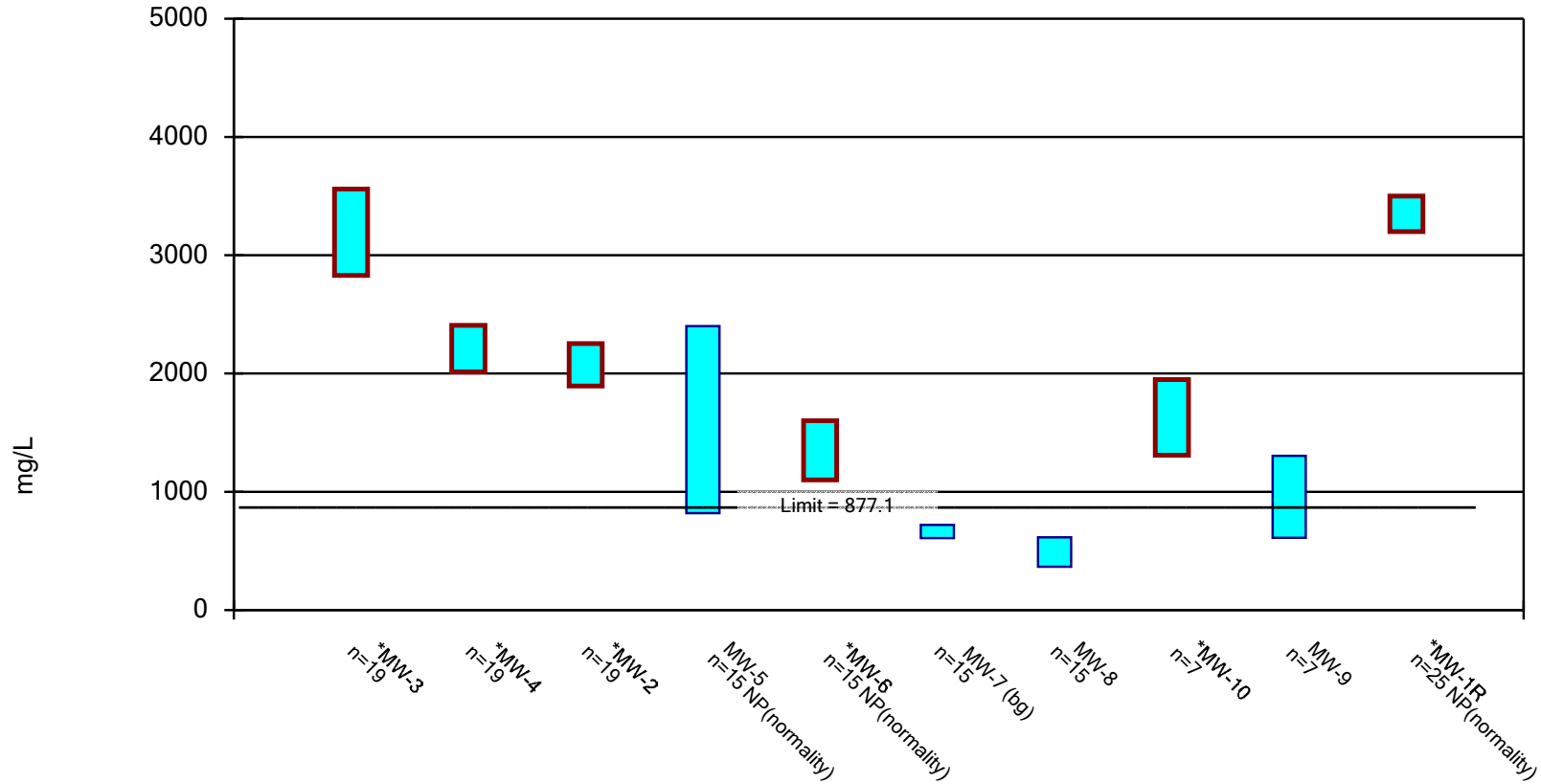
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Thallium Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

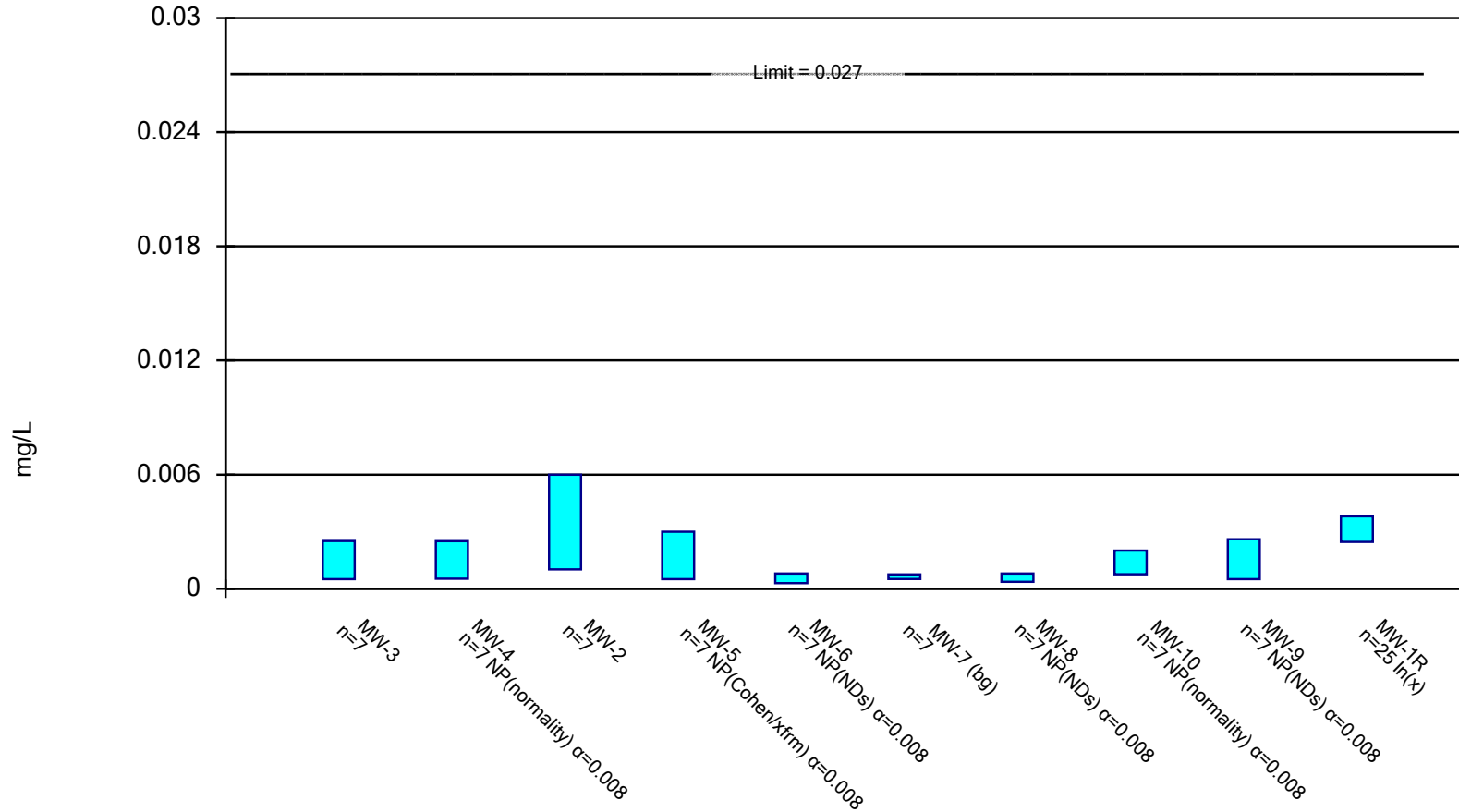


Constituent: Total Dissolved Solids Analysis Run 4/27/2021 1:09 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

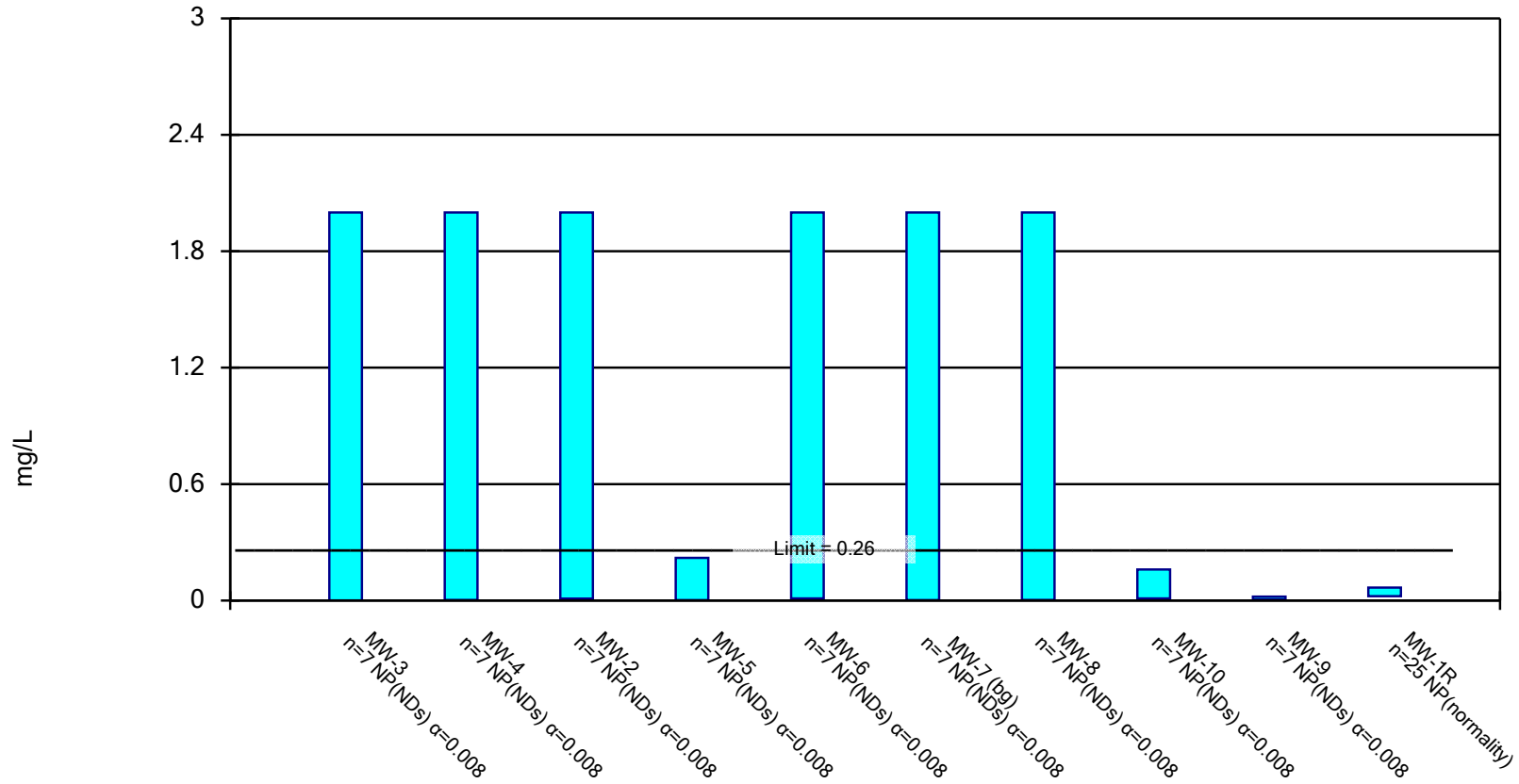
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Vanadium Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Zinc Analysis Run 4/27/2021 1:09 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 4/27/2021, 1:10 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-3	0.00057	0.00027	0.006	No	18	0.0004936	0.000394	94.44	No	0.01	NP (NDs)
Antimony (mg/L)	MW-4	0.00057	0.00027	0.006	No	18	0.0004251	0.0003038	94.44	No	0.01	NP (NDs)
Antimony (mg/L)	MW-2	0.00068	0.00027	0.006	No	18	0.001032	0.001726	61.11	No	0.01	NP (NDs)
Antimony (mg/L)	MW-5	0.0015	0.00009	0.006	No	15	0.000296	0.0003466	100	No	0.01	NP (NDs)
Antimony (mg/L)	MW-6	0.00033	0.00009	0.006	No	15	0.0002253	0.0001031	73.33	No	0.01	NP (NDs)
Antimony (mg/L)	MW-7 (bg)	0.0016	0.00009	0.006	No	15	0.0003123	0.0003688	86.67	No	0.01	NP (NDs)
Antimony (mg/L)	MW-8	0.00031	0.00009	0.006	No	15	0.0002187	0.000097	86.67	No	0.01	NP (NDs)
Antimony (mg/L)	MW-10	0.0039	0.00018	0.006	No	7	0.001011	0.001352	71.43	No	0.008	NP (NDs)
Antimony (mg/L)	MW-9	0.0006	0.0003	0.006	No	7	0.0003429	0.0001134	100	No	0.008	NP (NDs)
Antimony (mg/L)	MW-1R	0.004684	0.001571	0.006	No	25	0.004789	0.005666	12	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-3	0.00221	0.001662	0.01	No	18	0.001936	0.000453	5.556	No	0.01	Param.
Arsenic (mg/L)	MW-4	0.0018	0.00125	0.01	No	18	0.001442	0.0002912	5.556	No	0.01	NP (normality)
Arsenic (mg/L)	MW-2	0.009338	0.006701	0.01	No	18	0.008019	0.002179	5.556	No	0.01	Param.
Arsenic (mg/L)	MW-5	0.1791	0.06648	0.01	Yes	15	0.1228	0.08307	0	No	0.01	Param.
Arsenic (mg/L)	MW-6	0.001537	0.0009308	0.01	No	15	0.001234	0.0004475	6.667	No	0.01	Param.
Arsenic (mg/L)	MW-7 (bg)	0.0019	0.00025	0.01	No	14	0.001134	0.00127	35.71	No	0.01	NP (Cohens/xfrm)
Arsenic (mg/L)	MW-8	0.005907	0.003773	0.01	No	15	0.004987	0.001853	0	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-10	0.001418	0.0008333	0.01	No	7	0.001126	0.0002462	0	No	0.01	Param.
Arsenic (mg/L)	MW-9	0.00395	0.001935	0.01	No	7	0.002943	0.0008482	0	No	0.01	Param.
Arsenic (mg/L)	MW-1R	0.0084	0.0068	0.01	No	25	0.007346	0.001841	4	No	0.01	NP (normality)
Barium (mg/L)	MW-3	0.4421	0.3235	1.3	No	18	0.3828	0.09803	0	No	0.01	Param.
Barium (mg/L)	MW-4	0.1572	0.1229	1.3	No	18	0.1401	0.02835	0	No	0.01	Param.
Barium (mg/L)	MW-2	0.4828	0.4483	1.3	No	18	0.4656	0.02854	0	No	0.01	Param.
Barium (mg/L)	MW-5	0.2983	0.1157	1.3	No	15	0.207	0.1348	0	No	0.01	Param.
Barium (mg/L)	MW-6	1.298	0.7787	1.3	No	15	1.038	0.3832	0	No	0.01	Param.
Barium (mg/L)	MW-7 (bg)	0.4137	0.3316	1.3	No	15	0.3727	0.06053	0	No	0.01	Param.
Barium (mg/L)	MW-8	0.7634	0.5299	1.3	No	15	0.6467	0.1722	0	No	0.01	Param.
Barium (mg/L)	MW-10	1.3	1.1	1.3	No	7	1.229	0.07559	0	No	0.008	NP (normality)
Barium (mg/L)	MW-9	2.126	0.7369	1.3	No	7	1.431	0.5847	0	No	0.01	Param.
Barium (mg/L)	MW-1R	0.6305	0.4447	1.3	No	25	0.5376	0.1864	0	No	0.01	Param.
Beryllium (mg/L)	MW-3	0.001	0.00031	0.004	No	18	0.0006856	0.0004719	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-4	0.001	0.00031	0.004	No	18	0.0006856	0.0004719	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-2	0.0015	0.00031	0.004	No	18	0.001023	0.0009046	83.33	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-5	0.002	0.00006	0.004	No	15	0.0007533	0.0005673	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-6	0.002	0.00006	0.004	No	15	0.000722	0.0005657	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-7 (bg)	0.002	0.00006	0.004	No	15	0.000722	0.0005657	100	No	0.01	NP (NDs)

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Beryllium (mg/L)	MW-8	0.002	0.00006	0.004	No	15	0.0006926	0.0005874	93.33	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-10	0.002	0.001	0.004	No	7	0.001143	0.000378	100	No	0.008	NP (NDs)
Beryllium (mg/L)	MW-9	0.002	0.001	0.004	No	7	0.001143	0.000378	100	No	0.008	NP (NDs)
Beryllium (mg/L)	MW-1R	0.001	0.001	0.004	No	25	0.001	0	100	No	0.01	NP (NDs)
Boron (ug/L)	MW-3	5661	4581	16000	No	18	5167	926.1	0	In(x)	0.01	Param.
Boron (ug/L)	MW-4	4000	3400	16000	No	18	3750	613.8	0	No	0.01	NP (normality)
Boron (ug/L)	MW-2	140000	110000	16000	Yes	18	128000	41507	0	No	0.01	NP (normality)
Boron (ug/L)	MW-5	4600	2700	16000	No	15	4140	2845	0	No	0.01	NP (normality)
Boron (ug/L)	MW-6	14000	9200	16000	No	15	11107	3812	0	No	0.01	NP (normality)
Boron (ug/L)	MW-7 (bg)	16000	9200	16000	No	15	12707	3620	0	No	0.01	NP (normality)
Boron (ug/L)	MW-8	2969	1292	16000	No	15	2387	1749	0	In(x)	0.01	Param.
Boron (ug/L)	MW-10	48623	36520	16000	Yes	7	42571	5094	0	No	0.01	Param.
Boron (ug/L)	MW-9	6374	4168	16000	No	7	5271	928.6	0	No	0.01	Param.
Boron (ug/L)	MW-1R	187203	159197	16000	Yes	25	173200	28095	0	No	0.01	Param.
Cadmium (mg/L)	MW-3	0.0006	0.00004	0.0025	No	18	0.0005814	0.0009144	94.44	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-4	0.0006	0.00004	0.0025	No	18	0.0004429	0.0006888	88.89	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-2	0.0011	0.00014	0.0025	No	18	0.0007272	0.0008428	61.11	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-5	0.001	0.000017	0.0025	No	15	0.0004052	0.000785	80	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-6	0.0006	0.0000285	0.0025	No	15	0.0002582	0.0003238	60	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-7 (bg)	0.0006	0.000017	0.0025	No	15	0.0002469	0.0003313	93.33	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-8	0.0006	0.000017	0.0025	No	15	0.0002513	0.0003284	86.67	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-10	0.003	0.00003	0.0025	No	7	0.001019	0.0009547	71.43	No	0.008	NP (NDs)
Cadmium (mg/L)	MW-9	0.0012	0.00004	0.0025	No	7	0.0006629	0.0003665	100	No	0.008	NP (NDs)
Cadmium (mg/L)	MW-1R	0.0043	0.0016	0.0025	No	25	0.004544	0.005151	32	No	0.01	NP (Cohens/xfrm)
Calcium (ug/L)	MW-3	620000	530000	200000	Yes	19	591053	87235	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-4	469869	428026	200000	Yes	19	448947	35730	0	No	0.01	Param.
Calcium (ug/L)	MW-2	210000	180000	200000	No	19	201579	35787	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-5	610000	210000	200000	Yes	15	439333	173307	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-6	260000	190000	200000	No	15	215420	65691	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-7 (bg)	150000	130000	200000	No	15	146000	16388	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-8	141420	120580	200000	No	15	131000	15376	0	No	0.01	Param.
Calcium (ug/L)	MW-10	160000	130000	200000	No	7	138571	12150	0	No	0.008	NP (normality)
Calcium (ug/L)	MW-9	267263	229880	200000	Yes	7	248571	15736	0	No	0.01	Param.
Calcium (ug/L)	MW-1R	254886	165994	200000	No	25	210440	89171	0	No	0.01	Param.
Chloride (mg/L)	MW-3	469.3	360	150	Yes	19	421.6	102.6	0	In(x)	0.01	Param.
Chloride (mg/L)	MW-4	327.1	254	150	Yes	19	290.5	62.4	0	No	0.01	Param.

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Chloride (mg/L)	MW-2	150	140	150	No	19	145.8	8.377	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-5	21.64	14.24	150	No	15	17.94	5.457	0	No	0.01	Param.
Chloride (mg/L)	MW-6	300	150	150	No	15	235.3	69.06	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-7 (bg)	15	13	150	No	15	14.27	0.7988	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-8	47.18	16.63	150	No	15	37.43	31.62	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-10	622.4	366.2	150	Yes	7	494.3	107.8	0	No	0.01	Param.
Chloride (mg/L)	MW-9	18	9.5	150	No	7	11.93	2.775	0	No	0.008	NP (normality)
Chloride (mg/L)	MW-1R	266.4	255.2	150	Yes	25	260.8	11.15	0	No	0.01	Param.
Chromium (mg/L)	MW-3	0.00237	0.001413	0.011	No	18	0.002003	0.0009243	0	ln(x)	0.01	Param.
Chromium (mg/L)	MW-4	0.002231	0.001736	0.011	No	18	0.002011	0.0004664	5.556	ln(x)	0.01	Param.
Chromium (mg/L)	MW-2	0.05566	0.03534	0.011	Yes	18	0.0455	0.01679	0	No	0.01	Param.
Chromium (mg/L)	MW-5	0.0008	0.00034	0.011	No	15	0.000858	0.0007535	80	No	0.01	NP (NDs)
Chromium (mg/L)	MW-6	0.0038	0.00099	0.011	No	15	0.001752	0.001037	0	No	0.01	NP (normality)
Chromium (mg/L)	MW-7 (bg)	0.0009	0.00037	0.011	No	15	0.0007753	0.0005885	66.67	No	0.01	NP (NDs)
Chromium (mg/L)	MW-8	0.0008904	0.0006096	0.011	No	15	0.00075	0.0002072	26.67	No	0.01	Param.
Chromium (mg/L)	MW-10	0.01181	0.006302	0.011	No	7	0.009057	0.002319	0	No	0.01	Param.
Chromium (mg/L)	MW-9	0.002726	0.001731	0.011	No	7	0.002229	0.0004192	0	No	0.01	Param.
Chromium (mg/L)	MW-1R	0.006933	0.003687	0.011	No	25	0.00614	0.004144	0	ln(x)	0.01	Param.
Cobalt (mg/L)	MW-3	0.00099	0.00067	0.006	No	18	0.0009639	0.0004594	22.22	No	0.01	NP (normality)
Cobalt (mg/L)	MW-4	0.00083	0.00032	0.006	No	18	0.0006328	0.0005625	38.89	No	0.01	NP (normality)
Cobalt (mg/L)	MW-2	0.008114	0.005819	0.006	No	18	0.006967	0.001897	0	No	0.01	Param.
Cobalt (mg/L)	MW-5	0.003953	0.001172	0.006	No	15	0.002563	0.002051	33.33	No	0.01	Param.
Cobalt (mg/L)	MW-6	0.00099	0.00036	0.006	No	15	0.0006627	0.0003262	46.67	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-7 (bg)	0.0008634	0.0007314	0.006	No	15	0.000784	0.00008305	20	No	0.01	Param.
Cobalt (mg/L)	MW-8	0.0018	0.00034	0.006	No	15	0.0008107	0.0006521	40	No	0.01	NP (normality)
Cobalt (mg/L)	MW-10	0.0026	0.00062	0.006	No	7	0.001053	0.0007008	0	No	0.008	NP (normality)
Cobalt (mg/L)	MW-9	0.002107	0.0004606	0.006	No	7	0.001187	0.0008206	0	ln(x)	0.01	Param.
Cobalt (mg/L)	MW-1R	0.01743	0.00595	0.006	No	25	0.01828	0.02303	0	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-3	1.461	0.7527	5	No	18	1.107	0.5854	27.78	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-4	1.05	0.515	5	No	18	0.914	0.3972	44.44	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-2	2.27	1	5	No	18	1.583	0.8372	33.33	No	0.01	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	MW-5	1.1	0.61	5	No	15	0.984	0.3854	60	No	0.01	NP (NDs)
Combined Radium 226 + 228 (pCi/L)	MW-6	2.22	0.87	5	No	15	1.388	0.768	40	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-7 (bg)	1.65	0.762	5	No	15	1.172	0.4241	60	No	0.01	NP (NDs)
Combined Radium 226 + 228 (pCi/L)	MW-8	2.31	0.952	5	No	15	1.607	1.036	40	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-10	2.226	0.463	5	No	6	1.48	0.4722	33.33	No	0.01	Param.

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Combined Radium 226 + 228 (pCi/L)	MW-9	1.725	1.115	5	No	7	1.42	0.2566	14.29	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1R	2.25	0.79	5	No	4	1.26	0.6674	50	No	0.0625	NP (Cohens/xfrm)
Copper (mg/L)	MW-3	0.022	0.00045	0.02	No	7	0.005876	0.007344	71.43	No	0.008	NP (NDs)
Copper (mg/L)	MW-4	0.022	0.00085	0.02	No	7	0.006036	0.007216	71.43	No	0.008	NP (NDs)
Copper (mg/L)	MW-2	0.022	0.0012	0.02	No	7	0.006343	0.007014	71.43	No	0.008	NP (NDs)
Copper (mg/L)	MW-5	0.022	0.00028	0.02	No	7	0.006126	0.007178	71.43	No	0.008	NP (NDs)
Copper (mg/L)	MW-6	0.0051	0.0012	0.02	No	7	0.003943	0.001333	57.14	No	0.008	NP (NDs)
Copper (mg/L)	MW-7 (bg)	0.005	0.00046	0.02	No	7	0.003321	0.001928	71.43	No	0.008	NP (NDs)
Copper (mg/L)	MW-8	0.005	0.00084	0.02	No	7	0.003426	0.001751	71.43	No	0.008	NP (NDs)
Copper (mg/L)	MW-10	0.0086	0.00087	0.02	No	7	0.004524	0.002251	85.71	No	0.008	NP (NDs)
Copper (mg/L)	MW-9	0.0086	0.0013	0.02	No	7	0.004586	0.002137	85.71	No	0.008	NP (NDs)
Copper (mg/L)	MW-1R	0.0086	0.0043	0.02	No	25	0.00962	0.008324	64	No	0.01	NP (NDs)
Fluoride (mg/L)	MW-3	1.581	1.012	2.42	No	18	1.297	0.4707	0	No	0.01	Param.
Fluoride (mg/L)	MW-4	1.3	1.115	2.42	No	18	1.208	0.1531	0	No	0.01	Param.
Fluoride (mg/L)	MW-2	13.18	10.71	2.42	Yes	18	11.94	2.045	0	No	0.01	Param.
Fluoride (mg/L)	MW-5	3.302	2.165	2.42	No	15	2.733	0.8389	0	No	0.01	Param.
Fluoride (mg/L)	MW-6	1.725	1.462	2.42	No	15	1.593	0.1944	0	No	0.01	Param.
Fluoride (mg/L)	MW-7 (bg)	0.1444	0.08629	2.42	No	15	0.1082	0.0517	20	No	0.01	Param.
Fluoride (mg/L)	MW-8	0.4943	0.3111	2.42	No	15	0.4027	0.1352	0	No	0.01	Param.
Fluoride (mg/L)	MW-10	11.6	9.202	2.42	Yes	7	10.4	1.008	0	No	0.01	Param.
Fluoride (mg/L)	MW-9	2.647	2.239	2.42	No	7	2.443	0.1718	0	No	0.01	Param.
Fluoride (mg/L)	MW-1R	26	21	2.42	Yes	25	21.98	7.108	4	No	0.01	NP (normality)
Iron (mg/L)	MW-3	24.26	3.513	26.55	No	7	13.89	8.733	0	No	0.01	Param.
Iron (mg/L)	MW-4	9.408	6.735	26.55	No	7	8.071	1.125	0	No	0.01	Param.
Iron (mg/L)	MW-2	22.49	18.94	26.55	No	7	20.71	1.496	0	No	0.01	Param.
Iron (mg/L)	MW-5	43.97	11.32	26.55	No	7	27.64	13.74	0	No	0.01	Param.
Iron (mg/L)	MW-6	19.05	10.66	26.55	No	7	14.86	3.532	0	No	0.01	Param.
Iron (mg/L)	MW-7 (bg)	21.17	15.4	26.55	No	7	18.29	2.43	0	No	0.01	Param.
Iron (mg/L)	MW-8	28.94	17.35	26.55	No	7	23.14	4.88	0	No	0.01	Param.
Iron (mg/L)	MW-10	11.57	8.316	26.55	No	7	9.943	1.37	0	No	0.01	Param.
Iron (mg/L)	MW-9	23.68	14.04	26.55	No	7	18.86	4.059	0	No	0.01	Param.
Iron (mg/L)	MW-1R	4.172	2.572	26.55	No	25	3.372	1.604	0	No	0.01	Param.
Lead (mg/L)	MW-3	0.00079	0.00022	0.014	No	18	0.0007055	0.0007729	61.11	No	0.01	NP (NDs)
Lead (mg/L)	MW-4	0.0005	0.00028	0.014	No	18	0.0005894	0.0006191	61.11	No	0.01	NP (NDs)
Lead (mg/L)	MW-2	0.004665	0.001961	0.014	No	18	0.003731	0.002432	11.11	ln(x)	0.01	Param.
Lead (mg/L)	MW-5	0.0025	0.00022	0.014	No	15	0.002832	0.007091	46.67	No	0.01	NP (Cohens/xfrm)

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Lead (mg/L)	MW-6	0.002402	0.0009473	0.014	No	15	0.001675	0.001073	20	No	0.01	Param.
Lead (mg/L)	MW-7 (bg)	0.00062	0.00004	0.014	No	15	0.0005767	0.000806	66.67	No	0.01	NP (NDs)
Lead (mg/L)	MW-8	0.002	0.0003	0.014	No	15	0.0009647	0.001002	40	No	0.01	NP (Cohens/xfrm)
Lead (mg/L)	MW-10	0.045	0.00078	0.014	No	7	0.008211	0.01625	14.29	No	0.008	NP (normality)
Lead (mg/L)	MW-9	0.002	0.0005	0.014	No	7	0.001133	0.0007089	57.14	No	0.008	NP (NDs)
Lead (mg/L)	MW-1R	0.03482	0.01134	0.014	No	25	0.03532	0.04256	0	ln(x)	0.01	Param.
Lithium (mg/L)	MW-3	0.07697	0.04614	0.059	No	18	0.06156	0.02547	5.556	No	0.01	Param.
Lithium (mg/L)	MW-4	0.05796	0.03838	0.059	No	18	0.04817	0.01618	5.556	No	0.01	Param.
Lithium (mg/L)	MW-2	1.549	1.271	0.059	Yes	18	1.41	0.2294	0	No	0.01	Param.
Lithium (mg/L)	MW-5	0.1338	0.06164	0.059	Yes	15	0.0977	0.05322	13.33	No	0.01	Param.
Lithium (mg/L)	MW-6	0.23	0.17	0.059	Yes	15	0.1903	0.06661	6.667	No	0.01	NP (normality)
Lithium (mg/L)	MW-7 (bg)	0.0061	0.0022	0.059	No	15	0.00798	0.01429	33.33	No	0.01	NP (normality)
Lithium (mg/L)	MW-8	0.03678	0.02149	0.059	No	15	0.02913	0.01128	6.667	No	0.01	Param.
Lithium (mg/L)	MW-10	1.53	0.7844	0.059	Yes	7	1.157	0.3138	0	No	0.01	Param.
Lithium (mg/L)	MW-9	0.2808	0.1678	0.059	Yes	7	0.2243	0.04756	0	No	0.01	Param.
Lithium (mg/L)	MW-1R	3.138	2.482	0.059	Yes	25	2.868	0.7028	0	ln(x)	0.01	Param.
Mercury (mg/L)	MW-3	0.00016	0.000041	0.00014	No	18	0.0001158	0.00006123	83.33	No	0.01	NP (NDs)
Mercury (mg/L)	MW-4	0.00016	0.000041	0.00014	No	18	0.0001157	0.00006142	94.44	No	0.01	NP (NDs)
Mercury (mg/L)	MW-2	0.00016	0.0000417	0.00014	No	18	0.0001811	0.0002857	83.33	No	0.01	NP (NDs)
Mercury (mg/L)	MW-5	0.0002	1.6e-7	0.00014	No	15	0.00009709	0.00007709	93.33	No	0.01	NP (NDs)
Mercury (mg/L)	MW-6	0.0002	0.000025	0.00014	No	15	0.00009465	0.00007028	66.67	No	0.01	NP (NDs)
Mercury (mg/L)	MW-7 (bg)	0.0002	0.00004025	0.00014	No	15	0.00009497	0.00007243	73.33	No	0.01	NP (NDs)
Mercury (mg/L)	MW-8	0.0002	0.0000409	0.00014	No	15	0.00008852	0.00007242	73.33	No	0.01	NP (NDs)
Mercury (mg/L)	MW-10	0.0002	1.6e-7	0.00014	No	7	0.000086	0.00009617	57.14	No	0.008	NP (NDs)
Mercury (mg/L)	MW-9	0.0002	1.6e-7	0.00014	No	7	0.000086	0.00009614	57.14	No	0.008	NP (NDs)
Mercury (mg/L)	MW-1R	0.00002851	0.000008453	0.00014	No	25	0.00003098	0.00004101	4	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-3	0.0065	0.00012	0.1	No	18	0.002575	0.003164	50	No	0.01	NP (Cohens/xfrm)
Molybdenum (mg/L)	MW-4	0.0016	0.001	0.1	No	18	0.0013	0.000625	22.22	No	0.01	NP (normality)
Molybdenum (mg/L)	MW-2	0.009949	0.006288	0.1	No	18	0.008494	0.003494	11.11	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-5	0.01452	0.004768	0.1	No	15	0.009646	0.007198	13.33	No	0.01	Param.
Molybdenum (mg/L)	MW-6	0.001304	0.0006123	0.1	No	15	0.0009582	0.0005105	26.67	No	0.01	Param.
Molybdenum (mg/L)	MW-7 (bg)	0.0043	0.00016	0.1	No	15	0.002012	0.002117	20	No	0.01	NP (Cohens/xfrm)
Molybdenum (mg/L)	MW-8	0.004907	0.002332	0.1	No	15	0.003619	0.0019	13.33	No	0.01	Param.
Molybdenum (mg/L)	MW-10	0.01395	0.003104	0.1	No	7	0.008529	0.004567	0	No	0.01	Param.
Molybdenum (mg/L)	MW-9	0.0266	0.009603	0.1	No	7	0.0181	0.007153	0	No	0.01	Param.
Molybdenum (mg/L)	MW-1R	0.01	0.0088	0.1	No	25	0.00914	0.002778	0	No	0.01	NP (normality)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 4/27/2021, 1:10 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Nickel (mg/L)	MW-3	0.011	0.002	0.11	No	7	0.004343	0.0034	28.57	No	0.008	NP (normality)
Nickel (mg/L)	MW-4	0.01901	0.01527	0.11	No	7	0.01714	0.001574	0	No	0.01	Param.
Nickel (mg/L)	MW-2	0.02803	0.0134	0.11	No	7	0.02071	0.006157	0	No	0.01	Param.
Nickel (mg/L)	MW-5	0.01671	0.0005356	0.11	No	7	0.004106	0.003527	42.86	No	0.01	Param.
Nickel (mg/L)	MW-6	0.005	0.0019	0.11	No	7	0.002586	0.001075	71.43	No	0.008	NP (NDs)
Nickel (mg/L)	MW-7 (bg)	0.005	0.0004	0.11	No	7	0.002089	0.001536	71.43	No	0.008	NP (NDs)
Nickel (mg/L)	MW-8	0.005	0.0011	0.11	No	7	0.002314	0.001276	71.43	No	0.008	NP (NDs)
Nickel (mg/L)	MW-10	0.0054	0.0021	0.11	No	7	0.002957	0.001359	71.43	No	0.008	NP (NDs)
Nickel (mg/L)	MW-9	0.005	0.0015	0.11	No	7	0.003014	0.001322	71.43	No	0.008	NP (NDs)
Nickel (mg/L)	MW-1R	0.02139	0.009438	0.11	No	25	0.02034	0.0202	0	ln(x)	0.01	Param.
pH (SU)	MW-3	7.535	6.883	8.5	No	17	7.209	0.4599	0	No	0.005	Param.
pH (SU)	MW-4	7.766	7.113	8.5	No	17	7.439	0.4611	0	No	0.005	Param.
pH (SU)	MW-2	7.841	7.167	8.5	No	17	7.504	0.476	0	No	0.005	Param.
pH (SU)	MW-5	7.912	7.125	8.5	No	14	7.519	0.4888	0	No	0.005	Param.
pH (SU)	MW-6	7.857	7.2	8.5	No	14	7.529	0.4076	0	No	0.005	Param.
pH (SU)	MW-7 (bg)	7.618	6.96	8.5	No	14	7.289	0.4087	0	No	0.005	Param.
pH (SU)	MW-8	7.938	7.226	8.5	No	14	7.582	0.4425	0	No	0.005	Param.
pH (SU)	MW-10	8.4	7.65	8.5	No	7	7.857	0.2646	0	No	0.008	NP (normality)
pH (SU)	MW-9	7.943	6.951	8.5	No	7	7.447	0.3537	0	No	0.005	Param.
pH (SU)	MW-1R	8.517	7.887	8.5	No	25	8.202	0.5636	0	No	0.005	Param.
Selenium (mg/L)	MW-3	0.0015	0.00087	0.005	No	18	0.001201	0.0009387	61.11	No	0.01	NP (NDs)
Selenium (mg/L)	MW-4	0.0009	0.00048	0.005	No	18	0.001022	0.0009557	83.33	No	0.01	NP (NDs)
Selenium (mg/L)	MW-2	0.0038	0.0019	0.005	No	18	0.003456	0.003129	16.67	No	0.01	NP (normality)
Selenium (mg/L)	MW-5	0.002	0.00028	0.005	No	15	0.0008787	0.00111	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-6	0.0009	0.00028	0.005	No	15	0.0006387	0.0004827	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-7 (bg)	0.0009	0.00028	0.005	No	15	0.0006387	0.0004827	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-8	0.0009	0.00028	0.005	No	15	0.0006387	0.0004827	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-10	0.002	0.00087	0.005	No	7	0.001181	0.0004944	100	No	0.008	NP (NDs)
Selenium (mg/L)	MW-9	0.002	0.00087	0.005	No	7	0.001181	0.0004944	100	No	0.008	NP (NDs)
Selenium (mg/L)	MW-1R	0.0039	0.0016	0.005	No	25	0.002492	0.001261	16	No	0.01	NP (normality)
Silver (mg/L)	MW-3	0.0015	0.000026	0.0015	No	7	0.0006666	0.0006547	85.71	No	0.008	NP (NDs)
Silver (mg/L)	MW-4	0.0015	0.000014	0.0015	No	7	0.0004899	0.0005539	71.43	No	0.008	NP (NDs)
Silver (mg/L)	MW-2	0.0015	0.000036	0.0015	No	7	0.0004966	0.0005472	85.71	No	0.008	NP (NDs)
Silver (mg/L)	MW-5	0.0015	0.000016	0.0015	No	7	0.0004937	0.0005501	85.71	No	0.008	NP (NDs)
Silver (mg/L)	MW-6	0.001	0.000024	0.0015	No	7	0.0003234	0.000324	85.71	No	0.008	NP (NDs)
Silver (mg/L)	MW-7 (bg)	0.001	0.000022	0.0015	No	7	0.0003223	0.0003252	71.43	No	0.008	NP (NDs)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 4/27/2021, 1:10 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Silver (mg/L)	MW-8	0.001	0.000028	0.0015	No	7	0.000324	0.0003234	85.71	No	0.008	NP (NDs)
Silver (mg/L)	MW-10	0.0015	0.00004	0.0015	No	7	0.0005771	0.0005083	100	No	0.008	NP (NDs)
Silver (mg/L)	MW-9	0.001	0.00004	0.0015	No	7	0.0004057	0.0003081	100	No	0.008	NP (NDs)
Silver (mg/L)	MW-1R	0.0015	0.0003	0.0015	No	25	0.000732	0.0005483	100	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-3	1057	559.6	250	Yes	19	808.4	424.8	0	No	0.01	Param.
Sulfate (mg/L)	MW-4	832.1	676.3	250	Yes	19	754.2	133.1	0	No	0.01	Param.
Sulfate (mg/L)	MW-2	3.3	1	250	No	19	2.908	3.498	57.89	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-5	1200	83	250	No	15	730.5	478.6	0	No	0.01	NP (normality)
Sulfate (mg/L)	MW-6	70.61	8.99	250	No	15	53.15	52.28	6.667	ln(x)	0.01	Param.
Sulfate (mg/L)	MW-7 (bg)	51.22	26.11	250	No	15	38.67	18.52	0	No	0.01	Param.
Sulfate (mg/L)	MW-8	6.168	1.749	250	No	15	5.125	6.464	6.667	ln(x)	0.01	Param.
Sulfate (mg/L)	MW-10	5.254	-0.2356	250	No	7	2.509	2.311	28.57	No	0.01	Param.
Sulfate (mg/L)	MW-9	171.1	13.67	250	No	7	92.37	66.25	0	No	0.01	Param.
Sulfate (mg/L)	MW-1R	737.8	500.6	250	Yes	25	619.2	237.9	0	No	0.01	Param.
Thallium (mg/L)	MW-3	0.0003	0.000087	0.002	No	18	0.0003787	0.0004579	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-4	0.0003	0.000087	0.002	No	18	0.0003121	0.0003625	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-2	0.001	0.000087	0.002	No	18	0.0005121	0.0006502	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-5	0.001	0.000029	0.002	No	15	0.0002653	0.0004231	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-6	0.0006	0.000029	0.002	No	15	0.0002038	0.0002733	93.33	No	0.01	NP (NDs)
Thallium (mg/L)	MW-7 (bg)	0.0003	0.000029	0.002	No	15	0.0001853	0.0002517	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-8	0.0003	0.000029	0.002	No	15	0.0001896	0.0002494	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-10	0.0015	0.000087	0.002	No	7	0.0005839	0.0005002	100	No	0.008	NP (NDs)
Thallium (mg/L)	MW-9	0.001	0.000087	0.002	No	7	0.0004481	0.0003377	85.71	No	0.008	NP (NDs)
Thallium (mg/L)	MW-1R	0.0015	0.0006	0.002	No	25	0.001108	0.000657	96	No	0.01	NP (NDs)
Total Dissolved Solids (mg/L)	MW-3	3560	2829	877.1	Yes	19	3195	624	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-4	2408	2014	877.1	Yes	19	2211	336.5	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-2	2253	1894	877.1	Yes	19	2074	307	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-5	2400	820	877.1	No	15	1779	679.2	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-6	1600	1100	877.1	Yes	15	1413	213.4	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-7 (bg)	720.3	607.7	877.1	No	15	664	83.05	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-8	614.6	366.8	877.1	No	15	490.7	182.9	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-10	1948	1309	877.1	Yes	7	1629	269	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-9	1304	610.5	877.1	No	7	957.1	291.8	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1R	3500	3200	877.1	Yes	25	3212	488.5	0	No	0.01	NP (normality)
Vanadium (mg/L)	MW-3	0.002507	0.0005015	0.027	No	7	0.001504	0.0008442	14.29	No	0.01	Param.
Vanadium (mg/L)	MW-4	0.0025	0.00053	0.027	No	7	0.00093	0.0007057	14.29	No	0.008	NP (normality)

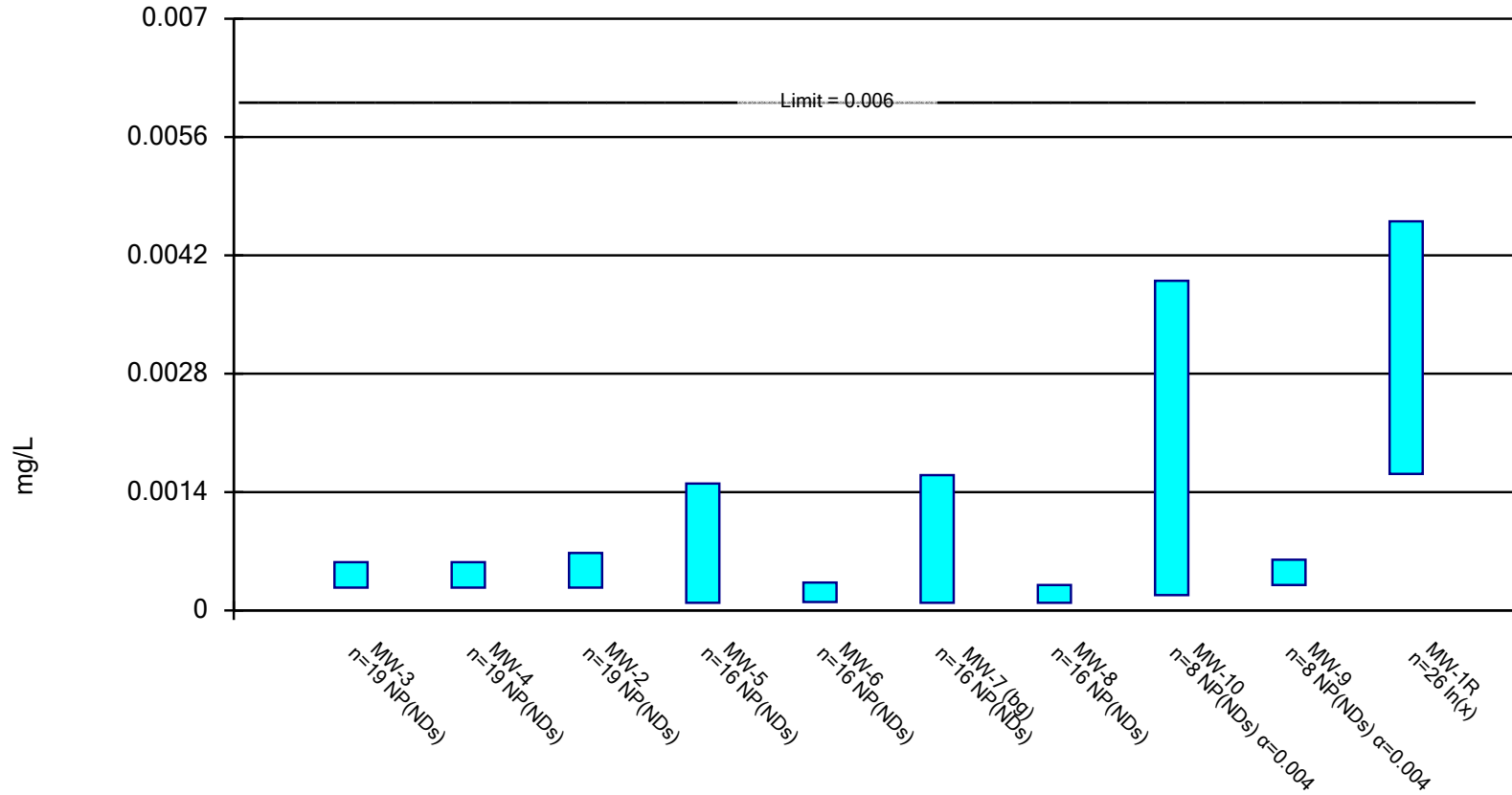
Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 4/27/2021, 1:10 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Vanadium (mg/L)	MW-2	0.005995	0.001013	0.027	No	7	0.003504	0.002097	0	No	0.01	Param.
Vanadium (mg/L)	MW-5	0.003	0.0005	0.027	No	7	0.001356	0.001001	42.86	No	0.008	NP (Cohens/xfm)
Vanadium (mg/L)	MW-6	0.0008	0.00029	0.027	No	7	0.0005729	0.000178	57.14	No	0.008	NP (NDs)
Vanadium (mg/L)	MW-7 (bg)	0.0007488	0.0005112	0.027	No	7	0.00063	0.0001	0	No	0.01	Param.
Vanadium (mg/L)	MW-8	0.0008	0.00036	0.027	No	7	0.0005214	0.0001332	71.43	No	0.008	NP (NDs)
Vanadium (mg/L)	MW-10	0.002	0.00076	0.027	No	7	0.001353	0.0005529	0	No	0.008	NP (normality)
Vanadium (mg/L)	MW-9	0.0026	0.0005	0.027	No	7	0.001071	0.000892	71.43	No	0.008	NP (NDs)
Vanadium (mg/L)	MW-1R	0.003805	0.002464	0.027	No	25	0.00338	0.001704	0	ln(x)	0.01	Param.
Zinc (mg/L)	MW-3	2	0.00081	0.26	No	7	0.299	0.7501	85.71	No	0.008	NP (NDs)
Zinc (mg/L)	MW-4	2	0.003	0.26	No	7	0.2993	0.75	85.71	No	0.008	NP (NDs)
Zinc (mg/L)	MW-2	2	0.0099	0.26	No	7	0.3003	0.7495	85.71	No	0.008	NP (NDs)
Zinc (mg/L)	MW-5	0.22	0.0025	0.26	No	7	0.04493	0.07743	71.43	No	0.008	NP (NDs)
Zinc (mg/L)	MW-6	2	0.011	0.26	No	7	0.3004	0.7494	85.71	No	0.008	NP (NDs)
Zinc (mg/L)	MW-7 (bg)	2	0.0023	0.26	No	7	0.2996	0.7498	71.43	No	0.008	NP (NDs)
Zinc (mg/L)	MW-8	2	0.0026	0.26	No	7	0.2992	0.75	85.71	No	0.008	NP (NDs)
Zinc (mg/L)	MW-10	0.16	0.011	0.26	No	7	0.03729	0.05417	71.43	No	0.008	NP (NDs)
Zinc (mg/L)	MW-9	0.02	0.0064	0.26	No	7	0.01663	0.004572	85.71	No	0.008	NP (NDs)
Zinc (mg/L)	MW-1R	0.067	0.022	0.26	No	25	0.07124	0.07947	24	No	0.01	NP (normality)

Parametric and Non-Parametric (NP) Confidence Interval

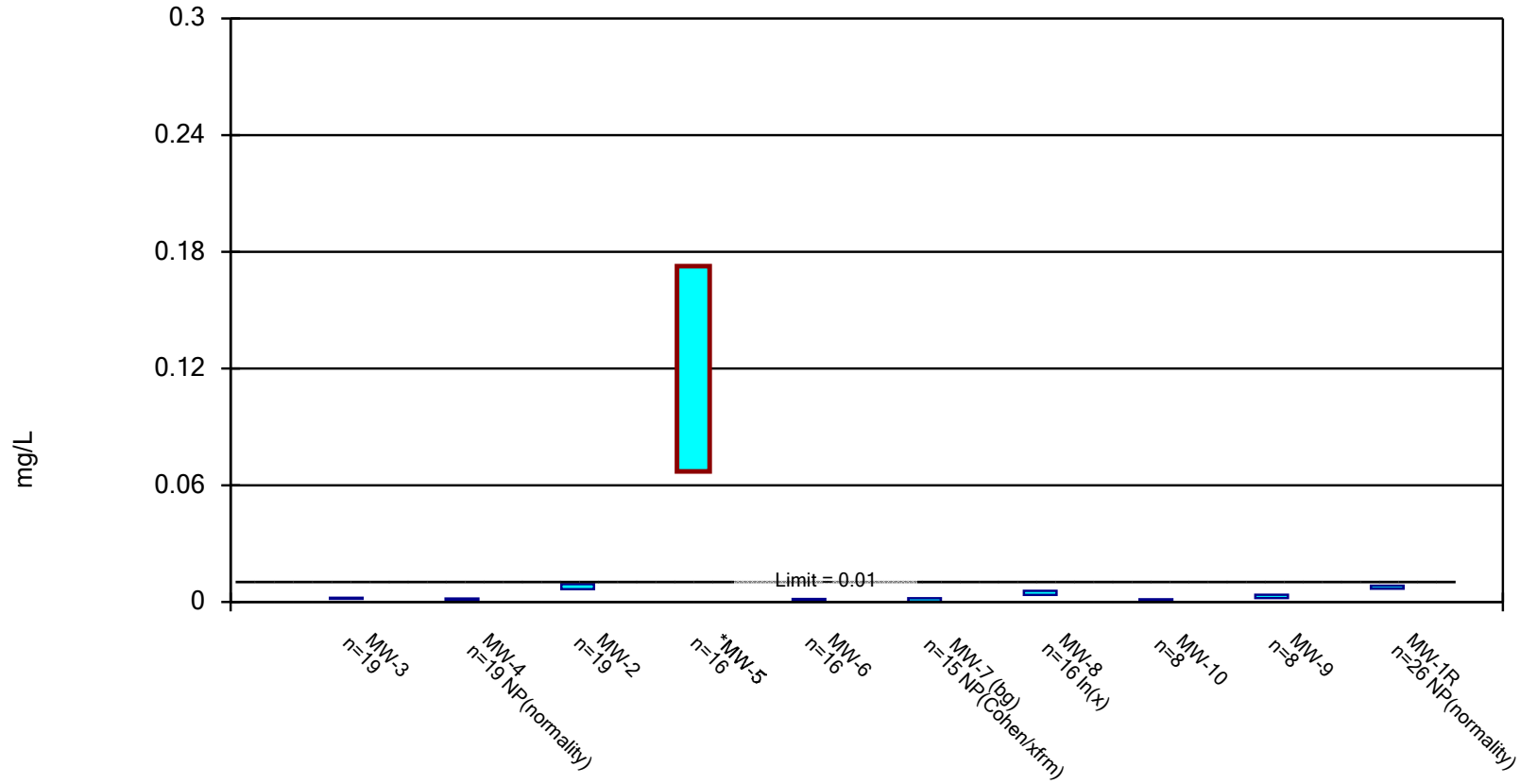
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Antimony Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

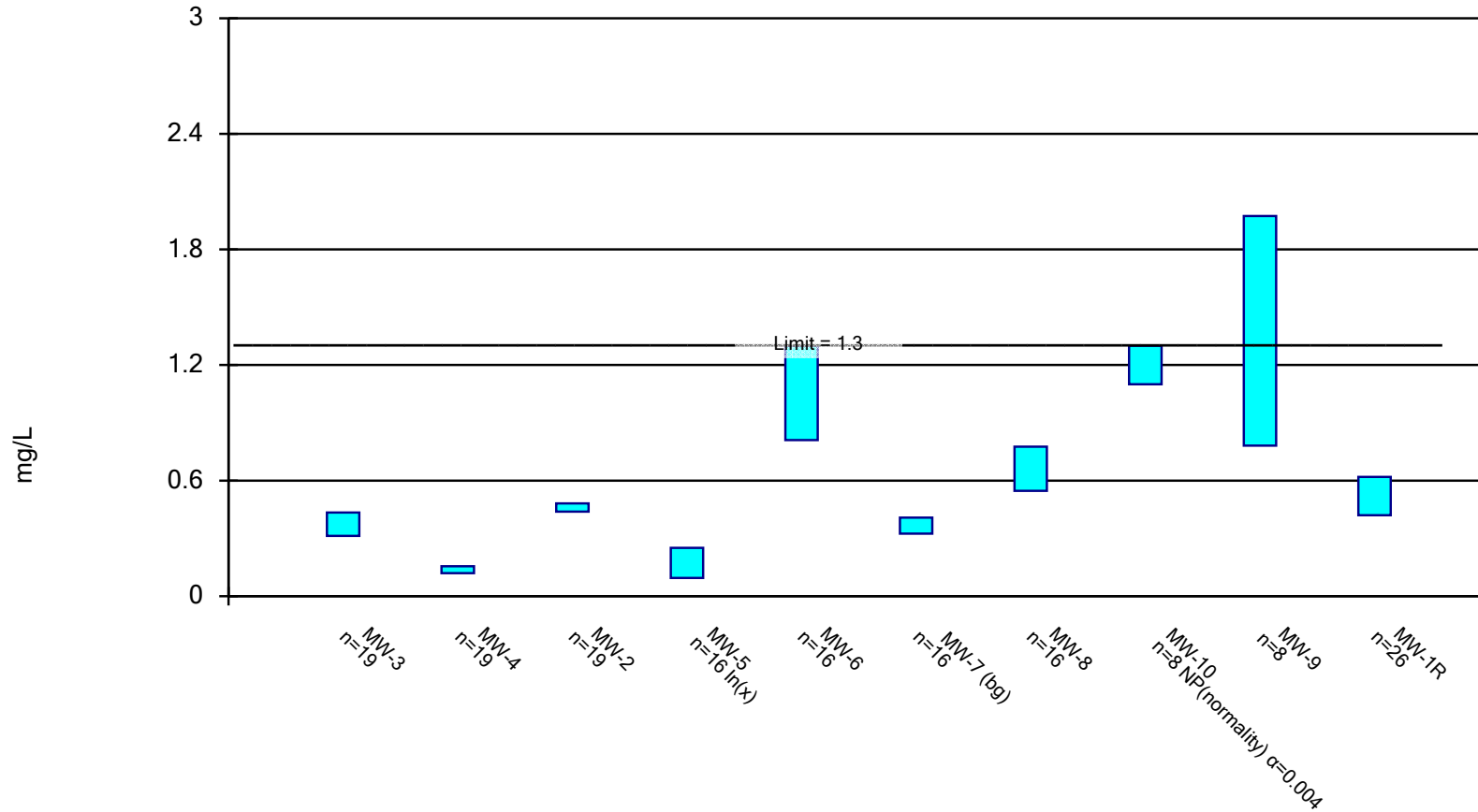
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

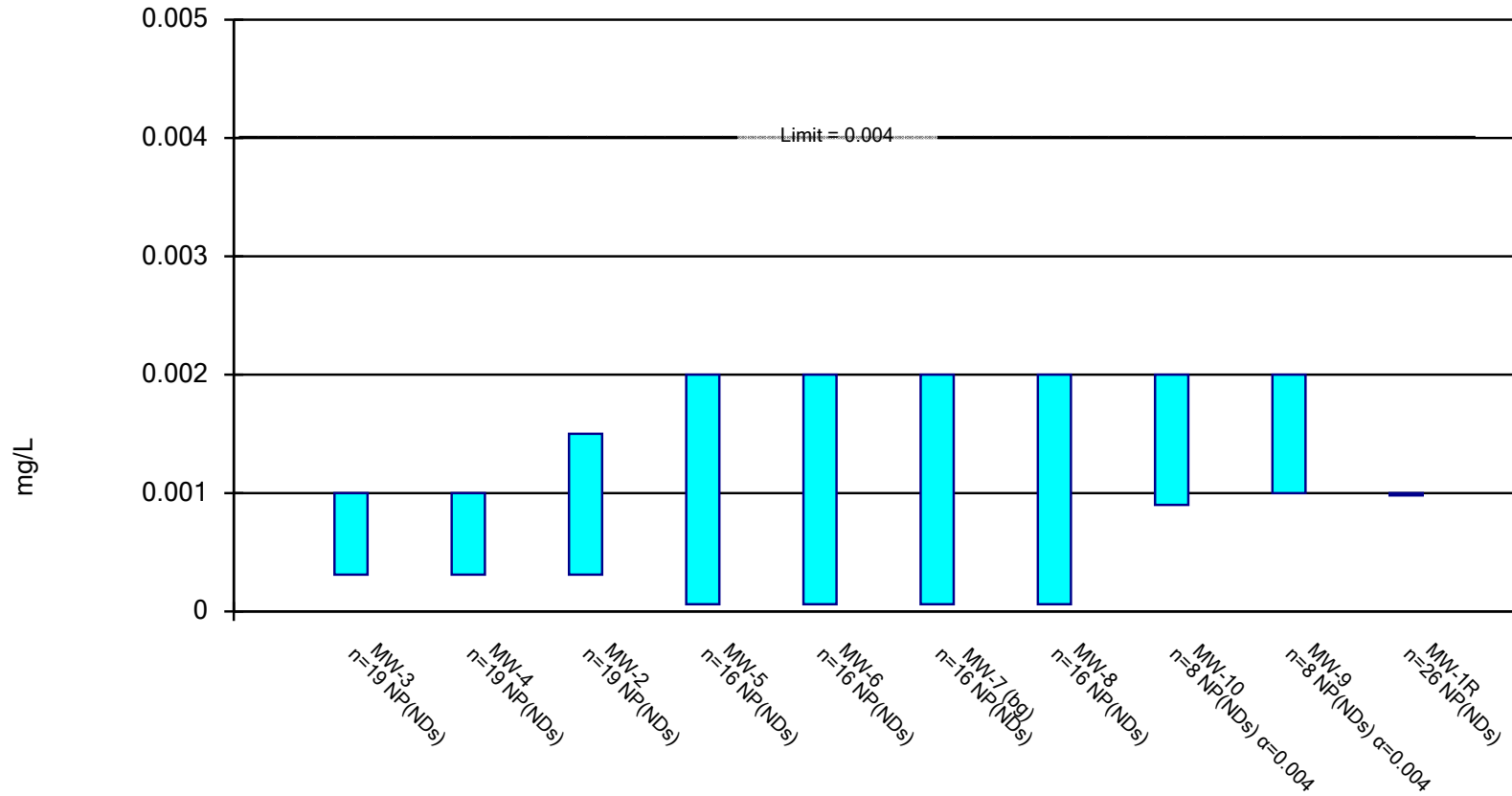
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

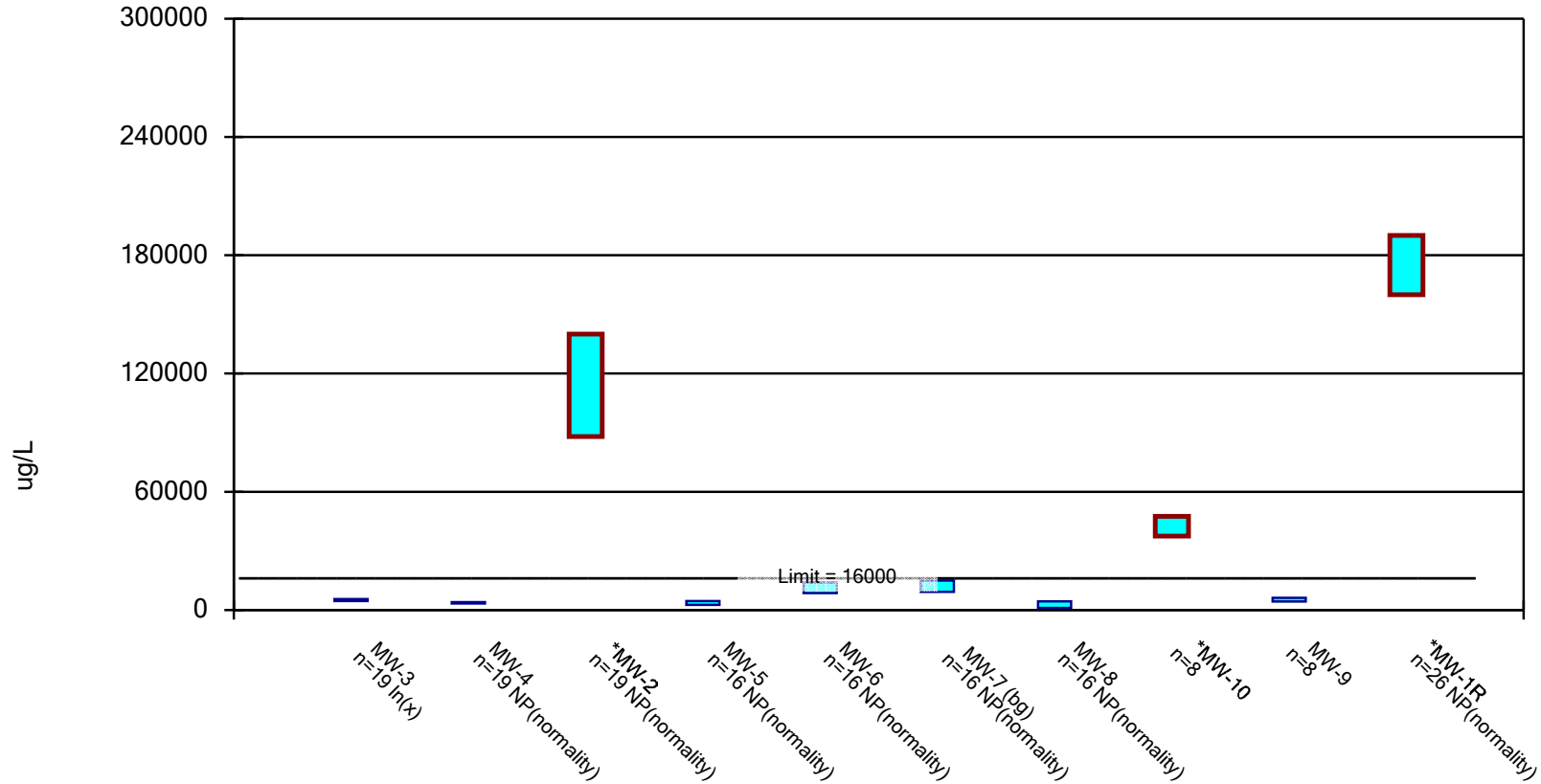
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Beryllium Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

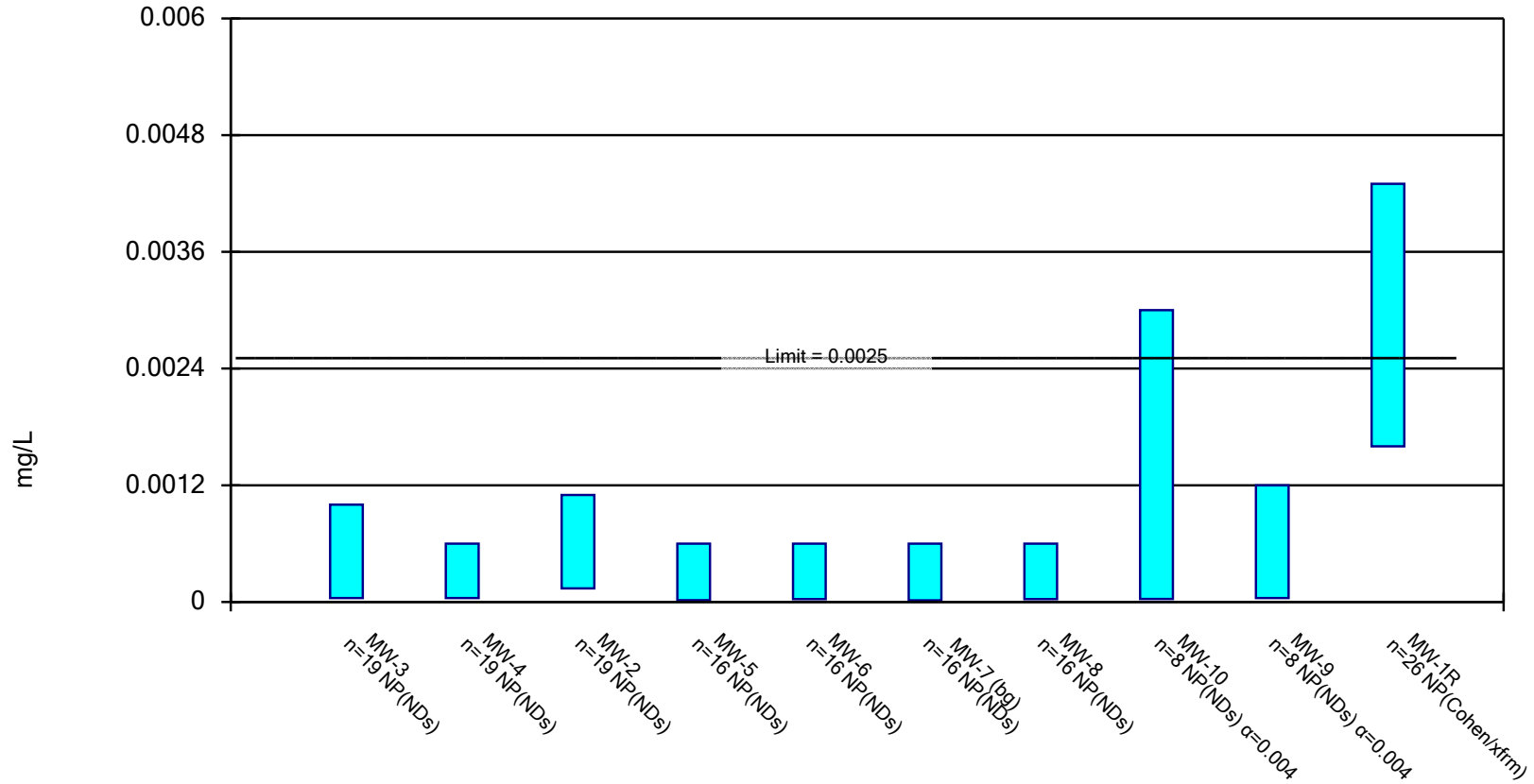
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

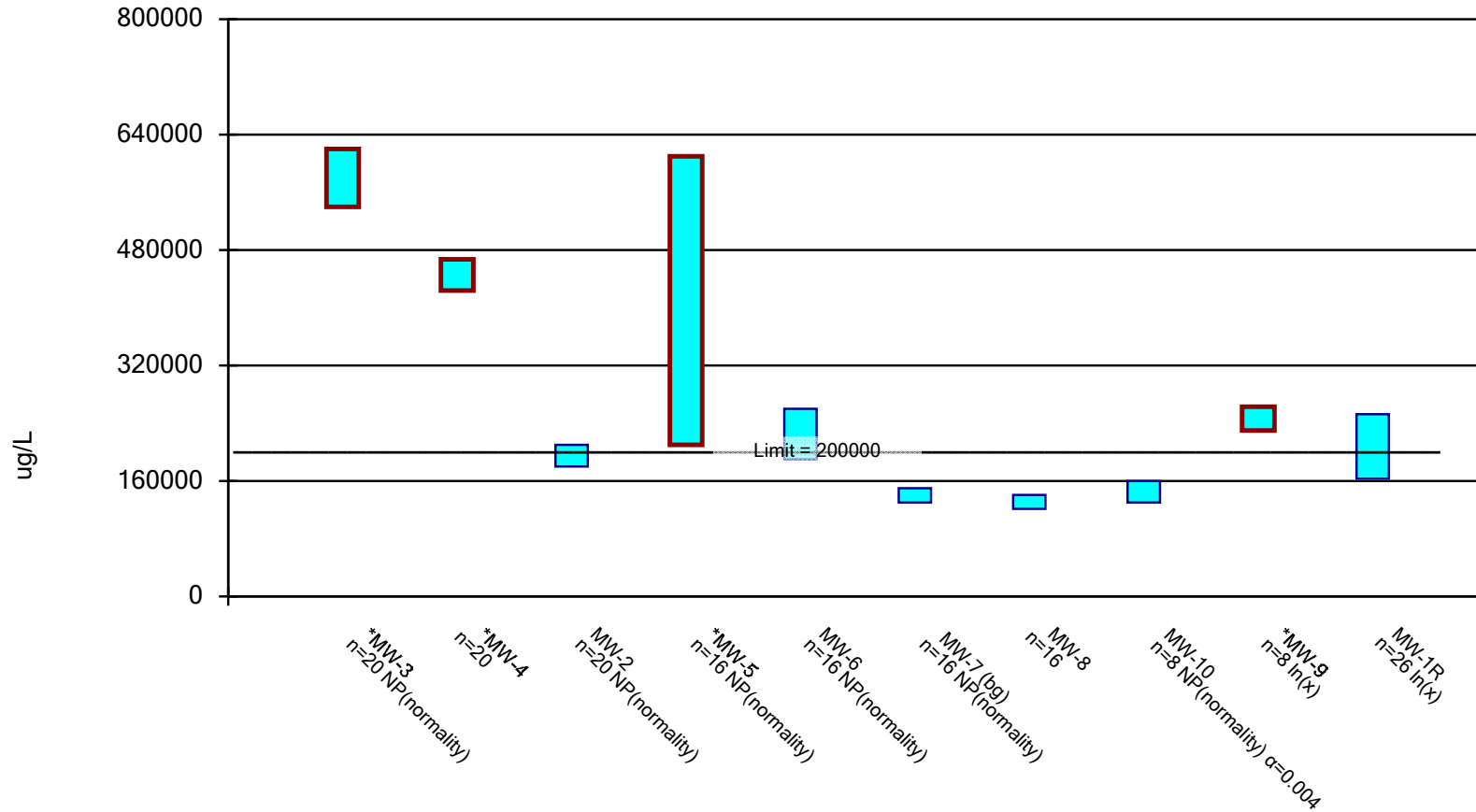
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Cadmium Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

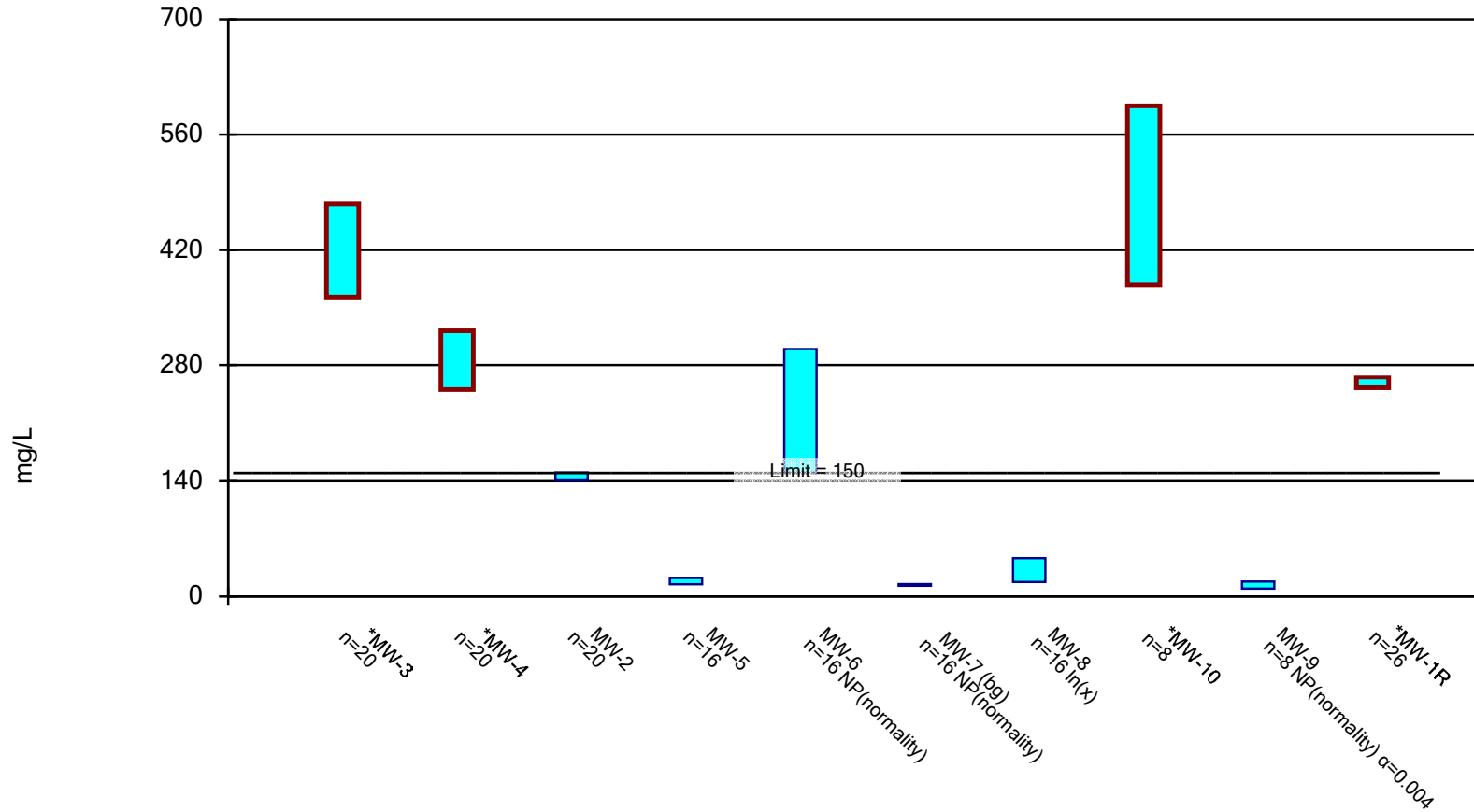
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

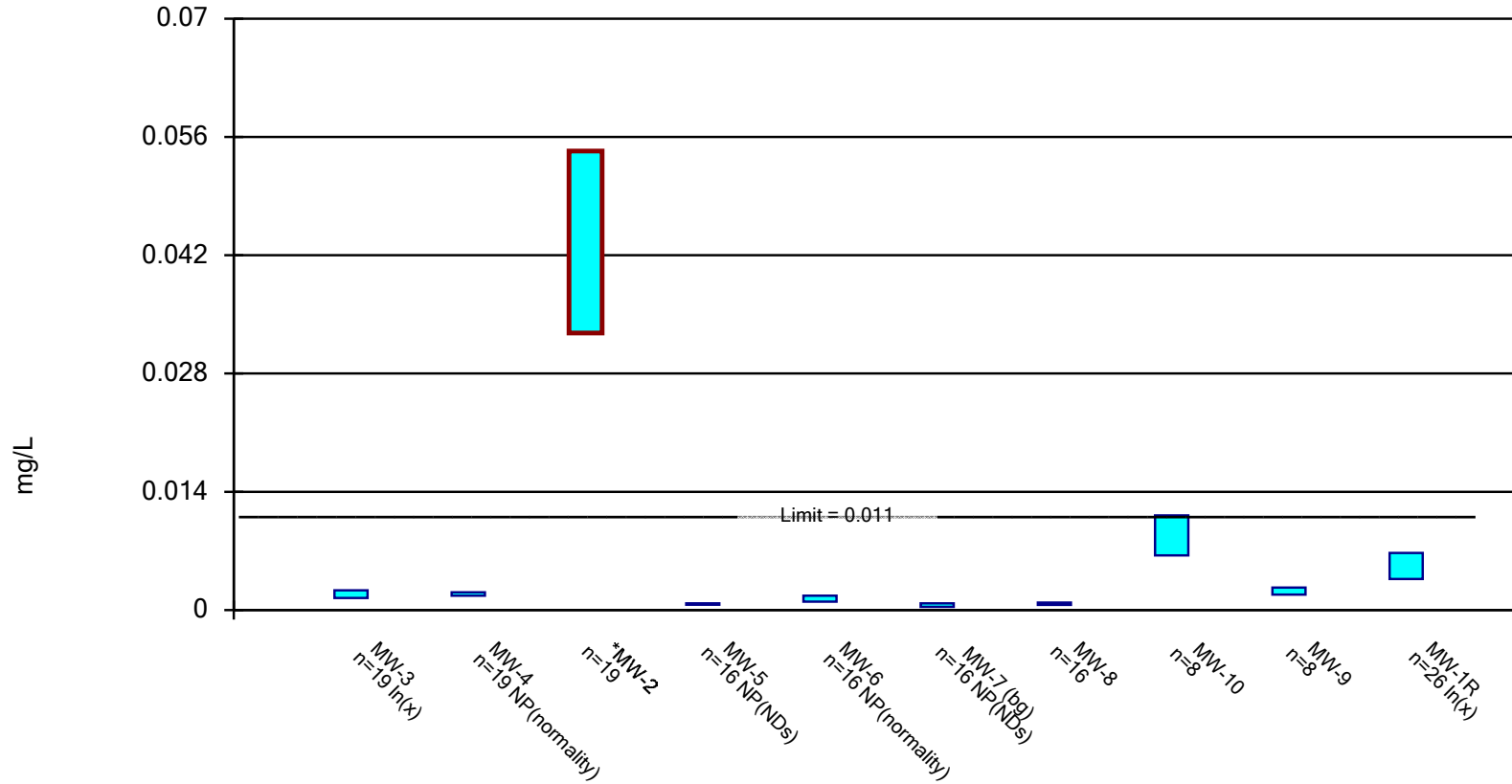
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chloride Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

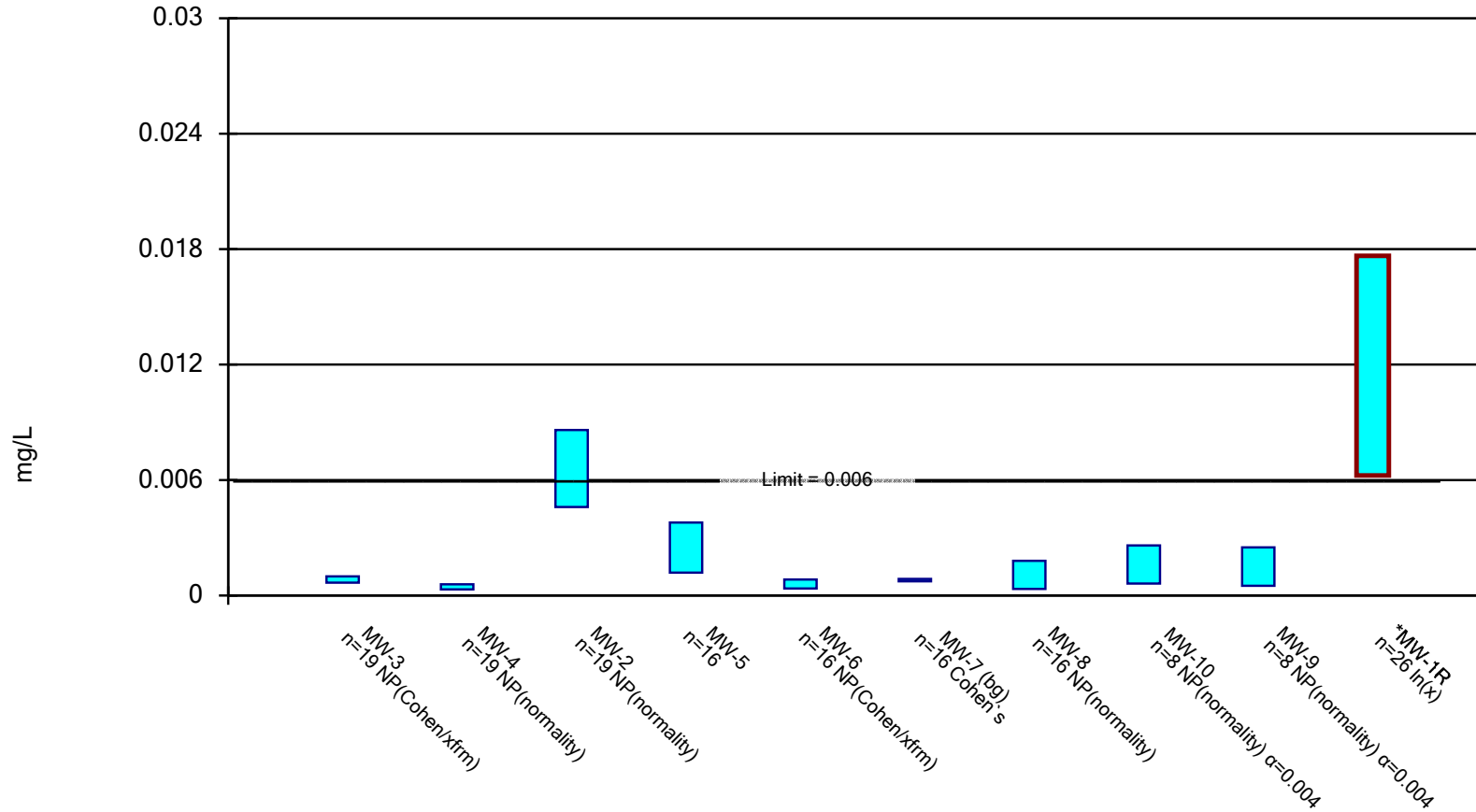
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

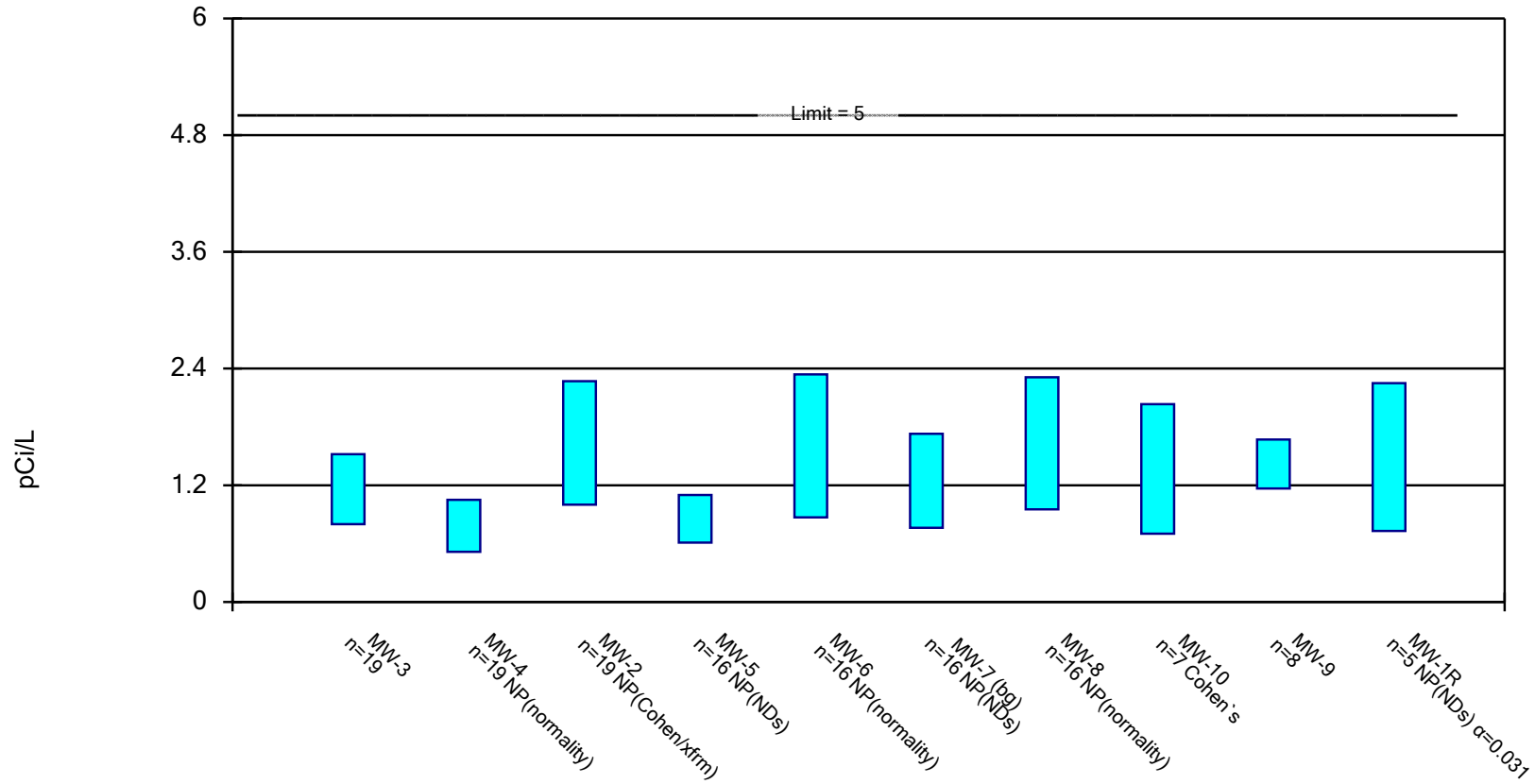
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

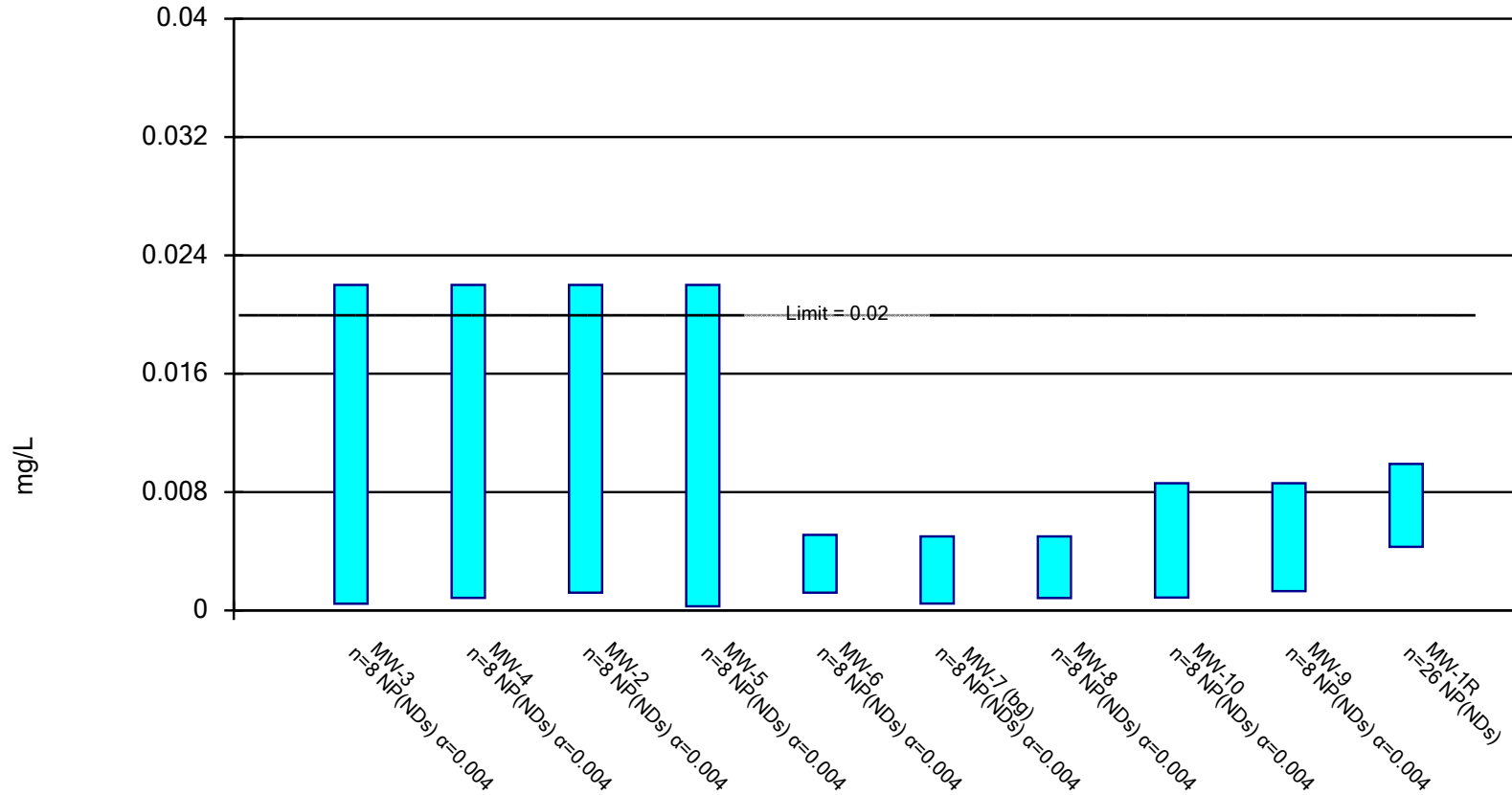


Constituent: Combined Radium 226 + 228 Analysis Run 6/7/2021 2:32 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

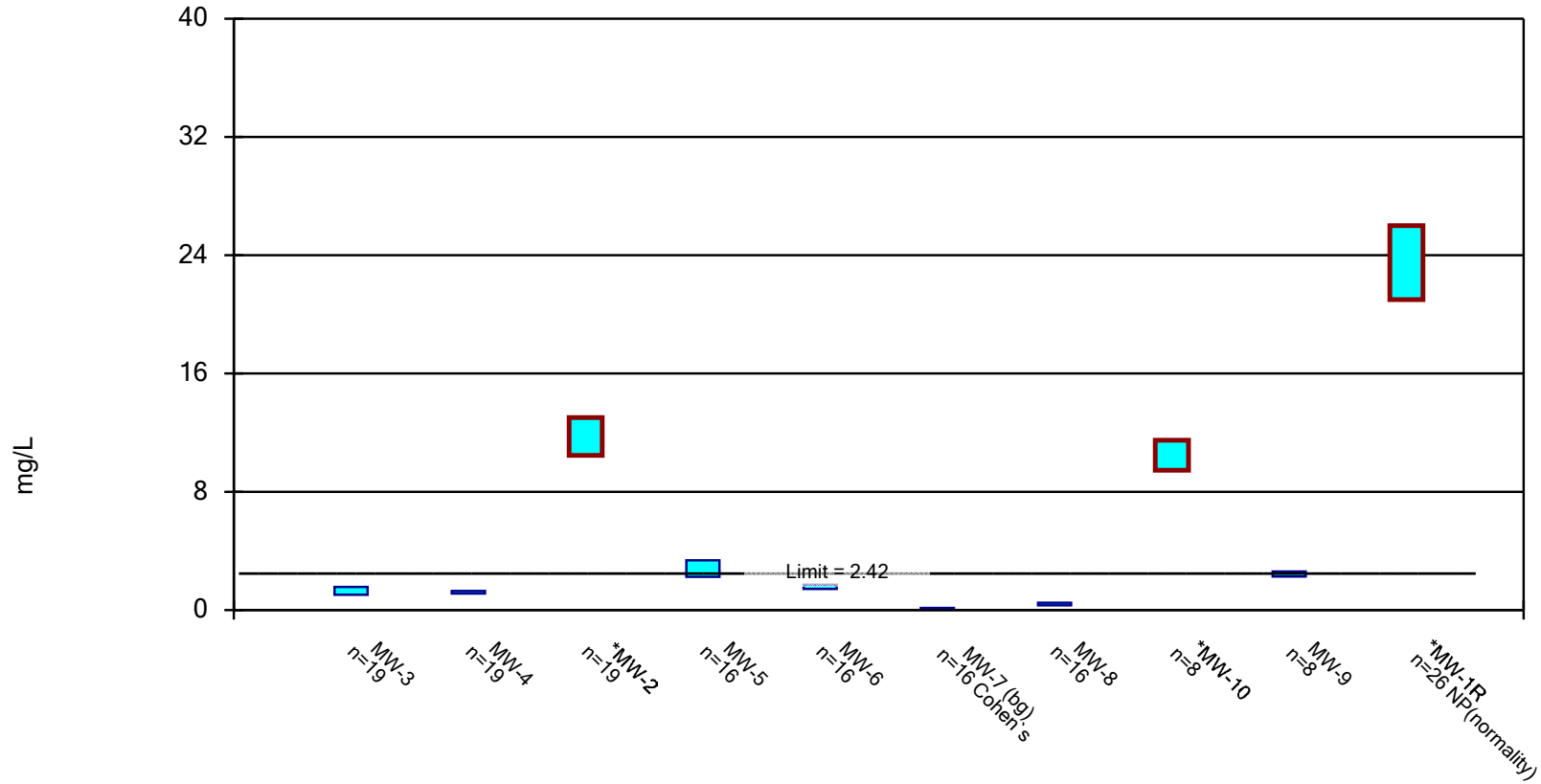
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Copper Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

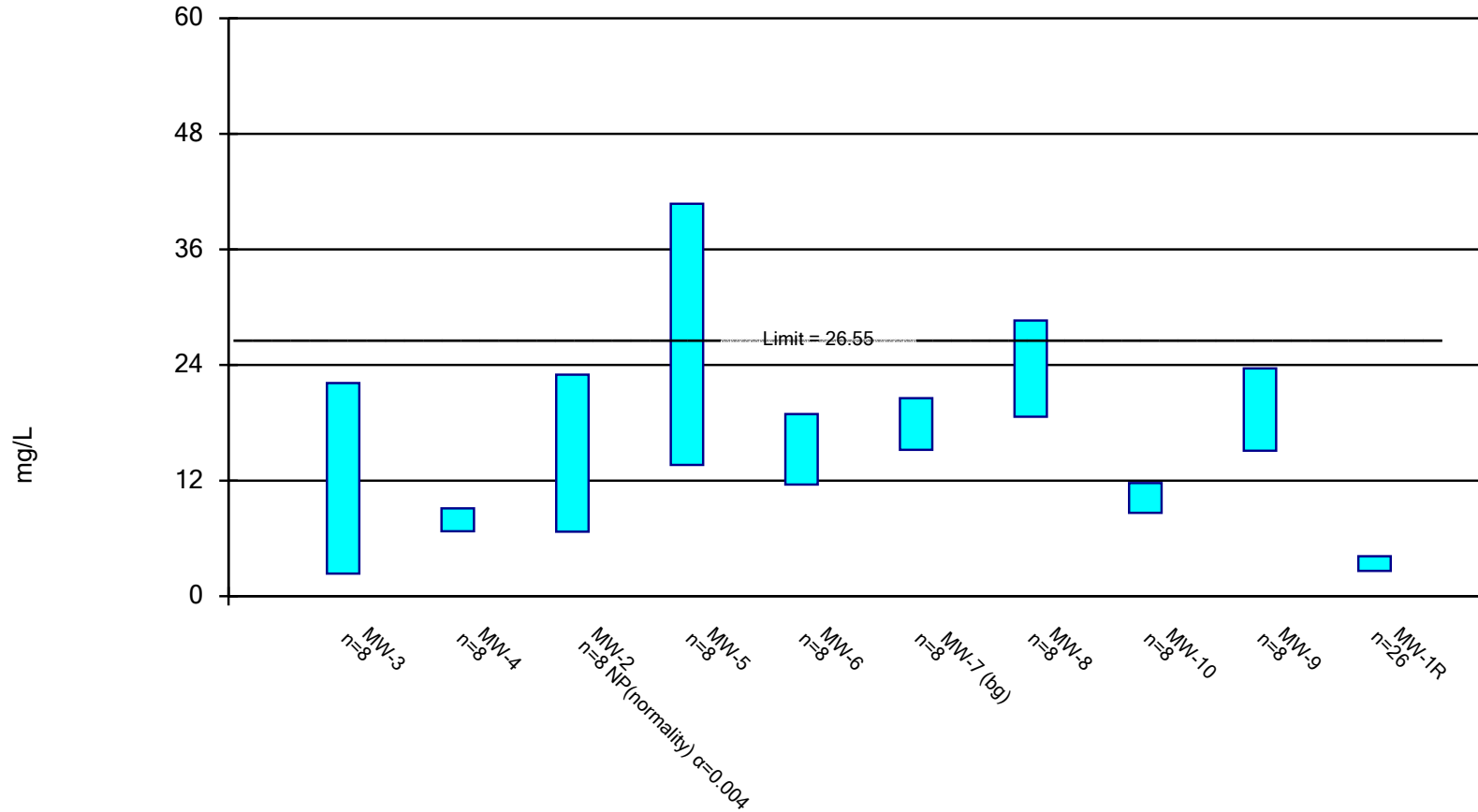
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

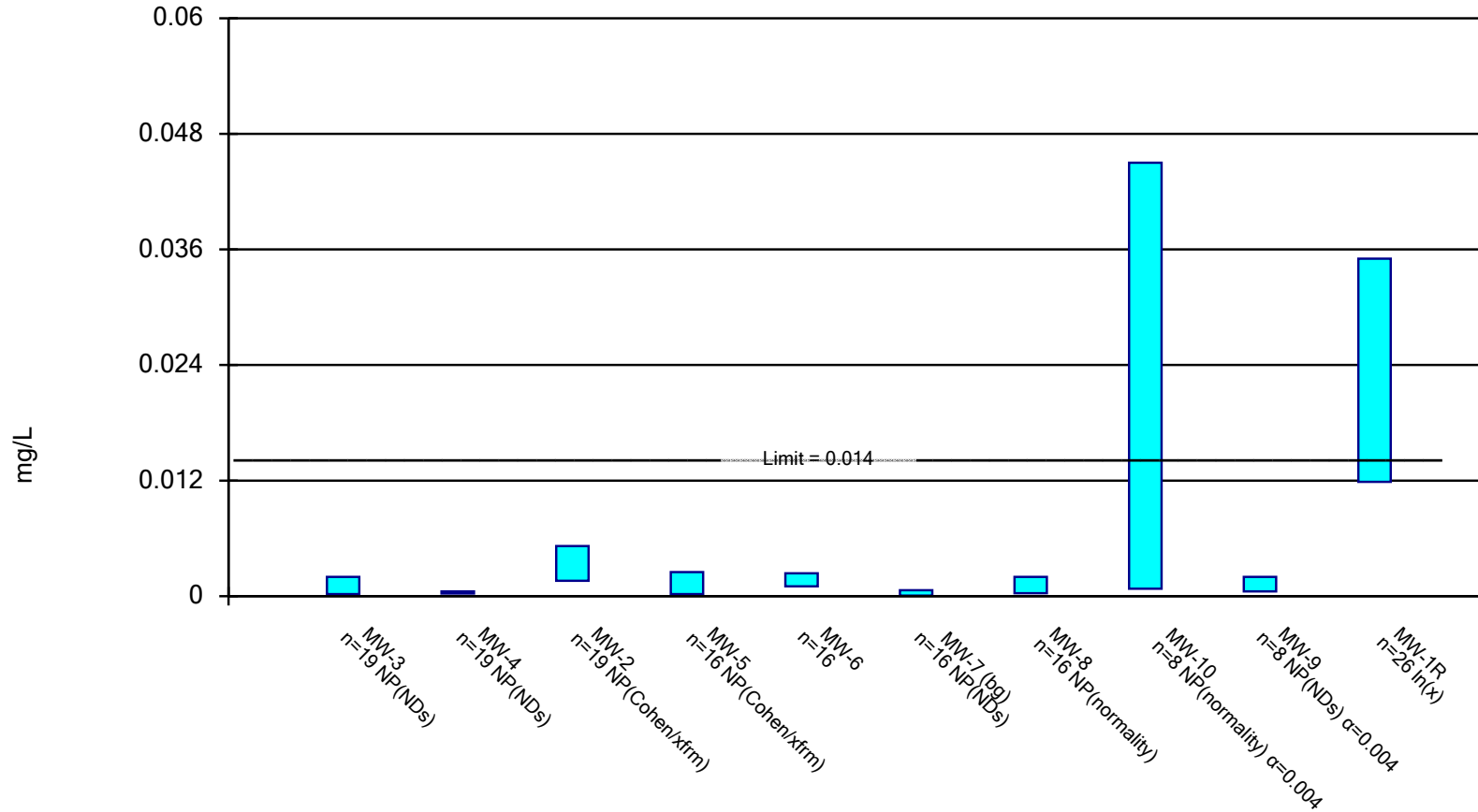
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Iron Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

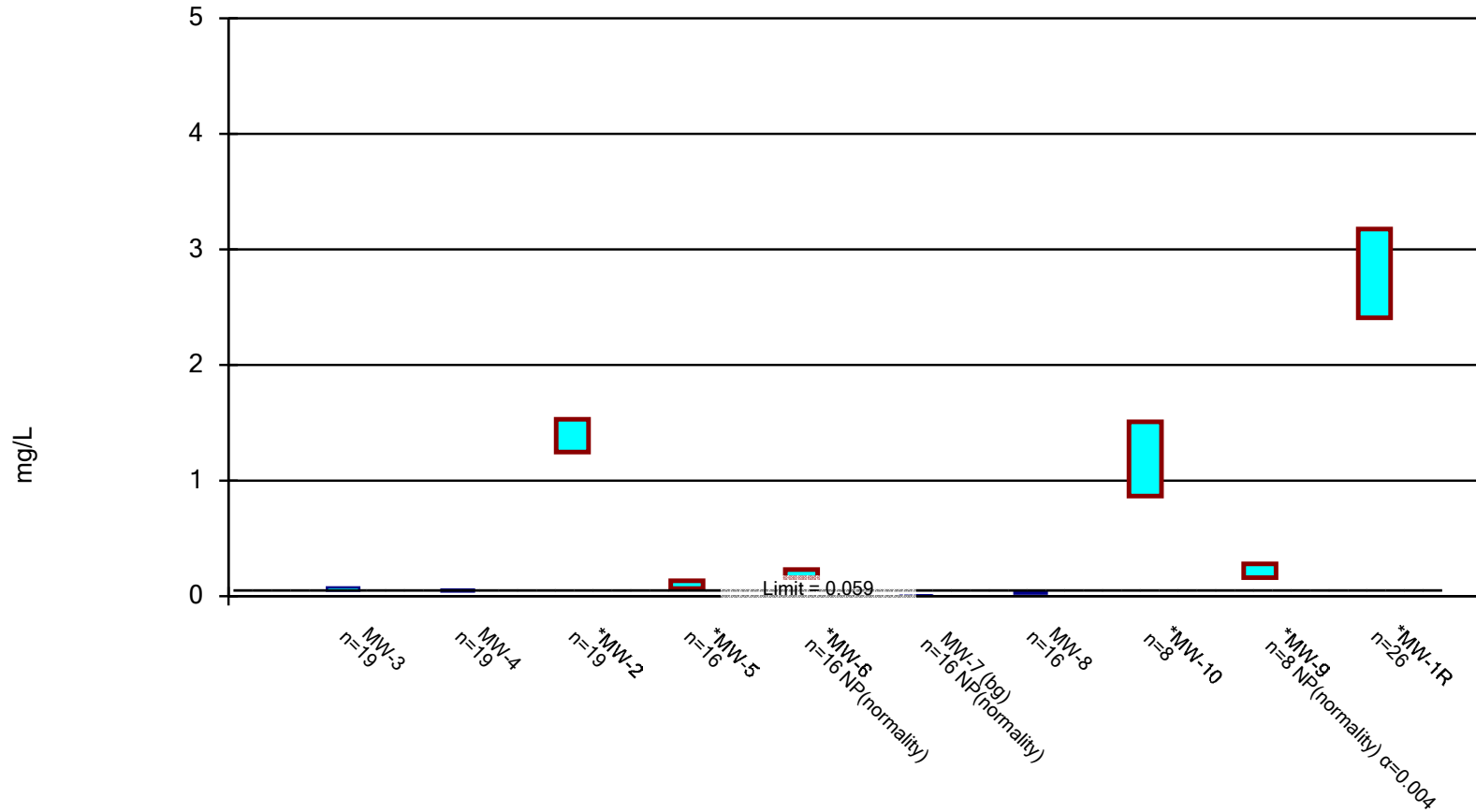
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

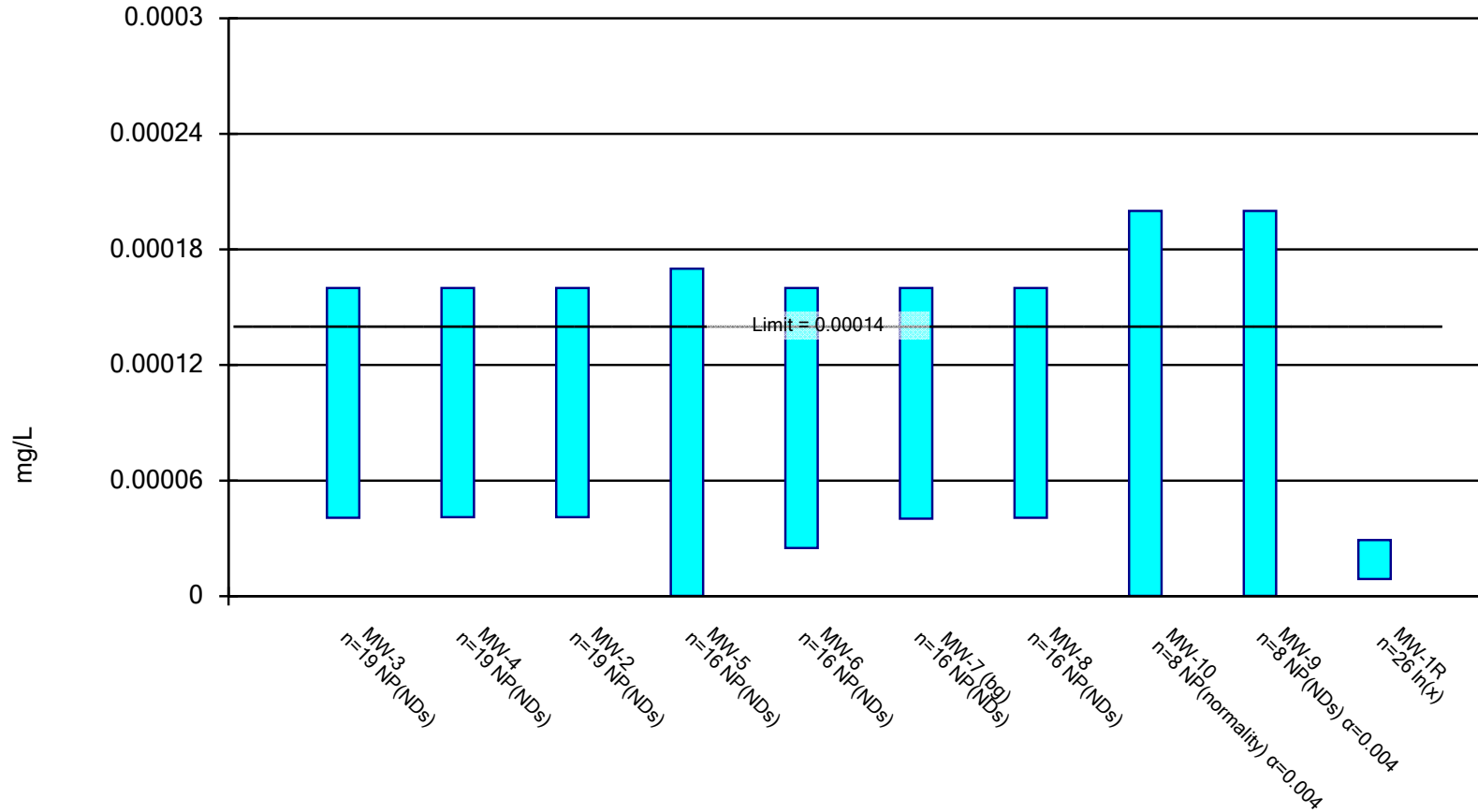
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

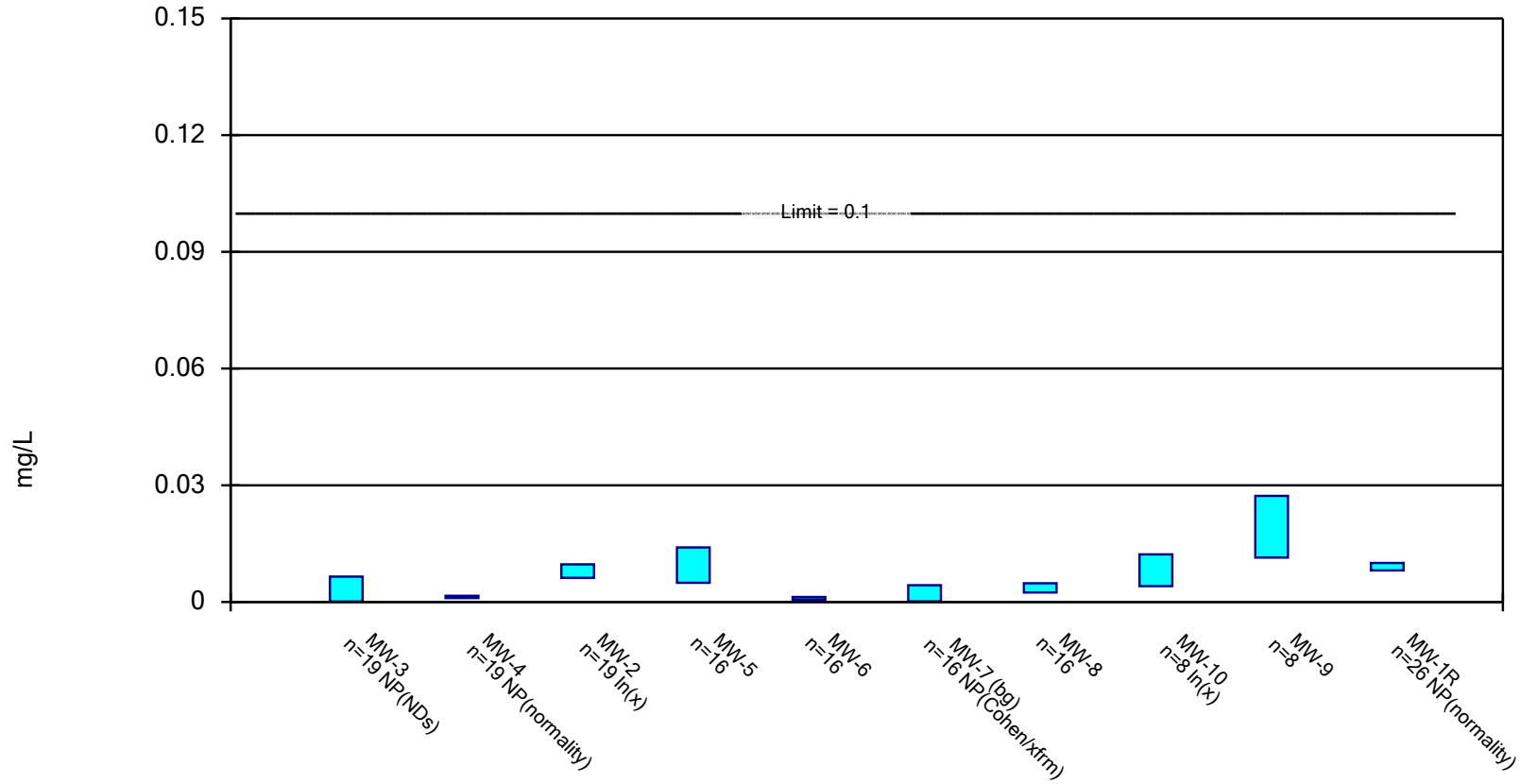
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

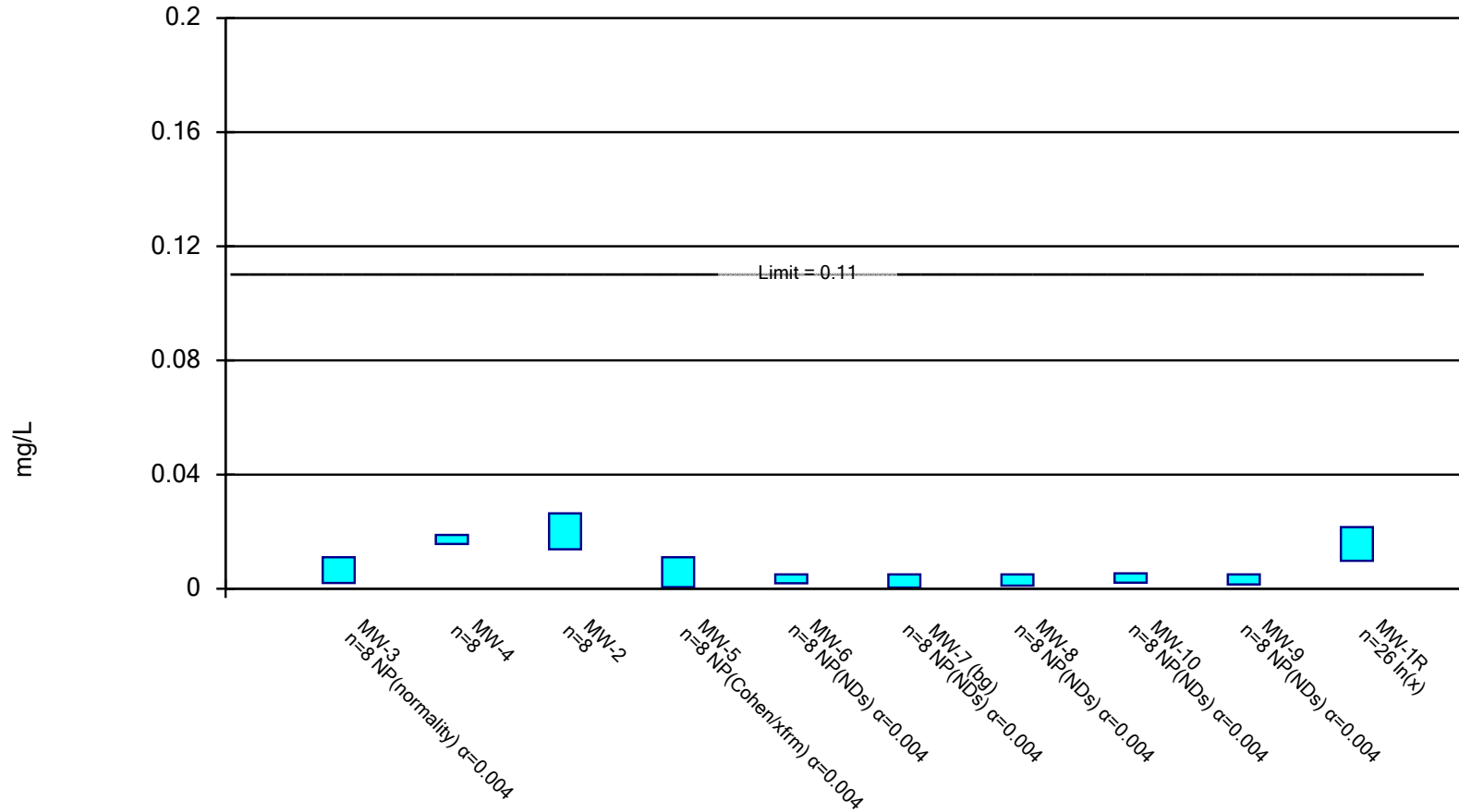
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

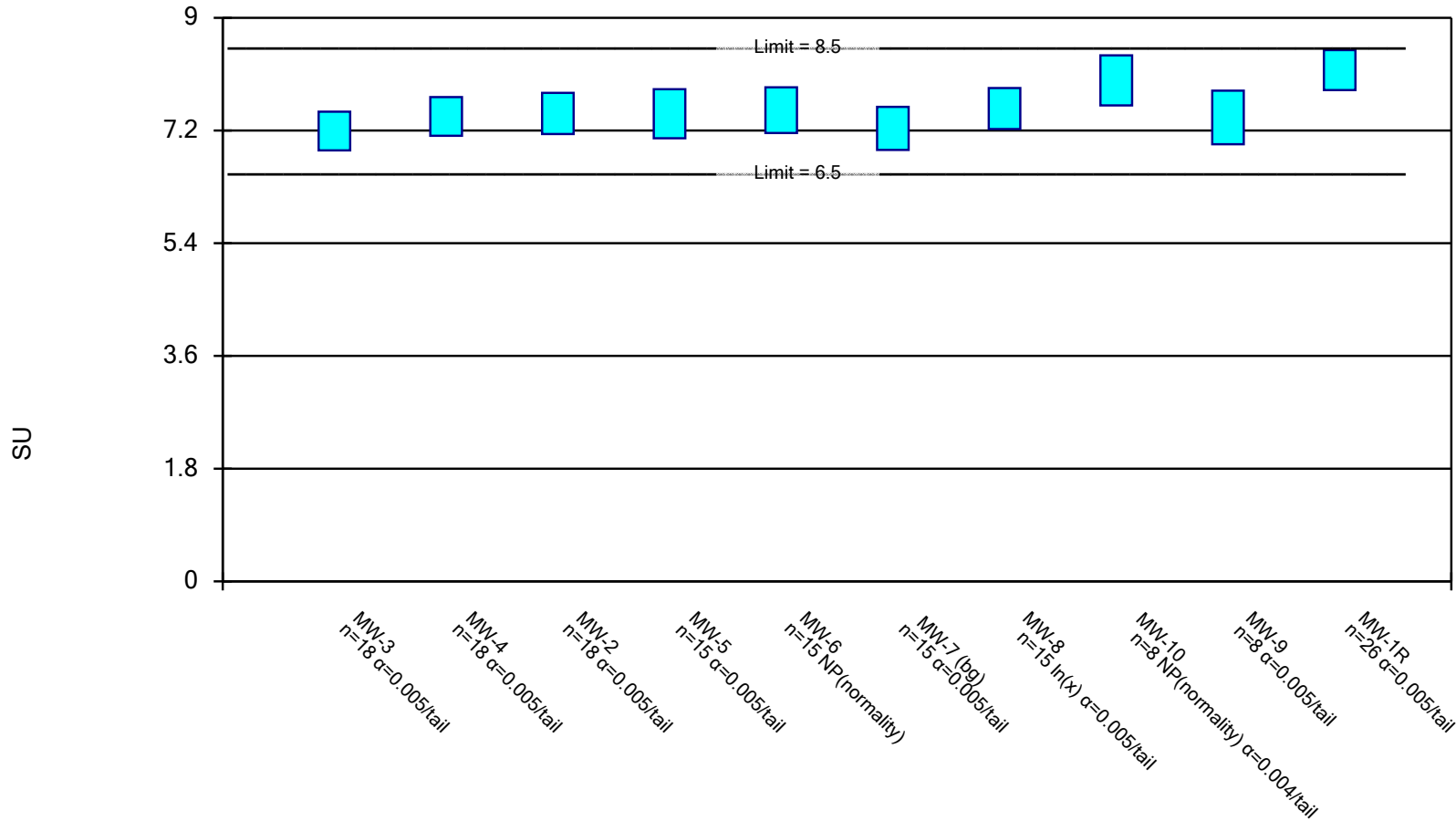
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Nickel Analysis Run 6/7/2021 2:32 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

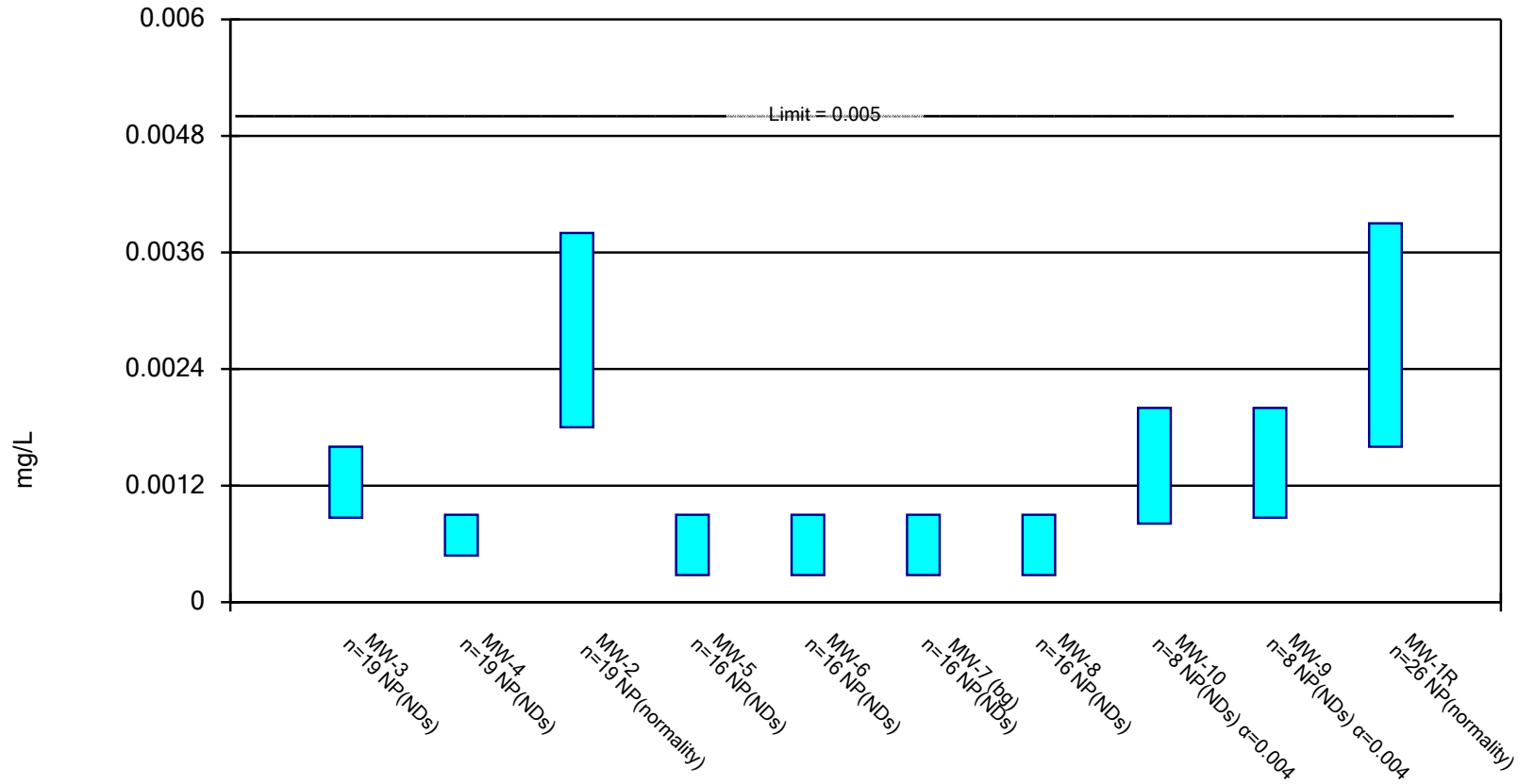
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: pH Analysis Run 6/7/2021 2:33 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

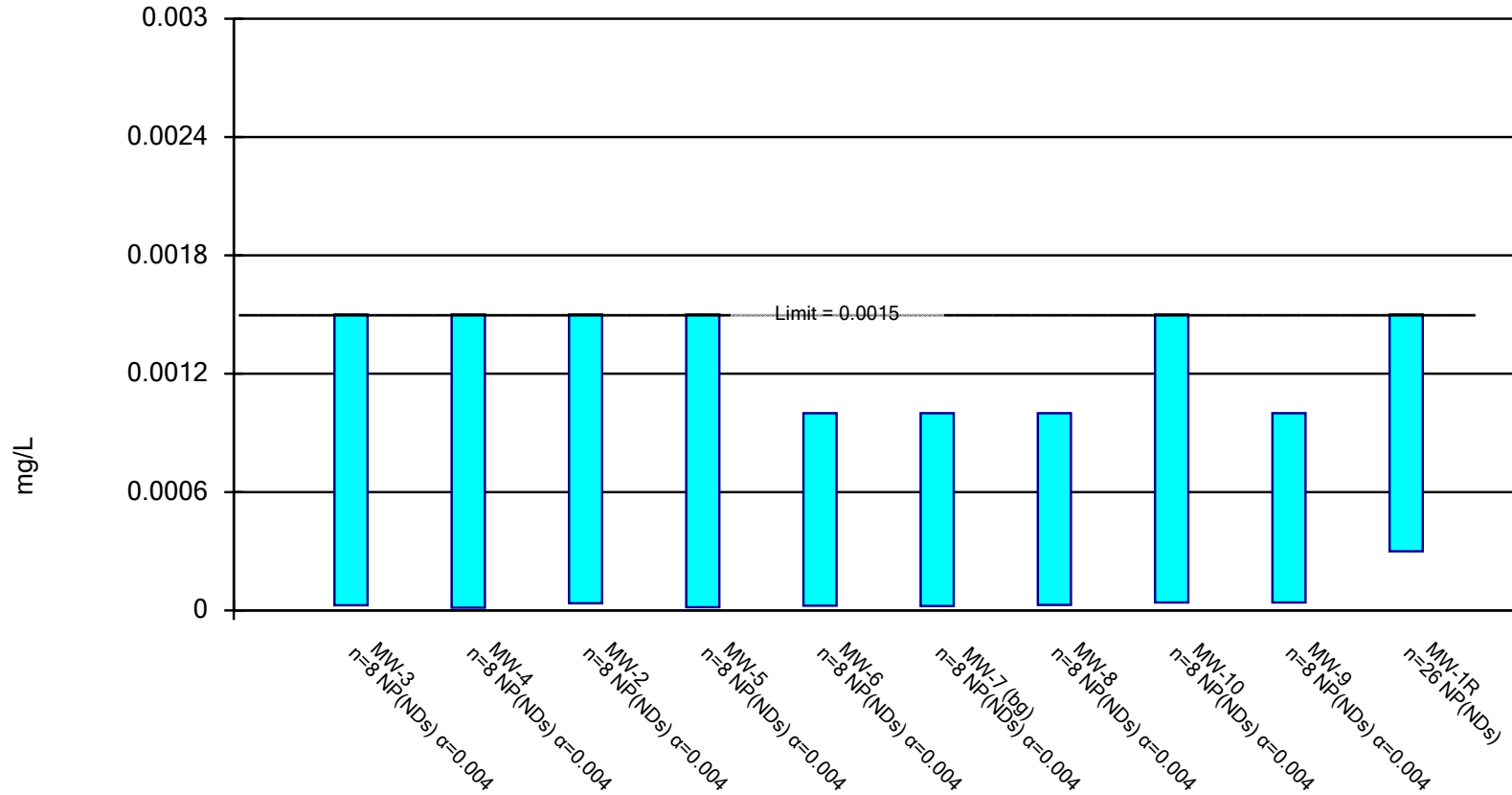
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Selenium Analysis Run 6/7/2021 2:33 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

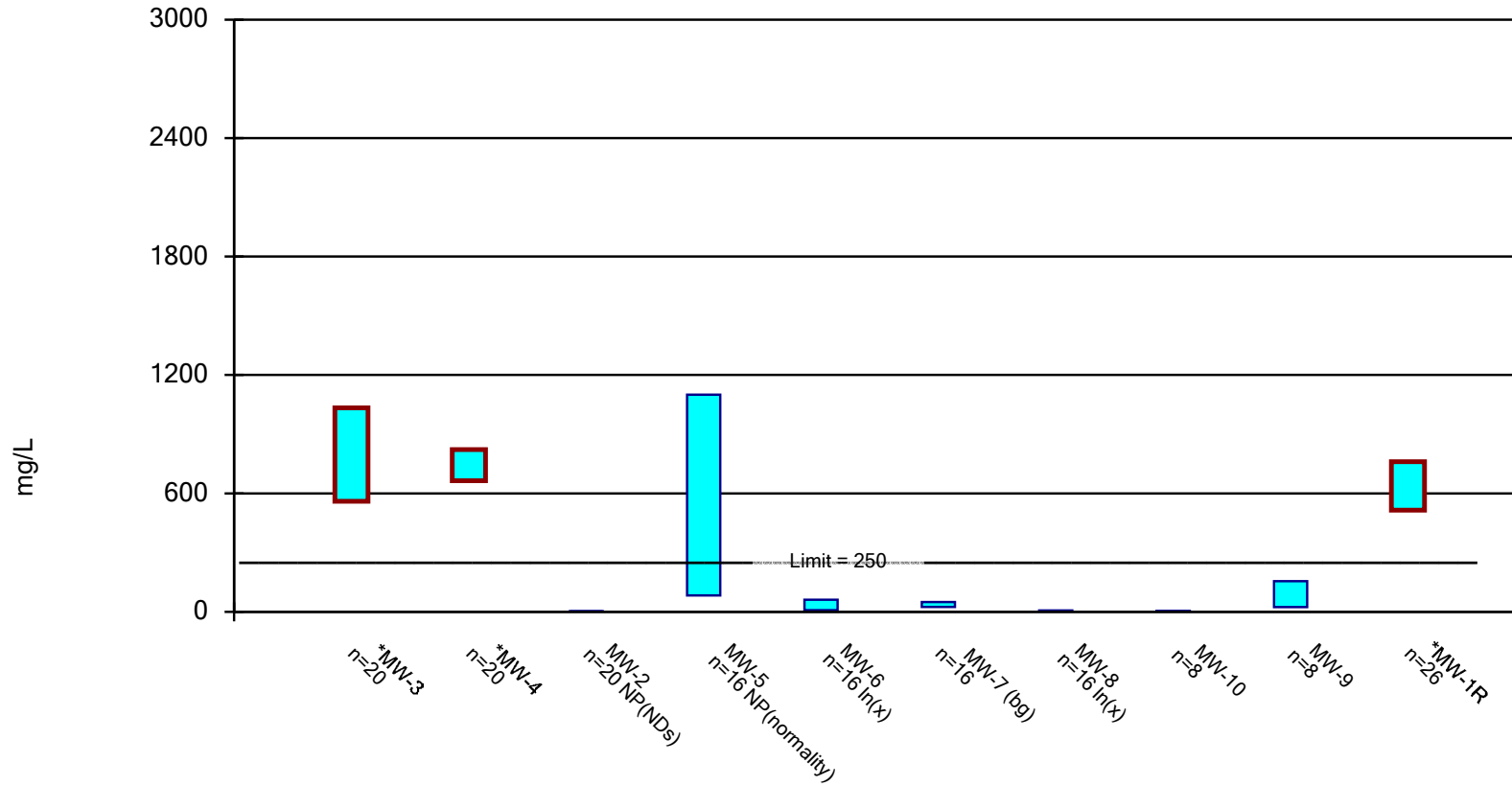
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Silver Analysis Run 6/7/2021 2:33 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

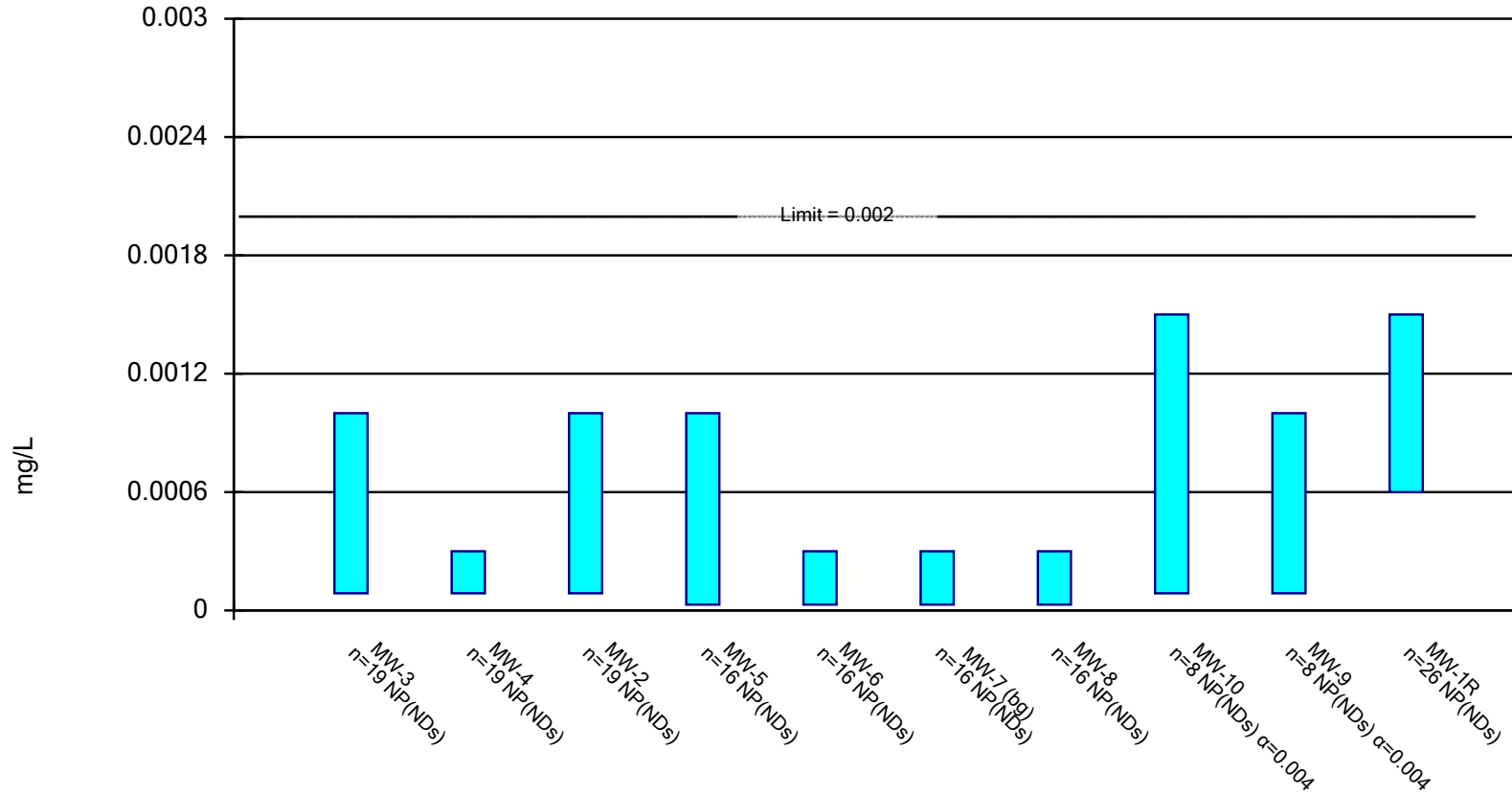
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Sulfate Analysis Run 6/7/2021 2:33 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

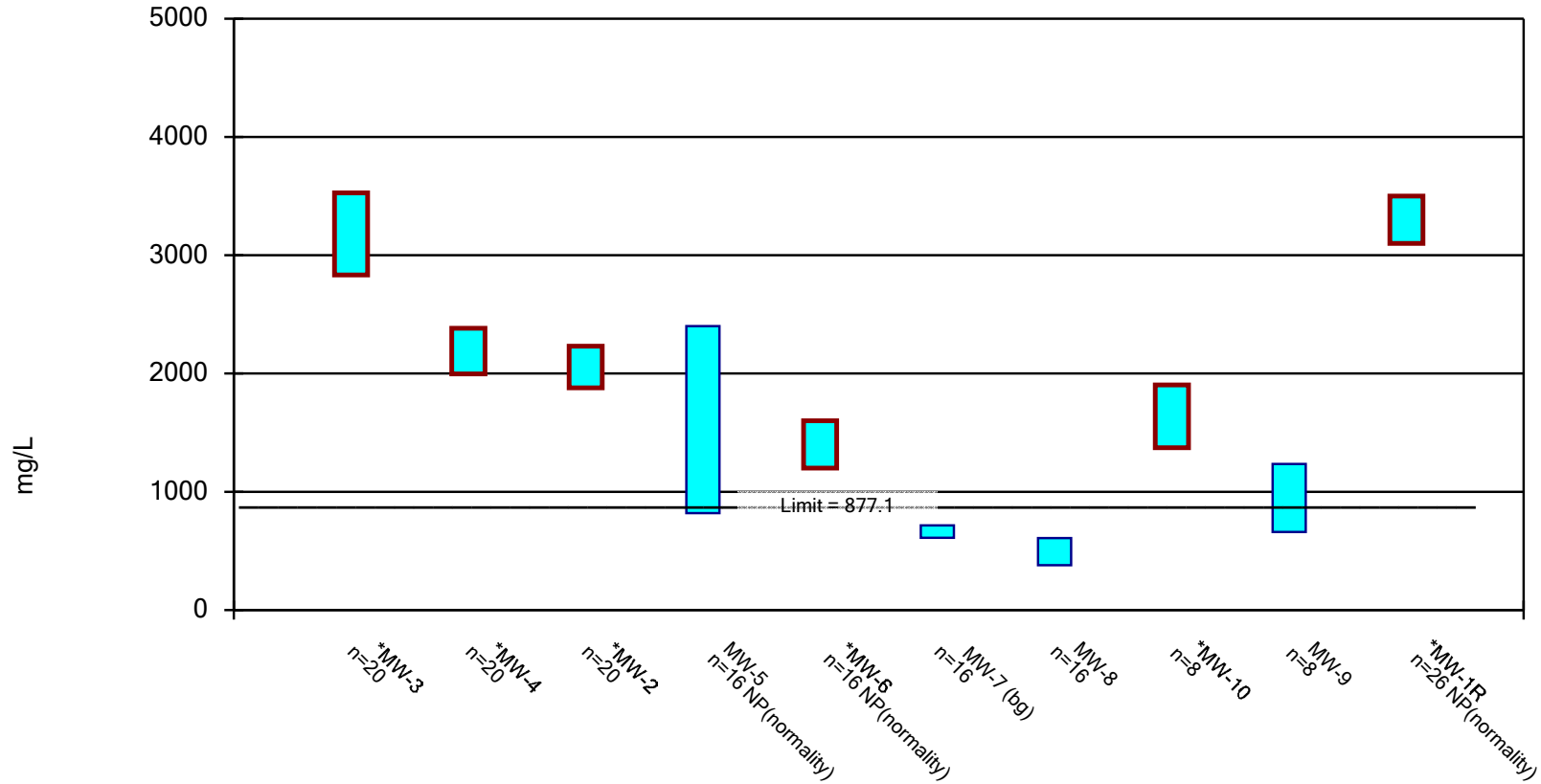
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Thallium Analysis Run 6/7/2021 2:33 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

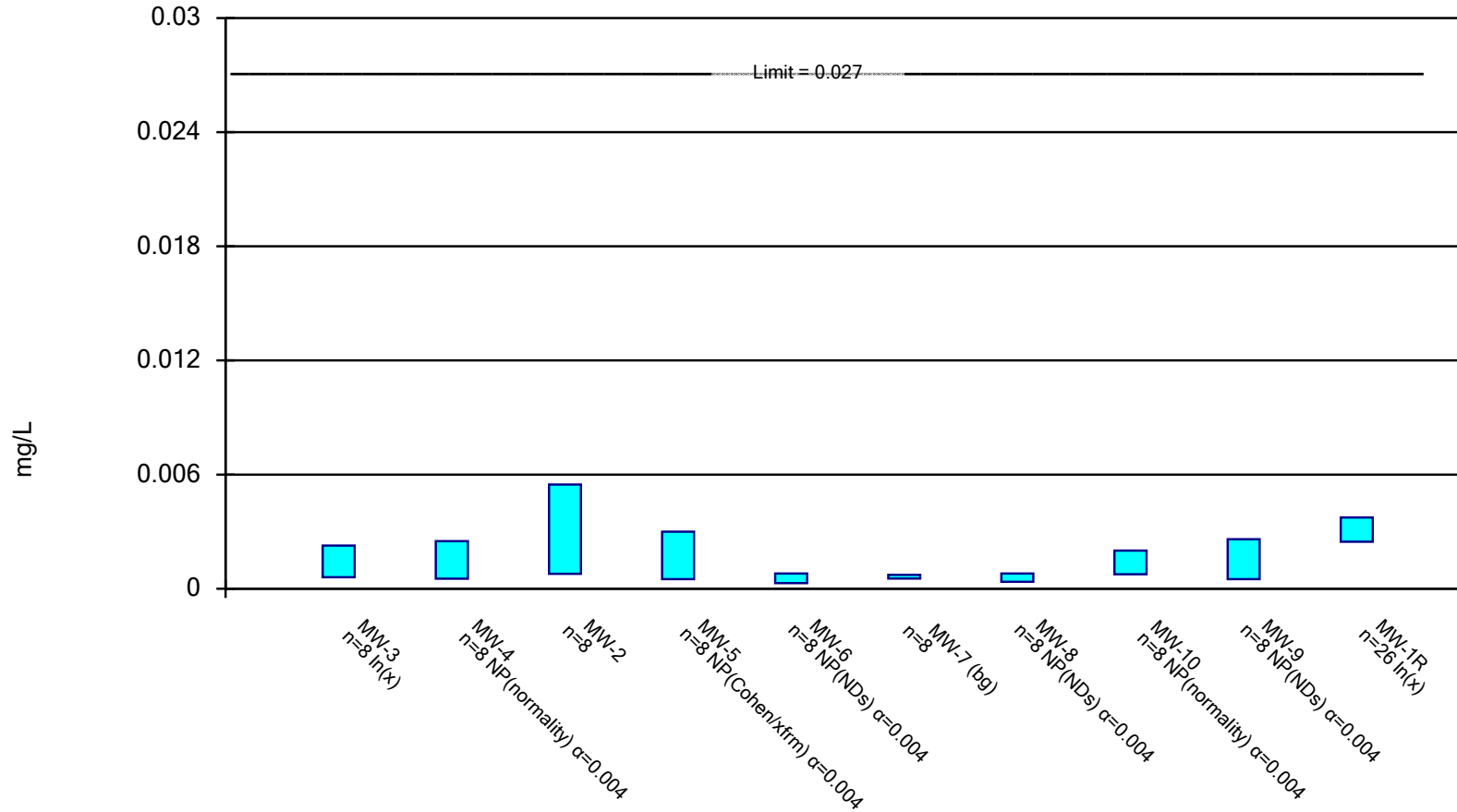


Constituent: Total Dissolved Solids Analysis Run 6/7/2021 2:33 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

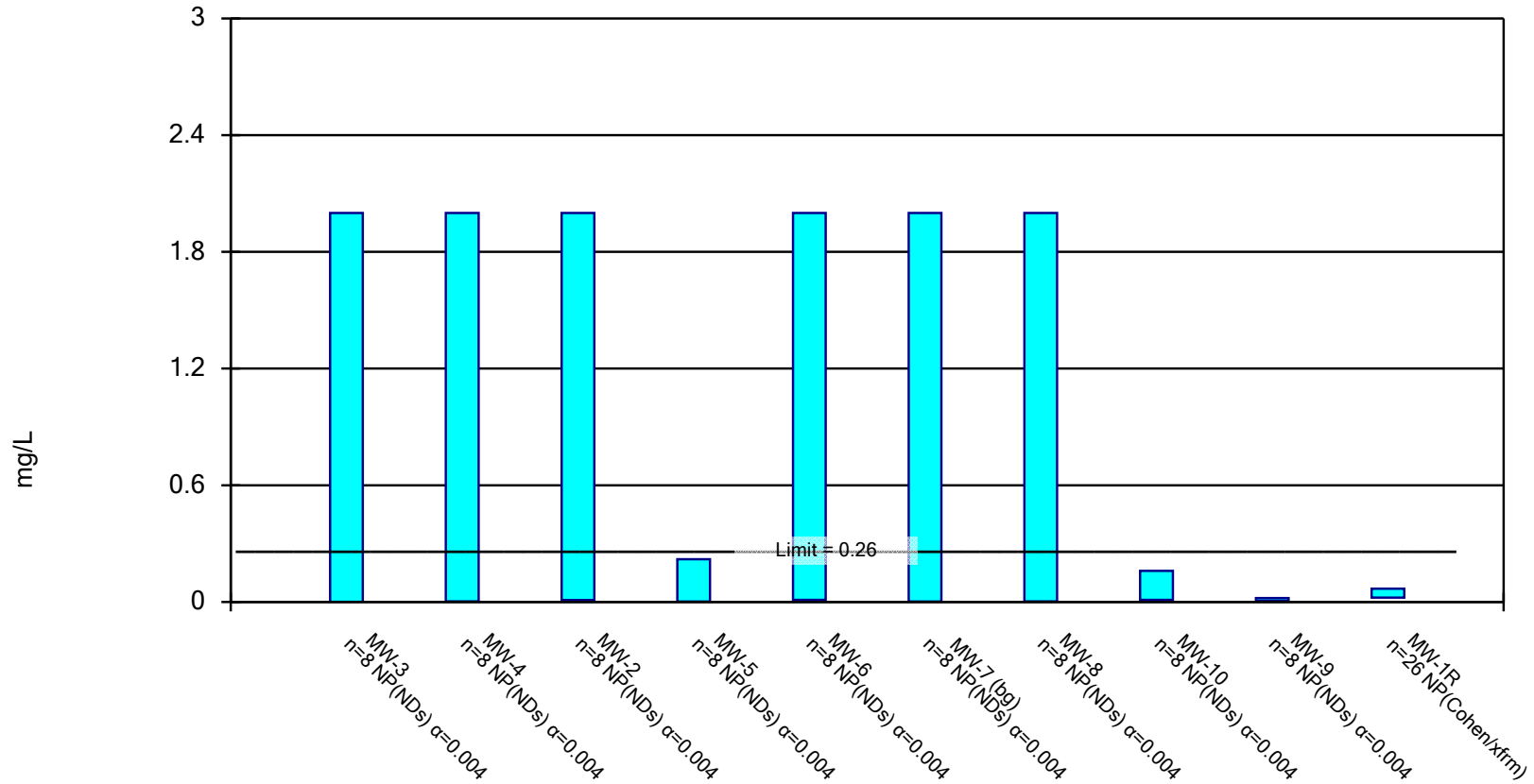
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Vanadium Analysis Run 6/7/2021 2:33 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Zinc Analysis Run 6/7/2021 2:33 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 6/7/2021, 2:34 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-3	0.00057	0.00027	0.006	No	19	0.0005466	0.0004471	94.74	No	0.01	NP (NDs)
Antimony (mg/L)	MW-4	0.00057	0.00027	0.006	No	19	0.0004185	0.0002967	94.74	No	0.01	NP (NDs)
Antimony (mg/L)	MW-2	0.00068	0.00027	0.006	No	19	0.0009932	0.001686	63.16	No	0.01	NP (NDs)
Antimony (mg/L)	MW-5	0.0015	0.00009	0.006	No	16	0.0003713	0.0004503	100	No	0.01	NP (NDs)
Antimony (mg/L)	MW-6	0.00033	0.0001	0.006	No	16	0.00023	0.0001014	75	No	0.01	NP (NDs)
Antimony (mg/L)	MW-7 (bg)	0.0016	0.00009	0.006	No	16	0.0003116	0.0003563	87.5	No	0.01	NP (NDs)
Antimony (mg/L)	MW-8	0.0003	0.00009	0.006	No	16	0.0002238	0.00009589	87.5	No	0.01	NP (NDs)
Antimony (mg/L)	MW-10	0.0039	0.00018	0.006	No	8	0.00106	0.001259	75	No	0.004	NP (NDs)
Antimony (mg/L)	MW-9	0.0006	0.0003	0.006	No	8	0.0003375	0.0001061	100	No	0.004	NP (NDs)
Antimony (mg/L)	MW-1R	0.004602	0.001616	0.006	No	26	0.004724	0.005562	11.54	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-3	0.002174	0.001626	0.01	No	19	0.0019	0.0004676	10.53	No	0.01	Param.
Arsenic (mg/L)	MW-4	0.0018	0.0012	0.01	No	19	0.001429	0.0002883	5.263	No	0.01	NP (normality)
Arsenic (mg/L)	MW-2	0.009166	0.006565	0.01	No	19	0.007866	0.002221	5.263	No	0.01	Param.
Arsenic (mg/L)	MW-5	0.1726	0.06709	0.01	Yes	16	0.1199	0.0811	0	No	0.01	Param.
Arsenic (mg/L)	MW-6	0.001498	0.0009199	0.01	No	16	0.001209	0.0004439	6.25	No	0.01	Param.
Arsenic (mg/L)	MW-7 (bg)	0.0019	0.00025	0.01	No	15	0.001075	0.001245	40	No	0.01	NP (Cohens/xfrm)
Arsenic (mg/L)	MW-8	0.00572	0.00365	0.01	No	16	0.00485	0.001872	0	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-10	0.001366	0.000766	0.01	No	8	0.001066	0.0002832	0	No	0.01	Param.
Arsenic (mg/L)	MW-9	0.003736	0.002039	0.01	No	8	0.002888	0.0008008	0	No	0.01	Param.
Arsenic (mg/L)	MW-1R	0.0084	0.0068	0.01	No	26	0.007152	0.002058	3.846	No	0.01	NP (normality)
Barium (mg/L)	MW-3	0.4341	0.3133	1.3	No	19	0.3737	0.1032	0	No	0.01	Param.
Barium (mg/L)	MW-4	0.1549	0.1195	1.3	No	19	0.1372	0.03021	0	No	0.01	Param.
Barium (mg/L)	MW-2	0.4816	0.4384	1.3	No	19	0.46	0.03682	0	No	0.01	Param.
Barium (mg/L)	MW-5	0.2508	0.09471	1.3	No	16	0.1974	0.1357	0	ln(x)	0.01	Param.
Barium (mg/L)	MW-6	1.299	0.8101	1.3	No	16	1.055	0.3759	0	No	0.01	Param.
Barium (mg/L)	MW-7 (bg)	0.4078	0.3247	1.3	No	16	0.3663	0.06386	0	No	0.01	Param.
Barium (mg/L)	MW-8	0.776	0.5465	1.3	No	16	0.6613	0.1763	0	No	0.01	Param.
Barium (mg/L)	MW-10	1.3	1.1	1.3	No	8	1.225	0.07071	0	No	0.004	NP (normality)
Barium (mg/L)	MW-9	1.974	0.7814	1.3	No	8	1.378	0.5624	0	No	0.01	Param.
Barium (mg/L)	MW-1R	0.6192	0.4204	1.3	No	26	0.5198	0.2039	0	No	0.01	Param.
Beryllium (mg/L)	MW-3	0.001	0.00031	0.004	No	19	0.0007021	0.0004642	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-4	0.001	0.00031	0.004	No	19	0.0007021	0.0004642	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-2	0.0015	0.00031	0.004	No	19	0.001022	0.0008791	84.21	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-5	0.002	0.00006	0.004	No	16	0.0007688	0.0005515	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-6	0.002	0.00006	0.004	No	16	0.0007394	0.0005509	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-7 (bg)	0.002	0.00006	0.004	No	16	0.0007394	0.0005509	100	No	0.01	NP (NDs)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 6/7/2021, 2:34 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Beryllium (mg/L)	MW-8	0.002	0.00006	0.004	No	16	0.0007118	0.0005727	93.75	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-10	0.002	0.0009	0.004	No	8	0.001113	0.0003603	100	No	0.004	NP (NDs)
Beryllium (mg/L)	MW-9	0.002	0.001	0.004	No	8	0.001125	0.0003536	100	No	0.004	NP (NDs)
Beryllium (mg/L)	MW-1R	0.001	0.001	0.004	No	26	0.001	0	100	No	0.01	NP (NDs)
Boron (ug/L)	MW-3	5590	4557	16000	No	19	5121	921.7	0	ln(x)	0.01	Param.
Boron (ug/L)	MW-4	4000	3300	16000	No	19	3726	605.4	0	No	0.01	NP (normality)
Boron (ug/L)	MW-2	140000	88000	16000	Yes	19	124684	42849	0	No	0.01	NP (normality)
Boron (ug/L)	MW-5	4600	2600	16000	No	16	4025	2787	0	No	0.01	NP (normality)
Boron (ug/L)	MW-6	14000	8600	16000	No	16	10951	3736	0	No	0.01	NP (normality)
Boron (ug/L)	MW-7 (bg)	15000	9200	16000	No	16	12725	3498	0	No	0.01	NP (normality)
Boron (ug/L)	MW-8	4400	1100	16000	No	16	2298	1727	0	No	0.01	NP (normality)
Boron (ug/L)	MW-10	47504	37496	16000	Yes	8	42500	4721	0	No	0.01	Param.
Boron (ug/L)	MW-9	6186	4364	16000	No	8	5275	859.8	0	No	0.01	Param.
Boron (ug/L)	MW-1R	190000	160000	16000	Yes	26	168077	37949	0	No	0.01	NP (normality)
Cadmium (mg/L)	MW-3	0.001	0.00004	0.0025	No	19	0.0007087	0.001048	94.74	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-4	0.0006	0.00004	0.0025	No	19	0.0004512	0.0006704	89.47	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-2	0.0011	0.00014	0.0025	No	19	0.0007205	0.0008195	63.16	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-5	0.0006	0.000018	0.0025	No	16	0.0004173	0.0007599	81.25	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-6	0.0006	0.0000285	0.0025	No	16	0.0002795	0.0003243	62.5	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-7 (bg)	0.0006	0.000017	0.0025	No	16	0.000269	0.000332	93.75	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-8	0.0006	0.0000285	0.0025	No	16	0.0002731	0.000329	87.5	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-10	0.003	0.00003	0.0025	No	8	0.0009588	0.0008999	75	No	0.004	NP (NDs)
Cadmium (mg/L)	MW-9	0.0012	0.00004	0.0025	No	8	0.000655	0.00034	100	No	0.004	NP (NDs)
Cadmium (mg/L)	MW-1R	0.0043	0.0016	0.0025	No	26	0.004573	0.005049	30.77	No	0.01	NP (Cohens/xfrm)
Calcium (ug/L)	MW-3	620000	540000	200000	Yes	20	595500	87207	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-4	467101	423899	200000	Yes	20	445500	38041	0	No	0.01	Param.
Calcium (ug/L)	MW-2	210000	180000	200000	No	20	202500	35075	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-5	610000	210000	200000	Yes	16	446875	170126	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-6	260000	190000	200000	No	16	216331	63569	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-7 (bg)	150000	130000	200000	No	16	145625	15903	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-8	140604	121271	200000	No	16	130938	14857	0	No	0.01	Param.
Calcium (ug/L)	MW-10	160000	130000	200000	No	8	141250	13562	0	No	0.004	NP (normality)
Calcium (ug/L)	MW-9	262795	229931	200000	Yes	8	246250	15980	0	ln(x)	0.01	Param.
Calcium (ug/L)	MW-1R	252620	163291	200000	No	26	225038	114780	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-3	476.4	362.6	150	Yes	20	419.5	100.3	0	No	0.01	Param.
Chloride (mg/L)	MW-4	322.6	251.4	150	Yes	20	287	62.75	0	No	0.01	Param.

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 6/7/2021, 2:34 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Chloride (mg/L)	MW-2	150.2	140.8	150	No	20	145.5	8.256	0	No	0.01	Param.
Chloride (mg/L)	MW-5	22.37	14.77	150	No	16	18.57	5.841	0	No	0.01	Param.
Chloride (mg/L)	MW-6	300	150	150	No	16	230	70.05	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-7 (bg)	15	13	150	No	16	14.19	0.8342	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-8	46.62	17.59	150	No	16	37.59	30.55	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-10	594.8	377.7	150	Yes	8	486.3	102.4	0	No	0.01	Param.
Chloride (mg/L)	MW-9	18	9.5	150	No	8	11.94	2.57	0	No	0.004	NP (normality)
Chloride (mg/L)	MW-1R	265.7	253.5	150	Yes	26	259.6	12.48	0	No	0.01	Param.
Chromium (mg/L)	MW-3	0.002326	0.001429	0.011	No	19	0.001987	0.0009009	0	ln(x)	0.01	Param.
Chromium (mg/L)	MW-4	0.0021	0.0017	0.011	No	19	0.002005	0.000454	5.263	No	0.01	NP (normality)
Chromium (mg/L)	MW-2	0.05432	0.03279	0.011	Yes	19	0.04356	0.01839	0	No	0.01	Param.
Chromium (mg/L)	MW-5	0.0008	0.00063	0.011	No	16	0.0008481	0.0007291	81.25	No	0.01	NP (NDs)
Chromium (mg/L)	MW-6	0.0017	0.00099	0.011	No	16	0.001698	0.001025	0	No	0.01	NP (normality)
Chromium (mg/L)	MW-7 (bg)	0.0008	0.00037	0.011	No	16	0.0007706	0.0005688	68.75	No	0.01	NP (NDs)
Chromium (mg/L)	MW-8	0.0008773	0.0006164	0.011	No	16	0.0007469	0.0002005	31.25	No	0.01	Param.
Chromium (mg/L)	MW-10	0.01121	0.006468	0.011	No	8	0.008838	0.002235	0	No	0.01	Param.
Chromium (mg/L)	MW-9	0.002666	0.001834	0.011	No	8	0.00225	0.0003928	0	No	0.01	Param.
Chromium (mg/L)	MW-1R	0.006759	0.003676	0.011	No	26	0.006038	0.004093	3.846	ln(x)	0.01	Param.
Cobalt (mg/L)	MW-3	0.00099	0.00067	0.006	No	19	0.0009395	0.0004589	26.32	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-4	0.00058	0.00032	0.006	No	19	0.0006258	0.0005475	42.11	No	0.01	NP (normality)
Cobalt (mg/L)	MW-2	0.0086	0.0046	0.006	No	19	0.006758	0.002056	0	No	0.01	NP (normality)
Cobalt (mg/L)	MW-5	0.003793	0.001187	0.006	No	16	0.00249	0.002003	31.25	No	0.01	Param.
Cobalt (mg/L)	MW-6	0.00083	0.00036	0.006	No	16	0.0006525	0.0003177	50	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-7 (bg)	0.0008568	0.0007357	0.006	No	16	0.0007844	0.00008025	18.75	No	0.01	Param.
Cobalt (mg/L)	MW-8	0.0018	0.00034	0.006	No	16	0.0007913	0.0006348	43.75	No	0.01	NP (normality)
Cobalt (mg/L)	MW-10	0.0026	0.00062	0.006	No	8	0.001009	0.0006607	0	No	0.004	NP (normality)
Cobalt (mg/L)	MW-9	0.0025	0.0005	0.006	No	8	0.001101	0.0007976	12.5	No	0.004	NP (normality)
Cobalt (mg/L)	MW-1R	0.01765	0.006236	0.006	Yes	26	0.01842	0.02257	0	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-3	1.519	0.8004	5	No	19	1.16	0.6137	26.32	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-4	1.05	0.515	5	No	19	0.9027	0.3891	42.11	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-2	2.27	1	5	No	19	1.576	0.8142	31.58	No	0.01	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	MW-5	1.1	0.61	5	No	16	0.9781	0.3731	56.25	No	0.01	NP (NDs)
Combined Radium 226 + 228 (pCi/L)	MW-6	2.34	0.87	5	No	16	1.454	0.788	37.5	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-7 (bg)	1.73	0.762	5	No	16	1.207	0.4328	56.25	No	0.01	NP (NDs)
Combined Radium 226 + 228 (pCi/L)	MW-8	2.31	0.952	5	No	16	1.643	1.011	37.5	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-10	2.033	0.702	5	No	7	1.464	0.4331	28.57	No	0.01	Param.

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 6/7/2021, 2:34 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Combined Radium 226 + 228 (pCi/L)	MW-9	1.671	1.167	5	No	8	1.419	0.2376	12.5	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1R	2.25	0.73	5	No	5	1.154	0.6247	60	No	0.031	NP (NDs)
Copper (mg/L)	MW-3	0.022	0.00045	0.02	No	8	0.005366	0.00695	75	No	0.004	NP (NDs)
Copper (mg/L)	MW-4	0.022	0.00085	0.02	No	8	0.005531	0.006831	62.5	No	0.004	NP (NDs)
Copper (mg/L)	MW-2	0.022	0.0012	0.02	No	8	0.005775	0.006689	75	No	0.004	NP (NDs)
Copper (mg/L)	MW-5	0.022	0.00028	0.02	No	8	0.005585	0.00682	75	No	0.004	NP (NDs)
Copper (mg/L)	MW-6	0.0051	0.0012	0.02	No	8	0.003675	0.001448	62.5	No	0.004	NP (NDs)
Copper (mg/L)	MW-7 (bg)	0.005	0.00046	0.02	No	8	0.003131	0.001864	75	No	0.004	NP (NDs)
Copper (mg/L)	MW-8	0.005	0.00084	0.02	No	8	0.003223	0.00172	75	No	0.004	NP (NDs)
Copper (mg/L)	MW-10	0.0086	0.00087	0.02	No	8	0.004159	0.002326	87.5	No	0.004	NP (NDs)
Copper (mg/L)	MW-9	0.0086	0.0013	0.02	No	8	0.004238	0.00221	87.5	No	0.004	NP (NDs)
Copper (mg/L)	MW-1R	0.0099	0.0043	0.02	No	26	0.009631	0.008156	61.54	No	0.01	NP (NDs)
Fluoride (mg/L)	MW-3	1.565	1.029	2.42	No	19	1.297	0.4574	0	No	0.01	Param.
Fluoride (mg/L)	MW-4	1.29	1.114	2.42	No	19	1.202	0.1508	0	No	0.01	Param.
Fluoride (mg/L)	MW-2	13.02	10.46	2.42	Yes	19	11.74	2.184	0	No	0.01	Param.
Fluoride (mg/L)	MW-5	3.367	2.246	2.42	No	16	2.806	0.8614	0	No	0.01	Param.
Fluoride (mg/L)	MW-6	1.707	1.431	2.42	No	16	1.569	0.212	0	No	0.01	Param.
Fluoride (mg/L)	MW-7 (bg)	0.1409	0.08589	2.42	No	16	0.1067	0.05031	18.75	No	0.01	Param.
Fluoride (mg/L)	MW-8	0.4943	0.322	2.42	No	16	0.4081	0.1324	0	No	0.01	Param.
Fluoride (mg/L)	MW-10	11.49	9.46	2.42	Yes	8	10.48	0.9573	0	No	0.01	Param.
Fluoride (mg/L)	MW-9	2.607	2.268	2.42	No	8	2.438	0.1598	0	No	0.01	Param.
Fluoride (mg/L)	MW-1R	26	21	2.42	Yes	26	21.47	7.421	3.846	No	0.01	NP (normality)
Iron (mg/L)	MW-3	22.13	2.348	26.55	No	8	12.24	9.331	0	No	0.01	Param.
Iron (mg/L)	MW-4	9.113	6.737	26.55	No	8	7.925	1.121	0	No	0.01	Param.
Iron (mg/L)	MW-2	23	6.7	26.55	No	8	18.96	5.145	0	No	0.004	NP (normality)
Iron (mg/L)	MW-5	40.74	13.63	26.55	No	8	27.19	12.79	0	No	0.01	Param.
Iron (mg/L)	MW-6	18.91	11.59	26.55	No	8	15.25	3.454	0	No	0.01	Param.
Iron (mg/L)	MW-7 (bg)	20.56	15.19	26.55	No	8	17.88	2.532	0	No	0.01	Param.
Iron (mg/L)	MW-8	28.63	18.62	26.55	No	8	23.63	4.719	0	No	0.01	Param.
Iron (mg/L)	MW-10	11.75	8.65	26.55	No	8	10.2	1.462	0	No	0.01	Param.
Iron (mg/L)	MW-9	23.65	15.1	26.55	No	8	19.38	4.033	0	No	0.01	Param.
Iron (mg/L)	MW-1R	4.151	2.618	26.55	No	26	3.385	1.573	0	No	0.01	Param.
Lead (mg/L)	MW-3	0.002	0.00022	0.014	No	19	0.0007999	0.0008566	63.16	No	0.01	NP (NDs)
Lead (mg/L)	MW-4	0.0005	0.00028	0.014	No	19	0.0005847	0.000602	63.16	No	0.01	NP (NDs)
Lead (mg/L)	MW-2	0.0052	0.0016	0.014	No	19	0.003561	0.002477	15.79	No	0.01	NP (Cohens/xfrm)
Lead (mg/L)	MW-5	0.0025	0.00022	0.014	No	16	0.002811	0.006851	50	No	0.01	NP (Cohens/xfrm)

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Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 6/7/2021, 2:34 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Lead (mg/L)	MW-6	0.002379	0.001023	0.014	No	16	0.001701	0.001042	18.75	No	0.01	Param.
Lead (mg/L)	MW-7 (bg)	0.00062	0.000057	0.014	No	16	0.0005719	0.0007789	68.75	No	0.01	NP (NDs)
Lead (mg/L)	MW-8	0.002	0.0003	0.014	No	16	0.0009356	0.0009747	43.75	No	0.01	NP (normality)
Lead (mg/L)	MW-10	0.045	0.00078	0.014	No	8	0.00746	0.0152	25	No	0.004	NP (normality)
Lead (mg/L)	MW-9	0.002	0.0005	0.014	No	8	0.001054	0.0006934	62.5	No	0.004	NP (NDs)
Lead (mg/L)	MW-1R	0.03504	0.01187	0.014	No	26	0.03547	0.04171	0	ln(x)	0.01	Param.
Lithium (mg/L)	MW-3	0.07654	0.04746	0.059	No	19	0.062	0.02483	5.263	No	0.01	Param.
Lithium (mg/L)	MW-4	0.05813	0.03945	0.059	No	19	0.04879	0.01596	5.263	No	0.01	Param.
Lithium (mg/L)	MW-2	1.53	1.247	0.059	Yes	19	1.388	0.242	0	No	0.01	Param.
Lithium (mg/L)	MW-5	0.1327	0.06545	0.059	Yes	16	0.09909	0.05171	12.5	No	0.01	Param.
Lithium (mg/L)	MW-6	0.23	0.16	0.059	Yes	16	0.1884	0.0648	6.25	No	0.01	NP (normality)
Lithium (mg/L)	MW-7 (bg)	0.0061	0.0022	0.059	No	16	0.007691	0.01386	37.5	No	0.01	NP (normality)
Lithium (mg/L)	MW-8	0.03657	0.0223	0.059	No	16	0.02944	0.01097	6.25	No	0.01	Param.
Lithium (mg/L)	MW-10	1.509	0.8664	0.059	Yes	8	1.188	0.3029	0	No	0.01	Param.
Lithium (mg/L)	MW-9	0.28	0.16	0.059	Yes	8	0.2288	0.04581	0	No	0.004	NP (normality)
Lithium (mg/L)	MW-1R	3.177	2.408	0.059	Yes	26	2.793	0.7884	0	No	0.01	Param.
Mercury (mg/L)	MW-3	0.00016	0.0000407	0.00014	No	19	0.0001118	0.00006198	78.95	No	0.01	NP (NDs)
Mercury (mg/L)	MW-4	0.00016	0.000041	0.00014	No	19	0.000118	0.00006055	94.74	No	0.01	NP (NDs)
Mercury (mg/L)	MW-2	0.00016	0.000041	0.00014	No	19	0.0001737	0.0002795	78.95	No	0.01	NP (NDs)
Mercury (mg/L)	MW-5	0.00017	1.6e-7	0.00014	No	16	0.000101	0.00007612	93.75	No	0.01	NP (NDs)
Mercury (mg/L)	MW-6	0.00016	0.000025	0.00014	No	16	0.00009142	0.00006911	62.5	No	0.01	NP (NDs)
Mercury (mg/L)	MW-7 (bg)	0.00016	0.00004025	0.00014	No	16	0.00009904	0.00007184	75	No	0.01	NP (NDs)
Mercury (mg/L)	MW-8	0.00016	0.0000407	0.00014	No	16	0.00008553	0.00007098	68.75	No	0.01	NP (NDs)
Mercury (mg/L)	MW-10	0.0002	1.6e-7	0.00014	No	8	0.00008031	0.00009047	50	No	0.004	NP (normality)
Mercury (mg/L)	MW-9	0.0002	1.6e-7	0.00014	No	8	0.00009525	0.00009277	62.5	No	0.004	NP (NDs)
Mercury (mg/L)	MW-1R	0.00002908	0.000008938	0.00014	No	26	0.00003138	0.00004023	3.846	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-3	0.0065	0.00012	0.1	No	19	0.002464	0.003113	52.63	No	0.01	NP (NDs)
Molybdenum (mg/L)	MW-4	0.0016	0.001	0.1	No	19	0.001276	0.0006161	21.05	No	0.01	NP (normality)
Molybdenum (mg/L)	MW-2	0.00967	0.00619	0.1	No	19	0.008321	0.003479	10.53	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-5	0.01402	0.00492	0.1	No	16	0.009468	0.00699	12.5	No	0.01	Param.
Molybdenum (mg/L)	MW-6	0.001258	0.0005951	0.1	No	16	0.0009264	0.0005093	25	No	0.01	Param.
Molybdenum (mg/L)	MW-7 (bg)	0.0043	0.00016	0.1	No	16	0.001896	0.002096	18.75	No	0.01	NP (Cohens/xfrm)
Molybdenum (mg/L)	MW-8	0.004812	0.002424	0.1	No	16	0.003618	0.001836	12.5	No	0.01	Param.
Molybdenum (mg/L)	MW-10	0.01222	0.004076	0.1	No	8	0.007988	0.004496	0	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-9	0.02728	0.0114	0.1	No	8	0.01934	0.007491	0	No	0.01	Param.
Molybdenum (mg/L)	MW-1R	0.01	0.0081	0.1	No	26	0.009012	0.002799	0	No	0.01	NP (normality)

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<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Nickel (mg/L)	MW-3	0.011	0.002	0.11	No	8	0.004087	0.00323	25	No	0.004	NP (normality)
Nickel (mg/L)	MW-4	0.01883	0.01567	0.11	No	8	0.01725	0.001488	0	No	0.01	Param.
Nickel (mg/L)	MW-2	0.02642	0.01383	0.11	No	8	0.02013	0.005939	0	No	0.01	Param.
Nickel (mg/L)	MW-5	0.011	0.00054	0.11	No	8	0.00388	0.003327	37.5	No	0.004	NP (Cohens/xfrm)
Nickel (mg/L)	MW-6	0.005	0.0019	0.11	No	8	0.002537	0.001004	75	No	0.004	NP (NDs)
Nickel (mg/L)	MW-7 (bg)	0.005	0.0004	0.11	No	8	0.002102	0.001423	75	No	0.004	NP (NDs)
Nickel (mg/L)	MW-8	0.005	0.0011	0.11	No	8	0.0023	0.001182	75	No	0.004	NP (NDs)
Nickel (mg/L)	MW-10	0.0054	0.0021	0.11	No	8	0.002987	0.001261	62.5	No	0.004	NP (NDs)
Nickel (mg/L)	MW-9	0.005	0.0015	0.11	No	8	0.003025	0.001224	62.5	No	0.004	NP (NDs)
Nickel (mg/L)	MW-1R	0.02157	0.009776	0.11	No	26	0.02052	0.01982	0	ln(x)	0.01	Param.
pH (SU)	MW-3	7.501	6.884	8.5	No	18	7.192	0.4517	0	No	0.005	Param.
pH (SU)	MW-4	7.733	7.117	8.5	No	18	7.425	0.4515	0	No	0.005	Param.
pH (SU)	MW-2	7.801	7.145	8.5	No	18	7.473	0.4805	0	No	0.005	Param.
pH (SU)	MW-5	7.86	7.076	8.5	No	15	7.468	0.5101	0	No	0.005	Param.
pH (SU)	MW-6	7.89	7.16	8.5	No	15	7.505	0.4035	0	No	0.01	NP (normality)
pH (SU)	MW-7 (bg)	7.578	6.89	8.5	No	15	7.234	0.447	0	No	0.005	Param.
pH (SU)	MW-8	7.878	7.224	8.5	No	15	7.555	0.4389	0	ln(x)	0.005	Param.
pH (SU)	MW-10	8.4	7.6	8.5	No	8	7.825	0.2613	0	No	0.004	NP (normality)
pH (SU)	MW-9	7.836	6.982	8.5	No	8	7.409	0.345	0	No	0.005	Param.
pH (SU)	MW-1R	8.484	7.847	8.5	No	26	8.165	0.5829	0	No	0.005	Param.
Selenium (mg/L)	MW-3	0.0016	0.00087	0.005	No	19	0.001374	0.001185	63.16	No	0.01	NP (NDs)
Selenium (mg/L)	MW-4	0.0009	0.00048	0.005	No	19	0.001016	0.0009292	84.21	No	0.01	NP (NDs)
Selenium (mg/L)	MW-2	0.0038	0.0018	0.005	No	19	0.003321	0.003097	21.05	No	0.01	NP (normality)
Selenium (mg/L)	MW-5	0.0009	0.00028	0.005	No	16	0.00088	0.001072	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-6	0.0009	0.00028	0.005	No	16	0.000655	0.0004709	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-7 (bg)	0.0009	0.00028	0.005	No	16	0.000655	0.0004709	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-8	0.0009	0.00028	0.005	No	16	0.000655	0.0004709	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-10	0.002	0.00081	0.005	No	8	0.001135	0.0004762	100	No	0.004	NP (NDs)
Selenium (mg/L)	MW-9	0.002	0.00087	0.005	No	8	0.001146	0.0004684	100	No	0.004	NP (NDs)
Selenium (mg/L)	MW-1R	0.0039	0.0016	0.005	No	26	0.002477	0.001238	15.38	No	0.01	NP (normality)
Silver (mg/L)	MW-3	0.0015	0.000026	0.0015	No	8	0.0007708	0.000674	87.5	No	0.004	NP (NDs)
Silver (mg/L)	MW-4	0.0015	0.000014	0.0015	No	8	0.0004661	0.0005172	75	No	0.004	NP (NDs)
Silver (mg/L)	MW-2	0.0015	0.000036	0.0015	No	8	0.000472	0.0005114	87.5	No	0.004	NP (NDs)
Silver (mg/L)	MW-5	0.0015	0.000016	0.0015	No	8	0.0004695	0.0005139	87.5	No	0.004	NP (NDs)
Silver (mg/L)	MW-6	0.001	0.000024	0.0015	No	8	0.0003205	0.0003001	87.5	No	0.004	NP (NDs)
Silver (mg/L)	MW-7 (bg)	0.001	0.000022	0.0015	No	8	0.0003195	0.0003012	75	No	0.004	NP (NDs)

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Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 6/7/2021, 2:34 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Silver (mg/L)	MW-8	0.001	0.000028	0.0015	No	8	0.000321	0.0002995	87.5	No	0.004	NP (NDs)
Silver (mg/L)	MW-10	0.0015	0.00004	0.0015	No	8	0.0005388	0.0004829	100	No	0.004	NP (NDs)
Silver (mg/L)	MW-9	0.001	0.00004	0.0015	No	8	0.0003925	0.0002876	100	No	0.004	NP (NDs)
Silver (mg/L)	MW-1R	0.0015	0.0003	0.0015	No	26	0.0007615	0.0005579	100	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-3	1033	559.7	250	Yes	20	796.5	416.9	0	No	0.01	Param.
Sulfate (mg/L)	MW-4	821.9	664.1	250	Yes	20	743	138.9	0	No	0.01	Param.
Sulfate (mg/L)	MW-2	3.3	1	250	No	20	2.838	3.419	55	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-5	1100	83	250	No	16	718.6	464.8	0	No	0.01	NP (normality)
Sulfate (mg/L)	MW-6	61.54	8.566	250	No	16	50.18	51.89	6.25	ln(x)	0.01	Param.
Sulfate (mg/L)	MW-7 (bg)	49.45	24.92	250	No	16	37.19	18.85	0	No	0.01	Param.
Sulfate (mg/L)	MW-8	6.563	1.912	250	No	16	5.493	6.415	6.25	ln(x)	0.01	Param.
Sulfate (mg/L)	MW-10	4.802	0.2643	250	No	8	2.533	2.14	25	No	0.01	Param.
Sulfate (mg/L)	MW-9	155.2	24.19	250	No	8	89.7	61.8	0	No	0.01	Param.
Sulfate (mg/L)	MW-1R	760.2	515.2	250	Yes	26	637.7	251.4	0	No	0.01	Param.
Thallium (mg/L)	MW-3	0.001	0.000087	0.002	No	19	0.0004377	0.000514	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-4	0.0003	0.000087	0.002	No	19	0.0003114	0.0003523	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-2	0.001	0.000087	0.002	No	19	0.0005009	0.0006337	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-5	0.001	0.000029	0.002	No	16	0.0003425	0.0005122	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-6	0.0003	0.000029	0.002	No	16	0.0002098	0.0002651	93.75	No	0.01	NP (NDs)
Thallium (mg/L)	MW-7 (bg)	0.0003	0.000029	0.002	No	16	0.0001925	0.0002448	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-8	0.0003	0.000029	0.002	No	16	0.0001965	0.0002425	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-10	0.0015	0.000087	0.002	No	8	0.0006859	0.0005457	100	No	0.004	NP (NDs)
Thallium (mg/L)	MW-9	0.001	0.000087	0.002	No	8	0.0004296	0.000317	87.5	No	0.004	NP (NDs)
Thallium (mg/L)	MW-1R	0.0015	0.0006	0.002	No	26	0.001123	0.0006483	96.15	No	0.01	NP (NDs)
Total Dissolved Solids (mg/L)	MW-3	3527	2833	877.1	Yes	20	3180	611	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-4	2383	1997	877.1	Yes	20	2190	340.1	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-2	2231	1879	877.1	Yes	20	2055	310.3	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-5	2400	820	877.1	No	16	1793	658.5	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-6	1600	1200	877.1	Yes	16	1400	212.9	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-7 (bg)	716	611.5	877.1	No	16	663.8	80.24	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-8	609	378.5	877.1	No	16	493.8	177.1	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-10	1903	1372	877.1	Yes	8	1638	250.4	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-9	1235	659.7	877.1	No	8	947.5	271.5	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1R	3500	3100	877.1	Yes	26	3200	482.5	0	No	0.01	NP (normality)
Vanadium (mg/L)	MW-3	0.002264	0.0006012	0.027	No	8	0.001384	0.0008527	12.5	ln(x)	0.01	Param.
Vanadium (mg/L)	MW-4	0.0025	0.00053	0.027	No	8	0.0008825	0.000667	12.5	No	0.004	NP (normality)

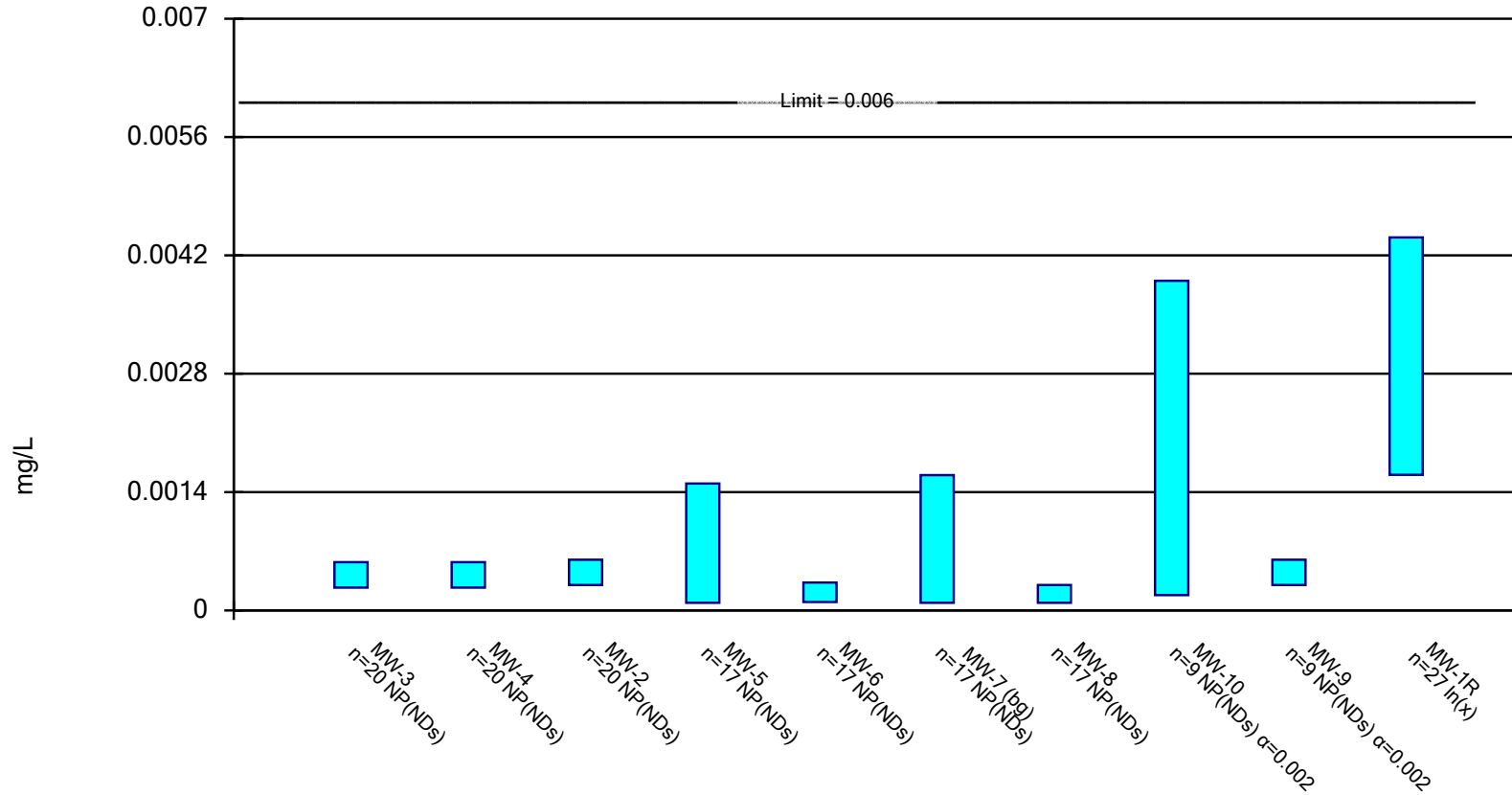
Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 6/7/2021, 2:34 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Vanadium (mg/L)	MW-2	0.005474	0.0007831	0.027	No	8	0.003129	0.002213	12.5	No	0.01	Param.
Vanadium (mg/L)	MW-5	0.003	0.0005	0.027	No	8	0.001249	0.0009745	50	No	0.004	NP (Cohens/xfm)
Vanadium (mg/L)	MW-6	0.0008	0.00029	0.027	No	8	0.0005638	0.0001668	62.5	No	0.004	NP (NDs)
Vanadium (mg/L)	MW-7 (bg)	0.0007309	0.0005341	0.027	No	8	0.0006325	0.00009285	0	No	0.01	Param.
Vanadium (mg/L)	MW-8	0.0008	0.00036	0.027	No	8	0.0005188	0.0001236	75	No	0.004	NP (NDs)
Vanadium (mg/L)	MW-10	0.002	0.00076	0.027	No	8	0.001279	0.0005531	0	No	0.004	NP (normality)
Vanadium (mg/L)	MW-9	0.0026	0.0005	0.027	No	8	0.001	0.0008502	75	No	0.004	NP (NDs)
Vanadium (mg/L)	MW-1R	0.003745	0.002465	0.027	No	26	0.003346	0.001679	3.846	ln(x)	0.01	Param.
Zinc (mg/L)	MW-3	2	0.00081	0.26	No	8	0.2639	0.7015	87.5	No	0.004	NP (NDs)
Zinc (mg/L)	MW-4	2	0.003	0.26	No	8	0.2641	0.7014	87.5	No	0.004	NP (NDs)
Zinc (mg/L)	MW-2	2	0.0099	0.26	No	8	0.265	0.7011	87.5	No	0.004	NP (NDs)
Zinc (mg/L)	MW-5	0.22	0.0025	0.26	No	8	0.04156	0.07232	75	No	0.004	NP (NDs)
Zinc (mg/L)	MW-6	2	0.011	0.26	No	8	0.2651	0.701	87.5	No	0.004	NP (NDs)
Zinc (mg/L)	MW-7 (bg)	2	0.0023	0.26	No	8	0.2644	0.7013	75	No	0.004	NP (NDs)
Zinc (mg/L)	MW-8	2	0.0026	0.26	No	8	0.2641	0.7014	87.5	No	0.004	NP (NDs)
Zinc (mg/L)	MW-10	0.16	0.011	0.26	No	8	0.03462	0.05072	75	No	0.004	NP (NDs)
Zinc (mg/L)	MW-9	0.02	0.0064	0.26	No	8	0.0168	0.00426	87.5	No	0.004	NP (NDs)
Zinc (mg/L)	MW-1R	0.068	0.022	0.26	No	26	0.0735	0.07872	23.08	No	0.01	NP (Cohens/xfm)

Parametric and Non-Parametric (NP) Confidence Interval

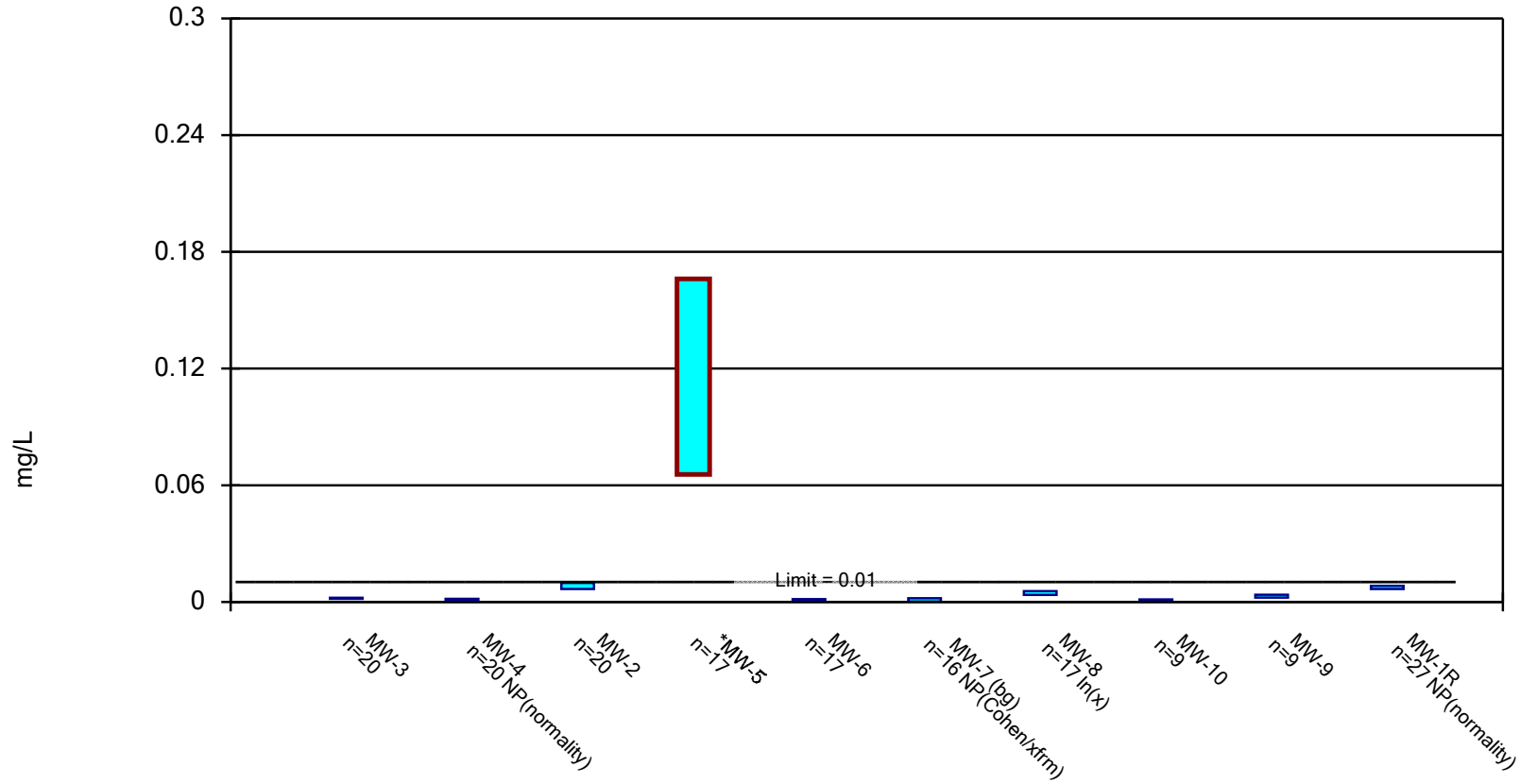
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Antimony Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

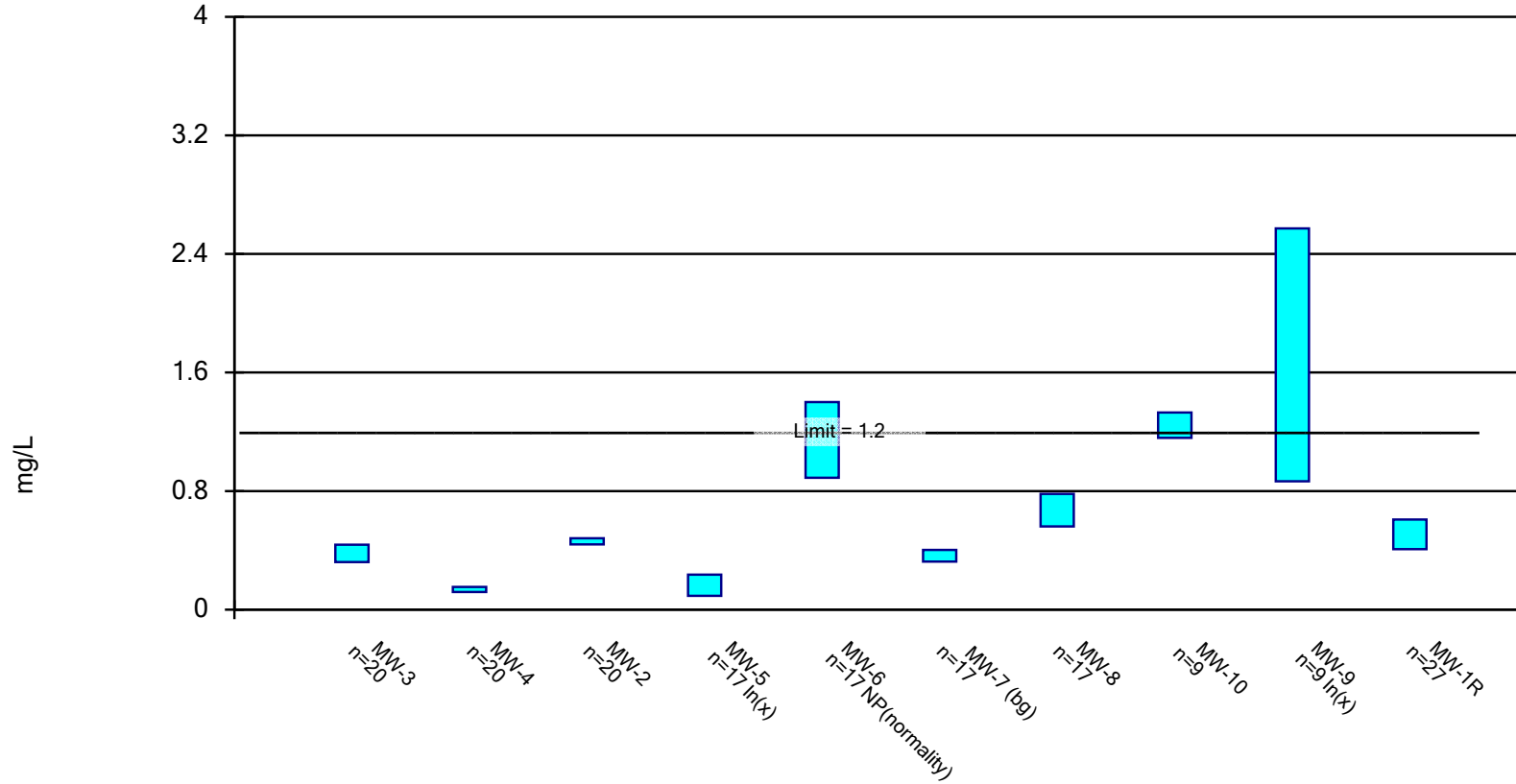
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

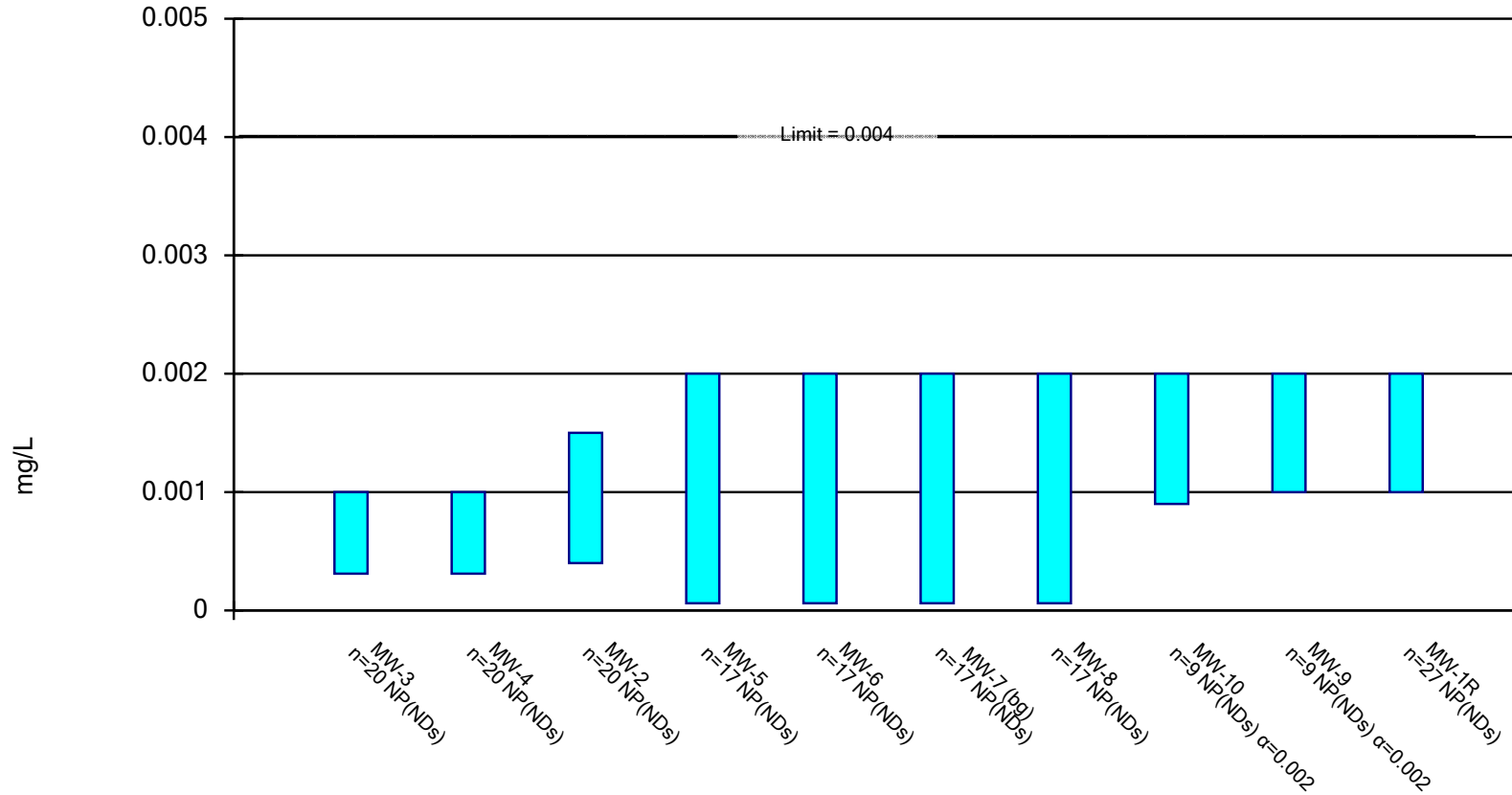
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

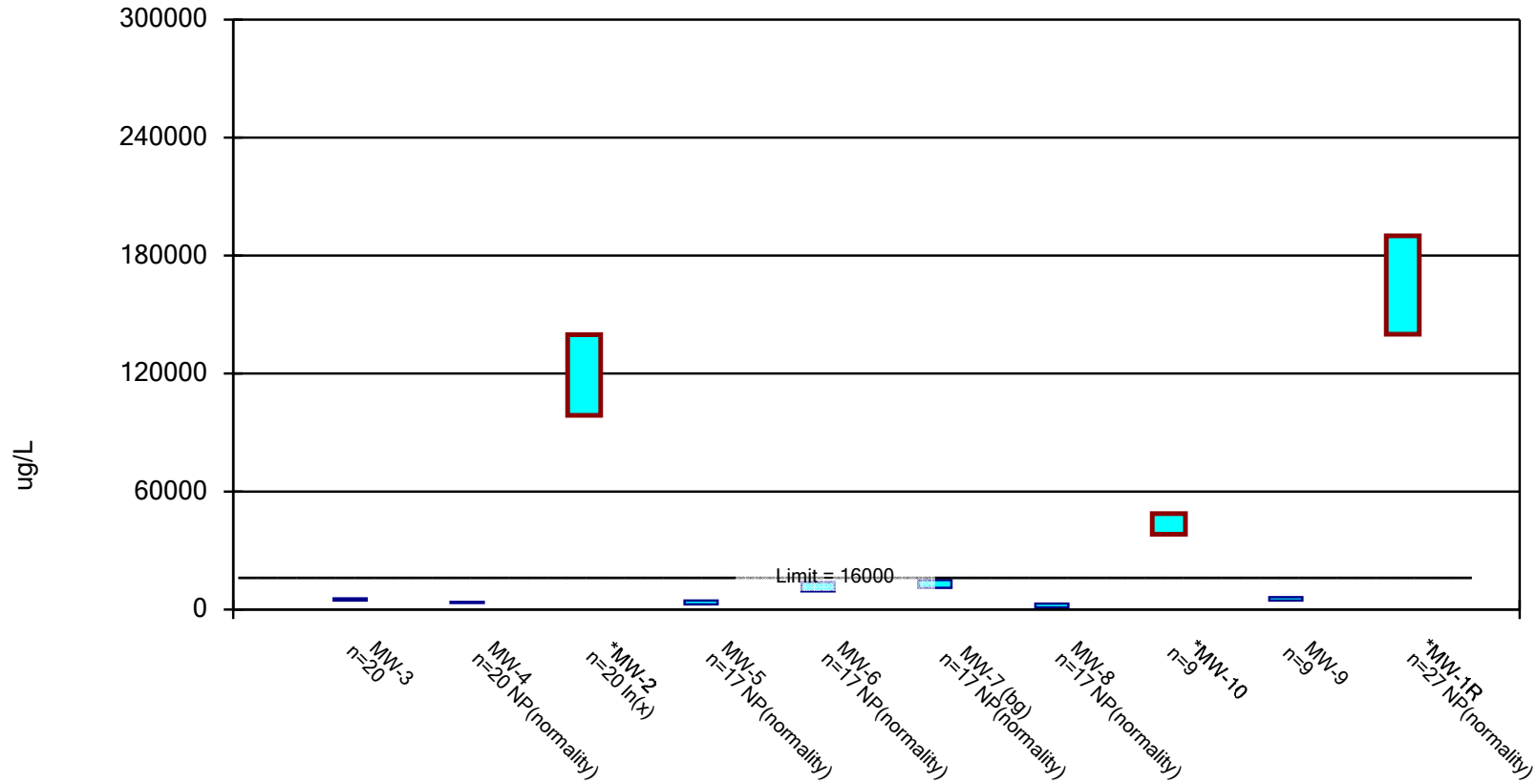
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Beryllium Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

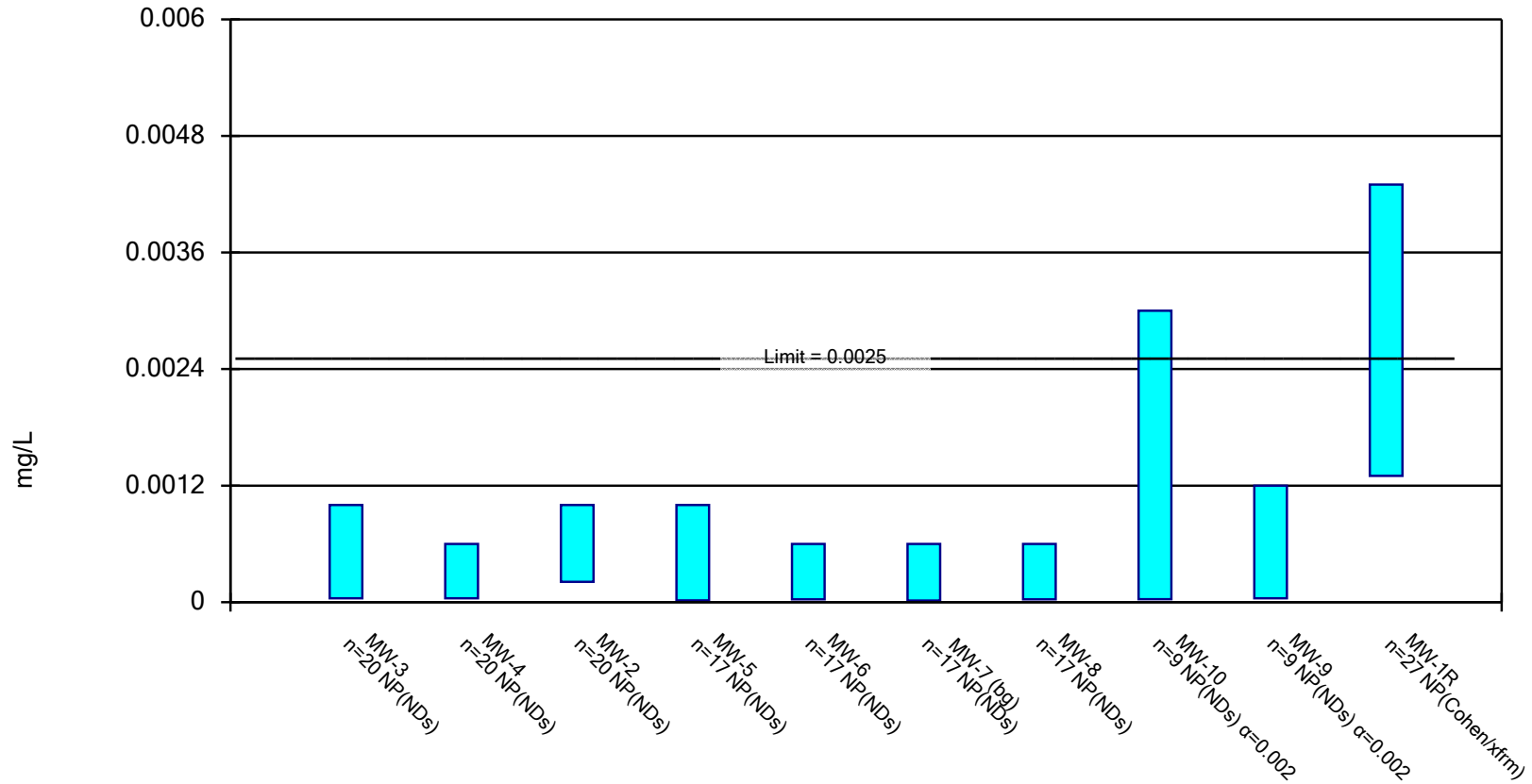
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

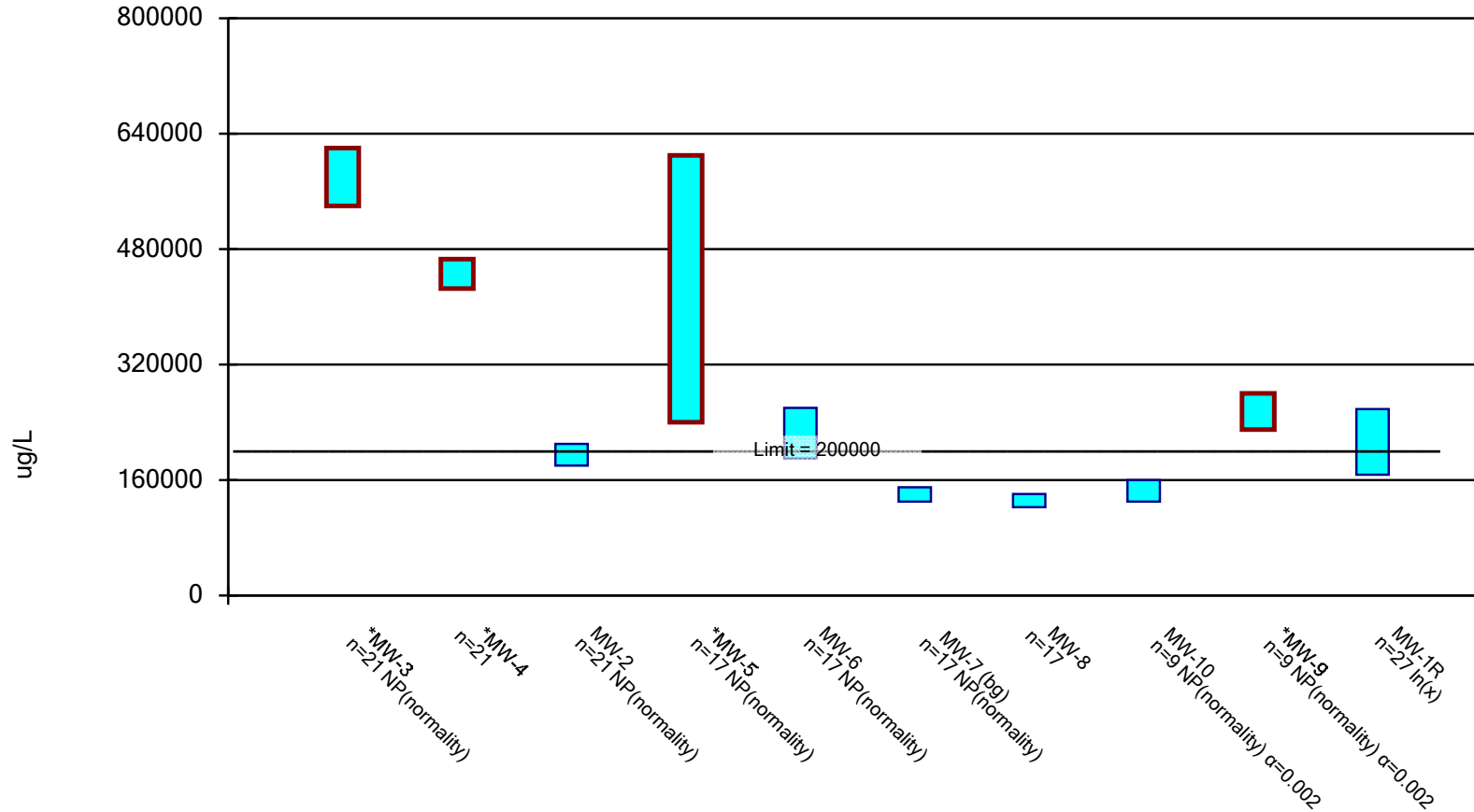
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Cadmium Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

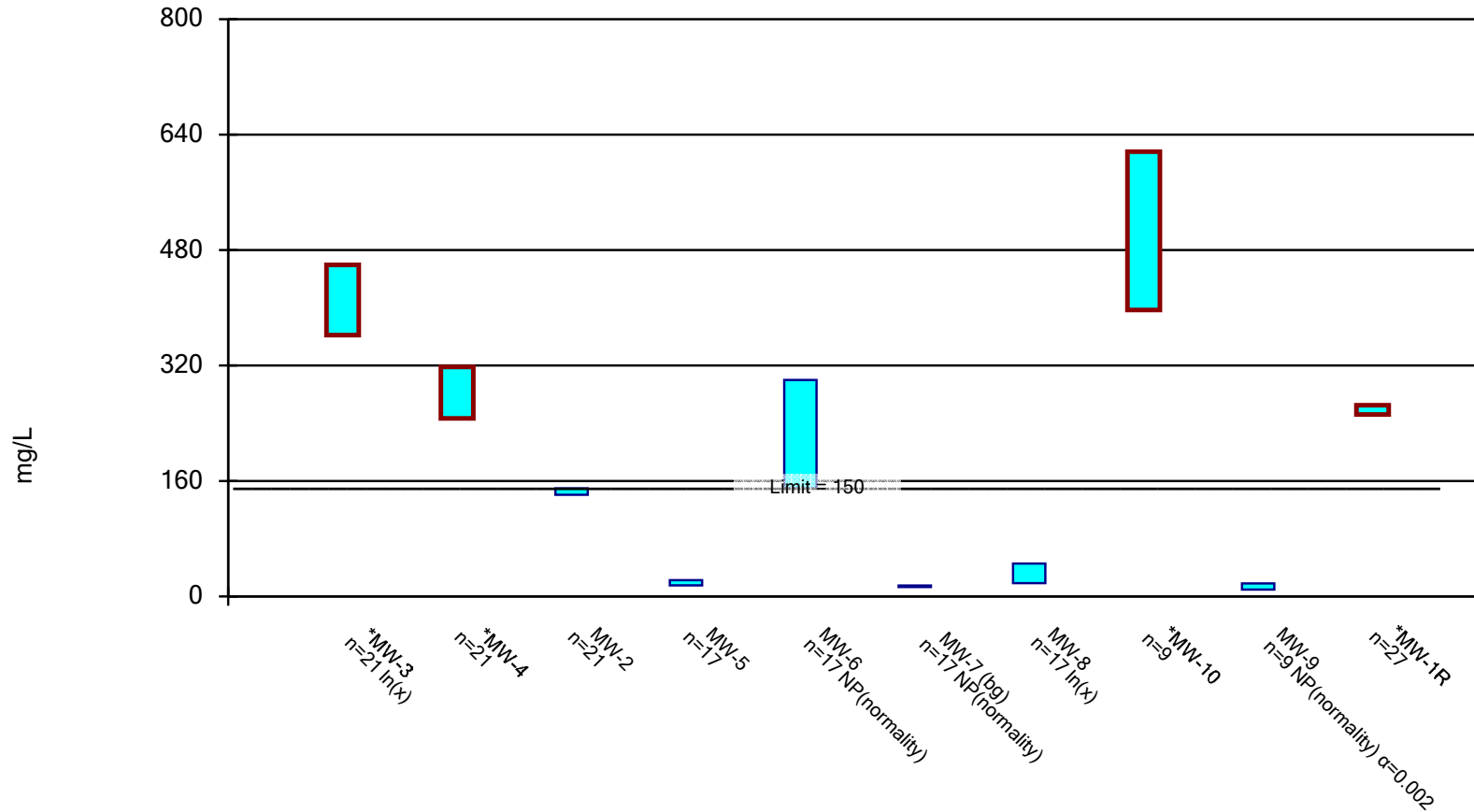
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

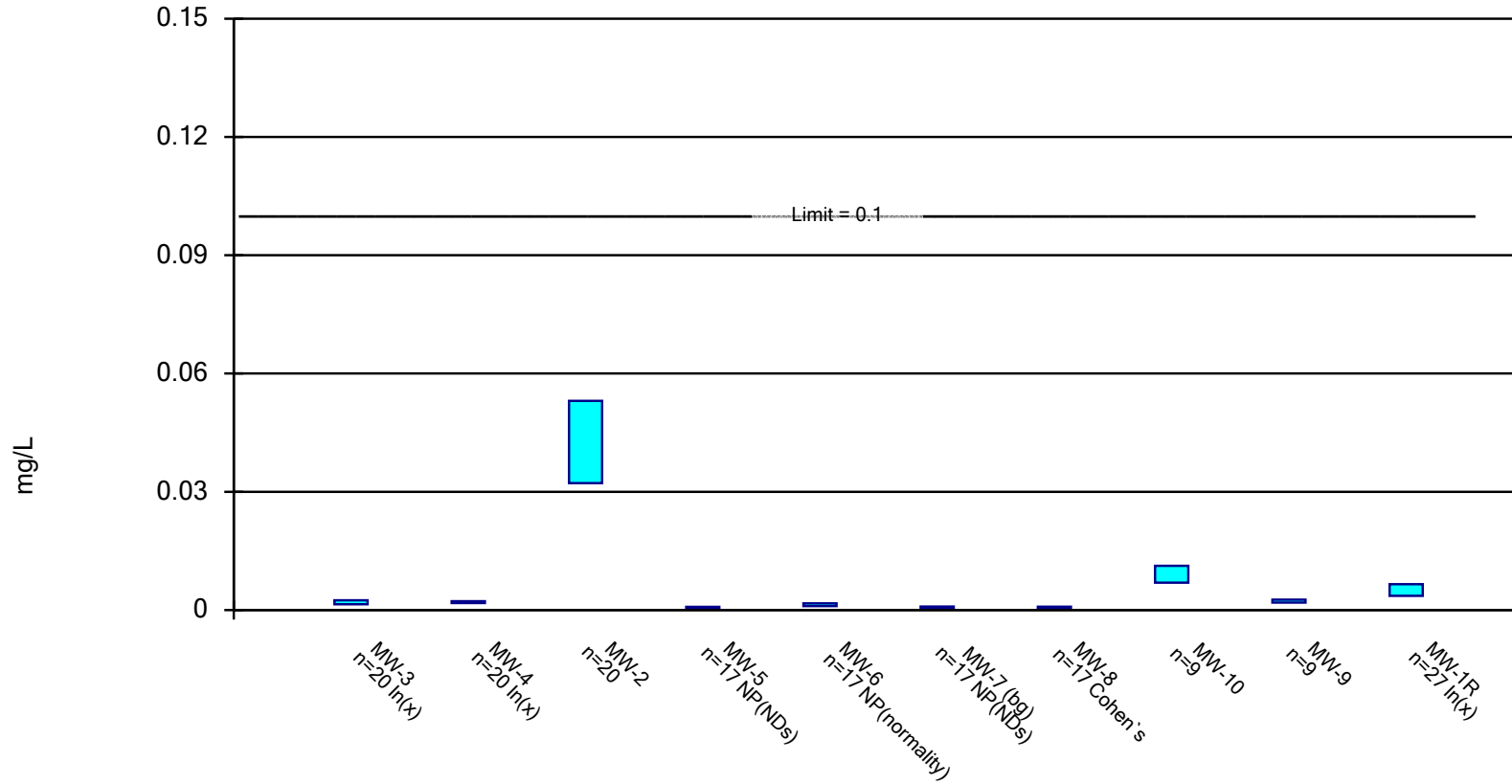
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chloride Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

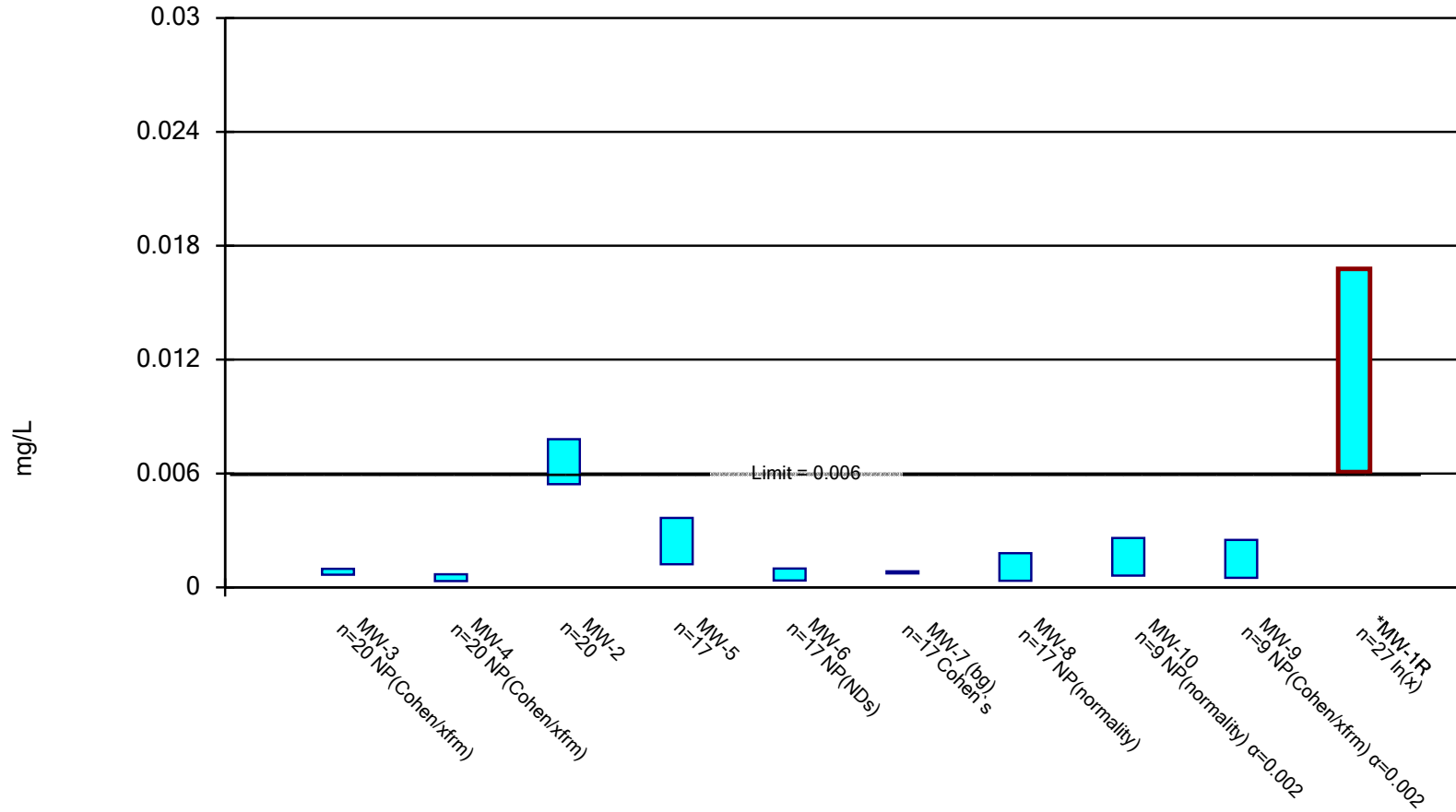
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

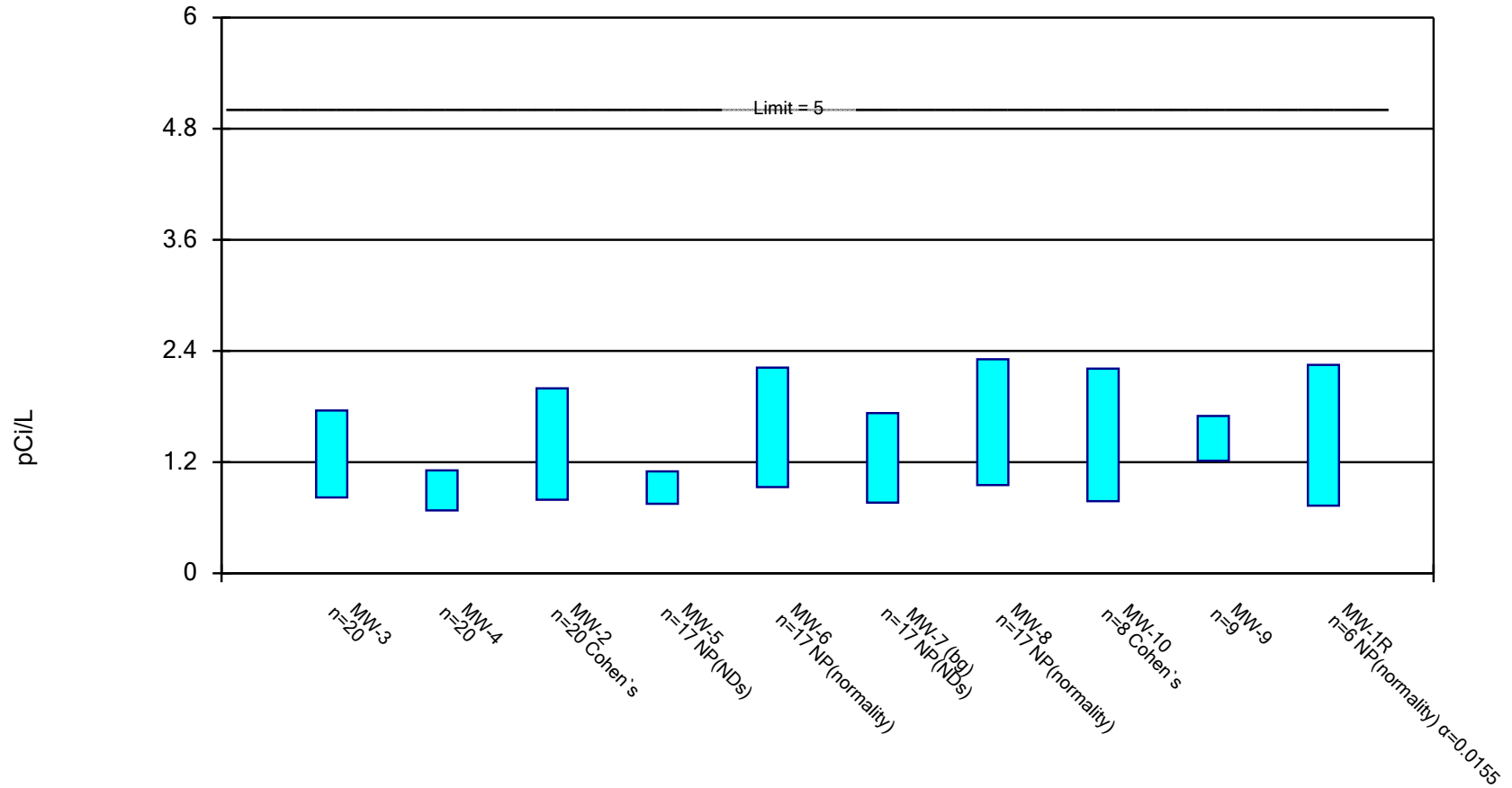
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

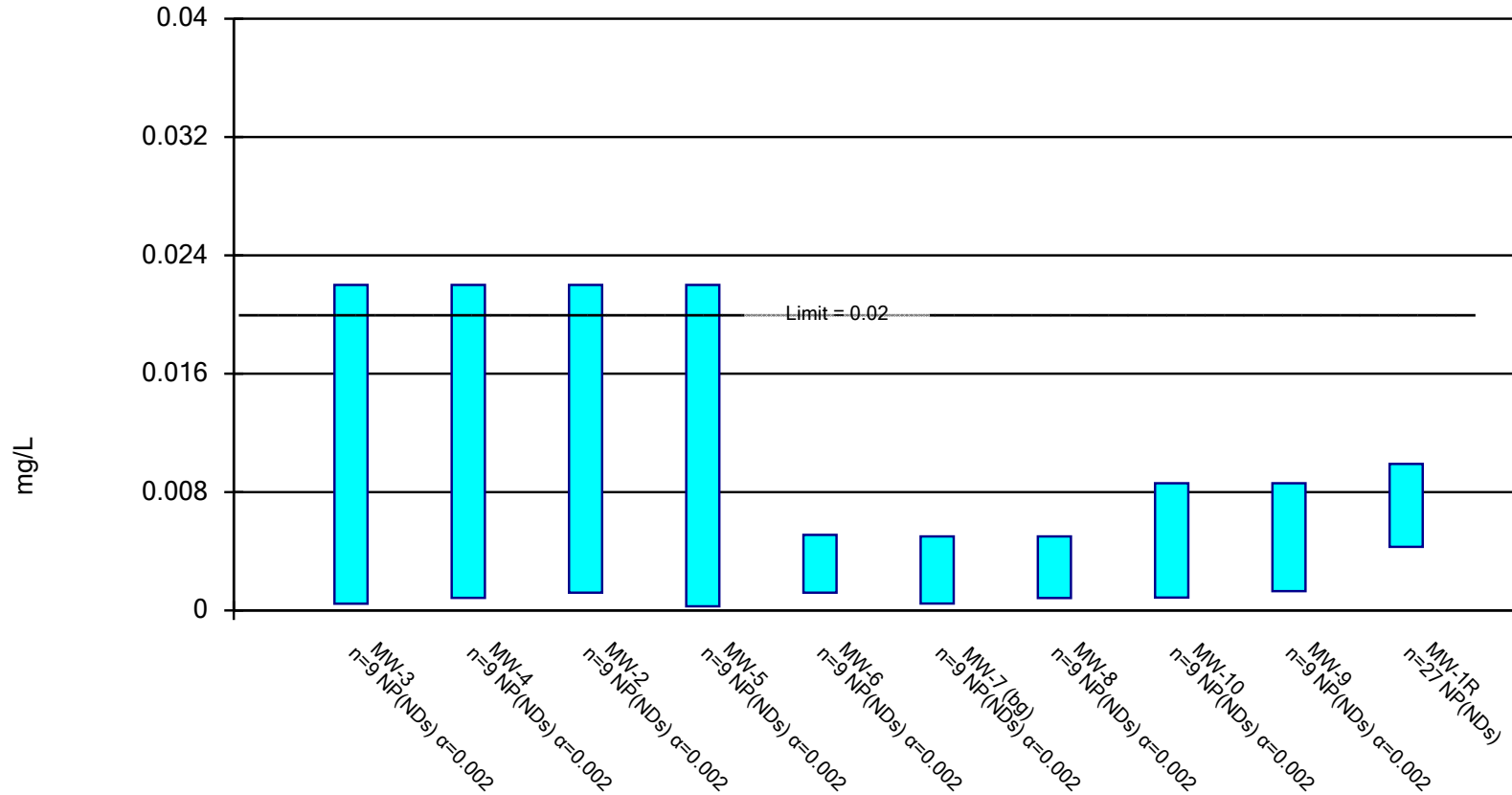


Constituent: Combined Radium 226 + 228 Analysis Run 9/24/2021 3:54 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

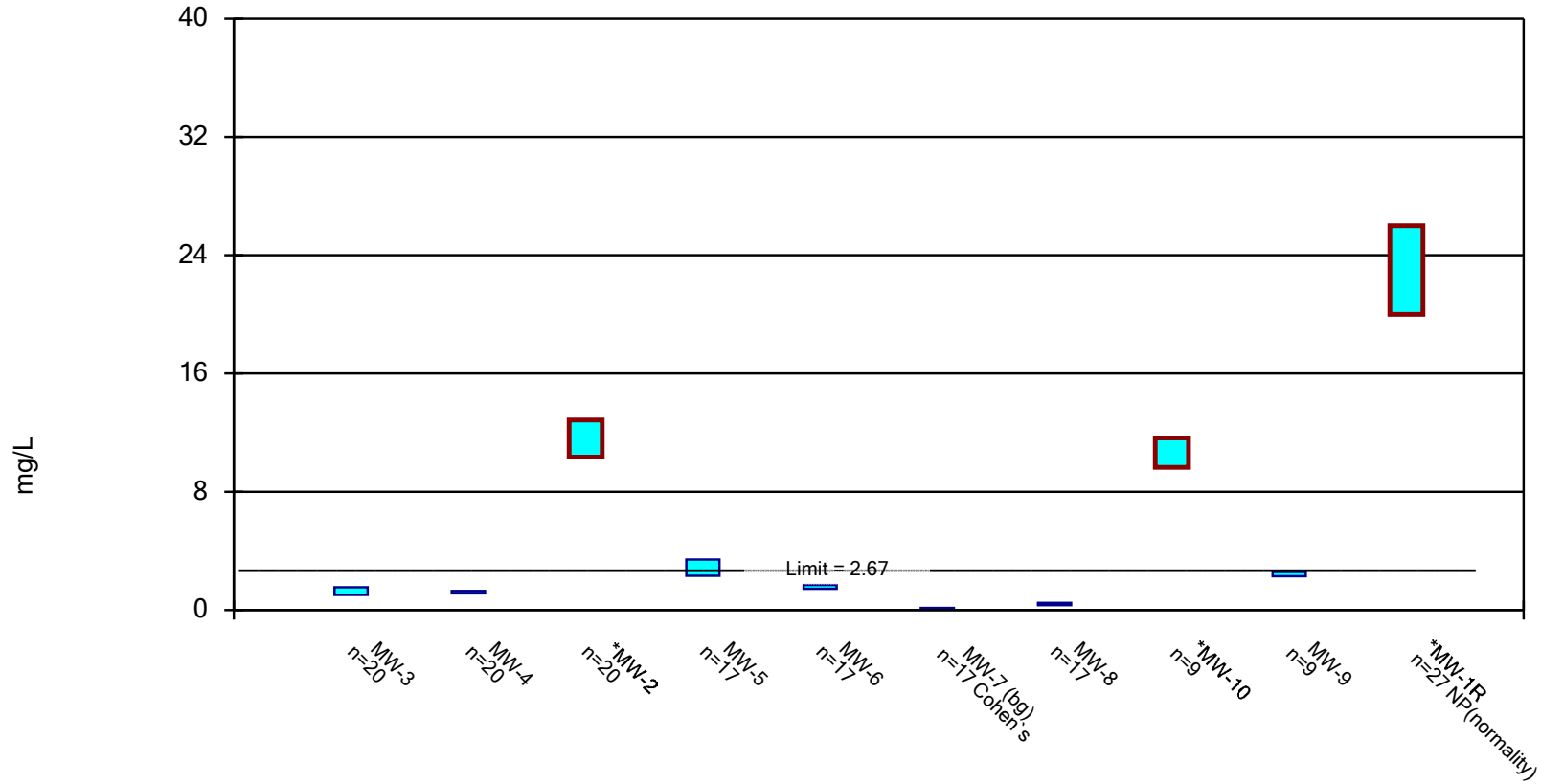
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Copper Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

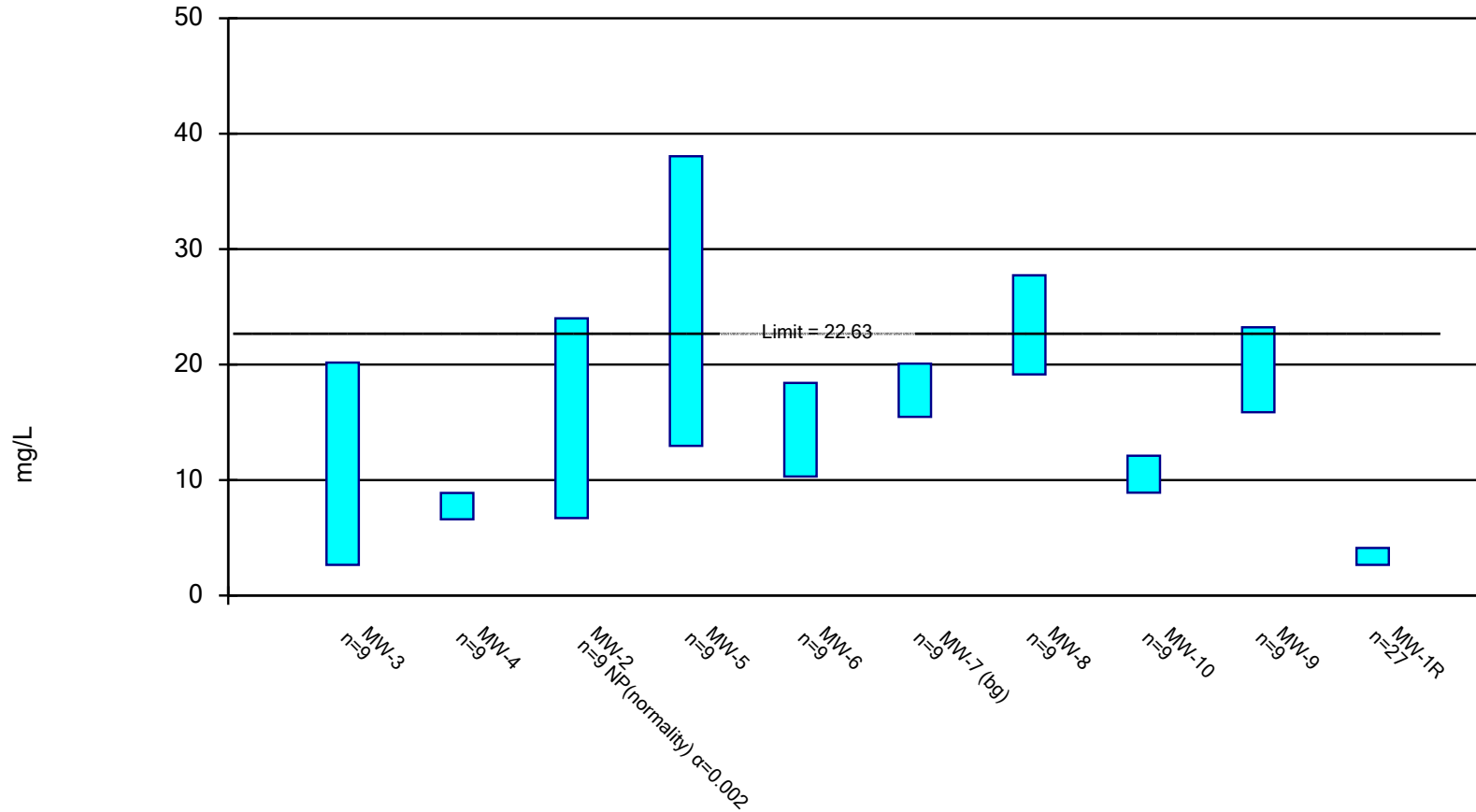
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

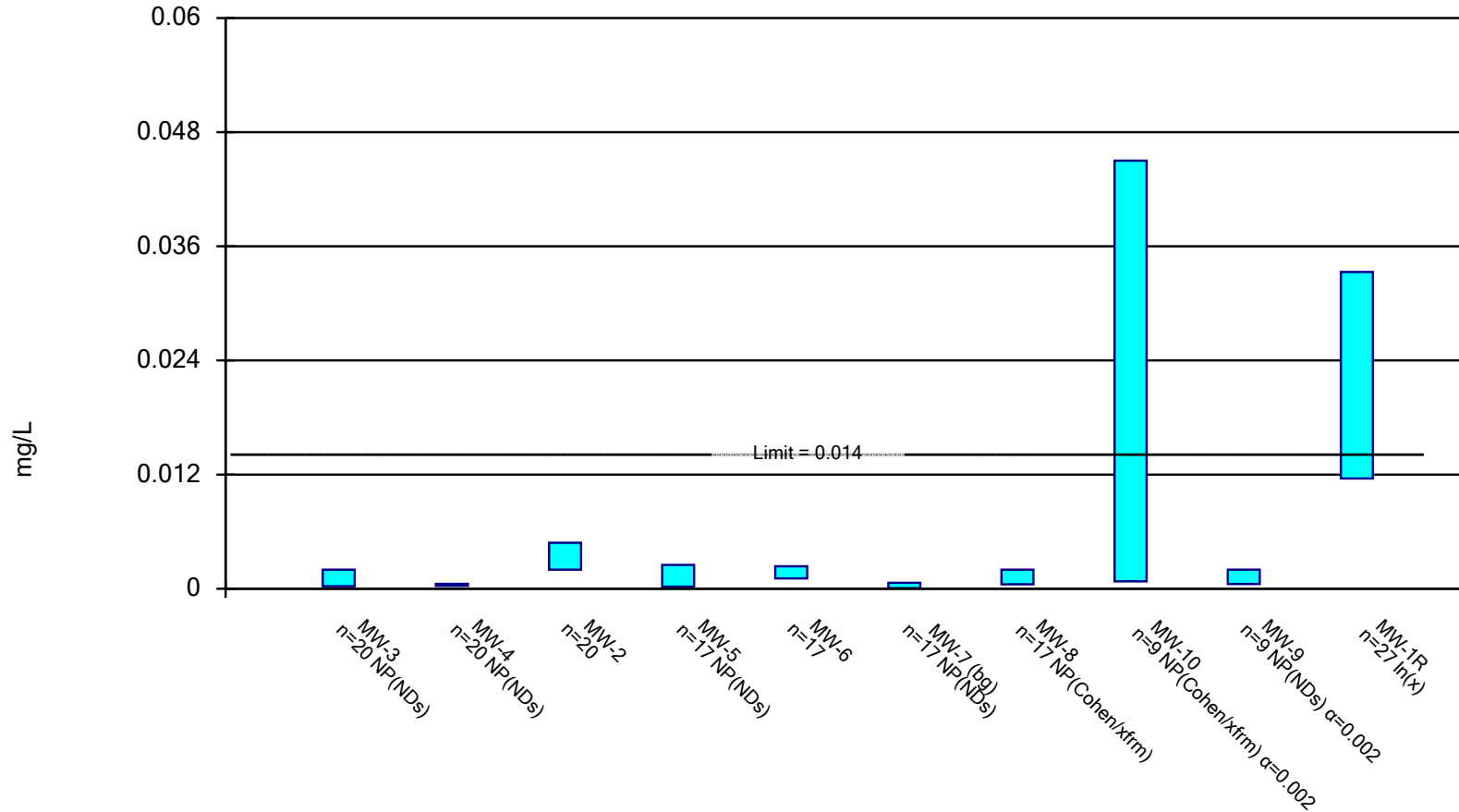
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Iron Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

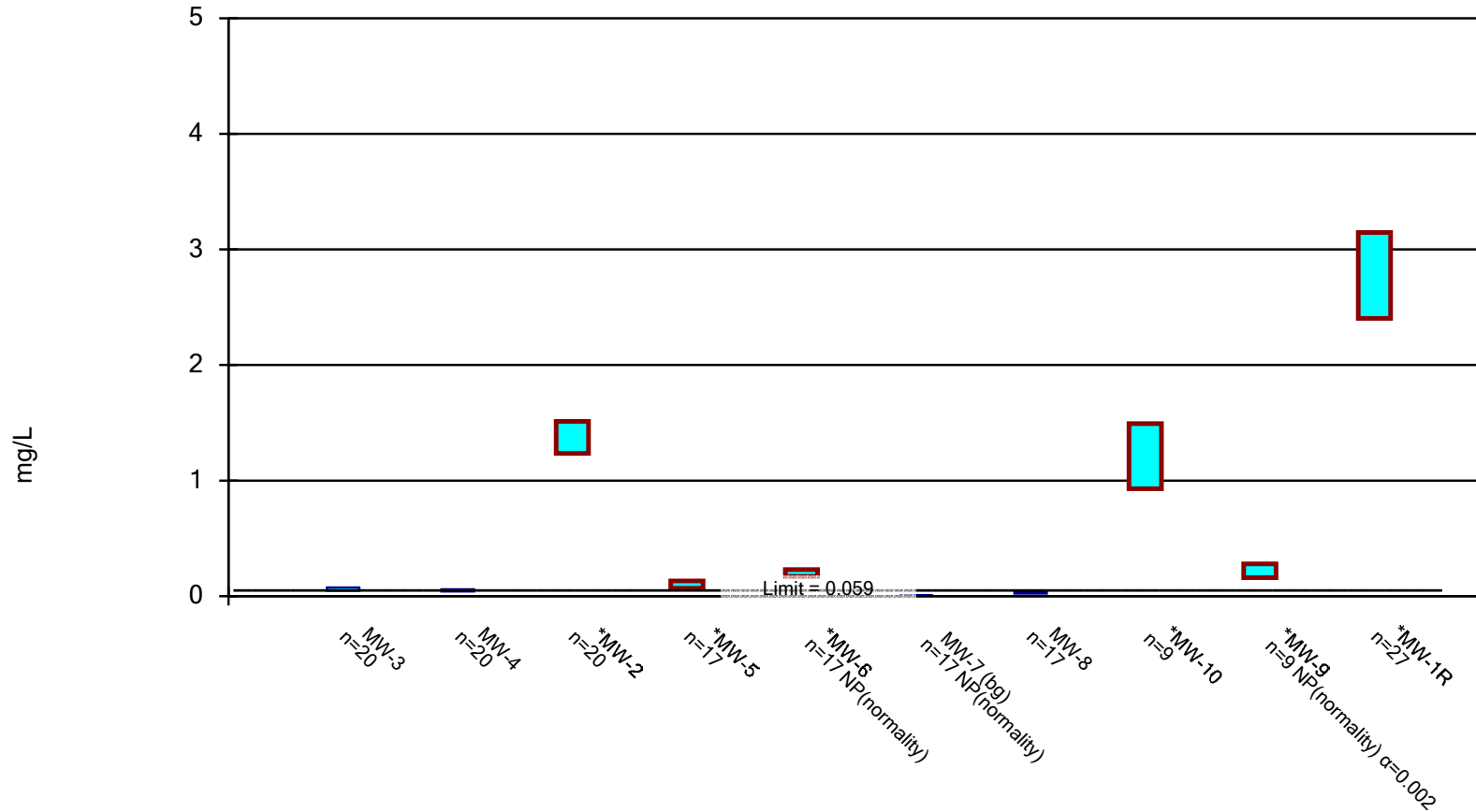
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

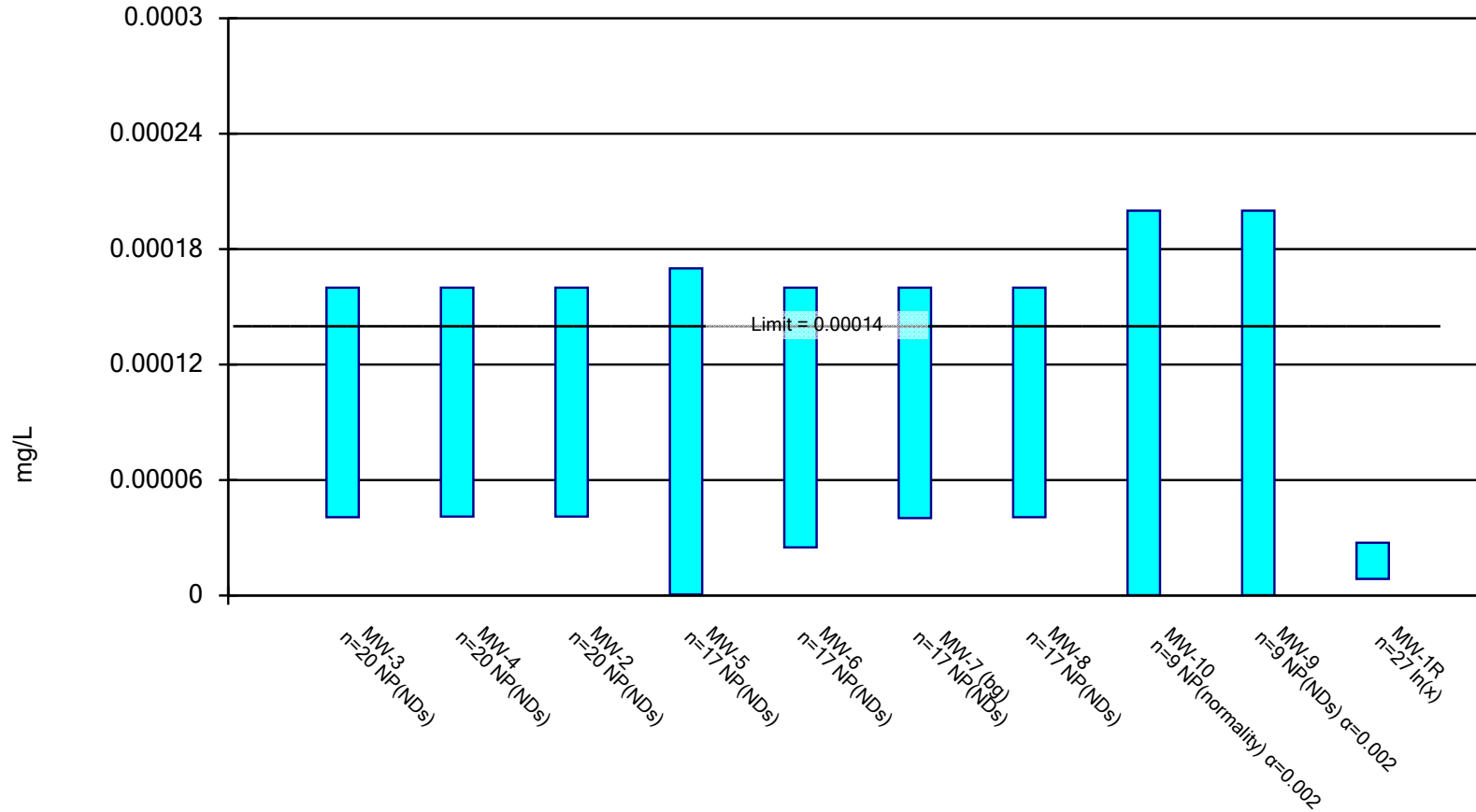
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

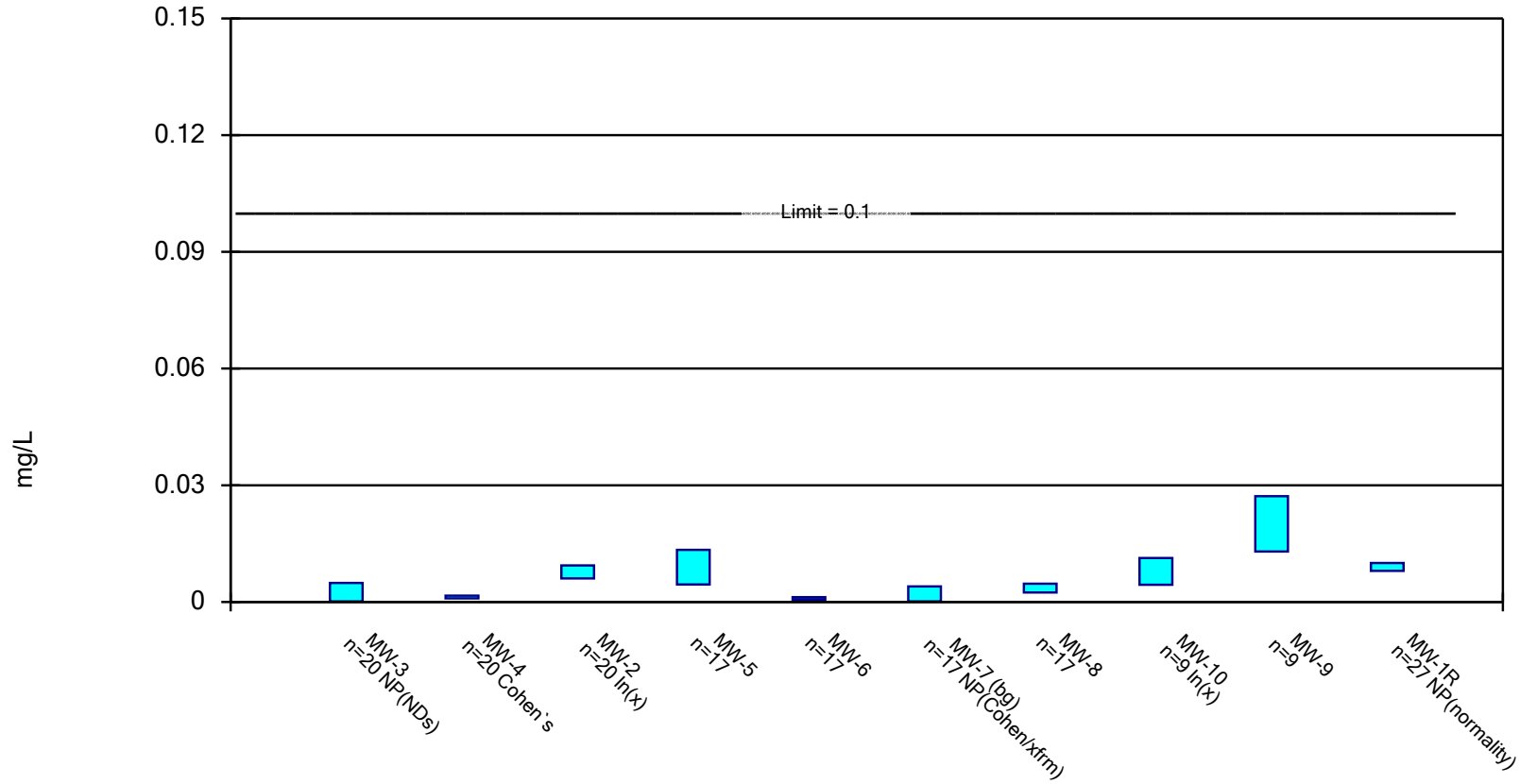
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

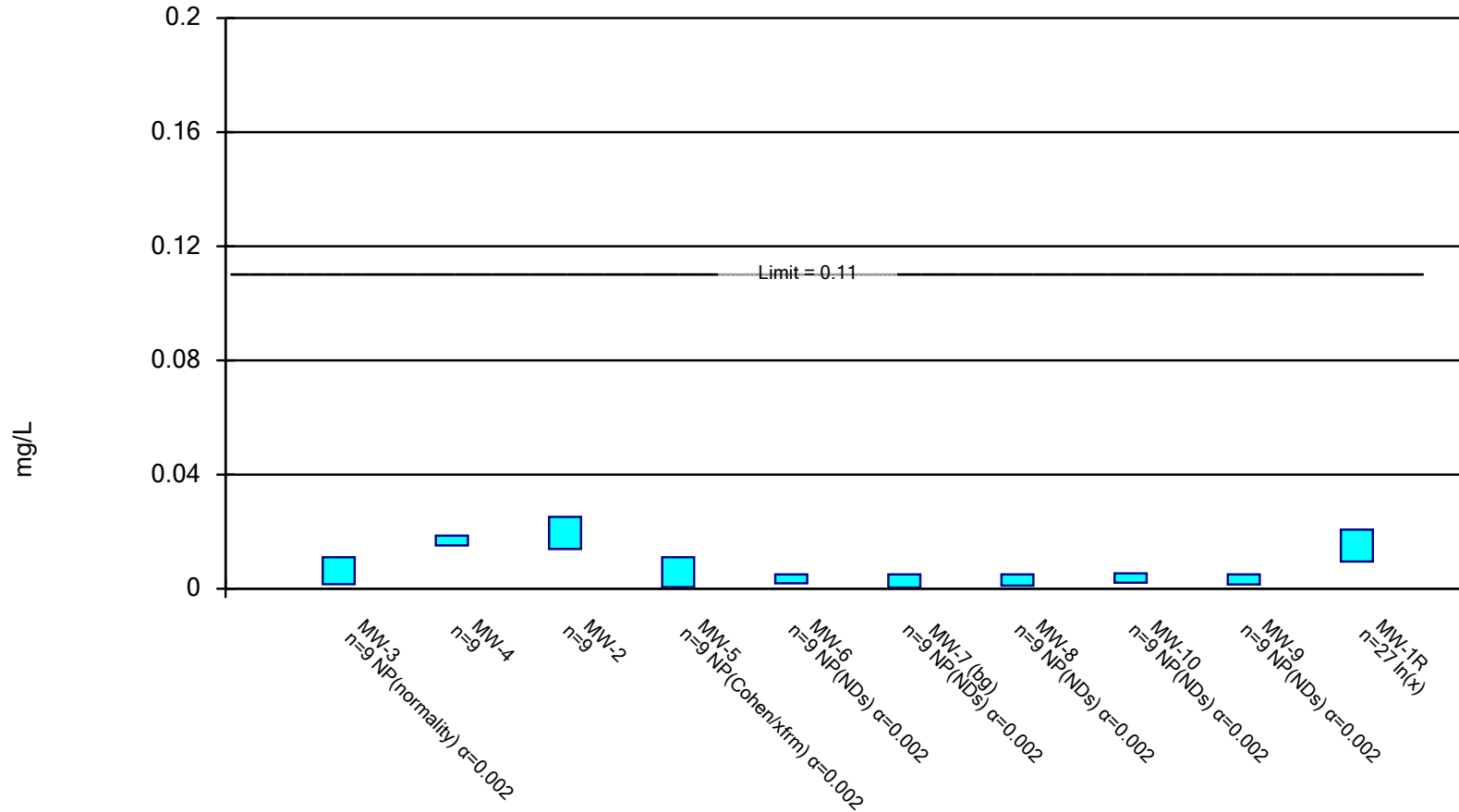


Constituent: Molybdenum Analysis Run 9/24/2021 3:54 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

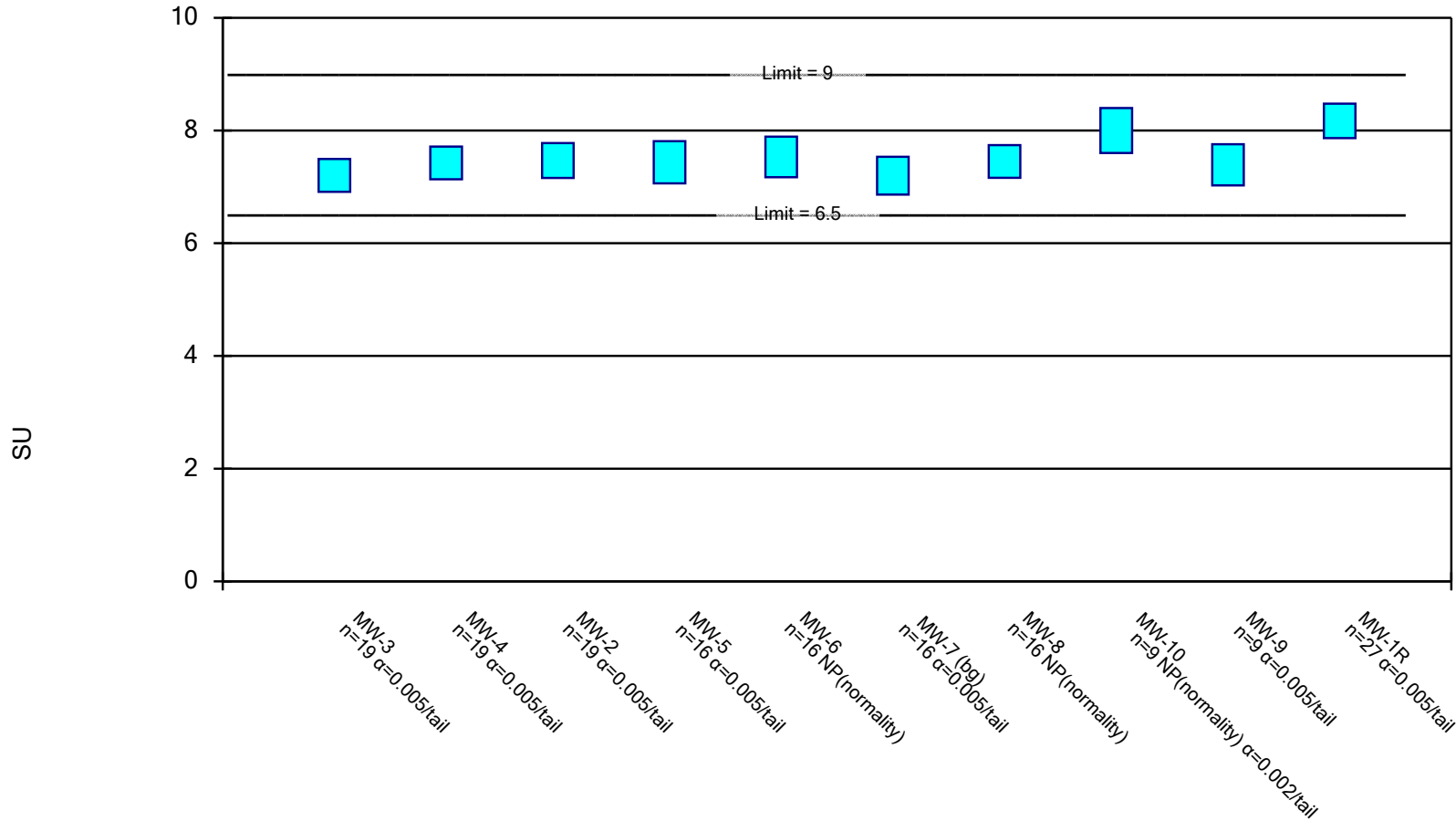
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Nickel Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

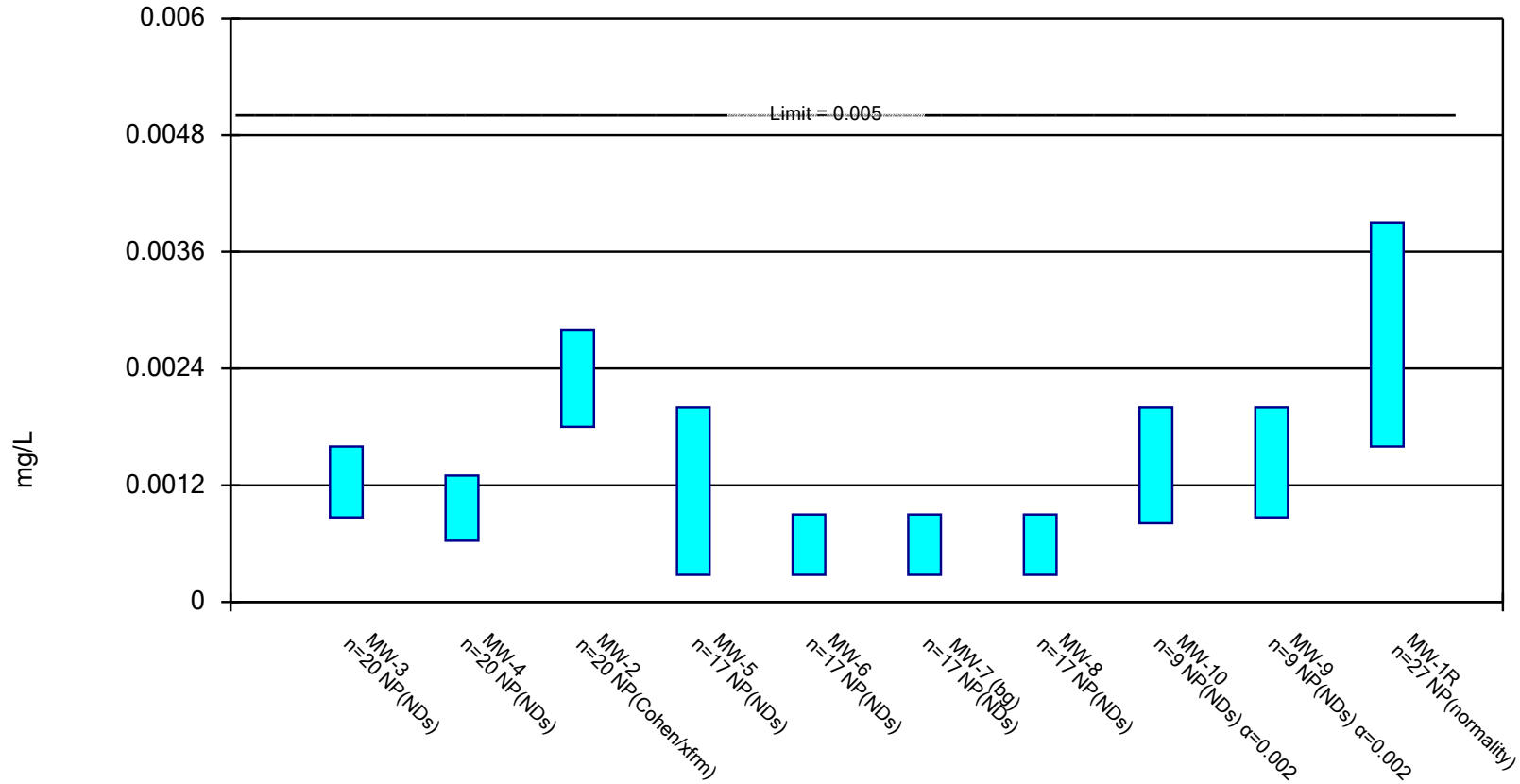
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: pH Analysis Run 9/24/2021 3:54 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

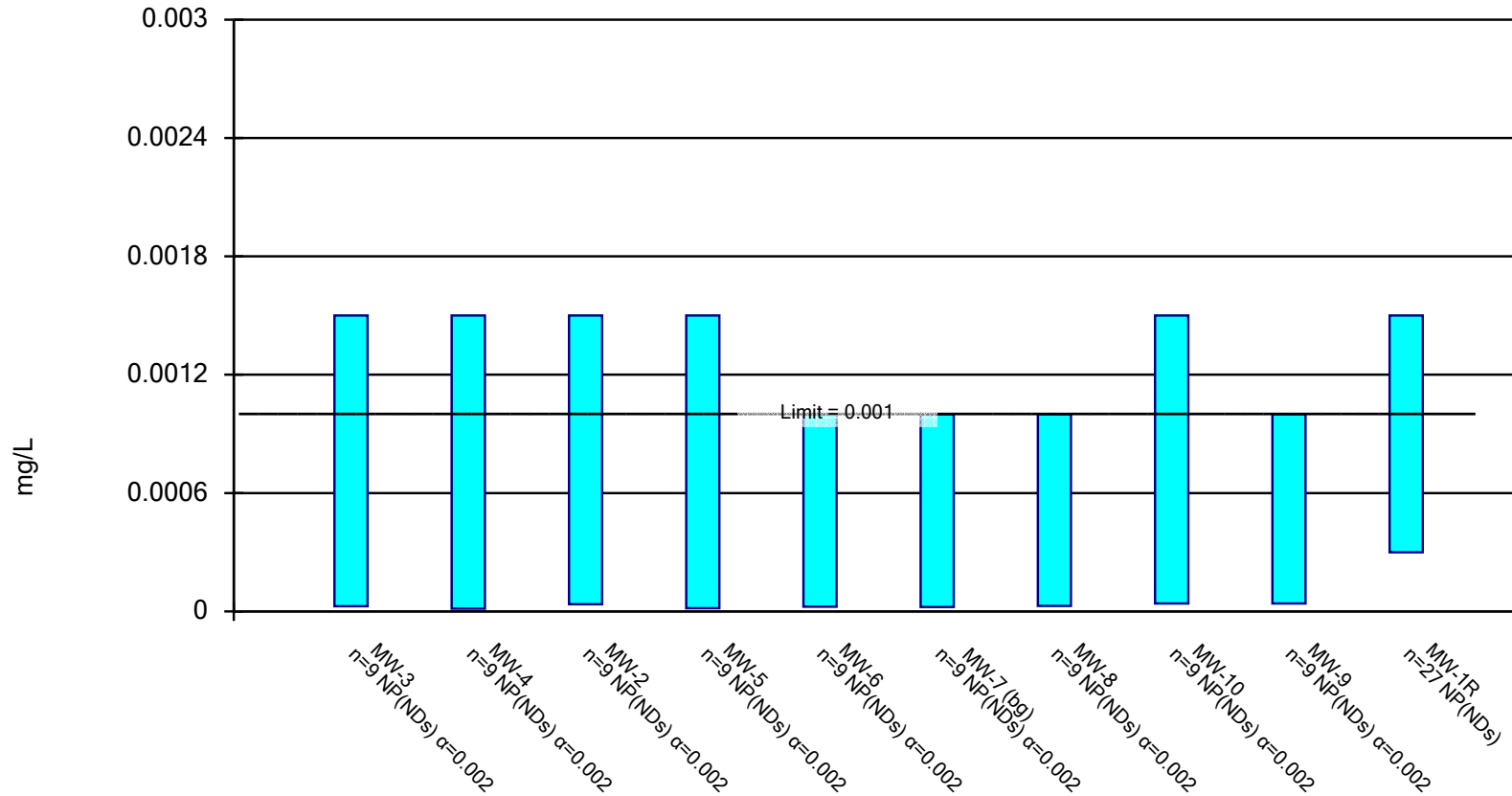
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Selenium Analysis Run 9/24/2021 3:55 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

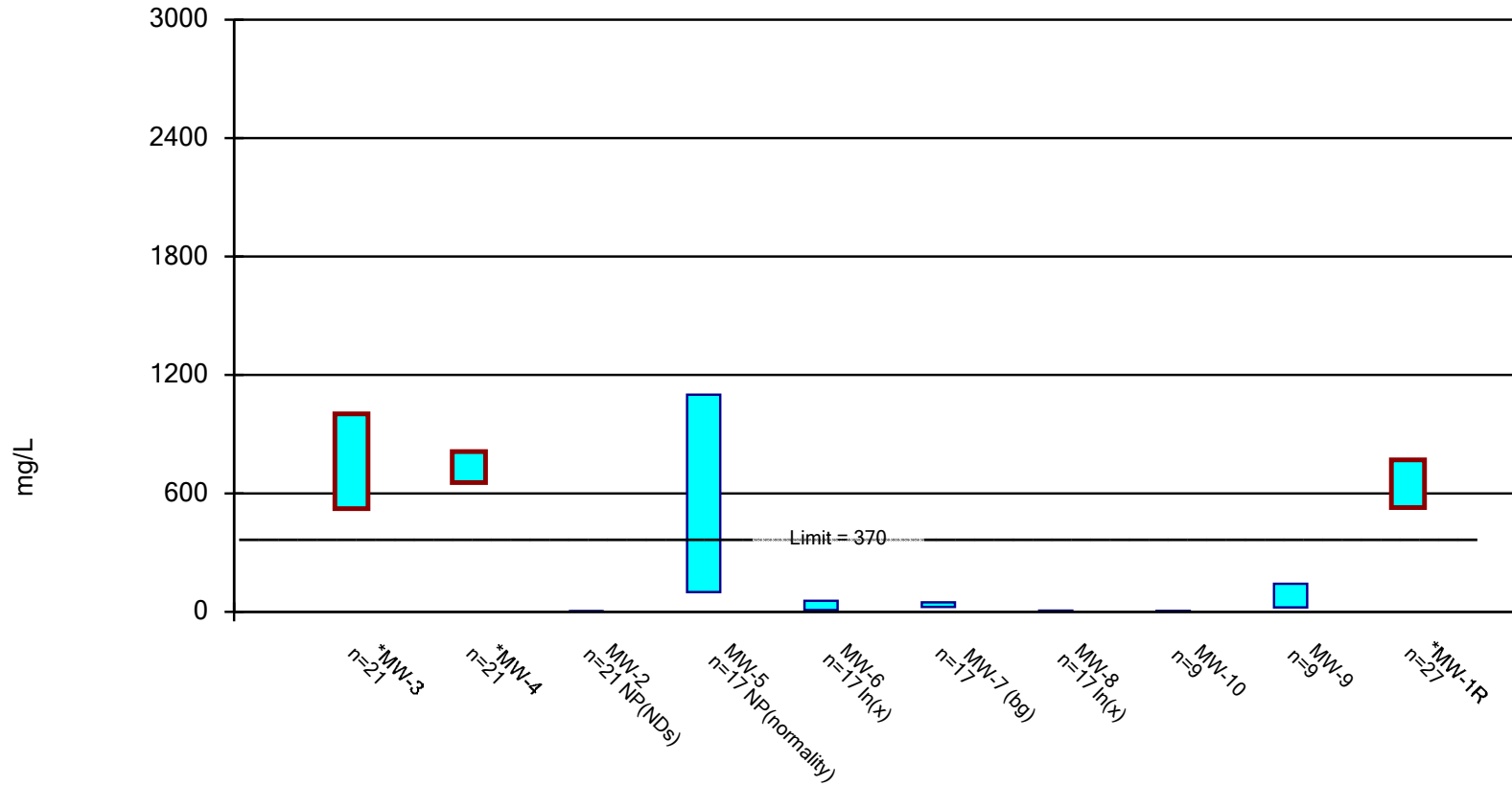
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Silver Analysis Run 9/24/2021 3:55 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

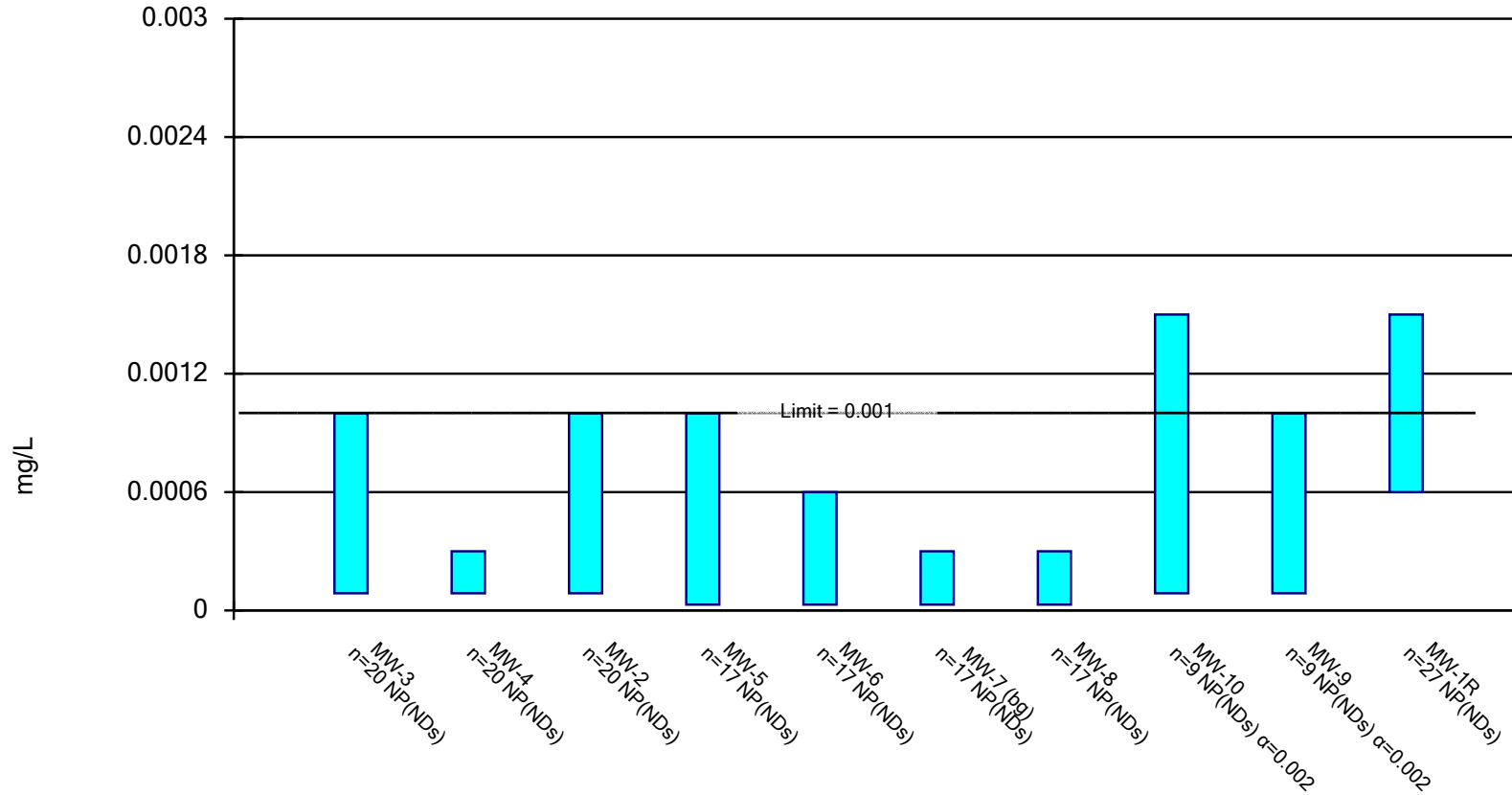
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Sulfate Analysis Run 9/24/2021 3:55 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

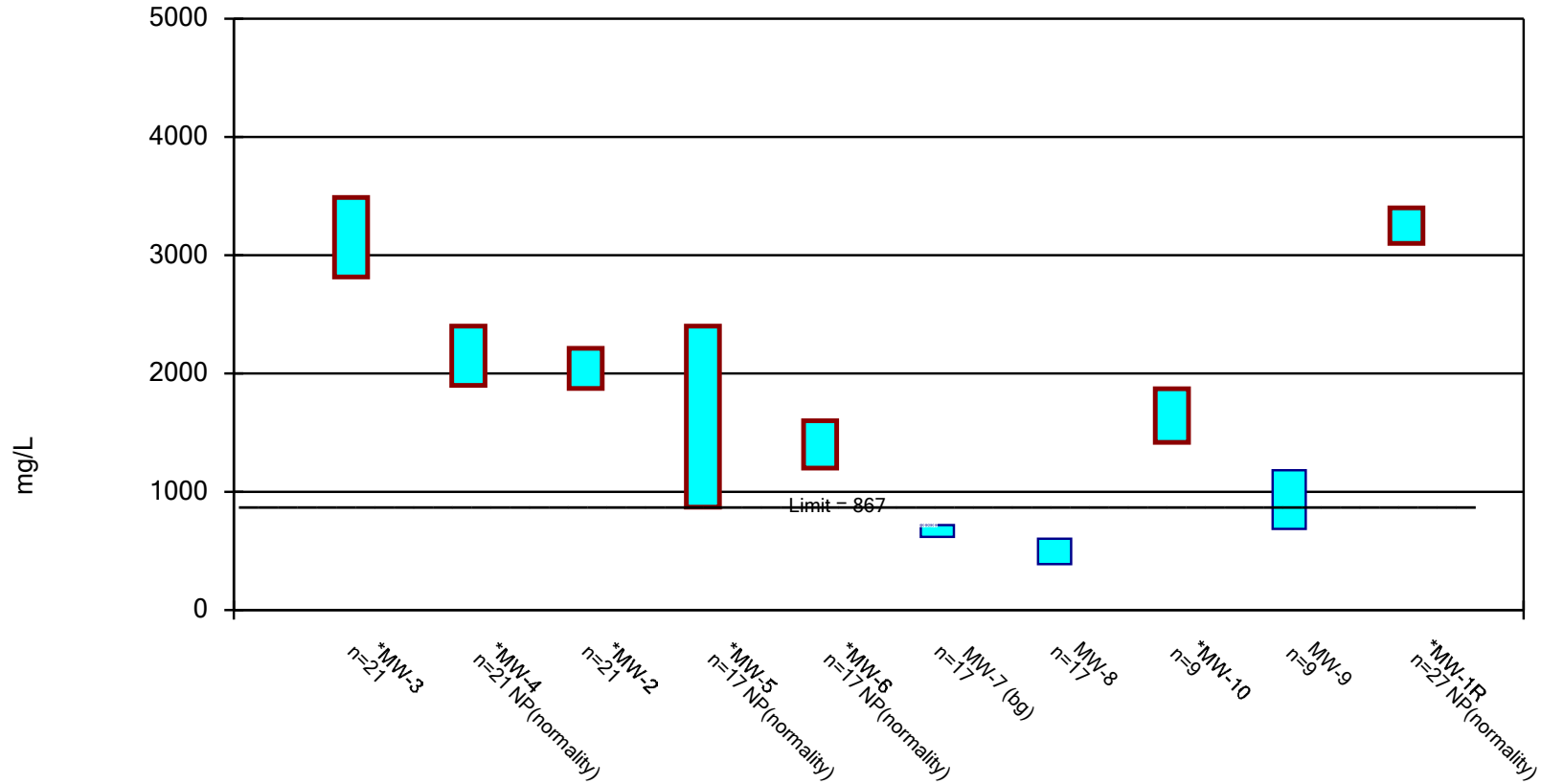
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Thallium Analysis Run 9/24/2021 3:55 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

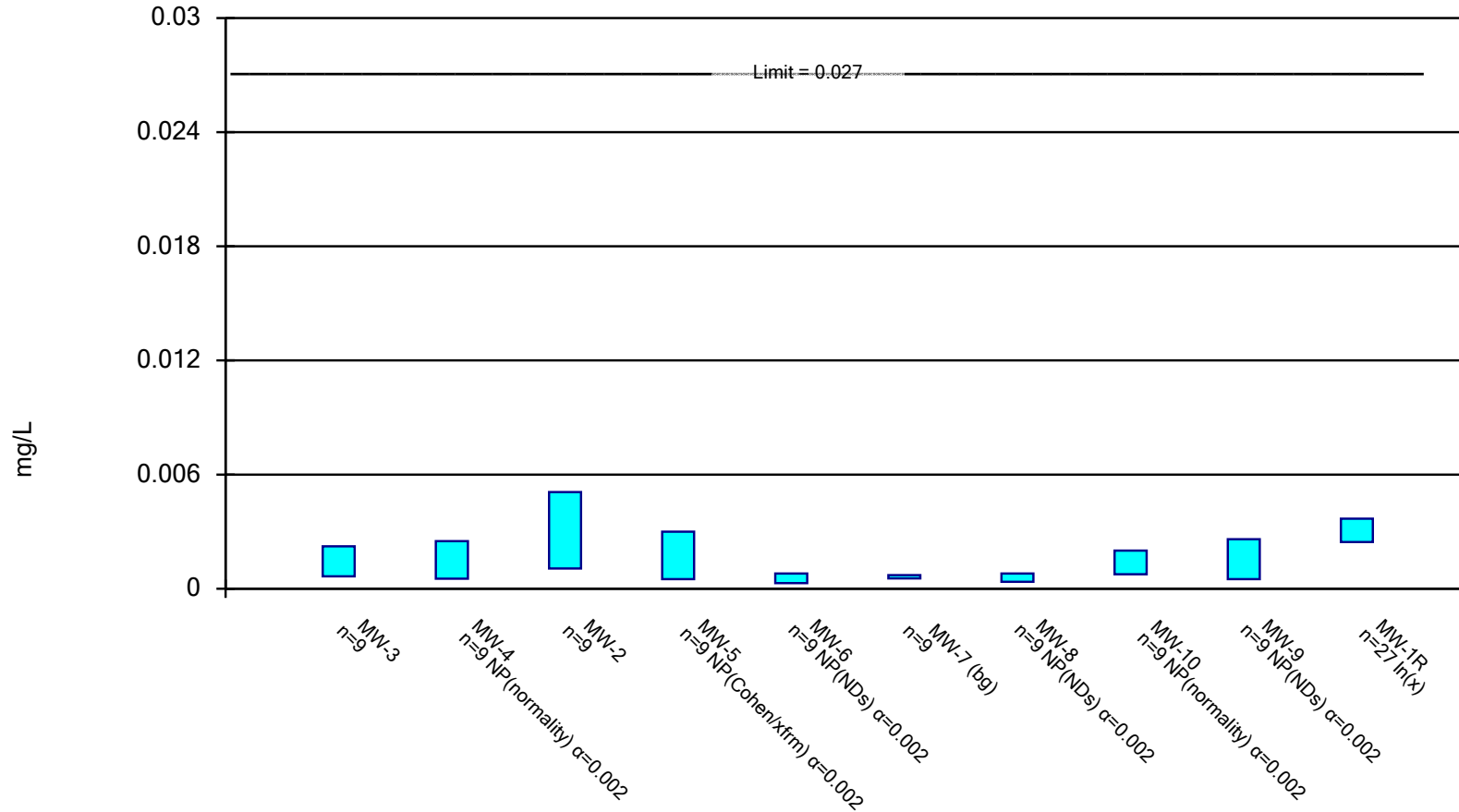


Constituent: Total Dissolved Solids Analysis Run 9/24/2021 3:55 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

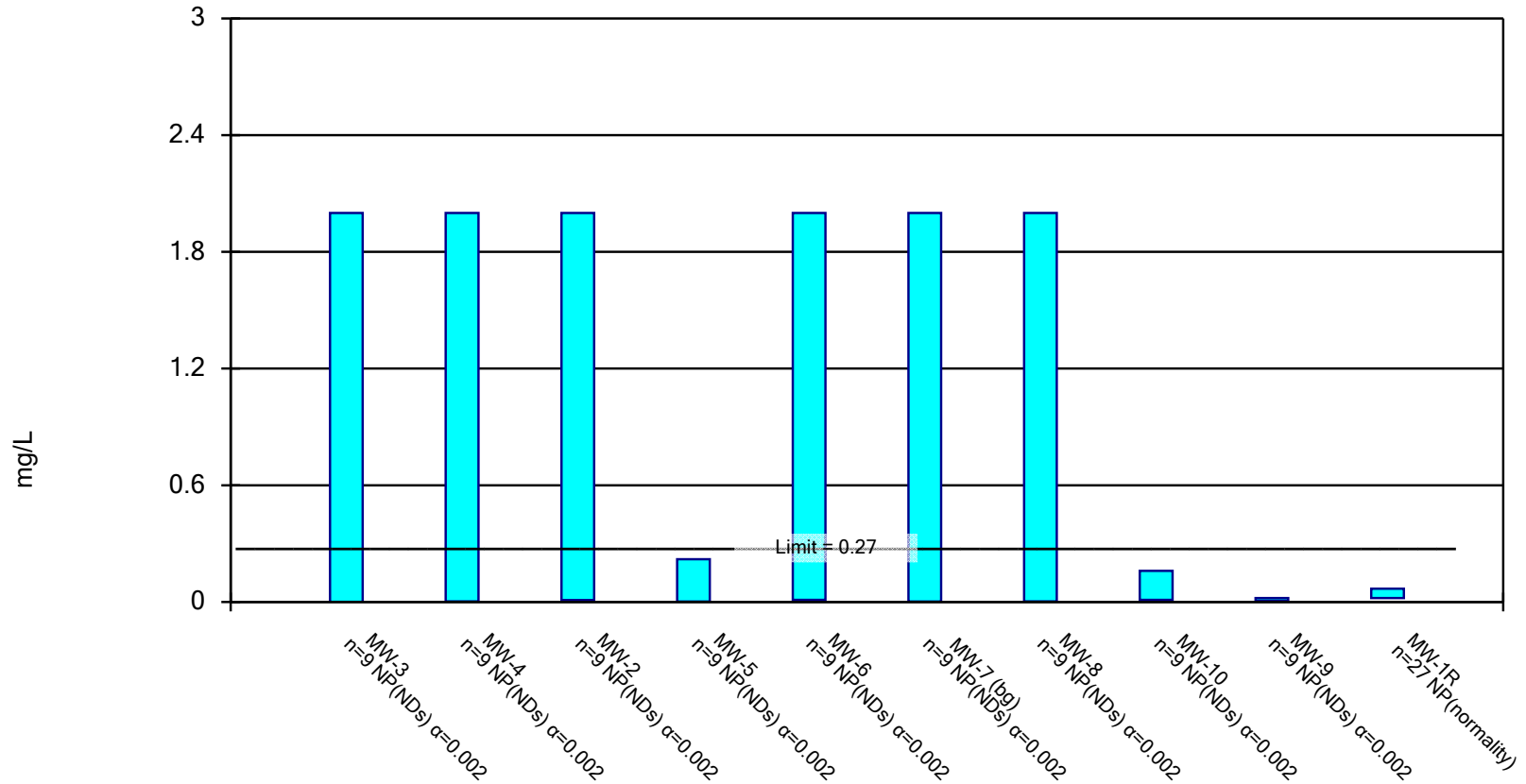
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Vanadium Analysis Run 9/24/2021 3:55 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Zinc Analysis Run 9/24/2021 3:55 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 9/24/2021, 3:55 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-3	0.00057	0.00027	0.006	No	20	0.0005343	0.0004387	95	No	0.01	NP (NDs)
Antimony (mg/L)	MW-4	0.00057	0.00027	0.006	No	20	0.0004125	0.00029	95	No	0.01	NP (NDs)
Antimony (mg/L)	MW-2	0.0006	0.0003	0.006	No	20	0.0009585	0.001648	65	No	0.01	NP (NDs)
Antimony (mg/L)	MW-5	0.0015	0.00009	0.006	No	17	0.0003671	0.0004363	100	No	0.01	NP (NDs)
Antimony (mg/L)	MW-6	0.00033	0.0001	0.006	No	17	0.0002341	0.00009961	76.47	No	0.01	NP (NDs)
Antimony (mg/L)	MW-7 (bg)	0.0016	0.00009	0.006	No	17	0.0003109	0.000345	88.24	No	0.01	NP (NDs)
Antimony (mg/L)	MW-8	0.0003	0.00009	0.006	No	17	0.0002282	0.00009467	88.24	No	0.01	NP (NDs)
Antimony (mg/L)	MW-10	0.0039	0.00018	0.006	No	9	0.0009756	0.001205	77.78	No	0.002	NP (NDs)
Antimony (mg/L)	MW-9	0.0006	0.0003	0.006	No	9	0.0003333	0.0001	100	No	0.002	NP (NDs)
Antimony (mg/L)	MW-1R	0.004413	0.001604	0.006	No	27	0.004601	0.005491	11.11	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-3	0.00215	0.00163	0.01	No	20	0.00189	0.0004573	10	No	0.01	Param.
Arsenic (mg/L)	MW-4	0.0016	0.00125	0.01	No	20	0.001427	0.0002807	5	No	0.01	NP (normality)
Arsenic (mg/L)	MW-2	0.009748	0.006697	0.01	No	20	0.008222	0.002686	5	No	0.01	Param.
Arsenic (mg/L)	MW-5	0.1661	0.06559	0.01	Yes	17	0.1159	0.08023	0	No	0.01	Param.
Arsenic (mg/L)	MW-6	0.001468	0.0009253	0.01	No	17	0.001196	0.0004328	5.882	No	0.01	Param.
Arsenic (mg/L)	MW-7 (bg)	0.0019	0.00025	0.01	No	16	0.001039	0.001211	43.75	No	0.01	NP (Cohens/xfrm)
Arsenic (mg/L)	MW-8	0.005568	0.003634	0.01	No	17	0.004771	0.001842	0	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-10	0.001326	0.000814	0.01	No	9	0.00107	0.0002652	0	No	0.01	Param.
Arsenic (mg/L)	MW-9	0.003686	0.002203	0.01	No	9	0.002944	0.0007683	0	No	0.01	Param.
Arsenic (mg/L)	MW-1R	0.0083	0.0067	0.01	No	27	0.007043	0.002096	3.704	No	0.01	NP (normality)
Barium (mg/L)	MW-3	0.4376	0.3204	1.2	No	20	0.379	0.1032	0	No	0.01	Param.
Barium (mg/L)	MW-4	0.1529	0.1188	1.2	No	20	0.1359	0.03003	0	No	0.01	Param.
Barium (mg/L)	MW-2	0.4815	0.4405	1.2	No	20	0.461	0.03611	0	No	0.01	Param.
Barium (mg/L)	MW-5	0.2358	0.09283	1.2	No	17	0.1904	0.1346	0	ln(x)	0.01	Param.
Barium (mg/L)	MW-6	1.4	0.89	1.2	No	17	1.069	0.3688	0	No	0.01	NP (normality)
Barium (mg/L)	MW-7 (bg)	0.4029	0.3242	1.2	No	17	0.3635	0.06284	0	No	0.01	Param.
Barium (mg/L)	MW-8	0.7812	0.5612	1.2	No	17	0.6712	0.1756	0	No	0.01	Param.
Barium (mg/L)	MW-10	1.33	1.159	1.2	No	9	1.244	0.08819	0	No	0.01	Param.
Barium (mg/L)	MW-9	2.572	0.8662	1.2	No	9	1.758	1.256	0	ln(x)	0.01	Param.
Barium (mg/L)	MW-1R	0.6077	0.4082	1.2	No	27	0.508	0.2092	0	No	0.01	Param.
Beryllium (mg/L)	MW-3	0.001	0.00031	0.004	No	20	0.000767	0.000537	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-4	0.001	0.00031	0.004	No	20	0.000767	0.000537	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-2	0.0015	0.0004	0.004	No	20	0.001071	0.0008832	85	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-5	0.002	0.00006	0.004	No	17	0.0008412	0.0006118	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-6	0.002	0.00006	0.004	No	17	0.0008135	0.0006148	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-7 (bg)	0.002	0.00006	0.004	No	17	0.0008135	0.0006148	100	No	0.01	NP (NDs)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 9/24/2021, 3:55 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Beryllium (mg/L)	MW-8	0.002	0.00006	0.004	No	17	0.0007876	0.0006364	94.12	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-10	0.002	0.0009	0.004	No	9	0.001211	0.0004485	100	No	0.002	NP (NDs)
Beryllium (mg/L)	MW-9	0.002	0.001	0.004	No	9	0.001222	0.000441	100	No	0.002	NP (NDs)
Beryllium (mg/L)	MW-1R	0.002	0.001	0.004	No	27	0.001037	0.0001925	100	No	0.01	NP (NDs)
Boron (ug/L)	MW-3	5616	4594	16000	No	20	5105	900	0	No	0.01	Param.
Boron (ug/L)	MW-4	3900	3300	16000	No	20	3725	589.3	0	No	0.01	NP (normality)
Boron (ug/L)	MW-2	139778	98764	16000	Yes	20	123100	42303	0	In(x)	0.01	Param.
Boron (ug/L)	MW-5	4600	2600	16000	No	17	3959	2712	0	No	0.01	NP (normality)
Boron (ug/L)	MW-6	14000	9200	16000	No	17	10954	3617	0	No	0.01	NP (normality)
Boron (ug/L)	MW-7 (bg)	15000	11000	16000	No	17	12859	3432	0	No	0.01	NP (normality)
Boron (ug/L)	MW-8	3000	1100	16000	No	17	2239	1690	0	No	0.01	NP (normality)
Boron (ug/L)	MW-10	48802	38309	16000	Yes	9	43556	5434	0	No	0.01	Param.
Boron (ug/L)	MW-9	6257	4543	16000	No	9	5400	887.4	0	No	0.01	Param.
Boron (ug/L)	MW-1R	190000	140000	16000	Yes	27	165926	38855	0	No	0.01	NP (normality)
Cadmium (mg/L)	MW-3	0.001	0.00004	0.0025	No	20	0.0007233	0.001022	95	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-4	0.0006	0.00004	0.0025	No	20	0.0004786	0.0006639	90	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-2	0.001	0.00021	0.0025	No	20	0.0007345	0.0008001	65	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-5	0.001	0.000018	0.0025	No	17	0.0004516	0.0007492	82.35	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-6	0.0006	0.0000285	0.0025	No	17	0.0003219	0.0003593	64.71	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-7 (bg)	0.0006	0.000017	0.0025	No	17	0.000312	0.0003671	94.12	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-8	0.0006	0.0000285	0.0025	No	17	0.0003159	0.0003641	88.24	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-10	0.003	0.00003	0.0025	No	9	0.0009633	0.0008419	77.78	No	0.002	NP (NDs)
Cadmium (mg/L)	MW-9	0.0012	0.00004	0.0025	No	9	0.0006933	0.0003382	100	No	0.002	NP (NDs)
Cadmium (mg/L)	MW-1R	0.0043	0.0013	0.0025	No	27	0.004426	0.005009	29.63	No	0.01	NP (Cohens/xfm)
Calcium (ug/L)	MW-3	620000	540000	200000	Yes	21	594286	85180	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-4	466175	425253	200000	Yes	21	445714	37091	0	No	0.01	Param.
Calcium (ug/L)	MW-2	210000	180000	200000	No	21	203810	34710	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-5	610000	240000	200000	Yes	17	450588	165434	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-6	260000	190000	200000	No	17	215959	61569	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-7 (bg)	150000	130000	200000	No	17	145882	15435	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-8	140589	122352	200000	No	17	131471	14552	0	No	0.01	Param.
Calcium (ug/L)	MW-10	160000	130000	200000	No	9	141111	12693	0	No	0.002	NP (normality)
Calcium (ug/L)	MW-9	280000	230000	200000	Yes	9	245556	15092	0	No	0.002	NP (normality)
Calcium (ug/L)	MW-1R	258284	167296	200000	No	27	230778	116435	0	In(x)	0.01	Param.
Chloride (mg/L)	MW-3	459.6	362.1	150	Yes	21	417.6	98.13	0	In(x)	0.01	Param.
Chloride (mg/L)	MW-4	318.1	246.7	150	Yes	21	282.4	64.72	0	No	0.01	Param.

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Chloride (mg/L)	MW-2	149.7	140.7	150	No	21	145.2	8.136	0	No	0.01	Param.
Chloride (mg/L)	MW-5	22.53	15.25	150	No	17	18.89	5.807	0	No	0.01	Param.
Chloride (mg/L)	MW-6	300	150	150	No	17	228.8	68	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-7 (bg)	15	13	150	No	17	14.12	0.8575	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-8	45.51	18.33	150	No	17	37.32	29.6	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-10	616.4	396.9	150	Yes	9	506.7	113.7	0	No	0.01	Param.
Chloride (mg/L)	MW-9	18	9.5	150	No	9	12.06	2.43	0	No	0.002	NP (normality)
Chloride (mg/L)	MW-1R	265	252.1	150	Yes	27	258.5	13.5	0	No	0.01	Param.
Chromium (mg/L)	MW-3	0.00246	0.001476	0.1	No	20	0.002108	0.00103	0	ln(x)	0.01	Param.
Chromium (mg/L)	MW-4	0.002255	0.001773	0.1	No	20	0.002045	0.0004763	5	ln(x)	0.01	Param.
Chromium (mg/L)	MW-2	0.05306	0.0322	0.1	No	20	0.04263	0.01837	0	No	0.01	Param.
Chromium (mg/L)	MW-5	0.0008	0.00063	0.1	No	17	0.0008512	0.000706	82.35	No	0.01	NP (NDs)
Chromium (mg/L)	MW-6	0.0017	0.00099	0.1	No	17	0.001698	0.000992	0	No	0.01	NP (normality)
Chromium (mg/L)	MW-7 (bg)	0.0009	0.00045	0.1	No	17	0.0007782	0.0005517	70.59	No	0.01	NP (NDs)
Chromium (mg/L)	MW-8	0.0008547	0.0005643	0.1	No	17	0.0007476	0.0001942	29.41	No	0.01	Param.
Chromium (mg/L)	MW-10	0.01121	0.006942	0.1	No	9	0.009078	0.002212	0	No	0.01	Param.
Chromium (mg/L)	MW-9	0.002625	0.001909	0.1	No	9	0.002267	0.0003708	0	No	0.01	Param.
Chromium (mg/L)	MW-1R	0.006562	0.003618	0.1	No	27	0.005915	0.004065	3.704	ln(x)	0.01	Param.
Cobalt (mg/L)	MW-3	0.00098	0.00067	0.006	No	20	0.0009355	0.0004471	25	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-4	0.00069	0.00033	0.006	No	20	0.000629	0.0005331	40	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-2	0.00781	0.00544	0.006	No	20	0.006625	0.002088	0	No	0.01	Param.
Cobalt (mg/L)	MW-5	0.00366	0.001215	0.006	No	17	0.002438	0.001951	35.29	No	0.01	Param.
Cobalt (mg/L)	MW-6	0.00099	0.00036	0.006	No	17	0.0007082	0.000384	52.94	No	0.01	NP (NDs)
Cobalt (mg/L)	MW-7 (bg)	0.0008489	0.0007358	0.006	No	17	0.0007818	0.00007844	17.65	No	0.01	Param.
Cobalt (mg/L)	MW-8	0.0018	0.00035	0.006	No	17	0.0008388	0.0006451	47.06	No	0.01	NP (normality)
Cobalt (mg/L)	MW-10	0.0026	0.00062	0.006	No	9	0.001019	0.0006187	0	No	0.002	NP (normality)
Cobalt (mg/L)	MW-9	0.0025	0.0005	0.006	No	9	0.001157	0.0007644	22.22	No	0.002	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-1R	0.01678	0.006071	0.006	Yes	27	0.01788	0.02231	0	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-3	1.758	0.8179	5	No	20	1.288	0.8274	25	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-4	1.111	0.6785	5	No	20	0.8946	0.3805	40	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-2	1.997	0.7936	5	No	20	1.611	0.8076	30	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-5	1.1	0.75	5	No	17	0.9971	0.3696	52.94	No	0.01	NP (NDs)
Combined Radium 226 + 228 (pCi/L)	MW-6	2.22	0.931	5	No	17	1.457	0.763	35.29	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-7 (bg)	1.73	0.762	5	No	17	1.24	0.44	52.94	No	0.01	NP (NDs)
Combined Radium 226 + 228 (pCi/L)	MW-8	2.31	0.952	5	No	17	1.747	1.068	35.29	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-10	2.21	0.7786	5	No	8	1.593	0.5406	25	No	0.01	Param.

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Combined Radium 226 + 228 (pCi/L)	MW-9	1.698	1.216	5	No	9	1.457	0.2497	11.11	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1R	2.25	0.73	5	No	6	1.092	0.5792	50	No	0.0155	NP (normality)
Copper (mg/L)	MW-3	0.022	0.00045	0.02	No	9	0.005214	0.006517	77.78	No	0.002	NP (NDs)
Copper (mg/L)	MW-4	0.022	0.00085	0.02	No	9	0.005361	0.006411	66.67	No	0.002	NP (NDs)
Copper (mg/L)	MW-2	0.022	0.0012	0.02	No	9	0.005578	0.006285	77.78	No	0.002	NP (NDs)
Copper (mg/L)	MW-5	0.022	0.00028	0.02	No	9	0.005409	0.006401	77.78	No	0.002	NP (NDs)
Copper (mg/L)	MW-6	0.0051	0.0012	0.02	No	9	0.003711	0.001359	66.67	No	0.002	NP (NDs)
Copper (mg/L)	MW-7 (bg)	0.005	0.00046	0.02	No	9	0.003228	0.001768	77.78	No	0.002	NP (NDs)
Copper (mg/L)	MW-8	0.005	0.00084	0.02	No	9	0.003309	0.00163	77.78	No	0.002	NP (NDs)
Copper (mg/L)	MW-10	0.0086	0.00087	0.02	No	9	0.004141	0.002177	88.89	No	0.002	NP (NDs)
Copper (mg/L)	MW-9	0.0086	0.0013	0.02	No	9	0.004211	0.002069	88.89	No	0.002	NP (NDs)
Copper (mg/L)	MW-1R	0.0099	0.0043	0.02	No	27	0.009422	0.008071	62.96	No	0.01	NP (NDs)
Fluoride (mg/L)	MW-3	1.538	1.026	2.67	No	20	1.282	0.4502	0	No	0.01	Param.
Fluoride (mg/L)	MW-4	1.291	1.123	2.67	No	20	1.207	0.1484	0	No	0.01	Param.
Fluoride (mg/L)	MW-2	12.86	10.34	2.67	Yes	20	11.6	2.212	0	No	0.01	Param.
Fluoride (mg/L)	MW-5	3.419	2.322	2.67	No	17	2.871	0.8752	0	No	0.01	Param.
Fluoride (mg/L)	MW-6	1.699	1.442	2.67	No	17	1.571	0.2054	0	No	0.01	Param.
Fluoride (mg/L)	MW-7 (bg)	0.1376	0.0854	2.67	No	17	0.1052	0.04908	17.65	No	0.01	Param.
Fluoride (mg/L)	MW-8	0.4869	0.326	2.67	No	17	0.4065	0.1284	0	No	0.01	Param.
Fluoride (mg/L)	MW-10	11.64	9.65	2.67	Yes	9	10.64	1.03	0	No	0.01	Param.
Fluoride (mg/L)	MW-9	2.578	2.289	2.67	No	9	2.433	0.15	0	No	0.01	Param.
Fluoride (mg/L)	MW-1R	26	20	2.67	Yes	27	21.12	7.502	3.704	No	0.01	NP (normality)
Iron (mg/L)	MW-3	20.17	2.652	22.63	No	9	11.41	9.074	0	No	0.01	Param.
Iron (mg/L)	MW-4	8.884	6.605	22.63	No	9	7.744	1.18	0	No	0.01	Param.
Iron (mg/L)	MW-2	24	6.7	22.63	No	9	19.52	5.097	0	No	0.002	NP (normality)
Iron (mg/L)	MW-5	38.04	12.96	22.63	No	9	25.5	12.99	0	No	0.01	Param.
Iron (mg/L)	MW-6	18.41	10.3	22.63	No	9	14.36	4.2	0	No	0.01	Param.
Iron (mg/L)	MW-7 (bg)	20.08	15.47	22.63	No	9	17.78	2.386	0	No	0.01	Param.
Iron (mg/L)	MW-8	27.74	19.15	22.63	No	9	23.44	4.447	0	No	0.01	Param.
Iron (mg/L)	MW-10	12.11	8.913	22.63	No	9	10.51	1.656	0	No	0.01	Param.
Iron (mg/L)	MW-9	23.24	15.88	22.63	No	9	19.56	3.812	0	No	0.01	Param.
Iron (mg/L)	MW-1R	4.117	2.646	22.63	No	27	3.381	1.542	0	No	0.01	Param.
Lead (mg/L)	MW-3	0.002	0.00026	0.014	No	20	0.00086	0.0008758	65	No	0.01	NP (NDs)
Lead (mg/L)	MW-4	0.00051	0.0003	0.014	No	20	0.0006555	0.000666	65	No	0.01	NP (NDs)
Lead (mg/L)	MW-2	0.004833	0.001999	0.014	No	20	0.003416	0.002496	15	No	0.01	Param.
Lead (mg/L)	MW-5	0.0025	0.00022	0.014	No	17	0.002764	0.006636	52.94	No	0.01	NP (NDs)

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Lead (mg/L)	MW-6	0.002353	0.001085	0.014	No	17	0.001719	0.001012	23.53	No	0.01	Param.
Lead (mg/L)	MW-7 (bg)	0.00062	0.000057	0.014	No	17	0.0006559	0.0008299	70.59	No	0.01	NP (NDs)
Lead (mg/L)	MW-8	0.002	0.00046	0.014	No	17	0.0009982	0.0009784	47.06	No	0.01	NP (Cohens/xfrm)
Lead (mg/L)	MW-10	0.045	0.00078	0.014	No	9	0.00762	0.01422	22.22	No	0.002	NP (Cohens/xfrm)
Lead (mg/L)	MW-9	0.002	0.0005	0.014	No	9	0.001159	0.0007213	66.67	No	0.002	NP (NDs)
Lead (mg/L)	MW-1R	0.0333	0.0116	0.014	No	27	0.03443	0.04125	0	ln(x)	0.01	Param.
Lithium (mg/L)	MW-3	0.07521	0.04759	0.059	No	20	0.0614	0.02432	5	No	0.01	Param.
Lithium (mg/L)	MW-4	0.05866	0.04054	0.059	No	20	0.0496	0.01595	5	No	0.01	Param.
Lithium (mg/L)	MW-2	1.513	1.235	0.059	Yes	20	1.374	0.2442	0	No	0.01	Param.
Lithium (mg/L)	MW-5	0.1312	0.06832	0.059	Yes	17	0.09973	0.05014	11.76	No	0.01	Param.
Lithium (mg/L)	MW-6	0.23	0.17	0.059	Yes	17	0.1885	0.06274	5.882	No	0.01	NP (normality)
Lithium (mg/L)	MW-7 (bg)	0.0057	0.00335	0.059	No	17	0.007532	0.01343	41.18	No	0.01	NP (normality)
Lithium (mg/L)	MW-8	0.03681	0.02319	0.059	No	17	0.03	0.01087	5.882	No	0.01	Param.
Lithium (mg/L)	MW-10	1.493	0.9291	0.059	Yes	9	1.211	0.2921	0	No	0.01	Param.
Lithium (mg/L)	MW-9	0.28	0.16	0.059	Yes	9	0.2322	0.0441	0	No	0.002	NP (normality)
Lithium (mg/L)	MW-1R	3.146	2.403	0.059	Yes	27	2.774	0.7789	0	No	0.01	Param.
Mercury (mg/L)	MW-3	0.00016	0.0000407	0.00014	No	20	0.0001062	0.00006524	75	No	0.01	NP (NDs)
Mercury (mg/L)	MW-4	0.00016	0.000041	0.00014	No	20	0.0001121	0.00006453	95	No	0.01	NP (NDs)
Mercury (mg/L)	MW-2	0.00016	0.000041	0.00014	No	20	0.0001651	0.0002748	75	No	0.01	NP (NDs)
Mercury (mg/L)	MW-5	0.00017	5.0e-7	0.00014	No	17	0.00009511	0.00007763	94.12	No	0.01	NP (NDs)
Mercury (mg/L)	MW-6	0.00016	0.000025	0.00014	No	17	0.00008609	0.00007044	58.82	No	0.01	NP (NDs)
Mercury (mg/L)	MW-7 (bg)	0.00016	0.00004025	0.00014	No	17	0.00009324	0.00007355	76.47	No	0.01	NP (NDs)
Mercury (mg/L)	MW-8	0.00016	0.0000407	0.00014	No	17	0.00008054	0.00007174	64.71	No	0.01	NP (NDs)
Mercury (mg/L)	MW-10	0.0002	1.6e-7	0.00014	No	9	0.0000715	0.00008867	44.44	No	0.002	NP (normality)
Mercury (mg/L)	MW-9	0.0002	1.6e-7	0.00014	No	9	0.00008472	0.00009235	66.67	No	0.002	NP (NDs)
Mercury (mg/L)	MW-1R	0.00002739	0.000008605	0.00014	No	27	0.00003038	0.00003979	3.704	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-3	0.0049	0.00013	0.1	No	20	0.00236	0.003065	55	No	0.01	NP (NDs)
Molybdenum (mg/L)	MW-4	0.001631	0.000918	0.1	No	20	0.001303	0.000611	20	No	0.01	Param.
Molybdenum (mg/L)	MW-2	0.009397	0.006034	0.1	No	20	0.00813	0.003492	10	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-5	0.0134	0.0045	0.1	No	17	0.008948	0.007099	11.76	No	0.01	Param.
Molybdenum (mg/L)	MW-6	0.00122	0.0005935	0.1	No	17	0.0009066	0.0004998	23.53	No	0.01	Param.
Molybdenum (mg/L)	MW-7 (bg)	0.004	0.00016	0.1	No	17	0.001808	0.002062	23.53	No	0.01	NP (Cohens/xfrm)
Molybdenum (mg/L)	MW-8	0.00469	0.002449	0.1	No	17	0.00357	0.001788	11.76	No	0.01	Param.
Molybdenum (mg/L)	MW-10	0.01128	0.004424	0.1	No	9	0.007889	0.004216	0	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-9	0.02717	0.01298	0.1	No	9	0.02008	0.00735	0	No	0.01	Param.
Molybdenum (mg/L)	MW-1R	0.01	0.008	0.1	No	27	0.00877	0.003017	0	No	0.01	NP (normality)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 9/24/2021, 3:56 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Nickel (mg/L)	MW-3	0.011	0.0016	0.11	No	9	0.003811	0.003133	22.22	No	0.002	NP (normality)
Nickel (mg/L)	MW-4	0.01859	0.01519	0.11	No	9	0.01689	0.001764	0	No	0.01	Param.
Nickel (mg/L)	MW-2	0.02517	0.01394	0.11	No	9	0.01956	0.005812	0	No	0.01	Param.
Nickel (mg/L)	MW-5	0.011	0.00054	0.11	No	9	0.004004	0.003135	44.44	No	0.002	NP (Cohens/xfrm)
Nickel (mg/L)	MW-6	0.005	0.0019	0.11	No	9	0.002811	0.001247	77.78	No	0.002	NP (NDs)
Nickel (mg/L)	MW-7 (bg)	0.005	0.0004	0.11	No	9	0.002424	0.001644	77.78	No	0.002	NP (NDs)
Nickel (mg/L)	MW-8	0.005	0.0011	0.11	No	9	0.0026	0.001426	77.78	No	0.002	NP (NDs)
Nickel (mg/L)	MW-10	0.0054	0.0021	0.11	No	9	0.003111	0.001236	55.56	No	0.002	NP (NDs)
Nickel (mg/L)	MW-9	0.005	0.0015	0.11	No	9	0.003044	0.001147	55.56	No	0.002	NP (NDs)
Nickel (mg/L)	MW-1R	0.0207	0.009504	0.11	No	27	0.01997	0.01964	0	ln(x)	0.01	Param.
pH (SU)	MW-3	7.494	6.911	9	No	19	7.203	0.4413	0	No	0.005	Param.
pH (SU)	MW-4	7.715	7.136	9	No	19	7.425	0.4387	0	No	0.005	Param.
pH (SU)	MW-2	7.777	7.159	9	No	19	7.468	0.4675	0	No	0.005	Param.
pH (SU)	MW-5	7.811	7.061	9	No	16	7.436	0.5089	0	No	0.005	Param.
pH (SU)	MW-6	7.89	7.17	9	No	16	7.504	0.3899	0	No	0.01	NP (normality)
pH (SU)	MW-7 (bg)	7.533	6.863	9	No	16	7.198	0.455	0	No	0.005	Param.
pH (SU)	MW-8	7.74	7.16	9	No	16	7.531	0.4353	0	No	0.01	NP (normality)
pH (SU)	MW-10	8.4	7.6	9	No	9	7.811	0.2479	0	No	0.002	NP (normality)
pH (SU)	MW-9	7.757	7.025	9	No	9	7.391	0.327	0	No	0.005	Param.
pH (SU)	MW-1R	8.477	7.865	9	No	27	8.171	0.5723	0	No	0.005	Param.
Selenium (mg/L)	MW-3	0.0016	0.00087	0.005	No	20	0.001405	0.001162	65	No	0.01	NP (NDs)
Selenium (mg/L)	MW-4	0.0013	0.00063	0.005	No	20	0.001065	0.0009308	85	No	0.01	NP (NDs)
Selenium (mg/L)	MW-2	0.0028	0.0018	0.005	No	20	0.00322	0.003048	20	No	0.01	NP (Cohens/xfrm)
Selenium (mg/L)	MW-5	0.002	0.00028	0.005	No	17	0.0009459	0.001073	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-6	0.0009	0.00028	0.005	No	17	0.0007341	0.0005606	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-7 (bg)	0.0009	0.00028	0.005	No	17	0.0007341	0.0005606	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-8	0.0009	0.00028	0.005	No	17	0.0007341	0.0005606	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-10	0.002	0.00081	0.005	No	9	0.001231	0.0005306	100	No	0.002	NP (NDs)
Selenium (mg/L)	MW-9	0.002	0.00087	0.005	No	9	0.001241	0.0005225	100	No	0.002	NP (NDs)
Selenium (mg/L)	MW-1R	0.0039	0.0016	0.005	No	27	0.002459	0.001218	18.52	No	0.01	NP (normality)
Silver (mg/L)	MW-3	0.0015	0.000026	0.001	No	9	0.0007962	0.0006351	88.89	No	0.002	NP (NDs)
Silver (mg/L)	MW-4	0.0015	0.000014	0.001	No	9	0.0005254	0.0005155	77.78	No	0.002	NP (NDs)
Silver (mg/L)	MW-2	0.0015	0.000036	0.001	No	9	0.0005307	0.0005097	88.89	No	0.002	NP (NDs)
Silver (mg/L)	MW-5	0.0015	0.000016	0.001	No	9	0.0005284	0.0005122	88.89	No	0.002	NP (NDs)
Silver (mg/L)	MW-6	0.001	0.000024	0.001	No	9	0.000396	0.0003607	88.89	No	0.002	NP (NDs)
Silver (mg/L)	MW-7 (bg)	0.001	0.000022	0.001	No	9	0.0003951	0.0003617	77.78	No	0.002	NP (NDs)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 9/24/2021, 3:56 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Silver (mg/L)	MW-8	0.001	0.000028	0.001	No	9	0.0003964	0.0003602	88.89	No	0.002	NP (NDs)
Silver (mg/L)	MW-10	0.0015	0.00004	0.001	No	9	0.00059	0.0004772	100	No	0.002	NP (NDs)
Silver (mg/L)	MW-9	0.001	0.00004	0.001	No	9	0.00046	0.0003367	100	No	0.002	NP (NDs)
Silver (mg/L)	MW-1R	0.0015	0.0003	0.001	No	27	0.0007704	0.000549	100	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-3	1003	522.6	370	Yes	21	762.6	435	0	No	0.01	Param.
Sulfate (mg/L)	MW-4	811.9	654.8	370	Yes	21	733.3	142.4	0	No	0.01	Param.
Sulfate (mg/L)	MW-2	3.3	1	370	No	21	2.741	3.362	52.38	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-5	1100	100	370	No	17	716.9	450.1	0	No	0.01	NP (normality)
Sulfate (mg/L)	MW-6	56.1	8.866	370	No	17	48.05	51	5.882	ln(x)	0.01	Param.
Sulfate (mg/L)	MW-7 (bg)	48.09	24.97	370	No	17	36.53	18.45	0	No	0.01	Param.
Sulfate (mg/L)	MW-8	6.105	1.898	370	No	17	5.275	6.276	5.882	ln(x)	0.01	Param.
Sulfate (mg/L)	MW-10	4.38	0.4568	370	No	9	2.418	2.032	33.33	No	0.01	Param.
Sulfate (mg/L)	MW-9	142.1	22.03	370	No	9	82.07	62.18	0	No	0.01	Param.
Sulfate (mg/L)	MW-1R	769.7	528.1	370	Yes	27	648.9	253.3	0	No	0.01	Param.
Thallium (mg/L)	MW-3	0.001	0.000087	0.001	No	20	0.0004659	0.0005159	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-4	0.0003	0.000087	0.001	No	20	0.0003459	0.0003759	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-2	0.001	0.000087	0.001	No	20	0.0005259	0.0006269	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-5	0.001	0.000029	0.001	No	17	0.0003812	0.0005209	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-6	0.0006	0.000029	0.001	No	17	0.0002563	0.0003203	94.12	No	0.01	NP (NDs)
Thallium (mg/L)	MW-7 (bg)	0.0003	0.000029	0.001	No	17	0.00024	0.0003075	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-8	0.0003	0.000029	0.001	No	17	0.0002438	0.0003051	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-10	0.0015	0.000087	0.001	No	9	0.0007208	0.000521	100	No	0.002	NP (NDs)
Thallium (mg/L)	MW-9	0.001	0.000087	0.001	No	9	0.000493	0.0003522	88.89	No	0.002	NP (NDs)
Thallium (mg/L)	MW-1R	0.0015	0.0006	0.001	No	27	0.001119	0.0006361	96.3	No	0.01	NP (NDs)
Total Dissolved Solids (mg/L)	MW-3	3488	2817	867	Yes	21	3152	608.8	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-4	2400	1900	867	Yes	21	2101	525.8	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-2	2213	1873	867	Yes	21	2043	307.5	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-5	2400	870	867	Yes	17	1787	638	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-6	1600	1200	867	Yes	17	1400	206.2	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-7 (bg)	718.3	618.2	867	No	17	668.2	79.86	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-8	603.5	388.3	867	No	17	495.9	171.7	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-10	1871	1417	867	Yes	9	1644	235.1	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-9	1183	686.3	867	No	9	934.4	257	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1R	3400	3100	867	Yes	27	3200	473.1	0	No	0.01	NP (normality)
Vanadium (mg/L)	MW-3	0.002229	0.0006533	0.027	No	9	0.001441	0.000816	11.11	No	0.01	Param.
Vanadium (mg/L)	MW-4	0.0025	0.00053	0.027	No	9	0.0009178	0.0006328	11.11	No	0.002	NP (normality)

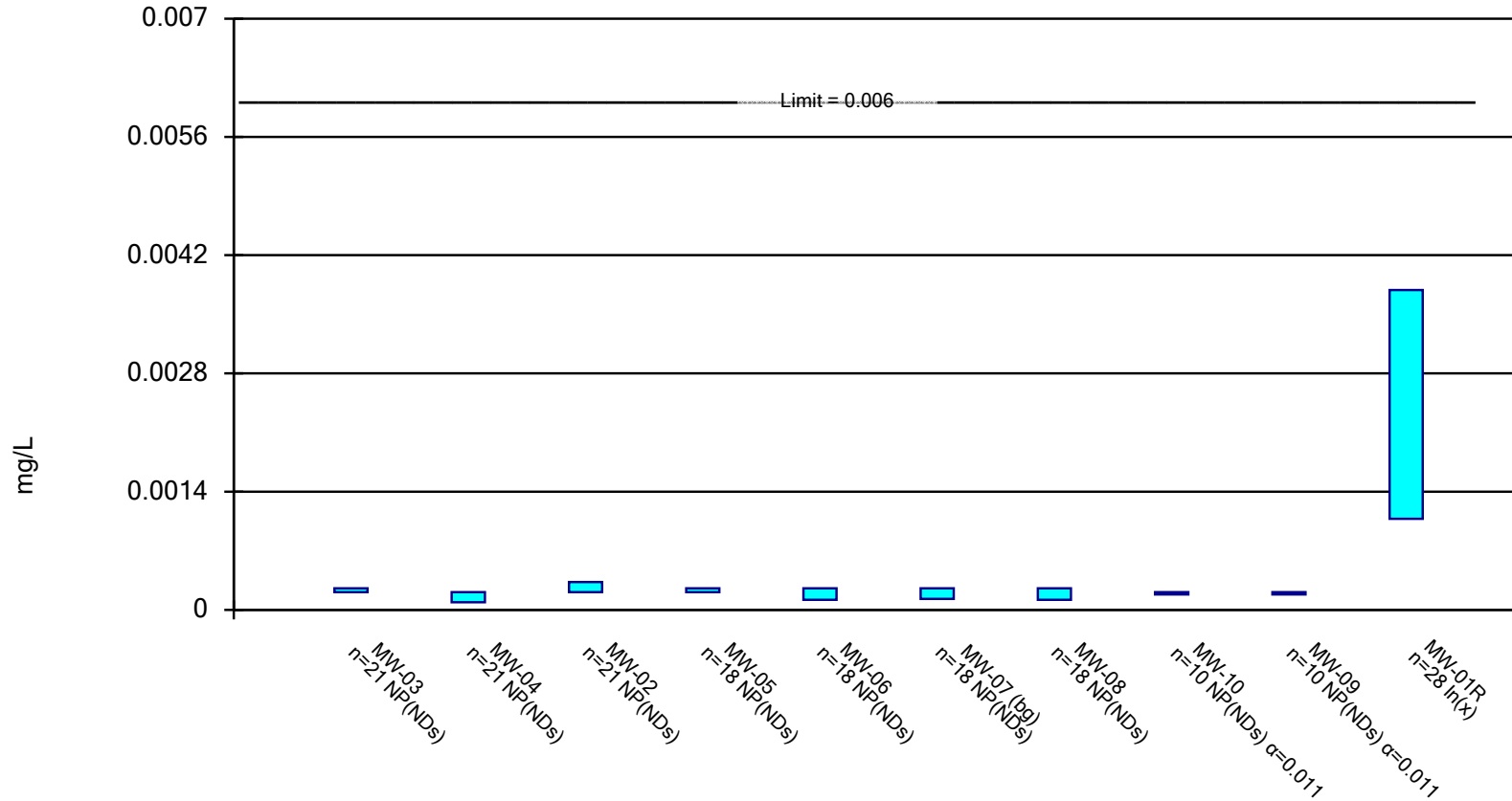
Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 9/24/2021, 3:56 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Vanadium (mg/L)	MW-2	0.005076	0.001064	0.027	No	9	0.00307	0.002078	11.11	No	0.01	Param.
Vanadium (mg/L)	MW-5	0.003	0.0005	0.027	No	9	0.001188	0.0009297	44.44	No	0.002	NP (Cohens/xfm)
Vanadium (mg/L)	MW-6	0.0008	0.00029	0.027	No	9	0.00059	0.0001748	66.67	No	0.002	NP (NDs)
Vanadium (mg/L)	MW-7 (bg)	0.0007142	0.0005458	0.027	No	9	0.00063	0.00008718	0	No	0.01	Param.
Vanadium (mg/L)	MW-8	0.0008	0.00036	0.027	No	9	0.00055	0.0001488	77.78	No	0.002	NP (NDs)
Vanadium (mg/L)	MW-10	0.002	0.00076	0.027	No	9	0.001337	0.0005458	0	No	0.002	NP (normality)
Vanadium (mg/L)	MW-9	0.0026	0.0005	0.027	No	9	0.0009778	0.0007981	77.78	No	0.002	NP (NDs)
Vanadium (mg/L)	MW-1R	0.003681	0.002457	0.027	No	27	0.003307	0.001658	3.704	ln(x)	0.01	Param.
Zinc (mg/L)	MW-3	2	0.00081	0.27	No	9	0.2368	0.6612	88.89	No	0.002	NP (NDs)
Zinc (mg/L)	MW-4	2	0.003	0.27	No	9	0.237	0.6611	88.89	No	0.002	NP (NDs)
Zinc (mg/L)	MW-2	2	0.0099	0.27	No	9	0.2378	0.6608	88.89	No	0.002	NP (NDs)
Zinc (mg/L)	MW-5	0.22	0.0025	0.27	No	9	0.03917	0.06803	77.78	No	0.002	NP (NDs)
Zinc (mg/L)	MW-6	2	0.011	0.27	No	9	0.2379	0.6608	88.89	No	0.002	NP (NDs)
Zinc (mg/L)	MW-7 (bg)	2	0.0023	0.27	No	9	0.2373	0.6611	77.78	No	0.002	NP (NDs)
Zinc (mg/L)	MW-8	2	0.0026	0.27	No	9	0.237	0.6612	88.89	No	0.002	NP (NDs)
Zinc (mg/L)	MW-10	0.16	0.011	0.27	No	9	0.033	0.04769	77.78	No	0.002	NP (NDs)
Zinc (mg/L)	MW-9	0.02	0.0064	0.27	No	9	0.01716	0.004125	88.89	No	0.002	NP (NDs)
Zinc (mg/L)	MW-1R	0.068	0.02	0.27	No	27	0.07152	0.07787	25.93	No	0.01	NP (normality)

Parametric and Non-Parametric (NP) Confidence Interval

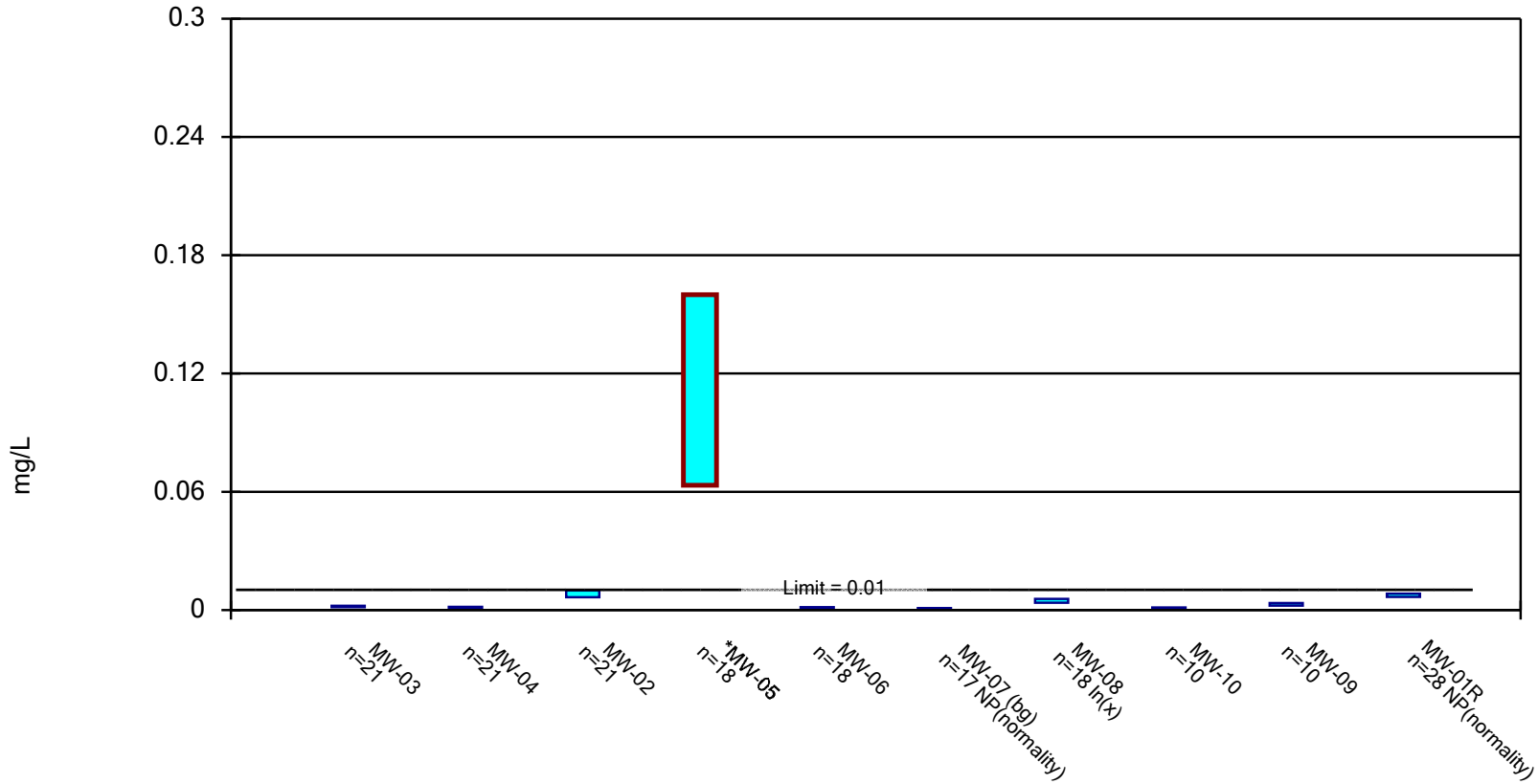
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Antimony Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

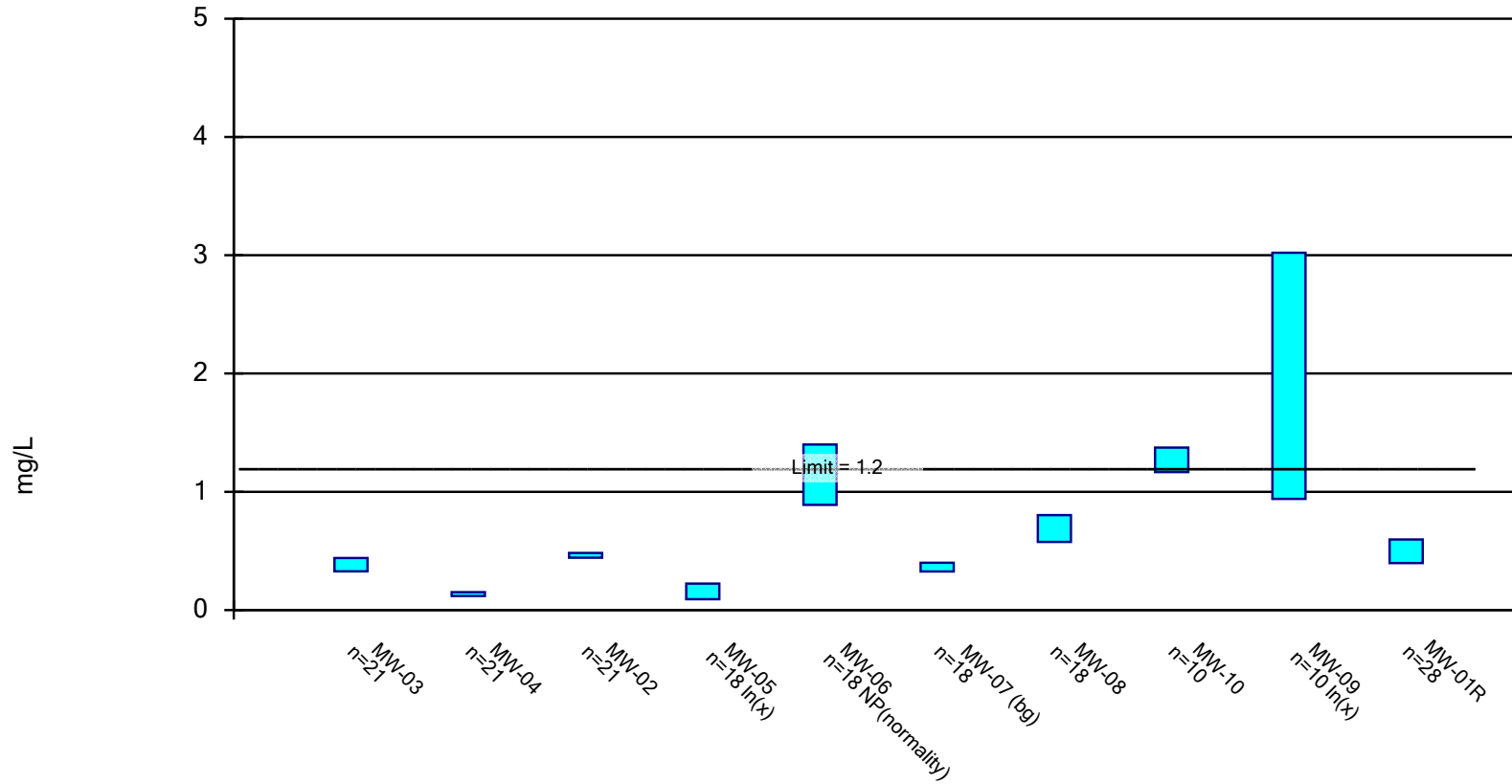
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

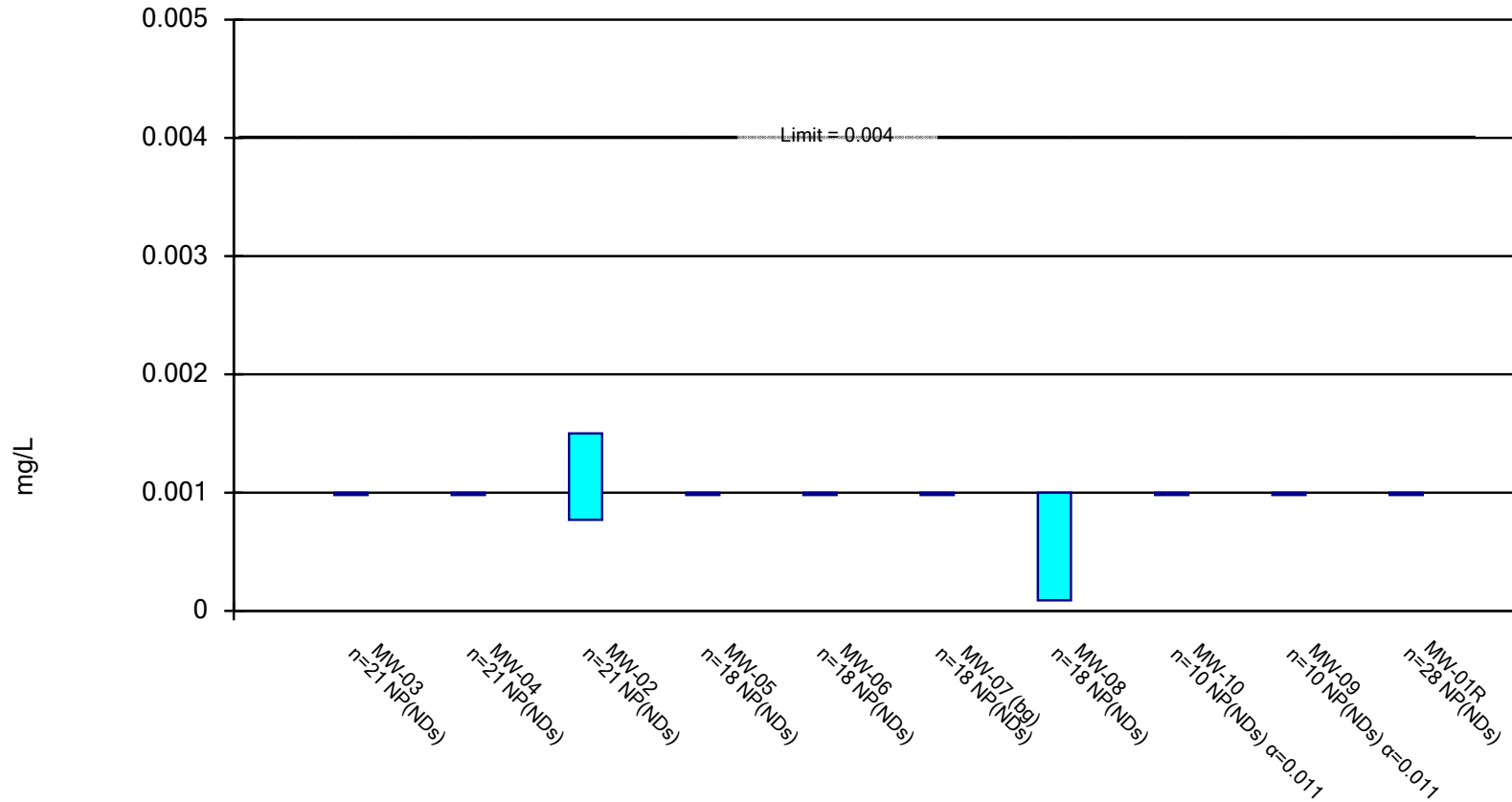
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

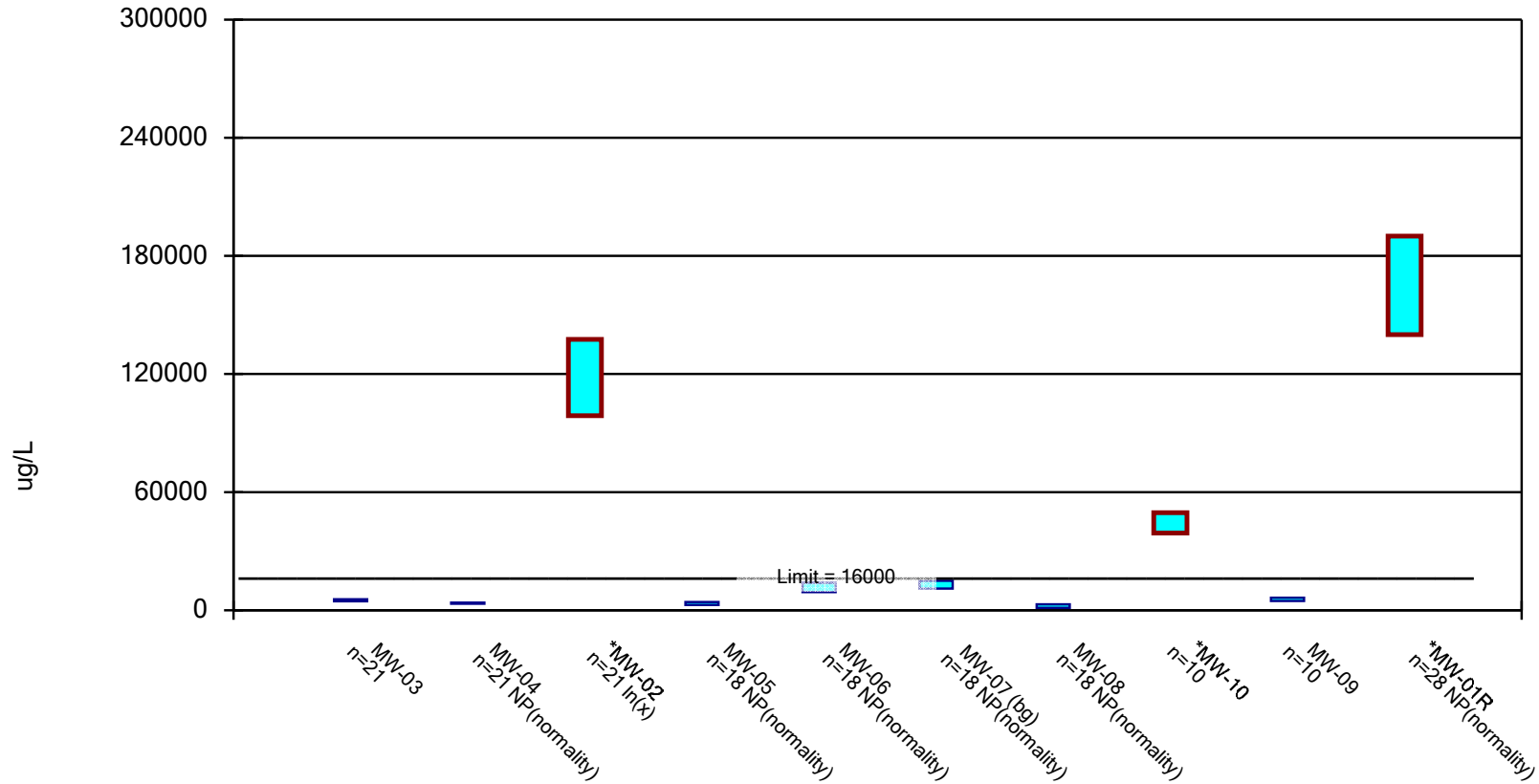
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Beryllium Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

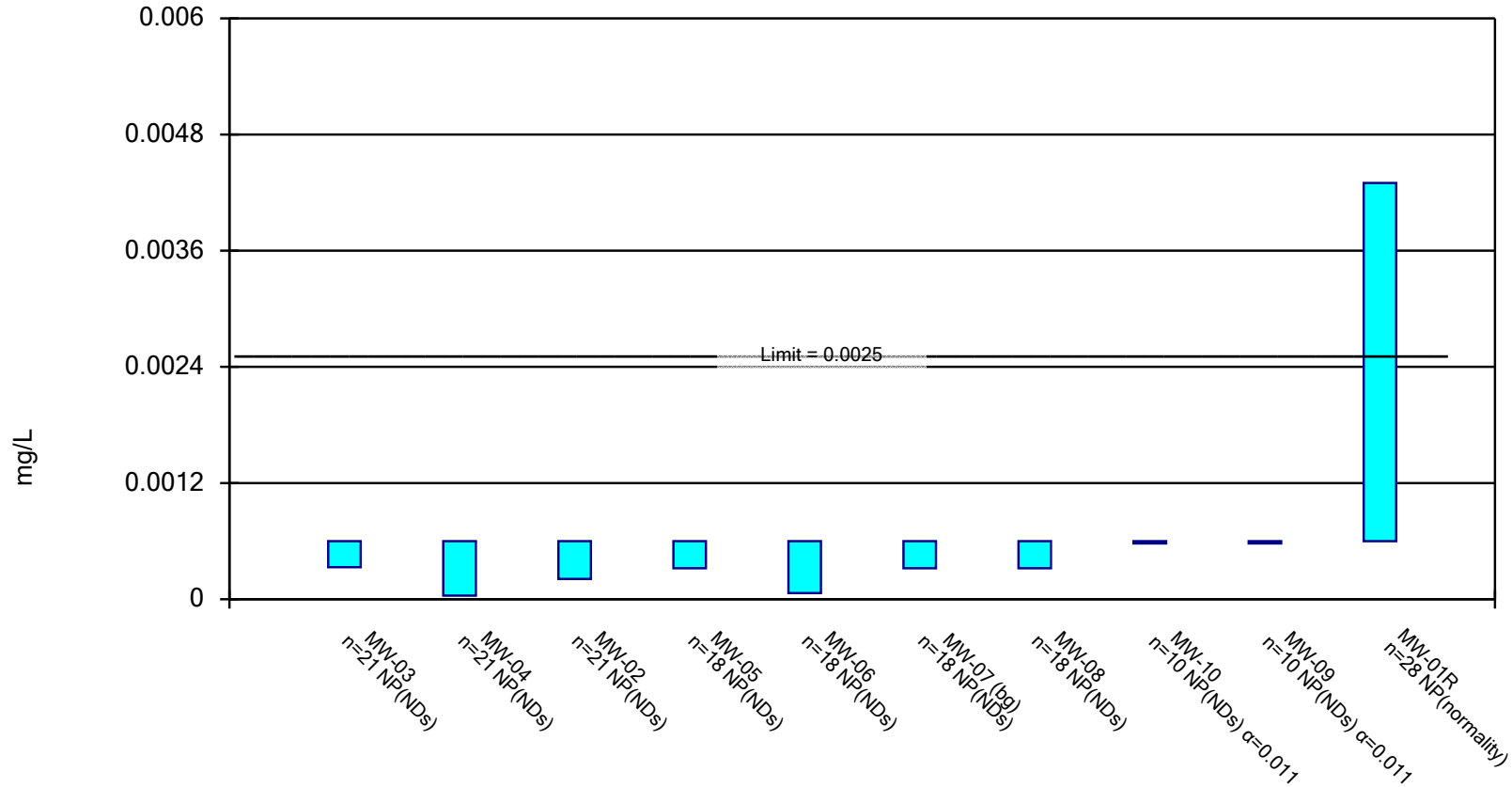
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

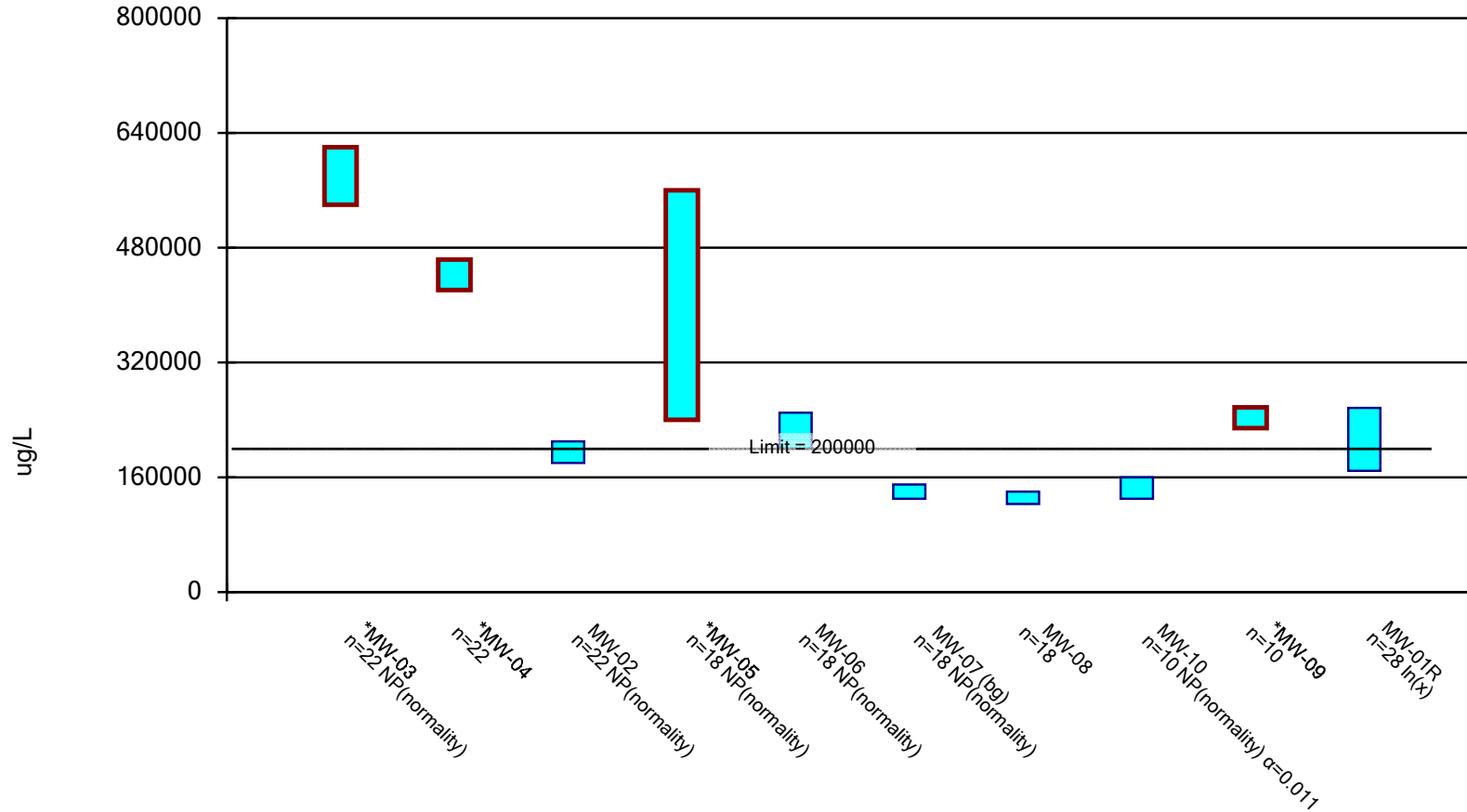
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Cadmium Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

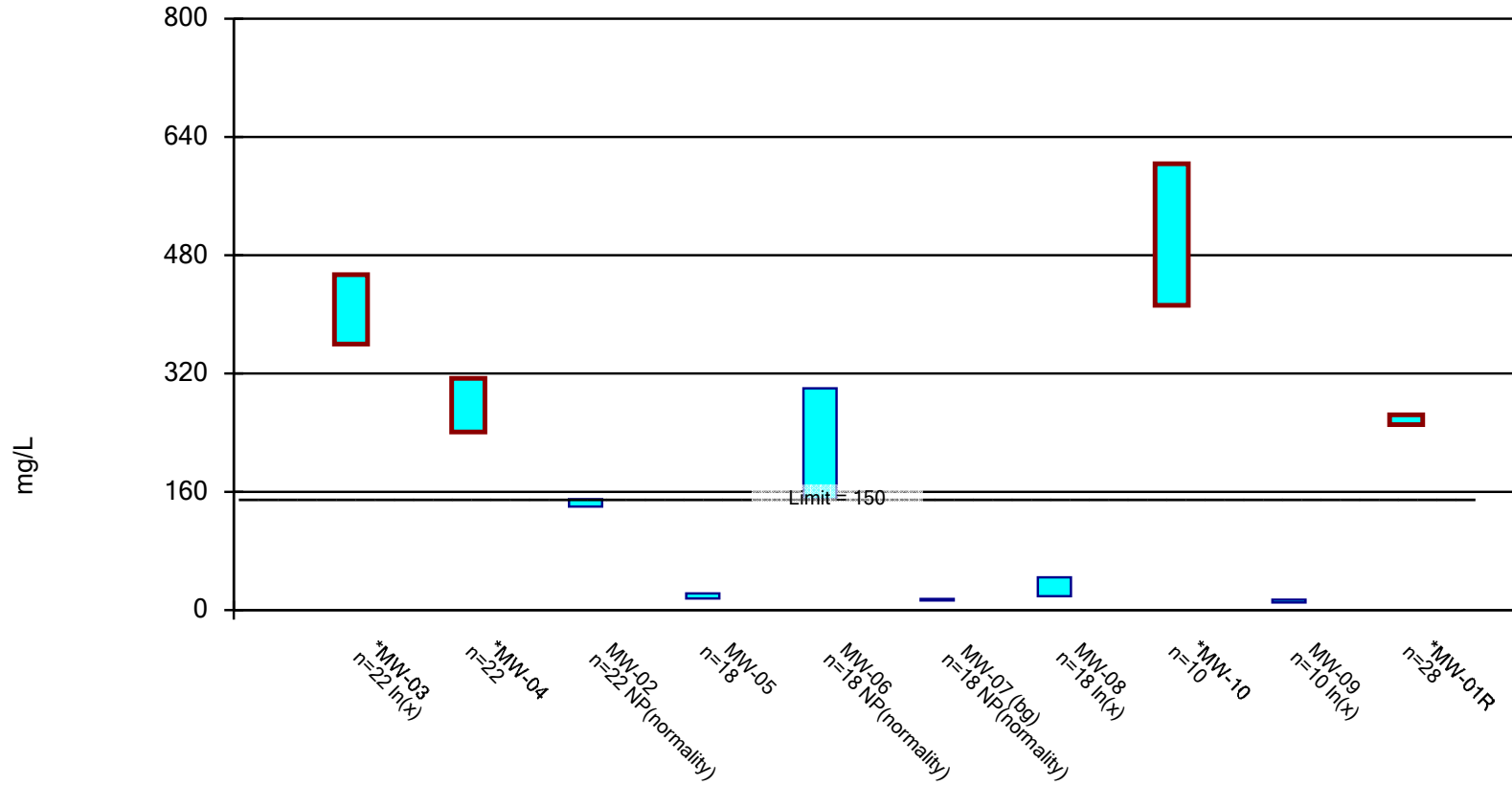
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium Analysis Run 1/3/2022 1:23 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

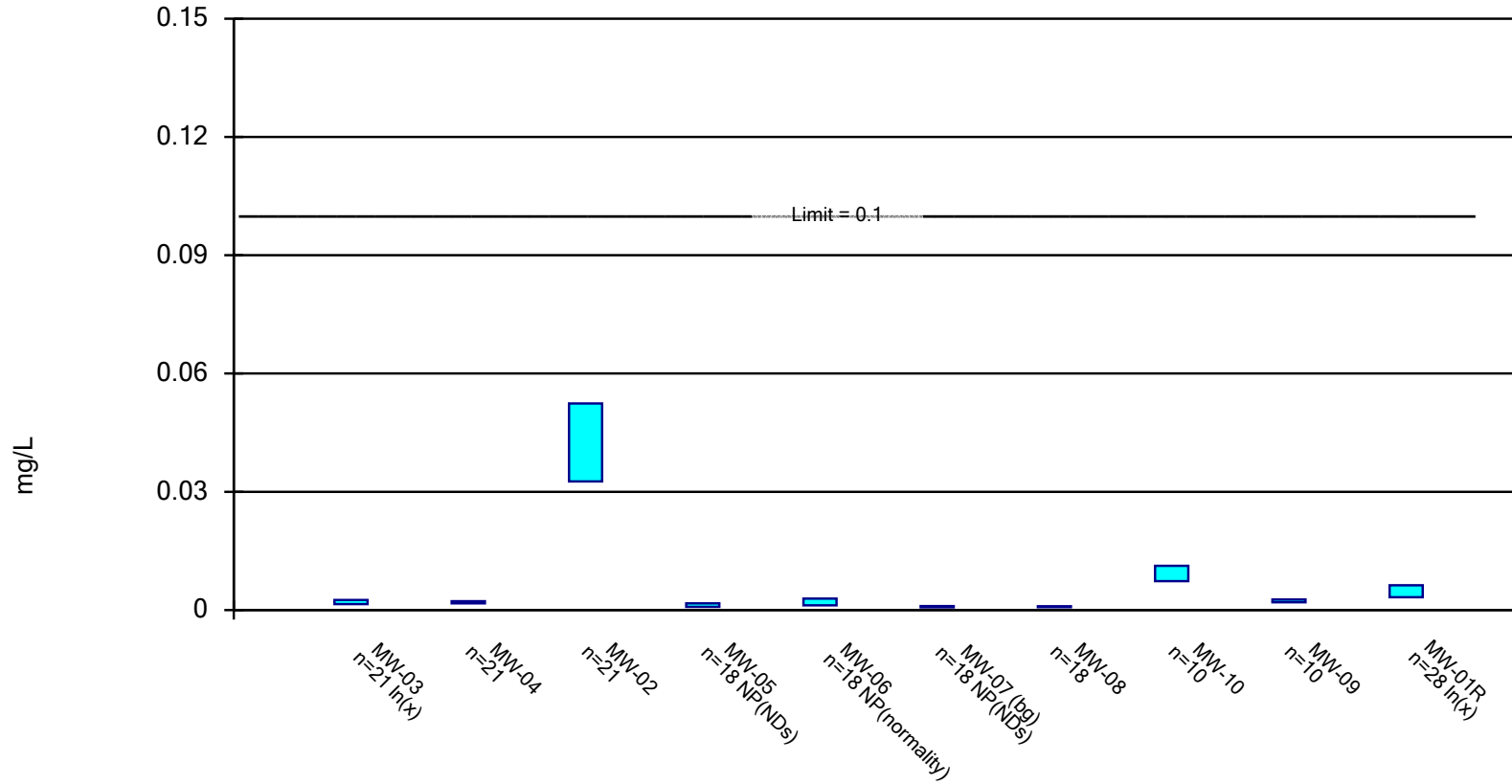
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chloride Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

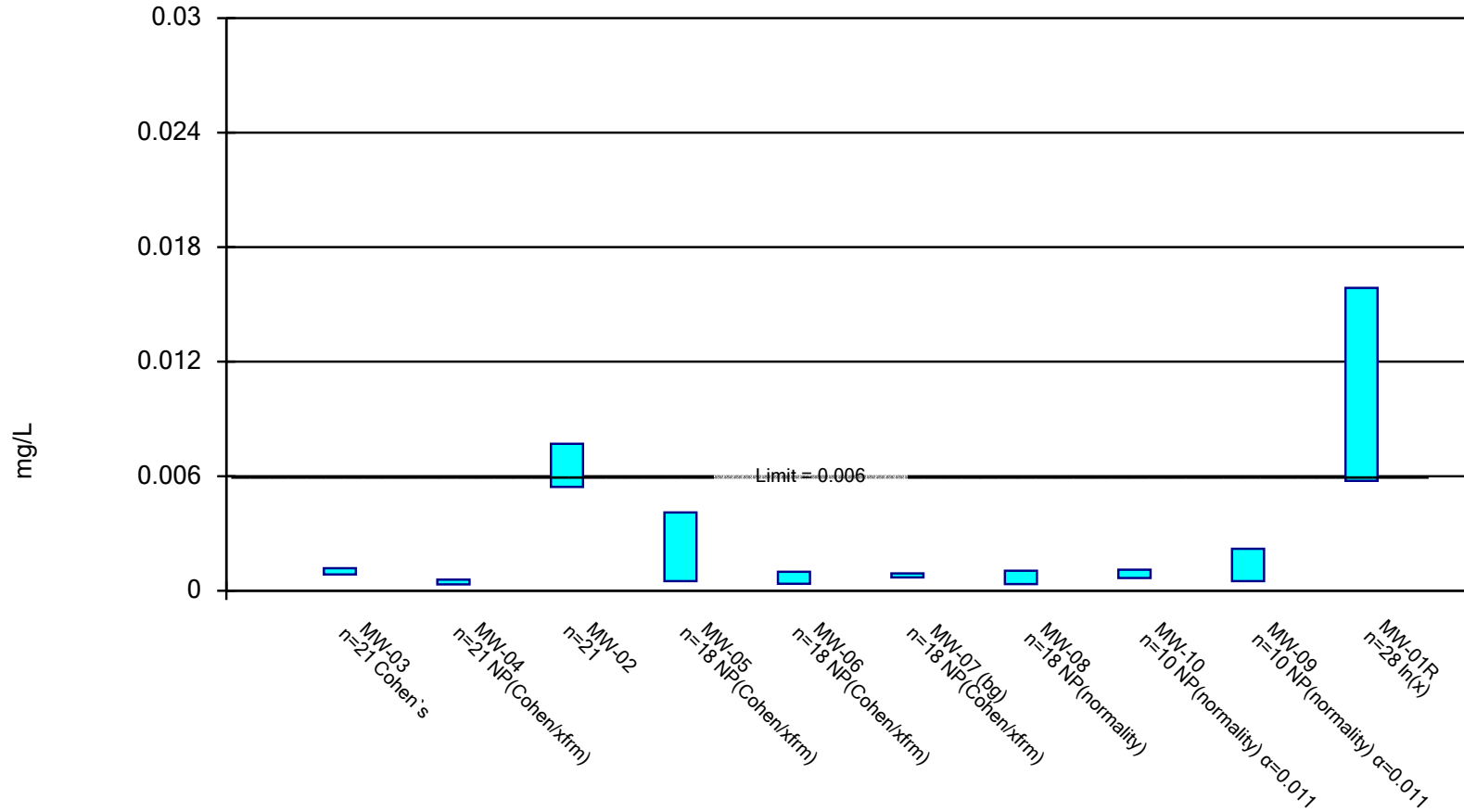
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

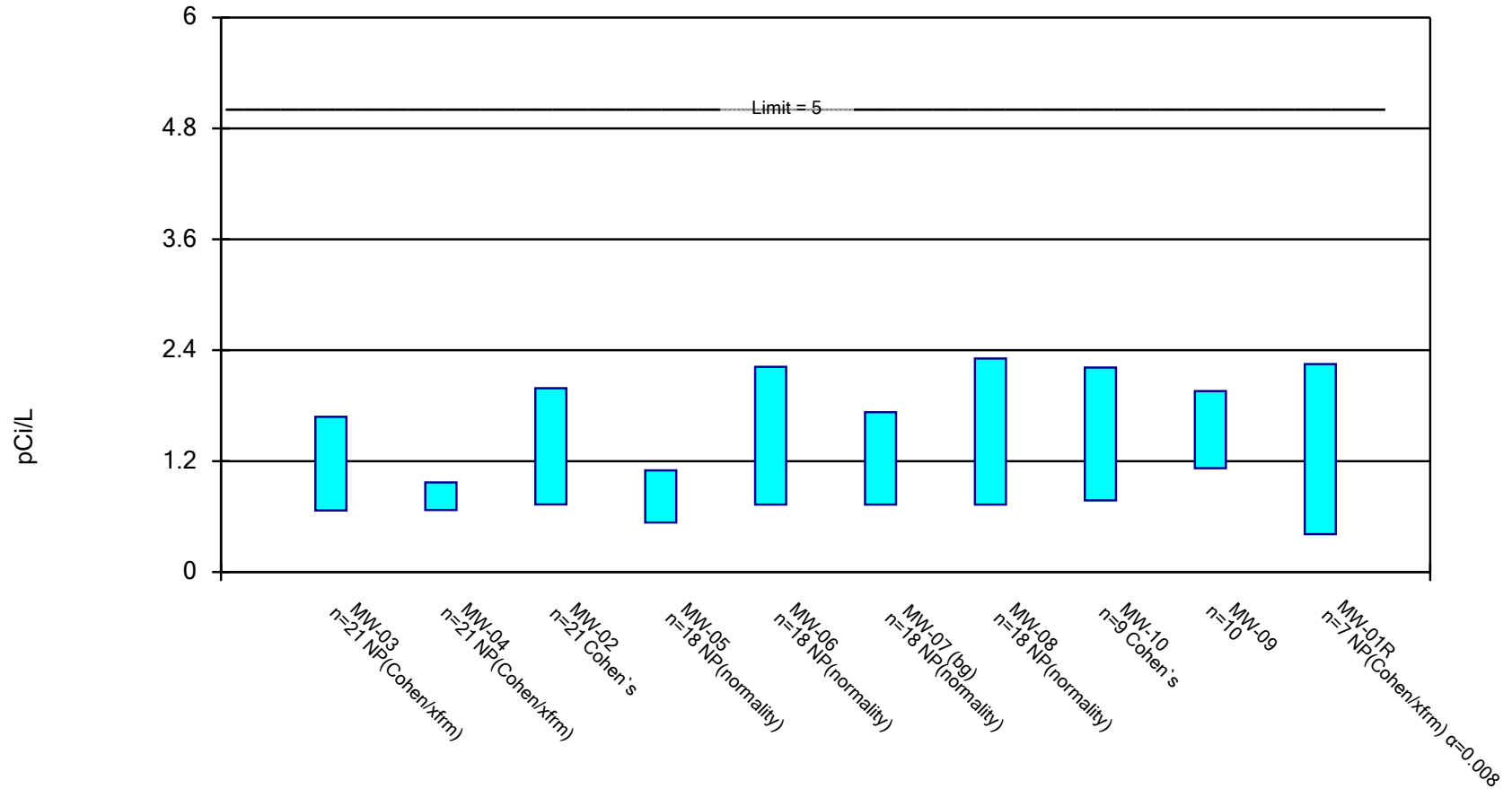
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Constituent: Cobalt Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

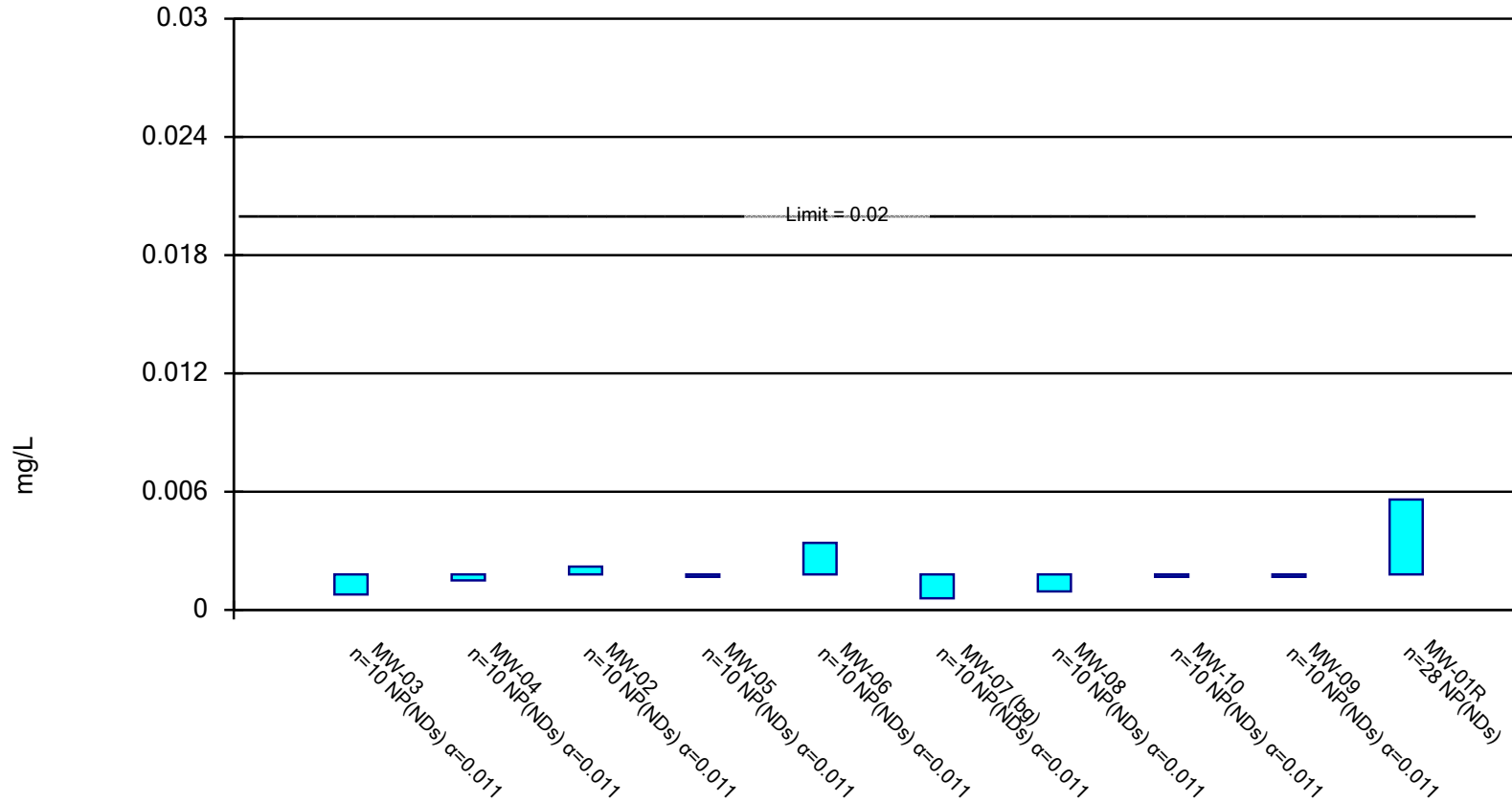


Constituent: Combined Radium 226 + 228 Analysis Run 1/3/2022 1:24 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

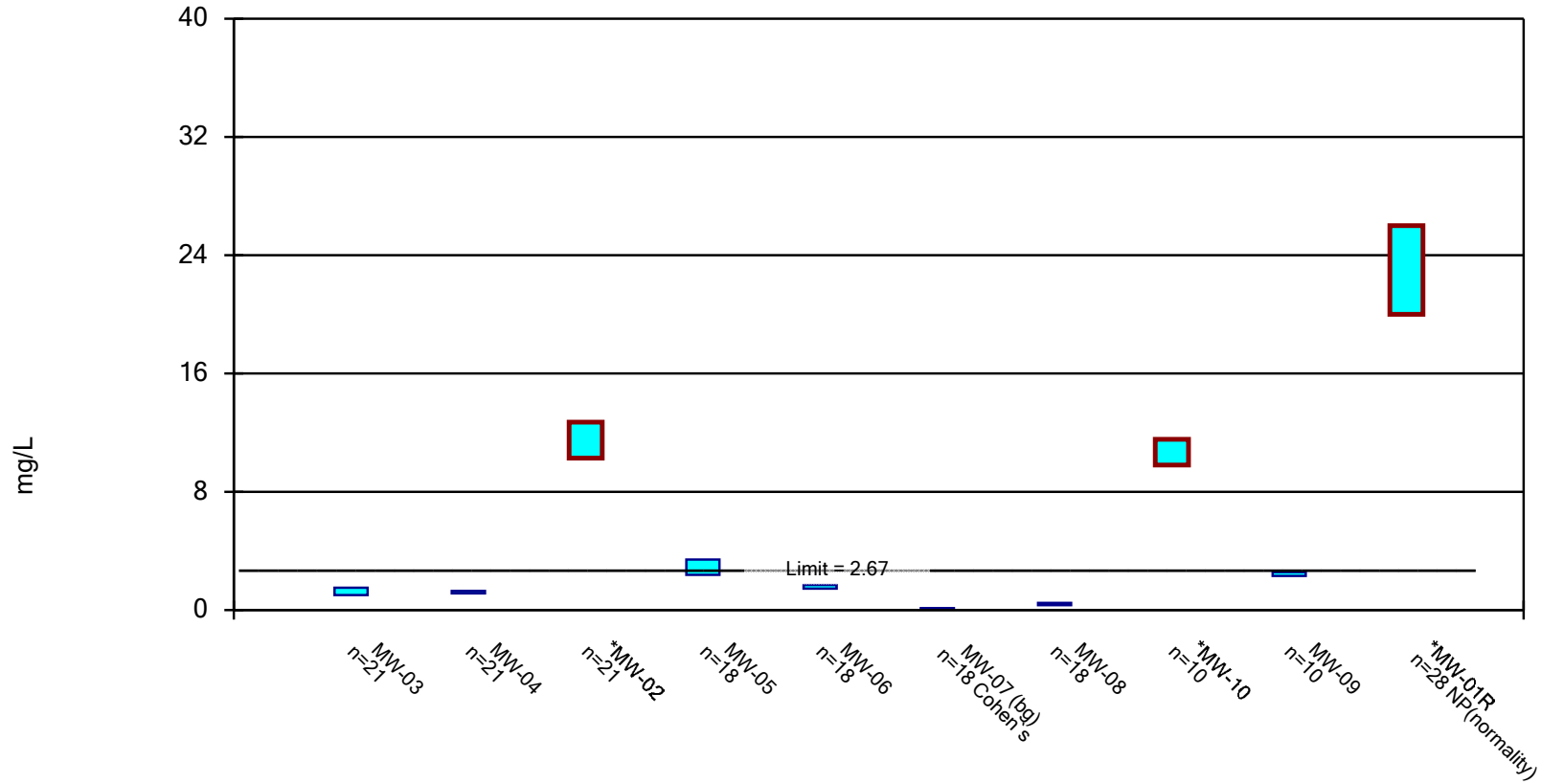
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Copper Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

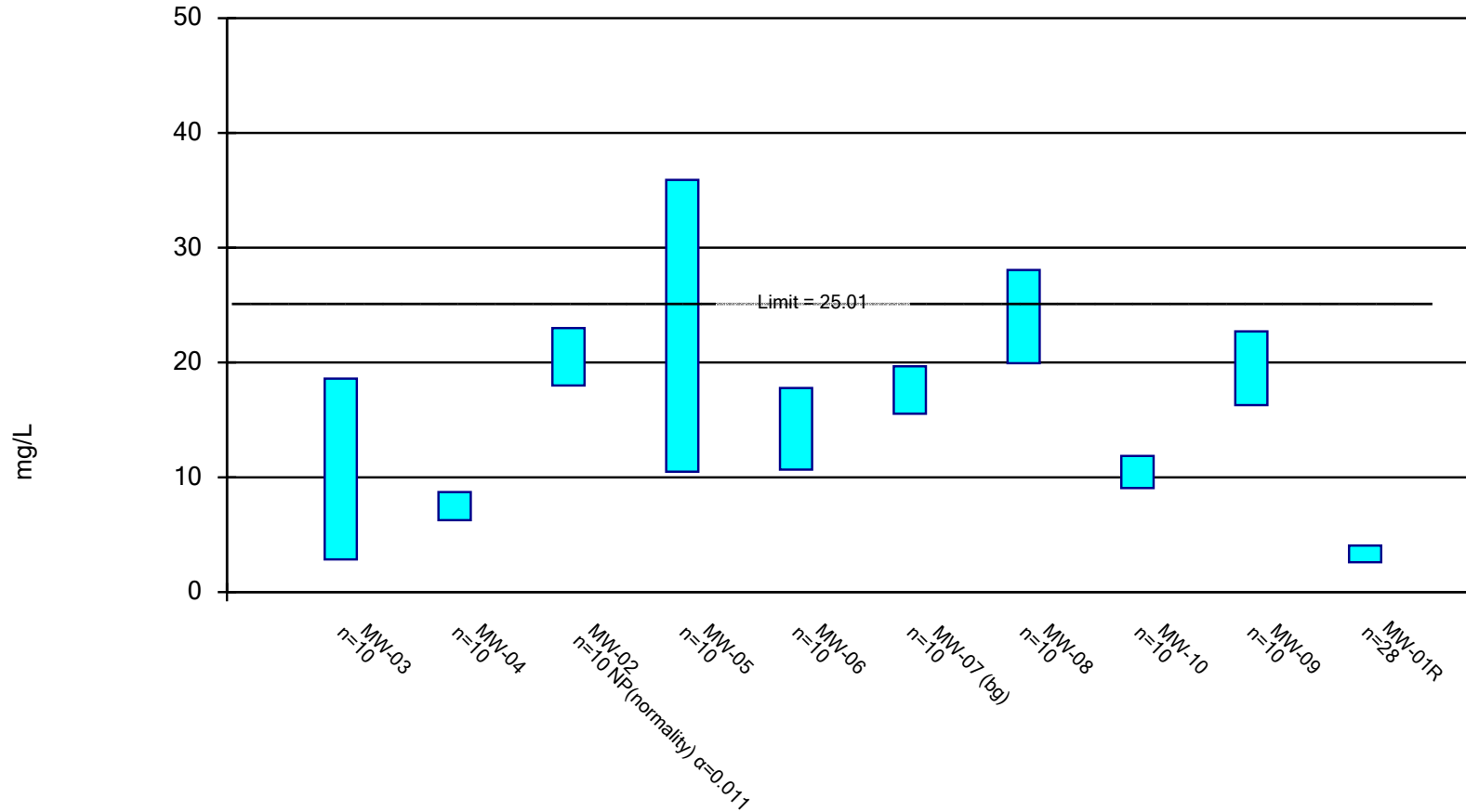
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

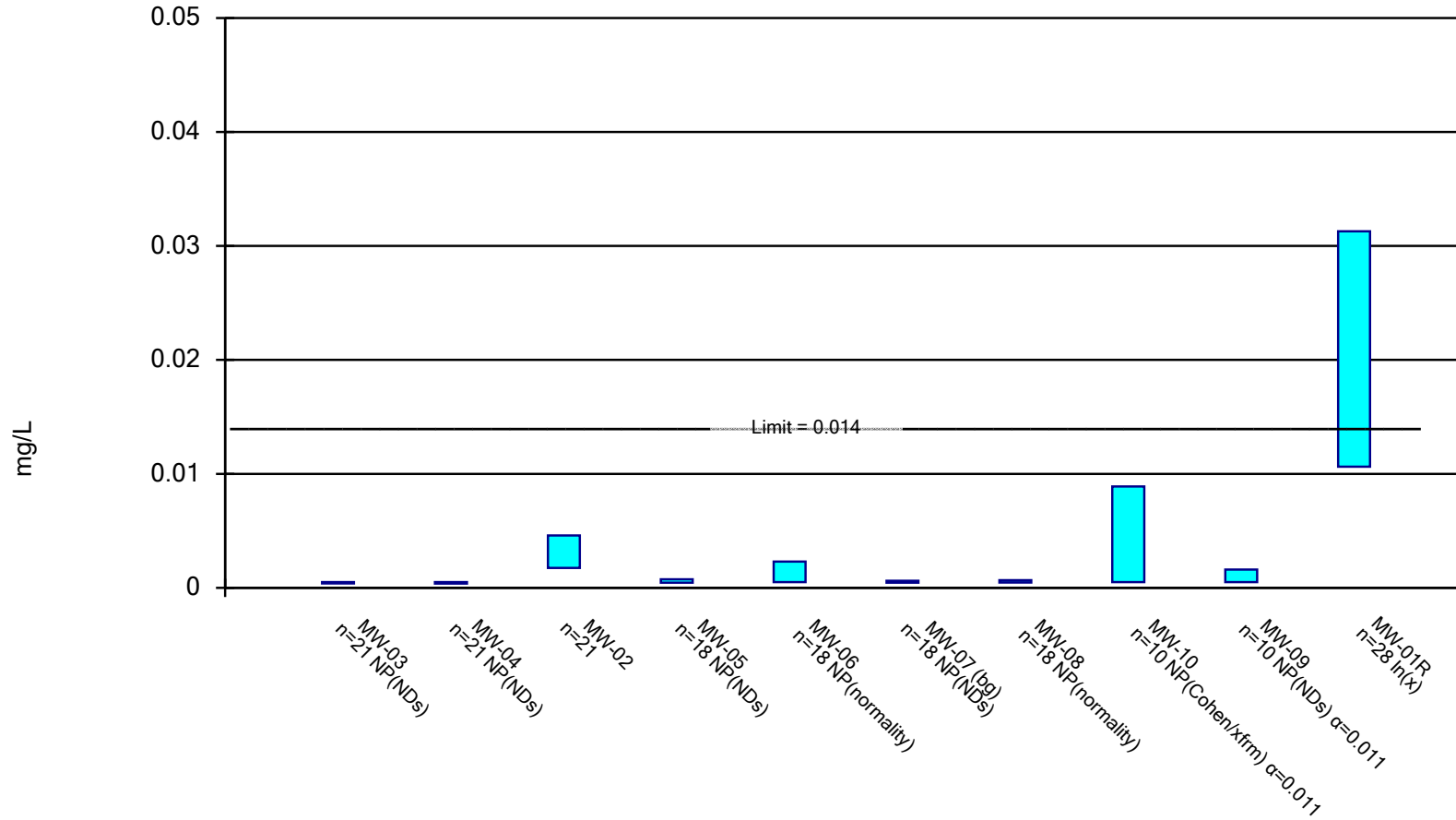
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Iron Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

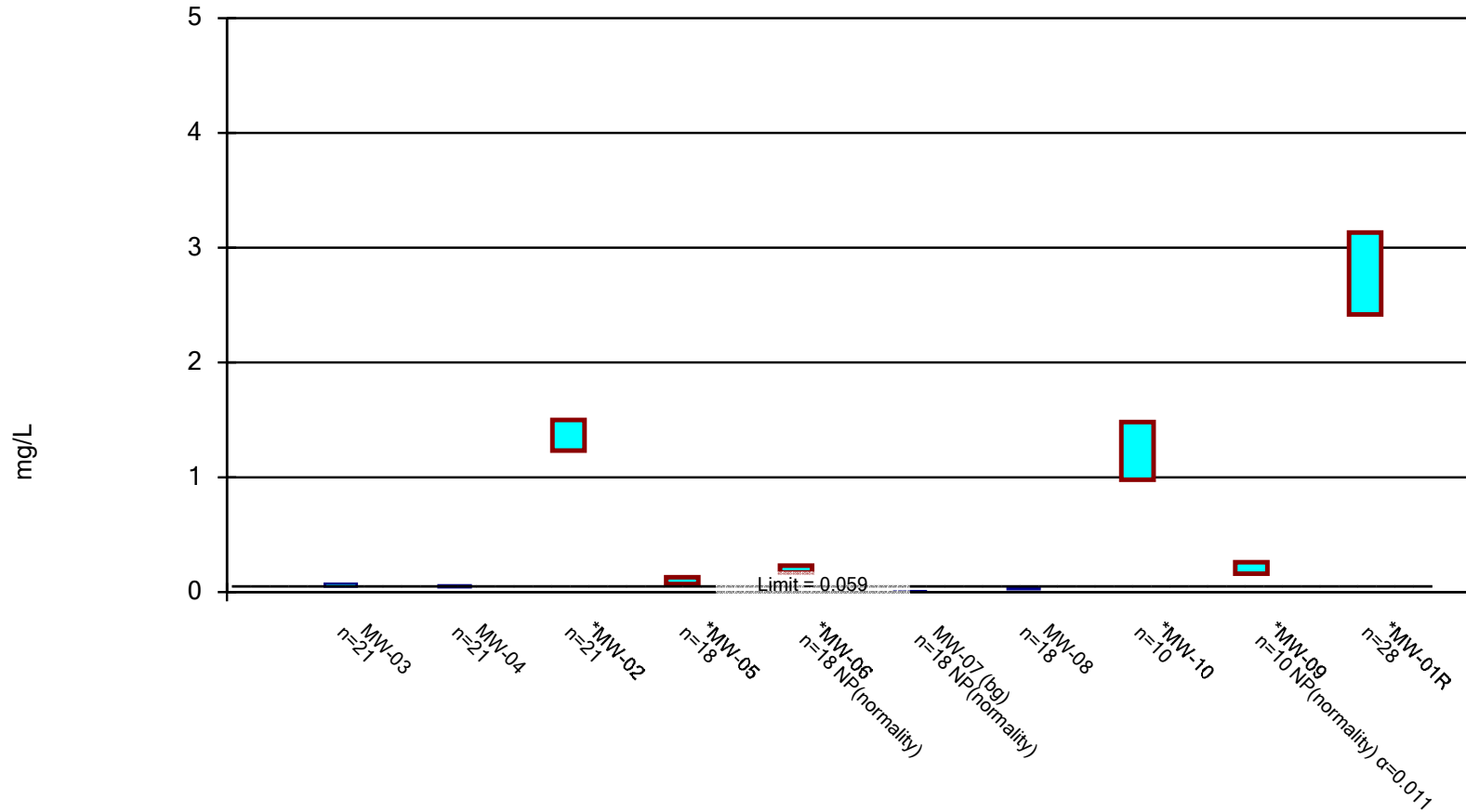
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

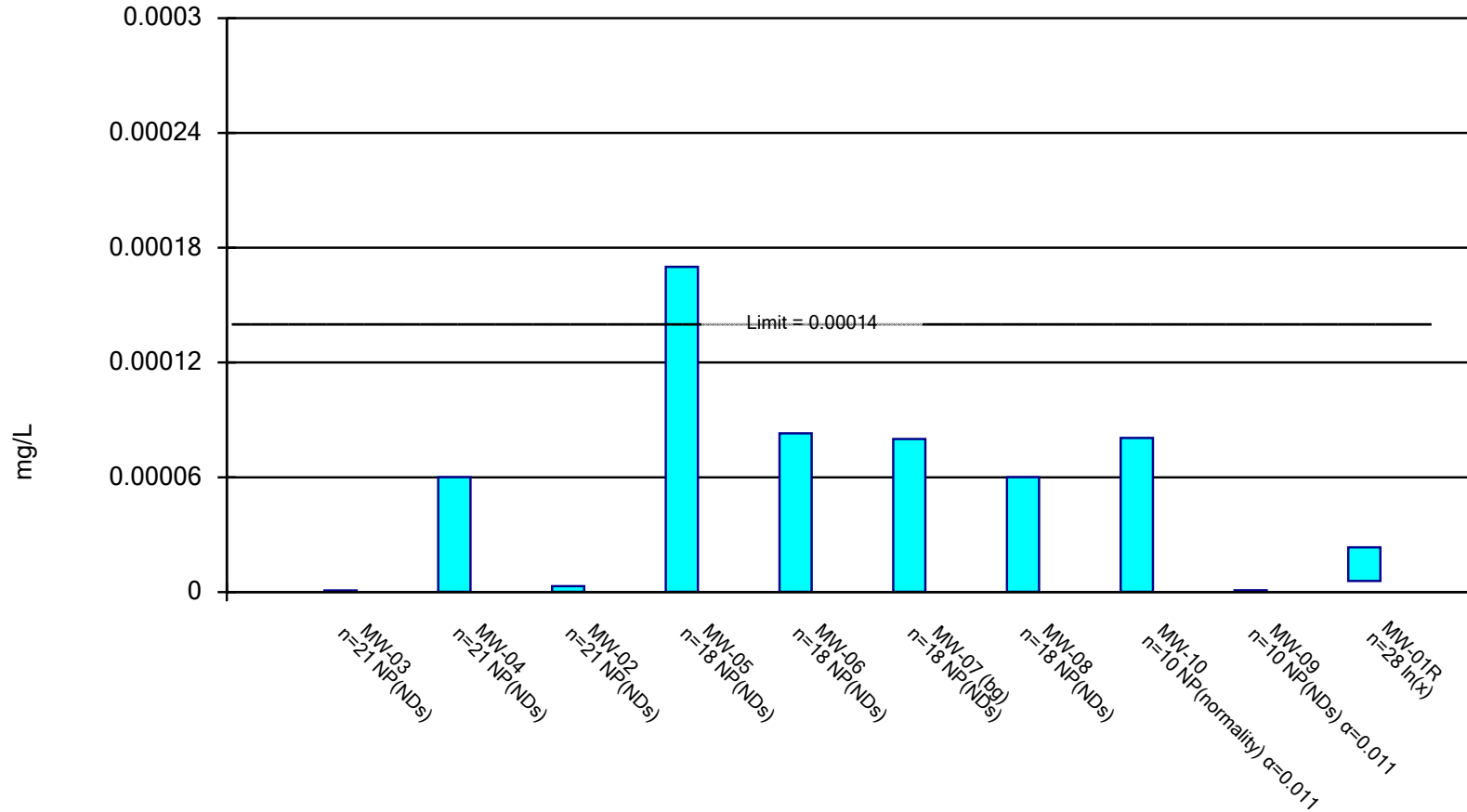
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

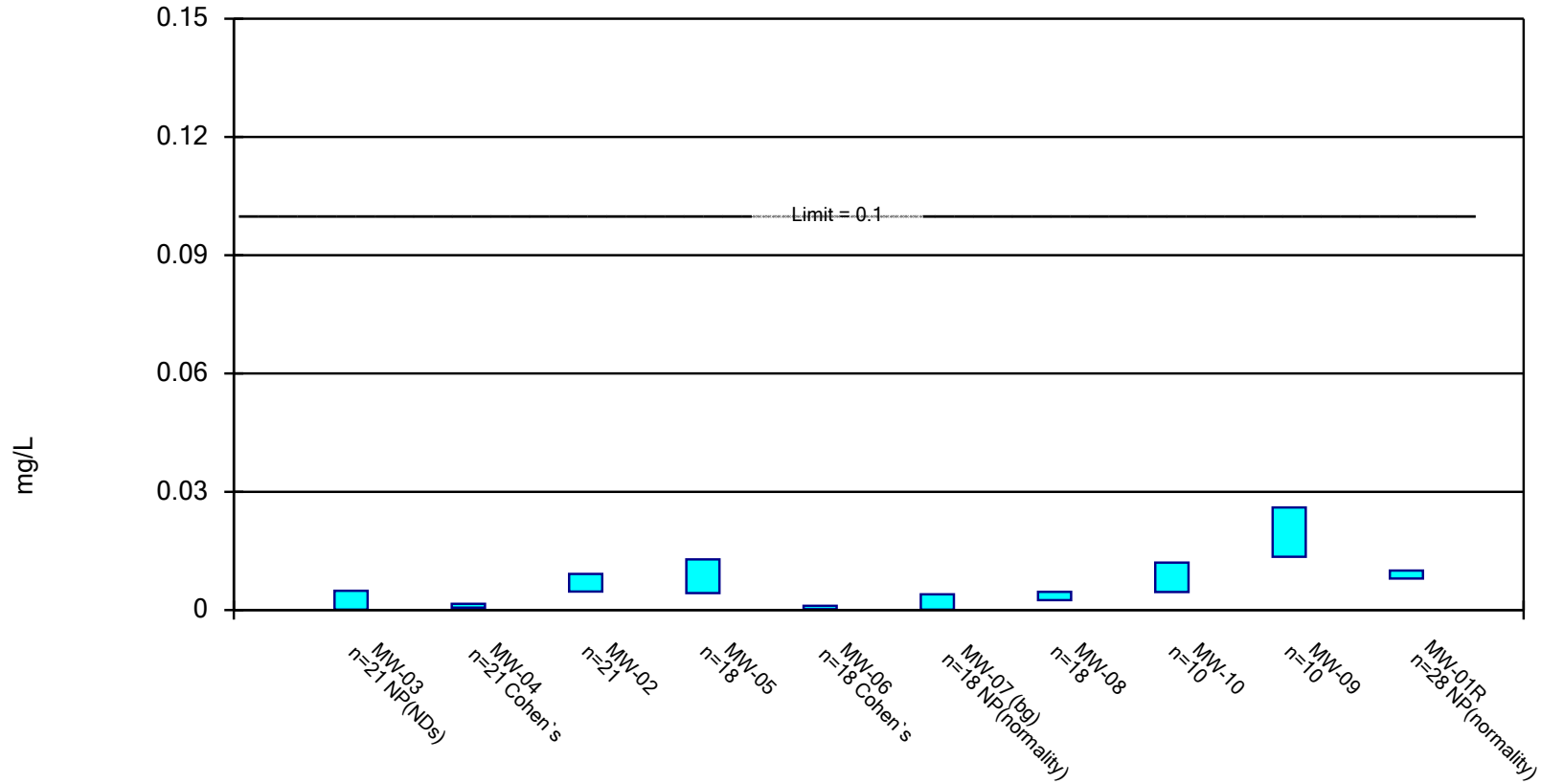
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

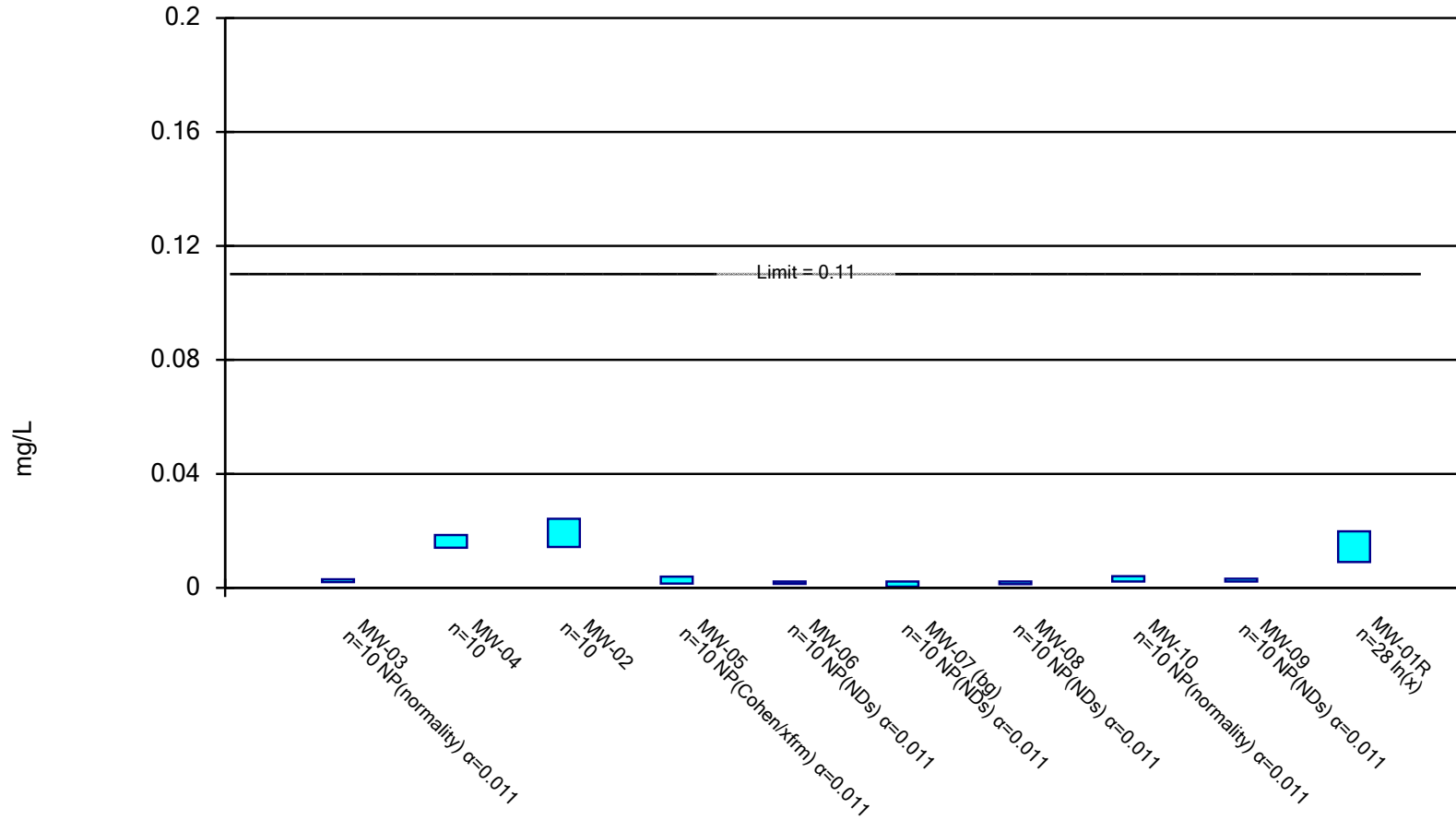


Constituent: Molybdenum Analysis Run 1/3/2022 1:24 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

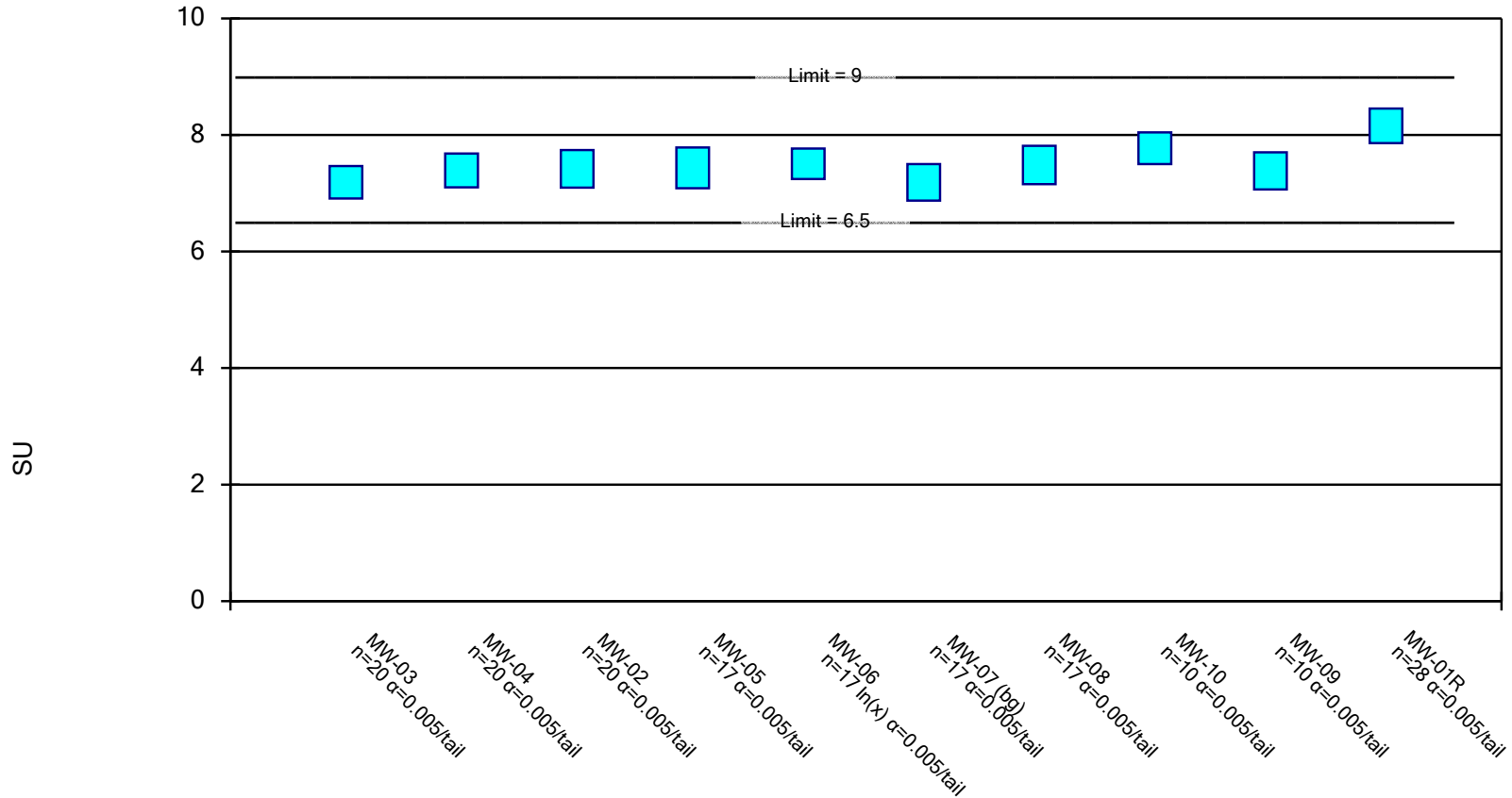
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Nickel Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric Confidence Interval

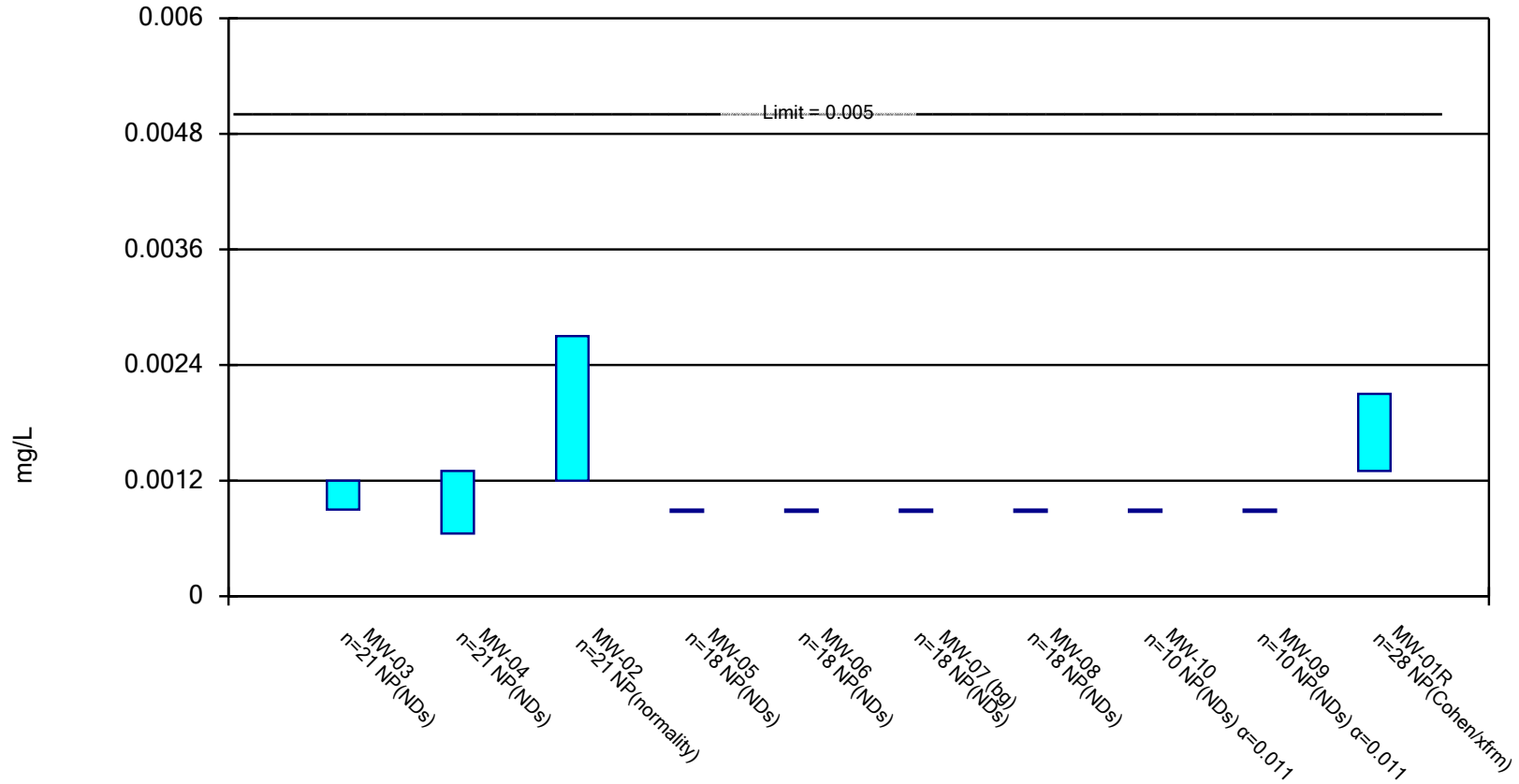
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: pH Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

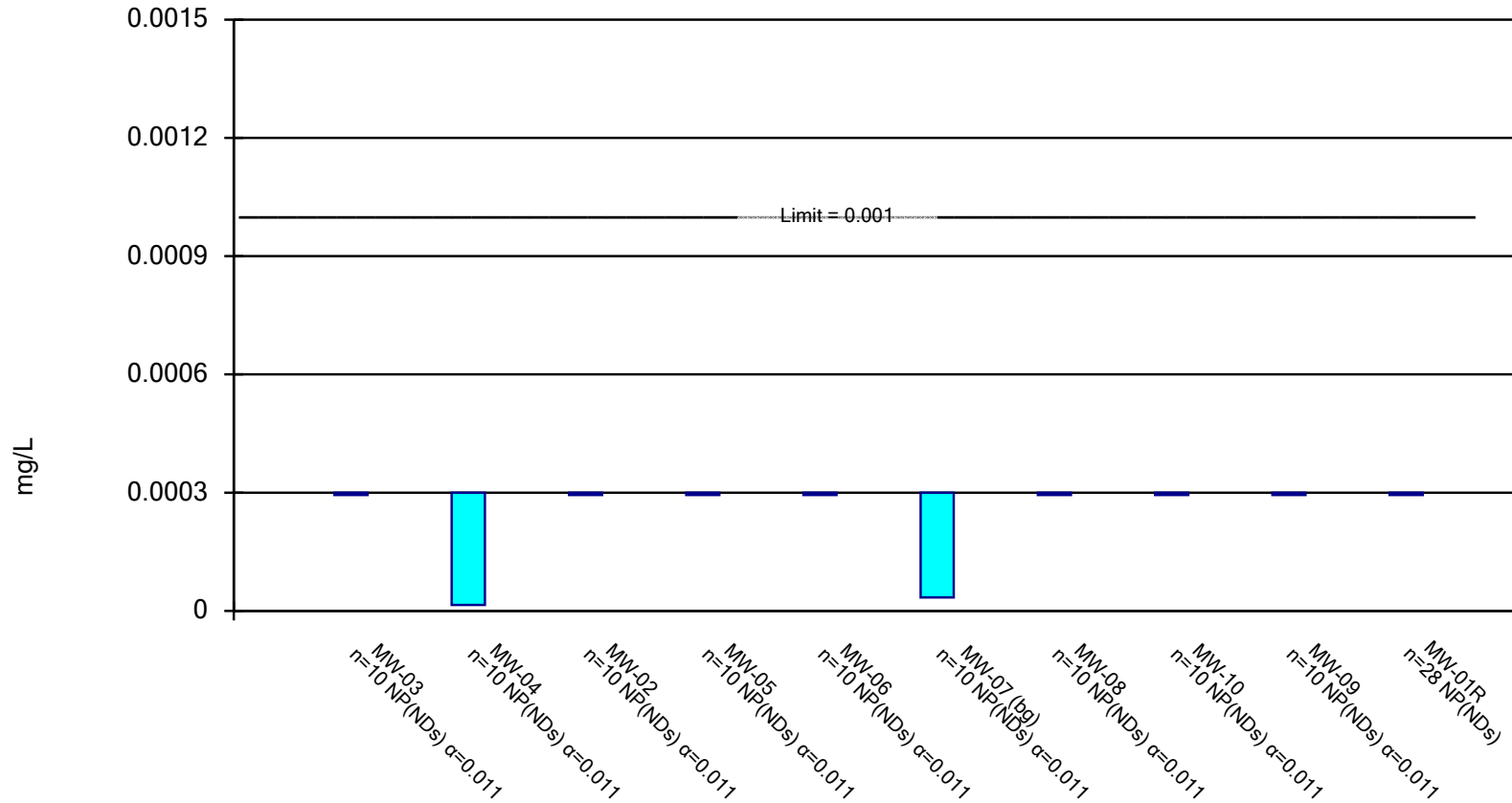
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Selenium Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

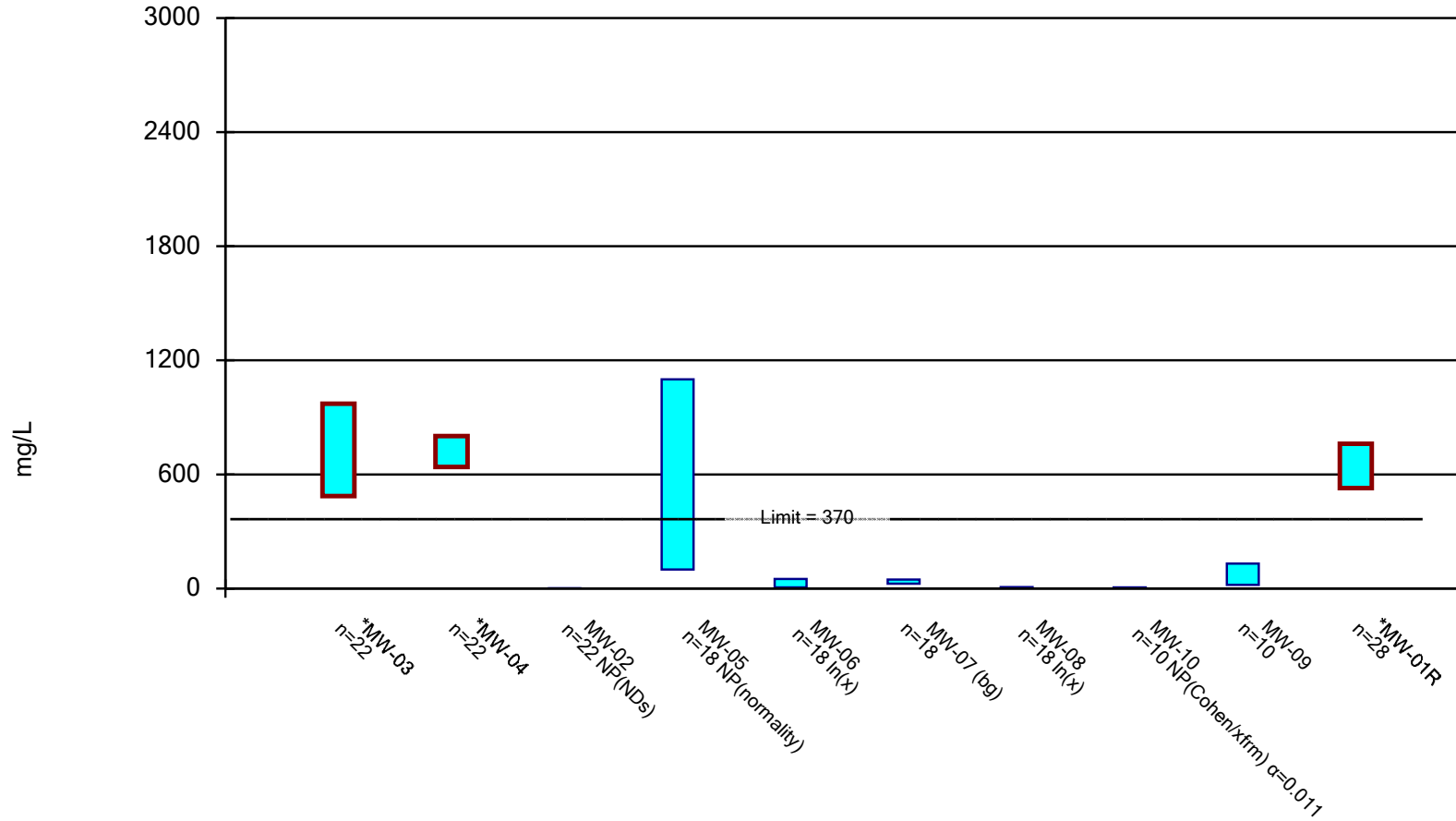
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Silver Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

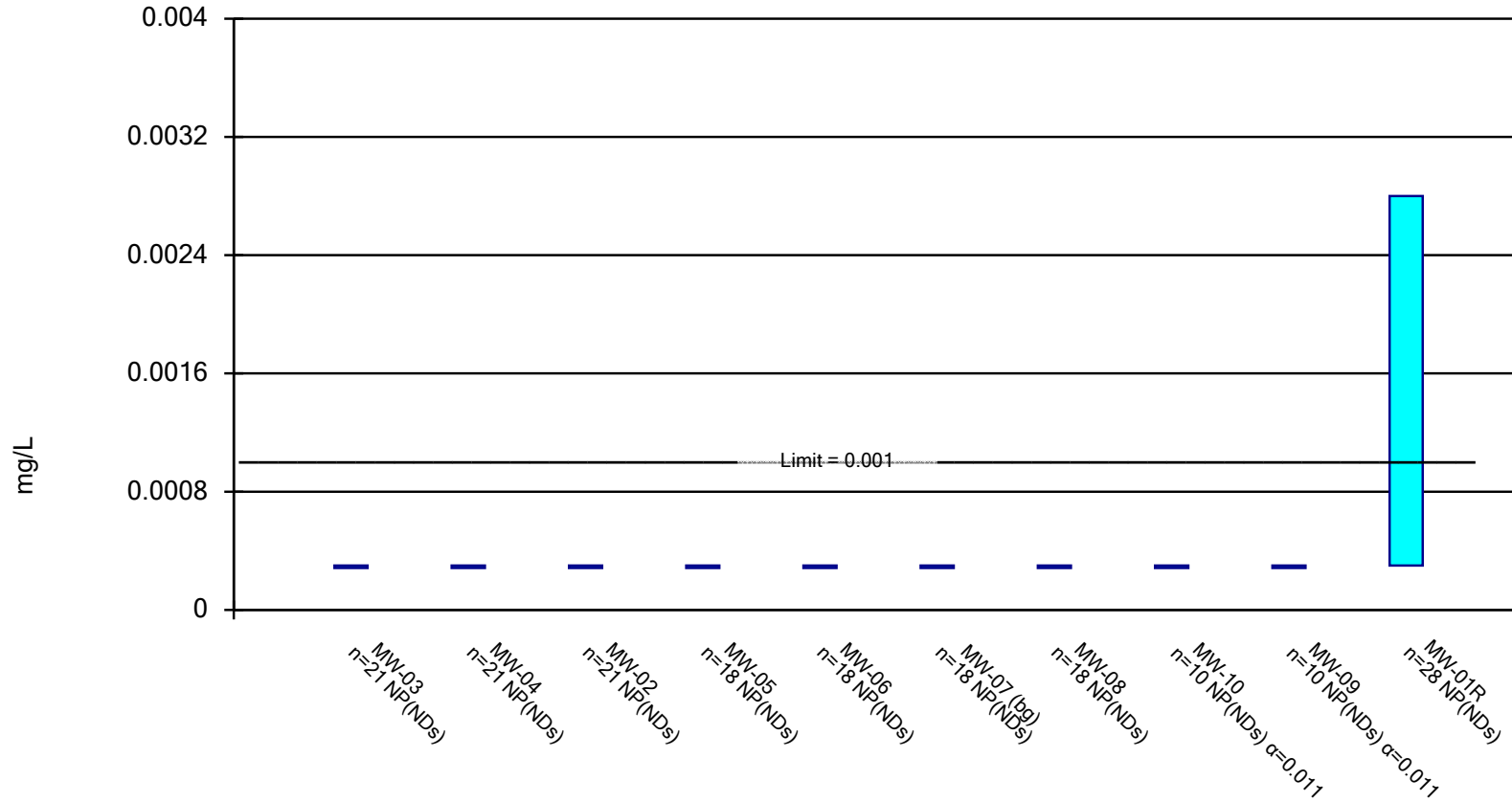
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Sulfate Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

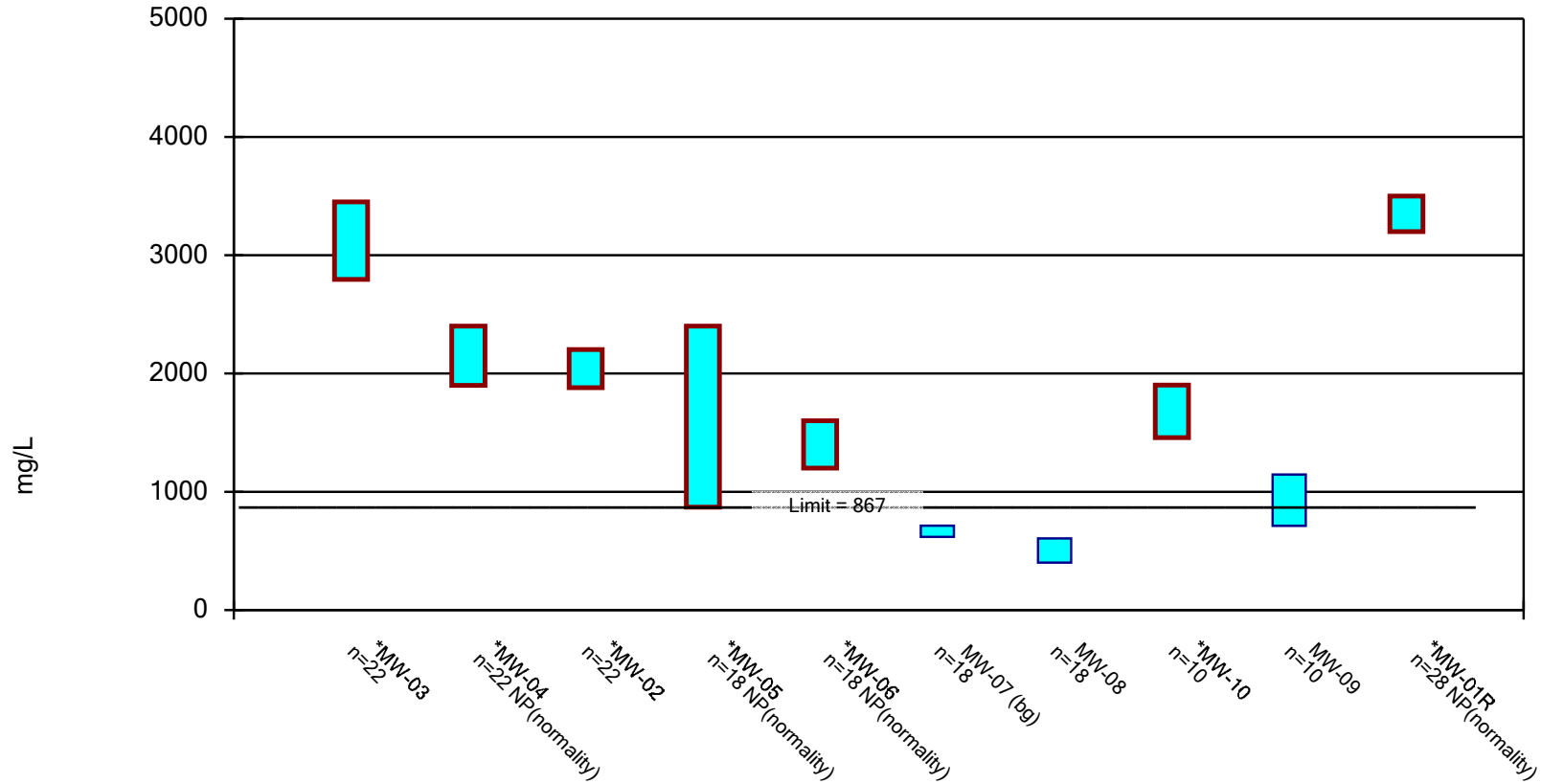
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Thallium Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

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

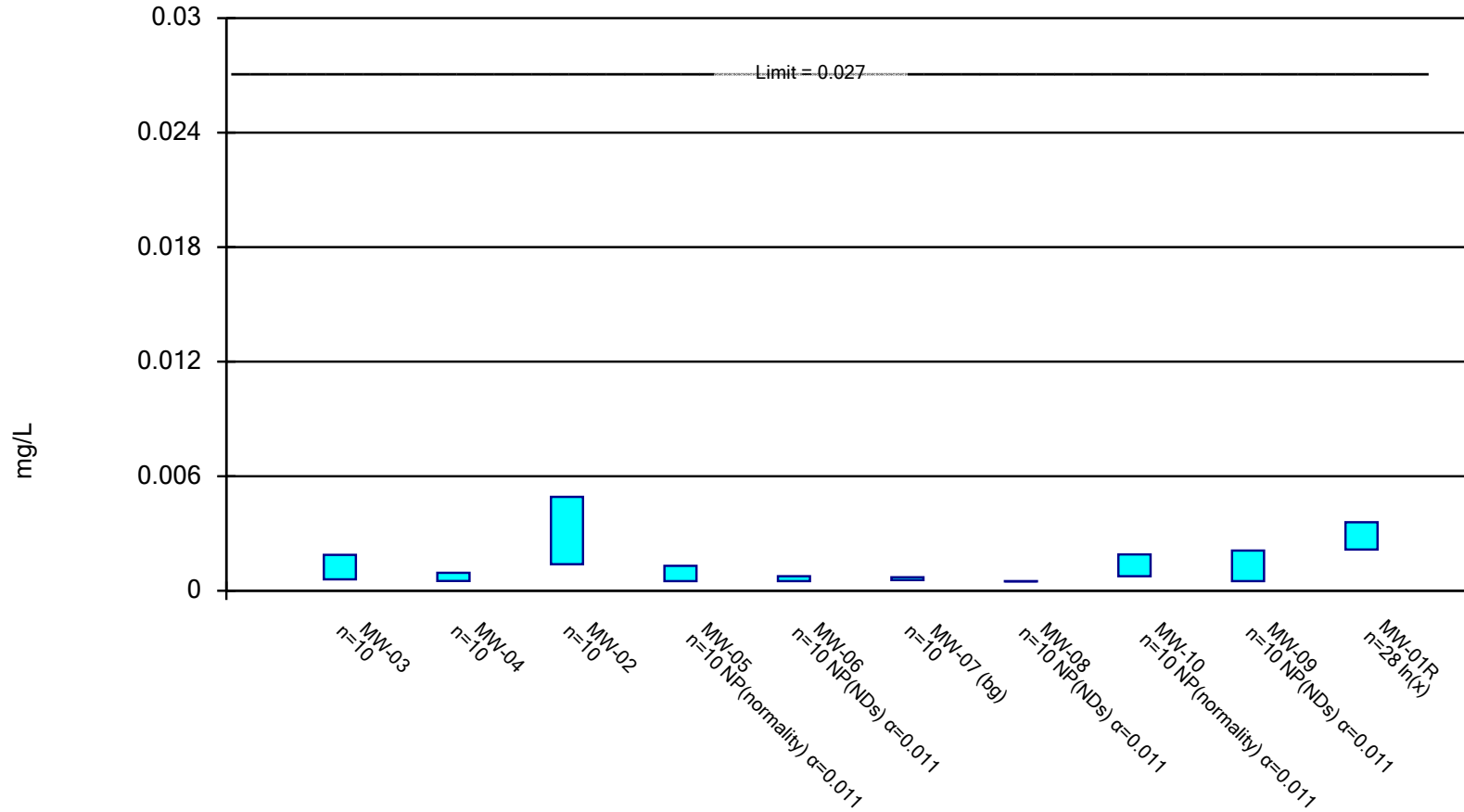


Constituent: Total Dissolved Solids Analysis Run 1/3/2022 1:24 PM View: MI GWPS

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Parametric and Non-Parametric (NP) Confidence Interval

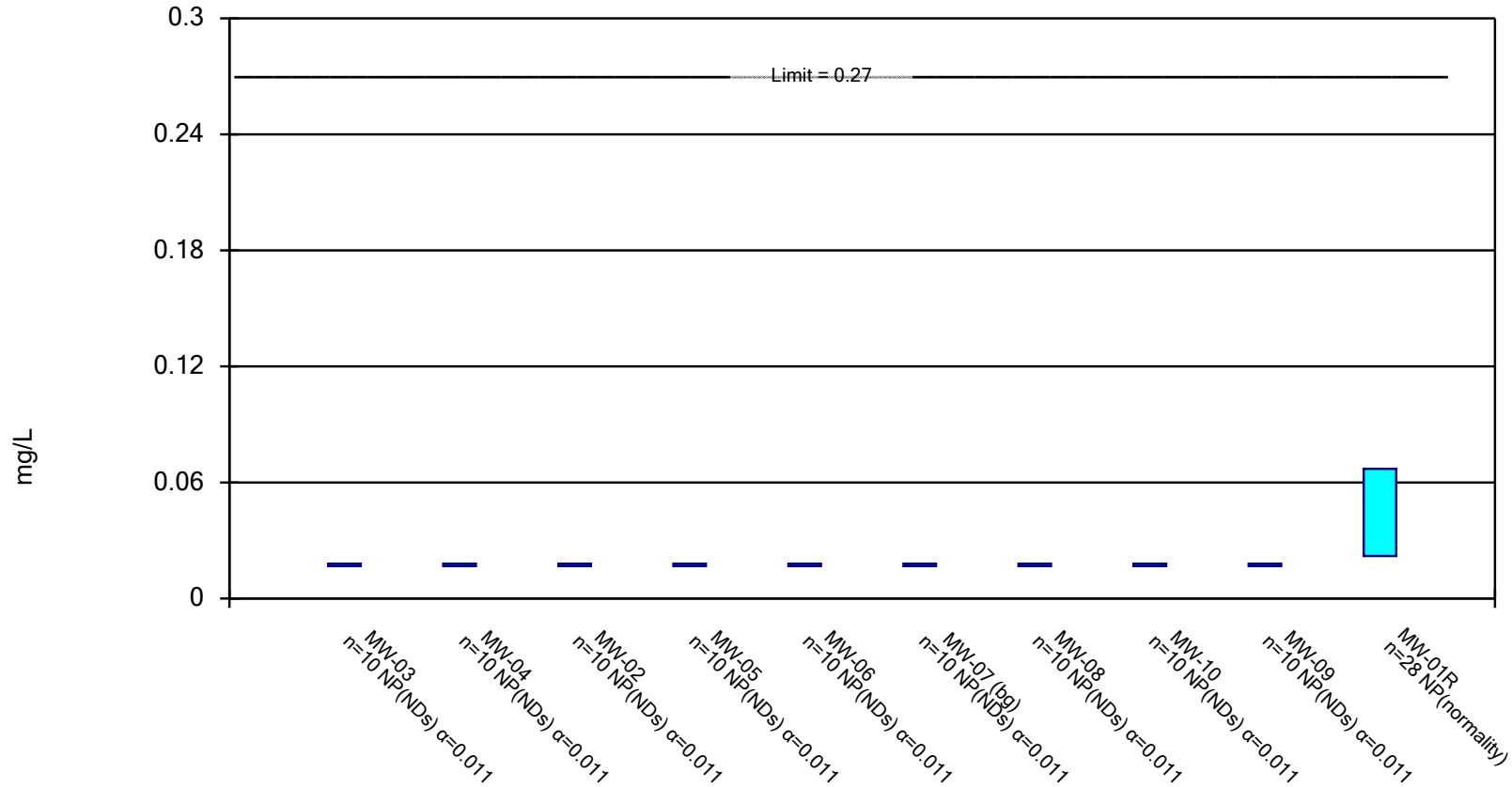
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Vanadium Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Zinc Analysis Run 1/3/2022 1:24 PM View: MI GWPS
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:31 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	MW-03	0.000255	0.00021	0.006	No	21	0.0002217	0.00004425	95.24	No	0.01	NP (NDs)
Antimony (mg/L)	MW-04	0.00021	0.000091	0.006	No	21	0.0002043	0.00002597	95.24	No	0.01	NP (NDs)
Antimony (mg/L)	MW-02	0.00033	0.00021	0.006	No	21	0.0002814	0.0001471	66.67	No	0.01	NP (NDs)
Antimony (mg/L)	MW-05	0.000255	0.00021	0.006	No	18	0.000215	0.00001455	100	No	0.01	NP (NDs)
Antimony (mg/L)	MW-06	0.000255	0.00012	0.006	No	18	0.0002194	0.0000607	77.78	No	0.01	NP (NDs)
Antimony (mg/L)	MW-07 (bg)	0.000255	0.00013	0.006	No	18	0.0002853	0.0003289	88.89	No	0.01	NP (NDs)
Antimony (mg/L)	MW-08	0.000255	0.00012	0.006	No	18	0.0002156	0.00003564	88.89	No	0.01	NP (NDs)
Antimony (mg/L)	MW-10	0.00021	0.00021	0.006	No	10	0.000576	0.001168	80	No	0.011	NP (NDs)
Antimony (mg/L)	MW-09	0.00021	0.00021	0.006	No	10	0.00021	0	100	No	0.011	NP (NDs)
Antimony (mg/L)	MW-01R	0.003786	0.001079	0.006	No	28	0.004314	0.005538	10.71	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-03	0.002118	0.001453	0.01	No	21	0.001786	0.0006027	9.524	No	0.01	Param.
Arsenic (mg/L)	MW-04	0.001611	0.001217	0.01	No	21	0.001414	0.0003568	4.762	No	0.01	Param.
Arsenic (mg/L)	MW-02	0.009952	0.006543	0.01	No	21	0.008248	0.00309	4.762	No	0.01	Param.
Arsenic (mg/L)	MW-05	0.16	0.06333	0.01	Yes	18	0.1116	0.07986	0	No	0.01	Param.
Arsenic (mg/L)	MW-06	0.00149	0.0009801	0.01	No	18	0.001235	0.0004214	5.556	No	0.01	Param.
Arsenic (mg/L)	MW-07 (bg)	0.001	0.0005	0.01	No	17	0.001078	0.00114	47.06	No	0.01	NP (normality)
Arsenic (mg/L)	MW-08	0.005661	0.003736	0.01	No	18	0.004878	0.001844	0	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-10	0.001296	0.0008498	0.01	No	10	0.001073	0.0002502	0	No	0.01	Param.
Arsenic (mg/L)	MW-09	0.003558	0.002242	0.01	No	10	0.0029	0.0007379	0	No	0.01	Param.
Arsenic (mg/L)	MW-01R	0.0083	0.0067	0.01	No	28	0.006929	0.002187	3.571	No	0.01	NP (normality)
Barium (mg/L)	MW-03	0.4399	0.3268	1.2	No	21	0.3833	0.1025	0	No	0.01	Param.
Barium (mg/L)	MW-04	0.1514	0.1188	1.2	No	21	0.1351	0.02947	0	No	0.01	Param.
Barium (mg/L)	MW-02	0.4828	0.4429	1.2	No	21	0.4629	0.03621	0	No	0.01	Param.
Barium (mg/L)	MW-05	0.2237	0.09223	1.2	No	18	0.1846	0.1329	0	ln(x)	0.01	Param.
Barium (mg/L)	MW-06	1.4	0.89	1.2	No	18	1.099	0.379	0	No	0.01	NP (normality)
Barium (mg/L)	MW-07 (bg)	0.4002	0.3264	1.2	No	18	0.3633	0.06097	0	No	0.01	Param.
Barium (mg/L)	MW-08	0.8027	0.5762	1.2	No	18	0.6894	0.1871	0	No	0.01	Param.
Barium (mg/L)	MW-10	1.373	1.167	1.2	No	10	1.27	0.116	0	No	0.01	Param.
Barium (mg/L)	MW-09	3.021	0.9393	1.2	No	10	2.082	1.567	0	ln(x)	0.01	Param.
Barium (mg/L)	MW-01R	0.5967	0.3973	1.2	No	28	0.497	0.2134	0	No	0.01	Param.
Beryllium (mg/L)	MW-03	0.001	0.001	0.004	No	21	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-04	0.001	0.001	0.004	No	21	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-02	0.0015	0.00077	0.004	No	21	0.0009681	0.0002412	85.71	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-05	0.001	0.001	0.004	No	18	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-06	0.001	0.001	0.004	No	18	0.001	0	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-07 (bg)	0.001	0.001	0.004	No	18	0.001	0	100	No	0.01	NP (NDs)

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Beryllium (mg/L)	MW-08	0.001	0.000089	0.004	No	18	0.0009494	0.0002147	94.44	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-10	0.001	0.001	0.004	No	10	0.001	0	100	No	0.011	NP (NDs)
Beryllium (mg/L)	MW-09	0.001	0.001	0.004	No	10	0.001	0	100	No	0.011	NP (NDs)
Beryllium (mg/L)	MW-01R	0.001	0.001	0.004	No	28	0.001	0	100	No	0.01	NP (NDs)
Boron (ug/L)	MW-03	5563	4580	16000	No	21	5071	890.6	0	No	0.01	Param.
Boron (ug/L)	MW-04	3900	3300	16000	No	21	3724	574.4	0	No	0.01	NP (normality)
Boron (ug/L)	MW-02	137592	98805	16000	Yes	21	122000	41539	0	In(x)	0.01	Param.
Boron (ug/L)	MW-05	4200	2700	16000	No	18	3906	2641	0	No	0.01	NP (normality)
Boron (ug/L)	MW-06	14000	9200	16000	No	18	11067	3542	0	No	0.01	NP (normality)
Boron (ug/L)	MW-07 (bg)	15000	11000	16000	No	18	12978	3368	0	No	0.01	NP (normality)
Boron (ug/L)	MW-08	3000	1200	16000	No	18	2192	1651	0	No	0.01	NP (normality)
Boron (ug/L)	MW-10	49555	39245	16000	Yes	10	44400	5777	0	No	0.01	Param.
Boron (ug/L)	MW-09	6385	4695	16000	No	10	5540	946.6	0	No	0.01	Param.
Boron (ug/L)	MW-01R	190000	140000	16000	Yes	28	165000	38442	0	No	0.01	NP (normality)
Cadmium (mg/L)	MW-03	0.0006	0.00033	0.0025	No	21	0.0005738	0.00008273	95.24	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-04	0.0006	0.000037	0.0025	No	21	0.0005463	0.0001696	90.48	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-02	0.0006	0.00021	0.0025	No	21	0.0004928	0.0002549	66.67	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-05	0.0006	0.00032	0.0025	No	18	0.0004888	0.0002229	83.33	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-06	0.0006	0.000063	0.0025	No	18	0.0003986	0.0002596	61.11	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-07 (bg)	0.0006	0.00032	0.0025	No	18	0.0005537	0.0001426	94.44	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-08	0.0006	0.00032	0.0025	No	18	0.000525	0.0001799	88.89	No	0.01	NP (NDs)
Cadmium (mg/L)	MW-10	0.0006	0.0006	0.0025	No	10	0.000593	0.0002526	80	No	0.011	NP (NDs)
Cadmium (mg/L)	MW-09	0.0006	0.0006	0.0025	No	10	0.0006	0	100	No	0.011	NP (NDs)
Cadmium (mg/L)	MW-01R	0.0043	0.0006	0.0025	No	28	0.003946	0.005132	32.14	No	0.01	NP (normality)
Calcium (ug/L)	MW-03	620000	540000	200000	Yes	22	589545	86050	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-04	463546	420999	200000	Yes	22	442273	39633	0	No	0.01	Param.
Calcium (ug/L)	MW-02	210000	180000	200000	No	22	203182	34001	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-05	560000	240000	200000	Yes	18	444444	162597	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-06	250000	200000	200000	No	18	215072	59849	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-07 (bg)	150000	130000	200000	No	18	145000	15435	0	No	0.01	NP (normality)
Calcium (ug/L)	MW-08	139933	122845	200000	No	18	131389	14122	0	No	0.01	Param.
Calcium (ug/L)	MW-10	160000	130000	200000	No	10	141000	11972	0	No	0.011	NP (normality)
Calcium (ug/L)	MW-09	257600	228400	200000	Yes	10	243000	16364	0	No	0.01	Param.
Calcium (ug/L)	MW-01R	256657	169040	200000	No	28	230393	114277	0	In(x)	0.01	Param.
Chloride (mg/L)	MW-03	453.6	359.9	150	Yes	22	413.6	97.57	0	In(x)	0.01	Param.
Chloride (mg/L)	MW-04	313.5	241	150	Yes	22	277.3	67.55	0	No	0.01	Param.

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Chloride (mg/L)	MW-02	150	140	150	No	22	145	8.018	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-05	22.5	15.62	150	No	18	19.06	5.681	0	No	0.01	Param.
Chloride (mg/L)	MW-06	300	150	150	No	18	227.2	66.32	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-07 (bg)	15	13	150	No	18	14.11	0.8324	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-08	44.32	18.9	150	No	18	36.92	28.77	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-10	603.7	412.3	150	Yes	10	508	107.3	0	No	0.01	Param.
Chloride (mg/L)	MW-09	13.95	10.29	150	No	10	12.15	2.31	0	ln(x)	0.01	Param.
Chloride (mg/L)	MW-01R	264.2	250.8	150	Yes	28	257.5	14.3	0	No	0.01	Param.
Chromium (mg/L)	MW-03	0.00256	0.001525	0.1	No	21	0.002202	0.001094	0	ln(x)	0.01	Param.
Chromium (mg/L)	MW-04	0.002257	0.001705	0.1	No	21	0.001981	0.0004996	4.762	No	0.01	Param.
Chromium (mg/L)	MW-02	0.05239	0.03262	0.1	No	21	0.0425	0.01791	0	No	0.01	Param.
Chromium (mg/L)	MW-05	0.0017	0.0008	0.1	No	18	0.0009139	0.0002103	77.78	No	0.01	NP (NDs)
Chromium (mg/L)	MW-06	0.0029	0.0012	0.1	No	18	0.001765	0.001003	0	No	0.01	NP (normality)
Chromium (mg/L)	MW-07 (bg)	0.001	0.00068	0.1	No	18	0.000925	0.0005008	66.67	No	0.01	NP (NDs)
Chromium (mg/L)	MW-08	0.0009586	0.0007158	0.1	No	18	0.0008372	0.0002006	27.78	No	0.01	Param.
Chromium (mg/L)	MW-10	0.01121	0.007332	0.1	No	10	0.00927	0.002172	0	No	0.01	Param.
Chromium (mg/L)	MW-09	0.002689	0.001971	0.1	No	10	0.00233	0.0004029	0	No	0.01	Param.
Chromium (mg/L)	MW-01R	0.006266	0.003249	0.1	No	28	0.005689	0.004133	3.571	ln(x)	0.01	Param.
Cobalt (mg/L)	MW-03	0.001178	0.0008524	0.006	No	21	0.0008833	0.0002917	23.81	No	0.01	Param.
Cobalt (mg/L)	MW-04	0.00058	0.00033	0.006	No	21	0.00051	0.0002227	38.1	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-02	0.007702	0.005441	0.006	No	21	0.006571	0.002049	0	No	0.01	Param.
Cobalt (mg/L)	MW-05	0.0041	0.0005	0.006	No	18	0.002205	0.001998	33.33	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-06	0.00099	0.00036	0.006	No	18	0.0006289	0.0002498	50	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-07 (bg)	0.00091	0.0007	0.006	No	18	0.0008239	0.0001295	16.67	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-08	0.00105	0.00035	0.006	No	18	0.00071	0.0005735	50	No	0.01	NP (normality)
Cobalt (mg/L)	MW-10	0.0011	0.00067	0.006	No	10	0.001027	0.0005839	0	No	0.011	NP (normality)
Cobalt (mg/L)	MW-09	0.0022	0.0005	0.006	No	10	0.000981	0.0007477	30	No	0.011	NP (normality)
Cobalt (mg/L)	MW-01R	0.01587	0.005758	0.006	No	28	0.01732	0.0221	0	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-03	1.68	0.666	5	No	21	1.21	0.8396	23.81	No	0.01	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	MW-04	0.97	0.671	5	No	21	0.8382	0.4338	38.1	No	0.01	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	MW-02	1.988	0.7317	5	No	21	1.565	0.8717	28.57	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-05	1.1	0.536	5	No	18	0.8472	0.3989	50	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-06	2.22	0.73	5	No	18	1.29	0.8637	33.33	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-07 (bg)	1.73	0.73	5	No	18	1.11	0.5214	50	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-08	2.31	0.73	5	No	18	1.607	1.125	33.33	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	MW-10	2.213	0.7756	5	No	9	1.581	0.6146	22.22	No	0.01	Param.

Confidence Interval

Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP Printed 1/3/2022, 1:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Combined Radium 226 + 228 (pCi/L)	MW-09	1.957	1.123	5	No	10	1.54	0.4674	10	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-01R	2.25	0.41	5	No	7	0.9557	0.5965	42.86	No	0.008	NP (Cohens/xfrm)
Copper (mg/L)	MW-03	0.0018	0.00078	0.02	No	10	0.001563	0.0005057	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-04	0.0018	0.0015	0.02	No	10	0.001695	0.0003201	70	No	0.011	NP (NDs)
Copper (mg/L)	MW-02	0.0022	0.0018	0.02	No	10	0.00193	0.0005376	70	No	0.011	NP (NDs)
Copper (mg/L)	MW-05	0.0018	0.0018	0.02	No	10	0.001738	0.0005852	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-06	0.0034	0.0018	0.02	No	10	0.00223	0.001153	70	No	0.011	NP (NDs)
Copper (mg/L)	MW-07 (bg)	0.0018	0.00059	0.02	No	10	0.001545	0.0005385	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-08	0.0018	0.00094	0.02	No	10	0.001618	0.0003844	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-10	0.0018	0.0018	0.02	No	10	0.002027	0.001085	80	No	0.011	NP (NDs)
Copper (mg/L)	MW-09	0.0018	0.0018	0.02	No	10	0.00175	0.0001581	90	No	0.011	NP (NDs)
Copper (mg/L)	MW-01R	0.0056	0.0018	0.02	No	28	0.006071	0.008081	64.29	No	0.01	NP (NDs)
Fluoride (mg/L)	MW-03	1.51	1.017	2.67	No	21	1.263	0.447	0	No	0.01	Param.
Fluoride (mg/L)	MW-04	1.292	1.131	2.67	No	21	1.211	0.1461	0	No	0.01	Param.
Fluoride (mg/L)	MW-02	12.71	10.28	2.67	Yes	21	11.5	2.209	0	No	0.01	Param.
Fluoride (mg/L)	MW-05	3.412	2.377	2.67	No	18	2.894	0.8551	0	No	0.01	Param.
Fluoride (mg/L)	MW-06	1.693	1.452	2.67	No	18	1.572	0.1994	0	No	0.01	Param.
Fluoride (mg/L)	MW-07 (bg)	0.1335	0.07364	2.67	No	18	0.1079	0.04269	16.67	No	0.01	Param.
Fluoride (mg/L)	MW-08	0.4826	0.3318	2.67	No	18	0.4072	0.1246	0	No	0.01	Param.
Fluoride (mg/L)	MW-10	11.55	9.808	2.67	Yes	10	10.68	0.9773	0	No	0.01	Param.
Fluoride (mg/L)	MW-09	2.568	2.312	2.67	No	10	2.44	0.143	0	No	0.01	Param.
Fluoride (mg/L)	MW-01R	26	20	2.67	Yes	28	20.83	7.517	3.571	No	0.01	NP (normality)
Iron (mg/L)	MW-03	18.6	2.843	25.01	No	10	10.72	8.83	0	No	0.01	Param.
Iron (mg/L)	MW-04	8.715	6.265	25.01	No	10	7.49	1.373	0	No	0.01	Param.
Iron (mg/L)	MW-02	23	18	25.01	No	10	19.77	4.869	0	No	0.011	NP (normality)
Iron (mg/L)	MW-05	35.91	10.49	25.01	No	10	23.2	14.24	0	No	0.01	Param.
Iron (mg/L)	MW-06	17.77	10.67	25.01	No	10	14.22	3.983	0	No	0.01	Param.
Iron (mg/L)	MW-07 (bg)	19.67	15.53	25.01	No	10	17.6	2.319	0	No	0.01	Param.
Iron (mg/L)	MW-08	28.06	19.94	25.01	No	10	24	4.546	0	No	0.01	Param.
Iron (mg/L)	MW-10	11.86	9.06	25.01	No	10	10.46	1.569	0	No	0.01	Param.
Iron (mg/L)	MW-09	22.71	16.29	25.01	No	10	19.5	3.598	0	No	0.01	Param.
Iron (mg/L)	MW-01R	4.044	2.599	25.01	No	28	3.321	1.547	0	No	0.01	Param.
Lead (mg/L)	MW-03	0.0005	0.00038	0.014	No	21	0.0004395	0.0001571	66.67	No	0.01	NP (NDs)
Lead (mg/L)	MW-04	0.0005	0.00037	0.014	No	21	0.0004414	0.00009404	66.67	No	0.01	NP (NDs)
Lead (mg/L)	MW-02	0.0046	0.001745	0.014	No	21	0.003172	0.002587	14.29	No	0.01	Param.
Lead (mg/L)	MW-05	0.00075	0.00045	0.014	No	18	0.002287	0.006514	55.56	No	0.01	NP (NDs)

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Lead (mg/L)	MW-06	0.0023	0.0005	0.014	No	18	0.001507	0.00107	22.22	No	0.01	NP (normality)
Lead (mg/L)	MW-07 (bg)	0.00062	0.00045	0.014	No	18	0.0005756	0.0005995	72.22	No	0.01	NP (NDs)
Lead (mg/L)	MW-08	0.00067	0.00046	0.014	No	18	0.0008167	0.0008797	50	No	0.01	NP (normality)
Lead (mg/L)	MW-10	0.0089	0.0005	0.014	No	10	0.006608	0.01373	20	No	0.011	NP (Cohens/xfrm)
Lead (mg/L)	MW-09	0.0016	0.0005	0.014	No	10	0.000793	0.0005488	70	No	0.011	NP (NDs)
Lead (mg/L)	MW-01R	0.03128	0.01062	0.014	No	28	0.03329	0.04093	0	ln(x)	0.01	Param.
Lithium (mg/L)	MW-03	0.07409	0.04808	0.059	No	21	0.06108	0.02358	4.762	No	0.01	Param.
Lithium (mg/L)	MW-04	0.05878	0.04167	0.059	No	21	0.05022	0.0155	4.762	No	0.01	Param.
Lithium (mg/L)	MW-02	1.499	1.233	0.059	Yes	21	1.366	0.241	0	No	0.01	Param.
Lithium (mg/L)	MW-05	0.1286	0.07023	0.059	Yes	18	0.09939	0.0482	11.11	No	0.01	Param.
Lithium (mg/L)	MW-06	0.23	0.17	0.059	Yes	18	0.1909	0.06135	5.556	No	0.01	NP (normality)
Lithium (mg/L)	MW-07 (bg)	0.00835	0.0039	0.059	No	18	0.008872	0.01265	44.44	No	0.01	NP (normality)
Lithium (mg/L)	MW-08	0.03732	0.02431	0.059	No	18	0.03082	0.01075	5.556	No	0.01	Param.
Lithium (mg/L)	MW-10	1.481	0.9786	0.059	Yes	10	1.23	0.2818	0	No	0.01	Param.
Lithium (mg/L)	MW-09	0.26	0.16	0.059	Yes	10	0.235	0.04249	0	No	0.011	NP (normality)
Lithium (mg/L)	MW-01R	3.133	2.418	0.059	Yes	28	2.775	0.7644	0	No	0.01	Param.
Mercury (mg/L)	MW-03	8.0e-7	1.6e-7	0.00014	No	21	0.00001079	0.00002658	71.43	No	0.01	NP (NDs)
Mercury (mg/L)	MW-04	0.00006008	1.6e-7	0.00014	No	21	0.00000683	0.00002131	95.24	No	0.01	NP (NDs)
Mercury (mg/L)	MW-02	0.0000031	1.6e-7	0.00014	No	21	0.00001119	0.00002659	71.43	No	0.01	NP (NDs)
Mercury (mg/L)	MW-05	0.00017	1.6e-7	0.00014	No	18	0.000009596	0.00004003	94.44	No	0.01	NP (NDs)
Mercury (mg/L)	MW-06	0.000083	1.6e-7	0.00014	No	18	0.00002561	0.00004623	55.56	No	0.01	NP (NDs)
Mercury (mg/L)	MW-07 (bg)	0.00008	1.6e-7	0.00014	No	18	0.00002347	0.00004661	77.78	No	0.01	NP (NDs)
Mercury (mg/L)	MW-08	0.00006008	1.6e-7	0.00014	No	18	0.00001919	0.00003791	66.67	No	0.01	NP (NDs)
Mercury (mg/L)	MW-10	0.00008055	1.6e-7	0.00014	No	10	0.00001648	0.00003381	40	No	0.011	NP (normality)
Mercury (mg/L)	MW-09	8.8e-7	1.6e-7	0.00014	No	10	0.000008344	0.0000253	60	No	0.011	NP (NDs)
Mercury (mg/L)	MW-01R	0.00002335	0.00005832	0.00014	No	28	0.00002651	0.00003384	3.571	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-03	0.0049	0.000093	0.1	No	21	0.002009	0.003164	52.38	No	0.01	NP (NDs)
Molybdenum (mg/L)	MW-04	0.00158	0.000607	0.1	No	21	0.001178	0.0007406	19.05	No	0.01	Param.
Molybdenum (mg/L)	MW-02	0.009148	0.004689	0.1	No	21	0.006918	0.004042	9.524	No	0.01	Param.
Molybdenum (mg/L)	MW-05	0.01285	0.004305	0.1	No	18	0.008579	0.007063	11.11	No	0.01	Param.
Molybdenum (mg/L)	MW-06	0.001081	0.000237	0.1	No	18	0.0007473	0.0005699	22.22	No	0.01	Param.
Molybdenum (mg/L)	MW-07 (bg)	0.004	0.000093	0.1	No	18	0.001595	0.00211	27.78	No	0.01	NP (normality)
Molybdenum (mg/L)	MW-08	0.004627	0.002527	0.1	No	18	0.003577	0.001735	11.11	No	0.01	Param.
Molybdenum (mg/L)	MW-10	0.01203	0.004568	0.1	No	10	0.0083	0.004183	0	No	0.01	Param.
Molybdenum (mg/L)	MW-09	0.02601	0.01353	0.1	No	10	0.01977	0.006998	0	No	0.01	Param.
Molybdenum (mg/L)	MW-01R	0.01	0.008	0.1	No	28	0.008514	0.003256	0	No	0.01	NP (normality)

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Nickel (mg/L)	MW-03	0.003	0.002	0.11	No	10	0.00282	0.001522	20	No	0.011	NP (normality)
Nickel (mg/L)	MW-04	0.01853	0.01407	0.11	No	10	0.0163	0.002497	0	No	0.01	Param.
Nickel (mg/L)	MW-02	0.02424	0.01436	0.11	No	10	0.0193	0.005539	0	No	0.01	Param.
Nickel (mg/L)	MW-05	0.0039	0.0015	0.11	No	10	0.002594	0.001548	40	No	0.011	NP (Cohens/xfrm)
Nickel (mg/L)	MW-06	0.0022	0.0022	0.11	No	10	0.00219	0.0001197	70	No	0.011	NP (NDs)
Nickel (mg/L)	MW-07 (bg)	0.0022	0.00042	0.11	No	10	0.001842	0.0007547	80	No	0.011	NP (NDs)
Nickel (mg/L)	MW-08	0.0022	0.0013	0.11	No	10	0.002	0.0004243	80	No	0.011	NP (NDs)
Nickel (mg/L)	MW-10	0.0041	0.0022	0.11	No	10	0.00285	0.0011	50	No	0.011	NP (normality)
Nickel (mg/L)	MW-09	0.0032	0.0022	0.11	No	10	0.00246	0.000631	60	No	0.011	NP (NDs)
Nickel (mg/L)	MW-01R	0.01981	0.009064	0.11	No	28	0.0194	0.01951	0	ln(x)	0.01	Param.
pH (SU)	MW-03	7.466	6.91	9	No	20	7.188	0.4345	0	No	0.005	Param.
pH (SU)	MW-04	7.681	7.101	9	No	20	7.391	0.4537	0	No	0.005	Param.
pH (SU)	MW-02	7.742	7.095	9	No	20	7.419	0.5058	0	No	0.005	Param.
pH (SU)	MW-05	7.785	7.087	9	No	17	7.436	0.4927	0	No	0.005	Param.
pH (SU)	MW-06	7.767	7.243	9	No	17	7.509	0.3782	0	ln(x)	0.005	Param.
pH (SU)	MW-07 (bg)	7.501	6.873	9	No	17	7.187	0.4429	0	No	0.005	Param.
pH (SU)	MW-08	7.812	7.156	9	No	17	7.484	0.4631	0	No	0.005	Param.
pH (SU)	MW-10	8.044	7.5	9	No	10	7.772	0.2644	0	No	0.005	Param.
pH (SU)	MW-09	7.701	7.065	9	No	10	7.383	0.3094	0	No	0.005	Param.
pH (SU)	MW-01R	8.454	7.861	9	No	28	8.158	0.566	0	No	0.005	Param.
Selenium (mg/L)	MW-03	0.0012	0.0009	0.005	No	21	0.001026	0.0002179	66.67	No	0.01	NP (NDs)
Selenium (mg/L)	MW-04	0.0013	0.00065	0.005	No	21	0.0008943	0.0001214	85.71	No	0.01	NP (NDs)
Selenium (mg/L)	MW-02	0.0027	0.0012	0.005	No	21	0.002543	0.002738	19.05	No	0.01	NP (normality)
Selenium (mg/L)	MW-05	0.0009	0.0009	0.005	No	18	0.0009	0	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-06	0.0009	0.0009	0.005	No	18	0.0009	0	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-07 (bg)	0.0009	0.0009	0.005	No	18	0.0009	0	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-08	0.0009	0.0009	0.005	No	18	0.0009	0	100	No	0.01	NP (NDs)
Selenium (mg/L)	MW-10	0.0009	0.0009	0.005	No	10	0.0009	0	100	No	0.011	NP (NDs)
Selenium (mg/L)	MW-09	0.0009	0.0009	0.005	No	10	0.0009	0	100	No	0.011	NP (NDs)
Selenium (mg/L)	MW-01R	0.0021	0.0013	0.005	No	28	0.001949	0.001097	17.86	No	0.01	NP (Cohens/xfrm)
Silver (mg/L)	MW-03	0.0003	0.0003	0.001	No	10	0.0002726	0.00008665	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-04	0.0003	0.000015	0.001	No	10	0.0002429	0.0001204	80	No	0.011	NP (NDs)
Silver (mg/L)	MW-02	0.0003	0.0003	0.001	No	10	0.0002736	0.00008348	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-05	0.0003	0.0003	0.001	No	10	0.0002716	0.00008981	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-06	0.0003	0.0003	0.001	No	10	0.0002724	0.00008728	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-07 (bg)	0.0003	0.000034	0.001	No	10	0.0002456	0.0001147	80	No	0.011	NP (NDs)

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Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	Transform	Alpha	Method
Silver (mg/L)	MW-08	0.0003	0.0003	0.001	No	10	0.0002728	0.00008601	90	No	0.011	NP (NDs)
Silver (mg/L)	MW-10	0.0003	0.0003	0.001	No	10	0.0003	0	100	No	0.011	NP (NDs)
Silver (mg/L)	MW-09	0.0003	0.0003	0.001	No	10	0.0003	0	100	No	0.011	NP (NDs)
Silver (mg/L)	MW-01R	0.0003	0.0003	0.001	No	28	0.0003	0	100	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-03	972	485.9	370	Yes	22	729	452.8	0	No	0.01	Param.
Sulfate (mg/L)	MW-04	801.8	639.1	370	Yes	22	720.5	151.5	0	No	0.01	Param.
Sulfate (mg/L)	MW-02	1.5	0.41	370	No	22	1.98	3.488	54.55	No	0.01	NP (NDs)
Sulfate (mg/L)	MW-05	1100	100	370	No	18	694.8	446.6	0	No	0.01	NP (normality)
Sulfate (mg/L)	MW-06	50.27	6.247	370	No	18	45.39	50.74	5.556	ln(x)	0.01	Param.
Sulfate (mg/L)	MW-07 (bg)	47.04	25.3	370	No	18	36.17	17.96	0	No	0.01	Param.
Sulfate (mg/L)	MW-08	7.348	1.78	370	No	18	6.977	9.683	5.556	ln(x)	0.01	Param.
Sulfate (mg/L)	MW-10	5.8	0.41	370	No	10	7.538	16.09	30	No	0.011	NP (Cohens/xfrm)
Sulfate (mg/L)	MW-09	131	19.54	370	No	10	75.26	62.45	0	No	0.01	Param.
Sulfate (mg/L)	MW-01R	761.3	528	370	Yes	28	644.6	249.6	0	No	0.01	Param.
Thallium (mg/L)	MW-03	0.0003	0.0003	0.001	No	21	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-04	0.0003	0.0003	0.001	No	21	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-02	0.0003	0.0003	0.001	No	21	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-05	0.0003	0.0003	0.001	No	18	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-06	0.0003	0.0003	0.001	No	18	0.0002869	0.00005563	88.89	No	0.01	NP (NDs)
Thallium (mg/L)	MW-07 (bg)	0.0003	0.0003	0.001	No	18	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-08	0.0003	0.0003	0.001	No	18	0.0003	0	100	No	0.01	NP (NDs)
Thallium (mg/L)	MW-10	0.0003	0.0003	0.001	No	10	0.0003	0	100	No	0.011	NP (NDs)
Thallium (mg/L)	MW-09	0.0003	0.0003	0.001	No	10	0.000355	0.0001739	90	No	0.011	NP (NDs)
Thallium (mg/L)	MW-01R	0.0028	0.0003	0.001	No	28	0.0003893	0.0004725	96.43	No	0.01	NP (NDs)
Total Dissolved Solids (mg/L)	MW-03	3450	2795	867	Yes	22	3123	610.2	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-04	2400	1900	867	Yes	22	2092	514.9	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-02	2202	1880	867	Yes	22	2041	300.3	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-05	2400	870	867	Yes	18	1760	629.5	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-06	1600	1200	867	Yes	18	1394	201.4	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-07 (bg)	713.3	618.9	867	No	18	666.1	78	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-08	605.9	400.8	867	No	18	503.3	169.5	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-10	1902	1458	867	Yes	10	1680	248.6	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-09	1146	712.3	867	No	10	929	242.9	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-01R	3500	3200	867	Yes	28	3214	470.4	0	No	0.01	NP (normality)
Vanadium (mg/L)	MW-03	0.00188	0.0005939	0.027	No	10	0.001237	0.0007208	10	No	0.01	Param.
Vanadium (mg/L)	MW-04	0.0009392	0.0005128	0.027	No	10	0.000726	0.000239	10	No	0.01	Param.

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<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Vanadium (mg/L)	MW-02	0.004916	0.00139	0.027	No	10	0.003153	0.001976	10	No	0.01	Param.
Vanadium (mg/L)	MW-05	0.0013	0.0005	0.027	No	10	0.000958	0.0007621	40	No	0.011	NP (normality)
Vanadium (mg/L)	MW-06	0.00076	0.0005	0.027	No	10	0.000554	0.0001553	60	No	0.011	NP (NDs)
Vanadium (mg/L)	MW-07 (bg)	0.0007082	0.0005598	0.027	No	10	0.000634	0.00008316	0	No	0.01	Param.
Vanadium (mg/L)	MW-08	0.0005	0.00049	0.027	No	10	0.000485	0.00004403	80	No	0.011	NP (NDs)
Vanadium (mg/L)	MW-10	0.0019	0.00076	0.027	No	10	0.001383	0.000535	0	No	0.011	NP (normality)
Vanadium (mg/L)	MW-09	0.0021	0.0005	0.027	No	10	0.00087	0.0007889	80	No	0.011	NP (NDs)
Vanadium (mg/L)	MW-01R	0.003589	0.002157	0.027	No	28	0.003179	0.00173	3.571	ln(x)	0.01	Param.
Zinc (mg/L)	MW-03	0.018	0.018	0.27	No	10	0.01628	0.005436	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-04	0.018	0.018	0.27	No	10	0.0165	0.004743	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-02	0.018	0.018	0.27	No	10	0.01719	0.002561	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-05	0.018	0.018	0.27	No	10	0.03665	0.06461	80	No	0.011	NP (NDs)
Zinc (mg/L)	MW-06	0.018	0.018	0.27	No	10	0.0173	0.002214	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-07 (bg)	0.018	0.018	0.27	No	10	0.01673	0.005157	80	No	0.011	NP (NDs)
Zinc (mg/L)	MW-08	0.018	0.018	0.27	No	10	0.01646	0.00487	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-10	0.018	0.018	0.27	No	10	0.0315	0.0452	80	No	0.011	NP (NDs)
Zinc (mg/L)	MW-09	0.018	0.018	0.27	No	10	0.01684	0.003668	90	No	0.011	NP (NDs)
Zinc (mg/L)	MW-01R	0.067	0.022	0.27	No	28	0.06954	0.07713	28.57	No	0.01	NP (normality)



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