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**GREDELL Engineering Resources, Inc.**

**Sikeston Power Station  
2020 Annual Groundwater Monitoring Report for  
Bottom Ash Pond  
For Compliance with USEPA 40 CFR 257.90(e)**

*Prepared for:*



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January 29, 2021

**Sikeston Power Station**  
**2020 Annual Groundwater Monitoring Report for**  
**Bottom Ash Pond**  
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**Prepared for:**  
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**1551 West Wakefield Avenue**  
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**January 2021**

**Table of Contents**

|            |  |           |
|------------|--|-----------|
| <b>1.0</b> | <b>INTRODUCTION .....</b>                            | <b>1</b>  |
| <b>2.0</b> | <b>GROUNDWATER MONITORING SYSTEM.....</b>            | <b>3</b>  |
| <b>3.0</b> | <b>FIELD SAMPLING SUMMARY .....</b>                  | <b>4</b>  |
| <b>3.1</b> | <b>Field Quality Assurance/Quality Control .....</b> | <b>4</b>  |
| <b>4.0</b> | <b>ANALYTICAL SUMMARY .....</b>                      | <b>6</b>  |
| <b>4.1</b> | <b>Laboratory Quality Control .....</b>              | <b>6</b>  |
| <b>4.2</b> | <b>Precision and Accuracy .....</b>                  | <b>6</b>  |
| <b>4.3</b> | <b>Representativeness .....</b>                      | <b>7</b>  |
| <b>4.4</b> | <b>Comparability .....</b>                           | <b>7</b>  |
| <b>4.5</b> | <b>Completeness .....</b>                            | <b>8</b>  |
| <b>5.0</b> | <b>STATISTICAL ANALYSIS .....</b>                    | <b>9</b>  |
| <b>5.1</b> | <b>Statistical Results .....</b>                     | <b>10</b> |
| <b>6.0</b> | <b>SUMMARY .....</b>                                 | <b>11</b> |
| <b>7.0</b> | <b>LIMITATIONS.....</b>                              | <b>12</b> |
| <b>8.0</b> | <b>REFERENCES .....</b>                              | <b>13</b> |

## **List of Tables**

Table 1 – Groundwater Monitoring Network Summary

Table 2 – Historical Groundwater Level Summary

Table 3 – Water Level and Field Parameter Summary

Table 4 – Groundwater Monitoring Constituents

Table 5 – Relative Percent Difference Summary

Table 6 – Intra-Well Prediction Limit Summary

## **List of Figures**

Figure 1 –Groundwater Contour Map – February 18, 2020

Figure 2 –Groundwater Contour Map – July 21, 2020

## **List of Appendices**

Appendix 1 – Field Sampling Notes

Appendix 2 – Laboratory Analytical Results

Appendix 3 – Laboratory Quality Assurance/Quality Control Data

Appendix 4 – Groundwater Quality Data Base

Appendix 5 – Statistical Power Curve

Appendix 6 – Time Series Plots

Appendix 7 – Box and Whiskers Plots

Appendix 8 – Prediction Limit Charts

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## 1.0 INTRODUCTION

The Sikeston Power Station (SPS), owned and operated by the Sikeston Board of Municipal Utilities (SBMU), is an electric power producer and distributor located within the western city limits of Sikeston, in southern Scott County, Missouri. The SBMU-SPS began operation in 1981 and produces approximately 235 megawatts. Coal combustion residuals (approximately 10,000 tons per annum) are currently sold or placed in the facility's two coal ash surface impoundments located immediately east of the power station. Both impoundments are on properties owned and controlled by SBMU. One coal ash impoundment measuring approximately 61 acres in size is used for bottom ash disposal. The second coal ash impoundment measuring approximately 30 acres in size is primarily used for fly ash disposal. It is subject to the alternate compliance schedule specified by the United States Environmental Protection Agency (USEPA) under 40 CFR Part 257.100(e)(5)(ii) due to its initial inactive status and the Response to Partial Vacatur (the Direct Final Rule). Consequently, this report pertains specifically to the bottom ash pond.

Pursuant to USEPA's 40 CFR Part 257 (§257) Federal Criteria for Classification of Solid Waste Disposal Facilities and Practices, Subpart D – Standards for Disposal of Coal Combustion Residuals (CCR) in Landfills and Surface Impoundments (ponds), the establishment of a groundwater monitoring system and routine detection sampling and reporting is required at all coal ash surface impoundments. The purpose of a monitoring well system is to accurately evaluate the quality of groundwater as it passes beneath the waste mass within an impoundment. Groundwater samples are collected and analyzed on a semi-annual basis in accordance with §257.93, or as otherwise detailed in a site-specific Groundwater Monitoring and Sampling Plan (GMSAP) (Gredell Engineering, 2018a). Analytical data also are subjected to statistical analysis in accordance with §257.93(f), with the results included in an Annual Groundwater Monitoring and Corrective Action Report in accordance with §257.90(e). If results suggest a statistically significant increase (SSI) in one or more constituents for detection monitoring listed in Appendix III of §257, a written demonstration is required to determine if the SSI is attributable to an ash pond release or to other causative factors. If a successful demonstration is not made, an assessment monitoring program must be initiated as required under §257.95.

Prior to completion of the 2018 Annual Groundwater Monitoring and Corrective Action Report (Gredell Engineering, 2019), an Alternate Source Demonstration (ASD) was prepared to address three suspected SSIs in one of the wells comprising the groundwater monitoring network for the bottom ash pond. The ASD was successfully completed and certified in accordance with §257.94(e)(2) on September 26, 2018. The ASD report (Gredell Engineering, 2019) documented that the suspected SSIs in monitoring well MW-8 (Chloride, Sulfate, and Calcium) resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. As a result of this successful ASD, detection monitoring in accordance with §257.94 has continued on a semi-annual basis as specified in §257.94(b). The ASD also concluded that a minimum of eight additional rounds of background data be collected and analyzed for the constituents listed in Appendix III and IV to Part 257. To date, seven additional rounds of background data have been collected. The eighth round of sampling began during the fourth quarter of 2020, but final data have not been received as of the time of this report. Prior to completion of this Annual

Groundwater Monitoring Report, an Alternate Source Demonstration (ASD) was prepared to address the suspected SSI in one of the wells comprising the groundwater monitoring network for the bottom ash pond. The ASD was successfully completed and certified in accordance with §257.94(e)(2) on August 6, 2020. The ASD report (Appendix 9) documented that the suspected SSI in monitoring well MW-8 (TDS) was a false positive and was attributed to an alternate source and not evidence of a release from the Bottom Ash Pond. As a result, detection monitoring in accordance with §257.94 will continue as specified in §257.94(b).

This 4th annual report describes the results of the sixth and seventh semi-annual detection groundwater sampling events initiated at the Sikeston Power Station bottom ash pond on February 18 and July 21, 2020, respectively. Included is a description of the sampling event, groundwater elevations, water table surface, summary of field activities, analytical results, and statistical analysis results. Field sampling and reporting activities were conducted in accordance with the site-specific GMSAP (Gredell Engineering, 2018a). Statistical analysis was performed in accordance with §257.93(f) using the appropriate statistical analysis method as filed in the SBMU-SPS operating record on October 17, 2017.

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## **2.0 GROUNDWATER MONITORING SYSTEM**

The SBMU-SPS bottom ash pond groundwater monitoring system consists of five monitoring wells that yield water from the uppermost aquifer. The five wells are designated MW-3, MW-4, MW-5, MW-6, and MW-8. MW-3 through MW-6 were installed during characterization of the site in May 2016. MW-8 was installed in April 2017 to serve as an additional downgradient monitoring well as discussed in the Site Characterization Report (Gredell Engineering, 2017). The Site Characterization Report also concluded that MW-4, MW-5 and MW-8 are hydraulically downgradient of the bottom ash pond. MW-3 and MW-6 are hydraulically upgradient of the bottom ash pond. The bottom ash pond monitoring system is described in more detail in the site-specific GMSAP for this facility (Gredell Engineering, 2018a).

Table 1 presents a construction summary of the wells comprising the bottom ash pond groundwater monitoring system. Figures 1 and 2 depict well locations and groundwater contour maps of the uppermost aquifer for the February and July, 2020 semi-annual sampling events respectively. These maps confirm that water in the uppermost aquifer continues to move in a west-southwesterly direction, consistent with the conclusions of the Site Characterization Report (Gredell Engineering, 2017). All groundwater wells are equipped with dedicated tubing for use with a peristaltic pump. This system has been used for chemical sampling since inception of groundwater sampling with the bottom ash pond monitoring system.

### **3.0 FIELD SAMPLING SUMMARY**

SPS environmental staff initiated the sixth and seventh semi-annual detection groundwater sampling events on February 18 and July 21, 2020, respectively, at the Sikeston Power Station. Each event was conducted in the same manner as described in the following paragraphs.

Groundwater samples were collected from all five monitoring wells using low-flow sampling techniques and dedicated sampling equipment. Field tests of indicator parameters were performed using an In-Situ, Inc. SmarTROLL™ MP flow cell unit and HF Scientific MicroTPI field portable turbidimeter. Each groundwater sample was subsequently analyzed for the constituents listed in §257 Appendix III. All five monitoring wells produced sufficient volumes of groundwater for full analysis during both sampling events.

During each sampling event, the environmental staff inspected each monitoring well upon arrival. Wells appeared to be in satisfactory condition and had locks in place. Staff initially gauged water levels in the monitoring wells using a standard electronic water level meter graduated in increments of 0.01 feet. Static water levels were recorded on forms provided in the GMSAP. Each well was then purged and field measurement of pH was collected. Staff monitored water quality until indicator parameters (pH and specific conductance) stabilized in accordance with the criteria in the GMSAP. Additional indicator parameters (turbidity, temperature, dissolved oxygen, and oxidation/reduction potential) were monitored for general stability prior to groundwater sample collection. The pumping rate of the peristaltic pump during purging and sampling was limited to less than 500 mL/min.

Field notes documenting the sampling events and a copy of the chain-of-custody forms are presented in Appendix 1 and are arranged by sampling event. Field sampling notes from each sampling event are summarized in Table 3, including initial and final water level measurements, purge volumes, and pH. Raw analytical laboratory data sheets for each sample, including the field blank and sample duplicate, are included in Appendix 2 and are also arranged by sampling event. Quality Assurance/Quality Control (QA/QC) documentation for each sampling event is presented in Appendix 3. A summary of background and detection monitoring analytical data and field parameters is presented in Appendix 4

#### **3.1 Field Quality Assurance/Quality Control**

Field QA/QC during both the February 18 and July 21, 2020 sampling events included the collection of one field blank and one field duplicate sample per sampling event. During the February event, the duplicate was collected from MW-5, and during the July event, the duplicate was collected from MW-8 (Table 5). Rinsate blanks were not collected because dedicated sampling equipment was used. Samples were immediately shipped to PDC Laboratories' (PDC Labs) primary facility located in Peoria, Illinois using standard chain-of-custody documentation procedures.

Samples from the February sampling event were received by the primary facility on February 20, 2020. However, final results received on March 16, 2020 qualified that analysis hold times were



exceeded for all TDS samples. As a consequence, all five wells were sampled specifically for TDS on March 30, 2020 to provide un-qualified results. Final hard copy analytical results for TDS were received from PDC Labs on April 7, 2020. The final TDS results suggested an SSI for TDS in MW-8 may be present. Therefore, MW-8 was resampled on April 8, 2020 to confirm the initial result. Final hard copy analytical results for TDS in MW-8 were received on May 14, 2020.

Samples from the July sampling event were received by the primary facility on July 23, 2020 and subsequently analyzed for the six detection monitoring constituents listed in §257 Appendix III and required under §257.94(b) (Table 4). Final hard copy analytical results for the August sampling event were received from PDC Labs on August 24, 2020. However, a re-sample of pH at MW-4 had already been completed on August 4, 2020.

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## 4.0 ANALYTICAL SUMMARY

Hard copy analytical data for each monitoring well sampled during the February and July, 2020 detection monitoring events are provided in Appendix 2. The data pertain to water quality results from the uppermost aquifer in the area bordering the bottom ash pond, along with sample duplicates and field blank results.

### 4.1 Laboratory Quality Control

Laboratory analytical data for the February and July, 2020 sampling events were completed by PDC Labs and were accompanied by appropriate QA/QC documentation. That documentation is presented in Appendix 3.

### 4.2 Precision and Accuracy

Precision is a measure of the reproducibility of analytical results, generally expressed as a *Relative Percent Difference (RPD)*. Laboratory quality control procedures to measure precision consist of laboratory control sample (LCS) analysis and analysis of matrix spike/matrix spike duplicates (MS/MSD). These analyses are used to define analytical variability. Accuracy is defined as the degree of agreement between the measured amount of a species and the amount actually known to be present, expressed as a percentage. It is generally determined by calculating the percent recoveries for analyses of surrogate compounds, laboratory control samples, continuing calibration check standards and matrix spike samples. Acceptable percent recoveries are established for SW-846 and USEPA methods. Field and laboratory blank analyses are also used to address measurement bias.

The analyses were performed within appropriate hold times (except as noted below) and both initial and continuing calibrations met acceptance criteria for all analyses. Similarly, method blanks and LCS analyses met acceptance criteria. The case narrative for the February 2020 sampling event indicates that all testing was performed according to the lab's TNI accreditations. Several results from the February 2020 event were qualified:

- All TDS analysis was conducted outside hold time (and subsequent sampling for valid TDS results was scheduled and completed March 30, 2020.
- The Fluoride result for MW-3 is qualified with "Q1" to signify that the matrix spike failed percent recovery acceptance limits, and the associated blank spike recovery was acceptable.
- The Fluoride result for MW-6 is qualified with "Q3" to signify that the matrix spike/matrix spike duplicate failed percent recovery acceptance limits, and the associated blank spike recovery was acceptable.

The case narrative for the July 2020 sampling event indicates that all testing was performed according to the lab's TNI accreditations. However, several results from this event were qualified:

- The TDS result for the duplicate sample is qualified with "M" to signify that this analyte failed to meet the required acceptance criteria for duplicate analysis.

- 
- The Calcium result for the Field Blank is qualified with “B” to signify that this analyte was present in the method blank at 0.88 mg/L.

Additional QA/QC comments for both sampling events include the following:

- *Field Duplicates:* Analyses of duplicate samples are used to define the total variability of the sampling/analytical system as a whole. One field duplicate from MW-5 was collected during the February 2020 sampling event and one field duplicate from MW-8 was collected during the July 2020 event. RPDs were calculated for all detected chemical parameters for each sampling event. A summary table showing the results of the RPD calculations is included as Table 5. Using a tolerance level of  $\pm 20$  percent, all calculated RPDs were within acceptable ranges for each parameter.
- *Field Blank:* One field blank was incorporated into the data set for each sampling event in 2020. The February 2020 field blank analytical results do not indicate concentrations above detection limits for sampled parameters. The July 2020 field blank analytical results indicate a reportable concentration of Calcium (0.98 mg/L). All other parameters during the July event were below detection limits.
- *Laboratory Blanks:* Method blanks, artificial, and matrix-less samples are analyzed to monitor the laboratory system for interferences and contamination from glassware, reagents, etc. Method blanks are taken throughout the entire sample preparation process. They are included with each batch of extractions or digestions prepared, or with each 20 samples, whichever was more frequent. Reference to Appendix 3 should be made for comments related to these and other laboratory control samples.

### 4.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely reflect site conditions. Representativeness of the data is determined by comparing actual sampling procedures to those delineated in the field sampling plan, comparing results from field duplicate samples and reviewing the results of field blanks.

Approved sampling procedures are described in the GMSAP (Gredell Engineering, 2018a). Procedures specified in that plan have been followed. Approved sampling procedures should be reviewed annually. Groundwater monitoring data is evaluated using an intrawell statistical analysis methodology and is conducted separately for each constituent in each monitoring well using prediction limits in accordance with §257.93(f)(3) and the performance standards in §257.93(g). The stated statistical approach, along with supporting documentation and engineering certification, are available in the SBMU-SPS On-Site Operating Record.

### 4.4 Comparability

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

## **4.5 Completeness**

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected under controlled laboratory conditions. Completeness is defined as the valid data percentage of the total tests requested. Valid data are defined as those where the sample arrived at the laboratory intact, properly preserved, in sufficient quantity to perform the requested analyses, and accompanied by a completed chain-of-custody form (Appendix 3). Furthermore, the sample must have been analyzed within the specified holding time and in such a manner that analytical QC acceptance criteria are met.

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## 5.0 STATISTICAL ANALYSIS

The statistical analysis approach used to evaluate groundwater within the uppermost aquifer for the bottom ash pond monitoring well network at SBMU-SPS consists of intra-well analysis using prediction limits. The analysis is conducted separately for each constituent in each of the five monitoring wells for each sampling event in accordance with §257.93(f)(3). This statistical method complies with the accepted performance standards listed in §257.93(g).

The background data used to evaluate current groundwater quality is based on eight rounds of groundwater sampling of MW-3, MW-4, MW-5, and MW-6 spanning November 2016 to July 2017 and MW-8 spanning May 2017 to September 2017. The background may be updated every two years but any SSIs will not be included in background unless they are unconfirmed in accordance with Unified Guidance (USEPA, 2009).

Statistical analysis was performed in accordance with §257.93 using Sanitas™ for Ground Water (Version 9.6.27; 2020). Intra-well prediction intervals were compared at the 99 percent confidence level for each constituent with a 1 of 2 retest methodology to improve accuracy and reduce false positives. The groundwater results from the February and July 2020 monitoring events were compared to the prediction limits (Table 6) to determine if potential SSIs over background are apparent.

If the number of reportable concentrations of a given constituent in a given well is not sufficient to permit parametric analysis, non-parametric prediction interval analysis is conducted. Both parametric and non-parametric prediction limit analysis were performed for the bottom ash pond groundwater monitoring well network data. Prediction intervals are based on the background monitoring data sets (Appendix 4), including concentrations reported as below detection limits. Initially, outlier analysis was performed for the background data set using Exploratory Data Analysis (EDA) with Sanitas™, time-series plots, and box and whiskers plots. However, because the background data span a collection period of less than one year, variance in the data set may be attributable to natural seasonal variation. Therefore, all background data have been retained as recommended by Unified Guidance (USEPA, 2009) when no basis for likely error or discrepancy can be identified. Following future updates to the background data set, the identification of potential outliers will be re-evaluated.

The results of the statistical analysis for the 2020 sampling events are described below. A complete database summarizing the sample results, dates of sampling, and the purpose of sampling event, as per §257.90(e)(3), is provided in Appendix 4. A statistical power curve, based on the background data, is provided in Appendix 5. Trend analysis (time-series) plots of background data for all detection monitoring constituents are presented in Appendix 6. Box and whiskers plots of background data are presented in Appendix 7. Prediction limit charts are provided in Appendix 8.

## **5.1 Statistical Results**

### **February 18, 2020 Sampling Event**

The initial results of the statistical analysis for the bottom ash pond groundwater monitoring system suggested the presence of one suspected SSI (TDS in MW-8). The prediction limit for TDS in MW-8 is 448 mg/L (Table 6), whereas the reported concentration was 480 mg/L (Appendix 2 and Appendix 4). A second sample was obtained from MW-8 and analyzed for TDS (Appendix 2). The reported concentration of TDS in the resample (480 mg/L) confirmed the SSI. In accordance with §257.94(e)(2), an Alternate Source Demonstration was conducted on August 6, 2020 (Appendix 9) and concluded that the concentration of TDS in monitoring well MW-8 was a false positive and was attributed to an alternate source and not evidence of a release from the Bottom Ash Pond. Consequently, detection monitoring should continue on a semi-annual basis as specified in §257.94(b).

### **July 21, 2020 Sampling Event**

The results of the statistical analysis for the bottom ash pond groundwater monitoring system suggested the presence of an apparent statistically significant decrease in pH in MW-4. During the July 21, 2020 event, the field measurement for pH in MW-4 (Appendix 1 and Appendix 4) was 7.2 S.U. and the lower prediction limit is 7.291 S.U. (Table 6). Consequently, field pH was resampled (Appendix 1) on August 4, 2020 and the result (7.4 S.U.) did not confirm a statistically significant change in pH. Therefore, detection monitoring should continue on a semi-annual basis as specified in §257.94(b).

## **6.0 SUMMARY**

The statistical analysis results for samples obtained during the sixth and seventh groundwater detection monitoring events conducted on February 18 and July 21, 2020, respectively, do not indicate the presence of confirmed SSIs associated with a release from the bottom ash pond groundwater monitoring system. Therefore, it is recommended that detection monitoring of the bottom ash pond continue on a semi-annual basis in accordance with §257.94(b).

Additional background sampling in accordance with the September 2018 ASD (Gredell Engineering, 2019) has resulted in additional data that will be used to update the background statistical database prior to the next detection monitoring event at the bottom ash pond.

## **7.0 LIMITATIONS**

This report has been prepared for the exclusive use of the client and GREDELL Engineering Resources, Inc. for the specific project discussed in accordance with generally accepted environmental practices common to this locale at this time. The report is applicable only to this specific project and identified site conditions as they existed at the time of report preparation. The use of this report by others to develop independent interpretations of data or conclusions not explicitly stated in this report are the sole responsibility of those firms or individuals.

This report is not a guarantee of subsurface conditions. Variations in subsurface conditions may be present that were not identified during this or previous investigations. Interpretations of data and recommendations made in this report are based on observations of data that were available and referred to in this report unless otherwise noted. No other warranties, expressed or implied, are provided.



## 8.0 REFERENCES

GREDELL Engineering Resources, Inc., 2017, *Sikeston Power Station Site Characterization for Compliance with Missouri State Operating Permit #MO-0095575*, dated May 2017.

GREDELL Engineering Resources, Inc., 2018a, *Sikeston Power Station Groundwater Monitoring and Sampling Plan for Compliance with Missouri State Operating Permit #MO-0095575*, dated September 2018.

GREDELL Engineering Resources, Inc., 2018b, *Sikeston Board of Municipal Utilities Sikeston Power Station Detection Monitoring Program for Bottom Ash Pond Alternate Source Demonstration*, dated September 2018.

GREDELL Engineering Resources, Inc., 2019, *Sikeston Power Station, 2018 Annual Groundwater Monitoring and Corrective Action Report for Bottom Ash Pond for Compliance with USEPA 40 CFR 257.90(e)*, dated January 30, 2019.

Sanitas Statistical Software, © 1992-2019 SANITAS TECHNOLOGIES, Alamosa Colorado 81101-0012.

U.S. Environmental Protection Agency, March 2009, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance: USEPA 530/R-09-007*, Office of Resource Conservation and Recovery, Program Implementation and Information Division, Washington, D.C.

# TABLES

**Annual Groundwater Monitoring Report  
USEPA 40 CFR 257.90(e)  
SBMU - Sikeston Power Station  
Scott County, Missouri**

**Table 1  
Groundwater Monitoring Network Summary**

| <b>Monitoring Well ID<sup>1,2</sup></b> | <b>Northing Location<sup>3,4</sup></b> | <b>Easting Location<sup>3,4</sup></b> | <b>Ground Surface Elevation<sup>3,4</sup> (feet)</b> | <b>Top of Riser Elevation<sup>3,4</sup> (feet)</b> | <b>Well Depth<sup>5</sup> (feet)</b> | <b>Base of Well Elevation<sup>6</sup> (feet)</b> | <b>Screen Length<sup>7</sup> (feet)</b> | <b>Top of Screen Elevation (feet)</b> |
|---|--|---------------------------------------|--|--|--------------------------------------|--|---|---------------------------------------|
| MW-3                                    | 381130.00                              | 1079946.62                            | 306.11   | 308.55   | 37.21                                | 271.34   | 10                                      | 281.5                                 |
| MW-4                                    | 380804.62                              | 1077766.95                            | 303.26   | 305.61   | 37.55                                | 268.06   | 10                                      | 278.3                                 |
| MW-5                                    | 379858.94                              | 1078477.85                            | 303.57   | 305.91   | 37.17                                | 268.74   | 10                                      | 278.9                                 |
| MW-6                                    | 379874.77                              | 1079384.36                            | 305.37   | 307.72   | 38.03                                | 269.69   | 10                                      | 279.9                                 |
| MW-8                                    | 380311.20                              | 1077940.08                            | 302.37   | 304.77   | 37.41                                | 267.36   | 10                                      | 277.6                                 |

**NOTES:**

1. Refer to Figure 1 for monitoring well locations.
2. Refer to Sikeston Power Station On-Site Operating Record for well construction diagrams.
3. Monitoring well survey data provided by Bowen Engineering & Surveying, Inc.
4. Horizontal Datum: Missouri State Plane Coordinates - NAD 83 (Feet), Vertical Datum: NAVD 88 (Feet).
5. Depth measurements relative to surveyed point on top of well casing.
6. Sump installed at base of screen (0.2 feet length).
7. Actual screen length (9.7 feet) is the machine-slotted section of the 10-foot length of Schedule 40 PVC pipe.

**Annual Groundwater Monitoring Report  
USEPA 40 CFR 257.90(e)  
SBMU - Sikeston Power Station  
Scott County, Missouri**

**Table 2  
Historical Groundwater Level Summary**

| Well ID  | MW-3                             | MW-4   | MW-5   | MW-6   | MW-8   |
|----------|----------------------------------|--------|--------|--------|--------|
| Date     | Groundwater Elevation (feet MSL) |        |        |        |        |
| 05/12/16 | 298.13                           | 296.01 | 296.68 | 297.41 | NM     |
| 06/28/16 | 297.58                           | 294.75 | 295.51 | 296.57 | NM     |
| 07/15/16 | 297.37                           | 294.77 | 295.53 | 296.44 | NM     |
| 08/08/16 | 297.05                           | 294.66 | 294.87 | 295.77 | NM     |
| 09/08/16 | 296.76                           | 294.40 | 294.96 | 295.84 | NM     |
| 10/05/16 | 296.40                           | 294.02 | 294.70 | 295.57 | NM     |
| 11/01/16 | 296.10                           | 293.99 | 294.49 | 295.24 | NM     |
| 11/30/16 | 296.03                           | 294.26 | 294.80 | 295.37 | NM     |
| 01/24/17 | 296.35                           | 294.73 | 295.19 | 295.77 | NM     |
| 01/26/17 | 296.35                           | 294.73 | 295.19 | 295.77 | NM     |
| 02/22/17 | 296.00                           | 294.40 | 294.81 | 295.41 | NM     |
| 02/24/17 | 296.00                           | 294.40 | 294.81 | 295.41 | NM     |
| 03/20/17 | 296.45                           | 295.10 | 295.46 | 295.97 | NM     |
| 04/19/17 | 296.35                           | 294.73 | 295.19 | 295.81 | NM     |
| 04/27/17 | 296.72                           | 295.41 | 295.78 | 296.20 | NM     |
| 05/17/17 | 297.81                           | 295.76 | 296.31 | 297.11 | NM     |
| 05/18/17 | NM                               | NM     | NM     | NM     | 295.67 |
| 06/08/17 | 297.81                           | 295.64 | 296.17 | 296.96 | NM     |
| 06/09/17 | NM                               | NM     | NM     | NM     | 295.57 |
| 07/13/17 | 296.98                           | 294.60 | 295.22 | 296.06 | 294.70 |
| 08/03/17 | NM                               | NM     | NM     | NM     | 294.12 |
| 08/15/17 | NM                               | NM     | NM     | NM     | 294.02 |
| 08/30/17 | NM                               | NM     | NM     | NM     | 293.72 |
| 09/14/17 | NM                               | NM     | NM     | NM     | 293.57 |
| 09/27/17 | NM                               | NM     | NM     | NM     | 293.26 |
| 10/31/17 | 295.22                           | 293.11 | 293.65 | 294.41 | 293.20 |
| 06/13/18 | 297.33                           | 294.93 | 295.60 | 296.47 | 295.02 |
| 11/26/18 | 295.63                           | 293.76 | 294.27 | 294.91 | 293.88 |
| 12/26/18 | 296.04                           | 294.19 | 294.64 | 295.36 | 294.31 |
| 01/08/19 | 296.38                           | 294.62 | 295.17 | 295.77 | 294.73 |
| 02/05/19 | 296.73                           | 294.99 | 295.46 | 296.06 | 295.07 |
| 02/22/19 | 298.35                           | 296.58 | 297.33 | 297.94 | 296.79 |
| 03/27/19 | 298.51                           | 296.05 | 296.72 | 297.69 | 296.15 |
| 04/16/19 | 298.93                           | 296.58 | 297.31 | 298.22 | 296.67 |
| 05/14/19 | 299.25                           | 296.36 | 297.10 | 298.21 | 296.45 |
| 05/28/19 | 298.95                           | 296.01 | 296.80 | 297.91 | 296.16 |
| 06/12/19 | 298.82                           | 296.00 | 296.71 | 297.82 | 296.10 |
| 07/17/19 | 298.38                           | 295.84 | 296.46 | 297.44 | 295.97 |
| 07/24/19 | 298.41                           | 295.97 | 296.66 | 297.57 | 296.13 |
| 08/14/19 | 297.80                           | 295.03 | 295.70 | 296.76 | 295.12 |
| 08/28/19 | 297.55                           | 294.81 | 295.47 | 296.51 | 294.91 |
| 09/16/19 | 297.22                           | 294.51 | 295.20 | 296.20 | 294.63 |
| 10/10/19 | 296.84                           | 294.29 | 294.89 | 295.85 | 294.36 |
| 10/22/19 | 296.80                           | 294.40 | 295.00 | 295.88 | 294.50 |
| 11/04/19 | 297.34                           | 295.24 | 295.80 | 296.57 | 295.32 |
| 02/18/20 | 299.00                           | 296.50 | 297.28 | 298.22 | 296.66 |
| 03/30/20 | 300.09                           | 297.66 | 298.48 | 299.40 | 297.81 |
| 07/21/20 | 298.35                           | 295.16 | 295.98 | 297.19 | 295.32 |

**NOTES:**

1. Refer to Figures 1 and 2 for monitoring well locations.
2. Refer to Sikeston Power Station On-Site Operating Record for well construction diagrams.
3. NM - Not Measured.
4. Maximum and minimum groundwater elevations are shaded.

**Annual Groundwater Monitoring Report  
USEPA 40 CFR 257.90(e)  
SBMU - Sikeston Power Station  
Scott County, Missouri**

**Table 3  
Water Level and Field Parameter Summary  
February 18, 2020**

| Monitoring Well I.D. | Hydraulic Position | Initial Water Level (ft, BTOC <sup>2</sup> ) | Final Water Level (ft, BTOC <sup>2</sup> ) | Minimum <sup>3</sup> Purge Vol. (ml <sup>4</sup> ) | Actual Purge Vol. (ml <sup>4</sup> ) | pH (S.U. <sup>5</sup> ) |
|----------------------|--------------------|--|--|--|--------------------------------------|-------------------------|
| MW-3                 | Upgradient         | 9.55   | 9.55                                       | 300  | 4,860                                | 6.4                     |
| MW-4                 | Downgradient       | 9.11   | 9.11                                       | 300  | 2,680                                | 7.4                     |
| MW-5                 | Downgradient       | 8.63   | 8.63                                       | 300  | 2,300                                | 6.8                     |
| MW-6                 | Upgradient         | 9.50   | 9.50                                       | 300  | 5,860                                | 6.7                     |
| MW-8                 | Downgradient       | 8.11   | 8.11                                       | 300  | 3,360                                | 7.2                     |

**Water Level and Field Parameter Summary  
July 21, 2020**

| Monitoring Well I.D. | Hydraulic Position | Initial Water Level (ft, BTOC <sup>2</sup> ) | Final Water Level (ft, BTOC <sup>2</sup> ) | Minimum <sup>3</sup> Purge Vol. (ml <sup>4</sup> ) | Actual Purge Vol. (ml <sup>4</sup> ) | pH (S.U. <sup>5</sup> ) |
|----------------------|--------------------|--|--|--|--------------------------------------|-------------------------|
| MW-3                 | Upgradient         | 10.20  | 10.20                                      | 300  | 4,020                                | 6.5                     |
| MW-4                 | Downgradient       | 10.45  | 10.45                                      | 300  | 3,400                                | 7.4                     |
| MW-5                 | Downgradient       | 9.93   | 9.93                                       | 300  | 4,860                                | 6.8                     |
| MW-6                 | Upgradient         | 10.53  | 10.53                                      | 300  | 3,740                                | 6.7                     |
| MW-8                 | Downgradient       | 9.45   | 9.45                                       | 300  | 3,000                                | 7.1                     |

**NOTES:**

1. Sequence of sampling is MW-3, MW-6, MW-5, MW-8, MW-4.
2. BTOC: Below Top of Casing
3. Purge calculations based on 1/4" ID tubing and complete evacuation of single tubing volume.
4. ml: milliliter
5. S.U.: Standard Unit. Data shown for pH at MW-4 on July 21 is from August 4, 2020 re-sample event.

**Annual Groundwater Monitoring Report  
USEPA 40 CFR 257.90(e)  
SBMU - Sikeston Power Station  
Scott County, Missouri**

**Table 4  
Groundwater Monitoring Constituents**

| USEPA 40 CFR 257  |           |   |                   |
|---|-----------|---|-------------------|
| Appendix III -<br>Constituents for Detection Monitoring |           | Appendix IV -<br>Constituents for Assessment Monitoring |                   |
| Chemical Constituent                                    | Method    | Chemical Constituent                                    | Method            |
| pH (S.U.)   | Field     | Antimony (µg/L)   | SW 6020           |
| Boron (µg/L)  | SW 6020   | Arsenic (µg/L)  | SW 6020           |
| Calcium (mg/L)  | SW 6020   | Barium (µg/L)   | SW 6020           |
| Chloride (mg/L)   | EPA 300.0 | Beryllium (µg/L)  | SW 6020           |
| Fluoride (mg/L)   | EPA 300.0 | Cadmium (µg/L)  | SW 6020           |
| Sulfate (mg/L)  | EPA 300.0 | Chromium (µg/L)   | SW 6020           |
| Total Dissolved Solids (mg/L)                           | SM 2540C  | Cobalt (µg/L)   | SW 6020           |
|   |           | Fluoride (mg/L)   | EPA 300           |
|   |           | Lead (µg/L)   | SW 6020           |
|   |           | Lithium (µg/L)  | SW 6020           |
|   |           | Mercury (µg/L)  | SW 6020           |
|   |           | Molybdenum (µg/L)                                       | SW 6020           |
|   |           | Selenium (µg/L)   | SW 6020           |
|   |           | Thallium (µg/L)   | SW 6020           |
|   |           | Radium 226 and 228 combined (pCi/L)                     | EPA 903.1 & 904.0 |

**NOTES:**

1. S.U. = Standard Unit.
2. µg/L = micrograms per liter.
3. mg/L = milligrams per liter.
4. pCi/L = picocurie per liter.

**Annual Groundwater Monitoring Report  
USEPA 40 CFR 257.90(e)  
SBMU - Sikeston Power Station  
Scott County, Missouri**

**Table 5  
Relative Percent Difference Summary -  
February 18, 2020**

| <b>Chemical Parameter</b> | <b>Units</b> | <b>MW-5</b> | <b>DUP</b> | <b>Relative Percent Difference</b> |
|---------------------------|--------------|-------------|------------|------------------------------------|
| pH                        | S.U.         | 6.8         | 6.8        | 0.00                               |
| Boron                     | µg/L         | 400         | 410        | 2.47                               |
| Calcium                   | mg/L         | 110         | 120        | 8.70                               |
| Chloride                  | mg/L         | 15          | 15         | 0.00                               |
| Fluoride                  | mg/L         | <0.250      | <0.250     | N/A                                |
| Sulfate                   | mg/L         | 210         | 220        | 4.65                               |
| Total Dissolved Solids    | mg/L         | 450         | 460        | 2.20                               |

**Relative Percent Difference Summary -  
July 21, 2020**

| <b>Chemical Parameter</b> | <b>Units</b> | <b>MW-8</b> | <b>DUP</b> | <b>Relative Percent Difference</b> |
|---------------------------|--------------|-------------|------------|------------------------------------|
| pH                        | S.U.         | 7.1         | 7.1        | 0.00                               |
| Boron                     | µg/L         | 470         | 480        | 2.11                               |
| Calcium                   | mg/L         | 89          | 91         | 2.22                               |
| Chloride                  | mg/L         | 50          | 51         | 1.98                               |
| Fluoride                  | mg/L         | <0.250      | <0.250     | N/A                                |
| Sulfate                   | mg/L         | 100         | 110        | 9.52                               |
| Total Dissolved Solids    | mg/L         | 420         | 400        | 4.88                               |

**NOTES:**

1. S.U. = Standard Unit.
2. µg/L = micrograms per liter.
3. mg/L = milligrams per liter.
4. Relative Percent Difference tolerance = 20%.
5. N/A = Not applicable - parameter concentration below reporting limit.

**Annual Groundwater Monitoring Report  
 USEPA 40 CFR 257.90(e)  
 SBMU - Sikeston Power Station  
 Scott County, Missouri**

**Table 6  
 Intra-Well Prediction Limit Summary**

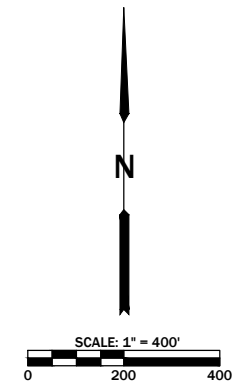
| Chemical Parameter   | Units | MW-3   | MW-4  | MW-5  | MW-6  | MW-8  |
|--|-------|--------|-------|-------|-------|-------|
| <b>40 CFR 257 Appendix III Constituents for Detection Monitoring</b> |       |        |       |       |       |       |
| pH Upper   | S.U.  | 7.189  | 7.529 | 7.078 | 7.075 | 7.285 |
| pH Lower   | S.U.  | 6.363  | 7.291 | 6.697 | 6.575 | 7.018 |
| Boron  | µg/L  | 57.21  | 1734  | 5700  | 60.62 | 596.7 |
| Calcium  | mg/L  | 25.46  | 95.25 | 240   | 49.29 | 101.7 |
| Chloride   | mg/L  | 2.565  | 18.69 | 17.45 | 3.083 | 58.72 |
| Fluoride   | mg/L  | 0.4819 | 0.259 | 0.255 | 0.331 | 0.25  |
| Sulfate  | mg/L  | 33.73  | 147.6 | 484.6 | 44.8  | 131.1 |
| Total Dissolved Solids   | mg/L  | 191.6  | 407.2 | 577.5 | 250.2 | 448   |

**NOTES:**

1. Prediction limits for MW-3 through MW-6 calculated using background data set spanning November 2016 to July 2017. Prediction limits for MW-8 calculated using background data set spanning May 2017 to September 2017.



# FIGURES



**LEGEND**

|                                   |                      |
|-----------------------------------|----------------------|
| PROPERTY LINE                     | — PL —               |
| GROUNDWATER CONTOUR               | — (with elevation) — |
| MONITORING WELL                   | ⊙ MW                 |
| UP GRADIENT MONITORING LOCATION   | UG                   |
| DOWN GRADIENT MONITORING LOCATION | DG                   |
| GENERAL FLOW DIRECTION            | ←                    |

- NOTES:**
1. IMAGE PROVIDED BY BING MAPS.
  2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.
  3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON FEBRUARY 18, 2019.
  4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
  5. RANGE OF HYDRAULIC GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0005 FT./FT. TO 0.001 FT./FT.

| WELL ID | GROUNDWATER ELEVATION | CASING ELEVATION | NORTHING  | EASTING    |
|---------|-----------------------|------------------|-----------|------------|
| MW-3    | 299.00                | 308.55           | 381130.00 | 1079946.62 |
| MW-4    | 296.50                | 305.61           | 380804.62 | 1077766.95 |
| MW-5    | 297.28                | 305.91           | 379858.94 | 1078477.85 |
| MW-6    | 298.22                | 307.72           | 379874.77 | 1079384.36 |
| MW-8    | 296.66                | 304.77           | 380311.20 | 1077940.08 |

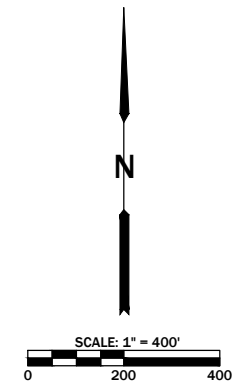
**GREDELL Engineering Resources, Inc.**  
 ENVIRONMENTAL ENGINEERING LAND - AIR - WATER  
 1505 East High Street  
 Jefferson City, Missouri  
 Telephone: (573) 659-9078  
 Facsimile: (573) 659-9079  
 MISSOURI PROFESSIONAL ENGINEERING LICENSE NO. E-2001010166940

**SIKESTON POWER STATION  
 BOTTOM ASH POND  
 2020 ANNUAL GROUNDWATER  
 MONITORING & REPORT**

**FIGURE 1  
 GROUNDWATER CONTOUR MAP  
 FEBRUARY 18, 2020**

THE GEOLOGIST WHO REVIEWED AND APPROVED THIS REPORT ASSUMES RESPONSIBILITY ONLY FOR GEOLOGIC INTERPRETATIONS OF DATA APPEARING ON THIS PAGE AND DISCLAIMS RESPONSIBILITY TO SECTION 256.456 RSMO ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS OR OTHER DOCUMENTS OR INSTRUMENTS NOT PREPARED UNDER THE SUPERVISION OF THE GEOLOGIST RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS FIGURE REFERS.

|          |    |         |           |          |          |              |                    |           |                    |         |           |
|----------|----|---------|-----------|----------|----------|--------------|--------------------|-----------|--------------------|---------|-----------|
| DESIGNED | NA | DATE    | 12/2/2020 | SCALE    | AS NOTED | PROJECT NAME | SIKESTON/GWMAP/BAP | FILE NAME | GWCONT BAP 02-2020 | SHEET # | 1 OF 1    |
| SURVEYED | NA | CHECKED | CP        | APPROVED | MCC      | DRAWN        | KE                 | CHECKED   | CP                 | DATE    | 12/2/2020 |



**LEGEND**

|                                   |                  |
|-----------------------------------|------------------|
| PROPERTY LINE                     | — PL —           |
| GROUNDWATER CONTOUR               | — (solid line) — |
| MONITORING WELL                   | ⊙ MW             |
| UP GRADIENT MONITORING LOCATION   | UG               |
| DOWN GRADIENT MONITORING LOCATION | DG               |
| GENERAL FLOW DIRECTION            | ←                |

- NOTES:**
1. IMAGE PROVIDED BY BING MAPS.
  2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.
  3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON JULY 21, 2020.
  4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
  5. RANGE OF HYDRAULIC GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0005 FT./FT. TO 0.002 FT./FT.

| WELL ID | GROUNDWATER ELEVATION | CASING ELEVATION | NORTHING  | EASTING    |
|---------|-----------------------|------------------|-----------|------------|
| MW-3    | 298.35                | 308.55           | 381130.00 | 1079946.62 |
| MW-4    | 295.16                | 305.61           | 380804.62 | 1077766.95 |
| MW-5    | 295.98                | 305.91           | 379858.94 | 1078477.85 |
| MW-6    | 297.19                | 307.72           | 379874.77 | 1079384.36 |
| MW-8    | 295.32                | 304.77           | 380311.20 | 1077940.08 |

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 MISSOURI ENGINEERING LICENSE NO. E-2001010166940

**SIKESTON POWER STATION  
 BOTTOM ASH POND  
 2019 ANNUAL GROUNDWATER  
 MONITORING & REPORT**

**FIGURE 2  
 GROUNDWATER CONTOUR MAP  
 JULY 21, 2020**

THE GEOLOGIST WHO REVIEWED AND APPROVED THIS REPORT ASSUMES RESPONSIBILITY ONLY FOR GEOLOGIC INTERPRETATIONS OF DATA APPEARING ON THIS PAGE AND DISCLAIMS RESPONSIBILITY TO SECTION 256.456 RSMO ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS OR OTHER DOCUMENTS OR INSTRUMENTS NOT PREPARED UNDER THE SUPERVISION OF THE GEOLOGIST RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS FIGURE REFERS.

|          |    |         |          |          |          |              |                    |           |                    |         |            |
|----------|----|---------|----------|----------|----------|--------------|--------------------|-----------|--------------------|---------|------------|
| DESIGNED | NA | DATE    | 12/20/20 | SCALE    | AS NOTED | PROJECT NAME | SIKESTON/GWMAP/BAP | FILE NAME | GWCONT BAP 07-2020 | SHEET # | 1 OF 1     |
| SURVEYED | NA | CHECKED | KE       | APPROVED | MCC      | DRAWN        | CP                 | CHECKED   | NA                 | DATE    | 12/22/2020 |

# APPENDICES

# **Appendix 1**

## **Field Sampling Notes**

Field Sampling Notes – February 18, 2020  
(First 2020 Semi-annual Event)

## Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: Ashish Patel

Field Instruments: In-Situ smartROLL Field Meter

HF scientific, inc. Micro TPI Field Portable Turbidimeter

S/N #: 474247

S/N #: 201607366

|                              | Date       | Time | pH          |              | Specific Conductance Standard (µS/cm) | Specific Conductance Measurement (µS/cm) | Oxidation Reduction Potential Standard (mV) |               | Oxidation Reduction Potential Measurement (mV) | Dissolved Oxygen (%) |                 | Turbidity Standards (NTU) | Turbidity Measurements (NTU) |      |        |
|------------------------------|------------|------|-------------|--------------|---------------------------------------|--|---|---------------|--|----------------------|-----------------|---------------------------|------------------------------|------|--------|
|                              |            |      | Standards   | Measurements |                                       |  | Temperature (°C)                            | Standard (mV) |  | Temperature (°C)     | Measurement     |                           |                              |      |        |
| Beginning of Day Calibration | 02-18-2020 | 0742 | 4.00        | = 4.0        | 1413                                  | = 142.4                                  | Temperature (°C)                            | = 21.28       | = 229.7  | Temperature (°C)     | = 20.40         | 0.02                      | = 0.02                       |      |        |
|                              |            |      | 7.00        | = 7.0        |                                       |  | Standard (mV)                               | = 229.0       |  | Tap Water Source     | = Sikeston City |                           |                              | 10.0 | = 10.0 |
|                              |            |      | 10.00       | = 10.0       |                                       |  | Barometric Pressure (mm/Hg)                 | = 1005.6      |  | 1000                 | = 1000.0        |                           |                              |      |        |
|                              |            |      | Measurement | = 100.0      |                                       |  |   |               |  |                      |                 |                           |                              |      |        |
| End of Day Check             | 02-18-2020 | 1454 | 4.00        | = 4.0        | 1413                                  | = 1415.5                                 | Temperature (°C)                            | = 18.35       | = 229.4  | Temperature (°C)     | = 13.49         | 0.02                      | = 0.04                       |      |        |
|                              |            |      | 7.00        | = 7.0        |                                       |  | Standard (mV)                               | = 229.0       |  | Tap Water Source     | = Sikeston City |                           |                              | 10.0 | = 9.94 |
|                              |            |      | 10.00       | = 9.9        |                                       |  | Barometric Pressure (mm/Hg)                 | = 1012.4      |  | 1000                 | = 972.8         |                           |                              |      |        |
|                              |            |      | Measurement | = 103.7      |                                       |  |   |               |  |                      |                 |                           |                              |      |        |

Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential.

The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.

Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.

I certify that the aforementioned meters were calibrated within the manufacturers specifications.

Date: 2-18-2020 By: Ashish Patel

### Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 3

Name (Field Staff): A Patel D Dillingham

Date: 02-18-2020

Access:

Accessibility:                      Good                       Fair                       Poor

Well clear of weeds and/or debris?:    Yes                       No

Well identification clearly visible?:    Yes                       No

Remarks:

Concrete Pad:

Condition of Concrete Pad:                      Good                       Inadequate

Depressions or standing water around well?:    Yes                       No

Remarks:

Protective Outer Casing:                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged

Condition of Locking Cap:                      Good                       Damaged

Condition of Lock:                      Good                       Damaged

Condition of Weep Hole:                      Good                       Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged

Condition of Riser Cap:                      Good                       Damaged

Measurement Reference Point:    Yes                       No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification

Ashish Parri  
Signed

Lab Tech  
Title

02-18-2020  
Date







### Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 6

Name (Field Staff): A Patel D Dillingham

Date: 02-18-2020

Access:

Accessibility:                      Good                       Fair                       Poor

Well clear of weeds and/or debris?:    Yes                       No

Well identification clearly visible?:    Yes                       No

Remarks:

Concrete Pad:

Condition of Concrete Pad:                      Good                       Inadequate

Depressions or standing water around well?:    Yes                       No

Remarks:

Protective Outer Casing:                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged

Condition of Locking Cap:                      Good                       Damaged

Condition of Lock:                      Good                       Damaged

Condition of Weep Hole:                      Good                       Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged

Condition of Riser Cap:                      Good                       Damaged

Measurement Reference Point:    Yes                       No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification

Ashish Patel  
Signed

Lab Tech  
Title

02-18-2020  
Date



# Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 6

## Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 9.50

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

## Final Purge Stabilization Sampling Data:

| Date Sample Time                 | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|----------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>02-18-2020</u><br><u>1025</u> | <u>270</u>           | <u>14.54</u> | <u>390.27</u>                | <u>0.81</u>             | <u>6.7</u> | <u>-54.5</u>                       | <u>5.79</u>     |

## Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

## General Information:

Weather Conditions @ time of sampling: Cloudy, Windy  
45°F

Sample Characteristics: clear, colorless, odorless

Sample Collection Order: Per SAP

## Comments and Observations:

---

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---

---

---

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---

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 02-18-2020 By: Abhishek Patel Title: Lab Tech

### Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 5

Name (Field Staff): A Patel D Dillingham

Date: 02-18-2020

Access:

Accessibility:                      Good                       Fair                       Poor

Well clear of weeds and/or debris?:    Yes                       No

Well identification clearly visible?:    Yes                       No

Remarks:

Concrete Pad:

Condition of Concrete Pad:                      Good                       Inadequate

Depressions or standing water around well?:    Yes                       No

Remarks:

Protective Outer Casing:                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged

Condition of Locking Cap:                      Good                       Damaged

Condition of Lock:                      Good                       Damaged

Condition of Weep Hole:                      Good                       Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged

Condition of Riser Cap:                      Good                       Damaged

Measurement Reference Point:    Yes                       No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification

Ashish Patel  
Signed

Lab Tech  
Title

02-18-2020  
Date



# Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 5

## Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 8.63

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

## Final Purge Stabilization Sampling Data:

| Date Sample Time                 | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|----------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>02-18-2020</u><br><u>1139</u> | <u>240</u>           | <u>14.05</u> | <u>871.67</u>                | <u>0.81</u>             | <u>6.8</u> | <u>-45.2</u>                       | <u>0.88</u>     |

## Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

## General Information:

Weather Conditions @ time of sampling: cloudy, windy

46°F

Sample Characteristics: clear, colorless, odorless

Sample Collection Order: Per SAP

## Comments and Observations:

Collect Duplicate for APP III and APP IV

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 02-18-2020 By: [Signature] Title: Lab Tech



### Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 8

Name (Field Staff): A Patel D Dillingham

Date: 02-18-2020

Access:

Accessibility:                      Good                       Fair                       Poor

Well clear of weeds and/or debris?:    Yes                       No

Well identification clearly visible?:    Yes                       No

Remarks:

Concrete Pad:

Condition of Concrete Pad:                      Good                       Inadequate

Depressions or standing water around well?:    Yes                       No

Remarks:

Protective Outer Casing:                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged

Condition of Locking Cap:                      Good                       Damaged

Condition of Lock:                      Good                       Damaged

Condition of Weep Hole:                      Good                       Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged

Condition of Riser Cap:                      Good                       Damaged

Measurement Reference Point:    Yes                       No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification

Ashish Patel  
Signed

Lab Tech  
Title

02-18-2020  
Date



## Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 8

**Sampling Information:**

Method of Sampling: Low Flow - Peristaltic Pump & Tubing Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 8.11

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

**Final Purge Stabilization Sampling Data:**

| Date Sample Time                 | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|----------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>02-18-2020</u><br><u>1236</u> | <u>250</u>           | <u>13.49</u> | <u>747.89</u>                | <u>0.29</u>             | <u>7.2</u> | <u>-75.7</u>                       | <u>0.69</u>     |

**Instrument Calibration Data:**

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

**General Information:**

Weather Conditions @ time of sampling: cloudy, windy  
46°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

**Comments and Observations:**

Collect Field Blank for APP III and APP IV

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I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 02-18-2020 By: Ashish Patel Title: Lab Tech

### Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring  
Monitoring Well ID: MW 4  
Name (Field Staff): A Patel D Dillingham  
Date: 02-18-2020

Access:

Accessibility:                      Good                       Fair                       Poor   
Well clear of weeds and/or debris?:    Yes                       No   
Well identification clearly visible?:    Yes                       No

Remarks:

Concrete Pad:

Condition of Concrete Pad:                      Good                       Inadequate   
Depressions or standing water around well?:    Yes                       No

Remarks:

Protective Outer Casing:                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged   
Condition of Locking Cap:                      Good                       Damaged   
Condition of Lock:                      Good                       Damaged   
Condition of Weep Hole:                      Good                       Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged   
Condition of Riser Cap:                      Good                       Damaged   
Measurement Reference Point:    Yes                       No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification

A Patel  
Signed

Lab Tech  
Title

2-18-2020  
Date



## Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 4

**Sampling Information:**

Method of Sampling: Low Flow - Peristaltic Pump & Tubing Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 9.11

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

**Final Purge Stabilization Sampling Data:**

| Date<br>Sample Time              | Sample Rate<br>(mL/min) | Temp<br>(°C) | Specific<br>Conductance<br>(µS/cm) | Dissolved Oxygen<br>(mg/L) | pH<br>(S.U.) | Oxidation<br>Reduction<br>Potential<br>(mV) | Turbidity<br>(NTU) |
|----------------------------------|-------------------------|--------------|------------------------------------|----------------------------|--------------|---|--------------------|
| <u>02-18-2020</u><br><u>1413</u> | <u>240</u>              | <u>14.49</u> | <u>526.86</u>                      | <u>0.63</u>                | <u>7.4</u>   | <u>-87.6</u>                                | <u>1.60</u>        |

**Instrument Calibration Data:**

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

**General Information:**

Weather Conditions @ time of sampling: Cloudy, Windy  
43°F

Sample Characteristics: Clear, Colorless, Odorless

Sample Collection Order: Per SAP

Comments and Observations:

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I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 2-18-2020 By: Ashish Patel Title: Lab Tech

Field Sampling Notes – March 30, 2020  
(First 2020 Semi-annual Event - TDS)

# Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling Calibrated by: Ahish Patel

Field Instruments: In-Situ smartROLL Field Meter HF scientific, inc. Micro TPI Field Portable Turbidimeter

S/N #: 474247 S/N #: 201607366

| Date       | Time | pH Standards | pH Measurements | Specific Conductance Standard (µS/cm) | Specific Conductance Measurement (µS/cm) | Oxidation Reduction Potential (mV) |               | Dissolved Oxygen (%) |  | Turbidity Standards (NTU) | Turbidity Measurements (NTU) |      |        |
|------------|------|--------------|-----------------|---------------------------------------|--|------------------------------------|---------------|----------------------|--|---------------------------|------------------------------|------|--------|
|            |      |              |                 |                                       |  | Temperature (°C)                   | Standard (mV) | Temperature (°C)     | Tap Water Source Barometric Pressure (mm/Hg) Measurement |                           |                              |      |        |
| 03/30/2020 | 0640 | 4.00         | 4.0             | 1413                                  | 1412.0                                   |                                    | 21.69         | 21.28                | Temperature  | 0.02                      | 0.02                         |      |        |
|            |      | 7.00         | 7.0             |                                       |  |                                    |               |                      | Tap Water Source   |                           |                              | 10.0 | 10.0   |
|            |      | 10.00        | 10.0            |                                       |  |                                    |               |                      | Barometric Pressure (mm/Hg)                              |                           |                              | 1000 | 1000.0 |
| 03/30/2020 | 1335 | 4.00         | 4.0             | 1413                                  | 1389.1                                   | 21.33                              | 228.1         | 20.53                | Temperature  | 0.02                      | 0.02                         |      |        |
|            |      | 7.00         | 7.0             |                                       |  |                                    |               |                      | Tap Water Source   |                           |                              | 10.0 | 10.17  |
|            |      | 10.00        | 9.9             |                                       |  |                                    |               |                      | Barometric Pressure (mm/Hg)                              |                           |                              | 1000 | 990.8  |

Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential.  
 The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.  
 Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.

I certify that the aforementioned meters were calibrated within the manufacturers specifications.  
 Date: 03/30/2020 By: Ahish Patel



**Monitoring Well Field Inspection**

Facility: SBMU SPS – CCR Groundwater Monitoring  
Monitoring Well ID: MW 3  
Name (Field Staff): A Patel D Dillingham  
Date: 3-30-2020

Access:  
Accessibility: Good  Fair  Poor   
Well clear of weeds and/or debris?: Yes  No   
Well identification clearly visible?: Yes  No   
Remarks:

Concrete Pad:  
Condition of Concrete Pad: Good  Inadequate   
Depressions or standing water around well?: Yes  No   
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp  
Condition of Protective Casing: Good  Damaged   
Condition of Locking Cap: Good  Damaged   
Condition of Lock: Good  Damaged   
Condition of Weep Hole: Good  Damaged   
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded  
Condition of Riser: Good  Damaged   
Condition of Riser Cap: Good  Damaged   
Measurement Reference Point: Yes  No   
Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing  
Condition: Good  Damaged  Missing   
Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes  No   
Remarks:

Field Certification Ashish Patel Lab Tech 3-30-2020  
Signed Title Date

## Field Sampling Log

Monitoring Well ID: MW 3 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 8.46 Date: 3-30-2020  
 Initial Groundwater Elevation (NAVD88): \_\_\_\_\_ Air Pressure in Well? Y /  N

**PURGE INFORMATION**

Date: 3-30-2020  
 Name (Sample Collector): D Dillingham  
 Method of Well Purge: Low Flow Peristaltic Pump Dedicated Tubing?  Y / N  
 Time Purging Initiated: 0803 One (1) Well Volume (mL): NA  
 Beginning Water Level (feet btoc): 8.46 Total Volume Purged (mL): 7040  
 Beginning Groundwater Elevation (NAVD88): \_\_\_\_\_ Well Purged To Dryness? Y /  N  
 Well Total Depth (feet btoc): 36.99 Water Level after Sampling (feet btoc): 8.46  
 (i.e., pump is off)  
 Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0832

**PURGE STABILIZATION DATA**

| Time | Purge Rate (mL/min) | Cumulative Volume (mL) | Temp (°C) | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.) | Oxidation Reduction Potential (mV) | Turbidity (NTU) | Water Level (feet btoc) | Notes (e.g., opacity, color, odor) |
|------|---------------------|------------------------|-----------|------------------------------|-------------------------|-----------|------------------------------------|-----------------|-------------------------|------------------------------------|
| 0805 |                     | 380                    | 16.00     | 197.18                       | 2.42                    | 8.6       | 97.3                               | 32.26           | 8.46                    | Red Flake, no odor                 |
| 0807 | 280                 | 940                    | 15.04     | 198.64                       | 2.23                    | 7.9       | 90.5                               | 21.67           | 8.46                    | " "                                |
| 0809 | 270                 | 1480                   | 14.79     | 198.60                       | 2.08                    | 7.4       | 85.5                               | 19.32           | 8.46                    | Clear, no odor                     |
| 0811 | 280                 | 2040                   | 14.73     | 198.63                       | 1.98                    | 7.1       | 81.2                               | 13.54           | 8.46                    | " "                                |
| 0813 | 270                 | 2580                   | 14.72     | 198.08                       | 1.83                    | 6.9       | 77.7                               | 12.08           | 8.46                    | " "                                |
| 0815 | 270                 | 3120                   | 14.76     | 197.44                       | 1.68                    | 6.7       | 74.4                               | 11.26           | 8.46                    | " "                                |
| 0817 | 290                 | 3700                   | 14.78     | 197.08                       | 1.58                    | 6.6       | 71.9                               | 10.83           | 8.46                    | " "                                |
| 0819 | 300                 | 4300                   | 14.81     | 197.85                       | 1.47                    | 6.5       | 69.9                               | 10.09           | 8.46                    | " "                                |
| 0821 | 290                 | 4880                   | 14.85     | 199.15                       | 1.36                    | 6.5       | 67.3                               | 8.67            | 8.46                    | " "                                |
| 0823 | 280                 | 5440                   | 14.85     | 199.19                       | 1.34                    | 6.5       | 64.8                               | 8.21            | 8.46                    | " "                                |
| 0825 | 260                 | 5960                   | 14.85     | 199.35                       | 1.26                    | 6.4       | 63.2                               | 5.26            | 8.46                    | " "                                |
| 0827 | 270                 | 6500                   | 14.86     | 201.56                       | 1.20                    | 6.4       | 61.7                               | 6.12            | 8.46                    | " "                                |
| 0829 | 270                 | 7040                   | 14.87     | 199.31                       | 1.20                    | 6.4       | 61.2                               | 6.01            | 8.46                    | " "                                |
|      |                     |                        |           |                              |                         |           |                                    |                 |                         |                                    |
|      |                     |                        |           |                              |                         |           |                                    |                 |                         |                                    |
|      |                     |                        |           |                              |                         |           |                                    |                 |                         |                                    |
|      |                     |                        |           |                              |                         |           |                                    |                 |                         |                                    |
|      |                     |                        |           |                              |                         |           |                                    |                 |                         |                                    |

btoc - below top of casing

# Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 3

## Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 8.46

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

## Final Purge Stabilization Sampling Data:

| Date Sample Time                | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|---------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>3-30-2020</u><br><u>0829</u> | <u>270</u>           | <u>14.87</u> | <u>199.31</u>                | <u>1.20</u>             | <u>6.4</u> | <u>61.2</u>                        | <u>6.01</u>     |

## Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

## General Information:

Weather Conditions @ time of sampling: Sunny  
46°F

Sample Characteristics: Clear, Colorless, Odorless

Sample Collection Order: Per SAP

## Comments and Observations:

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I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 3-30-2020 By: Ashish Patel Title: Lab Tech

**Monitoring Well Field Inspection**

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 6

Name (Field Staff): A Patel D Dillingham

Date: 3-30-2020

Access:

Accessibility:                      Good                       Fair                       Poor

Well clear of weeds and/or debris?:    Yes                       No

Well identification clearly visible?:    Yes                       No

Remarks:

Concrete Pad:

Condition of Concrete Pad:                      Good                       Inadequate

Depressions or standing water around well?:    Yes                       No

Remarks:

Protective Outer Casing:                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged

Condition of Locking Cap:                      Good                       Damaged

Condition of Lock:                      Good                       Damaged

Condition of Weep Hole:                      Good                       Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged

Condition of Riser Cap:                      Good                       Damaged

Measurement Reference Point:    Yes                       No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification

Ashish Patel  
Signed

Lab Tech  
Title

3-30-2020  
Date



## Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 6

**Sampling Information:**

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated:  Y /  N

Water Level @ Sampling (feet btoC): 8.32

Monitoring Event:    Annual ( )    Semi-Annual ( )    Quarterly ( )    Monthly ( )    Other ()

**Final Purge Stabilization Sampling Data:**

| Date Sample Time                | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|---------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>3-30-2020</u><br><u>0920</u> | <u>270</u>           | <u>15.17</u> | <u>390.95</u>                | <u>0.67</u>             | <u>6.7</u> | <u>-53.6</u>                       | <u>3.99</u>     |

**Instrument Calibration Data:**

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

**General Information:**

Weather Conditions @ time of sampling: Sunny

54°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

**Comments and Observations:**

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I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 3-30-2020 By: Abhishek Patel Title: Lab Tech







# Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW5

## Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 7.43

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

## Final Purge Stabilization Sampling Data:

| Date Sample Time                | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|---------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>3-30-2020</u><br><u>1035</u> | <u>280</u>           | <u>15.84</u> | <u>750.41</u>                | <u>0.62</u>             | <u>6.8</u> | <u>-49.7</u>                       | <u>2.90</u>     |

## Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

## General Information:

Weather Conditions @ time of sampling: Sunny  
59°F

Sample Characteristics: yellow flake, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:  
Collect Duplicate

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 3-30-2020 By: Ashish PARI Title: Lab Tech

### Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 8

Name (Field Staff): A Patel D Oillingham

Date: 3-30-2020

Access:

Accessibility:                      Good                       Fair                       Poor

Well clear of weeds and/or debris?:    Yes                       No

Well identification clearly visible?:    Yes                       No

Remarks:

Concrete Pad:

Condition of Concrete Pad:                      Good                       Inadequate

Depressions or standing water around well?:    Yes                       No

Remarks:

Protective Outer Casing:                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged

Condition of Locking Cap:                      Good                       Damaged

Condition of Lock:                      Good                       Damaged

Condition of Weep Hole:                      Good                       Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged

Condition of Riser Cap:                      Good                       Damaged

Measurement Reference Point:    Yes                       No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification

Ashish Patel  
Signed

Lab Tech  
Title

3-30-2020  
Date

## Field Sampling Log

Monitoring Well ID: MW 8 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 6.96 Date: 03-30-2020  
 Initial Groundwater Elevation (NAVD88): \_\_\_\_\_ Air Pressure in Well? Y /  N

### PURGE INFORMATION

Date: 03-30-2020  
 Name (Sample Collector): D Dillingham  
 Method of Well Purge: Low Flow Peristaltic Pump Dedicated Tubing?  Y / N  
 Time Purging Initiated: 1117 One (1) Well Volume (mL): NA  
 Beginning Water Level (feet btoc): 6.96 Total Volume Purged (mL): 8820  
 Beginning Groundwater Elevation (NAVD88): \_\_\_\_\_ Well Purged To Dryness? Y /  N  
 Well Total Depth (feet btoc): 37.09 Water Level after Sampling (feet btoc): 6.96  
 (i.e., pump is off)  
 Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1154

### PURGE STABILIZATION DATA

| Time | Purge Rate (mL/min) | Cumulative Volume (mL) | Temp (°C) | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.) | Oxidation Reduction Potential (mV) | Turbidity (NTU) | Water Level (feet btoc) | Notes (e.g., opacity, color, odor) |
|------|---------------------|------------------------|-----------|------------------------------|-------------------------|-----------|------------------------------------|-----------------|-------------------------|------------------------------------|
| 1119 |                     | 360                    | 16.92     | 762.09                       | 0.54                    | 7.1       | -82.1                              | 49.45           | 6.96                    | Yellow NP Flake, odor              |
| 1121 | 260                 | 880                    | 15.86     | 783.34                       | 0.41                    | 7.1       | -85.0                              | 161.10          | 6.96                    | " "                                |
| 1123 | 260                 | 1400                   | 15.62     | 788.21                       | 0.35                    | 7.1       | -85.1                              | 100.70          | 6.96                    | " "                                |
| 1125 | 260                 | 1920                   | 15.57     | 790.24                       | 0.31                    | 7.1       | -85.1                              | 101.40          | 6.96                    | " "                                |
| 1127 | 270                 | 2460                   | 15.56     | 792.81                       | 0.28                    | 7.1       | -84.5                              | 57.31           | 6.96                    | " "                                |
| 1129 | 270                 | 3000                   | 15.55     | 794.75                       | 0.25                    | 7.1       | -84.4                              | 305.00          | 6.96                    | " "                                |
| 1131 | 260                 | 3520                   | 15.57     | 806.31                       | 0.24                    | 7.1       | -83.8                              | 47.87           | 6.96                    | " "                                |
| 1133 | 260                 | 4040                   | 15.59     | 810.18                       | 0.23                    | 7.1       | -84.2                              | 192.80          | 6.96                    | " "                                |
| 1135 | 280                 | 4600                   | 15.61     | 820.13                       | 0.22                    | 7.1       | -85.2                              | 30.51           | 6.96                    | " "                                |
| 1137 | 270                 | 5140                   | 15.62     | 818.73                       | 0.22                    | 7.1       | -85.6                              | 20.87           | 6.96                    | " "                                |
| 1139 | 270                 | 5680                   | 15.62     | 823.13                       | 0.21                    | 7.1       | -85.0                              | 14.95           | 6.96                    | clear, no odor                     |
| 1141 | 260                 | 6200                   | 15.62     | 827.33                       | 0.20                    | 7.1       | -83.9                              | 11.58           | 6.96                    | " "                                |
| 1143 | 210                 | 6620                   | 15.62     | 827.54                       | 0.20                    | 7.1       | -83.9                              | 9.96            | 6.96                    | " "                                |
| 1145 | 270                 | 7160                   | 15.64     | 824.96                       | 0.20                    | 7.1       | -83.9                              | 10.06           | 6.96                    | " "                                |
| 1147 | 280                 | 7720                   | 15.66     | 817.99                       | 0.20                    | 7.1       | -84.2                              | 8.17            | 6.96                    | " "                                |
| 1149 | 290                 | 8300                   | 15.71     | 830.71                       | 0.20                    | 7.1       | -83.3                              | 7.88            | 6.96                    | " "                                |
| 1151 | 260                 | 8820                   | 15.71     | 840.01                       | 0.20                    | 7.1       | -82.4                              | 7.48            | 6.96                    | " "                                |

btoc - below top of casing

## Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 8

**Sampling Information:**

Method of Sampling: Low Flow - Peristaltic Pump & Tubing Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 6.96

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

**Final Purge Stabilization Sampling Data:**

| Date Sample Time                | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|---------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>3-30-2020</u><br><u>1151</u> | <u>260</u>           | <u>15.71</u> | <u>840.01</u>                | <u>0.20</u>             | <u>7.1</u> | <u>-82.4</u>                       | <u>7.48</u>     |

**Instrument Calibration Data:**

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

**General Information:**

Weather Conditions @ time of sampling: Sunny  
61°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

**Comments and Observations:**

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I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 3-30-2020 By: Ashish Patel Title: Lab Tech

**Monitoring Well Field Inspection**

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 4

Name (Field Staff): A Patel D Dillingham

Date: 3-30-2020

**Access:**

Accessibility:                      Good                       Fair                       Poor

Well clear of weeds and/or debris?:    Yes     No

Well identification clearly visible?:    Yes     No

Remarks:

**Concrete Pad:**

Condition of Concrete Pad:                      Good                       Inadequate

Depressions or standing water around well?:    Yes     No

Remarks:

**Protective Outer Casing:**                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged

Condition of Locking Cap:                      Good                       Damaged

Condition of Lock:                      Good                       Damaged

Condition of Weep Hole:                      Good                       Damaged

Remarks:

**Well Riser:**                      Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged

Condition of Riser Cap:                      Good                       Damaged

Measurement Reference Point:    Yes                       No

Remarks:

**Dedicated Purging/Sampling Device:**    Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification Ashish Patel  
Signed

Lab Tech  
Title

03-30-2020  
Date

## Field Sampling Log

Monitoring Well ID: MW 4 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

|   |  |
|---|--|
| Initial Water Level (feet btoc): <u>7.95</u>  | Date: <u>03-30-2020</u>                                      |
| Initial Groundwater Elevation (NAVD88): _____ | Air Pressure in Well? Y / <input checked="" type="radio"/> N |

**PURGE INFORMATION**

Date: 03-30-2020

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Peristaltic Pump Dedicated Tubing?  Y / N

Time Purging Initiated: 1221 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 7.95 Total Volume Purged (mL): 7800

Beginning Groundwater Elevation (NAVD88): \_\_\_\_\_ Well Purged To Dryness? Y /  N

Well Total Depth (feet btoc): 37.26 Water Level after Sampling (feet btoc): 7.95  
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1251

**PURGE STABILIZATION DATA**

| Time | Purge Rate (mL/min) | Cumulative Volume (mL) | Temp (°C) | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.) | Oxidation Reduction Potential (mV) | Turbidity (NTU) | Water Level (feet btoc) | Notes (e.g., opacity, color, odor) |
|------|---------------------|------------------------|-----------|------------------------------|-------------------------|-----------|------------------------------------|-----------------|-------------------------|------------------------------------|
| 1223 |                     | 420                    | 17.80     | 505.29                       | 0.70                    | 7.2       | -77.4                              | 128.10          | 7.95                    | Yellow Pitt<br>Flake, odor         |
| 1225 | 290                 | 1000                   | 16.73     | 510.36                       | 0.58                    | 7.3       | -80.4                              | 208.40          | 7.95                    | " "                                |
| 1227 | 300                 | 1600                   | 16.50     | 516.16                       | 0.50                    | 7.3       | -85.7                              | 101.50          | 7.95                    | " "                                |
| 1229 | 290                 | 2180                   | 16.43     | 520.49                       | 0.45                    | 7.3       | -90.0                              | 71.19           | 7.95                    | " "                                |
| 1231 | 280                 | 2740                   | 16.43     | 519.49                       | 0.42                    | 7.3       | -90.4                              | 60.79           | 7.95                    | " "                                |
| 1233 | 290                 | 3320                   | 16.46     | 520.48                       | 0.40                    | 7.3       | -91.9                              | 36.88           | 7.95                    | " "                                |
| 1235 | 290                 | 3900                   | 16.45     | 520.08                       | 0.39                    | 7.3       | -92.4                              | 49.06           | 7.95                    | " "                                |
| 1237 | 280                 | 4460                   | 16.47     | 517.65                       | 0.38                    | 7.3       | -89.8                              | 22.46           | 7.95                    | " "                                |
| 1239 | 270                 | 5000                   | 16.47     | 517.92                       | 0.37                    | 7.3       | -89.2                              | 22.50           | 7.95                    | " "                                |
| 1241 | 290                 | 5580                   | 16.44     | 521.05                       | 0.36                    | 7.4       | -93.1                              | 12.24           | 7.95                    | " "                                |
| 1243 | 270                 | 6120                   | 16.45     | 519.42                       | 0.35                    | 7.4       | -91.9                              | 11.17           | 7.95                    | " "                                |
| 1245 | 290                 | 6700                   | 16.48     | 519.40                       | 0.35                    | 7.4       | -92.0                              | 19.88           | 7.95                    | " "                                |
| 1247 | 270                 | 7240                   | 16.47     | 518.57                       | 0.35                    | 7.4       | -91.1                              | 19.58           | 7.95                    | " "                                |
| 1249 | 280                 | 7800                   | 16.45     | 520.60                       | 0.35                    | 7.4       | -91.1                              | 19.51           | 7.95                    | " "                                |
|      |                     |                        |           |                              |                         |           |                                    |                 |                         |                                    |
|      |                     |                        |           |                              |                         |           |                                    |                 |                         |                                    |
|      |                     |                        |           |                              |                         |           |                                    |                 |                         |                                    |
|      |                     |                        |           |                              |                         |           |                                    |                 |                         |                                    |
|      |                     |                        |           |                              |                         |           |                                    |                 |                         |                                    |

btoc - below top of casing

# Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 4

## Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 7.95

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

## Final Purge Stabilization Sampling Data:

| Date Sample Time                 | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|----------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>03-30-2020</u><br><u>1249</u> | <u>280</u>           | <u>16.45</u> | <u>520.60</u>                | <u>0.35</u>             | <u>7.4</u> | <u>-91.9</u>                       | <u>19.51</u>    |

## Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

## General Information:

Weather Conditions @ time of sampling: cloudy  
63° F

Sample Characteristics: Yellow Flake, colorless, odorless

Sample Collection Order: Per SAP

## Comments and Observations:

Collect Field Blank

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I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 03-30-2020 By: Ashish Patel Title: Lab Tech

Field Sampling Notes – April 8, 2020  
(First 2020 Semi-Annual Event – TDS Resample)



# Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling      Calibrated by: Ashish Patel

Field Instruments: In-Situ smarTROLL Field Meter      HF scientific, inc. Micro TPI Field Portable Turbidimeter

S/N #: 474247      S/N #: 201607366

| Date                                       | Time | pH Standards | pH Measurements | Specific Conductance Standard (µS/cm) | Specific Conductance Measurement (µS/cm) | Oxidation Reduction Potential |               | Oxidation Reduction Potential Measurement (mV) | Dissolved Oxygen (%)        |                  |                             | Turbidity Standards (NTU) | Turbidity Measurements (NTU) |
|--|------|--------------|-----------------|---------------------------------------|--|-------------------------------|---------------|--|-----------------------------|------------------|-----------------------------|---------------------------|------------------------------|
|  |      |              |                 |                                       |  | Temperature (°C)              | Standard (mV) |  | Temperature (°C)            | Tap Water Source | Barometric Pressure (mm/Hg) |                           |                              |
| 04-08-2020<br>Beginning of Day Calibration | 0632 | 4.00         | 4.0             | 1413                                  | = 1412.0                                 |                               | = 22.12       |  | Temperature (°C)            | 21.73            |                             | 0.02                      | 0.02                         |
|  |      | 7.00         | 7.0             |                                       |  |                               |               |  | Tap Water Source            | Sikesboro City   | 10.0                        | 10.0                      |                              |
|  |      | 10.00        | 10.0            |                                       |  |                               |               |  | Barometric Pressure (mm/Hg) | 995.87           | 1000                        | 1000                      |                              |
| 04-08-2020<br>End of Day Check             | 0254 | 4.00         | 4.0             | 1413                                  | = 1389.2                                 |                               | = 23.03       |  | Temperature (°C)            | 27.57            |                             | 0.02                      | 0.03                         |
|  |      | 7.00         | 6.9             |                                       |  |                               |               |  | Tap Water Source            | Sikesboro City   | 10.0                        | 10.0                      |                              |
|  |      | 10.00        | 9.9             |                                       |  |                               |               |  | Barometric Pressure (mm/Hg) | 993.99           | 1000                        | 1000                      |                              |
|  |      |              |                 |                                       |  |                               |               |  | Measurement                 | =                | 98.42                       |                           |                              |

Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential.  
 The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.

Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.

I certify that the aforementioned meters were calibrated within the manufacturers specifications.  
 Date: 4-8-2020      By: ASB

**Monitoring Well Field Inspection**

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 8

Name (Field Staff): A Patel D Dillingham

Date: 04-08-2020

Access:

Accessibility: Good  Fair  Poor

Well clear of weeds and/or debris?: Yes  No

Well identification clearly visible?: Yes  No

Remarks:

Concrete Pad:

Condition of Concrete Pad: Good  Inadequate

Depressions or standing water around well?: Yes  No

Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing: Good  Damaged

Condition of Locking Cap: Good  Damaged

Condition of Lock: Good  Damaged

Condition of Weep Hole: Good  Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser: Good  Damaged

Condition of Riser Cap: Good  Damaged

Measurement Reference Point: Yes  No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition: Good  Damaged  Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes  No

Remarks:

Field Certification Ashish Patel

Signed

Lab Tech

Title

04-08-2020

Date



## Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 8

**Sampling Information:**

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 7.64

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly  Monthly ( ) Other ( )

**Final Purge Stabilization Sampling Data:**

| Date Sample Time                 | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|----------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>04-08-2020</u><br><u>1055</u> | <u>270</u>           | <u>16.56</u> | <u>784.03</u>                | <u>0.21</u>             | <u>7.1</u> | <u>-89.4</u>                       | <u>8.33</u>     |

**Instrument Calibration Data:**

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

**General Information:**

Weather Conditions @ time of sampling: cloudy, windy

73° F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

**Comments and Observations:**

Collect duplicate tws (NPOFs)

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 04-08-2020 By: Amis P. J. [Signature] Title: lab Tech

Field Sampling Notes – July 21, 2020  
(Second 2020 Semi-Annual Event)

# Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling Calibrated by: Ashish Patel

Field Instruments: In-Situ smarTROLL Field Meter HF scientific, inc. Micro TPI Field Portable Turbidimeter

S/N #: 474247 S/N #: 201607366

| Date                                       | Time | pH        |              | Specific Conductance Standard (µS/cm) | Specific Conductance Measurement (µS/cm) | Oxidation Reduction Potential |               | Oxidation Reduction Potential Measurement (mV) | Dissolved Oxygen (%)        |                  | Turbidity Standards (NTU) | Turbidity Measurements (NTU) |                             |
|--|------|-----------|--------------|---------------------------------------|--|-------------------------------|---------------|--|-----------------------------|------------------|---------------------------|------------------------------|-----------------------------|
|  |      | Standards | Measurements |                                       |  | Temperature (°C)              | Standard (mV) |  | Temperature (°C)            | Tap Water Source |                           |                              | Barometric Pressure (mm/Hg) |
| 07/21/2020<br>Beginning of Day Calibration | 0615 | 4.00      | = 4.0        | 1413                                  | = 1412.9                                 | Temperature (°C)              | = 21.13       | = 229.1  | Temperature (°C)            | = 22.42          | = 1000.0                  | = 0.02                       | = 0.02                      |
|  |      | 7.00      | = 7.0        |                                       |  | Standard (mV)                 | = 229.0       |  | Tap Water Source            | = Sikeston City  |                           |                              |                             |
|  |      | 10.00     | = 10.0       |                                       |  | Temperature (°C)              | = 22.89       |  | Barometric Pressure (mm/Hg) | = 1005           |                           |                              |                             |
| 07/21/2020<br>End of Day Check             | 1425 | 4.00      | = 4.0        | 1413                                  | = 1409.3                                 | Temperature (°C)              | = 21.67       | = 227.9  | Temperature (°C)            | = 22.89          | = 1000                    | = 0.02                       | = 0.01                      |
|  |      | 7.00      | = 7.0        |                                       |  | Standard (mV)                 | = 229.0       |  | Tap Water Source            | = Sikeston City  |                           |                              |                             |
|  |      | 10.00     | = 10.0       |                                       |  | Temperature (°C)              | = 22.89       |  | Barometric Pressure (mm/Hg) | = 1003.4         |                           |                              |                             |
|  |      |           |              |                                       |  |                               |               |  |                             |                  |                           |                              |                             |

Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential.  
 The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.  
 Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.

I certify that the aforementioned meters were calibrated within the manufacturers specifications.

Date: 07/21/2020 By: Ashish Patel

**Monitoring Well Field Inspection**

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 3

Name (Field Staff): A Patel

Date: 07-21-2020

Access:

Accessibility:                      Good                       Fair                       Poor

Well clear of weeds and/or debris?:    Yes                       No

Well identification clearly visible?:    Yes                       No

Remarks:

Concrete Pad:

Condition of Concrete Pad:                      Good                       Inadequate

Depressions or standing water around well?:    Yes                       No

Remarks:

Protective Outer Casing:                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged

Condition of Locking Cap:                      Good                       Damaged

Condition of Lock:                      Good                       Damaged

Condition of Weep Hole:                      Good                       Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged

Condition of Riser Cap:                      Good                       Damaged

Measurement Reference Point:    Yes                       No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification

Ashish Patel  
Signed

Job Tech  
Title

07-21-2020  
Date





# Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 3

### Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 10.20

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

### Final Purge Stabilization Sampling Data:

| Date Sample Time                 | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|----------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>07-21-2020</u><br><u>0721</u> | <u>260</u>           | <u>16.87</u> | <u>197.75</u>                | <u>8.42</u>             | <u>6.5</u> | <u>-424</u>                        | <u>3.43</u>     |

### Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

### General Information:

Weather Conditions @ time of sampling: Sunny

72°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

### Comments and Observations:

Bottom ash APP III and IV samples

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 07-21-2020 By: AW & Paty Title: Lab Tech

**Monitoring Well Field Inspection**

Facility: SBMU SPS – CCR Groundwater Monitoring  
Monitoring Well ID: MW 6  
Name (Field Staff): A Patel D Dillingham  
Date: 07-21-2020

**Access:**

Accessibility:                      Good                       Fair                       Poor   
Well clear of weeds and/or debris?:    Yes                       No   
Well identification clearly visible?:    Yes                       No

Remarks:

**Concrete Pad:**

Condition of Concrete Pad:                      Good                       Inadequate   
Depressions or standing water around well?:    Yes                       No

Remarks:

**Protective Outer Casing:**                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged   
Condition of Locking Cap:                      Good                       Damaged   
Condition of Lock:                      Good                       Damaged   
Condition of Weep Hole:                      Good                       Damaged

Remarks:

**Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded**

Condition of Riser:                      Good                       Damaged   
Condition of Riser Cap:                      Good                       Damaged   
Measurement Reference Point:    Yes                       No

Remarks:

**Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing**

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification [Signature]                      Lab Tech                      07-21-2020  
Signed                      Title                      Date





### Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 5

Name (Field Staff): A Patel O Dillingham

Date: 07-21-2020

Access:

Accessibility:                      Good                       Fair                       Poor

Well clear of weeds and/or debris?:    Yes                       No

Well identification clearly visible?:    Yes                       No

Remarks:

Concrete Pad:

Condition of Concrete Pad:                      Good                       Inadequate

Depressions or standing water around well?:    Yes                       No

Remarks:

Protective Outer Casing:                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged

Condition of Locking Cap:                      Good                       Damaged

Condition of Lock:                      Good                       Damaged

Condition of Weep Hole:                      Good                       Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged

Condition of Riser Cap:                      Good                       Damaged

Measurement Reference Point:    Yes                       No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification

A Patel

Signed

Lab Tech

Title

07-21-2020

Date



# Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 5

## Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 9.93

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

## Final Purge Stabilization Sampling Data:

| Date Sample Time                 | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|----------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>07-21-2020</u><br><u>0951</u> | <u>280</u>           | <u>18.35</u> | <u>816.50</u>                | <u>4.37</u>             | <u>6.8</u> | <u>-102.9</u>                      | <u>5.36</u>     |

## Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

## General Information:

Weather Conditions @ time of sampling: SUNNY

81°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

## Comments and Observations:

Collect Field Blank for Bottomcush App III and IV event

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 07-21-2020 By: Abigail Pen Title: Lab Tech

### Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Groundwater Monitoring

Monitoring Well ID: MW 8

Name (Field Staff): A Patel D Oillingham

Date: 07-21-2020

Access:

Accessibility:            Good             Fair             Poor

Well clear of weeds and/or debris?:    Yes             No

Well identification clearly visible?:    Yes             No

Remarks:

Concrete Pad:

Condition of Concrete Pad:            Good             Inadequate

Depressions or standing water around well?:    Yes             No

Remarks:

Protective Outer Casing:            Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good             Damaged

Condition of Locking Cap:            Good             Damaged

Condition of Lock:                    Good             Damaged

Condition of Weep Hole:            Good             Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                    Good             Damaged

Condition of Riser Cap:            Good             Damaged

Measurement Reference Point:    Yes             No

Remarks:

Dedicated Purging/Sampling Device: Type = 1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:            Good             Damaged             Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes             No

Remarks:

Field Certification AP Las Tech 07-21-2020  
Signed Title Date





## Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 8

**Sampling Information:**

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 9.45

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

**Final Purge Stabilization Sampling Data:**

| Date Sample Time           | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|----------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>07-21-2020<br/>1119</u> | <u>300</u>           | <u>19.33</u> | <u>673.71</u>                | <u>2.91</u>             | <u>7.1</u> | <u>-130.8</u>                      | <u>3.56</u>     |

**Instrument Calibration Data:**

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

**General Information:**

Weather Conditions @ time of sampling: SUNNY  
88°F

Sample Characteristics: Clear, Colorless, Odorless

Sample Collection Order: Per SAP

**Comments and Observations:**

Collect Field Duplicate for Bottomash APP III and IV

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 07-21-2020 By: Ashish Patel

Title: Lab Tech

### Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 4

Name (Field Staff): A Patel D Dillingham

Date: 07-21-2020

Access:

Accessibility:                      Good                       Fair                       Poor

Well clear of weeds and/or debris?:    Yes                       No

Well identification clearly visible?:    Yes                       No

Remarks:

Concrete Pad:

Condition of Concrete Pad:                      Good                       Inadequate

Depressions or standing water around well?:    Yes                       No

Remarks:

Protective Outer Casing:                      Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing:    Good                       Damaged

Condition of Locking Cap:                      Good                       Damaged

Condition of Lock:                      Good                       Damaged

Condition of Weep Hole:                      Good                       Damaged

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser:                      Good                       Damaged

Condition of Riser Cap:                      Good                       Damaged

Measurement Reference Point:    Yes                       No

Remarks:

Dedicated Purging/Sampling Device: Type = ¼" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition:                      Good                       Damaged                       Missing

Remarks:

Monitoring Well Locked/Secured Post Sampling?:    Yes                       No

Remarks:

Field Certification Ashish Patel

Signed

Lab Tech

Title

07-21-2020

Date



# Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 4

## Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 10.45

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other

## Final Purge Stabilization Sampling Data:

| Date<br>Sample Time              | Sample Rate<br>(mL/min) | Temp<br>(°C) | Specific<br>Conductance<br>(µS/cm) | Dissolved Oxygen<br>(mg/L) | pH<br>(S.U.) | Oxidation<br>Reduction<br>Potential<br>(mV) | Turbidity<br>(NTU) |
|----------------------------------|-------------------------|--------------|------------------------------------|----------------------------|--------------|---|--------------------|
| <u>07-21-2020</u><br><u>1318</u> | <u>250</u>              | <u>19.75</u> | <u>550.69</u>                      | <u>5.06</u>                | <u>7.2</u>   | <u>-145.6</u>                               | <u>6.49</u>        |

## Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

## General Information:

Weather Conditions @ time of sampling: Sunny

90°F

Sample Characteristics: Clear, Colorless, Odorless

Sample Collection Order: Per SAP

Comments and Observations:

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 07-21-2020 By: Alisa Passer Title: Lab Tech

Field Sampling Notes – August 4, 2020  
(Second 2020 Semi-Annual Event – pH Resample)

# Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling Calibrated by: Abhishek Paser

Field Instruments: In-Situ smarTROLL Field Meter HF scientific, inc. Micro TPI Field Portable Turbidimeter

SIN #: 474247      SIN #: 201607366

| Date       | Time | pH Standards | pH Measurements | Specific Conductance Standard (µS/cm) | Specific Conductance Measurement (µS/cm) | Oxidation Reduction Potential (mV) |               | Dissolved Oxygen (%) |  | Turbidity Standards (NTU) | Turbidity Measurements (NTU) |        |
|------------|------|--------------|-----------------|---------------------------------------|--|------------------------------------|---------------|----------------------|--|---------------------------|------------------------------|--------|
|            |      |              |                 |                                       |  | Temperature (°C)                   | Standard (mV) | Temperature (°C)     | Tap Water Source Barometric Pressure (mm/Hg) Measurement |                           |                              |        |
| 08-04-2020 | 0510 | 4.00         | 4.0             | 1413                                  | 1412.5                                   |                                    | 21.28         | 229.0                | 21.15  | 0.02                      | 0.02                         |        |
|            |      | 7.00         | 7.6             |                                       |  |                                    |               |                      | 10.0   |                           |                              | 10.0   |
|            |      | 10.00        | 10.0            |                                       |  |                                    |               |                      | 1000   |                           |                              | 1000.0 |
| 08-04-2020 | 1210 | 4.00         | 4.1             | 1413                                  | 1376.4                                   |                                    | 21.11         | 229.0                | 24.17  | 0.02                      | 0.01                         |        |
|            |      | 7.00         | 7.0             |                                       |  |                                    |               |                      | 10.0   |                           |                              | 10.0   |
|            |      | 10.00        | 9.9             |                                       |  |                                    |               |                      | 1000   |                           |                              | 1012.0 |

Beginning of Day Calibration

End of Day Check

Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential.  
 The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.  
 Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.

I certify that the aforementioned meters were calibrated within the manufacturers specifications.

Date: 08-04-2020 By: Abhishek Paser







# Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 4

## Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated:  Y /  N

Water Level @ Sampling (feet btoc): 10.40

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly  Monthly ( ) Other ( )

## Final Purge Stabilization Sampling Data:

| Date Sample Time                 | Sample Rate (mL/min) | Temp (°C)    | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | pH (S.U.)  | Oxidation Reduction Potential (mV) | Turbidity (NTU) |
|----------------------------------|----------------------|--------------|------------------------------|-------------------------|------------|------------------------------------|-----------------|
| <u>08-04-2020</u><br><u>1036</u> | <u>260</u>           | <u>18.81</u> | <u>567.81</u>                | <u>4.87</u>             | <u>7.4</u> | <u>-117.8</u>                      | <u>7.19</u>     |

## Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

- 1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potential)
- 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

## General Information:

Weather Conditions @ time of sampling: Sunny  
73°F

Sample Characteristics: Clear, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 08-04-2020 By: Ashish Patel Title: Lab Tech

# **Appendix 2**

## Laboratory Analytical Results

Laboratory Analytical Results – February 18, 2020  
(First 2020 Semi-annual Event)



March 16, 2020

Luke St Mary  
Sikeston BMU, Sikeston Power Station  
1551 W Wakefield  
Sikeston, MO 63801

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

Please find enclosed the analytical results for the 7 sample(s) the laboratory received on 2/20/20 10:10 am and logged in under work order 0023536. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Kurt Stepping  
Senior Project Manager  
(309) 692-9688 x1719  
kstepping@pdclab.com



## ANALYTICAL RESULTS



ANALYTICAL RESULTS

Sample: 0023536-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 02/18/20 09:20
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0023536-02
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 02/18/20 10:25
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0023536-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 02/18/20 11:39
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0023536-04
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 02/18/20 12:36
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.



ANALYTICAL RESULTS

Sample: 0023536-05
Name: MW-4
Matrix: Ground Water - Grab

Sampled: 02/18/20 14:13
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0023536-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 02/18/20 00:00
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0023536-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 02/18/20 00:00
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

ANALYTICAL RESULTS



## ANALYTICAL RESULTS

Sample: 0023536-01  
 Name: MW-3  
 Matrix: Ground Water - Grab

Sampled: 02/18/20 09:20  
 Received: 02/20/20 10:10  
 PO #: 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|---------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |         |                   |
| Chloride                              | 1.3     | mg/L |           | 02/28/20 08:26 | 1        | 1.0   | 02/28/20 08:26 | LAM     | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L | Q1        | 02/21/20 13:41 | 1        | 0.250 | 02/21/20 13:41 | n.a.    | EPA 300.0 REV 2.1 |
| Sulfate                               | 21      | mg/L |           | 02/28/20 08:44 | 5        | 5.0   | 02/28/20 08:44 | LAM     | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |         |                   |
| Solids - total dissolved solids (TDS) | 140     | mg/L | H         | 02/27/20 08:59 | 1        | 26    | 02/27/20 09:26 | cpc     | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |         |                   |
| Antimony                              | < 3.0   | ug/L |           | 03/03/20 12:27 | 5        | 3.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Arsenic                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Barium                                | 110     | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Boron                                 | 27      | ug/L |           | 03/11/20 10:06 | 5        | 10    | 03/12/20 08:56 | JMW     | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Calcium                               | 16000   | ug/L |           | 03/03/20 12:27 | 5        | 100   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 03/03/20 12:27 | 5        | 4.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 03/03/20 12:27 | 5        | 2.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 03/03/20 12:27 | 5        | 0.20  | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Molybdenum                            | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:36 | JMW     | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 03/03/20 12:27 | 11       | 0.020 | 03/04/20 10:09 | ZSA     | EPA 6010B*        |





## ANALYTICAL RESULTS

Sample: 0023536-02  
 Name: MW-6  
 Matrix: Ground Water - Grab

Sampled: 02/18/20 10:25  
 Received: 02/20/20 10:10  
 PO #: 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|---------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |         |                   |
| Chloride                              | 1.7     | mg/L |           | 02/28/20 09:02 | 1        | 1.0   | 02/28/20 09:02 | LAM     | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L | Q3        | 02/21/20 14:36 | 1        | 0.250 | 02/21/20 14:36 | n.a.    | EPA 300.0 REV 2.1 |
| Sulfate                               | 24      | mg/L |           | 02/28/20 09:21 | 5        | 5.0   | 02/28/20 09:21 | LAM     | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |         |                   |
| Solids - total dissolved solids (TDS) | 170     | mg/L | H         | 02/27/20 08:59 | 1        | 26    | 02/27/20 09:26 | cpc     | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |         |                   |
| Antimony                              | < 3.0   | ug/L |           | 03/03/20 12:27 | 5        | 3.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Arsenic                               | 2.4     | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Barium                                | 180     | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Boron                                 | 40      | ug/L |           | 03/11/20 10:06 | 5        | 10    | 03/12/20 09:00 | JMW     | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Calcium                               | 41000   | ug/L |           | 03/03/20 12:27 | 5        | 100   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 03/03/20 12:27 | 5        | 4.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 03/03/20 12:27 | 5        | 2.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 03/03/20 12:27 | 5        | 0.20  | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Molybdenum                            | ≤ 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 03/03/20 12:27 | 1        | 0.020 | 03/04/20 10:11 | ZSA     | EPA 6010B*        |



ANALYTICAL RESULTS

Sample: 0023536-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 02/18/20 11:39
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Anions - PIA (Chloride, Fluoride, Sulfate), General Chemistry - PIA (Solids - total dissolved solids (TDS)), and Total Metals - PIA (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Selenium, Thallium, Lithium).



## ANALYTICAL RESULTS

Sample: 0023536-04  
 Name: MW-8  
 Matrix: Ground Water - Grab

Sampled: 02/18/20 12:36  
 Received: 02/20/20 10:10  
 PO #: 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|---------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |         |                   |
| Chloride                              | 53      | mg/L |           | 02/28/20 10:33 | 25       | 25    | 02/28/20 10:33 | LAM     | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L |           | 02/21/20 17:02 | 1        | 0.250 | 02/21/20 17:02 | n.a.    | EPA 300.0 REV 2.1 |
| Sulfate                               | 110     | mg/L |           | 02/28/20 10:33 | 25       | 25    | 02/28/20 10:33 | LAM     | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |         |                   |
| Solids - total dissolved solids (TDS) | 420     | mg/L | H         | 02/27/20 08:59 | 1        | 26    | 02/27/20 09:26 | cpc     | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |         |                   |
| Antimony                              | < 3.0   | ug/L |           | 03/03/20 12:27 | 5        | 3.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Arsenic                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Barium                                | 77      | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Boron                                 | 480     | ug/L |           | 03/11/20 10:06 | 5        | 10    | 03/12/20 09:21 | JMW     | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Calcium                               | 93000   | ug/L |           | 03/03/20 12:27 | 5        | 100   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 03/03/20 12:27 | 5        | 4.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 03/03/20 12:27 | 5        | 2.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 03/03/20 12:27 | 5        | 0.20  | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Molybdenum                            | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:47 | JMW     | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 03/03/20 12:27 | 1        | 0.020 | 03/04/20 10:14 | ZSA     | EPA 6010B*        |



## ANALYTICAL RESULTS

Sample: 0023536-05  
 Name: MW-4  
 Matrix: Ground Water - Grab

Sampled: 02/18/20 14:13  
 Received: 02/20/20 10:10  
 PO #: 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|---------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |         |                   |
| Chloride                              | 11      | mg/L |           | 02/28/20 10:51 | 5        | 5.0   | 02/28/20 10:51 | LAM     | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L |           | 02/21/20 17:20 | 1        | 0.250 | 02/21/20 17:20 | n.a.    | EPA 300.0 REV 2.1 |
| Sulfate                               | 66      | mg/L |           | 02/28/20 11:09 | 25       | 25    | 02/28/20 11:09 | LAM     | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |         |                   |
| Solids - total dissolved solids (TDS) | 290     | mg/L | H         | 02/27/20 08:59 | 1        | 26    | 02/27/20 09:26 | cpc     | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |         |                   |
| Antimony                              | < 3.0   | ug/L |           | 03/03/20 12:27 | 5        | 3.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Arsenic                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Barium                                | 72      | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Boron                                 | 930     | ug/L |           | 03/03/20 12:27 | 5        | 10    | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Calcium                               | 67000   | ug/L |           | 03/03/20 12:27 | 5        | 100   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 03/03/20 12:27 | 5        | 4.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 03/03/20 12:27 | 5        | 2.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 03/03/20 12:27 | 5        | 0.20  | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Molybdenum                            | 5.1     | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 03/03/20 12:27 | 1        | 0.020 | 03/04/20 10:16 | ZSA     | EPA 6010B*        |



ANALYTICAL RESULTS

Sample: 0023536-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 02/18/20 00:00
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Anions - PIA (Chloride, Fluoride, Sulfate), General Chemistry - PIA (Solids - total dissolved solids (TDS)), and Total Metals - PIA (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Selenium, Thallium, Lithium).



## ANALYTICAL RESULTS

Sample: 0023536-07  
 Name: FIELD BLANK  
 Matrix: Ground Water - Field Blank

Sampled: 02/18/20 00:00  
 Received: 02/20/20 10:10  
 PO #: 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|---------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |         |                   |
| Chloride                              | < 1.0   | mg/L |           | 02/28/20 14:29 | 1        | 1.0   | 02/28/20 14:29 | LAM     | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L |           | 02/21/20 17:57 | 1        | 0.250 | 02/21/20 17:57 | n.a.    | EPA 300.0 REV 2.1 |
| Sulfate                               | < 1.0   | mg/L |           | 02/28/20 14:29 | 1        | 1.0   | 02/28/20 14:29 | LAM     | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |         |                   |
| Solids - total dissolved solids (TDS) | < 17    | mg/L | H         | 02/27/20 08:59 | 1        | 17    | 02/27/20 09:26 | cpc     | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |         |                   |
| Antimony                              | < 3.0   | ug/L |           | 03/03/20 12:27 | 5        | 3.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Arsenic                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Barium                                | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Boron                                 | < 10    | ug/L |           | 03/11/20 10:06 | 5        | 10    | 03/12/20 09:28 | JMW     | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Calcium                               | < 100   | ug/L |           | 03/03/20 12:27 | 5        | 100   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 03/03/20 12:27 | 5        | 4.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 03/03/20 12:27 | 5        | 2.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 03/03/20 12:27 | 5        | 0.20  | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Molybdenum                            | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:58 | JMW     | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 03/03/20 12:27 | 1        | 0.020 | 03/04/20 10:23 | ZSA     | EPA 6010B*        |

Laboratory Analytical Results – March 30, 2020  
(First 2020 Semi-annual Event - TDS)



April 07, 2020

Luke St Mary  
Sikeston BMU, Sikeston Power Station  
1551 W Wakefield  
Sikeston, MO 63801

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

Please find enclosed the analytical results for the 7 sample(s) the laboratory received on 4/1/20 11:00 am and logged in under work order 0040090. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Kurt Stepping  
Senior Project Manager  
(309) 692-9688 x1719  
kstepping@pdclab.com



## ANALYTICAL RESULTS





ANALYTICAL RESULTS

Sample: 0040090-01  
Name: MW-3  
Matrix: Ground Water - Grab

Sampled: 03/30/20 08:29  
Received: 04/01/20 11:00  
PO #: 23573

| Parameter                             | Result | Unit | Qualifier | Prepared       | Dilution | MRL | Analyzed       | Analyst | Method   |
|---------------------------------------|--------|------|-----------|----------------|----------|-----|----------------|---------|----------|
| <b>General Chemistry - PIA</b>        |        |      |           |                |          |     |                |         |          |
| Solids - total dissolved solids (TDS) | 180    | mg/L |           | 04/02/20 11:06 | 1        | 26  | 04/02/20 11:06 | CPC     | SM 2540C |

Sample: 0040090-02  
Name: MW-4  
Matrix: Ground Water - Grab

Sampled: 03/30/20 12:49  
Received: 04/01/20 11:00  
PO #: 23573

| Parameter                             | Result | Unit | Qualifier | Prepared       | Dilution | MRL | Analyzed       | Analyst | Method   |
|---------------------------------------|--------|------|-----------|----------------|----------|-----|----------------|---------|----------|
| <b>General Chemistry - PIA</b>        |        |      |           |                |          |     |                |         |          |
| Solids - total dissolved solids (TDS) | 300    | mg/L |           | 04/02/20 11:06 | 1        | 26  | 04/02/20 11:06 | CPC     | SM 2540C |

Sample: 0040090-03  
Name: MW-5  
Matrix: Ground Water - Grab

Sampled: 03/30/20 10:35  
Received: 04/01/20 11:00  
PO #: 23573

| Parameter                             | Result | Unit | Qualifier | Prepared       | Dilution | MRL | Analyzed       | Analyst | Method   |
|---------------------------------------|--------|------|-----------|----------------|----------|-----|----------------|---------|----------|
| <b>General Chemistry - PIA</b>        |        |      |           |                |          |     |                |         |          |
| Solids - total dissolved solids (TDS) | 450    | mg/L |           | 04/02/20 11:06 | 1        | 26  | 04/02/20 11:06 | CPC     | SM 2540C |

Sample: 0040090-04  
Name: MW-6  
Matrix: Ground Water - Grab

Sampled: 03/30/20 09:20  
Received: 04/01/20 11:00  
PO #: 23573

| Parameter                             | Result | Unit | Qualifier | Prepared       | Dilution | MRL | Analyzed       | Analyst | Method   |
|---------------------------------------|--------|------|-----------|----------------|----------|-----|----------------|---------|----------|
| <b>General Chemistry - PIA</b>        |        |      |           |                |          |     |                |         |          |
| Solids - total dissolved solids (TDS) | 230    | mg/L |           | 04/02/20 11:06 | 1        | 26  | 04/02/20 11:06 | CPC     | SM 2540C |



ANALYTICAL RESULTS

Sample: 0040090-05  
Name: MVV-8  
Matrix: Ground Water - Grab

Sampled: 03/30/20 11:51  
Received: 04/01/20 11:00  
PO #: 23573

| Parameter | Result | Unit | Qualifier | Prepared | Dilution | MRL | Analyzed | Analyst | Method |
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|

General Chemistry - PIA

|                                       |     |      |  |                |   |    |                |     |          |
|---------------------------------------|-----|------|--|----------------|---|----|----------------|-----|----------|
| Solids - total dissolved solids (TDS) | 480 | mg/L |  | 04/02/20 11:06 | 1 | 26 | 04/02/20 11:06 | CPC | SM 2540C |
|---------------------------------------|-----|------|--|----------------|---|----|----------------|-----|----------|

Sample: 0040090-06  
Name: FIELD DUPLICATE  
Matrix: Ground Water - Grab

Sampled: 03/30/20 00:00  
Received: 04/01/20 11:00  
PO #: 23573

| Parameter | Result | Unit | Qualifier | Prepared | Dilution | MRL | Analyzed | Analyst | Method |
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|

General Chemistry - PIA

|                                       |     |      |  |                |   |    |                |     |          |
|---------------------------------------|-----|------|--|----------------|---|----|----------------|-----|----------|
| Solids - total dissolved solids (TDS) | 460 | mg/L |  | 04/02/20 11:06 | 1 | 26 | 04/02/20 11:06 | CPC | SM 2540C |
|---------------------------------------|-----|------|--|----------------|---|----|----------------|-----|----------|

Sample: 0040090-07  
Name: FIELD BLANK  
Matrix: Ground Water - Grab

Sampled: 03/30/20 00:00  
Received: 04/01/20 11:00  
PO #: 23573

| Parameter | Result | Unit | Qualifier | Prepared | Dilution | MRL | Analyzed | Analyst | Method |
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|

General Chemistry - PIA

|                                       |      |      |  |                |   |    |                |     |          |
|---------------------------------------|------|------|--|----------------|---|----|----------------|-----|----------|
| Solids - total dissolved solids (TDS) | < 17 | mg/L |  | 04/02/20 11:06 | 1 | 17 | 04/02/20 11:06 | CPC | SM 2540C |
|---------------------------------------|------|------|--|----------------|---|----|----------------|-----|----------|

Laboratory Analytical Results – April 8, 2020  
(First 2020 Semi-Annual Event – TDS Resample)



May 14, 2020

Luke St Mary  
Sikeston BMU, Sikeston Power Station  
1551 W Wakefield  
Sikeston, MO 63801

RE: Sikeston NPDES Groundwater

Dear Luke St Mary:

Please find enclosed the analytical results for the **15 sample(s)** the laboratory received on **4/10/20 10:00 am** and logged in under work order **0042173**. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or [lgrant@pdclab.com](mailto:lgrant@pdclab.com).

Sincerely,

Kurt Stepping  
Senior Project Manager  
(309) 692-9688 x1719  
[kstepping@pdclab.com](mailto:kstepping@pdclab.com)



## ANALYTICAL RESULTS



ANALYTICAL RESULTS

Sample: 0042173-08
Name: MW-8
Matrix: Ground Water - Regular Sample

Sampled: 04/08/20 10:55
Received: 04/10/20 10:00
PO #: 23575

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Row 1: Solids - total dissolved solids (TDS), 430, mg/L, 04/13/20 13:25, 1, 26, 04/13/20 14:25, CPC, SM 2540C

Sample: 0042175-01
Name: MW-8
Matrix: Ground Water - Regular Sample

Sampled: 04/08/20 10:55
Received: 04/10/20 10:00
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Row 1: Solids - total dissolved solids (TDS), 480, mg/L, 04/13/20 13:25, 1, 26, 04/13/20 14:25, CPC, SM 2540C

Sample: 0042175-02
Name: FIELD DUPLICATE
Matrix: Ground Water - Regular Sample

Sampled: 04/08/20 00:00
Received: 04/10/20 10:00
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Row 1: Solids - total dissolved solids (TDS), 330, mg/L, 04/13/20 13:25, 1, 26, 04/13/20 14:25, CPC, SM 2540C

Sample: 0042175-03
Name: FIELD BLANK
Matrix: Ground Water - Regular Sample

Sampled: 04/07/20 00:00
Received: 04/10/20 10:00
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Row 1: Solids - total dissolved solids (TDS), < 17, mg/L, 04/13/20 13:25, 1, 17, 04/13/20 14:25, CPC, SM 2540C

Laboratory Analytical Results – July 21, 2020  
(Second 2020 Semi-Annual Event)



# PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

August 24, 2020

Luke St Mary  
Sikeston BMU, Sikeston Power Station  
1551 W Wakefield  
Sikeston, MO 63801

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

Please find enclosed the analytical results for the 7 sample(s) the laboratory received on 7/23/20 10:15 am and logged in under work order 0074963. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Kurt Stepping  
Senior Project Manager  
(309) 692-9688 x1719  
kstepping@pdclab.com





**SAMPLE RECEIPT CHECK LIST**

---

Work Order 0074963

---

|            |  |
|------------|--|
| <u>YES</u> | <u>Samples received within temperature compliance</u>            |
| <u>YES</u> | <u>COC present</u>   |
| <u>YES</u> | <u>COC completed &amp; legible</u>                               |
| <u>YES</u> | <u>Sampler name &amp; signature present</u>                      |
| <u>YES</u> | <u>Unique sample IDs assigned</u>                                |
| <u>YES</u> | <u>Sample collection location recorded</u>                       |
| <u>YES</u> | <u>Date &amp; time collected recorded on COC</u>                 |
| <u>YES</u> | <u>Relinquished by client signature on COC</u>                   |
| <u>YES</u> | <u>COC &amp; labels match</u>                                    |
| <u>YES</u> | <u>Sample labels are legible</u>                                 |
| <u>YES</u> | <u>Appropriate bottle(s) received</u>                            |
| <u>YES</u> | <u>Sufficient sample volume received</u>                         |
| <u>YES</u> | <u>Samples are free from signs of damage &amp; contamination</u> |
| <u>NO</u>  | <u>No headspace &gt;6 mm present in VOA vials or TOX bottles</u> |
| <u>NO</u>  | <u>Sulfide bottle(s) completely filled if required</u>           |
| <u>NO</u>  | <u>Trip blank(s) received if required</u>                        |
| <u>NO</u>  | <u>Custody seals used</u>  |
| <u>NO</u>  | <u>Custody seals intact</u>                                      |
| <u>YES</u> | <u>All analyses received within holding times</u>                |
| <u>NO</u>  | <u>Short hold time analysis requested</u>                        |
| <u>NO</u>  | <u>RUSH TAT requested</u>  |
| <u>NO</u>  | <u>Field parameters recorded on COC</u>                          |
| <u>YES</u> | <u>Current PDC COC submitted</u>                                 |
| <u>NO</u>  | <u>Sample receipt case narrative provided</u>                    |





ANALYTICAL RESULTS

Sample: 0074963-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 07/21/20 07:21
Received: 07/23/20 10:15
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0074963-02
Name: MW-4
Matrix: Ground Water - Grab

Sampled: 07/21/20 13:18
Received: 07/23/20 10:15
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0074963-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 07/21/20 09:51
Received: 07/23/20 10:15
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0074963-04
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 07/21/20 08:34
Received: 07/23/20 10:15
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.



ANALYTICAL RESULTS

Sample: 0074963-05
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 07/21/20 11:19
Received: 07/23/20 10:15
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0074963-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 07/21/20 00:00
Received: 07/23/20 10:15
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0074963-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 07/21/20 00:00
Received: 07/23/20 10:15
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

ANALYTICAL RESULTS



## ANALYTICAL RESULTS

Sample: 0074963-01  
 Name: MW-3  
 Matrix: Ground Water - Grab

Sampled: 07/21/20 07:21  
 Received: 07/23/20 10:15  
 PO #: 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst   | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|-----------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |           |                   |
| Chloride                              | 1.0     | mg/L |           | 07/28/20 22:04 | 1        | 1.0   | 07/28/20 22:04 | CRD       | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L |           | 07/30/20 16:50 | 1        | 0.250 | 07/30/20 16:50 | MGU       | EPA 300.0 REV 2.1 |
| Sulfate                               | 15      | mg/L |           | 07/28/20 22:22 | 5        | 5.0   | 07/28/20 22:22 | CRD       | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |           |                   |
| Solids - total dissolved solids (TDS) | 140     | mg/L |           | 07/24/20 08:07 | 1        | 26    | 07/24/20 10:00 | DMR / BMS | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |           |                   |
| Antimony                              | < 3.0   | ug/L |           | 07/28/20 09:15 | 5        | 3.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Arsenic                               | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Barium                                | 85      | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Boron                                 | 21      | ug/L |           | 07/28/20 09:15 | 5        | 10    | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Calcium                               | 18000   | ug/L |           | 07/28/20 09:15 | 5        | 200   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 07/28/20 09:15 | 5        | 4.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 07/28/20 09:15 | 5        | 2.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 07/28/20 09:15 | 5        | 0.20  | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Molybdenum                            | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:47 | JMW       | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 07/28/20 09:15 | 1        | 0.020 | 07/30/20 09:57 | ZSA       | EPA 6010B*        |



## ANALYTICAL RESULTS

Sample: 0074963-02  
 Name: MW-4  
 Matrix: Ground Water - Grab

Sampled: 07/21/20 13:18  
 Received: 07/23/20 10:15  
 PO #: 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst   | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|-----------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |           |                   |
| Chloride                              | 14      | mg/L |           | 07/28/20 23:35 | 5        | 5.0   | 07/28/20 23:35 | CRD       | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L |           | 07/30/20 17:08 | 1        | 0.250 | 07/30/20 17:08 | MGU       | EPA 300.0 REV 2.1 |
| Sulfate                               | 86      | mg/L |           | 07/28/20 23:53 | 25       | 25    | 07/28/20 23:53 | CRD       | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |           |                   |
| Solids - total dissolved solids (TDS) | 290     | mg/L |           | 07/24/20 08:07 | 1        | 26    | 07/24/20 10:00 | DMR / BMS | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |           |                   |
| Antimony                              | < 3.0   | ug/L |           | 07/28/20 09:15 | 5        | 3.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Arsenic                               | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Barium                                | 81      | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Boron                                 | 920     | ug/L |           | 07/28/20 09:15 | 5        | 10    | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Calcium                               | 76000   | ug/L |           | 07/28/20 09:15 | 5        | 200   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 07/28/20 09:15 | 5        | 4.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 07/28/20 09:15 | 5        | 2.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 07/28/20 09:15 | 5        | 0.20  | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Molybdenum                            | 7.0     | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:50 | JMW       | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 07/28/20 09:15 | 1        | 0.020 | 07/30/20 09:58 | ZSA       | EPA 6010B*        |



ANALYTICAL RESULTS

Sample: 0074963-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 07/21/20 09:51
Received: 07/23/20 10:15
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Anions - PIA (Chloride, Fluoride, Sulfate), General Chemistry - PIA (Solids - total dissolved solids (TDS)), and Total Metals - PIA (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Selenium, Thallium, Lithium).



## ANALYTICAL RESULTS

Sample: 0074963-04  
 Name: MW-6  
 Matrix: Ground Water - Grab

Sampled: 07/21/20 08:34  
 Received: 07/23/20 10:15  
 PO #: 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst   | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|-----------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |           |                   |
| Chloride                              | < 1.0   | mg/L |           | 07/29/20 01:06 | 1        | 1.0   | 07/29/20 01:06 | CRD       | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L |           | 07/30/20 17:44 | 1        | 0.250 | 07/30/20 17:44 | MGU       | EPA 300.0 REV 2.1 |
| Sulfate                               | 22      | mg/L |           | 07/29/20 01:24 | 5        | 5.0   | 07/29/20 01:24 | CRD       | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |           |                   |
| Solids - total dissolved solids (TDS) | 220     | mg/L |           | 07/24/20 08:07 | 1        | 26    | 07/24/20 10:00 | DMR / BMS | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |           |                   |
| Antimony                              | < 3.0   | ug/L |           | 07/28/20 09:15 | 5        | 3.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Arsenic                               | 3.1     | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Barium                                | 190     | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Boron                                 | 46      | ug/L |           | 07/28/20 09:15 | 5        | 10    | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Calcium                               | 43000   | ug/L |           | 07/28/20 09:15 | 5        | 200   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 07/28/20 09:15 | 5        | 4.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 07/28/20 09:15 | 5        | 2.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 07/28/20 09:15 | 5        | 0.20  | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Molybdenum                            | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 07/28/20 09:15 | 5        | 1.0   | 07/29/20 12:58 | JMW       | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 07/28/20 09:15 | 1        | 0.020 | 07/30/20 10:02 | ZSA       | EPA 6010B*        |



## ANALYTICAL RESULTS

Sample: 0074963-05  
 Name: MW-8  
 Matrix: Ground Water - Grab

Sampled: 07/21/20 11:19  
 Received: 07/23/20 10:15  
 PO #: 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst   | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|-----------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |           |                   |
| Chloride                              | 50      | mg/L |           | 07/29/20 02:01 | 25       | 25    | 07/29/20 02:01 | CRD       | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L |           | 07/30/20 18:02 | 1        | 0.250 | 07/30/20 18:02 | MGU       | EPA 300.0 REV 2.1 |
| Sulfate                               | 100     | mg/L |           | 07/29/20 02:01 | 25       | 25    | 07/29/20 02:01 | CRD       | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |           |                   |
| Solids - total dissolved solids (TDS) | 420     | mg/L |           | 07/24/20 08:07 | 1        | 26    | 07/24/20 10:00 | DMR / BMS | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |           |                   |
| Antimony                              | < 3.0   | ug/L |           | 07/28/20 11:11 | 5        | 3.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Arsenic                               | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Barium                                | 69      | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Boron                                 | 470     | ug/L |           | 07/28/20 11:11 | 5        | 10    | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Calcium                               | 89000   | ug/L |           | 07/28/20 11:11 | 5        | 200   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 07/28/20 11:11 | 5        | 4.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 07/28/20 11:11 | 5        | 2.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 07/28/20 11:11 | 5        | 0.20  | 08/03/20 09:05 | JMW       | EPA 6020A         |
| Molybdenum                            | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:55 | JMW       | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 07/28/20 11:11 | 1        | 0.020 | 07/30/20 10:12 | ZSA       | EPA 6010B*        |



ANALYTICAL RESULTS

Sample: 0074963-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 07/21/20 00:00
Received: 07/23/20 10:15
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Anions - PIA (Chloride, Fluoride, Sulfate), General Chemistry - PIA (Solids - total dissolved solids (TDS)), and Total Metals - PIA (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Selenium, Thallium, Lithium).





**ANALYTICAL RESULTS**

**Sample:** 0074963-07  
**Name:** FIELD BLANK  
**Matrix:** Ground Water - Field Blank

**Sampled:** 07/21/20 00:00  
**Received:** 07/23/20 10:15  
**PO #:** 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst   | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|-----------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |           |                   |
| Chloride                              | < 1.0   | mg/L |           | 07/29/20 03:50 | 1        | 1.0   | 07/29/20 03:50 | CRD       | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L |           | 07/29/20 03:50 | 1        | 0.250 | 07/29/20 03:50 | CRD       | EPA 300.0 REV 2.1 |
| Sulfate                               | < 1.0   | mg/L |           | 07/29/20 03:50 | 1        | 1.0   | 07/29/20 03:50 | CRD       | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |           |                   |
| Solids - total dissolved solids (TDS) | < 17    | mg/L |           | 07/24/20 08:07 | 1        | 17    | 07/24/20 10:00 | DMR / BMS | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |           |                   |
| Antimony                              | < 3.0   | ug/L |           | 07/28/20 11:11 | 5        | 3.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Arsenic                               | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Barium                                | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Boron                                 | < 10    | ug/L |           | 07/28/20 11:11 | 5        | 10    | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Calcium                               | 980     | ug/L | B         | 07/28/20 11:11 | 5        | 200   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 07/28/20 11:11 | 5        | 4.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 07/28/20 11:11 | 5        | 2.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 07/28/20 11:11 | 5        | 0.20  | 08/03/20 09:08 | JMW       | EPA 6020A         |
| Molybdenum                            | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 07/28/20 11:11 | 5        | 1.0   | 07/29/20 13:59 | JMW       | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 07/28/20 11:11 | 1        | 0.020 | 07/30/20 10:14 | ZSA       | EPA 6010B*        |

# **Appendix 3**

Laboratory Quality Assurance/Quality Control Data

Laboratory Quality Assurance/Quality Control Data –  
February 18, 2020  
(First 2020 Semi-annual Event)



**QC SAMPLE RESULTS**

| Parameter  | Result | Unit | Qual | Spike Level                                      | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|--|--------|------|------|--|---------------|------|-------------|-----|-----------|
| <b><u>Batch B004627 - IC No Prep - EPA 300.0 REV 2.1</u></b> |        |      |      |  |               |      |             |     |           |
| <b>Calibration Blank (B004627-CCB1)</b>                      |        |      |      | Prepared & Analyzed: 02/21/20                    |               |      |             |     |           |
| Fluoride   | 0.00   | mg/L |      |  |               |      |             |     |           |
| <b>Calibration Check (B004627-CCV1)</b>                      |        |      |      | Prepared & Analyzed: 02/21/20                    |               |      |             |     |           |
| Fluoride   | 4.89   | mg/L |      | 5.000  | 0.210         | 98   | 90-110      |     |           |
| <b>Matrix Spike (B004627-MS1)</b>                            |        |      |      | Sample: 0023536-01 Prepared & Analyzed: 02/21/20 |               |      |             |     |           |
| Fluoride   | 1.40   | mg/L | Q1   | 1.500  | 0.210         | 79   | 80-120      |     |           |
| <b>Matrix Spike (B004627-MS2)</b>                            |        |      |      | Sample: 0023536-02 Prepared & Analyzed: 02/21/20 |               |      |             |     |           |
| Fluoride   | 1.12   | mg/L | Q1   | 1.500  | ND            | 75   | 80-120      |     |           |
| <b>Matrix Spike (B004627-MS3)</b>                            |        |      |      | Sample: 0023536-03 Prepared & Analyzed: 02/21/20 |               |      |             |     |           |
| Fluoride   | 1.45   | mg/L |      | 1.500  | ND            | 97   | 80-120      |     |           |
| <b>Matrix Spike Dup (B004627-MSD1)</b>                       |        |      |      | Sample: 0023536-01 Prepared & Analyzed: 02/21/20 |               |      |             |     |           |
| Fluoride   | 1.43   | mg/L |      | 1.500  | 0.210         | 81   | 80-120      | 2   | 20        |
| <b>Matrix Spike Dup (B004627-MSD2)</b>                       |        |      |      | Sample: 0023536-02 Prepared & Analyzed: 02/21/20 |               |      |             |     |           |
| Fluoride   | 1.14   | mg/L | Q2   | 1.500  | ND            | 76   | 80-120      | 1   | 20        |
| <b>Matrix Spike Dup (B004627-MSD3)</b>                       |        |      |      | Sample: 0023536-03 Prepared & Analyzed: 02/21/20 |               |      |             |     |           |
| Fluoride   | 1.46   | mg/L |      | 1.500  | ND            | 97   | 80-120      | 0.8 | 20        |
| <b><u>Batch B004955 - No Prep - SM 2540C</u></b>             |        |      |      |  |               |      |             |     |           |
| <b>Blank (B004955-BLK1)</b>                                  |        |      |      | Prepared & Analyzed: 02/27/20                    |               |      |             |     |           |
| Solids - total dissolved solids (TDS)                        | < 17   | mg/L |      |  |               |      |             |     |           |
| <b>LCS (B004955-BS1)</b>                                     |        |      |      | Prepared & Analyzed: 02/27/20                    |               |      |             |     |           |
| Solids - total dissolved solids (TDS)                        | 967    | mg/L |      | 1000   |               | 97   | 67.9-132    |     |           |
| <b>Duplicate (B004955-DUP1)</b>                              |        |      |      | Sample: 0024315-01 Prepared & Analyzed: 02/27/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)                        | 473    | mg/L | M    |  | 540           |      |             | 13  | 5         |
| <b><u>Batch B005170 - IC No Prep - EPA 300.0 REV 2.1</u></b> |        |      |      |  |               |      |             |     |           |
| <b>Calibration Blank (B005170-CCB1)</b>                      |        |      |      | Prepared & Analyzed: 02/28/20                    |               |      |             |     |           |
| Sulfate  | 0.00   | mg/L |      |  |               |      |             |     |           |
| Chloride   | 0.578  | mg/L |      |  |               |      |             |     |           |
| <b>Calibration Check (B005170-CCV1)</b>                      |        |      |      | Prepared & Analyzed: 02/28/20                    |               |      |             |     |           |
| Sulfate  | 5.19   | mg/L |      | 5.000  |               | 104  | 90-110      |     |           |
| Chloride   | 5.07   | mg/L |      | 5.000  |               | 101  | 90-110      |     |           |
| <b><u>Batch B005306 - SW 3015 - EPA 6020A</u></b>            |        |      |      |  |               |      |             |     |           |
| <b>Blank (B005306-BLK1)</b>                                  |        |      |      | Prepared: 03/03/20 Analyzed: 03/04/20            |               |      |             |     |           |
| Antimony   | < 3.0  | ug/L |      |  |               |      |             |     |           |
| Arsenic  | < 1.0  | ug/L |      |  |               |      |             |     |           |
| Barium   | < 1.0  | ug/L |      |  |               |      |             |     |           |
| Beryllium  | < 1.0  | ug/L |      |  |               |      |             |     |           |
| Boron  | 77.4   | ug/L | B    |  |               |      |             |     |           |
| Cadmium  | < 1.0  | ug/L |      |  |               |      |             |     |           |
| Calcium  | < 100  | ug/L |      |  |               |      |             |     |           |
| Chromium   | < 4.0  | ug/L |      |  |               |      |             |     |           |
| Cobalt   | < 2.0  | ug/L |      |  |               |      |             |     |           |



**QC SAMPLE RESULTS**

| Parameter                                  | Result  | Unit | Qual | Spike Level | Source Result  | %REC | %REC Limits | RPD | RPD Limit |
|--|---------|------|------|-------------|--|------|-------------|-----|-----------|
| <b>Batch B005306 - SW 3015 - EPA 6020A</b> |         |      |      |             |  |      |             |     |           |
| <b>Blank (B005306-BLK1)</b>                |         |      |      |             | Prepared: 03/03/20 Analyzed: 03/04/20                    |      |             |     |           |
| Lead                                       | < 1.0   | ug/L |      |             |  |      |             |     |           |
| Mercury                                    | < 0.20  | ug/L |      |             |  |      |             |     |           |
| Molybdenum                                 | < 1.0   | ug/L |      |             |  |      |             |     |           |
| Selenium                                   | < 1.0   | ug/L |      |             |  |      |             |     |           |
| Thallium                                   | < 1.0   | ug/L |      |             |  |      |             |     |           |
| Lithium                                    | < 0.020 | mg/L |      |             |  |      |             |     |           |
| <b>LCS (B005306-BS1)</b>                   |         |      |      |             | Prepared: 03/03/20 Analyzed: 03/04/20                    |      |             |     |           |
| Antimony                                   | 535     | ug/L |      | 555.6       |  | 96   | 80-120      |     |           |
| Arsenic                                    | 569     | ug/L |      | 555.6       |  | 102  | 80-120      |     |           |
| Barium                                     | 531     | ug/L |      | 555.6       |  | 96   | 80-120      |     |           |
| Beryllium                                  | 527     | ug/L |      | 555.6       |  | 95   | 80-120      |     |           |
| Boron                                      | 605     | ug/L |      | 555.6       |  | 109  | 80-120      |     |           |
| Cadmium                                    | 526     | ug/L |      | 555.6       |  | 95   | 80-120      |     |           |
| Calcium                                    | 5580    | ug/L |      | 5556        |  | 100  | 80-120      |     |           |
| Chromium                                   | 555     | ug/L |      | 555.6       |  | 100  | 80-120      |     |           |
| Cobalt                                     | 560     | ug/L |      | 555.6       |  | 101  | 80-120      |     |           |
| Lead                                       | 562     | ug/L |      | 555.6       |  | 101  | 80-120      |     |           |
| Mercury                                    | 51.6    | ug/L |      | 55.56       |  | 93   | 80-120      |     |           |
| Molybdenum                                 | 545     | ug/L |      | 555.6       |  | 98   | 80-120      |     |           |
| Selenium                                   | 581     | ug/L |      | 555.6       |  | 105  | 80-120      |     |           |
| Thallium                                   | 533     | ug/L |      | 555.6       |  | 96   | 80-120      |     |           |
| Lithium                                    | 0.558   | mg/L |      | 0.5556      |  | 100  | 80-120      |     |           |
| <b>Matrix Spike (B005306-MS1)</b>          |         |      |      |             | Sample: 0023672-06 Prepared: 03/03/20 Analyzed: 03/04/20 |      |             |     |           |
| Antimony                                   | 543     | ug/L |      | 555.6       | ND   | 98   | 75-125      |     |           |
| Arsenic                                    | 574     | ug/L |      | 555.6       | ND   | 103  | 75-125      |     |           |
| Barium                                     | 539     | ug/L |      | 555.6       | 10.5   | 95   | 75-125      |     |           |
| Beryllium                                  | 514     | ug/L |      | 555.6       | ND   | 93   | 75-125      |     |           |
| Boron                                      | 851     | ug/L |      | 555.6       | 315  | 96   | 75-125      |     |           |
| Cadmium                                    | 512     | ug/L |      | 555.6       | ND   | 92   | 75-125      |     |           |
| Calcium                                    | 292000  | ug/L |      | 5556        | 288000   | 77   | 75-125      |     |           |
| Chromium                                   | 536     | ug/L |      | 555.6       | 4.97   | 96   | 75-125      |     |           |
| Cobalt                                     | 531     | ug/L |      | 555.6       | ND   | 96   | 75-125      |     |           |
| Lead                                       | 533     | ug/L |      | 555.6       | ND   | 96   | 75-125      |     |           |
| Mercury                                    | 56.0    | ug/L |      | 55.56       | ND   | 101  | 75-125      |     |           |
| Molybdenum                                 | 557     | ug/L |      | 555.6       | 0.783  | 100  | 75-125      |     |           |
| Selenium                                   | 581     | ug/L |      | 555.6       | ND   | 105  | 75-125      |     |           |
| Thallium                                   | 509     | ug/L |      | 555.6       | ND   | 92   | 75-125      |     |           |
| <b>Matrix Spike Dup (B005306-MSD1)</b>     |         |      |      |             | Sample: 0023672-06 Prepared: 03/03/20 Analyzed: 03/04/20 |      |             |     |           |
| Antimony                                   | 539     | ug/L |      | 555.6       | ND   | 97   | 75-125      | 0.6 | 20        |
| Arsenic                                    | 579     | ug/L |      | 555.6       | ND   | 104  | 75-125      | 1   | 20        |
| Barium                                     | 544     | ug/L |      | 555.6       | 10.5   | 96   | 75-125      | 0.8 | 20        |
| Beryllium                                  | 520     | ug/L |      | 555.6       | ND   | 94   | 75-125      | 1   | 20        |
| Boron                                      | 865     | ug/L |      | 555.6       | 315  | 99   | 75-125      | 2   | 20        |
| Cadmium                                    | 516     | ug/L |      | 555.6       | ND   | 93   | 75-125      | 0.8 | 20        |



QC SAMPLE RESULTS

| Parameter   | Result | Unit                      | Qual | Spike Level | Source Result                                | %REC | %REC Limits | RPD  | RPD Limit |
|---|--------|---------------------------|------|-------------|--|------|-------------|------|-----------|
| <b><u>Batch B005306 - SW 3015 - EPA 6020A</u></b> |        |                           |      |             |  |      |             |      |           |
| <b>Matrix Spike Dup (B005306-MSD1)</b>            |        | <b>Sample: 0023672-06</b> |      |             | <b>Prepared: 03/03/20 Analyzed: 03/05/20</b> |      |             |      |           |
| Calcium   | 293000 | ug/L                      |      | 5556        | 288000                                       | 97   | 75-125      | 0.4  | 20        |
| Chromium  | 544    | ug/L                      |      | 555.6       | 4.97   | 97   | 75-125      | 2    | 20        |
| Cobalt  | 530    | ug/L                      |      | 555.6       | ND   | 95   | 75-125      | 0.01 | 20        |
| Lead  | 529    | ug/L                      |      | 555.6       | ND   | 95   | 75-125      | 0.7  | 20        |
| Mercury   | 53.1   | ug/L                      |      | 55.56       | ND   | 96   | 75-125      | 5    | 20        |
| Molybdenum  | 561    | ug/L                      |      | 555.6       | 0.783  | 101  | 75-125      | 0.7  | 20        |
| Selenium  | 592    | ug/L                      |      | 555.6       | ND   | 107  | 75-125      | 2    | 20        |
| Thallium  | 508    | ug/L                      |      | 555.6       | ND   | 91   | 75-125      | 0.2  | 20        |
| <b><u>Batch B006011 - SW 3015 - EPA 6020A</u></b> |        |                           |      |             |  |      |             |      |           |
| <b>Blank (B006011-BLK1)</b>                       |        |                           |      |             | <b>Prepared: 03/11/20 Analyzed: 03/12/20</b> |      |             |      |           |
| Boron   | < 10   | ug/L                      |      |             |  |      |             |      |           |
| <b>LCS (B006011-BS1)</b>                          |        |                           |      |             | <b>Prepared: 03/11/20 Analyzed: 03/12/20</b> |      |             |      |           |
| Boron   | 499    | ug/L                      |      | 555.6       |  | 90   | 80-120      |      |           |



NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

\* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050

TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279  
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553  
Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)  
Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)  
Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPIL - Springfield, IL - 1210 Capitol Airport Drive, Springfield, IL 62707

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17592

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389  
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - Pending  
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050  
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

- B Present in the method blank at 77.4 ug/L.
- H Test performed after the expiration of the appropriate regulatory/advisory maximum allowable hold time.
- M Analyte failed to meet the required acceptance criteria for duplicate analysis.
- Q1 Matrix Spike failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
- Q2 Matrix Spike Duplicate failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
- Q3 Matrix Spike/Matrix Spike Duplicate both failed % recovery acceptance limits. The associated blank spike recovery was acceptable.

Certified by: Kurt Stepping, Senior Project Manager



March 11, 2020

Ms. Janet Clutters  
PDC Laboratories  
2231 W. Altorfer Drive  
Peoria, IL 61615

RE: Project: 0023536  
Pace Project No.: 30351798

Dear Ms. Clutters:

Enclosed are the analytical results for sample(s) received by the laboratory on February 25, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Alexis E. Ozoroski  
alexis.ozoroski@pacelabs.com  
(724)850-5600  
Project Manager

Enclosures

cc: Ms. Valerie Bennett, PDC Laboratories  
Margie Nobiling, PDC Laboratories



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 0023536  
Pace Project No.: 30351798

### **Pace Analytical Services Pennsylvania**

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: 0023536  
Pace Project No.: 30351798

| Lab ID      | Sample ID  | Matrix | Date Collected | Date Received  |
|-------------|------------|--------|----------------|----------------|
| 30351798001 | 0023536-01 | Water  | 02/18/20 09:20 | 02/25/20 09:20 |
| 30351798002 | 0023536-02 | Water  | 02/18/20 10:25 | 02/25/20 09:20 |
| 30351798003 | 0023536-03 | Water  | 02/18/20 11:39 | 02/25/20 09:20 |
| 30351798004 | 0023536-04 | Water  | 02/18/20 12:36 | 02/25/20 09:20 |
| 30351798005 | 0023536-05 | Water  | 02/18/20 14:13 | 02/25/20 09:20 |
| 30351798006 | 0023536-06 | Water  | 02/18/20 00:00 | 02/25/20 09:20 |
| 30351798007 | 0023536-07 | Water  | 02/18/20 00:00 | 02/25/20 09:20 |

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 0023536  
Pace Project No.: 30351798

| Lab ID      | Sample ID  | Method                   | Analysts | Analytes Reported | Laboratory |
|-------------|------------|--------------------------|----------|-------------------|------------|
| 30351798001 | 0023536-01 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798002 | 0023536-02 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798003 | 0023536-03 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798004 | 0023536-04 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798005 | 0023536-05 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798006 | 0023536-06 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798007 | 0023536-07 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 0023536  
Pace Project No.: 30351798

---

**Method:** EPA 903.1  
**Description:** 903.1 Radium 226  
**Client:** PDC Laboratories Inc  
**Date:** March 11, 2020

**General Information:**

7 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 0023536  
Pace Project No.: 30351798

---

**Method:** EPA 904.0  
**Description:** 904.0 Radium 228  
**Client:** PDC Laboratories Inc  
**Date:** March 11, 2020

**General Information:**

7 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 0023536  
Pace Project No.: 30351798

---

**Method:** Total Radium Calculation  
**Description:** Total Radium 228+226  
**Client:** PDC Laboratories Inc  
**Date:** March 11, 2020

**General Information:**

7 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 0023536  
Pace Project No.: 30351798

| Parameters   | Method                   | Act ± Unc (MDC) Carr Trac             | Units | Analyzed       | CAS No.    | Qual |
|--|--------------------------|---------------------------------------|-------|----------------|------------|------|
| <b>Sample: 0023536-01</b> <b>Lab ID: 30351798001</b> Collected: 02/18/20 09:20      Received: 02/25/20 09:20      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |                          |                                       |       |                |            |      |
| Radium-226   | EPA 903.1                | -0.0667 ± 0.392 (0.875)<br>C:NA T:78% | pCi/L | 03/09/20 11:52 | 13982-63-3 |      |
| Radium-228   | EPA 904.0                | 0.341 ± 0.289 (0.571)<br>C:79% T:92%  | pCi/L | 03/10/20 14:47 | 15262-20-1 |      |
| Total Radium   | Total Radium Calculation | 0.341 ± 0.681 (1.45)                  | pCi/L | 03/11/20 12:13 | 7440-14-4  |      |

| Parameters   | Method                   | Act ± Unc (MDC) Carr Trac            | Units | Analyzed       | CAS No.    | Qual |
|--|--------------------------|--------------------------------------|-------|----------------|------------|------|
| <b>Sample: 0023536-02</b> <b>Lab ID: 30351798002</b> Collected: 02/18/20 10:25      Received: 02/25/20 09:20      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |                          |                                      |       |                |            |      |
| Radium-226   | EPA 903.1                | 0.523 ± 0.415 (0.539)<br>C:NA T:93%  | pCi/L | 03/09/20 12:14 | 13982-63-3 |      |
| Radium-228   | EPA 904.0                | 0.736 ± 0.373 (0.638)<br>C:76% T:92% | pCi/L | 03/10/20 14:47 | 15262-20-1 |      |
| Total Radium   | Total Radium Calculation | 1.26 ± 0.788 (1.18)                  | pCi/L | 03/11/20 12:13 | 7440-14-4  |      |

| Parameters   | Method                   | Act ± Unc (MDC) Carr Trac            | Units | Analyzed       | CAS No.    | Qual |
|--|--------------------------|--------------------------------------|-------|----------------|------------|------|
| <b>Sample: 0023536-03</b> <b>Lab ID: 30351798003</b> Collected: 02/18/20 11:39      Received: 02/25/20 09:20      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |                          |                                      |       |                |            |      |
| Radium-226   | EPA 903.1                | 0.373 ± 0.424 (0.669)<br>C:NA T:90%  | pCi/L | 03/09/20 12:14 | 13982-63-3 |      |
| Radium-228   | EPA 904.0                | 0.576 ± 0.372 (0.701)<br>C:76% T:92% | pCi/L | 03/10/20 14:47 | 15262-20-1 |      |
| Total Radium   | Total Radium Calculation | 0.949 ± 0.796 (1.37)                 | pCi/L | 03/11/20 12:13 | 7440-14-4  |      |

| Parameters   | Method                   | Act ± Unc (MDC) Carr Trac            | Units | Analyzed       | CAS No.    | Qual |
|--|--------------------------|--------------------------------------|-------|----------------|------------|------|
| <b>Sample: 0023536-04</b> <b>Lab ID: 30351798004</b> Collected: 02/18/20 12:36      Received: 02/25/20 09:20      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |                          |                                      |       |                |            |      |
| Radium-226   | EPA 903.1                | 0.188 ± 0.325 (0.581)<br>C:NA T:88%  | pCi/L | 03/09/20 12:14 | 13982-63-3 |      |
| Radium-228   | EPA 904.0                | 0.814 ± 0.431 (0.762)<br>C:78% T:84% | pCi/L | 03/10/20 14:47 | 15262-20-1 |      |
| Total Radium   | Total Radium Calculation | 1.00 ± 0.756 (1.34)                  | pCi/L | 03/11/20 12:13 | 7440-14-4  |      |

| Parameters   | Method    | Act ± Unc (MDC) Carr Trac            | Units | Analyzed       | CAS No.    | Qual |
|--|-----------|--------------------------------------|-------|----------------|------------|------|
| <b>Sample: 0023536-05</b> <b>Lab ID: 30351798005</b> Collected: 02/18/20 14:13      Received: 02/25/20 09:20      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |           |                                      |       |                |            |      |
| Radium-226   | EPA 903.1 | 0.0706 ± 0.322 (0.520)<br>C:NA T:83% | pCi/L | 03/09/20 12:14 | 13982-63-3 |      |
| Radium-228   | EPA 904.0 | 1.05 ± 0.449 (0.709)<br>C:74% T:88%  | pCi/L | 03/10/20 14:47 | 15262-20-1 |      |

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 0023536  
Pace Project No.: 30351798

| Parameters   | Method                   | Act ± Unc (MDC) Carr Trac | Units | Analyzed       | CAS No.   | Qual |
|--|--------------------------|---------------------------|-------|----------------|-----------|------|
| <b>Sample: 0023536-05</b> <b>Lab ID: 30351798005</b> Collected: 02/18/20 14:13      Received: 02/25/20 09:20      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |                          |                           |       |                |           |      |
| Total Radium   | Total Radium Calculation | 1.12 ± 0.771 (1.23)       | pCi/L | 03/11/20 12:13 | 7440-14-4 |      |

| Parameters   | Method                   | Act ± Unc (MDC) Carr Trac            | Units | Analyzed       | CAS No.    | Qual |
|--|--------------------------|--------------------------------------|-------|----------------|------------|------|
| <b>Sample: 0023536-06</b> <b>Lab ID: 30351798006</b> Collected: 02/18/20 00:00      Received: 02/25/20 09:20      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |                          |                                      |       |                |            |      |
| Radium-226   | EPA 903.1                | 0.291 ± 0.344 (0.541)<br>C:NA T:87%  | pCi/L | 03/09/20 12:14 | 13982-63-3 |      |
| Radium-228   | EPA 904.0                | 0.936 ± 0.425 (0.696)<br>C:76% T:87% | pCi/L | 03/10/20 14:47 | 15262-20-1 |      |
| Total Radium   | Total Radium Calculation | 1.23 ± 0.769 (1.24)                  | pCi/L | 03/11/20 12:13 | 7440-14-4  |      |

| Parameters   | Method                   | Act ± Unc (MDC) Carr Trac            | Units | Analyzed       | CAS No.    | Qual |
|--|--------------------------|--------------------------------------|-------|----------------|------------|------|
| <b>Sample: 0023536-07</b> <b>Lab ID: 30351798007</b> Collected: 02/18/20 00:00      Received: 02/25/20 09:20      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |                          |                                      |       |                |            |      |
| Radium-226   | EPA 903.1                | 0.115 ± 0.357 (0.691)<br>C:NA T:96%  | pCi/L | 03/09/20 12:14 | 13982-63-3 |      |
| Radium-228   | EPA 904.0                | 0.693 ± 0.369 (0.626)<br>C:74% T:86% | pCi/L | 03/10/20 14:48 | 15262-20-1 |      |
| Total Radium   | Total Radium Calculation | 0.808 ± 0.726 (1.32)                 | pCi/L | 03/11/20 12:13 | 7440-14-4  |      |

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



**QUALITY CONTROL - RADIOCHEMISTRY**

Project: 0023536  
Pace Project No.: 30351798

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|   |  |
|---|--|
| QC Batch: 385636  | Analysis Method: EPA 903.1             |
| QC Batch Method: EPA 903.1  | Analysis Description: 903.1 Radium-226 |
| Associated Lab Samples: 30351798001, 30351798002, 30351798003, 30351798004, 30351798005, 30351798006, 30351798007 |  |

---

|   |               |
|---|---------------|
| METHOD BLANK: 1868384   | Matrix: Water |
| Associated Lab Samples: 30351798001, 30351798002, 30351798003, 30351798004, 30351798005, 30351798006, 30351798007 |               |

| Parameter  | Act ± Unc (MDC) Carr Trac          | Units | Analyzed       | Qualifiers |
|------------|------------------------------------|-------|----------------|------------|
| Radium-226 | -0.0938 ± 0.260 (0.615) C:NA T:92% | pCi/L | 03/09/20 11:39 |            |

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

**REPORT OF LABORATORY ANALYSIS**

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**QUALITY CONTROL - RADIOCHEMISTRY**

Project: 0023536  
Pace Project No.: 30351798

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QC Batch: 385656 Analysis Method: EPA 904.0  
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228  
Associated Lab Samples: 30351798001, 30351798002, 30351798003, 30351798004, 30351798005, 30351798006, 30351798007

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METHOD BLANK: 1868407 Matrix: Water  
Associated Lab Samples: 30351798001, 30351798002, 30351798003, 30351798004, 30351798005, 30351798006, 30351798007

| Parameter  | Act ± Unc (MDC) Carr Trac         | Units | Analyzed       | Qualifiers |
|------------|-----------------------------------|-------|----------------|------------|
| Radium-228 | 0.540 ± 0.354 (0.663) C:79% T:88% | pCi/L | 03/10/20 14:46 |            |

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

**REPORT OF LABORATORY ANALYSIS**

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## QUALIFIERS

Project: 0023536  
Pace Project No.: 30351798

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

**SUBCONTRACT ORDER**  
Transfer Chain of Custody

**WO# : 30351798**

PDC Laboratories, Inc.  
0023536



**SENDING LABORATORY**

PDC Laboratories, Inc.  
2231 W Altorfer Dr  
Peoria, IL 61615  
(800) 752-6651

**RECEIVING LABORATORY**

PACE Analytical - Greensburg  
1638 Roseytown Road - Suites 2,3,4  
Greensburg, PA 15601  
(724) 850-5600

**Sample: 0023536-01**  
**Name: MW-3**

**Sampled: 02/18/20 09:20**  
**Matrix: Ground Water**  
**Preservative: HNO3, pH <2**

001

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 09:20 |          |

**Sample: 0023536-02**  
**Name: MW-6**

**Sampled: 02/18/20 10:25**  
**Matrix: Ground Water**  
**Preservative: HNO3, pH <2**

002

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 10:25 |          |

**Sample: 0023536-03**  
**Name: MW-5**

**Sampled: 02/18/20 11:39**  
**Matrix: Ground Water**  
**Preservative: HNO3, pH <2**

003

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 11:39 |          |

**Sample: 0023536-04**  
**Name: MW-8**

**Sampled: 02/18/20 12:36**  
**Matrix: Ground Water**  
**Preservative: HNO3, pH <2**

004

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 12:36 |          |

**Sample: 0023536-05**  
**Name: MW-4**

**Sampled: 02/18/20 14:13**  
**Matrix: Ground Water**  
**Preservative: HNO3, pH <2**

005

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 14:13 |          |

**SUBCONTRACT ORDER**  
**Transfer Chain of Custody**

#-30351798

PDC Laboratories, Inc.  
 0023536

**SENDING LABORATORY**

PDC Laboratories, Inc.  
 2231 W Altorfer Dr  
 Peoria, IL 61615  
 (800) 752-6651

**RECEIVING LABORATORY**

PACE Analytical - Greensburg  
 1638 Roseytown Road - Suites 2,3,4  
 Greensburg, PA 15601  
 (724) 850-5600

Sample: 0023536-06  
 Name: FIELD DUPLICATE

Sampled: 02/18/20 00:00  
 Matrix: Ground Water  
 Preservative: HNO3, pH <2

006

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 00:00 |          |

Sample: 0023536-07  
 Name: FIELD BLANK

Sampled: 02/18/20 00:00  
 Matrix: Ground Water  
 Preservative: HNO3, pH <2

007

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 00:00 |          |

Please email results to Kurt Stepping at [kstepping@pdclab.com](mailto:kstepping@pdclab.com)

Date Shipped: 2-21-20 Total # of Containers: 7 Sample Origin (State): IL PO #: L41026

Turn-Around Time Requested  NORMAL  RUSH Date Results Needed: \_\_\_\_\_

|                     |                      |                   |                     |   |         |
|---------------------|----------------------|-------------------|---------------------|---|---------|
| Relinquished By     | Date/Time            | Received By       | Date/Time           | Sample Temperature Upon Receipt           | ____ °C |
| <i>Alan D. Hoag</i> | <i>2-21-20 11:30</i> | <i>M. M. Pace</i> | <i>2/25/20 4:00</i> | Sample(s) Received on Ice                 | Y or N  |
|                     |                      |                   |                     | Proper Bottles Received in Good Condition | Y or N  |
|                     |                      |                   |                     | Bottles Filled with Adequate Volume       | Y or N  |
|                     |                      |                   |                     | Samples Received Within Hold Time         | Y or N  |
|                     |                      |                   |                     | Date/Time Taken From Sample Bottle        | Y or N  |

Pittsburgh Lab Sample Condition Upon Receipt

# 30351798



Client Name: PDC LABS

Project # \_\_\_\_\_

|            |           |
|------------|-----------|
| Label      | <u>NG</u> |
| LIMS Login | <u>NG</u> |

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 778 2971 2530

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Thermometer Used \_\_\_\_\_ Type of Ice: Wet Blue None °C Final Temp: \_\_\_\_\_ °C

Cooler Temperature \_\_\_\_\_ Observed Temp \_\_\_\_\_ °C Correction Factor: \_\_\_\_\_ °C

Temp should be above freezing to 6°C

pH paper Lot# 1002-191 Date and initials of person analyzing contents: NG 2/26/2020

Comments:

|   | Yes | No | N/A |  |
|---|-----|----|-----|--|
| Chain of Custody Present:   | /   |    |     | 1.   |
| Chain of Custody Filled Out:  | /   |    |     | 2.   |
| Chain of Custody Relinquished:  | /   |    |     | 3.   |
| Sampler Name & Signature on COC:  | /   |    |     | 4.   |
| Sample Labels match COC:  | /   |    |     | 5.   |
| -Includes date/time/ID Matrix <u>M</u>                                    |     |    |     |  |
| Samples Arrived within Hold Time:   | /   |    |     | 6.   |
| Short Hold Time Analysis (<72hr remaining):                               | /   |    |     | 7.   |
| Rush Turn Around Time Requested:  | /   |    |     | 8.   |
| Sufficient Volume:  | /   |    |     | 9.   |
| Correct Containers Used:  | /   |    |     | 10.  |
| -Pace Containers Used:  | /   |    |     |  |
| Containers Intact:  | /   |    |     | 11.  |
| Orthophosphate field filtered   | /   |    |     | 12.  |
| Hex Cr Aqueous sample field filtered                                      | /   |    |     | 13.  |
| Organic Samples checked for dechlorination:                               | /   |    |     | 14.  |
| Filtered volume received for Dissolved tests                              | /   |    |     | 15.  |
| All containers have been checked for preservation.                        | /   |    |     | 16.  |
| exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix |     |    |     |  |
| All containers meet method preservation requirements.                     | /   |    |     |  |
|   |     |    |     | Initial when completed <u>NG</u> Date/time of preservation |
|   |     |    |     | Lot # of added preservative                                |
| Headspace in VOA Vials (>6mm):  | /   |    |     | 17.  |
| Trip Blank Present:   | /   |    |     | 18.  |
| Trip Blank Custody Seals Present  | /   |    |     |  |
| Rad Samples Screened < 0.5 mrem/hr  | /   |    |     | Initial when completed: <u>NG</u> Date: <u>2/26/2020</u>   |

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

A check in this box indicates that additional information has been stored in reports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)  
 \*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



Laboratory Quality Assurance/Quality Control Data –  
March 30, 2020  
(First 2020 Semi-annual Event - TDS)





QC SAMPLE RESULTS

| Parameter  | Result | Unit | Qual | Spike Level | Source Result                 | %REC | %REC Limits | RPD | RPD Limit |
|--|--------|------|------|-------------|-------------------------------|------|-------------|-----|-----------|
| <b><u>Batch B007813 - No Prep - SM 2540C</u></b> |        |      |      |             |                               |      |             |     |           |
| <b>Blank (B007813-BLK1)</b>                      |        |      |      |             | Prepared & Analyzed: 04/02/20 |      |             |     |           |
| Solids - total dissolved solids (TDS)            | < 17   | mg/L |      |             |                               |      |             |     |           |
| <b>LCS (B007813-BS1)</b>                         |        |      |      |             | Prepared & Analyzed: 04/02/20 |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 1010   | mg/L |      | 1000        |                               | 101  | 67.9-132    |     |           |
| <b>Duplicate (B007813-DUP1)</b>                  |        |      |      |             | Prepared & Analyzed: 04/02/20 |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 370    | mg/L | M    |             | 340                           |      |             | 8   | 5         |
| <b>Duplicate (B007813-DUP2)</b>                  |        |      |      |             | Prepared & Analyzed: 04/02/20 |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 350    | mg/L | M    |             | 320                           |      |             | 9   | 5         |



NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

\* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050

TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279  
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553

Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)

Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPIL - Springfield, IL - 1210 Capitol Airport Drive, Springfield, IL 62707

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17592

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050

Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

M Analyte failed to meet the required acceptance criteria for duplicate analysis.

Certified by: Kurt Stepping, Senior Project Manager





**PDC Laboratories, Inc.**  
P.O. Box 9071 • Peoria, IL 61612-9071  
(309) 692-9668 • (800) 752-6651 • FAX (309) 692-9668



## **DATA PACKAGE**

**CLIENT: Sikeston BMU**

**PROJECT: Sikeston Power Station**

**PDC LAB WORKORDER: 0040090**

**DATE ISSUED: April 7, 2020**

**CASE NARRATIVE –**

**PDC Work Order 0040090**

PDC Laboratories, Inc. received 7 water samples on April 1, 2020 in good condition at our Peoria, IL facility. This sample set was designated as work order 0040090.

| Sample ID's     |            | Date      |          |
|-----------------|------------|-----------|----------|
| Field           | Lab ID     | Collected | Received |
| MW-3            | 0040090-01 | 3/30/20   | 4/1/20   |
| MW-4            | 0040090-02 | 3/30/20   | 4/1/20   |
| MW-5            | 0040090-03 | 3/30/20   | 4/1/20   |
| MW-8            | 0040090-04 | 3/30/20   | 4/1/20   |
| MW-8            | 0040090-05 | 3/30/20   | 4/1/20   |
| Field Duplicate | 0040090-06 | 3/30/20   | 4/1/20   |
| Field Blank     | 0040090-07 | 3/30/20   | 4/1/20   |

**QC Summary:**

**All items met acceptance criteria with the following noted exceptions:**

**TDS: Batch duplicate samples flagged M, outside RPD acceptance criteria**

**Certification**

Signature:



Name: Kurt Stepping

Date: April 7, 2020

Title: Senior Project Manager



Laboratory Quality Assurance/Quality Control Data –  
April 8, 2020

(First 2020 Semi-Annual Event – TDS Resample)



QC SAMPLE RESULTS

| Parameter  | Result | Unit | Qual | Spike Level                   | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|--|--------|------|------|-------------------------------|---------------|------|-------------|-----|-----------|
| <b><u>Batch B008700 - No Prep - SM 2540C</u></b> |        |      |      |                               |               |      |             |     |           |
| <b>Blank (B008700-BLK1)</b>                      |        |      |      | Prepared & Analyzed: 04/13/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | < 17   | mg/L |      |                               |               |      |             |     |           |
| <b>LCS (B008700-BS1)</b>                         |        |      |      | Prepared & Analyzed: 04/13/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 980    | mg/L |      | 1000                          |               | 98   | 67.9-132    |     |           |
| <b>Duplicate (B008700-DUP1)</b>                  |        |      |      | Prepared & Analyzed: 04/13/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 410    | mg/L |      |                               | 430           |      |             | 5   | 5         |
| <b>Duplicate (B008700-DUP2)</b>                  |        |      |      | Prepared & Analyzed: 04/13/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 800    | mg/L |      |                               | 820           |      |             | 2   | 5         |



NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

\* Not a TNI accredited analyte

Memos

Revised report. Confirmed that filed duplicate label was put on wrong bottle. Value for -02 corrected to reflect the proper container.

TDS Lab duplicate from separate login group added.

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050

TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279  
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615

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Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050

Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Certified by: Kurt Stepping, Senior Project Manager







**PDC Laboratories, Inc.**

P.O. Box 9071 • Peoria, IL 61612-9071

(309) 692-9188 • (800) 752-6651 • FAX (309) 692-0658



## **DATA PACKAGE**

**CLIENT: Sikeston BMU**

**PROJECT: Sikeston Power Station**

**PDC LAB WORKORDER: 0042175**

**DATE ISSUED: May 13, 2020**

**CASE NARRATIVE –**

**PDC Work Order 0042175**

PDC Laboratories, Inc. received 3 water samples on April 10, 2020 in good condition at our Peoria, IL facility. This sample set was designated as work order 0042175.

| Sample ID's    |            | Date      |          |
|----------------|------------|-----------|----------|
| Field          | Lab ID     | Collected | Received |
|                |            |           |          |
| MW-8           | 0042175-01 | 4/8/20    | 4/10/20  |
| DUPLICATE WELL | 0042175-02 | 4/8/20    | 4/10/20  |
| FIELD BLANK    | 0042175-03 | 4/7/20    | 4/10/20  |

**QC Summary:**

All items met acceptance criteria with the following noted exceptions for this revised report:

No exceptions for this report.

Lab duplicate sample for MW-8 shows on report as 0042173-08. Duplicate analysis was performed on same bottle (also used for another monitoring program) in the same analytical batch.

**Certification**

Signature:



Name: Kurt Stepping

Date: May 13, 2020

Title: Senior Project Manager



Laboratory Quality Assurance/Quality Control Data –  
July 21, 2020  
(Second 2020 Semi-Annual Event)



QC SAMPLE RESULTS

| Parameter   | Result  | Unit | Qual | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---------|------|------|-------------|---------------|------|-------------|-----|-----------|
| <b>Batch B018017 - No Prep - SM 2540C</b>   |         |      |      |             |               |      |             |     |           |
| <b>Blank (B018017-BLK1)</b> Prepared & Analyzed: 07/24/20                                     |         |      |      |             |               |      |             |     |           |
| Solids - total dissolved solids (TDS)   | < 17    | mg/L |      |             |               |      |             |     |           |
| <b>LCS (B018017-BS1)</b> Prepared & Analyzed: 07/24/20  |         |      |      |             |               |      |             |     |           |
| Solids - total dissolved solids (TDS)   | 907     | mg/L |      | 1000        |               | 91   | 84.9-109    |     |           |
| <b>Duplicate (B018017-DUP1)</b> Sample: 0074963-04 Prepared & Analyzed: 07/24/20              |         |      |      |             |               |      |             |     |           |
| Solids - total dissolved solids (TDS)   | 220     | mg/L |      |             | 220           |      |             | 0   | 5         |
| <b>Duplicate (B018017-DUP2)</b> Sample: 0074963-06 Prepared & Analyzed: 07/24/20              |         |      |      |             |               |      |             |     |           |
| Solids - total dissolved solids (TDS)   | 480     | mg/L | M    |             | 400           |      |             | 18  | 5         |
| <b>Batch B018335 - SW 3015 - EPA 6020A</b>  |         |      |      |             |               |      |             |     |           |
| <b>Blank (B018335-BLK1)</b> Prepared: 07/28/20 Analyzed: 07/29/20                             |         |      |      |             |               |      |             |     |           |
| Antimony  | < 3.0   | ug/L |      |             |               |      |             |     |           |
| Arsenic   | < 1.0   | ug/L |      |             |               |      |             |     |           |
| Barium  | < 1.0   | ug/L |      |             |               |      |             |     |           |
| Beryllium   | < 1.0   | ug/L |      |             |               |      |             |     |           |
| Boron   | < 10    | ug/L |      |             |               |      |             |     |           |
| Cadmium   | < 1.0   | ug/L |      |             |               |      |             |     |           |
| Calcium   | < 200   | ug/L |      |             |               |      |             |     |           |
| Chromium  | < 4.0   | ug/L |      |             |               |      |             |     |           |
| Cobalt  | < 2.0   | ug/L |      |             |               |      |             |     |           |
| Lead  | < 1.0   | ug/L |      |             |               |      |             |     |           |
| Mercury   | < 0.20  | ug/L |      |             |               |      |             |     |           |
| Molybdenum  | < 1.0   | ug/L |      |             |               |      |             |     |           |
| Selenium  | < 1.0   | ug/L |      |             |               |      |             |     |           |
| Thallium  | < 1.0   | ug/L |      |             |               |      |             |     |           |
| Lithium   | < 0.020 | mg/L |      |             |               |      |             |     |           |
| <b>LCS (B018335-BS1)</b> Prepared: 07/28/20 Analyzed: 07/29/20                                |         |      |      |             |               |      |             |     |           |
| Antimony  | 539     | ug/L |      | 555.6       |               | 97   | 80-120      |     |           |
| Arsenic   | 520     | ug/L |      | 555.6       |               | 94   | 80-120      |     |           |
| Barium  | 515     | ug/L |      | 555.6       |               | 93   | 80-120      |     |           |
| Beryllium   | 540     | ug/L |      | 555.6       |               | 97   | 80-120      |     |           |
| Boron   | 536     | ug/L |      | 555.6       |               | 97   | 80-120      |     |           |
| Cadmium   | 523     | ug/L |      | 555.6       |               | 94   | 80-120      |     |           |
| Calcium   | 5780    | ug/L |      | 5556        |               | 104  | 80-120      |     |           |
| Chromium  | 543     | ug/L |      | 555.6       |               | 98   | 80-120      |     |           |
| Cobalt  | 563     | ug/L |      | 555.6       |               | 101  | 80-120      |     |           |
| Lead  | 514     | ug/L |      | 555.6       |               | 93   | 80-120      |     |           |
| Mercury   | 52.8    | ug/L |      | 55.56       |               | 95   | 80-120      |     |           |
| Molybdenum  | 501     | ug/L |      | 555.6       |               | 90   | 80-120      |     |           |
| Selenium  | 532     | ug/L |      | 555.6       |               | 96   | 80-120      |     |           |
| Thallium  | 511     | ug/L |      | 555.6       |               | 92   | 80-120      |     |           |
| Lithium   | 0.614   | mg/L |      | 0.5556      |               | 111  | 80-120      |     |           |
| <b>Matrix Spike (B018335-MS1)</b> Sample: 0073102-01RE1 Prepared: 07/28/20 Analyzed: 07/29/20 |         |      |      |             |               |      |             |     |           |
| Antimony  | 547     | ug/L |      | 555.6       | 0.494         | 98   | 75-125      |     |           |



QC SAMPLE RESULTS

| Parameter | Result | Unit | Qual | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|-----------|--------|------|------|-------------|---------------|------|-------------|-----|-----------|
|-----------|--------|------|------|-------------|---------------|------|-------------|-----|-----------|

**Batch B018335 - SW 3015 - EPA 6020A**

| Matrix Spike (B018335-MS1) |       | Sample: 0073102-01RE1 |  |       | Prepared: 07/28/20 Analyzed: 07/29/20 |     |        |  |  |
|----------------------------|-------|-----------------------|--|-------|---------------------------------------|-----|--------|--|--|
| Arsenic                    | 536   | ug/L                  |  | 555.6 | 8.91                                  | 95  | 75-125 |  |  |
| Barium                     | 584   | ug/L                  |  | 555.6 | 64.5                                  | 93  | 75-125 |  |  |
| Beryllium                  | 547   | ug/L                  |  | 555.6 | ND                                    | 98  | 75-125 |  |  |
| Boron                      | 625   | ug/L                  |  | 555.6 | 79.1                                  | 98  | 75-125 |  |  |
| Cadmium                    | 525   | ug/L                  |  | 555.6 | ND                                    | 94  | 75-125 |  |  |
| Calcium                    | 30500 | ug/L                  |  | 5556  | 24700                                 | 105 | 75-125 |  |  |
| Chromium                   | 540   | ug/L                  |  | 555.6 | 0.561                                 | 97  | 75-125 |  |  |
| Cobalt                     | 566   | ug/L                  |  | 555.6 | 6.66                                  | 101 | 75-125 |  |  |
| Lead                       | 510   | ug/L                  |  | 555.6 |                                       | 92  | 75-125 |  |  |
| Mercury                    | 54.7  | ug/L                  |  | 55.56 | ND                                    | 98  | 75-125 |  |  |
| Molybdenum                 | 510   | ug/L                  |  | 555.6 | 5.03                                  | 91  | 75-125 |  |  |
| Selenium                   | 530   | ug/L                  |  | 555.6 | ND                                    | 95  | 75-125 |  |  |
| Thallium                   | 506   | ug/L                  |  | 555.6 | 0.861                                 | 91  | 75-125 |  |  |

| Matrix Spike Dup (B018335-MSD1) |       | Sample: 0073102-01RE1 |  |       | Prepared: 07/28/20 Analyzed: 07/29/20 |    |        |     |    |
|---------------------------------|-------|-----------------------|--|-------|---------------------------------------|----|--------|-----|----|
| Antimony                        | 553   | ug/L                  |  | 555.6 | 0.494                                 | 99 | 75-125 | 1   | 20 |
| Arsenic                         | 532   | ug/L                  |  | 555.6 | 8.91                                  | 94 | 75-125 | 0.7 | 20 |
| Barium                          | 577   | ug/L                  |  | 555.6 | 64.5                                  | 92 | 75-125 | 1   | 20 |
| Beryllium                       | 539   | ug/L                  |  | 555.6 | ND                                    | 97 | 75-125 | 1   | 20 |
| Boron                           | 629   | ug/L                  |  | 555.6 | 79.1                                  | 99 | 75-125 | 0.5 | 20 |
| Cadmium                         | 521   | ug/L                  |  | 555.6 | ND                                    | 94 | 75-125 | 0.7 | 20 |
| Calcium                         | 30100 | ug/L                  |  | 5556  | 24700                                 | 98 | 75-125 | 1   | 20 |
| Chromium                        | 532   | ug/L                  |  | 555.6 | 0.561                                 | 96 | 75-125 | 1   | 20 |
| Cobalt                          | 558   | ug/L                  |  | 555.6 | 6.66                                  | 99 | 75-125 | 1   | 20 |
| Lead                            | 503   | ug/L                  |  | 555.6 |                                       | 91 | 75-125 | 1   | 20 |
| Mercury                         | 54.8  | ug/L                  |  | 55.56 | ND                                    | 99 | 75-125 | 0.2 | 20 |
| Molybdenum                      | 509   | ug/L                  |  | 555.6 | 5.03                                  | 91 | 75-125 | 0.3 | 20 |
| Selenium                        | 529   | ug/L                  |  | 555.6 | ND                                    | 95 | 75-125 | 0.3 | 20 |
| Thallium                        | 504   | ug/L                  |  | 555.6 | 0.861                                 | 90 | 75-125 | 0.5 | 20 |

**Batch B018353 - SW 3015 - EPA 6020A**

| Blank (B018353-BLK1) |        | Prepared: 07/28/20 Analyzed: 07/29/20 |  |  |  |  |  |  |  |
|----------------------|--------|---------------------------------------|--|--|--|--|--|--|--|
| Antimony             | < 3.0  | ug/L                                  |  |  |  |  |  |  |  |
| Arsenic              | < 1.0  | ug/L                                  |  |  |  |  |  |  |  |
| Barium               | < 1.0  | ug/L                                  |  |  |  |  |  |  |  |
| Beryllium            | < 1.0  | ug/L                                  |  |  |  |  |  |  |  |
| Boron                | < 10   | ug/L                                  |  |  |  |  |  |  |  |
| Cadmium              | < 1.0  | ug/L                                  |  |  |  |  |  |  |  |
| Calcium              | 880    | ug/L                                  |  |  |  |  |  |  |  |
| Chromium             | < 4.0  | ug/L                                  |  |  |  |  |  |  |  |
| Cobalt               | < 2.0  | ug/L                                  |  |  |  |  |  |  |  |
| Lead                 | < 1.0  | ug/L                                  |  |  |  |  |  |  |  |
| Mercury              | < 0.20 | ug/L                                  |  |  |  |  |  |  |  |
| Molybdenum           | < 1.0  | ug/L                                  |  |  |  |  |  |  |  |



**QC SAMPLE RESULTS**

| Parameter  | Result  | Unit | Qual | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|--|---------|------|------|-------------|---------------|------|-------------|-----|-----------|
| <b><u>Batch B018353 - SW 3015 - EPA 6020A</u></b>  |         |      |      |             |               |      |             |     |           |
| <b>Blank (B018353-BLK1)</b> <span style="float: right;">Prepared: 07/28/20 Analyzed: 07/29/20</span>                               |         |      |      |             |               |      |             |     |           |
| Selenium   | < 1.0   | ug/L |      |             |               |      |             |     |           |
| Thallium   | < 1.0   | ug/L |      |             |               |      |             |     |           |
| Lithium  | < 0.020 | mg/L |      |             |               |      |             |     |           |
| <b>LCS (B018353-BS1)</b> <span style="float: right;">Prepared: 07/28/20 Analyzed: 07/29/20</span>                                  |         |      |      |             |               |      |             |     |           |
| Antimony   | 537     | ug/L |      | 555.6       |               | 97   | 80-120      |     |           |
| Arsenic  | 523     | ug/L |      | 555.6       |               | 94   | 80-120      |     |           |
| Barium   | 509     | ug/L |      | 555.6       |               | 92   | 80-120      |     |           |
| Beryllium  | 516     | ug/L |      | 555.6       |               | 93   | 80-120      |     |           |
| Boron  | 503     | ug/L |      | 555.6       |               | 90   | 80-120      |     |           |
| Cadmium  | 527     | ug/L |      | 555.6       |               | 95   | 80-120      |     |           |
| Calcium  | 6010    | ug/L |      | 5556        |               | 108  | 80-120      |     |           |
| Chromium   | 544     | ug/L |      | 555.6       |               | 98   | 80-120      |     |           |
| Cobalt   | 562     | ug/L |      | 555.6       |               | 101  | 80-120      |     |           |
| Lead   | 542     | ug/L |      | 555.6       |               | 97   | 80-120      |     |           |
| Mercury  | 52.4    | ug/L |      | 55.56       |               | 94   | 80-120      |     |           |
| Molybdenum   | 504     | ug/L |      | 555.6       |               | 91   | 80-120      |     |           |
| Selenium   | 526     | ug/L |      | 555.6       |               | 95   | 80-120      |     |           |
| Thallium   | 533     | ug/L |      | 555.6       |               | 96   | 80-120      |     |           |
| Lithium  | 0.602   | mg/L |      | 0.5556      |               | 108  | 80-120      |     |           |
| <b>Matrix Spike (B018353-MS1)</b> <span style="float: right;">Sample: 0073698-03 Prepared: 07/28/20 Analyzed: 07/29/20</span>      |         |      |      |             |               |      |             |     |           |
| Antimony   | 523     | ug/L |      | 555.6       | ND            | 94   | 75-125      |     |           |
| Arsenic  | 517     | ug/L |      | 555.6       | 2.31          | 93   | 75-125      |     |           |
| Barium   | 615     | ug/L |      | 555.6       | 126           | 88   | 75-125      |     |           |
| Beryllium  | 510     | ug/L |      | 555.6       | ND            | 92   | 75-125      |     |           |
| Boron  | 632     | ug/L |      | 555.6       | 130           | 90   | 75-125      |     |           |
| Cadmium  | 519     | ug/L |      | 555.6       | 1.35          | 93   | 75-125      |     |           |
| Calcium  | 92200   | ug/L |      | 5556        | 87400         | 87   | 75-125      |     |           |
| Chromium   | 528     | ug/L |      | 555.6       | 0.839         | 95   | 75-125      |     |           |
| Cobalt   | 511     | ug/L |      | 555.6       | 0.733         | 92   | 75-125      |     |           |
| Lead   | 512     | ug/L |      | 555.6       | 0.294         | 92   | 75-125      |     |           |
| Mercury  | 52.4    | ug/L |      | 55.56       | ND            | 94   | 75-125      |     |           |
| Molybdenum   | 504     | ug/L |      | 555.6       | 1.38          | 90   | 75-125      |     |           |
| Selenium   | 515     | ug/L |      | 555.6       | ND            | 93   | 75-125      |     |           |
| Thallium   | 512     | ug/L |      | 555.6       | ND            | 92   | 75-125      |     |           |
| <b>Matrix Spike Dup (B018353-MSD1)</b> <span style="float: right;">Sample: 0073698-03 Prepared: 07/28/20 Analyzed: 07/29/20</span> |         |      |      |             |               |      |             |     |           |
| Antimony   | 537     | ug/L |      | 555.6       | ND            | 97   | 75-125      | 3   | 20        |
| Arsenic  | 533     | ug/L |      | 555.6       | 2.31          | 95   | 75-125      | 3   | 20        |
| Barium   | 630     | ug/L |      | 555.6       | 126           | 91   | 75-125      | 2   | 20        |
| Beryllium  | 533     | ug/L |      | 555.6       | ND            | 96   | 75-125      | 4   | 20        |
| Boron  | 658     | ug/L |      | 555.6       | 130           | 95   | 75-125      | 4   | 20        |
| Cadmium  | 536     | ug/L |      | 555.6       | 1.35          | 96   | 75-125      | 3   | 20        |
| Calcium  | 93100   | ug/L |      | 5556        | 87400         | 102  | 75-125      | 0.9 | 20        |
| Chromium   | 551     | ug/L |      | 555.6       | 0.839         | 99   | 75-125      | 4   | 20        |
| Cobalt   | 527     | ug/L |      | 555.6       | 0.733         | 95   | 75-125      | 3   | 20        |



QC SAMPLE RESULTS

| Parameter   | Result | Unit                          | Qual | Spike Level | Source Result                         | %REC | %REC Limits | RPD | RPD Limit |
|---|--------|-------------------------------|------|-------------|---------------------------------------|------|-------------|-----|-----------|
| <b><u>Batch B018353 - SW 3015 - EPA 6020A</u></b>         |        |                               |      |             |                                       |      |             |     |           |
| <b>Matrix Spike Dup (B018353-MSD1)</b>                    |        | Sample: 0073698-03            |      |             | Prepared: 07/28/20 Analyzed: 07/29/20 |      |             |     |           |
| Lead  | 536    | ug/L                          |      | 555.6       | 0.294                                 | 96   | 75-125      | 5   | 20        |
| Mercury   | 53.9   | ug/L                          |      | 55.56       | ND                                    | 97   | 75-125      | 3   | 20        |
| Molybdenum  | 520    | ug/L                          |      | 555.6       | 1.38                                  | 93   | 75-125      | 3   | 20        |
| Selenium  | 532    | ug/L                          |      | 555.6       | ND                                    | 96   | 75-125      | 3   | 20        |
| Thallium  | 533    | ug/L                          |      | 555.6       | ND                                    | 96   | 75-125      | 4   | 20        |
| <b><u>Batch B018438 - No Prep - EPA 300.0 REV 2.1</u></b> |        |                               |      |             |                                       |      |             |     |           |
| <b>Calibration Blank (B018438-CCB1)</b>                   |        | Prepared & Analyzed: 07/28/20 |      |             |                                       |      |             |     |           |
| Sulfate   | 0.00   | mg/L                          |      |             |                                       |      |             |     |           |
| Chloride  | 0.391  | mg/L                          |      |             |                                       |      |             |     |           |
| Fluoride  | 0.00   | mg/L                          |      |             |                                       |      |             |     |           |
| <b>Calibration Check (B018438-CCV1)</b>                   |        | Prepared & Analyzed: 07/28/20 |      |             |                                       |      |             |     |           |
| Chloride  | 4.68   | mg/L                          |      | 5.000       |                                       | 94   | 90-110      |     |           |
| Fluoride  | 4.37   | mg/L                          |      | 5.000       |                                       | 87   | 90-110      |     |           |
| Sulfate   | 4.79   | mg/L                          |      | 5.000       |                                       | 96   | 90-110      |     |           |
| <b><u>Batch B018720 - No Prep - EPA 300.0 REV 2.1</u></b> |        |                               |      |             |                                       |      |             |     |           |
| <b>Calibration Blank (B018720-CCB1)</b>                   |        | Prepared & Analyzed: 07/30/20 |      |             |                                       |      |             |     |           |
| Fluoride  | 0.00   | mg/L                          |      |             |                                       |      |             |     |           |
| <b>Calibration Check (B018720-CCV1)</b>                   |        | Prepared & Analyzed: 07/30/20 |      |             |                                       |      |             |     |           |
| Fluoride  | 4.80   | mg/L                          |      | 5.000       |                                       | 96   | 90-110      |     |           |





NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

\* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050

TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279  
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553

Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)

Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050

Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

- B Present in the method blank at 880 ug/L.
- M Analyte failed to meet the required acceptance criteria for duplicate analysis.

Certified by: Kurt Stepping, Senior Project Manager



August 24, 2020

Mr. Kurt Stepping  
PDC Laboratories  
2231 W. Altorfer Drive  
Peoria, IL 61615

RE: Project: 0074963  
Pace Project No.: 30375182

Dear Mr. Stepping:

Enclosed are the analytical results for sample(s) received by the laboratory on July 31, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Alexis E. Ozoroski  
alexis.ozoroski@pacelabs.com  
(724)850-5600  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
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## CERTIFICATIONS

Project: 0074963  
Pace Project No.: 30375182

### **Pace Analytical Services Pennsylvania**

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: 0074963  
Pace Project No.: 30375182

| Lab ID      | Sample ID  | Matrix | Date Collected | Date Received  |
|-------------|------------|--------|----------------|----------------|
| 30375182001 | 0074963-01 | Water  | 07/21/20 07:21 | 07/31/20 10:10 |
| 30375182002 | 0074963-02 | Water  | 07/21/20 13:18 | 07/31/20 10:10 |
| 30375182003 | 0074963-03 | Water  | 07/21/20 09:51 | 07/31/20 10:10 |
| 30375182004 | 0074963-04 | Water  | 07/21/20 08:34 | 07/31/20 10:10 |
| 30375182005 | 0074963-05 | Water  | 07/21/20 11:19 | 07/31/20 10:10 |
| 30375182006 | 0074963-06 | Water  | 07/21/20 00:00 | 07/31/20 10:10 |
| 30375182007 | 0074963-07 | Water  | 07/21/20 00:00 | 07/31/20 10:10 |

### REPORT OF LABORATORY ANALYSIS

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**SAMPLE ANALYTE COUNT**

Project: 0074963  
Pace Project No.: 30375182

| Lab ID      | Sample ID  | Method    | Analysts | Analytes Reported | Laboratory |
|-------------|------------|-----------|----------|-------------------|------------|
| 30375182001 | 0074963-01 | EPA 903.1 | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0 | VAL      | 1                 | PASI-PA    |
| 30375182002 | 0074963-02 | EPA 903.1 | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0 | VAL      | 1                 | PASI-PA    |
| 30375182003 | 0074963-03 | EPA 903.1 | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0 | VAL      | 1                 | PASI-PA    |
| 30375182004 | 0074963-04 | EPA 903.1 | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0 | VAL      | 1                 | PASI-PA    |
| 30375182005 | 0074963-05 | EPA 903.1 | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0 | VAL      | 1                 | PASI-PA    |
| 30375182006 | 0074963-06 | EPA 903.1 | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0 | VAL      | 1                 | PASI-PA    |
| 30375182007 | 0074963-07 | EPA 903.1 | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0 | VAL      | 1                 | PASI-PA    |

PASI-PA = Pace Analytical Services - Greensburg

**REPORT OF LABORATORY ANALYSIS**

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## PROJECT NARRATIVE

Project: 0074963  
Pace Project No.: 30375182

---

**Method:** EPA 903.1  
**Description:** 903.1 Radium 226  
**Client:** PDC Laboratories Inc  
**Date:** August 24, 2020

**General Information:**

7 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 0074963  
Pace Project No.: 30375182

---

**Method:** EPA 904.0  
**Description:** 904.0 Radium 228  
**Client:** PDC Laboratories Inc  
**Date:** August 24, 2020

**General Information:**

7 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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**ANALYTICAL RESULTS - RADIOCHEMISTRY**

Project: 0074963  
Pace Project No.: 30375182

Sample: 0074963-01 Lab ID: 30375182001 Collected: 07/21/20 07:21 Received: 07/31/20 10:10 Matrix: Water  
PWS: Site ID: Sample Type:

| Parameters                            | Method    | Act ± Unc (MDC) Carr Trac            | Units | Analyzed       | CAS No.    | Qual |
|---------------------------------------|-----------|--------------------------------------|-------|----------------|------------|------|
| Pace Analytical Services - Greensburg |           |                                      |       |                |            |      |
| Radium-226                            | EPA 903.1 | 0.0564 ± 0.257 (0.524)<br>C:NA T:94% | pCi/L | 08/14/20 16:35 | 13982-63-3 |      |
| Pace Analytical Services - Greensburg |           |                                      |       |                |            |      |
| Radium-228                            | EPA 904.0 | 0.801 ± 0.437 (0.776)<br>C:65% T:90% | pCi/L | 08/13/20 14:30 | 15262-20-1 |      |

Sample: 0074963-02 Lab ID: 30375182002 Collected: 07/21/20 13:18 Received: 07/31/20 10:10 Matrix: Water  
PWS: Site ID: Sample Type:

| Parameters                            | Method    | Act ± Unc (MDC) Carr Trac           | Units | Analyzed       | CAS No.    | Qual |
|---------------------------------------|-----------|-------------------------------------|-------|----------------|------------|------|
| Pace Analytical Services - Greensburg |           |                                     |       |                |            |      |
| Radium-226                            | EPA 903.1 | 0.456 ± 0.387 (0.480)<br>C:NA T:85% | pCi/L | 08/14/20 16:35 | 13982-63-3 |      |
| Pace Analytical Services - Greensburg |           |                                     |       |                |            |      |
| Radium-228                            | EPA 904.0 | 1.15 ± 0.556 (0.981)<br>C:65% T:89% | pCi/L | 08/13/20 14:34 | 15262-20-1 |      |

Sample: 0074963-03 Lab ID: 30375182003 Collected: 07/21/20 09:51 Received: 07/31/20 10:10 Matrix: Water  
PWS: Site ID: Sample Type:

| Parameters                            | Method    | Act ± Unc (MDC) Carr Trac            | Units | Analyzed       | CAS No.    | Qual |
|---------------------------------------|-----------|--------------------------------------|-------|----------------|------------|------|
| Pace Analytical Services - Greensburg |           |                                      |       |                |            |      |
| Radium-226                            | EPA 903.1 | -0.260 ± 0.442 (1.03)<br>C:NA T:87%  | pCi/L | 08/14/20 16:51 | 13982-63-3 |      |
| Pace Analytical Services - Greensburg |           |                                      |       |                |            |      |
| Radium-228                            | EPA 904.0 | 0.963 ± 0.535 (0.976)<br>C:65% T:84% | pCi/L | 08/13/20 14:34 | 15262-20-1 |      |

Sample: 0074963-04 Lab ID: 30375182004 Collected: 07/21/20 08:34 Received: 07/31/20 10:10 Matrix: Water  
PWS: Site ID: Sample Type:

| Parameters                            | Method    | Act ± Unc (MDC) Carr Trac           | Units | Analyzed       | CAS No.    | Qual |
|---------------------------------------|-----------|-------------------------------------|-------|----------------|------------|------|
| Pace Analytical Services - Greensburg |           |                                     |       |                |            |      |
| Radium-226                            | EPA 903.1 | 0.261 ± 0.369 (0.626)<br>C:NA T:97% | pCi/L | 08/14/20 16:35 | 13982-63-3 |      |
| Pace Analytical Services - Greensburg |           |                                     |       |                |            |      |
| Radium-228                            | EPA 904.0 | 1.20 ± 0.588 (1.04)<br>C:58% T:92%  | pCi/L | 08/13/20 14:34 | 15262-20-1 |      |

**REPORT OF LABORATORY ANALYSIS**

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**ANALYTICAL RESULTS - RADIOCHEMISTRY**

Project: 0074963  
Pace Project No.: 30375182

| Parameters   | Method    | Act ± Unc (MDC) Carr Trac                          | Units | Analyzed       | CAS No.    | Qual |
|--|-----------|--|-------|----------------|------------|------|
| <b>Sample: 0074963-05</b> <b>Lab ID: 30375182005</b> Collected: 07/21/20 11:19      Received: 07/31/20 10:10      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |           |  |       |                |            |      |
| Pace Analytical Services - Greensburg  |           |  |       |                |            |      |
| Radium-226   | EPA 903.1 | <b>0.0545 ± 0.249 (0.401)</b><br><b>C:NA T:97%</b> | pCi/L | 08/14/20 16:51 | 13982-63-3 |      |
| Pace Analytical Services - Greensburg  |           |  |       |                |            |      |
| Radium-228   | EPA 904.0 | <b>1.24 ± 0.555 (0.923)</b><br><b>C:66% T:82%</b>  | pCi/L | 08/13/20 14:34 | 15262-20-1 |      |

| Parameters   | Method    | Act ± Unc (MDC) Carr Trac                         | Units | Analyzed       | CAS No.    | Qual |
|--|-----------|---|-------|----------------|------------|------|
| <b>Sample: 0074963-06</b> <b>Lab ID: 30375182006</b> Collected: 07/21/20 00:00      Received: 07/31/20 10:10      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |           |   |       |                |            |      |
| Pace Analytical Services - Greensburg  |           |   |       |                |            |      |
| Radium-226   | EPA 903.1 | <b>0.313 ± 0.327 (0.461)</b><br><b>C:NA T:94%</b> | pCi/L | 08/14/20 16:51 | 13982-63-3 |      |
| Pace Analytical Services - Greensburg  |           |   |       |                |            |      |
| Radium-228   | EPA 904.0 | <b>2.09 ± 0.658 (0.867)</b><br><b>C:69% T:87%</b> | pCi/L | 08/13/20 14:34 | 15262-20-1 |      |

| Parameters   | Method    | Act ± Unc (MDC) Carr Trac                         | Units | Analyzed       | CAS No.    | Qual |
|--|-----------|---|-------|----------------|------------|------|
| <b>Sample: 0074963-07</b> <b>Lab ID: 30375182007</b> Collected: 07/21/20 00:00      Received: 07/31/20 10:10      Matrix: Water<br><b>PWS:</b> <b>Site ID:</b> <b>Sample Type:</b> |           |   |       |                |            |      |
| Pace Analytical Services - Greensburg  |           |   |       |                |            |      |
| Radium-226   | EPA 903.1 | <b>0.724 ± 1.13 (1.68)</b><br><b>C:NA T:93%</b>   | pCi/L | 08/24/20 11:54 | 13982-63-3 |      |
| Pace Analytical Services - Greensburg  |           |   |       |                |            |      |
| Radium-228   | EPA 904.0 | <b>0.979 ± 0.603 (1.15)</b><br><b>C:60% T:87%</b> | pCi/L | 08/13/20 14:34 | 15262-20-1 |      |

**REPORT OF LABORATORY ANALYSIS**

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**QUALITY CONTROL - RADIOCHEMISTRY**

Project: 0074963  
Pace Project No.: 30375182

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|                  |           |                       |                                       |
|------------------|-----------|-----------------------|---------------------------------------|
| QC Batch:        | 407762    | Analysis Method:      | EPA 904.0                             |
| QC Batch Method: | EPA 904.0 | Analysis Description: | 904.0 Radium 228                      |
|                  |           | Laboratory:           | Pace Analytical Services - Greensburg |

Associated Lab Samples: 30375182001, 30375182002, 30375182003, 30375182004, 30375182005, 30375182006, 30375182007

---

METHOD BLANK: 1973071 Matrix: Water

Associated Lab Samples: 30375182001, 30375182002, 30375182003, 30375182004, 30375182005, 30375182006, 30375182007

| Parameter  | Act ± Unc (MDC) Carr Trac         | Units | Analyzed       | Qualifiers |
|------------|-----------------------------------|-------|----------------|------------|
| Radium-228 | 0.777 ± 0.492 (0.915) C:72% T:66% | pCi/L | 08/13/20 14:29 |            |

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

**REPORT OF LABORATORY ANALYSIS**

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## QUALIFIERS

Project: 0074963  
Pace Project No.: 30375182

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## REPORT OF LABORATORY ANALYSIS

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PDC Laboratories, Inc.  
0074963



SENDING LABORATORY

PDC Laboratories, Inc.  
2231 W Altorfer Dr  
Peoria, IL 61615  
(800) 752-6651

RECEIVING LABORATORY

PACE Analytical - Greensburg  
1638 Roseytown Road - Suites 2,3,4  
Greensburg, PA 15601  
(724) 850-5600

Sample: 0074963-01  
Name: MW-3

Sampled: 07/21/20 07:21  
Matrix: Ground Water  
Preservative: HNO3, pH <2

001

| Analysis | Due | Expires | Comments |
|----------|-----|---------|----------|
|----------|-----|---------|----------|

|                   |                |                |  |
|-------------------|----------------|----------------|--|
| 01-Radium 226/228 | 08/03/20 16:00 | 01/17/21 07:21 |  |
|-------------------|----------------|----------------|--|

Sample: 0074963-02  
Name: MW-4

Sampled: 07/21/20 13:18  
Matrix: Ground Water  
Preservative: HNO3, pH <2

002

| Analysis | Due | Expires | Comments |
|----------|-----|---------|----------|
|----------|-----|---------|----------|

|                   |                |                |  |
|-------------------|----------------|----------------|--|
| 01-Radium 226/228 | 08/03/20 16:00 | 01/17/21 13:18 |  |
|-------------------|----------------|----------------|--|

Sample: 0074963-03  
Name: MW-5

Sampled: 07/21/20 09:51  
Matrix: Ground Water  
Preservative: HNO3, pH <2

003

| Analysis | Due | Expires | Comments |
|----------|-----|---------|----------|
|----------|-----|---------|----------|

|                   |                |                |  |
|-------------------|----------------|----------------|--|
| 01-Radium 226/228 | 08/03/20 16:00 | 01/17/21 09:51 |  |
|-------------------|----------------|----------------|--|

Sample: 0074963-04  
Name: MW-6

Sampled: 07/21/20 08:34  
Matrix: Ground Water  
Preservative: HNO3, pH <2

004

| Analysis | Due | Expires | Comments |
|----------|-----|---------|----------|
|----------|-----|---------|----------|

|                   |                |                |  |
|-------------------|----------------|----------------|--|
| 01-Radium 226/228 | 08/03/20 16:00 | 01/17/21 08:34 |  |
|-------------------|----------------|----------------|--|

Sample: 0074963-05  
Name: MW-8

Sampled: 07/21/20 11:19  
Matrix: Ground Water  
Preservative: HNO3, pH <2

005

| Analysis | Due | Expires | Comments |
|----------|-----|---------|----------|
|----------|-----|---------|----------|

|                   |                |                |  |
|-------------------|----------------|----------------|--|
| 01-Radium 226/228 | 08/03/20 16:00 | 01/17/21 11:19 |  |
|-------------------|----------------|----------------|--|

PDC Laboratories, Inc.  
0074963

**SENDING LABORATORY**

PDC Laboratories, Inc.  
2231 W Altorfer Dr  
Peoria, IL 61615  
(800) 752-6651

**RECEIVING LABORATORY**

PACE Analytical - Greensburg  
1638 Roseytown Road - Suites 2,3,4  
Greensburg, PA 15601  
(724) 850-5600

Sample: 0074963-06  
Name: FIELD DUPLICATE

Sampled: 07/21/20 00:00  
Matrix: Ground Water  
Preservative: HNO3, pH <2

006

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 08/03/20 16:00 | 01/17/21 00:00 |          |

Sample: 0074963-07  
Name: FIELD BLANK

Sampled: 07/21/20 00:00  
Matrix: Ground Water  
Preservative: HNO3, pH <2

007

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 08/03/20 16:00 | 01/17/21 00:00 |          |

Please email results to Kurt Stepping at [kstepping@pdclab.com](mailto:kstepping@pdclab.com)

Date Shipped: 7-29-20 Total # of Containers: 7 Sample Origin (State): IL PO #: 5886

Turn-Around Time Requested  NORMAL  RUSH Date Results Needed: \_\_\_\_\_

|                    |                      |                     |                       |   |                              |
|--------------------|----------------------|---------------------|-----------------------|---|------------------------------|
| Relinquished By    | Date/Time            | Received By         | Date/Time             | Sample Temperature Upon Receipt           | <u>NA</u> °C                 |
| <i>[Signature]</i> | <u>7-19-20 15:50</u> | <i>Nicki Rinder</i> | <u>7/31/2020 1010</u> | Sample(s) Received on Ice                 | Y or N <input type="radio"/> |
|                    |                      |                     |                       | Proper Bottles Received in Good Condition | Y or N <input type="radio"/> |
|                    |                      |                     |                       | Bottles Filled with Adequate Volume       | Y or N <input type="radio"/> |
|                    |                      |                     |                       | Samples Received Within Hold Time         | Y or N <input type="radio"/> |
|                    |                      |                     |                       | Date/Time Taken From Sample Bottle        | Y or N <input type="radio"/> |

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: PDC

Project # 30375182

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 771127818255

|            |            |
|------------|------------|
| Label      | <u>BLM</u> |
| LIMS Login | <u>BLM</u> |

Custody Seal on Cooler/Box Present:  yes  no      Seals intact:  yes  no

Thermometer Used \_\_\_\_\_ Type of Ice: Wet Blue None

Cooler Temperature \_\_\_\_\_ Observed Temp \_\_\_\_\_ °C Correction Factor: \_\_\_\_\_ °C Final Temp: \_\_\_\_\_ °C

Temp should be above freezing to 6°C

| Comments:   | pH paper Lot# |    |     | Date and Initials of person examining contents:                     |
|---|---------------|----|-----|---|
|   | Yes           | No | N/A |   |
| Chain of Custody Present:   | /             |    |     | 10D5191<br>NMR 7/31/2020  |
| Chain of Custody Filled Out:  | /             |    |     |   |
| Chain of Custody Relinquished:  | /             |    |     |   |
| Sampler Name & Signature on COC:  | /             |    |     |   |
| Sample Labels match COC:  | /             |    |     |   |
| -Includes date/time/ID      Matrix: <u>WT</u>                             |               |    |     |   |
| Samples Arrived within Hold Time:   | /             |    |     |   |
| Short Hold Time Analysis (<72hr remaining):                               |               | /  |     |   |
| Rush Turn Around Time Requested:  |               | /  |     |   |
| Sufficient Volume:  | /             |    |     |   |
| Correct Containers Used:  | /             |    |     |   |
| -Pace Containers Used:  |               | /  |     |   |
| Containers intact:  | /             |    |     |   |
| Orthophosphate field filtered   |               |    | /   |   |
| Hex Cr Aqueous sample field filtered                                      |               |    | /   |   |
| Organic Samples checked for dechlorination:                               |               |    | /   |   |
| Filtered volume received for Dissolved tests                              |               |    | /   |   |
| All containers have been checked for preservation.                        | /             |    |     |   |
| exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix |               |    |     |   |
| All containers meet method preservation requirements.                     | /             |    |     |   |
|   |               |    |     | Initial when completed: <u>NMR</u> Date/time of preservation: _____ |
|   |               |    |     | Lot # of added preservative: _____                                  |
| Headspace in VOA Vials (>9mm):  |               |    | /   |   |
| Trip Blank Present:   |               | /  |     |   |
| Trip Blank Custody Seals Present  |               | /  |     |   |
| Rad Samples Screened < 0.5 mrem/hr  | /             |    |     | Initial when completed: <u>NMR</u> Date: <u>7/31/2020</u>           |

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

A check in this box indicates that additional information has been stored in reports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

\*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.





**PDC Laboratories, Inc.**  
P.O. Box 9071 • Peoria, IL 61612-9071  
(309) 692-9692 • (800) 752-6651 • FAX (309) 692-9693



## **DATA PACKAGE**

**CLIENT: Sikeston BMU**

**PROJECT: Sikeston Power Station**

**PDC LAB WORKORDER: 0074963**

**DATE ISSUED: August 24, 2020**

**CASE NARRATIVE –**

**PDC Work Order 0074963**

PDC Laboratories, Inc. received 7 water samples on July 23, 2020 in good condition at our Peoria, IL facility. This sample set was designated as work order 0074963

| Sample ID's    |            | Date      |          |
|----------------|------------|-----------|----------|
| Field          | Lab ID     | Collected | Received |
| MW-3           | 0074963-01 | 7/21/20   | 7/23/20  |
| MW-4           | 0074963-02 | 7/21/20   | 7/23/20  |
| MW-5           | 0074963-03 | 7/21/20   | 7/23/20  |
| MW-6           | 0074963-04 | 7/21/20   | 7/23/20  |
| MW-8           | 0074963-05 | 7/21/20   | 7/23/20  |
| DUPLICATE WELL | 0074963-06 | 7/21/20   | 7/23/20  |
| FIELD BLANK    | 0074963-07 | 7/21/20   | 7/23/20  |

**QC Summary:**

All items met acceptance criteria with the following noted exceptions:

TDS, batch QC one sample flagged with M, RPD >5 %

Ca, Field blank sample flagged with B, lab blank contained 0.88 mg/l

**Certification**

Signature:



Name: Kurt Stepping

Date: August 24, 2020

Title: Senior Project Manager



# **Appendix 4**

## Groundwater Quality Data Base

**Sikeston Board of Municipal Utilities**  
**Sikeston Power Station**  
**Bottom Ash Pond Scott County, Missouri**  
**CCR Groundwater Data Base**

| Well ID    | Date        | Monitoring Purpose | Field Parameters |        |        |        |           | Appendix III Monitoring Constituents (Detection) |          |          |         |      |       |         |          | Appendix IV Monitoring Constituents (Assessment) |        |           |         |          |        |        |         |         |            |          |          |                               |           |        |
|------------|-------------|--------------------|------------------|--------|--------|--------|-----------|--|----------|----------|---------|------|-------|---------|----------|--|--------|-----------|---------|----------|--------|--------|---------|---------|------------|----------|----------|-------------------------------|-----------|--------|
|            |             |                    | Spec. Cond.      | Temp.  | ORP    | D.O.   | Turbidity | pH   | Chloride | Fluoride | Sulfate | TDS  | Boron | Calcium | Antimony | Arsenic  | Barium | Beryllium | Cadmium | Chromium | Cobalt | Lead   | Lithium | Mercury | Molybdenum | Selenium | Thallium | Radium 226 and 228 (Combined) |           |        |
|            |             |                    | µmhos/cm         | °C     | mV     | mg/L   | NTU       | S.U.   | mg/L     | mg/L     | mg/L    | mg/L | ug/L  | mg/L    | ug/L     | ug/L   | ug/L   | ug/L      | ug/L    | ug/L     | ug/L   | ug/L   | ug/L    | ug/L    | ug/L       | ug/L     | ug/L     | ug/L                          | pCi/L     |        |
| MW-3 (UG)  | 11/30/2016  | Background         | 254.0            | 15.75  | -27.1  | 0.41   | 37.28     | 7.1  | 2.3      | 0.438    | 26      | 160  | 18    | 24      | <3.0     | 1.5  | 96     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 1.668                         |           |        |
|            | 1/24/2017   | Background         | 226.4            | 16.52  | -8.4   | 0.39   | 4.46      | 6.9  | 2.0      | 0.261    | 30      | 130  | 12    | 21      | <3.0     | 1.2  | 120    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.677(ND)                     |           |        |
|            | 2/22/2017   | Background         | 226.6            | 16.47  | 9.7    | 0.36   | 3.56      | 6.9  | 1.9      | 0.290    | 26      | 120  | 33    | 22      | <3.0     | 1.0  | 120    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.460(ND)                     |           |        |
|            | 3/20/2017   | Background         | 212.1            | 17.07  | 33.7   | 0.43   | 6.61      | 6.7  | 1.8      | 0.286    | 21      | 170  | 22    | 19      | <3.0     | <1.0   | 110    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.277(ND)                     |           |        |
|            | 4/27/2017   | Background         | 223.2            | 15.35  | 9.2    | 0.57   | 2.69      | 6.7  | 2.0      | 0.257    | 28      | 140  | 54    | 20      | <3.0     | <1.0   | 110    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | 9.9        | <1.0     | <1.0     | -0.030(ND)                    |           |        |
|            | 5/17/2017   | Background         | 224.9            | 17.68  | 26.8   | 0.45   | 12.59     | 6.6  | 1.5      | <0.250   | 21      | 130  | 19    | 17      | <3.0     | <1.0   | 120    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | 0.40    | <1.0       | <1.0     | <1.0     | 0.844(ND)                     |           |        |
|            | 6/8/2017    | Background         | 217.9            | 16.73  | 18.2   | 0.49   | 2.61      | 6.7  | 1.7      | 0.276    | 22      | 160  | 20    | 19      | <3.0     | <1.0   | 110    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | -0.469(ND)                    |           |        |
|            | 7/13/2017   | Background         | 243.8            | 19.02  | 5.5    | 0.39   | 4.79      | 6.7  | 2.2      | 0.256    | 19      | 160  | 18    | 20      | <3.0     | <1.0   | 100    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.715(ND)                     |           |        |
|            | 10/31/2017  | Detection 1        | 246.2            | 16.74  | 12.4   | 0.65   | 7.47      | 6.6  | 2.0      | 0.331    | 20      | 140  | 27    | 19      | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)      | (NA)   |
|            | 6/13/2018   | Detection 2        | 194.2            | 17.19  | 42.3   | 0.42   | 7.57      | 6.6  | 1.3      | 0.291    | 17      | 130  | 23    | 20      | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)      | (NA)   |
|            | 11/26/2018  | Detection 3        | 194.9            | 15.05  | 49.8   | 0.47   | 2.23      | 6.5  | 1.5      | 0.301    | 18      | 100  | 23    | 17      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    | Note 8 |
|            | 2/5/2019    | Note 8             | 205.0            | 14.49  | 46.9   | 0.49   | 1.92      | 6.5  | 1.5      | 0.342    | 20      | 160  | 22    | 17      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    | Note 8 |
|            | 5/28/2019   | Detection 4        | 218.4            | 16.42  | 32.2   | 0.82   | 9.69      | 6.4  | 1.3      | <0.250   | 20      | (NA) | 51    | 17      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    | Note 8 |
|            | 7/23/2019   |                    | 203.0            | 16.58  | 71.0   | 0.88   | 4.96      | (NA)   | (NA)     | (NA)     | (NA)    | 140  | (NA)  | 17      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    | Note 8 |
|            | 8/28/2019   | Detection 5        | 207.4            | 16.97  | 75.6   | 0.89   | 4.02      | 6.4  | 1.1      | <0.250   | 18      | 140  | 35    | 15      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    | Note 8 |
|            | 11/4/2019   | Note 8             | 202.3            | 16.60  | 63.2   | 0.70   | 4.22      | 6.4  | 1.4      | <0.250   | 18      | 130  | 37    | 15      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    | Note 8 |
|            | 2/18/2020   | Detection 6        | 207.6            | 14.17  | 58.6   | 1.22   | 6.34      | 6.4  | 1.3      | <0.250   | 21      | 140H | 27    | 16      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    | Note 8 |
|            | 3/30/2020   |                    | 199.3            | 14.87  | 61.2   | 1.20   | 6.01      | 6.4  | (NA)     | (NA)     | (NA)    | 180  | (NA)  | (NA)    | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)      |        |
|            | 7/21/2020   | Detection 7        | 197.8            | 16.87  | -40.4  | 8.42   | 3.43      | 6.5  | 1.0      | <0.250   | 15      | 140  | 21    | 18      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    | Note 8 |
|            | MW-4 (DG)   | 11/30/2016         | Background       | 575.6  | 17.51  | -108.3 | 0.48      | 0.61   | 7.5      | 18       | 0.259   | 140  | 390   | 1400    | 89       | <3.0   | <1.0   | 41        | <1.0    | <1.0     | <4.0   | <2.0   | <1.0    | <10     | <0.20      | <1.0     | <1.0     | <1.0                          | 0.572(ND) |        |
| 1/24/2017  |             | Background         | 543.7            | 17.00  | -105.2 | 0.50   | 0.48      | 7.5  | 15       | <0.250   | 120     | 290  | 880   | 79      | <3.0     | <1.0   | 46     | <2.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.7031(ND)                    |           |        |
| 2/22/2017  |             | Background         | 554.0            | 17.95  | -115.3 | 0.51   | 1.19      | 7.5  | 13       | <0.250   | 97      | 320  | 1500  | 78      | <3.0     | <1.0   | 51     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.550(ND)                     |           |        |
| 3/20/2017  |             | Background         | 562.8            | 18.58  | -108.8 | 0.69   | 1.70      | 7.4  | 12       | <0.250   | 94      | 350  | 1400  | 72      | <3.0     | <1.0   | 53     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | 1.3     | <1.0       | <1.0     | <1.0     | 1.036                         |           |        |
| 4/27/2017  |             | Background         | 536.9            | 17.25  | -129.6 | 0.91   | 2.38      | 7.4  | 14       | <0.250   | 99      | 300  | 1300  | 74      | <3.0     | <1.0   | 50     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.210(ND)                     |           |        |
| 5/17/2017  |             | Background         | 554.9            | 17.90  | -115.5 | 0.63   | 3.02      | 7.4  | 14       | <0.250   | 96      | 320  | 1200  | 71      | <3.0     | <1.0   | 66     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.774(ND)                     |           |        |
| 6/8/2017   |             | Background         | 509.7            | 18.24  | -122.9 | 0.86   | 0.84      | 7.4  | 12       | <0.250   | 86      | 340  | 1100  | 61      | <3.0     | <1.0   | 45     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.464(ND)                     |           |        |
| 7/13/2017  |             | Background         | 575.5            | 19.46  | -115.2 | 0.52   | 1.43      | 7.4  | 13       | <0.250   | 88      | 300  | 1200  | 79      | <3.0     | <1.0   | 52     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 1.086(ND)                     |           |        |
| 10/31/2017 |             | Detection 1        | 525.8            | 18.35  | -118.1 | 0.63   | 1.07      | 7.3  | 17       | <0.250   | 83      | 290  | 1400  | 67      | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)      | (NA)   |
| 6/13/2018  |             | Detection 2        | 511.5            | 18.92  | -120.7 | 0.44   | 18.50     | 7.3  | 14       | <0.250   | 86      | 290  | 1200  | 80      | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)      | (NA)   |
| 11/26/2018 |             | Detection 3        | 468.0            | 16.07  | -101.8 | 0.53   | 1.01      | 7.4  | 8.8      | <0.250   | 54      | 260  | 1100  | 64      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    |        |
| 2/5/2019   |             | Note 8             | 761.0            | 15.62  | -97.5  | 0.52   | 2.58      | 7.3  | 33       | <0.250   | 140     | 420  | 1100  | 100     | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    |        |
| 5/28/2019  |             | Detection 4        | 581.7            | 18.65  | -108.5 | 0.37   | 3.30      | 7.3  | 11       | <0.250   | 75      | (NA) | 980   | 70      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    |        |
| 7/23/2019  |             |                    | 615.2            | 18.88  | -105.2 | 0.43   | 0.36      | (NA)   | (NA)     | (NA)     | (NA)    | 340  | (NA)  | (NA)    | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)      |        |
| 8/28/2019  |             | Detection 5        | 645.4            | 19.60  | -101.7 | 0.40   | 2.31      | 7.2  | 18       | <0.250   | 110     | 300  | 1100  | 83      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8    |        |
| 11/4/2019  | Note 8      | 657.7              | 18.52            | -104.2 | 0.50   | 0.96   | 7.2       | 2.1  | <0.250   | 120      | 400     | 1200 | 89    | Note 8  | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        |           |        |
| 2/18/2020  | Detection 6 | 526.9              | 14.49            | -87.6  | 0.63   | 1.60   | 7.4       | 11   | <0.250   | 66       | 290H    | 930  | 67    | Note 8  | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        |           |        |
| 3/30/2020  |             | 520.6              | 16.45            | -91.1  | 0.35   | 19.51  | 7.4       | (NA)   | (NA)     | (NA)     | 300     | (NA) | (NA)  | (NA)    | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     |                               |           |        |
| 7/21/2020  | Detection 7 | 550.7              | 19.75            | -145.6 | 5.06   | 6.49   | 7.2       | 14   | <0.250   | 86       | 290     | 920  | 76    | Note 8  | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        |           |        |
| 8/3/2020   |             | 567.8              | 18.81            | -117.8 | 4.87   | 7.19   | 7.4       | (NA)   | (NA)     | (NA)     | (NA)    | (NA) | (NA)  | (NA)    | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          |           |        |

Prepared by: KAE  
Checked by: MCC

**Sikeston Board of Municipal Utilities  
Sikeston Power Station  
Bottom Ash Pond Scott County, Missouri  
CCR Groundwater Data Base**

| Well ID    | Date        | Monitoring Purpose | Field Parameters |        |        |       |           | Appendix III Monitoring Constituents (Detection) |          |          |         |      |       |         | Appendix IV Monitoring Constituents (Assessment) |         |        |           |         |          |        |        |         |         |            |          |          |                               |        |        |
|------------|-------------|--------------------|------------------|--------|--------|-------|-----------|--|----------|----------|---------|------|-------|---------|--|---------|--------|-----------|---------|----------|--------|--------|---------|---------|------------|----------|----------|-------------------------------|--------|--------|
|            |             |                    | Spec. Cond.      | Temp.  | ORP    | D.O.  | Turbidity | pH   | Chloride | Fluoride | Sulfate | TDS  | Boron | Calcium | Antimony   | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Lead   | Lithium | Mercury | Molybdenum | Selenium | Thallium | Radium 226 and 228 (Combined) |        |        |
|            |             |                    | µmhos/cm         | °C     | mV     | mg/L  | NTU       | S.U.   | mg/L     | mg/L     | mg/L    | mg/L | ug/L  | mg/L    | ug/L   | ug/L    | ug/L   | ug/L      | ug/L    | ug/L     | ug/L   | ug/L   | ug/L    | ug/L    | ug/L       | ug/L     | ug/L     | ug/L                          | pCi/L  |        |
| MW-5 (DG)  | 11/30/2016  | Background         | 808.3            | 16.20  | -48.7  | 0.50  | 1.24      | 7.0  | 16       | 0.255    | 230     | 560  | 470   | 96      | <3.0   | <1.0    | 84     | <1.0      | <1.0    | <4.0     | 4.3    | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 1.844                         |        |        |
|            | 1/24/2017   | Background         | 745.3            | 16.24  | -37.6  | 0.58  | 0.72      | 6.9  | 15       | <0.250   | 270     | 470  | 480   | 120     | <3.0   | <1.0    | 91     | <1.0      | <1.0    | <4.0     | 5.2    | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.827(ND)                     |        |        |
|            | 2/22/2017   | Background         | 717.8            | 17.75  | -50.5  | 0.36  | 3.43      | 7.0  | 11       | <0.250   | 170     | 420  | 470   | 100     | <3.0   | <1.0    | 83     | <1.0      | <1.0    | <4.0     | 3.6    | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.130(ND)                     |        |        |
|            | 3/20/2017   | Background         | 737.9            | 17.78  | -36.5  | 0.72  | 2.16      | 6.9  | 11       | <0.250   | 170     | 480  | 320   | 99      | <3.0   | <1.0    | 76     | <1.0      | <1.0    | <4.0     | 4.4    | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.538(ND)                     |        |        |
|            | 4/27/2017   | Background         | 777.3            | 16.07  | -58.8  | 0.69  | 5.20      | 6.8  | 12       | <0.250   | 460     | 480  | 490   | 120     | <3.0   | <1.0    | 87     | <1.0      | <1.0    | <4.0     | 4.8    | <1.0   | <10     | <0.20   | 3.0        | <1.0     | <1.0     | 1.676                         |        |        |
|            | 5/17/2017   | Background         | 760.1            | 17.81  | -56.0  | 0.46  | 5.35      | 6.8  | 11       | <0.250   | 200     | 440  | 5700  | 240     | <3.0   | 1.8     | 180    | <1.0      | <1.0    | 16       | 5.3    | 6.3    | <10     | 0.24    | <1.0       | <1.0     | <1.0     | 1.739                         |        |        |
|            | 6/8/2017    | Background         | 678.3            | 17.72  | -58.6  | 0.69  | 1.89      | 6.8  | 11       | <0.250   | 180     | 480  | 360   | 97      | <3.0   | <1.0    | 77     | <1.0      | <1.0    | <4.0     | 3.9    | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.869(ND)                     |        |        |
|            | 7/13/2017   | Background         | 799.0            | 19.19  | -82.0  | 1.08  | 17.49     | 7.0  | 10       | <0.250   | 190     | 430  | 320   | 110     | <3.0   | <1.0    | 81     | <1.0      | <1.0    | <4.0     | 3.8    | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.767(ND)                     |        |        |
|            | 10/31/2017  | Detection 1        | 591.8            | 17.45  | -77.6  | 0.85  | 3.17      | 6.9  | 13       | <0.250   | 88      | 310  | 280   | 72      | (NA)   | (NA)    | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |        |
|            | 6/13/2018   | Detection 2        | 756.4            | 18.28  | -55.6  | 0.84  | 1.91      | 6.8  | 11       | <0.250   | 240     | 480  | 370   | 130     | (NA)   | (NA)    | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |        |
|            | 11/26/2018  | Detection 3        | 836.4            | 14.90  | -27.0  | 0.51  | 0.38      | 6.7  | 17       | <0.250   | 230     | 520  | 420   | 120     | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |        |
|            | 2/5/2019    | Note 8             | 845.6            | 15.22  | -23.7  | 0.41  | 0.71      | 6.7  | 15       | 0.272    | 200     | 480  | 450   | 120     | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |        |
|            | 5/28/2019   | Detection 4        | 861.1            | 18.31  | -59.1  | 0.60  | 3.71      | 6.9  | 10       | <0.250   | 190     | (NA) | 280   | 110     | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 | Note 8 |
|            | 7/23/2019   |                    | 806.9            | 18.66  | -44.9  | 0.81  | 1.34      | (NA)   | (NA)     | (NA)     | (NA)    | 480  | (NA)  | (NA)    | (NA)   | (NA)    | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |        |
|            | 8/28/2019   | Detection 5        | 848.4            | 18.49  | -42.2  | 0.64  | 0.82      | 6.8  | 16       | <0.250   | 190     | 480  | 410   | 110     | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |        |
|            | 11/4/2019   | Note 8             | 729.9            | 18.03  | -55.8  | 0.77  | 2.65      | 6.8  | 3.2      | <0.250   | 15      | 440  | 420   | 99      | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |        |
|            | 2/18/2020   | Detection 6        | 871.7            | 14.05  | -45.2  | 0.81  | 0.88      | 6.8  | 15.0     | <0.250   | 210     | 520H | 400   | 110     | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |        |
|            | 3/30/2020   |                    | 750.4            | 15.84  | -49.7  | 0.62  | 2.90      | 6.8  | (NA)     | (NA)     | (NA)    | 450  | (NA)  | (NA)    | (NA)   | (NA)    | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          |        |        |
|            | 7/21/2020   | Detection 7        | 816.5            | 18.35  | -102.9 | 4.37  | 5.36      | 6.8  | 14       | <0.250   | 210     | 470  | 330   | 110     | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |        |
|            | MW-6 (UG)   | 11/30/2016         | Background       | 369.0  | 16.39  | -49.4 | 0.85      | 0.84   | 6.9      | 2.8      | 0.331   | 36   | 200   | 36      | 45   | <3.0    | 4.3    | 190       | <1.0    | <1.0     | <4.0   | <2.0   | <1.0    | <10     | <0.20      | <1.0     | <1.0     | <1.0                          | 1.532  |        |
| 1/24/2017  |             | Background         | 358.9            | 16.29  | -44.8  | 0.66  | 0.26      | 6.9  | 2.4      | <0.250   | 43      | 200  | 27    | 41      | <3.0   | 5.7     | 220    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.948(ND)                     |        |        |
| 2/22/2017  |             | Background         | 352.5            | 17.20  | -42.2  | 0.81  | 15.27     | 6.9  | 2.1      | 0.269    | 32      | 160  | 59    | 40      | <3.0   | 6.4     | 210    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.685(ND)                     |        |        |
| 3/20/2017  |             | Background         | 360.8            | 16.90  | 24.9   | 0.36  | 9.70      | 6.7  | 2.1      | <0.250   | 31      | 240  | 37    | 39      | <3.0   | 5       | 160    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.577(ND)                     |        |        |
| 4/27/2017  |             | Background         | 331.5            | 15.71  | -50.9  | 0.39  | 8.35      | 6.7  | 2.3      | <0.250   | 34      | 170  | 36    | 38      | <3.0   | 3.2     | 180    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 1.243(ND)                     |        |        |
| 5/17/2017  |             | Background         | 323.2            | 17.65  | -71.5  | 0.45  | 7.13      | 6.8  | 1.8      | <0.250   | 30      | 170  | 35    | 30      | <3.0   | 4.9     | 190    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 1.173(ND)                     |        |        |
| 6/8/2017   |             | Background         | 326.7            | 17.50  | -53.0  | 0.33  | 3.86      | 6.7  | 1.7      | <0.250   | 29      | 180  | 38    | 36      | <3.0   | 4.6     | 190    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.893(ND)                     |        |        |
| 7/13/2017  |             | Background         | 396.8            | 19.68  | -84.0  | 0.72  | 2.17      | 7.0  | 1.6      | <0.250   | 28      | 180  | 31    | 40      | <3.0   | 5.8     | 200    | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.575(ND)                     |        |        |
| 10/31/2017 |             | Detection 1        | 359.6            | 17.57  | -57.9  | 0.71  | 1.48      | 6.7  | 1.7      | 0.303    | 29      | 170  | 41    | 38      | (NA)   | (NA)    | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |        |
| 6/13/2018  |             | Detection 2        | 345.4            | 17.59  | -44.0  | 0.40  | 13.24     | 6.7  | 2.3      | <0.250   | 32      | 160  | 43    | 41      | (NA)   | (NA)    | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |        |
| 11/26/2018 |             | Detection 3        | 375.3            | 15.04  | -37.6  | 1.07  | 1.66      | 6.7  | 1.5      | 0.313    | 29      | 180  | 46    | 36      | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |        |
| 2/5/2019   |             | Note 8             | 384.7            | 14.86  | -33.9  | 0.56  | 2.68      | 6.7  | 1.6      | 0.338    | 27      | 160  | 44    | 40      | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |        |
| 5/28/2019  |             | Detection 4        | 418.2            | 16.93  | -48.2  | 0.34  | 7.15      | 6.7  | 2.5      | <0.250   | 30      | (NA) | 52    | 40      | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |        |
| 7/23/2019  |             |                    | 419.3            | 17.64  | -59.8  | 0.51  | 2.03      | (NA)   | (NA)     | (NA)     | (NA)    | 180  | (NA)  | (NA)    | (NA)   | (NA)    | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |        |
| 8/28/2019  |             | Detection 5        | 442.2            | 17.67  | -65.4  | 0.66  | 1.15      | 6.7  | 1.0      | <0.250   | 24      | 200  | 54    | 44      | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |        |
| 11/4/2019  | Note 8      | 388.3              | 17.62            | -48.1  | 0.38   | 1.68  | 6.7       | 1.4  | 0.319    | 22       | 210     | 47   | 43    | Note 8  | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        |        |        |
| 2/18/2020  | Detection 6 | 390.3              | 14.54            | -54.5  | 0.81   | 5.79  | 6.7       | 1.7  | <0.250   | 24       | 170H    | 40   | 41    | Note 8  | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        |        |        |
| 3/30/2020  |             | 391.0              | 15.17            | -53.6  | 0.67   | 3.99  | 6.7       | (NA)   | (NA)     | (NA)     | 230     | (NA) | (NA)  | (NA)    | (NA)   | (NA)    | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     |                               |        |        |
| 7/21/2020  | Detection 7 | 415.1              | 17.64            | -100.2 | 4.54   | 3.48  | 6.7       | <1.0   | <0.250   | 22       | 220     | 46   | 43    | Note 8  | Note 8   | Note 8  | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        |        |        |

**Sikeston Board of Municipal Utilities  
Sikeston Power Station  
Bottom Ash Pond Scott County, Missouri  
CCR Groundwater Data Base**

| Well ID          | Date       | Monitoring Purpose | Field Parameters |       |        |      |           | Appendix III Monitoring Constituents (Detection) |          |          |         |         |       |         |          | Appendix IV Monitoring Constituents (Assessment) |        |           |         |          |        |        |         |         |            |          |          |                               |        |
|------------------|------------|--------------------|------------------|-------|--------|------|-----------|--|----------|----------|---------|---------|-------|---------|----------|--|--------|-----------|---------|----------|--------|--------|---------|---------|------------|----------|----------|-------------------------------|--------|
|                  |            |                    | Spec. Cond.      | Temp. | ORP    | D.O. | Turbidity | pH   | Chloride | Fluoride | Sulfate | TDS     | Boron | Calcium | Antimony | Arsenic  | Barium | Beryllium | Cadmium | Chromium | Cobalt | Lead   | Lithium | Mercury | Molybdenum | Selenium | Thallium | Radium 226 and 228 (Combined) |        |
|                  |            |                    | µmhos/cm         | °C    | mV     | mg/L | NTU       | S.U.   | mg/L     | mg/L     | mg/L    | mg/L    | ug/L  | mg/L    | ug/L     | ug/L   | ug/L   | ug/L      | ug/L    | ug/L     | ug/L   | ug/L   | ug/L    | ug/L    | ug/L       | ug/L     | ug/L     | ug/L                          | pCi/L  |
| <b>MW-8 (DG)</b> | 5/18/2017  | Background         | 662.5            | 17.58 | -89.4  | 0.29 | 2.39      | 7.2  | 46       | <0.250   | 100     | 340     | 400   | 74      | <3.0     | <1.0   | 86     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 1.067                         |        |
|                  | 6/9/2017   | Background         | 678.2            | 17.90 | -108.5 | 0.31 | 0.47      | 7.2  | 43       | <0.250   | 110     | 380     | 520   | 92      | <3.0     | <1.0   | 86     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.839(ND)                     |        |
|                  | 7/13/2017  | Background         | 661.5            | 18.57 | -107.1 | 0.23 | 1.20      | 7.3  | 36       | <0.250   | 89      | 320     | 430   | 87      | <3.0     | <1.0   | 74     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 1.034(ND)                     |        |
|                  | 8/3/2017   | Background         | 665.7            | 19.06 | -108.4 | 0.24 | 0.98      | 7.2  | 37       | <0.250   | 89      | 330     | 490   | 80      | <3.0     | <1.0   | 74     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.681(ND)                     |        |
|                  | 8/15/2017  | Background         | 594.9            | 18.56 | -88.7  | 0.38 | 0.99      | 7.2  | 36       | <0.250   | 83      | 320     | 530   | 75      | <3.0     | <1.0   | 68     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.906(ND)                     |        |
|                  | 8/30/2017  | Background         | 644.2            | 18.62 | -91.3  | 0.29 | 1.18      | 7.2  | 41       | <0.250   | 96      | 290     | 510   | 88      | <3.0     | <1.0   | 75     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.805(ND)                     |        |
|                  | 9/14/2017  | Background         | 707.9            | 18.52 | -90.1  | 0.48 | 0.67      | 7.1  | 53       | <0.250 H | 110     | 370     | 510   | 86      | <3.0     | <1.0   | 77     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | 12      | <0.20   | <1.0       | <1.0     | <1.0     | 0.314(ND)                     |        |
|                  | 9/27/2017  | Background         | 764.0            | 19.11 | -89.6  | 0.30 | 0.58      | 7.1  | 50       | <0.250   | 120     | 420     | 480   | 92      | <3.0     | <1.0   | 80     | <1.0      | <1.0    | <4.0     | <2.0   | <1.0   | <10     | <0.20   | <1.0       | <1.0     | <1.0     | 0.594(ND)                     |        |
|                  | 10/31/2017 | Detection 1        | 698.1            | 17.99 | -96.3  | 0.38 | 0.94      | 7.1  | 45       | <0.250   | 110     | 380     | 540   | 86      | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |
|                  | 6/13/2018  | Detection 2        | 788.8            | 18.34 | -99.1  | 0.23 | 4.80      | 7.1  | 65       | <0.250   | 150     | 430     | 520   | 120     | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |
|                  | 7/10/2018  | Re-sample          | 899.4            | 18.52 | -94.2  | 0.35 | 2.69      | 7.1  | 68       | (NA)     | 140     | (NA)    | (NA)  | 120     | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |
|                  | 7/10/2018  | Re-sample/DUP      | 899.4            | 18.52 | -94.2  | 0.35 | 2.69      | 7.1  | 71       | (NA)     | 150     | (NA)    | (NA)  | 120     | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |
|                  | 11/26/2018 | Detection 3        | 662.1            | 15.08 | -77.6  | 0.35 | 2.88      | 7.2  | 45       | <0.250   | 100     | 320     | 500   | 94      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |
|                  | 2/5/2019   | Note 8             | 839.7            | 14.72 | -76.0  | 0.30 | 2.66      | 7.1  | 71       | 0.26     | 140     | 390     | 550   | 110     | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |
|                  | 5/28/2019  | Detection 4        | 836.6            | 18.25 | -90.6  | 0.29 | 4.89      | 7.1  | 53       | <0.250   | 130     | (NA)    | 540   | 100     | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |
|                  | 7/23/2019  |                    | 819.5            | 19.34 | -90.7  | 0.30 | 1.39      | (NA)   | (NA)     | (NA)     | (NA)    | 480     | (NA)  | (NA)    | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |
|                  | 7/23/2019  | Re-sample          | 819.5            | 19.34 | -90.7  | 0.30 | 1.39      | (NA)   | (NA)     | (NA)     | (NA)    | 420     | (NA)  | (NA)    | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |
|                  | 8/28/2019  | Detection 5        | 769.1            | 19.38 | -90.0  | 0.25 | 1.25      | 7.1  | 55       | <0.250   | 110     | 360     | 460   | 93      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |
|                  | 11/4/2019  | Note 8             | 729.8            | 18.39 | -80.0  | 0.29 | 0.86      | 7.1  | 2.0      | <0.250   | 4.5     | 400     | 480   | 98      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |
|                  | 2/18/2020  | Detection 6        | 747.9            | 13.49 | -75.7  | 0.29 | 0.69      | 7.2  | 53       | <0.250   | 110     | 420H    | 480   | 93      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |
|                  | 3/30/2020  |                    | 840.0            | 15.71 | -82.4  | 0.20 | 7.48      | 7.1  | (NA)     | (NA)     | (NA)    | 480     | (NA)  | (NA)    | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |
|                  | 4/8/2020   | Re-sample/Dup      | 784.0            | 16.56 | -89.4  | 0.21 | 8.33      | 7.1  | (NA)     | (NA)     | (NA)    | 480/330 | (NA)  | (NA)    | (NA)     | (NA)   | (NA)   | (NA)      | (NA)    | (NA)     | (NA)   | (NA)   | (NA)    | (NA)    | (NA)       | (NA)     | (NA)     | (NA)                          | (NA)   |
|                  | 7/21/2020  | Detection 7        | 673.7            | 19.33 | -130.8 | 2.91 | 3.56      | 7.1  | 50       | <0.250   | 100     | 420     | 470   | 89      | Note 8   | Note 8   | Note 8 | Note 8    | Note 8  | Note 8   | Note 8 | Note 8 | Note 8  | Note 8  | Note 8     | Note 8   | Note 8   | Note 8                        | Note 8 |

- Notes:
- All data transcribed from analytical lab data sheets or field notes.
  - Less than (<) symbol denotes concentration not detected at or above reportable limits.
  - (ND) denotes Radium 226 and 228 (combined) concentration not detected above minimum detectable concentration.
  - (NA) denotes analysis not conducted, or not available at time of report.
  - Background monitoring per USEPA 40 CFR 257.93.
  - Detection monitoring per USEPA 40 CFR 257.94.
  - Assessment monitoring per USEPA 40 CFR 257.95.
  - Additional background sampling currently being conducted based on recommendations in Alternate Source Demonstration dated September 26, 2018 (see Gredell Engineering, 2019).

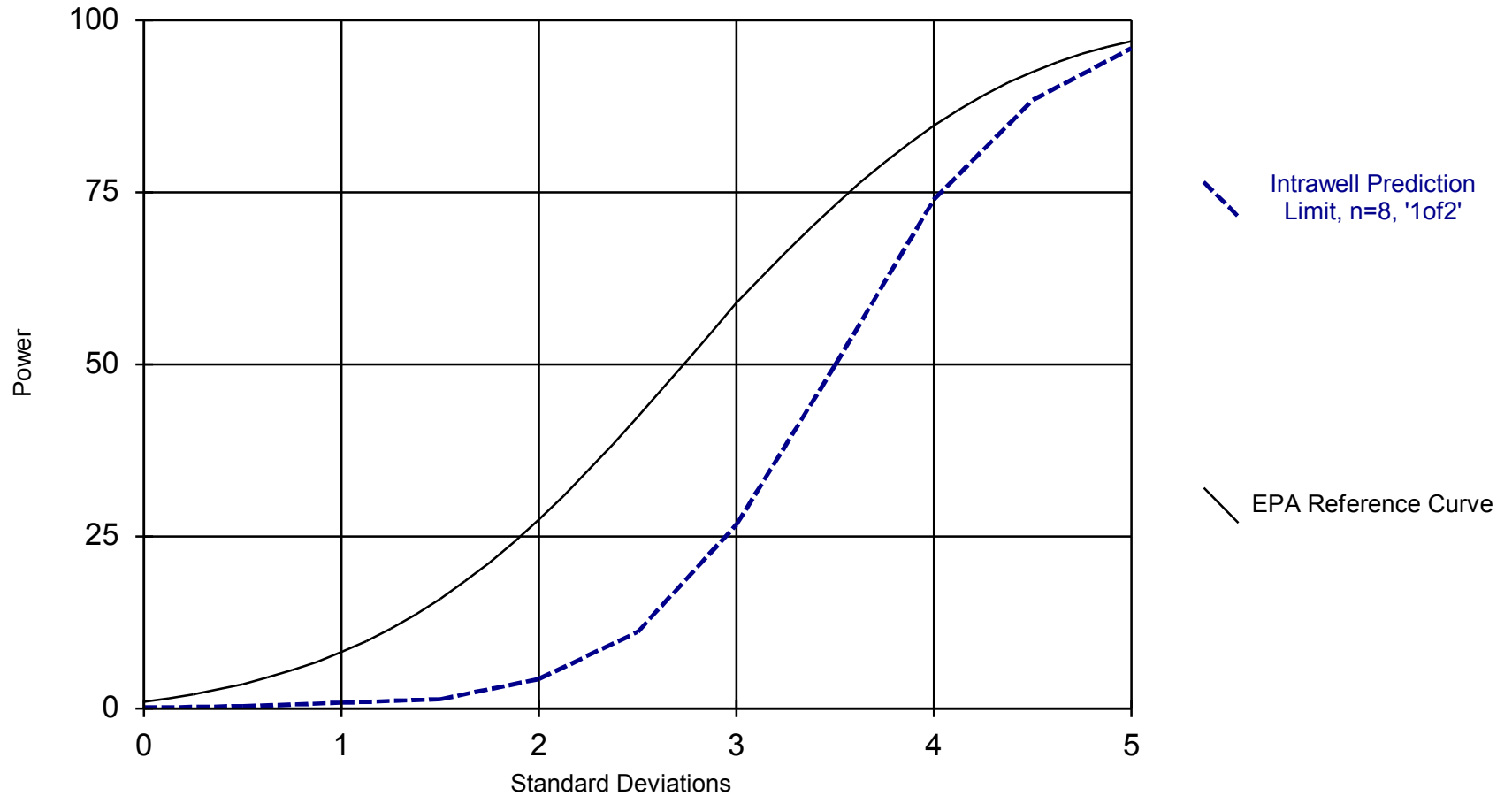
Prepared by: KAE  
Checked by: MCC

# **Appendix 5**

## Statistical Power Curve



### Power Curve MW-3 through MW-8



Kappa = 3.403, based on 3 compliance wells and 35 constituents, evaluated semi-annually (this report reflects annual total).

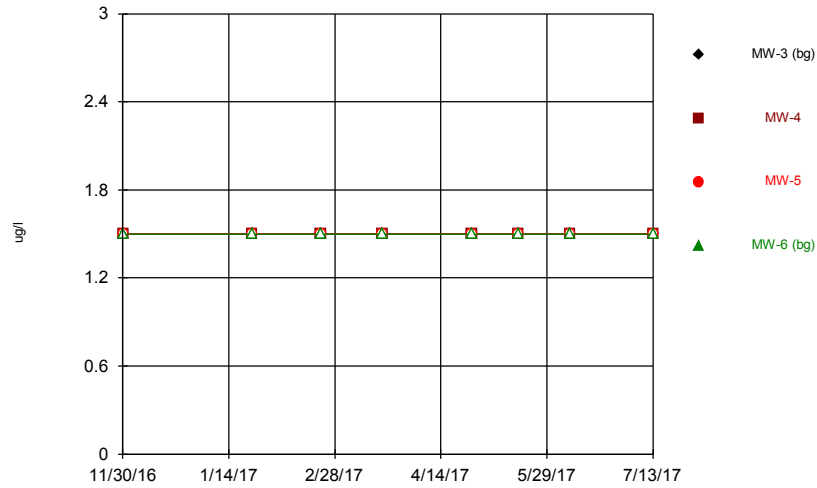
Analysis Run 11/28/2017 4:57 PM View: SBMU-SPS Appendix III

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

# **Appendix 6**

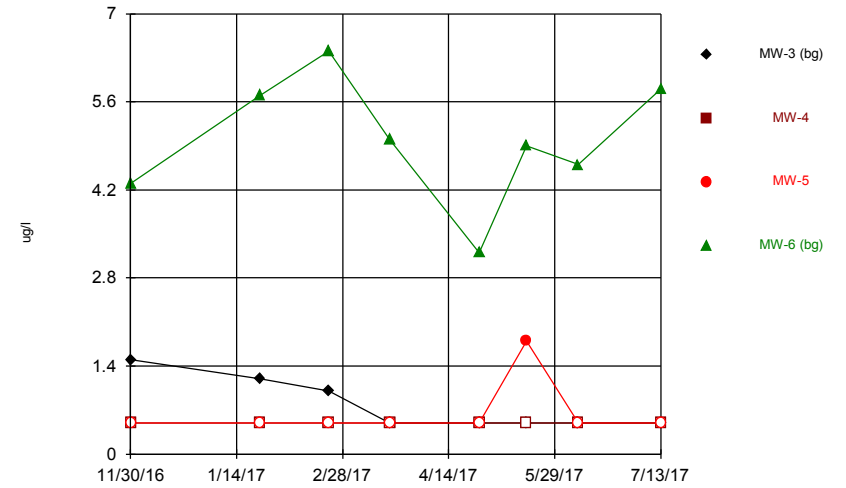
## Time Series Plots

Antimony



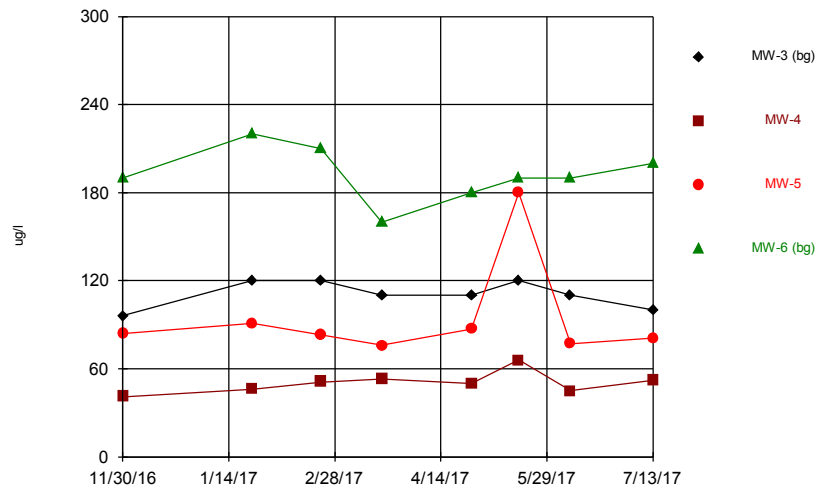
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Arsenic



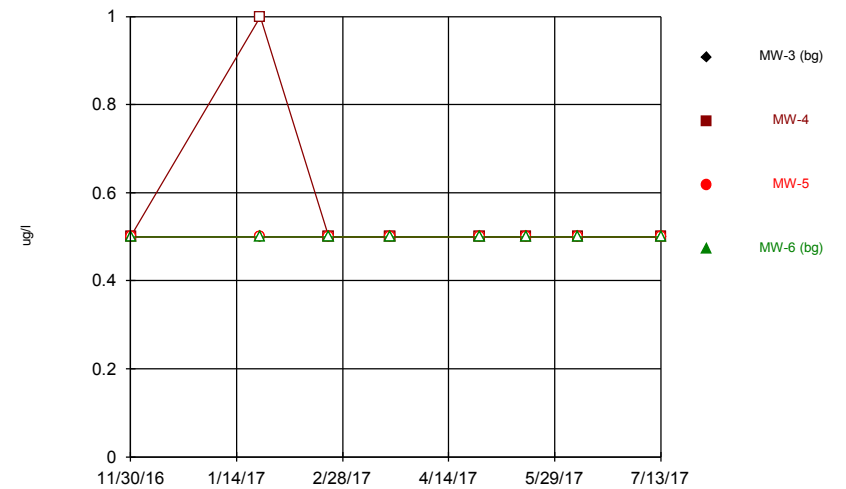
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Barium



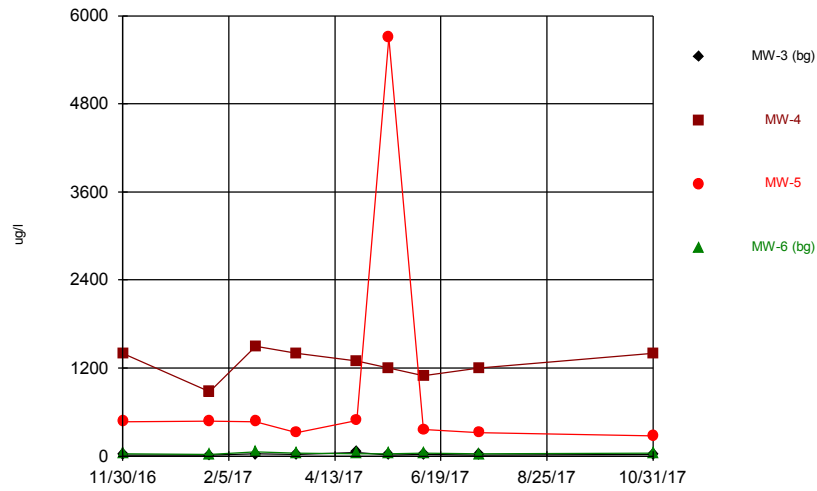
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Beryllium



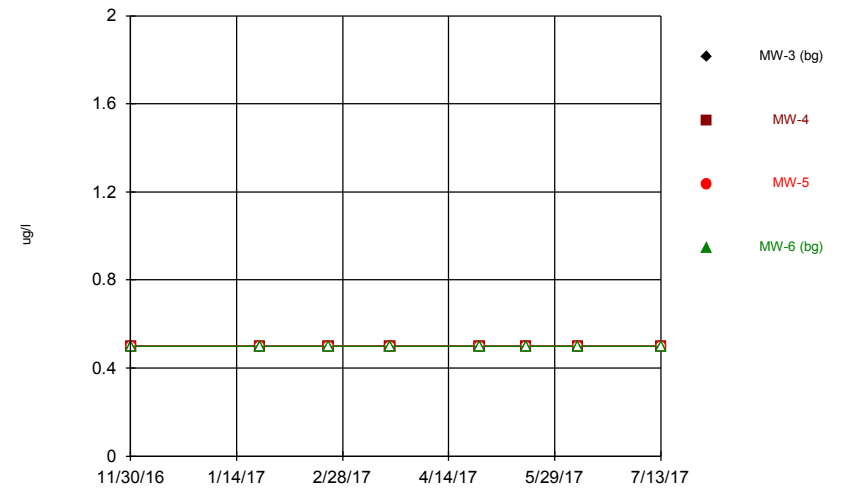
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Boron



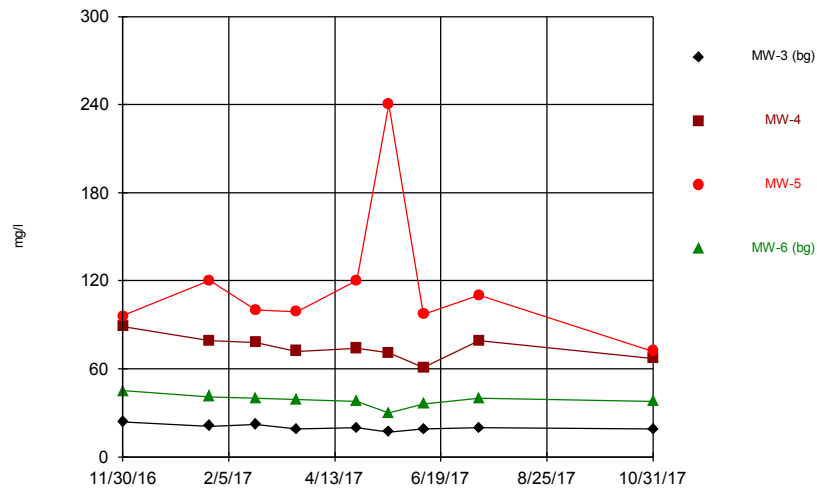
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Cadmium



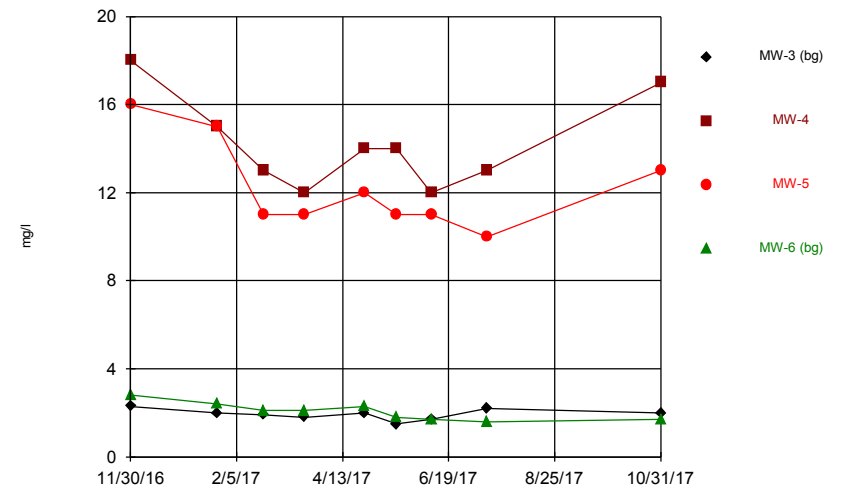
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Calcium



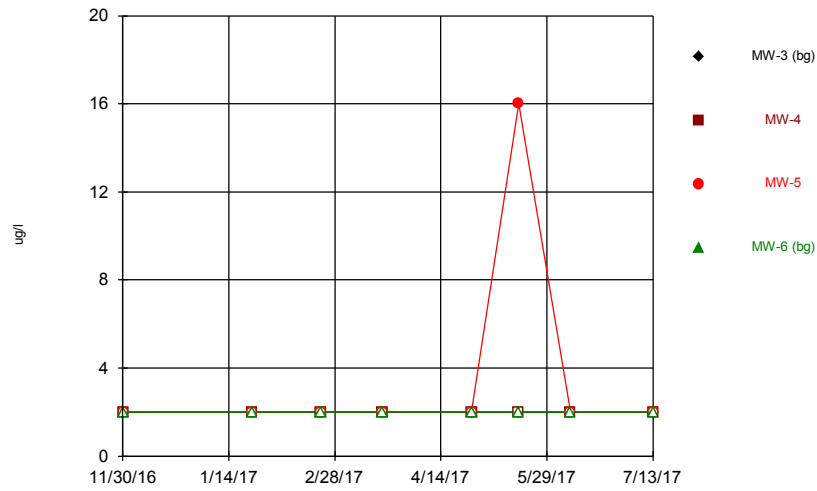
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Chloride



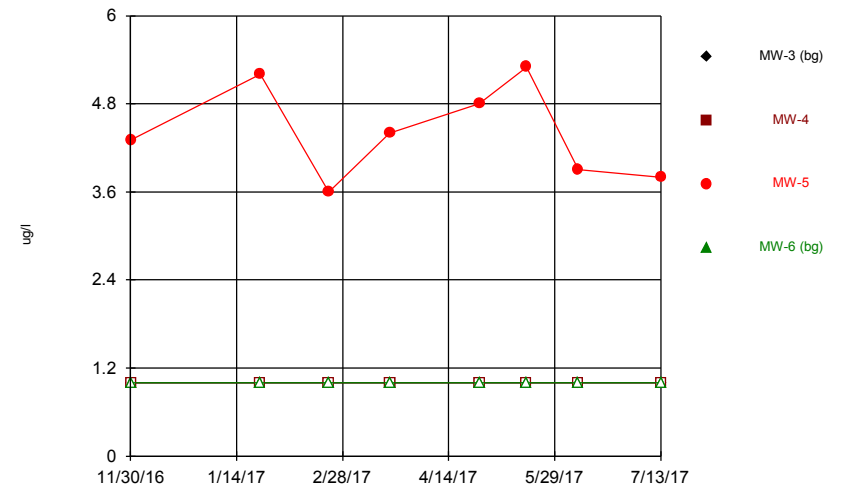
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Chromium



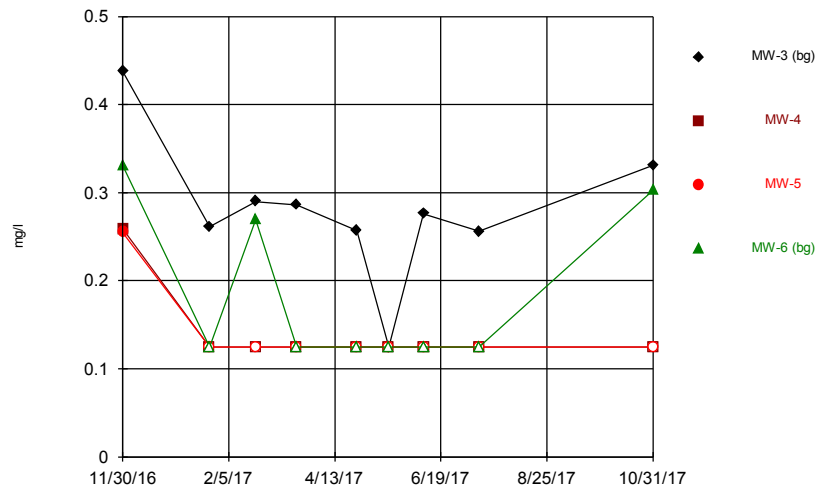
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Cobalt



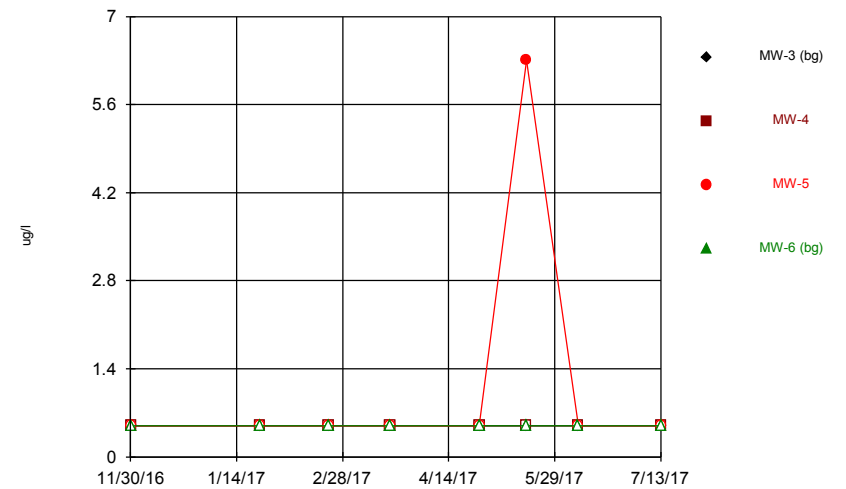
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Fluoride



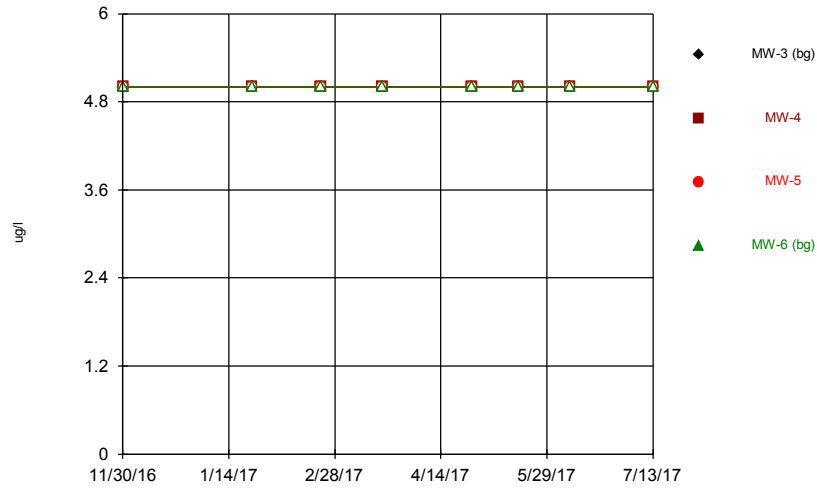
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Lead



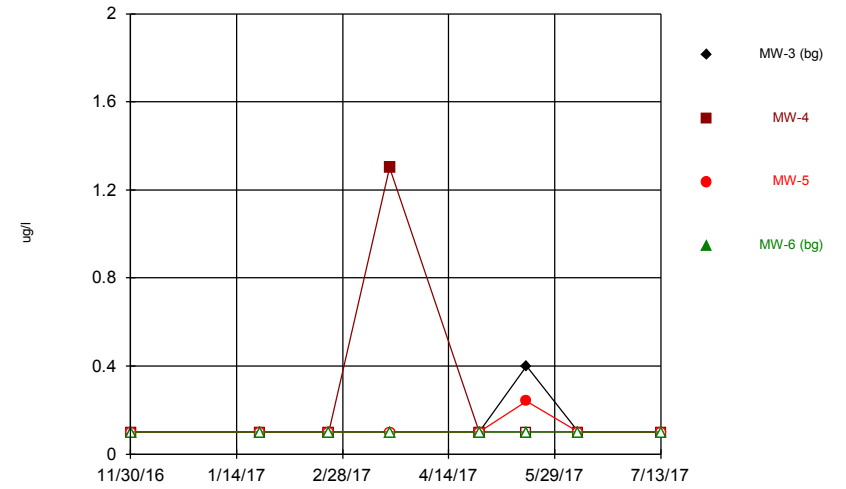
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Lithium



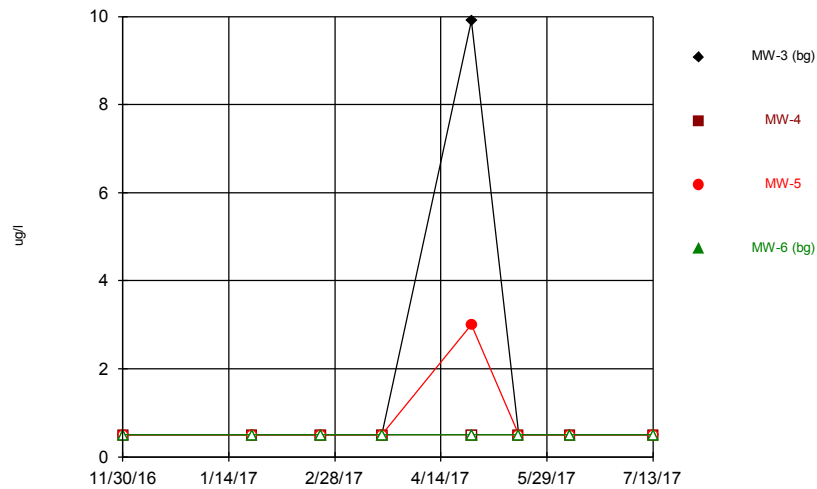
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Mercury



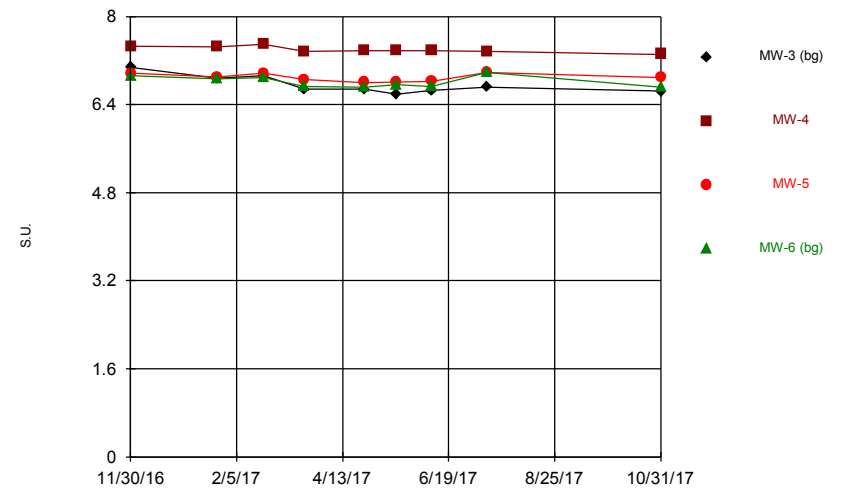
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Molybdenum



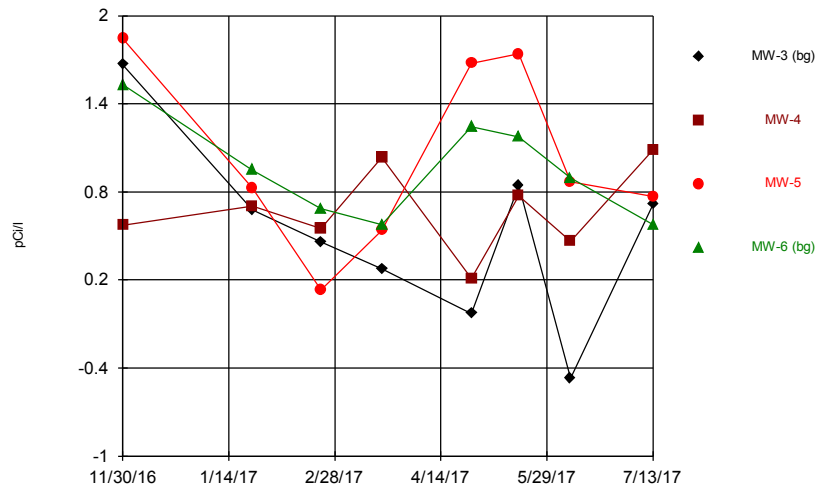
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pH



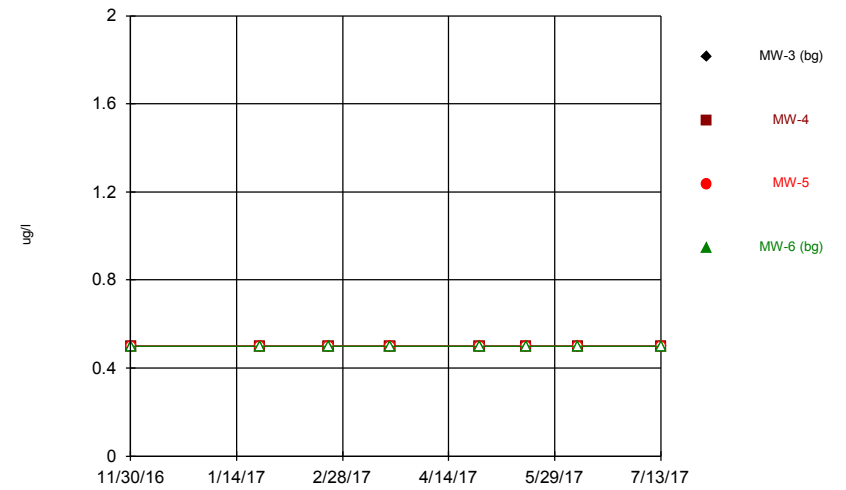
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Radium



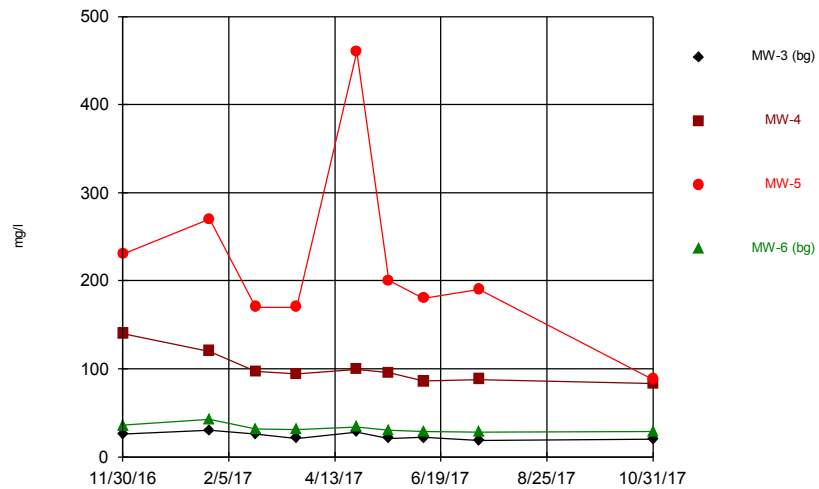
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Selenium



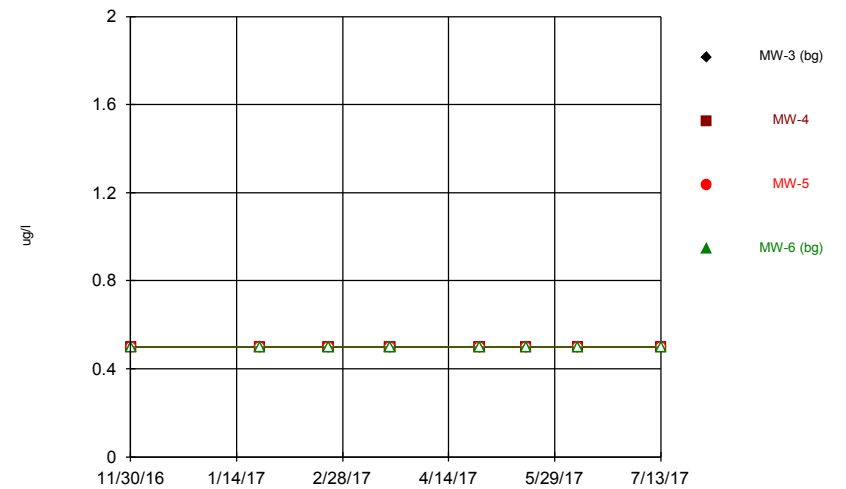
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Sulfate



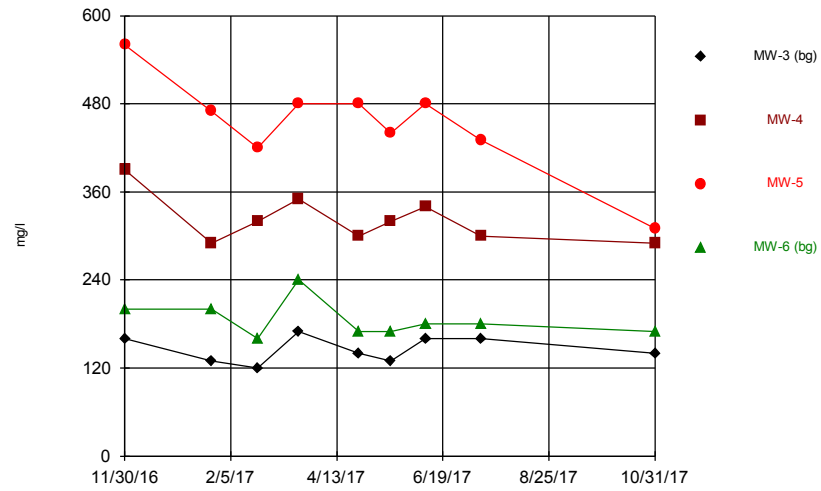
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Thallium



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III  
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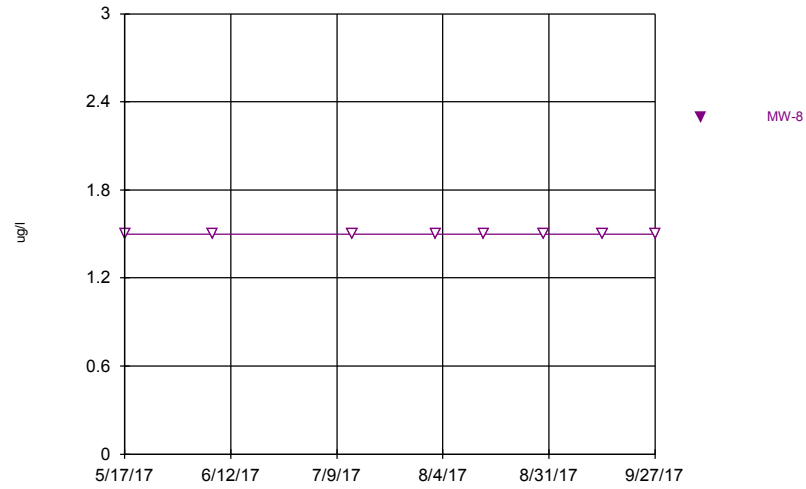
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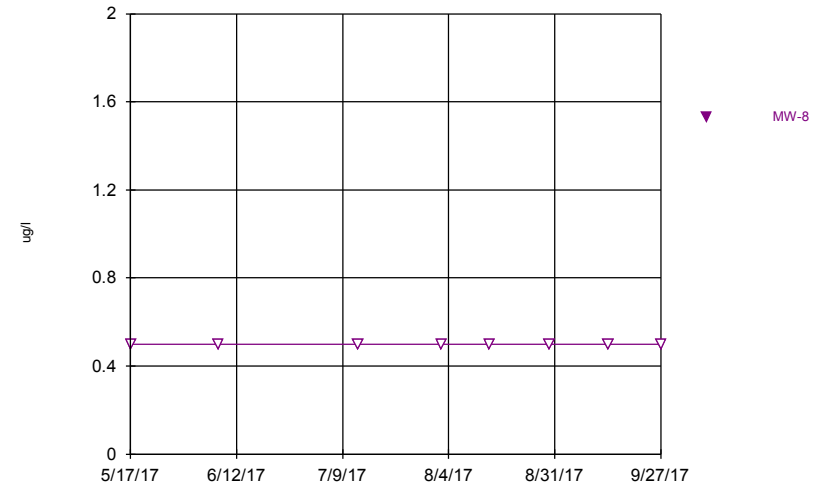


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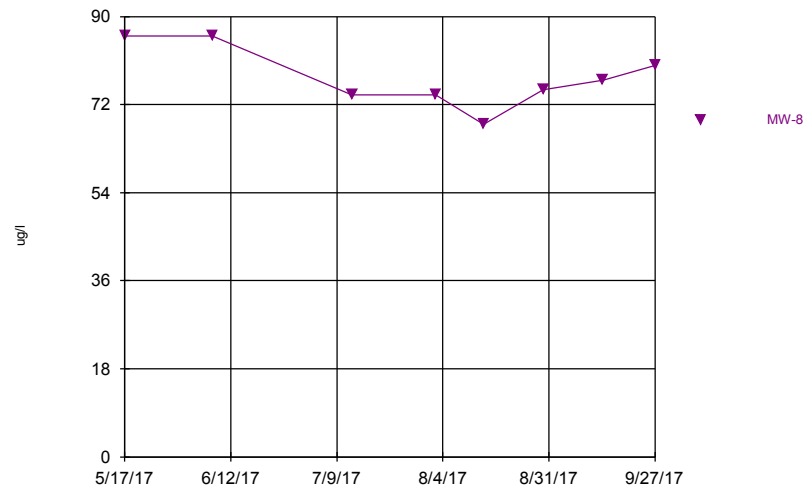
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### Arsenic



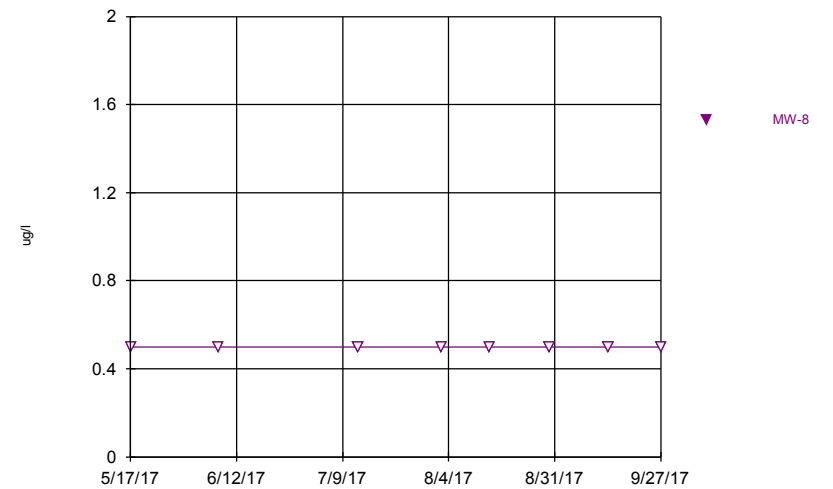
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### Barium



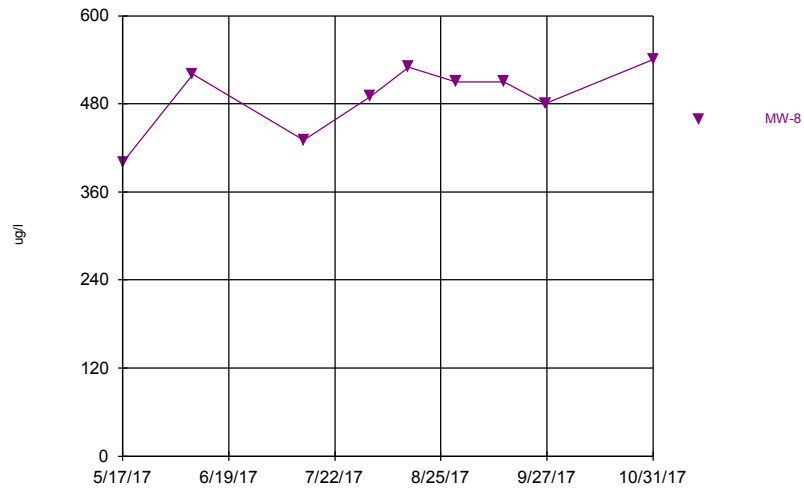
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### Beryllium



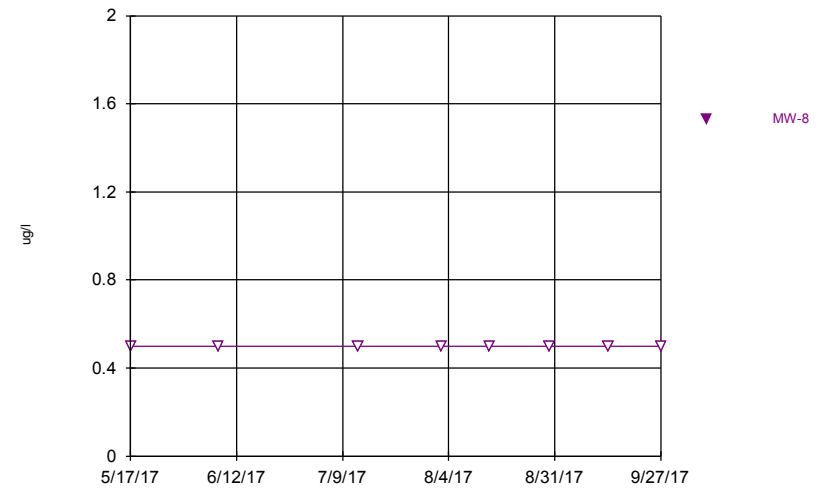
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### Boron



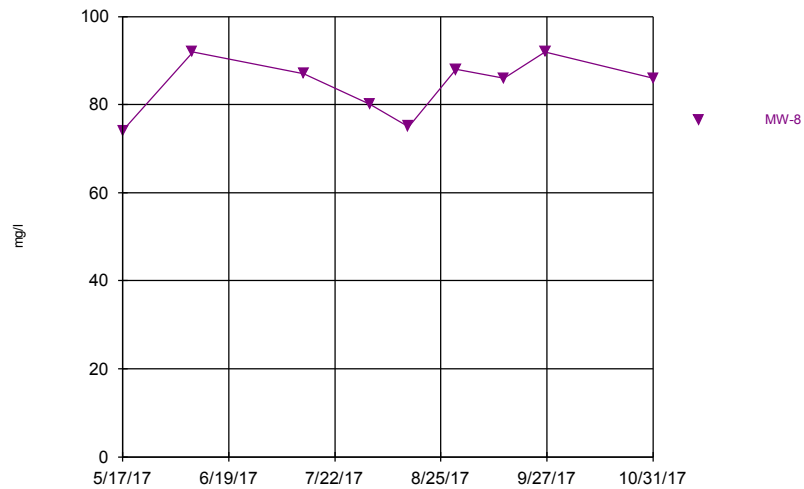
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### Cadmium



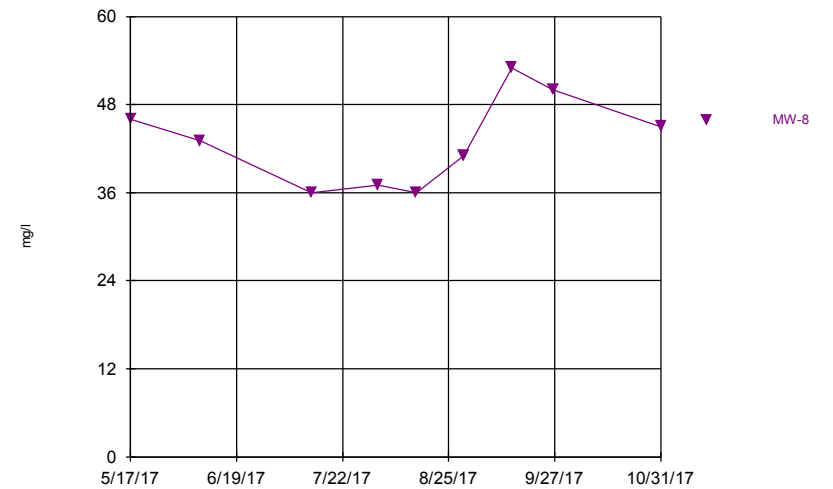
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### Calcium



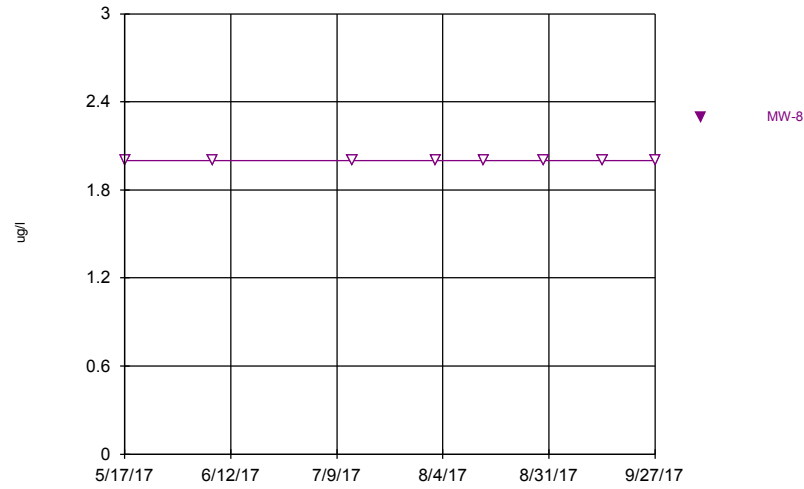
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### Chloride



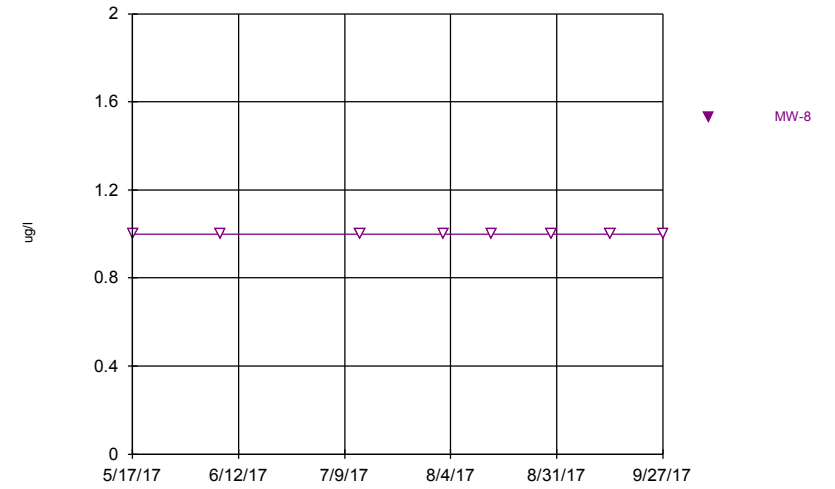
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### Chromium



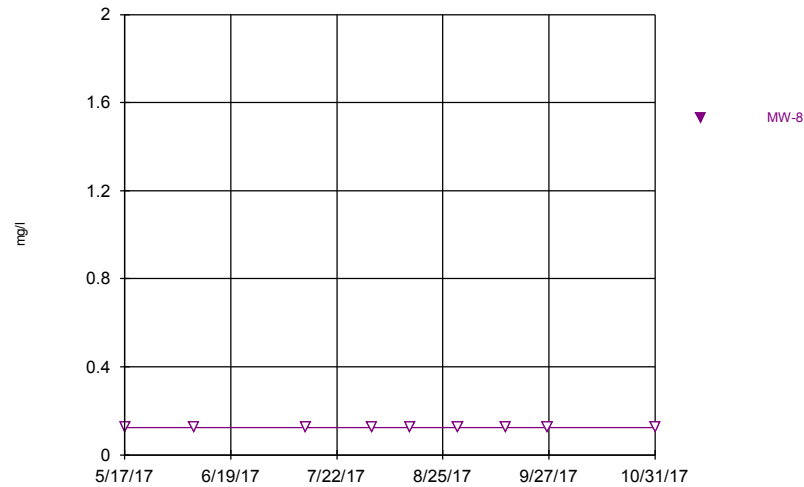
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### Cobalt



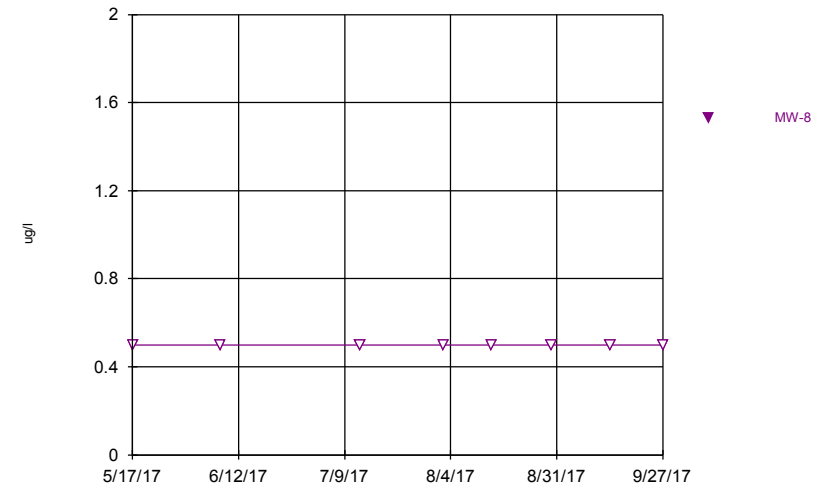
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### Fluoride



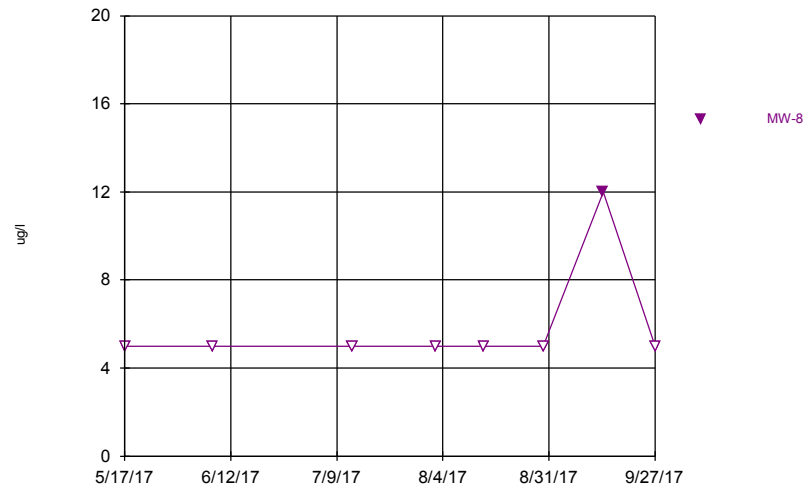
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### Lead



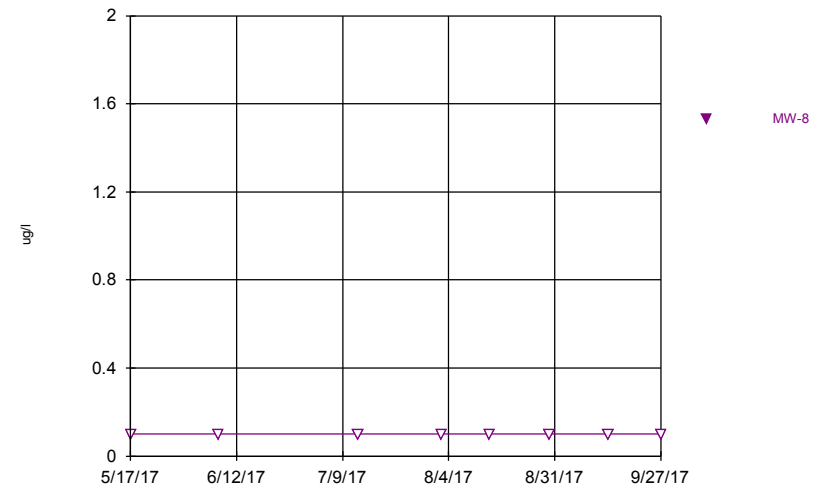
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Lithium



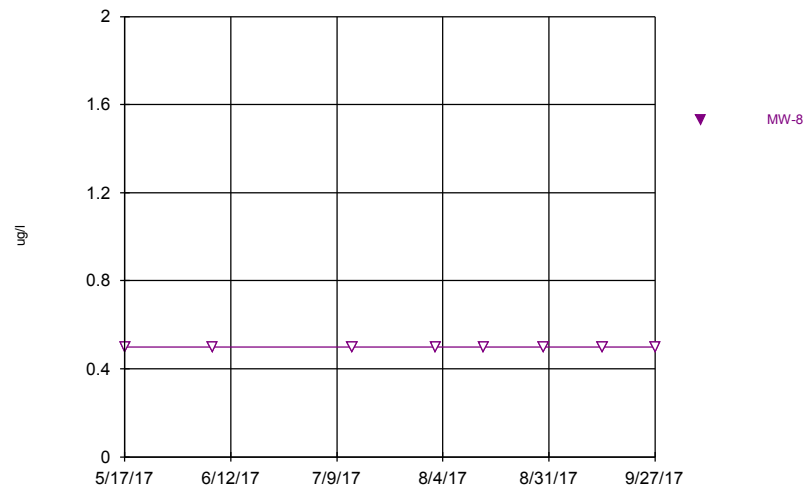
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Mercury



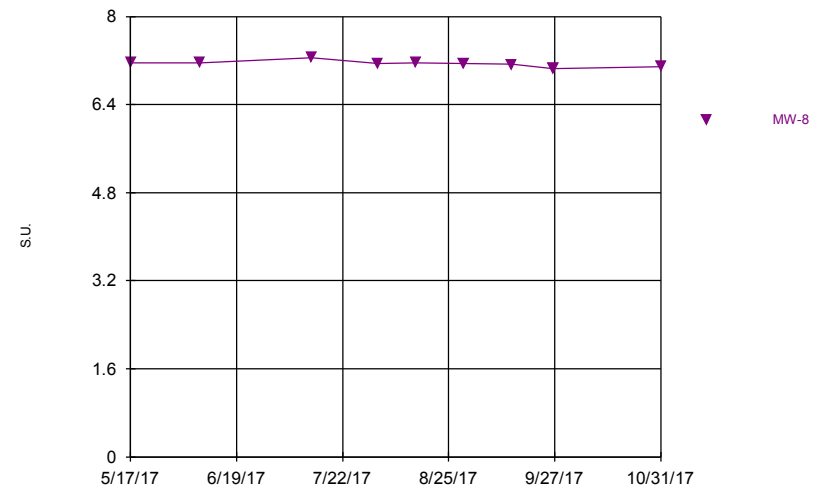
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Molybdenum



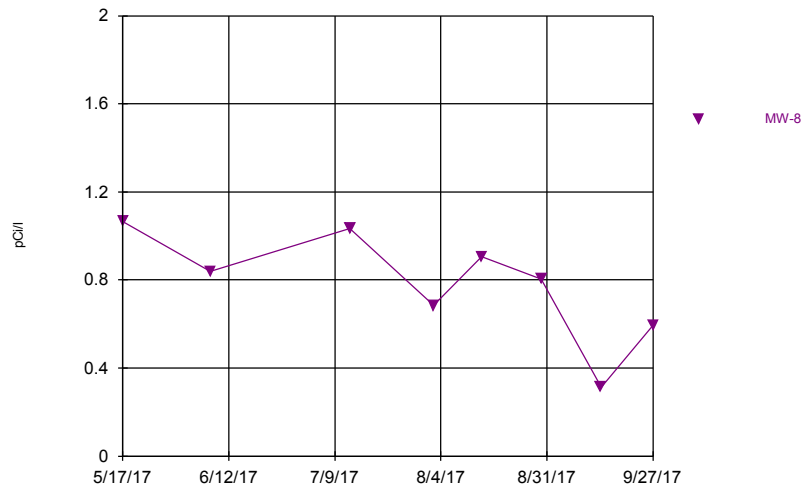
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pH



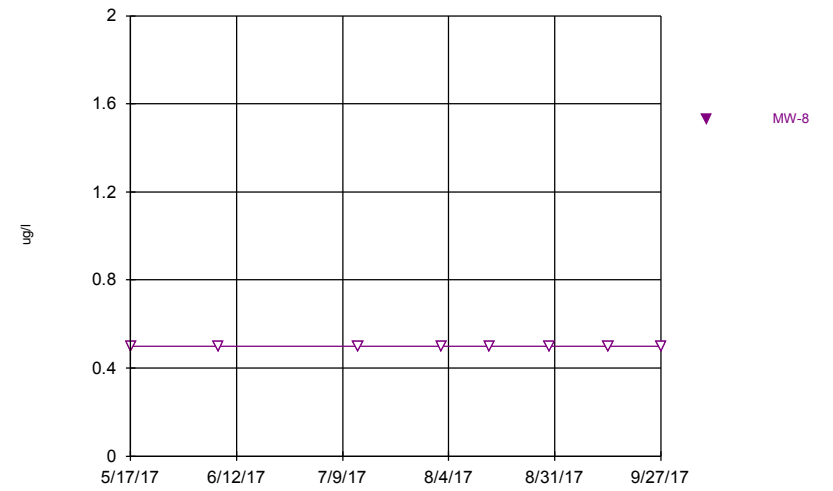
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### Radium



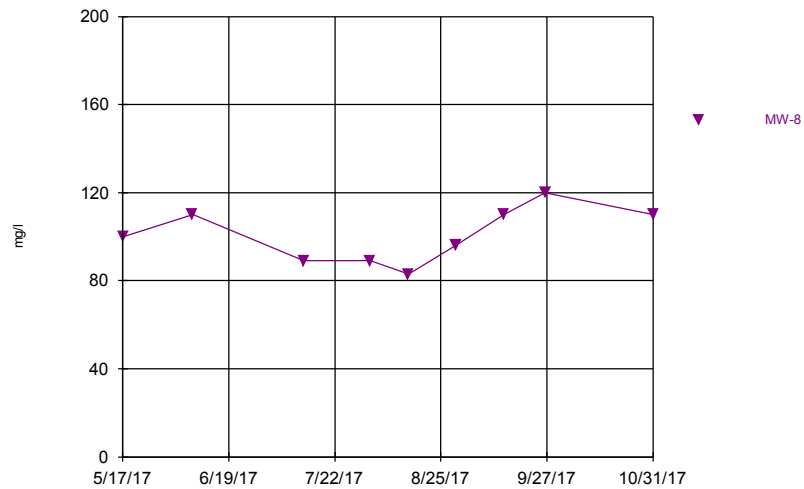
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### Selenium



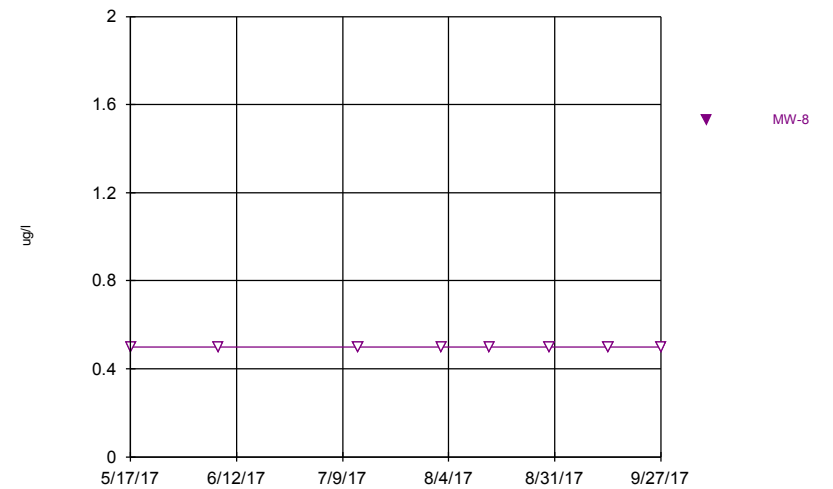
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### Sulfate



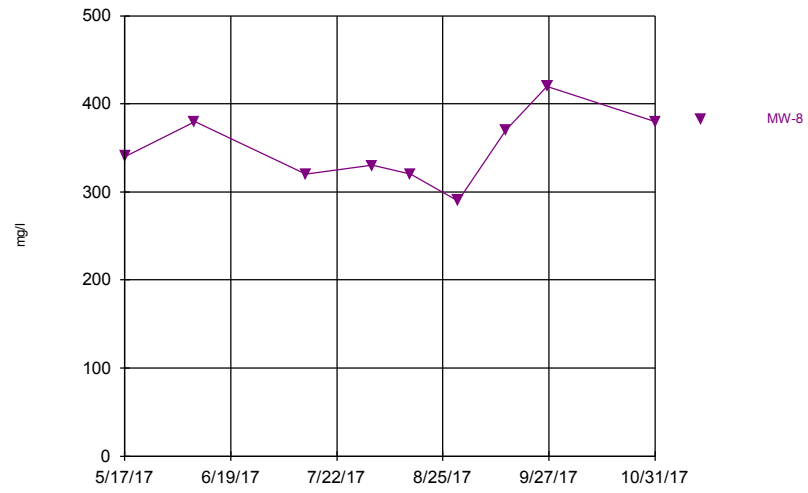
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Thallium



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Total Dissolved Solids



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

# Appendix 7

## Box and Whiskers Plots

# Box & Whiskers Plot MW-3 through MW-6

SBMU-Sikeston Power Station    Client: GREDELL Engineering    Data: SBMU-SPS EDD File 09-28-17    Printed 11/29/2017, 3:18 PM

| <u>Constituent</u> | <u>Well</u> | <u>N</u> | <u>Mean</u> | <u>Median</u> | <u>Lower Q.</u> | <u>Upper Q.</u> | <u>Min.</u> | <u>Max.</u> | <u>%NDs</u> |
|--------------------|-------------|----------|-------------|---------------|-----------------|-----------------|-------------|-------------|-------------|
| Antimony (ug/l)    | MW-3 (bg)   | 8        | 1.5         | 1.5           | 1.5             | 1.5             | 1.5         | 1.5         | 100         |
| Antimony (ug/l)    | MW-4        | 8        | 1.5         | 1.5           | 1.5             | 1.5             | 1.5         | 1.5         | 100         |
| Antimony (ug/l)    | MW-5        | 8        | 1.5         | 1.5           | 1.5             | 1.5             | 1.5         | 1.5         | 100         |
| Antimony (ug/l)    | MW-6 (bg)   | 8        | 1.5         | 1.5           | 1.5             | 1.5             | 1.5         | 1.5         | 100         |
| Arsenic (ug/l)     | MW-3 (bg)   | 8        | 0.775       | 0.5           | 0.5             | 1.1             | 0.5         | 1.5         | 62.5        |
| Arsenic (ug/l)     | MW-4        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Arsenic (ug/l)     | MW-5        | 8        | 0.6625      | 0.5           | 0.5             | 0.5             | 0.5         | 1.8         | 87.5        |
| Arsenic (ug/l)     | MW-6 (bg)   | 8        | 4.988       | 4.95          | 4.45            | 5.75            | 3.2         | 6.4         | 0           |
| Barium (ug/l)      | MW-3 (bg)   | 8        | 110.8       | 110           | 105             | 120             | 96          | 120         | 0           |
| Barium (ug/l)      | MW-4        | 8        | 50.5        | 50.5          | 45.5            | 52.5            | 41          | 66          | 0           |
| Barium (ug/l)      | MW-5        | 8        | 94.88       | 83.5          | 79              | 89              | 76          | 180         | 0           |
| Barium (ug/l)      | MW-6 (bg)   | 8        | 192.5       | 190           | 185             | 205             | 160         | 220         | 0           |
| Beryllium (ug/l)   | MW-3 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Beryllium (ug/l)   | MW-4        | 8        | 0.5625      | 0.5           | 0.5             | 0.5             | 0.5         | 1           | 100         |
| Beryllium (ug/l)   | MW-5        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Beryllium (ug/l)   | MW-6 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Boron (ug/l)       | MW-3 (bg)   | 9        | 24.78       | 20            | 18              | 30              | 12          | 54          | 0           |
| Boron (ug/l)       | MW-4        | 9        | 1264        | 1300          | 1150            | 1400            | 880         | 1500        | 0           |
| Boron (ug/l)       | MW-5        | 9        | 987.8       | 470           | 320             | 485             | 280         | 5700        | 0           |
| Boron (ug/l)       | MW-6 (bg)   | 9        | 37.78       | 36            | 33              | 39.5            | 27          | 59          | 0           |
| Cadmium (ug/l)     | MW-3 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Cadmium (ug/l)     | MW-4        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Cadmium (ug/l)     | MW-5        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Cadmium (ug/l)     | MW-6 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Calcium (mg/l)     | MW-3 (bg)   | 9        | 20.11       | 20            | 19              | 21.5            | 17          | 24          | 0           |
| Calcium (mg/l)     | MW-4        | 9        | 74.44       | 74            | 69              | 79              | 61          | 89          | 0           |
| Calcium (mg/l)     | MW-5        | 9        | 117.1       | 100           | 96.5            | 120             | 72          | 240         | 0           |
| Calcium (mg/l)     | MW-6 (bg)   | 9        | 38.56       | 39            | 37              | 40.5            | 30          | 45          | 0           |
| Chloride (mg/l)    | MW-3 (bg)   | 9        | 1.933       | 2             | 1.75            | 2.1             | 1.5         | 2.3         | 0           |
| Chloride (mg/l)    | MW-4        | 9        | 14.22       | 14            | 12.5            | 16              | 12          | 18          | 0           |
| Chloride (mg/l)    | MW-5        | 9        | 12.22       | 11            | 11              | 14              | 10          | 16          | 0           |
| Chloride (mg/l)    | MW-6 (bg)   | 9        | 2.056       | 2.1           | 1.7             | 2.35            | 1.6         | 2.8         | 0           |
| Chromium (ug/l)    | MW-3 (bg)   | 8        | 2           | 2             | 2               | 2               | 2           | 2           | 100         |
| Chromium (ug/l)    | MW-4        | 8        | 2           | 2             | 2               | 2               | 2           | 2           | 100         |
| Chromium (ug/l)    | MW-5        | 8        | 3.75        | 2             | 2               | 2               | 2           | 16          | 87.5        |
| Chromium (ug/l)    | MW-6 (bg)   | 8        | 2           | 2             | 2               | 2               | 2           | 2           | 100         |
| Cobalt (ug/l)      | MW-3 (bg)   | 8        | 1           | 1             | 1               | 1               | 1           | 1           | 100         |
| Cobalt (ug/l)      | MW-4        | 8        | 1           | 1             | 1               | 1               | 1           | 1           | 100         |
| Cobalt (ug/l)      | MW-5        | 8        | 4.413       | 4.35          | 3.85            | 5               | 3.6         | 5.3         | 0           |
| Cobalt (ug/l)      | MW-6 (bg)   | 8        | 1           | 1             | 1               | 1               | 1           | 1           | 100         |
| Fluoride (mg/l)    | MW-3 (bg)   | 9        | 0.28        | 0.276         | 0.2565          | 0.3105          | 0.125       | 0.438       | 11.11       |
| Fluoride (mg/l)    | MW-4        | 9        | 0.1399      | 0.125         | 0.125           | 0.125           | 0.125       | 0.259       | 88.89       |
| Fluoride (mg/l)    | MW-5        | 9        | 0.1394      | 0.125         | 0.125           | 0.125           | 0.125       | 0.255       | 88.89       |
| Fluoride (mg/l)    | MW-6 (bg)   | 9        | 0.1837      | 0.125         | 0.125           | 0.286           | 0.125       | 0.331       | 66.67       |
| Lead (ug/l)        | MW-3 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Lead (ug/l)        | MW-4        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Lead (ug/l)        | MW-5        | 8        | 1.225       | 0.5           | 0.5             | 0.5             | 0.5         | 6.3         | 87.5        |
| Lead (ug/l)        | MW-6 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Lithium (ug/l)     | MW-3 (bg)   | 8        | 5           | 5             | 5               | 5               | 5           | 5           | 100         |
| Lithium (ug/l)     | MW-4        | 8        | 5           | 5             | 5               | 5               | 5           | 5           | 100         |

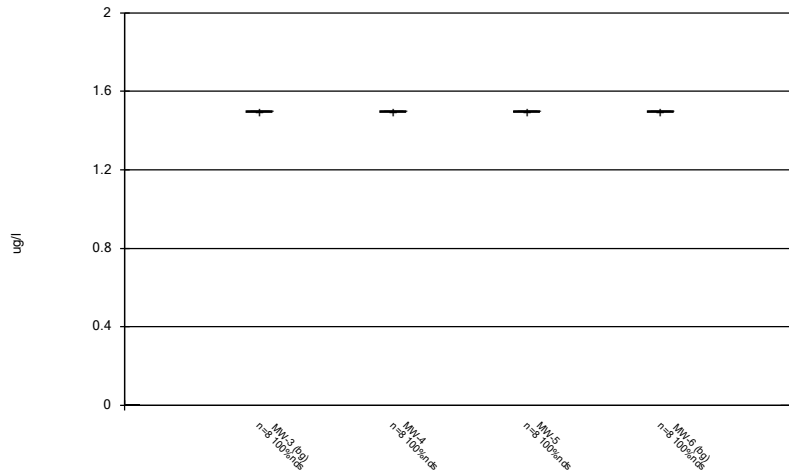


# Box & Whiskers Plot MW-3 through MW-6

SBMU-Sikeston Power Station    Client: GREDELL Engineering    Data: SBMU-SPS EDD File 09-28-17    Printed 11/29/2017, 3:18 PM

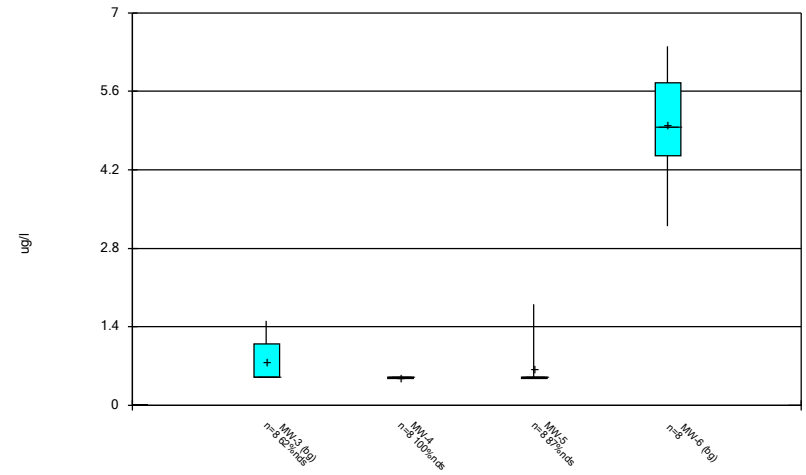
| <u>Constituent</u>            | <u>Well</u> | <u>N</u> | <u>Mean</u> | <u>Median</u> | <u>Lower Q.</u> | <u>Upper Q.</u> | <u>Min.</u> | <u>Max.</u> | <u>%NDs</u> |
|-------------------------------|-------------|----------|-------------|---------------|-----------------|-----------------|-------------|-------------|-------------|
| Lithium (ug/l)                | MW-5        | 8        | 5           | 5             | 5               | 5               | 5           | 5           | 100         |
| Lithium (ug/l)                | MW-6 (bg)   | 8        | 5           | 5             | 5               | 5               | 5           | 5           | 100         |
| Mercury (ug/l)                | MW-3 (bg)   | 8        | 0.1375      | 0.1           | 0.1             | 0.1             | 0.1         | 0.4         | 87.5        |
| Mercury (ug/l)                | MW-4        | 8        | 0.25        | 0.1           | 0.1             | 0.1             | 0.1         | 1.3         | 87.5        |
| Mercury (ug/l)                | MW-5        | 8        | 0.1175      | 0.1           | 0.1             | 0.1             | 0.1         | 0.24        | 87.5        |
| Mercury (ug/l)                | MW-6 (bg)   | 8        | 0.1         | 0.1           | 0.1             | 0.1             | 0.1         | 0.1         | 100         |
| Molybdenum (ug/l)             | MW-3 (bg)   | 8        | 1.675       | 0.5           | 0.5             | 0.5             | 0.5         | 9.9         | 87.5        |
| Molybdenum (ug/l)             | MW-4        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Molybdenum (ug/l)             | MW-5        | 8        | 0.8125      | 0.5           | 0.5             | 0.5             | 0.5         | 3           | 87.5        |
| Molybdenum (ug/l)             | MW-6 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| pH (S.U.)                     | MW-3 (bg)   | 9        | 6.761       | 6.68          | 6.65            | 6.905           | 6.59        | 7.08        | 0           |
| pH (S.U.)                     | MW-4        | 9        | 7.399       | 7.38          | 7.37            | 7.455           | 7.31        | 7.49        | 0           |
| pH (S.U.)                     | MW-5        | 9        | 6.888       | 6.89          | 6.815           | 6.97            | 6.8         | 6.98        | 0           |
| pH (S.U.)                     | MW-6 (bg)   | 9        | 6.813       | 6.76          | 6.725           | 6.905           | 6.72        | 6.98        | 0           |
| Radium (pCi/l)                | MW-3 (bg)   | 8        | 0.5178      | 0.5685        | 0.1235          | 0.7795          | -0.469      | 1.668       | 0           |
| Radium (pCi/l)                | MW-4        | 8        | 0.6744      | 0.6375        | 0.507           | 0.905           | 0.21        | 1.086       | 0           |
| Radium (pCi/l)                | MW-5        | 8        | 1.049       | 0.848         | 0.6525          | 1.708           | 0.13        | 1.844       | 0           |
| Radium (pCi/l)                | MW-6 (bg)   | 8        | 0.9533      | 0.9205        | 0.631           | 1.208           | 0.575       | 1.532       | 0           |
| Selenium (ug/l)               | MW-3 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Selenium (ug/l)               | MW-4        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Selenium (ug/l)               | MW-5        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Selenium (ug/l)               | MW-6 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Sulfate (mg/l)                | MW-3 (bg)   | 9        | 23.67       | 22            | 20.5            | 27              | 19          | 30          | 0           |
| Sulfate (mg/l)                | MW-4        | 9        | 100.3       | 96            | 87              | 109.5           | 83          | 140         | 0           |
| Sulfate (mg/l)                | MW-5        | 9        | 217.6       | 190           | 170             | 250             | 88          | 460         | 0           |
| Sulfate (mg/l)                | MW-6 (bg)   | 9        | 32.44       | 31            | 29              | 35              | 28          | 43          | 0           |
| Thallium (ug/l)               | MW-3 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Thallium (ug/l)               | MW-4        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Thallium (ug/l)               | MW-5        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Thallium (ug/l)               | MW-6 (bg)   | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Total Dissolved Solids (mg/l) | MW-3 (bg)   | 9        | 145.6       | 140           | 130             | 160             | 120         | 170         | 0           |
| Total Dissolved Solids (mg/l) | MW-4        | 9        | 322.2       | 320           | 295             | 345             | 290         | 390         | 0           |
| Total Dissolved Solids (mg/l) | MW-5        | 9        | 452.2       | 470           | 425             | 480             | 310         | 560         | 0           |
| Total Dissolved Solids (mg/l) | MW-6 (bg)   | 9        | 185.6       | 180           | 170             | 200             | 160         | 240         | 0           |

Antimony



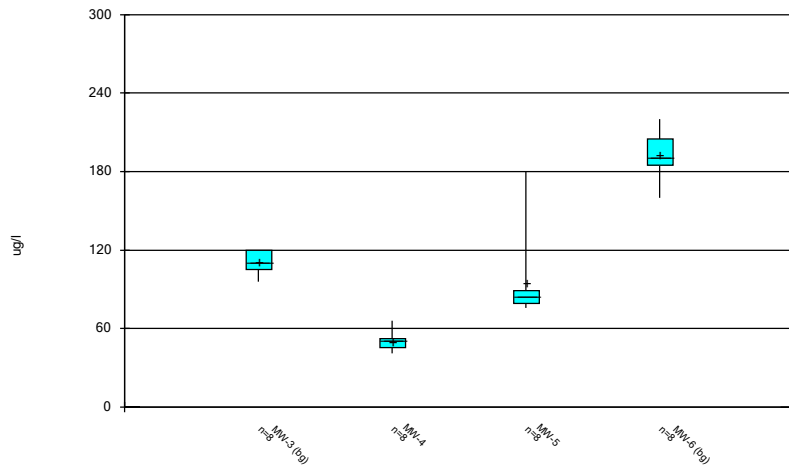
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Arsenic



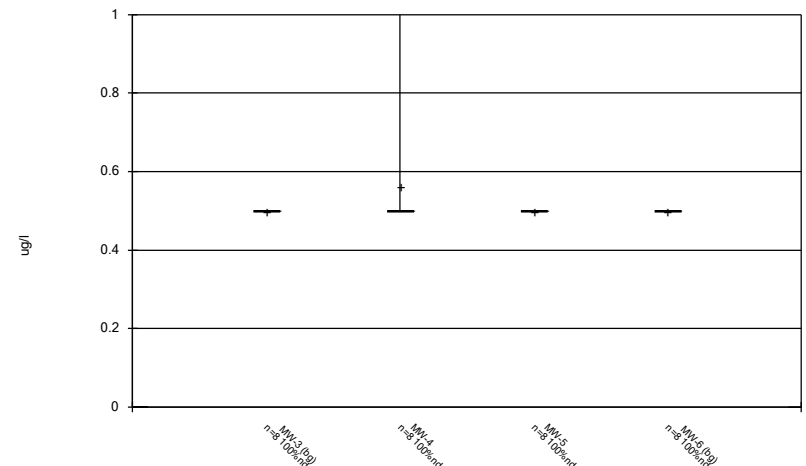
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Barium



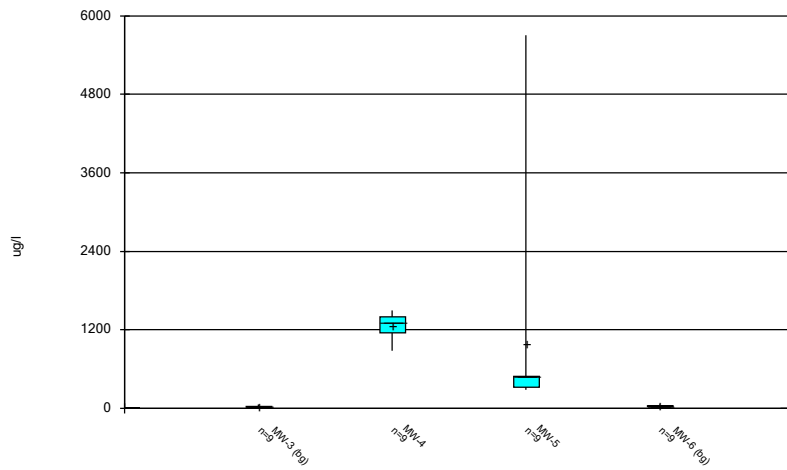
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Beryllium



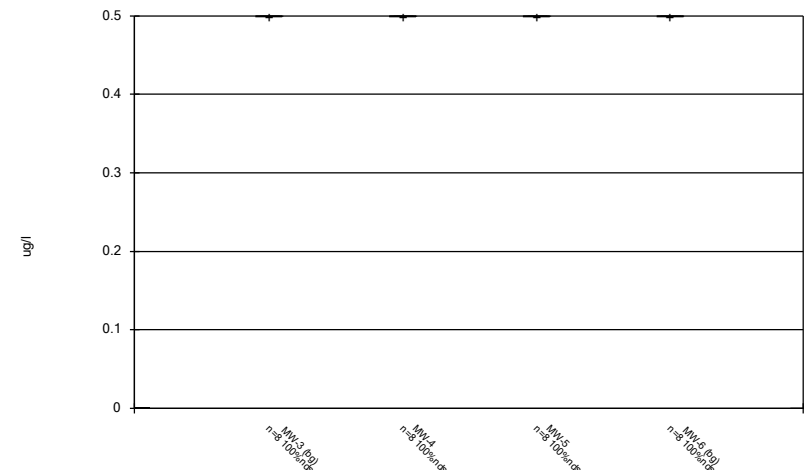
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Boron



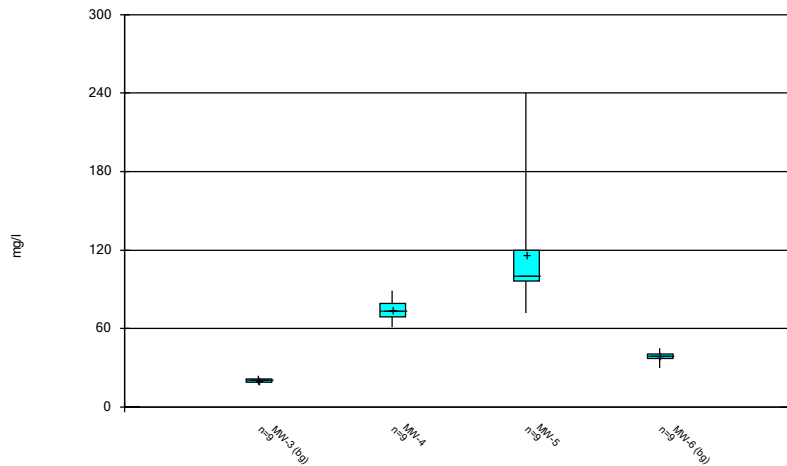
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Cadmium



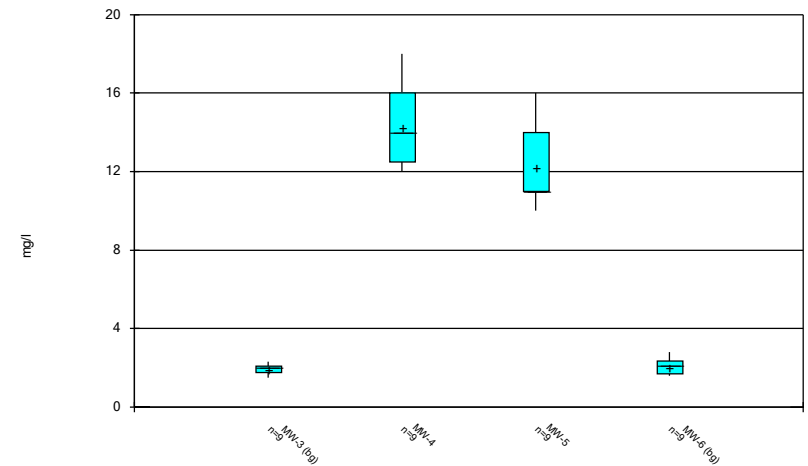
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Calcium



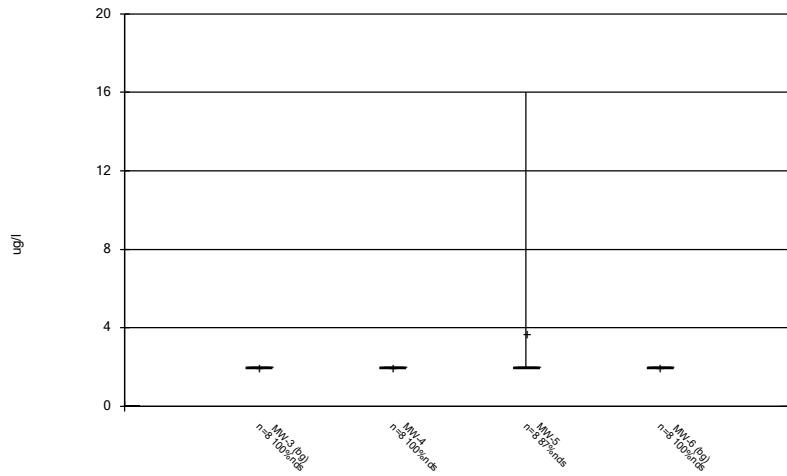
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Chloride



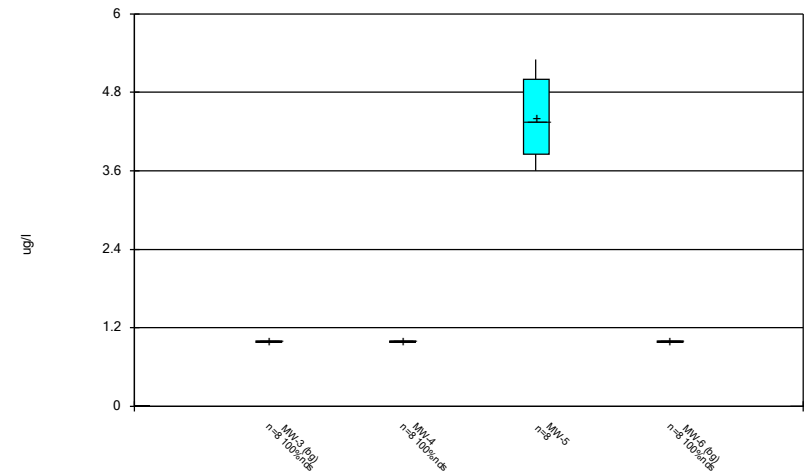
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Chromium



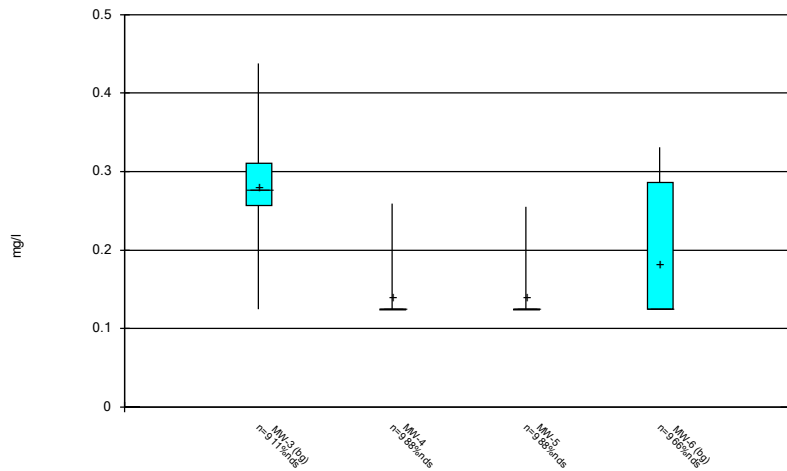
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Cobalt



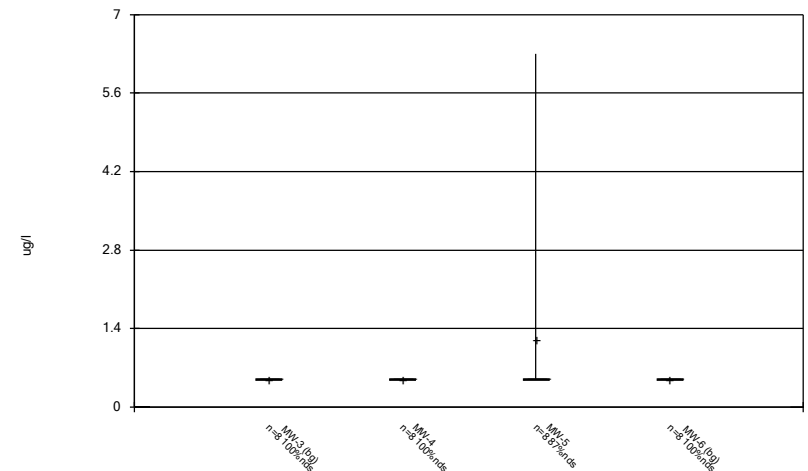
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Fluoride



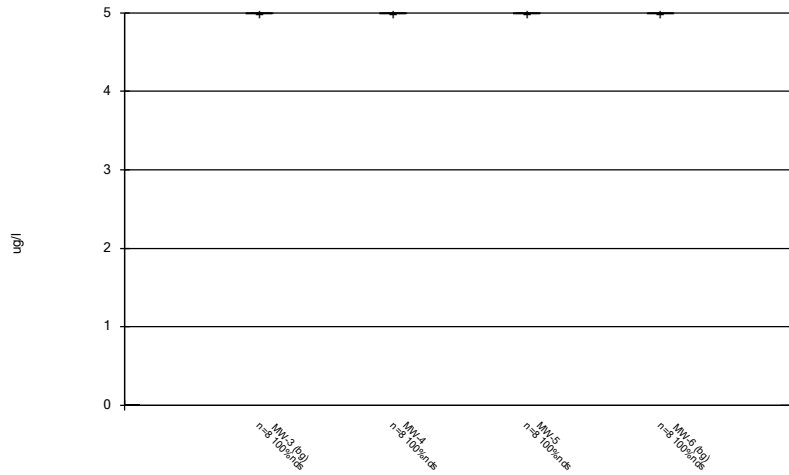
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Lead



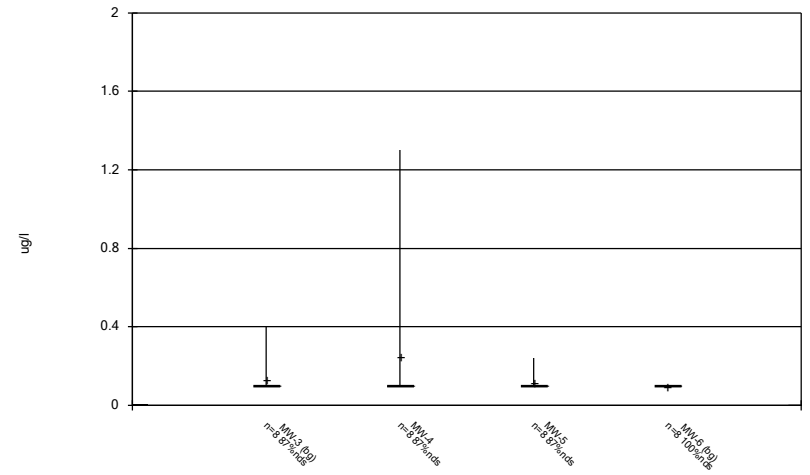
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lithium



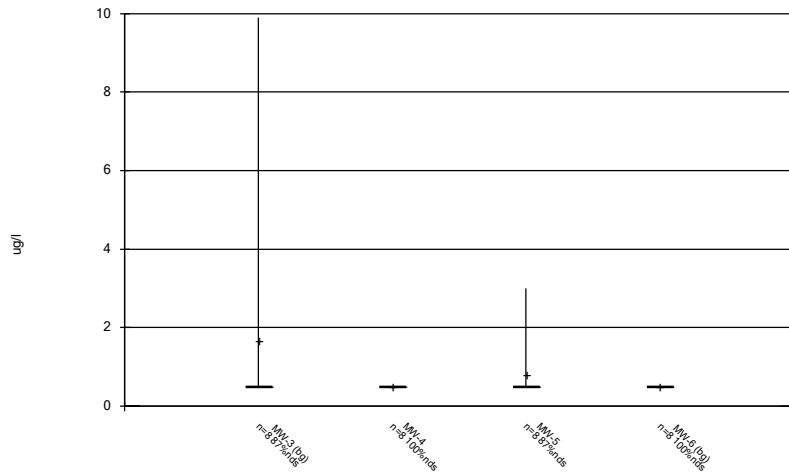
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Mercury



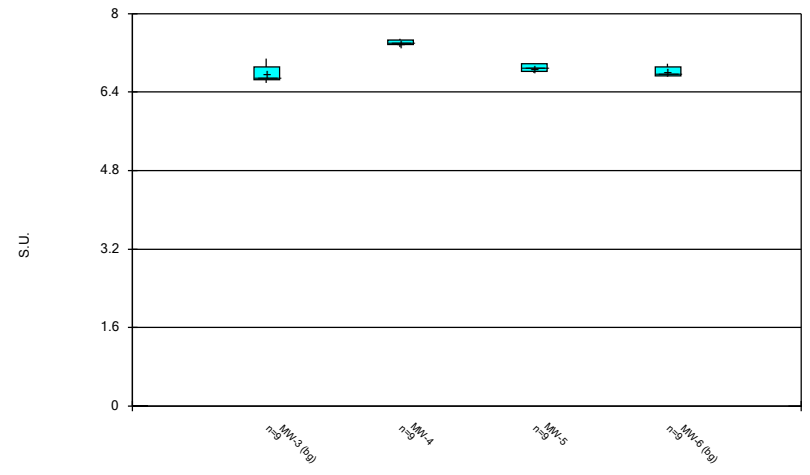
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Molybdenum



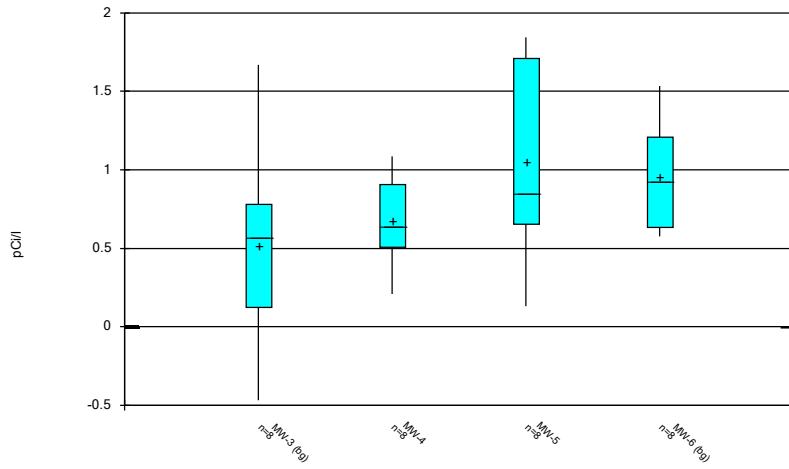
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

pH



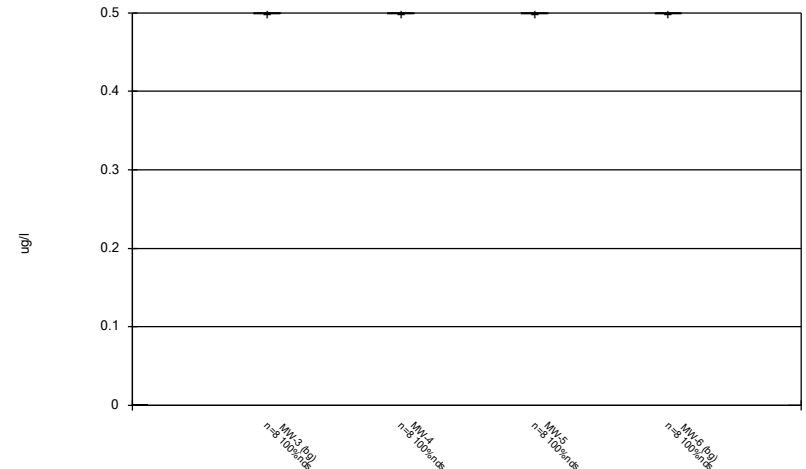
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Radium



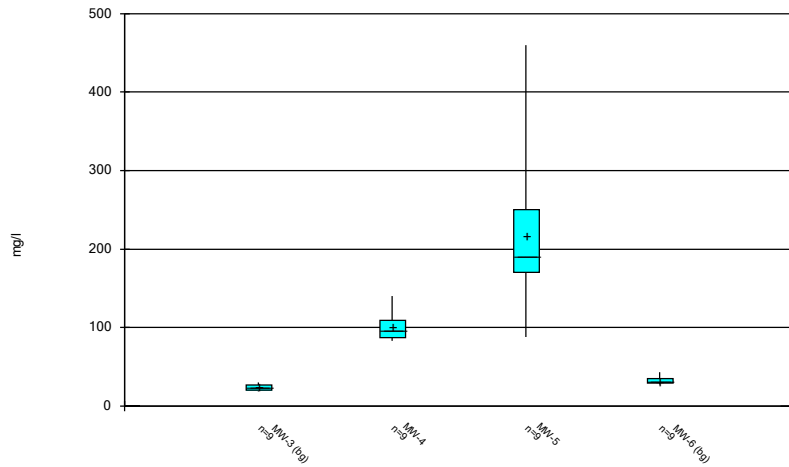
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Selenium



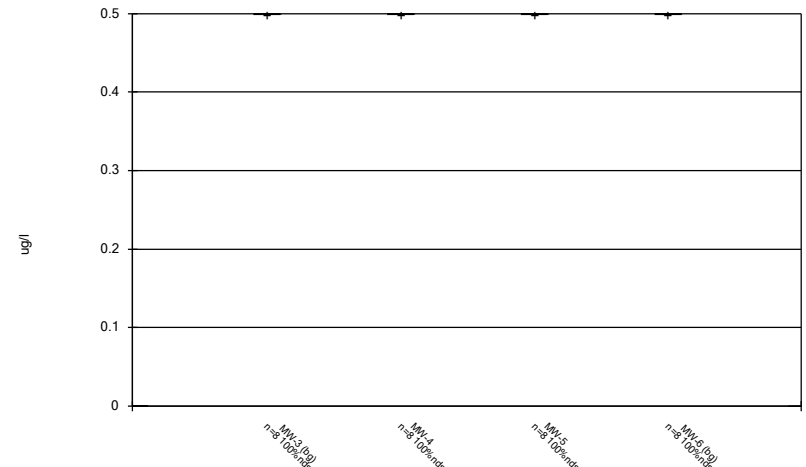
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Sulfate



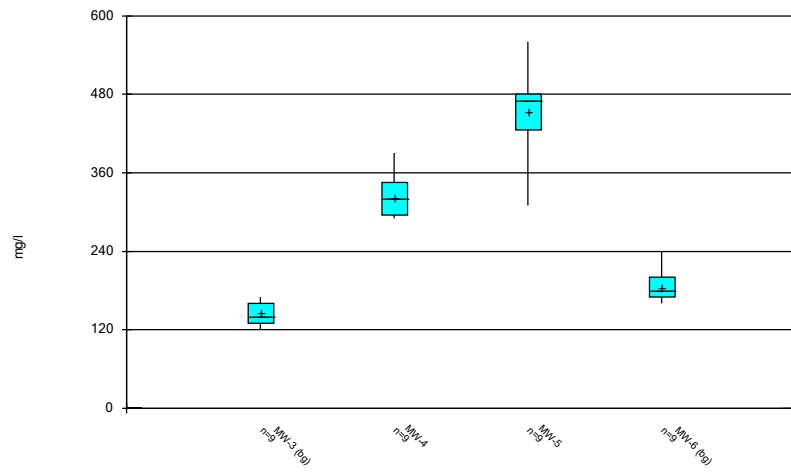
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Thallium



Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Total Dissolved Solids



Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

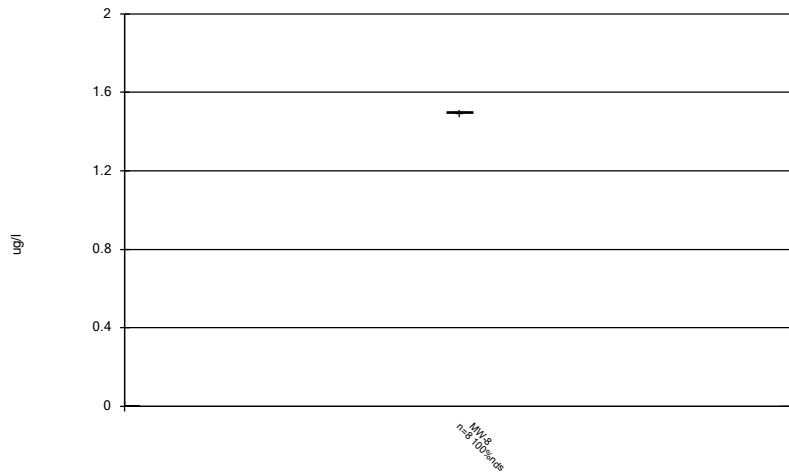
# Box & Whiskers Plot MW-8

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 11/29/2017, 9:37 AM

| <u>Constituent</u>            | <u>Well</u> | <u>N</u> | <u>Mean</u> | <u>Median</u> | <u>Lower Q.</u> | <u>Upper Q.</u> | <u>Min.</u> | <u>Max.</u> | <u>%NDs</u> |
|-------------------------------|-------------|----------|-------------|---------------|-----------------|-----------------|-------------|-------------|-------------|
| Antimony (ug/l)               | MW-8        | 8        | 1.5         | 1.5           | 1.5             | 1.5             | 1.5         | 1.5         | 100         |
| Arsenic (ug/l)                | MW-8        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Barium (ug/l)                 | MW-8        | 8        | 77.5        | 76            | 74              | 83              | 68          | 86          | 0           |
| Beryllium (ug/l)              | MW-8        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Boron (ug/l)                  | MW-8        | 9        | 490         | 510           | 455             | 525             | 400         | 540         | 0           |
| Cadmium (ug/l)                | MW-8        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Calcium (mg/l)                | MW-8        | 9        | 84.44       | 86            | 77.5            | 90              | 74          | 92          | 0           |
| Chloride (mg/l)               | MW-8        | 9        | 43          | 43            | 36.5            | 48              | 36          | 53          | 0           |
| Chromium (ug/l)               | MW-8        | 8        | 2           | 2             | 2               | 2               | 2           | 2           | 100         |
| Cobalt (ug/l)                 | MW-8        | 8        | 1           | 1             | 1               | 1               | 1           | 1           | 100         |
| Fluoride (mg/l)               | MW-8        | 9        | 0.125       | 0.125         | 0.125           | 0.125           | 0.125       | 0.125       | 100         |
| Lead (ug/l)                   | MW-8        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Lithium (ug/l)                | MW-8        | 8        | 5.875       | 5             | 5               | 5               | 5           | 12          | 87.5        |
| Mercury (ug/l)                | MW-8        | 8        | 0.1         | 0.1           | 0.1             | 0.1             | 0.1         | 0.1         | 100         |
| Molybdenum (ug/l)             | MW-8        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| pH (S.U.)                     | MW-8        | 9        | 7.144       | 7.15          | 7.11            | 7.16            | 7.05        | 7.25        | 0           |
| Radium (pCi/l)                | MW-8        | 8        | 0.7804      | 0.822         | 0.639           | 0.97            | 0.314       | 1.067       | 0           |
| Selenium (ug/l)               | MW-8        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Sulfate (mg/l)                | MW-8        | 9        | 100.8       | 100           | 89              | 110             | 83          | 120         | 0           |
| Thallium (ug/l)               | MW-8        | 8        | 0.5         | 0.5           | 0.5             | 0.5             | 0.5         | 0.5         | 100         |
| Total Dissolved Solids (mg/l) | MW-8        | 9        | 350         | 340           | 320             | 380             | 290         | 420         | 0           |

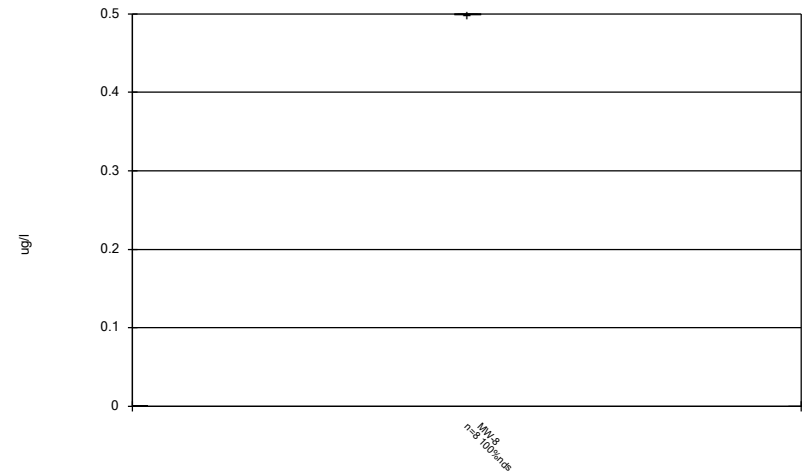


### Antimony



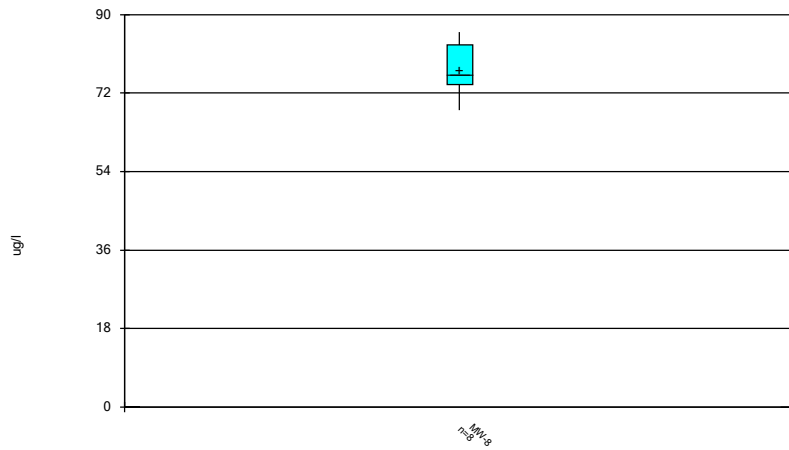
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Arsenic



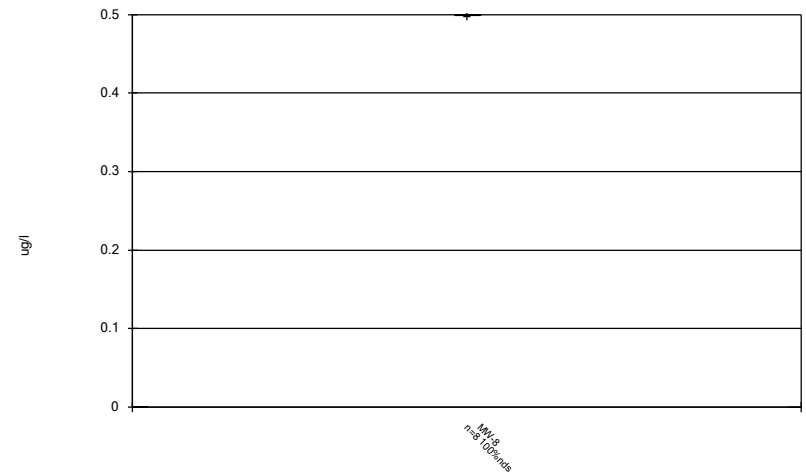
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Barium



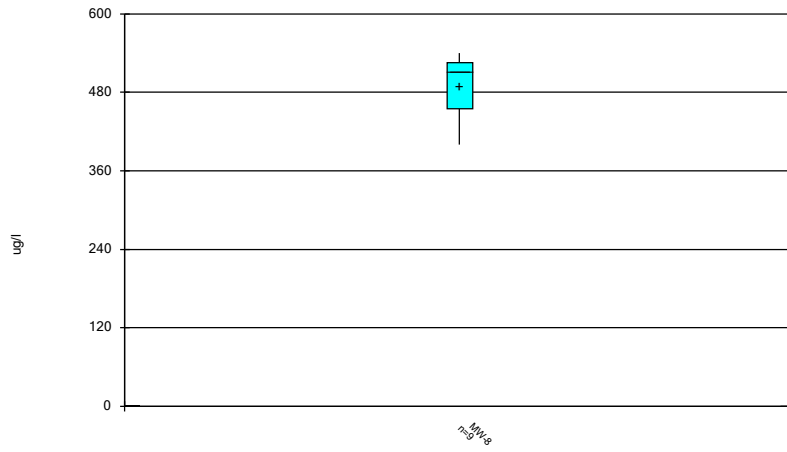
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Beryllium



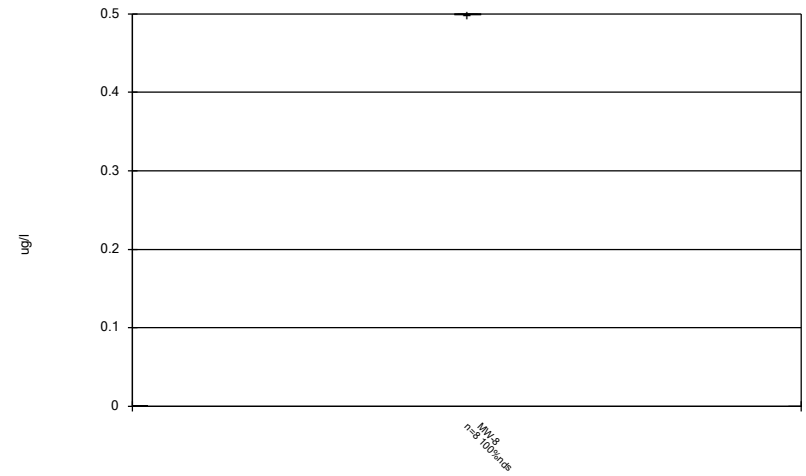
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Boron



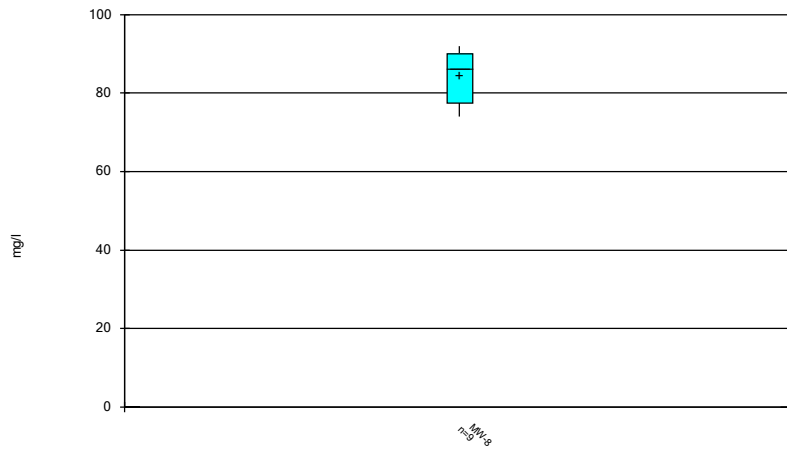
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### Cadmium



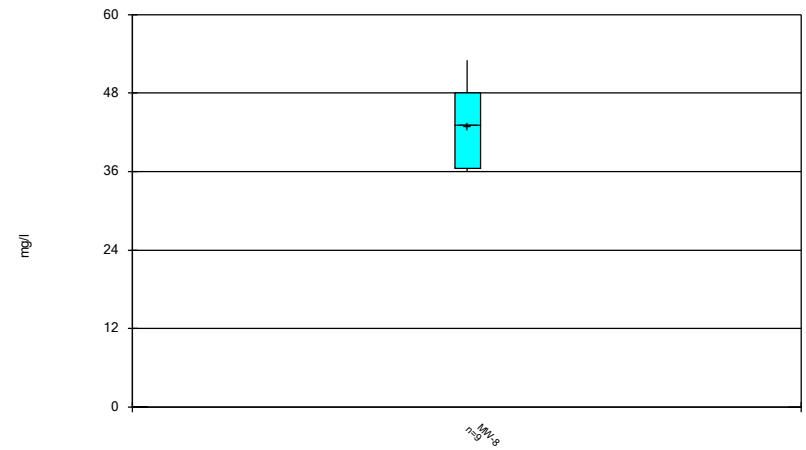
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Calcium



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Chloride



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Chromium



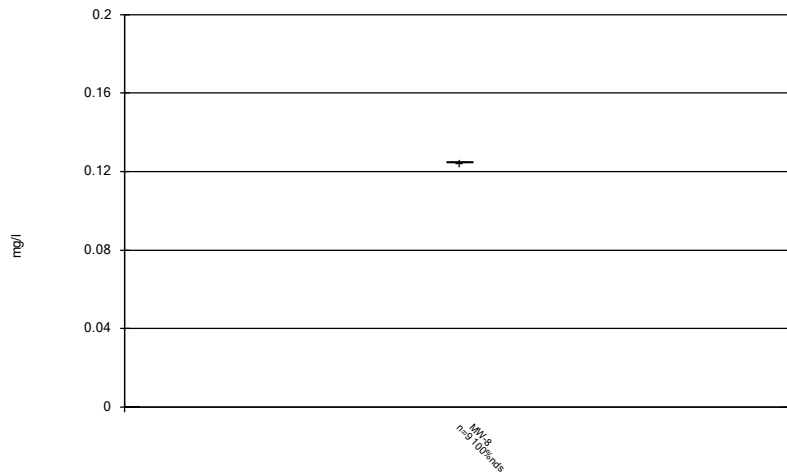
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Cobalt



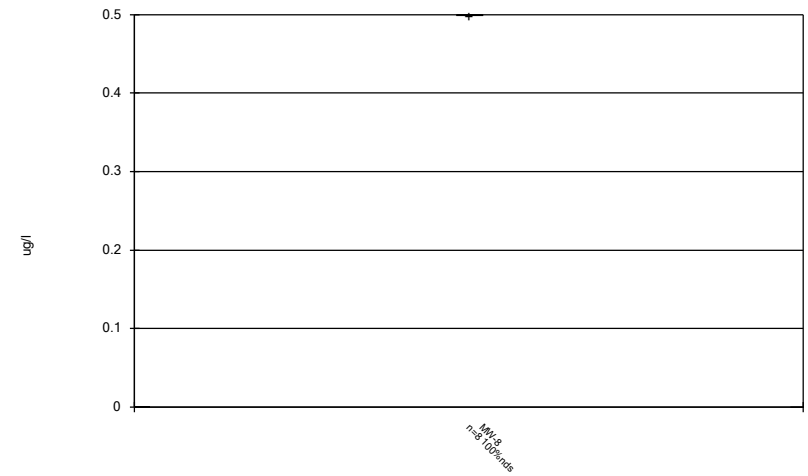
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Fluoride



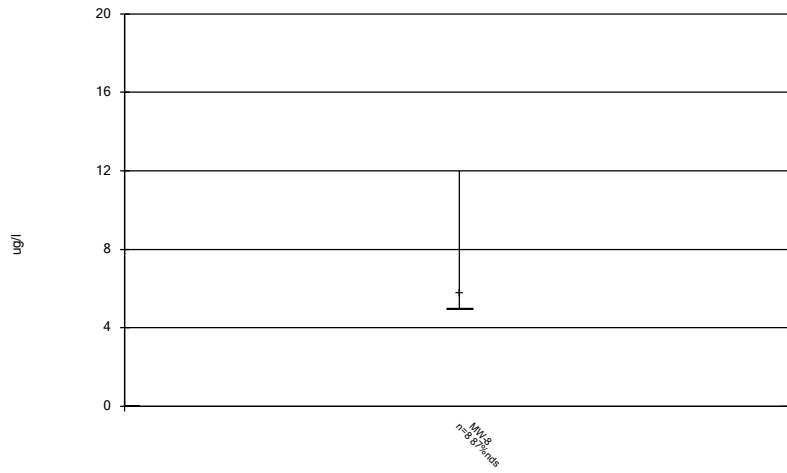
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Lead



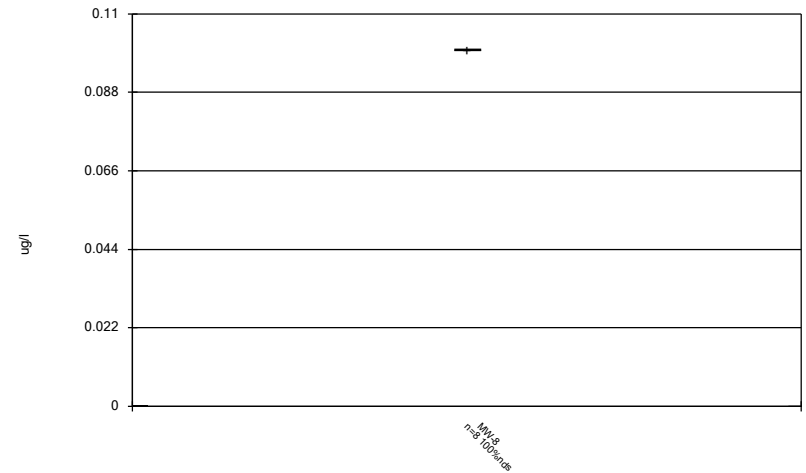
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Lithium



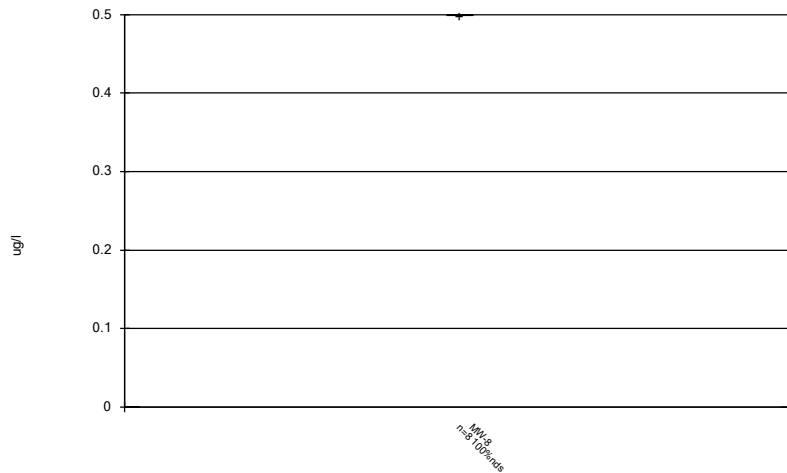
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Mercury



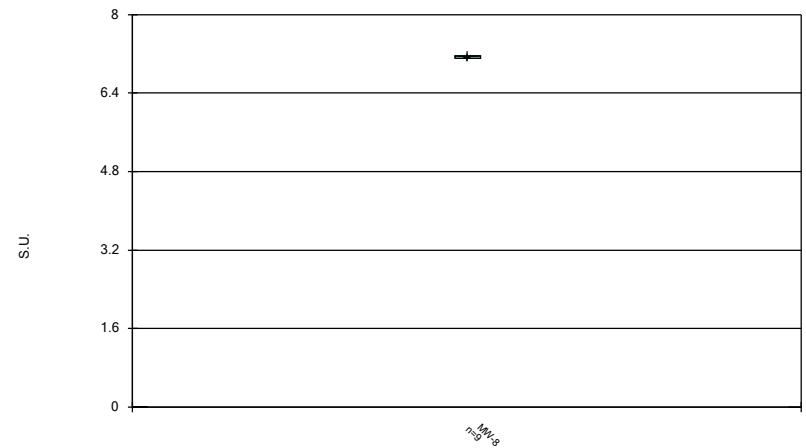
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Molybdenum



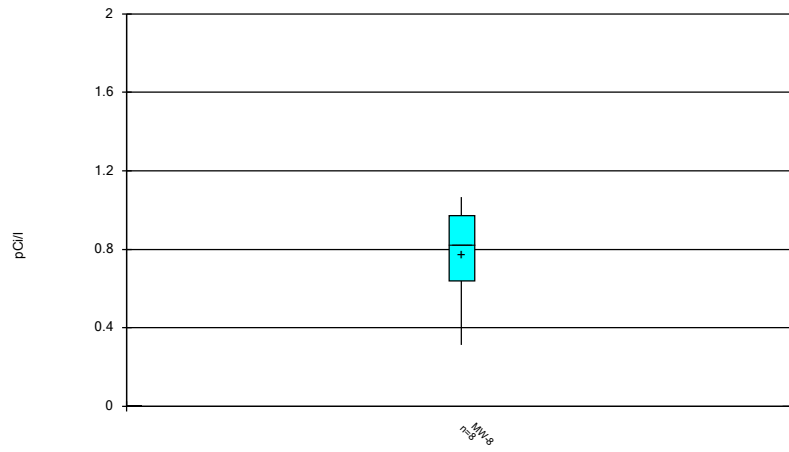
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### pH



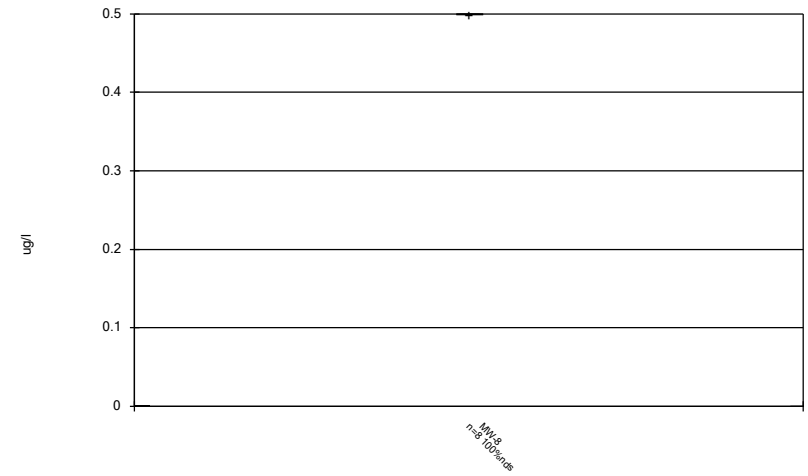
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Radium



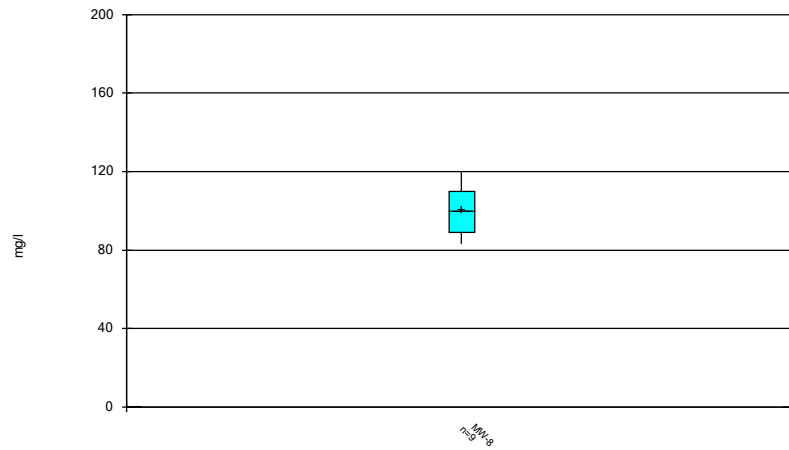
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Selenium



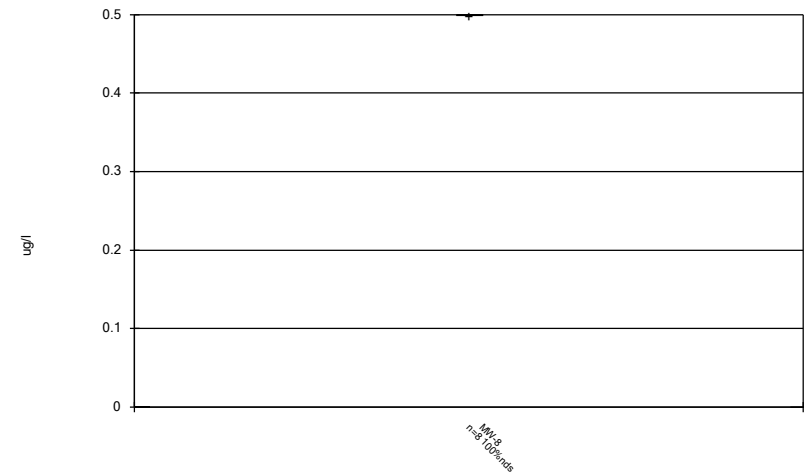
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Sulfate



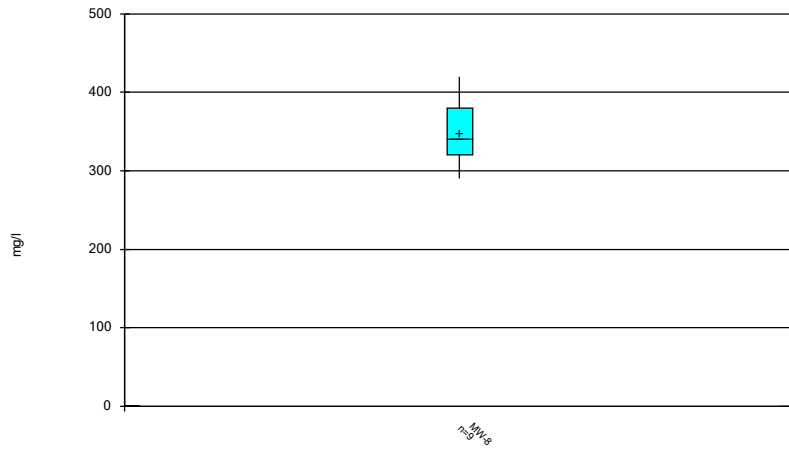
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Thallium



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

### Total Dissolved Solids



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

# **Appendix 8**

## Prediction Limit Charts

# Prediction Limit

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 12/21/2020, 8:18 AM

| <u>Constituent</u>                   | <u>Well</u> | <u>Upper Lim.</u> | <u>Lower Lim.</u> | <u>Date</u>      | <u>Observ.</u> | <u>Sig.</u> | <u>Bg N</u> | <u>%NDs</u> | <u>Transform</u> | <u>Alpha</u>    | <u>Method</u>             |
|--------------------------------------|-------------|-------------------|-------------------|------------------|----------------|-------------|-------------|-------------|------------------|-----------------|---------------------------|
| <b>Total Dissolved Solids (mg/l)</b> | <b>MW-8</b> | <b>448</b>        | n/a               | <b>3/30/2020</b> | <b>480</b>     | <b>Yes</b>  | <b>8</b>    | <b>0</b>    | <b>No</b>        | <b>0.002505</b> | <b>Param Intra 1 of 2</b> |



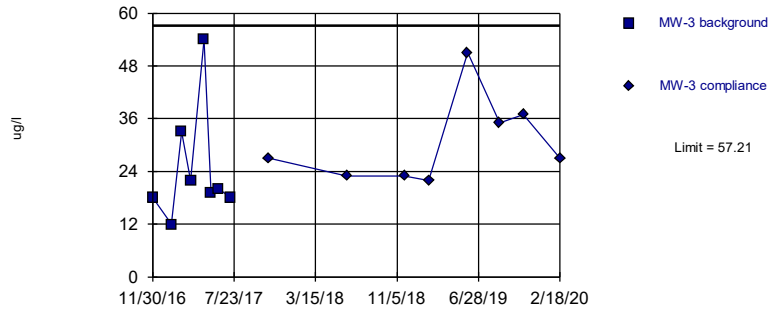
# Prediction Limit

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 12/21/2020, 8:18 AM

| <u>Constituent</u>                   | <u>Well</u> | <u>Upper Lim.</u> | <u>Lower Lim.</u> | <u>Date</u>      | <u>Observ.</u> | <u>Sig.</u> | <u>Bg N</u> | <u>%NDs</u> | <u>Transform</u> | <u>Alpha</u>    | <u>Method</u>             |
|--------------------------------------|-------------|-------------------|-------------------|------------------|----------------|-------------|-------------|-------------|------------------|-----------------|---------------------------|
| Boron (ug/l)                         | MW-3        | 57.21             | n/a               | 2/18/2020        | 27             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Boron (ug/l)                         | MW-4        | 1734              | n/a               | 2/18/2020        | 930            | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Boron (ug/l)                         | MW-5        | 5700              | n/a               | 2/18/2020        | 400            | No          | 8           | 0           | n/a              | 0.02144         | NP Intra (normality) ...  |
| Boron (ug/l)                         | MW-6        | 60.62             | n/a               | 2/18/2020        | 40             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Boron (ug/l)                         | MW-8        | 596.7             | n/a               | 2/18/2020        | 480            | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Calcium (mg/l)                       | MW-3        | 25.46             | n/a               | 2/18/2020        | 16             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Calcium (mg/l)                       | MW-4        | 95.25             | n/a               | 2/18/2020        | 67             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Calcium (mg/l)                       | MW-5        | 240               | n/a               | 2/18/2020        | 110            | No          | 8           | 0           | n/a              | 0.02144         | NP Intra (normality) ...  |
| Calcium (mg/l)                       | MW-6        | 49.29             | n/a               | 2/18/2020        | 41             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Calcium (mg/l)                       | MW-8        | 101.7             | n/a               | 2/18/2020        | 93             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Chloride (mg/l)                      | MW-3        | 2.565             | n/a               | 2/18/2020        | 1.3            | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Chloride (mg/l)                      | MW-4        | 18.69             | n/a               | 2/18/2020        | 11             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Chloride (mg/l)                      | MW-5        | 17.45             | n/a               | 2/18/2020        | 15             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Chloride (mg/l)                      | MW-6        | 3.083             | n/a               | 2/18/2020        | 1.7            | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Chloride (mg/l)                      | MW-8        | 58.72             | n/a               | 2/18/2020        | 53             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Fluoride (mg/l)                      | MW-3        | 0.4819            | n/a               | 2/18/2020        | 0.125ND        | No          | 8           | 12.5        | No               | 0.002505        | Param Intra 1 of 2        |
| Fluoride (mg/l)                      | MW-4        | 0.259             | n/a               | 2/18/2020        | 0.125ND        | No          | 8           | 87.5        | n/a              | 0.02144         | NP Intra (NDs) 1 of 2     |
| Fluoride (mg/l)                      | MW-5        | 0.255             | n/a               | 2/18/2020        | 0.125ND        | No          | 8           | 87.5        | n/a              | 0.02144         | NP Intra (NDs) 1 of 2     |
| Fluoride (mg/l)                      | MW-6        | 0.331             | n/a               | 2/18/2020        | 0.125ND        | No          | 8           | 75          | n/a              | 0.02144         | NP Intra (NDs) 1 of 2     |
| Fluoride (mg/l)                      | MW-8        | 0.25              | n/a               | 2/18/2020        | 0.125ND        | No          | 8           | 100         | n/a              | 0.02144         | NP Intra (NDs) 1 of 2     |
| pH (S.U.)                            | MW-3        | 7.189             | 6.363             | 2/18/2020        | 6.4            | No          | 8           | 0           | No               | 0.001253        | Param Intra 1 of 2        |
| pH (S.U.)                            | MW-4        | 7.529             | 7.291             | 2/18/2020        | 7.4            | No          | 8           | 0           | No               | 0.001253        | Param Intra 1 of 2        |
| pH (S.U.)                            | MW-5        | 7.078             | 6.697             | 2/18/2020        | 6.8            | No          | 8           | 0           | No               | 0.001253        | Param Intra 1 of 2        |
| pH (S.U.)                            | MW-6        | 7.075             | 6.575             | 2/18/2020        | 6.7            | No          | 8           | 0           | No               | 0.001253        | Param Intra 1 of 2        |
| pH (S.U.)                            | MW-8        | 7.285             | 7.018             | 2/18/2020        | 7.2            | No          | 8           | 0           | No               | 0.001253        | Param Intra 1 of 2        |
| Sulfate (mg/l)                       | MW-3        | 33.73             | n/a               | 2/18/2020        | 21             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Sulfate (mg/l)                       | MW-4        | 147.6             | n/a               | 2/18/2020        | 66             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Sulfate (mg/l)                       | MW-5        | 484.6             | n/a               | 2/18/2020        | 210            | No          | 8           | 0           | sqrt(x)          | 0.002505        | Param Intra 1 of 2        |
| Sulfate (mg/l)                       | MW-6        | 44.8              | n/a               | 2/18/2020        | 24             | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Sulfate (mg/l)                       | MW-8        | 131.1             | n/a               | 2/18/2020        | 110            | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Total Dissolved Solids (mg/l)        | MW-3        | 191.6             | n/a               | 3/30/2020        | 180            | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Total Dissolved Solids (mg/l)        | MW-4        | 407.2             | n/a               | 3/30/2020        | 300            | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Total Dissolved Solids (mg/l)        | MW-5        | 577.5             | n/a               | 3/30/2020        | 450            | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| Total Dissolved Solids (mg/l)        | MW-6        | 250.2             | n/a               | 3/30/2020        | 230            | No          | 8           | 0           | No               | 0.002505        | Param Intra 1 of 2        |
| <b>Total Dissolved Solids (mg/l)</b> | <b>MW-8</b> | <b>448</b>        | <b>n/a</b>        | <b>3/30/2020</b> | <b>480</b>     | <b>Yes</b>  | <b>8</b>    | <b>0</b>    | <b>No</b>        | <b>0.002505</b> | <b>Param Intra 1 of 2</b> |

Within Limit

Boron  
Intrawell Parametric

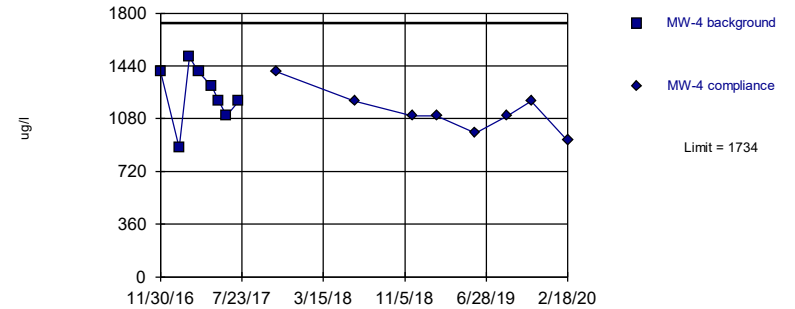


Background Data Summary: Mean=24.5, Std. Dev.=13.31, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7709, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron  
Intrawell Parametric

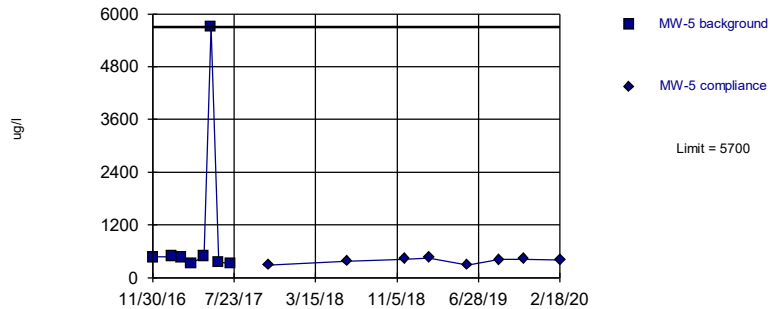


Background Data Summary: Mean=1248, Std. Dev.=198, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9503, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron  
Intrawell Non-parametric

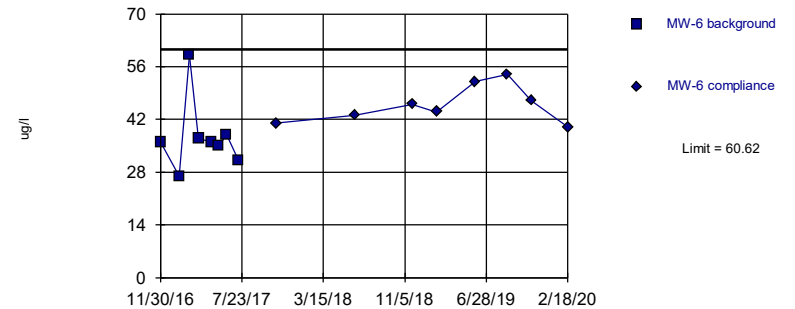


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality; data were not deseasonalized.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron  
Intrawell Parametric

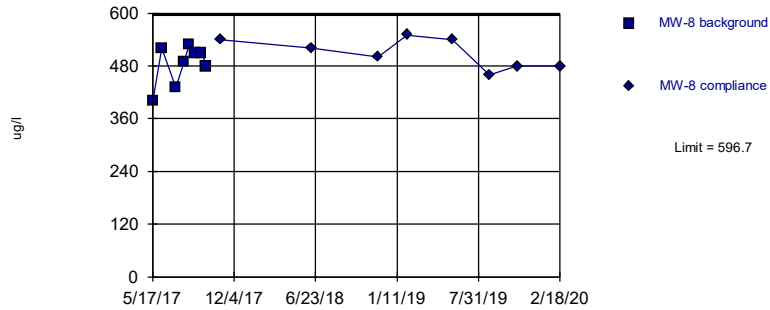


Background Data Summary: Mean=37.38, Std. Dev.=9.456, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7684, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

**Boron**  
Intrawell Parametric

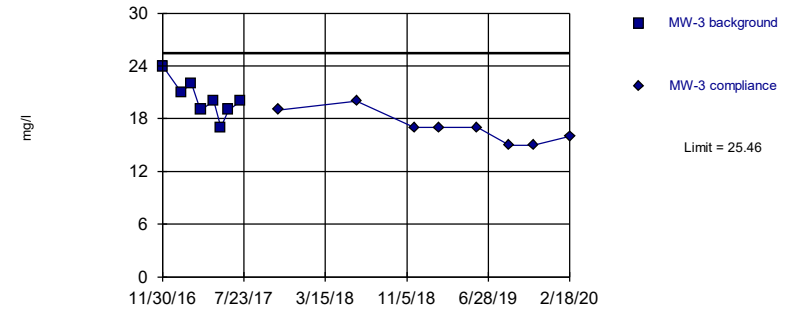


Background Data Summary: Mean=483.8, Std. Dev.=45.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8712, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

**Calcium**  
Intrawell Parametric

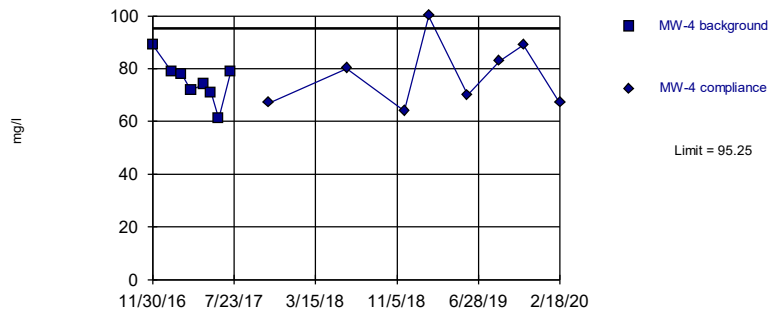


Background Data Summary: Mean=20.25, Std. Dev.=2.121, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9723, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

**Calcium**  
Intrawell Parametric

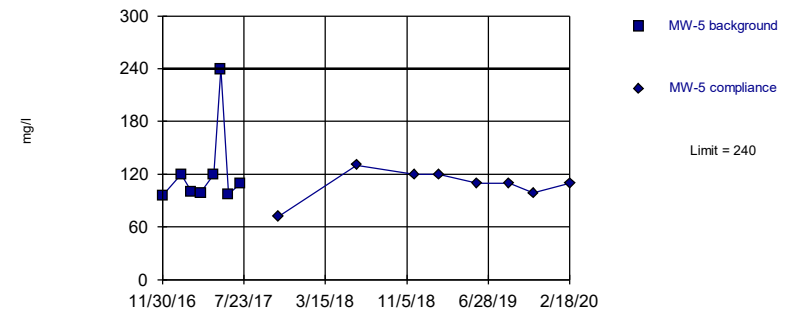


Background Data Summary: Mean=75.38, Std. Dev.=8.088, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9559, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

**Calcium**  
Intrawell Non-parametric

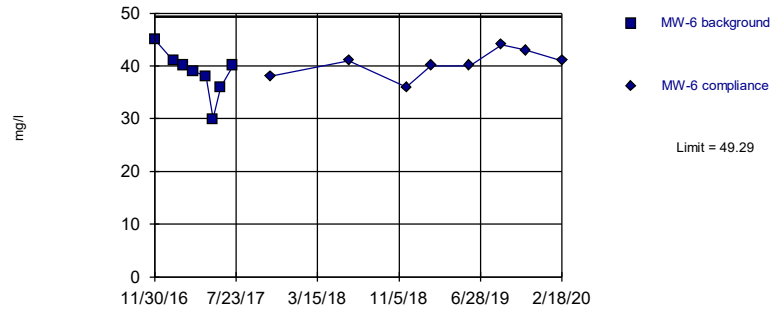


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 0

Within Limit

### Calcium Intrawell Parametric

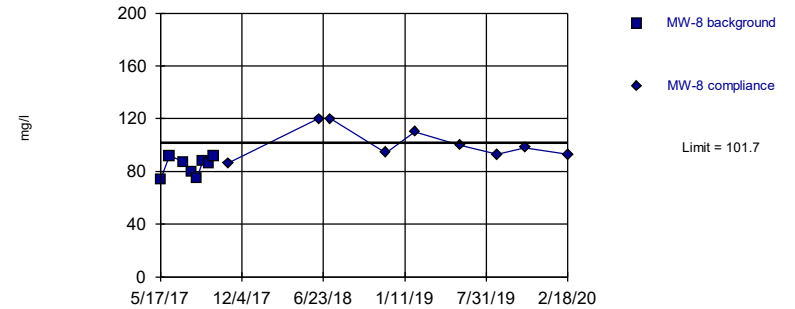


Background Data Summary: Mean=38.63, Std. Dev.=4.34, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9284, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

### Calcium Intrawell Parametric

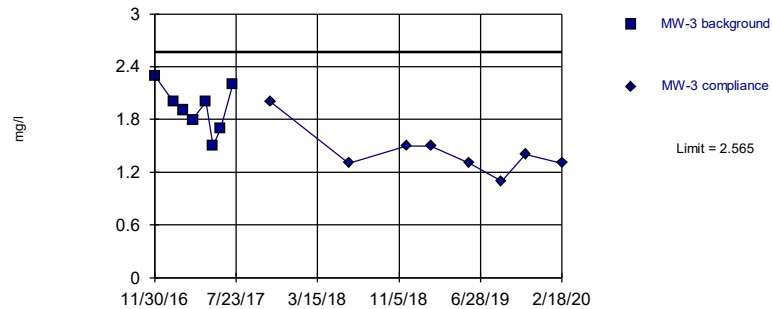


Background Data Summary: Mean=84.25, Std. Dev.=7.106, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8885, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

### Chloride Intrawell Parametric

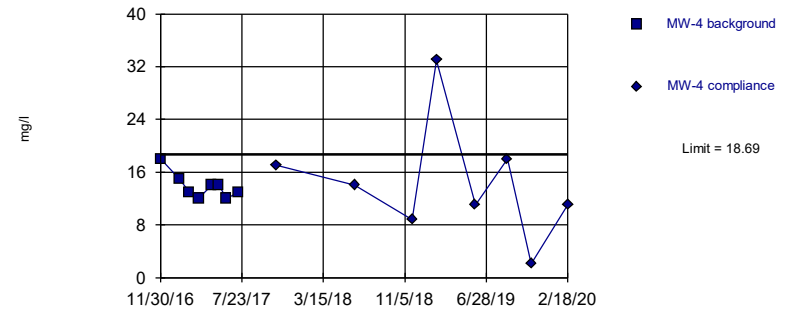


Background Data Summary: Mean=1.925, Std. Dev.=0.2605, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9816, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

### Chloride Intrawell Parametric

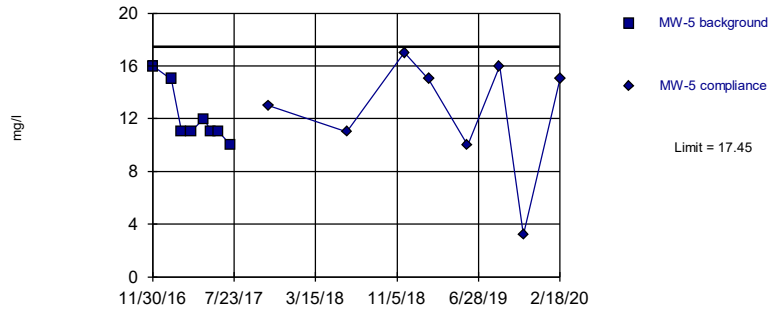


Background Data Summary: Mean=13.88, Std. Dev.=1.959, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8612, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride  
Intrawell Parametric

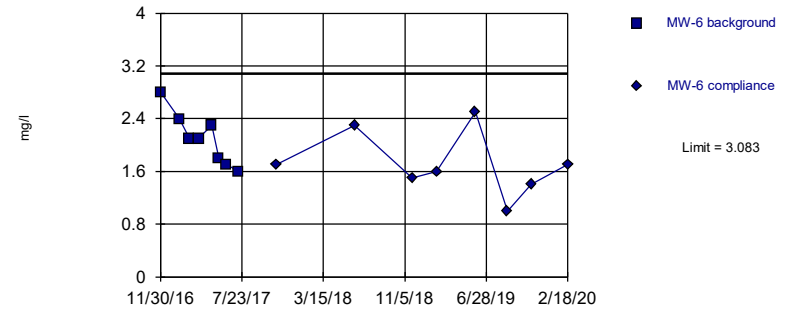


Background Data Summary: Mean=12.13, Std. Dev.=2.167, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7822, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride  
Intrawell Parametric

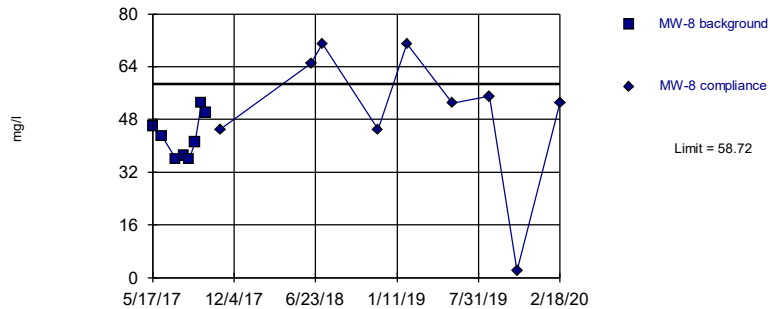


Background Data Summary: Mean=2.1, Std. Dev.=0.4, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride  
Intrawell Parametric

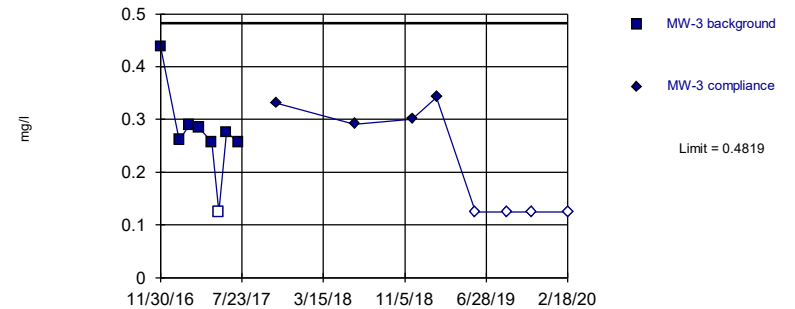


Background Data Summary: Mean=42.75, Std. Dev.=6.497, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9101, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Fluoride  
Intrawell Parametric

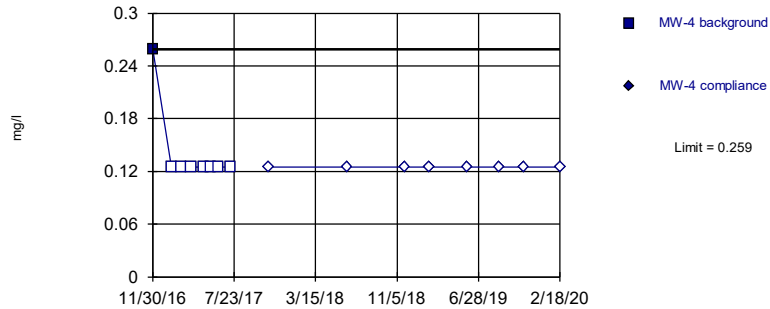


Background Data Summary: Mean=0.2736, Std. Dev.=0.08475, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8446, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Fluoride  
Intrawell Non-parametric

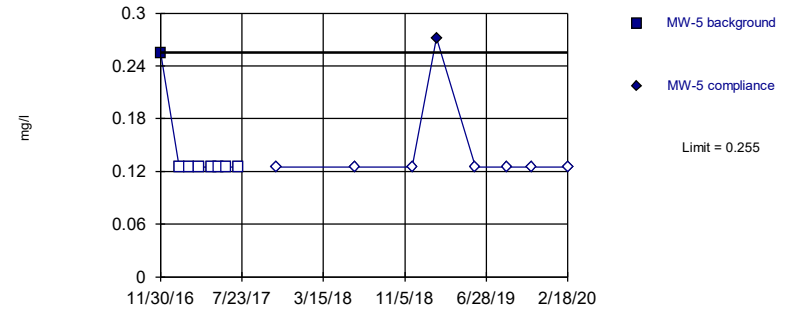


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Fluoride  
Intrawell Non-parametric

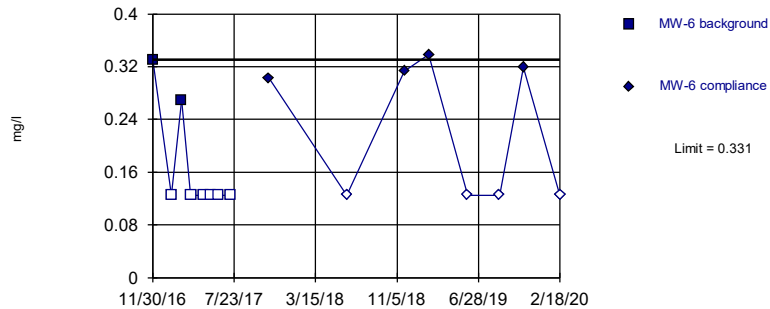


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Fluoride  
Intrawell Non-parametric

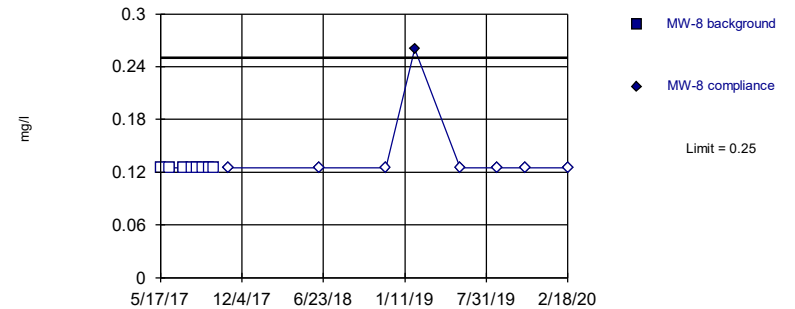


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Fluoride  
Intrawell Non-parametric

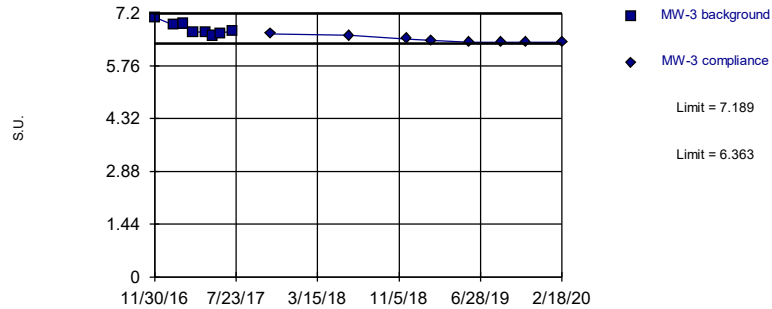


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH  
Intrawell Parametric

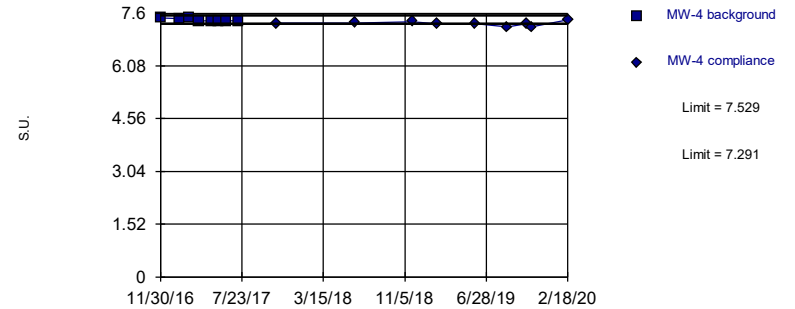


Background Data Summary: Mean=6.776, Std. Dev.=0.1681, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8856, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH  
Intrawell Parametric

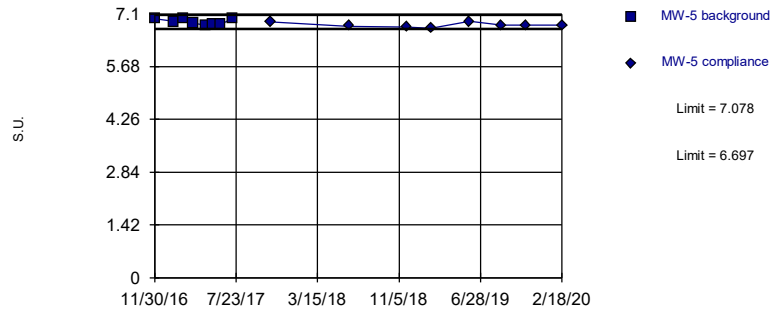


Background Data Summary: Mean=7.41, Std. Dev.=0.0484, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7828, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH  
Intrawell Parametric

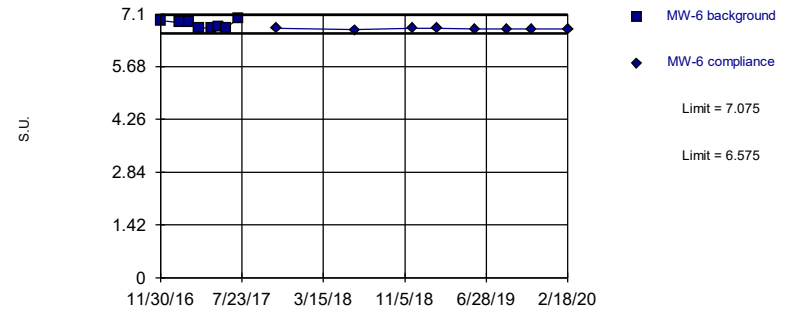


Background Data Summary: Mean=6.888, Std. Dev.=0.07741, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8471, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH  
Intrawell Parametric

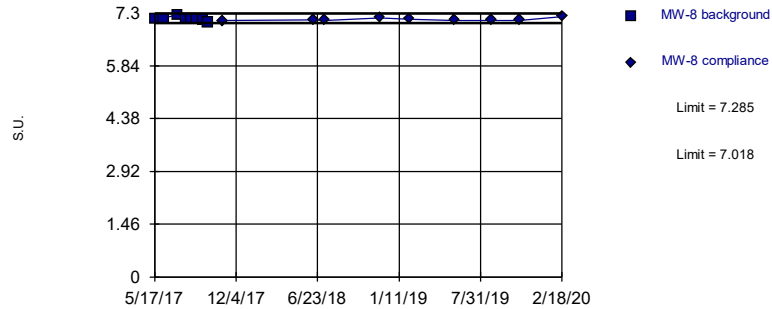


Background Data Summary: Mean=6.825, Std. Dev.=0.1018, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8714, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH  
Intrawell Parametric

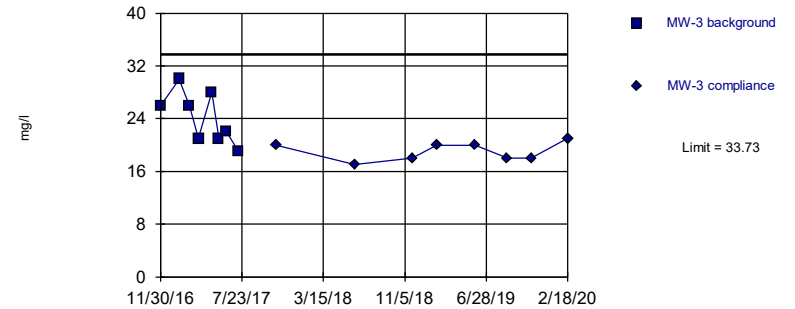


Background Data Summary: Mean=7.151, Std. Dev.=0.05436, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8529, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate  
Intrawell Parametric

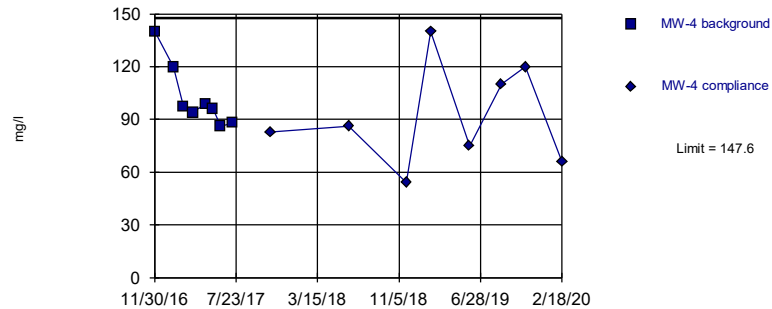


Background Data Summary: Mean=24.13, Std. Dev.=3.907, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9297, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate  
Intrawell Parametric

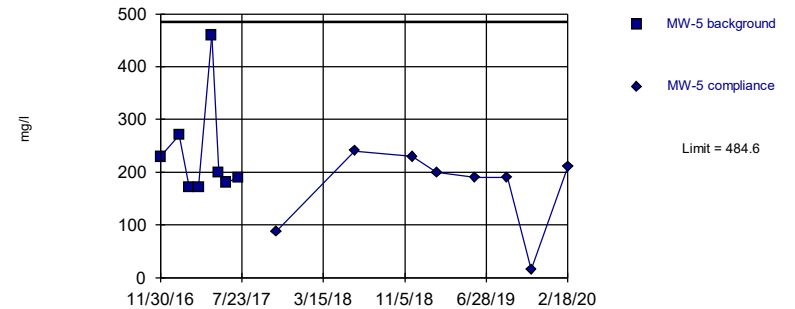


Background Data Summary: Mean=102.5, Std. Dev.=18.33, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8132, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate  
Intrawell Parametric



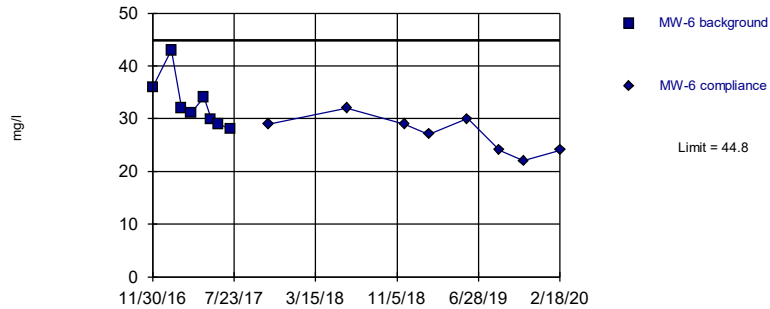
Background Data Summary (based on square root transformation): Mean=15.06, Std. Dev.=2.829, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7511, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Within Limit

Sulfate  
Intrawell Parametric

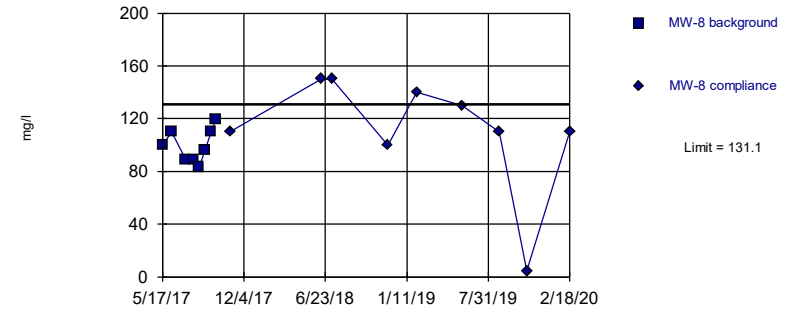


Background Data Summary: Mean=32.88, Std. Dev.=4.853, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8801, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate  
Intrawell Parametric

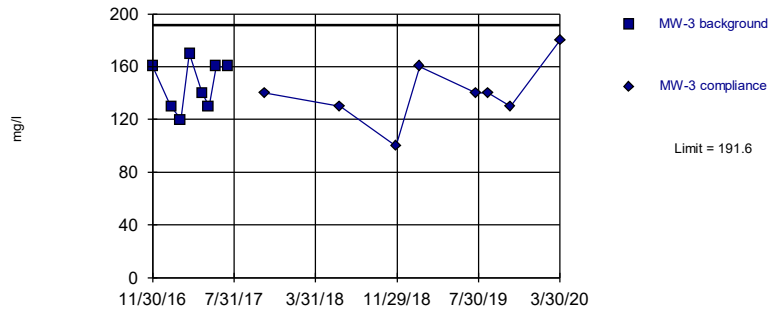


Background Data Summary: Mean=99.63, Std. Dev.=12.79, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9458, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids  
Intrawell Parametric

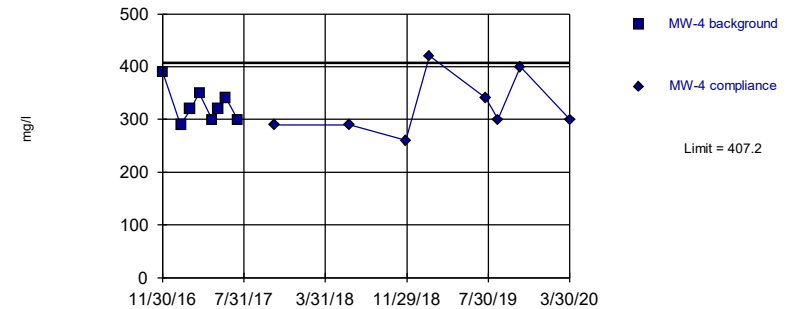


Background Data Summary: Mean=146.3, Std. Dev.=18.47, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8903, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

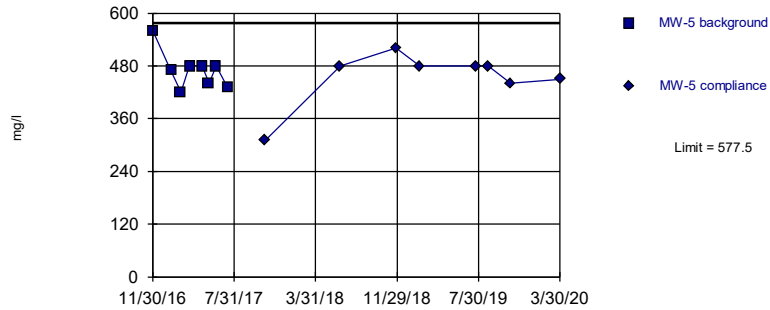
Within Limit

Total Dissolved Solids  
Intrawell Parametric



Within Limit

Total Dissolved Solids  
Intrawell Parametric

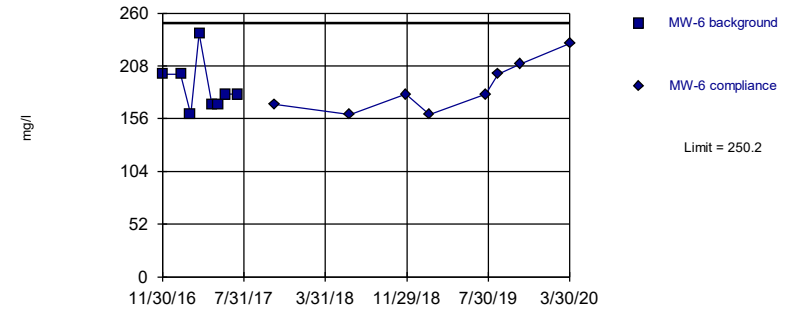


Background Data Summary: Mean=470, Std. Dev.=43.75, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8718, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids  
Intrawell Parametric

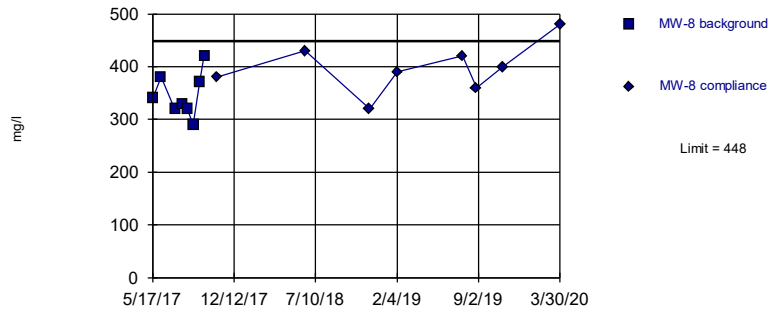


Background Data Summary: Mean=187.5, Std. Dev.=25.5, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8761, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Exceeds Limit

Total Dissolved Solids  
Intrawell Parametric



Background Data Summary: Mean=346.3, Std. Dev.=41.38, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9539, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

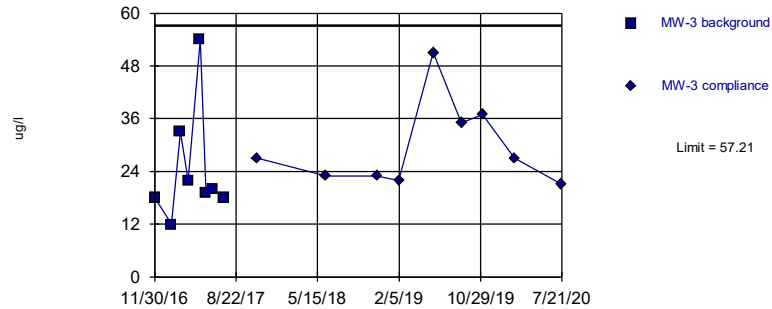
# Prediction Limit

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 12/21/2020, 8:17 AM

| <u>Constituent</u>            | <u>Well</u> | <u>Upper Lim.</u> | <u>Lower Lim.</u> | <u>Date</u> | <u>Observ.</u> | <u>Sig.</u> | <u>Bg N</u> | <u>%NDs</u> | <u>Transform</u> | <u>Alpha</u> | <u>Method</u>            |
|-------------------------------|-------------|-------------------|-------------------|-------------|----------------|-------------|-------------|-------------|------------------|--------------|--------------------------|
| Boron (ug/l)                  | MW-3        | 57.21             | n/a               | 7/21/2020   | 21             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Boron (ug/l)                  | MW-4        | 1734              | n/a               | 7/21/2020   | 920            | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Boron (ug/l)                  | MW-5        | 5700              | n/a               | 7/21/2020   | 330            | No          | 8           | 0           | n/a              | 0.02144      | NP Intra (normality) ... |
| Boron (ug/l)                  | MW-6        | 60.62             | n/a               | 7/21/2020   | 46             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Boron (ug/l)                  | MW-8        | 596.7             | n/a               | 7/21/2020   | 470            | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Calcium (mg/l)                | MW-3        | 25.46             | n/a               | 7/21/2020   | 18             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Calcium (mg/l)                | MW-4        | 95.25             | n/a               | 7/21/2020   | 76             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Calcium (mg/l)                | MW-5        | 240               | n/a               | 7/21/2020   | 110            | No          | 8           | 0           | n/a              | 0.02144      | NP Intra (normality) ... |
| Calcium (mg/l)                | MW-6        | 49.29             | n/a               | 7/21/2020   | 43             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Calcium (mg/l)                | MW-8        | 101.7             | n/a               | 7/21/2020   | 89             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Chloride (mg/l)               | MW-3        | 2.565             | n/a               | 7/21/2020   | 1              | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Chloride (mg/l)               | MW-4        | 18.69             | n/a               | 7/21/2020   | 14             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Chloride (mg/l)               | MW-5        | 17.45             | n/a               | 7/21/2020   | 14             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Chloride (mg/l)               | MW-6        | 3.083             | n/a               | 7/21/2020   | 0.5ND          | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Chloride (mg/l)               | MW-8        | 58.72             | n/a               | 7/21/2020   | 50             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Fluoride (mg/l)               | MW-3        | 0.4819            | n/a               | 7/21/2020   | 0.125ND        | No          | 8           | 12.5        | No               | 0.002505     | Param Intra 1 of 2       |
| Fluoride (mg/l)               | MW-4        | 0.259             | n/a               | 7/21/2020   | 0.125ND        | No          | 8           | 87.5        | n/a              | 0.02144      | NP Intra (NDs) 1 of 2    |
| Fluoride (mg/l)               | MW-5        | 0.255             | n/a               | 7/21/2020   | 0.125ND        | No          | 8           | 87.5        | n/a              | 0.02144      | NP Intra (NDs) 1 of 2    |
| Fluoride (mg/l)               | MW-6        | 0.331             | n/a               | 7/21/2020   | 0.125ND        | No          | 8           | 75          | n/a              | 0.02144      | NP Intra (NDs) 1 of 2    |
| Fluoride (mg/l)               | MW-8        | 0.25              | n/a               | 7/21/2020   | 0.125ND        | No          | 8           | 100         | n/a              | 0.02144      | NP Intra (NDs) 1 of 2    |
| pH (S.U.)                     | MW-3        | 7.189             | 6.363             | 7/21/2020   | 6.5            | No          | 8           | 0           | No               | 0.001253     | Param Intra 1 of 2       |
| pH (S.U.)                     | MW-4        | 7.529             | 7.291             | 8/4/2020    | 7.4            | No          | 8           | 0           | No               | 0.001253     | Param Intra 1 of 2       |
| pH (S.U.)                     | MW-5        | 7.078             | 6.697             | 7/21/2020   | 6.8            | No          | 8           | 0           | No               | 0.001253     | Param Intra 1 of 2       |
| pH (S.U.)                     | MW-6        | 7.075             | 6.575             | 7/21/2020   | 6.7            | No          | 8           | 0           | No               | 0.001253     | Param Intra 1 of 2       |
| pH (S.U.)                     | MW-8        | 7.285             | 7.018             | 7/21/2020   | 7.1            | No          | 8           | 0           | No               | 0.001253     | Param Intra 1 of 2       |
| Sulfate (mg/l)                | MW-3        | 33.73             | n/a               | 7/21/2020   | 15             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Sulfate (mg/l)                | MW-4        | 147.6             | n/a               | 7/21/2020   | 86             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Sulfate (mg/l)                | MW-5        | 484.6             | n/a               | 7/21/2020   | 210            | No          | 8           | 0           | sqrt(x)          | 0.002505     | Param Intra 1 of 2       |
| Sulfate (mg/l)                | MW-6        | 44.8              | n/a               | 7/21/2020   | 22             | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Sulfate (mg/l)                | MW-8        | 131.1             | n/a               | 7/21/2020   | 100            | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Total Dissolved Solids (mg/l) | MW-3        | 191.6             | n/a               | 7/21/2020   | 140            | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Total Dissolved Solids (mg/l) | MW-4        | 407.2             | n/a               | 7/21/2020   | 290            | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Total Dissolved Solids (mg/l) | MW-5        | 577.5             | n/a               | 7/21/2020   | 470            | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Total Dissolved Solids (mg/l) | MW-6        | 250.2             | n/a               | 7/21/2020   | 220            | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |
| Total Dissolved Solids (mg/l) | MW-8        | 448               | n/a               | 7/21/2020   | 420            | No          | 8           | 0           | No               | 0.002505     | Param Intra 1 of 2       |

Within Limit

Boron  
Intrawell Parametric

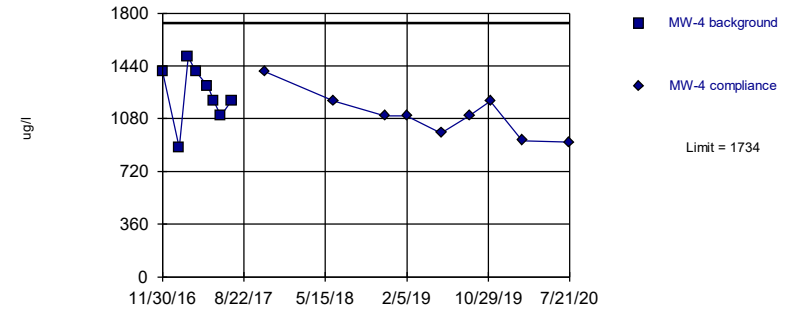


Background Data Summary: Mean=24.5, Std. Dev.=13.31, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7709, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron  
Intrawell Parametric

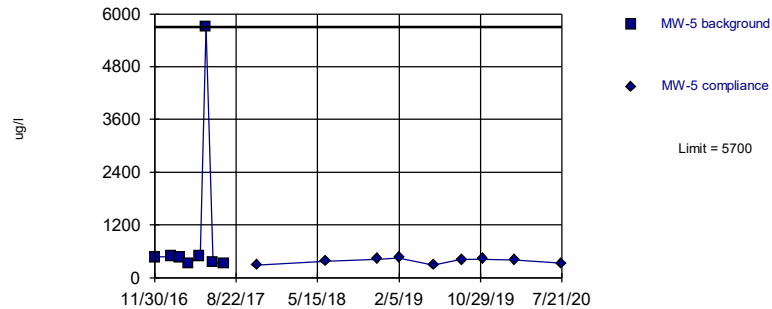


Background Data Summary: Mean=1248, Std. Dev.=198, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9503, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron  
Intrawell Non-parametric

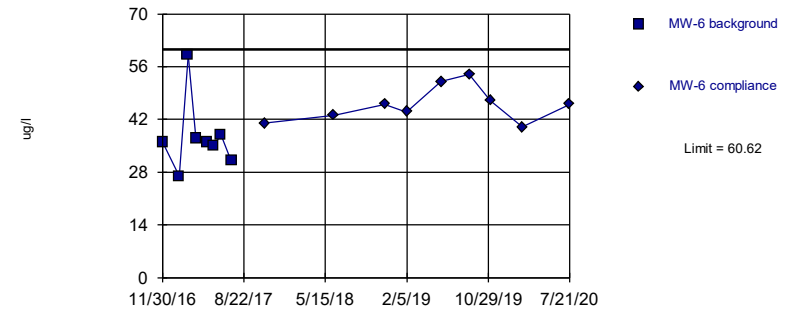


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality; data were not deseasonalized.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron  
Intrawell Parametric

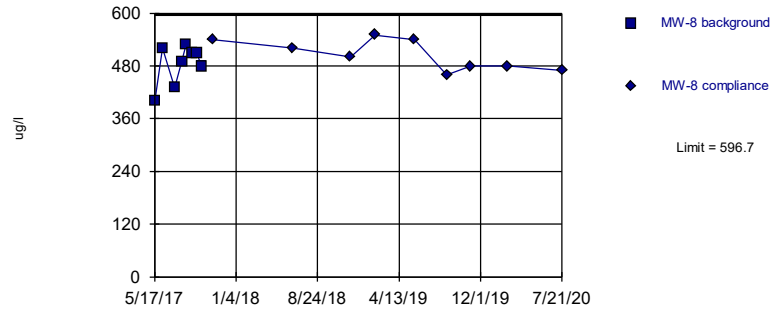


Background Data Summary: Mean=37.38, Std. Dev.=9.456, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7684, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

### Boron Intrawell Parametric

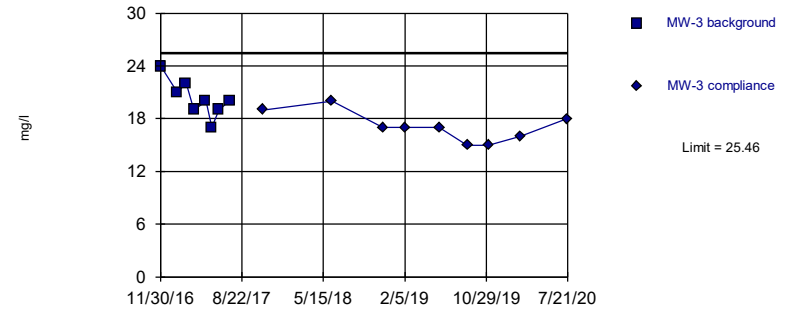


Background Data Summary: Mean=483.8, Std. Dev.=45.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8712, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

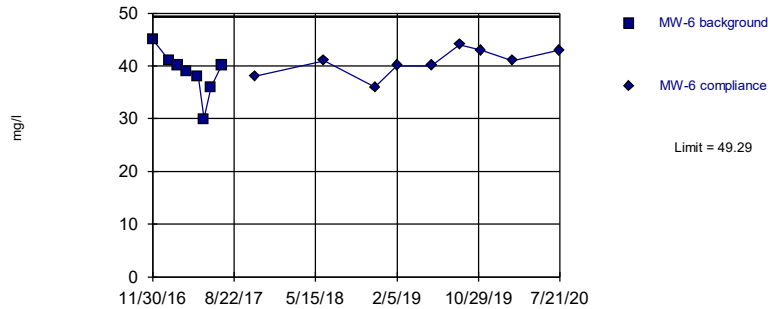
Within Limit

### Calcium Intrawell Parametric



Within Limit

### Calcium Intrawell Parametric

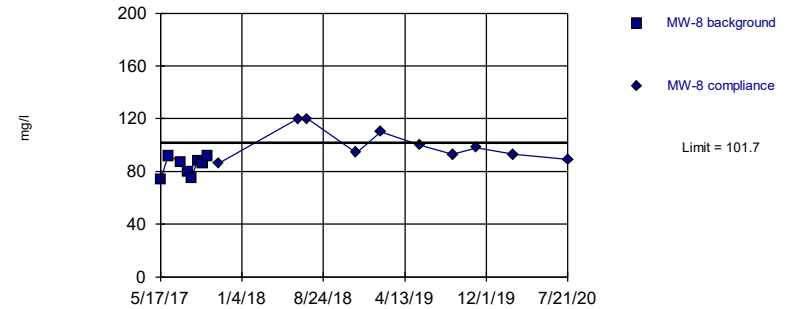


Background Data Summary: Mean=38.63, Std. Dev.=4.34, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9284, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

### Calcium Intrawell Parametric

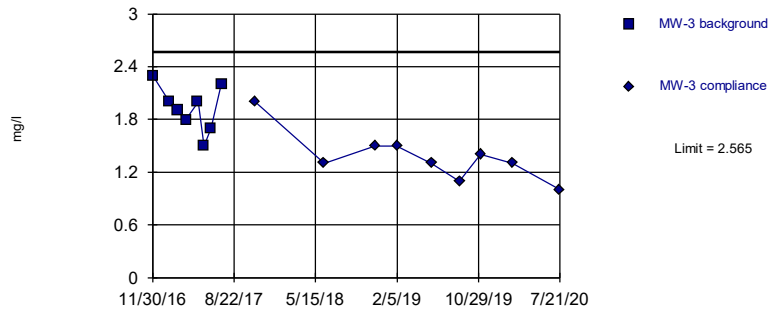


Background Data Summary: Mean=84.25, Std. Dev.=7.106, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8885, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

### Chloride Intrawell Parametric

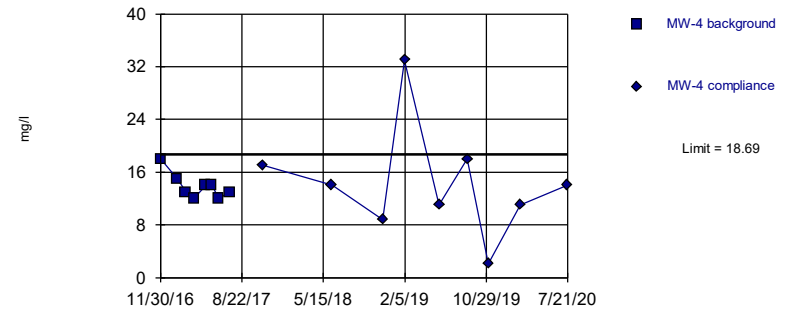


Background Data Summary: Mean=1.925, Std. Dev.=0.2605, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9816, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

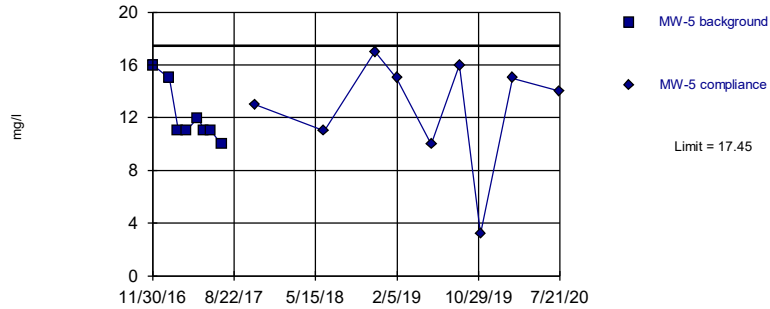
Within Limit

### Chloride Intrawell Parametric



Within Limit

### Chloride Intrawell Parametric

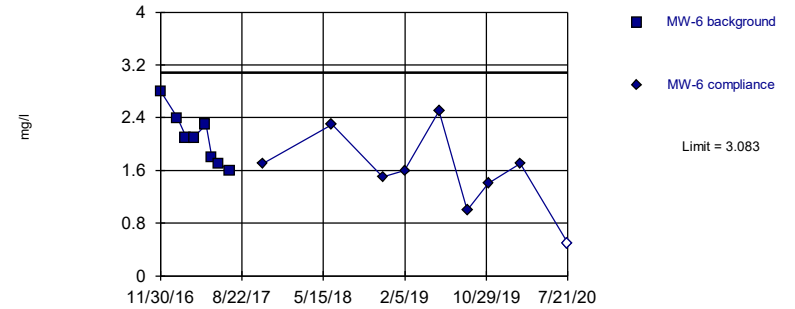


Background Data Summary: Mean=12.13, Std. Dev.=2.167, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7822, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

### Chloride Intrawell Parametric

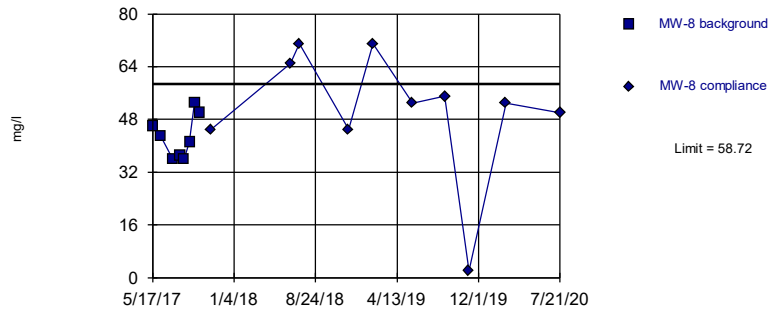


Background Data Summary: Mean=2.1, Std. Dev.=0.4, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

### Chloride Intrawell Parametric

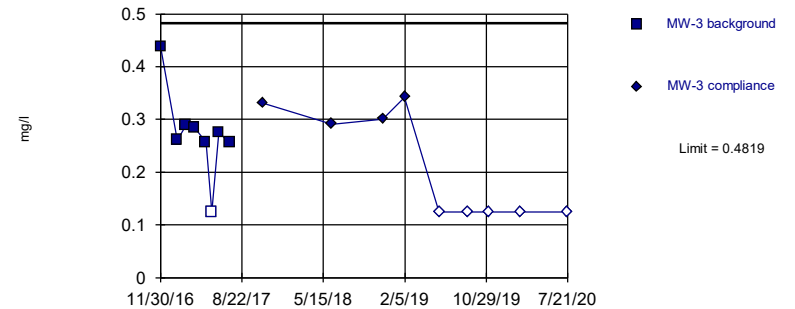


Background Data Summary: Mean=42.75, Std. Dev.=6.497, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9101, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

### Fluoride Intrawell Parametric

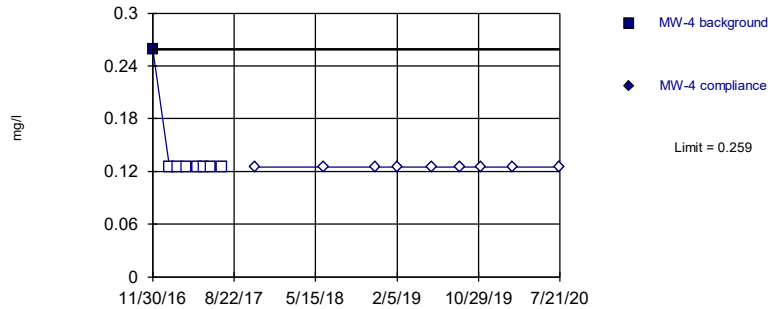


Background Data Summary: Mean=0.2736, Std. Dev.=0.08475, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8446, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Fluoride  
Intrawell Non-parametric

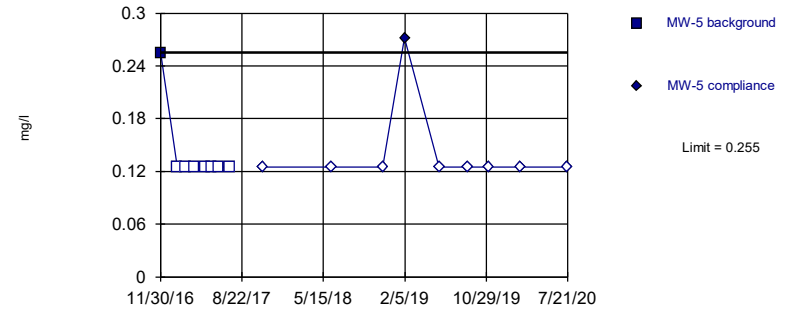


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Fluoride  
Intrawell Non-parametric

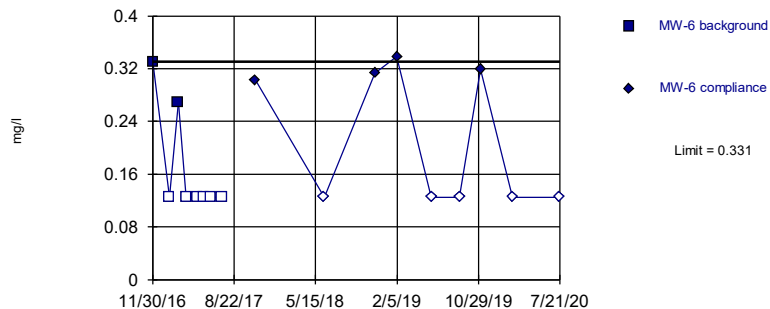


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Fluoride  
Intrawell Non-parametric

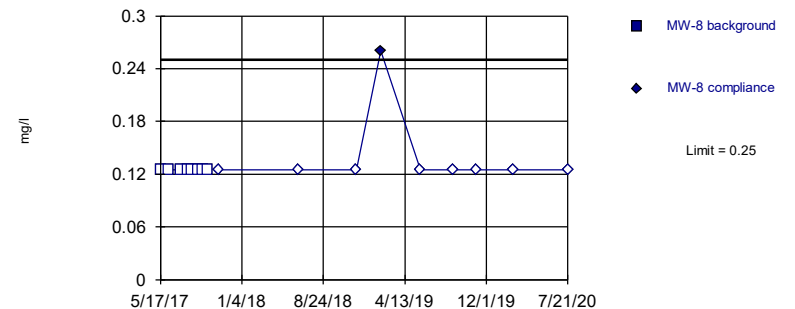


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

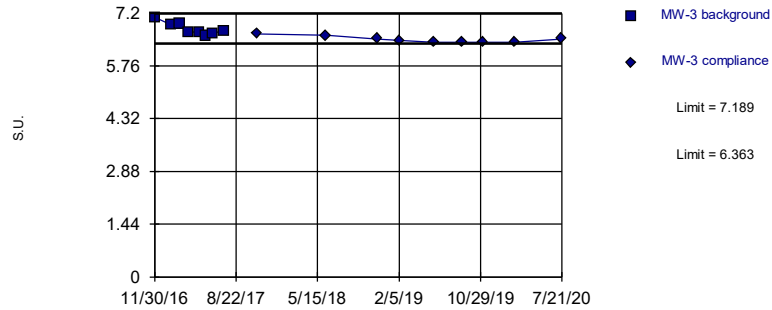
Fluoride  
Intrawell Non-parametric





Within Limits

pH  
Intrawell Parametric

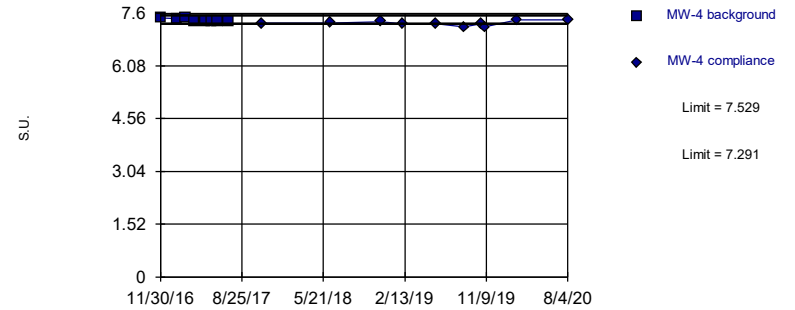


Background Data Summary: Mean=6.776, Std. Dev.=0.1681, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8856, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH  
Intrawell Parametric

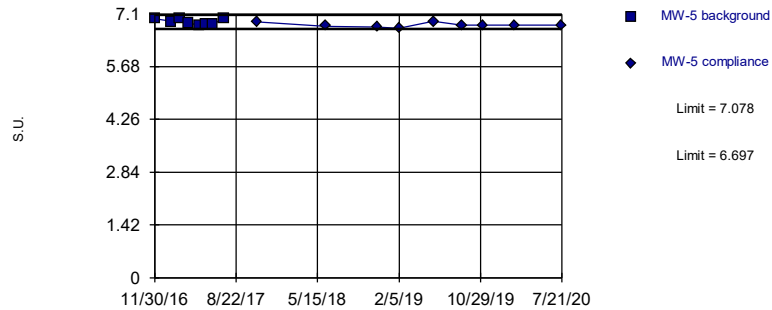


Background Data Summary: Mean=7.41, Std. Dev.=0.0484, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7828, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH  
Intrawell Parametric

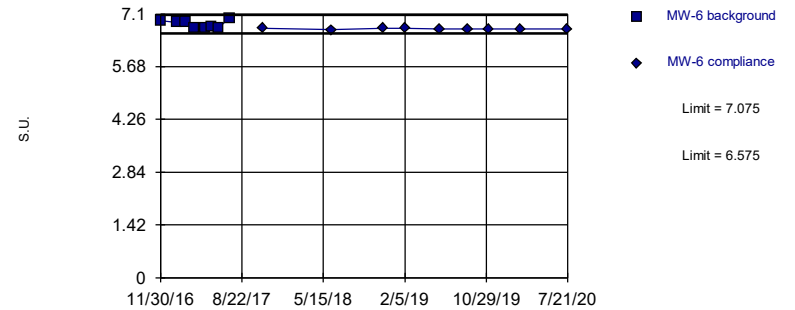


Background Data Summary: Mean=6.888, Std. Dev.=0.07741, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8471, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH  
Intrawell Parametric

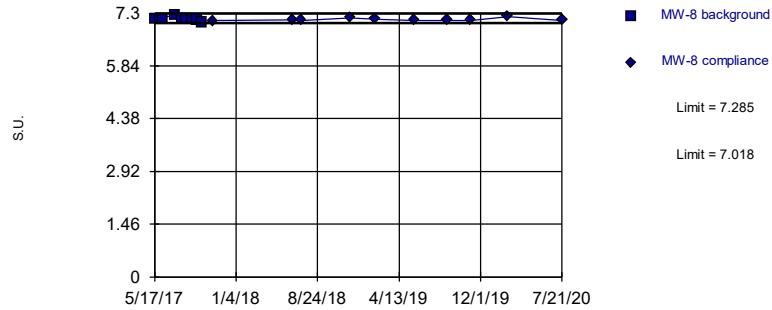


Background Data Summary: Mean=6.825, Std. Dev.=0.1018, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8714, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH  
Intrawell Parametric

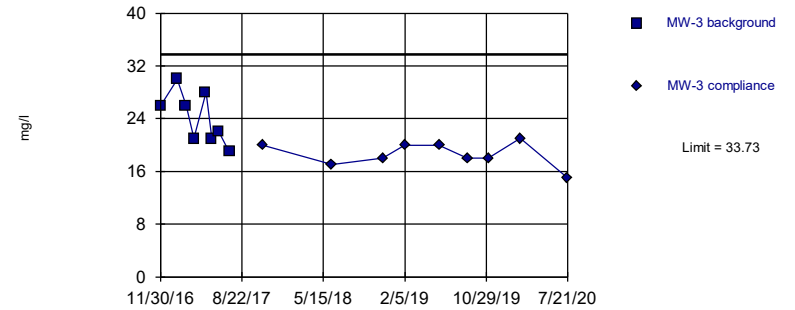


Background Data Summary: Mean=7.151, Std. Dev.=0.05436, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8529, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate  
Intrawell Parametric

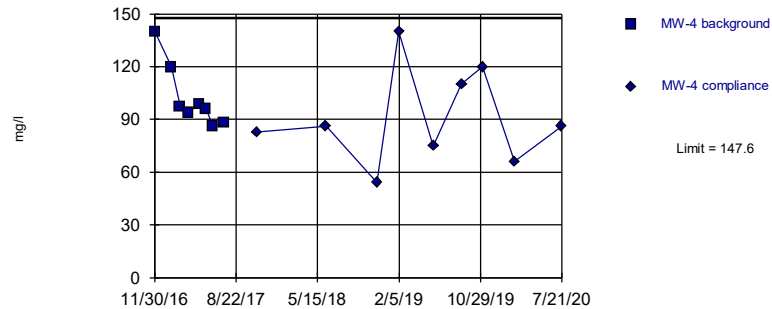


Background Data Summary: Mean=24.13, Std. Dev.=3.907, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9297, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate  
Intrawell Parametric

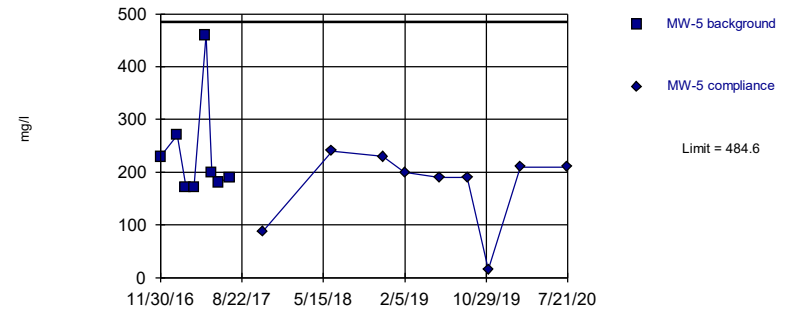


Background Data Summary: Mean=102.5, Std. Dev.=18.33, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8132, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate  
Intrawell Parametric

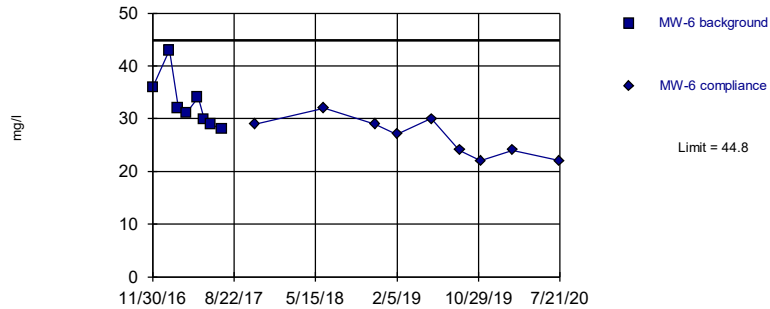


Background Data Summary (based on square root transformation): Mean=15.06, Std. Dev.=2.829, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7511, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate  
Intrawell Parametric

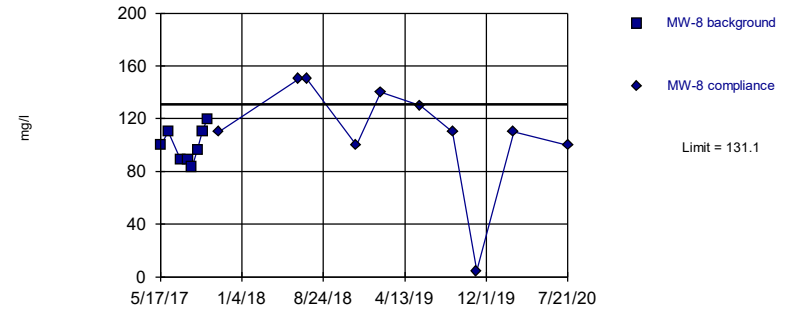


Background Data Summary: Mean=32.88, Std. Dev.=4.853, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8801, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate  
Intrawell Parametric

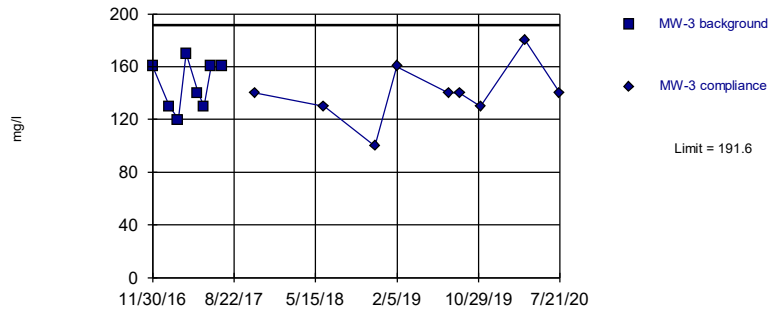


Background Data Summary: Mean=99.63, Std. Dev.=12.79, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9458, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids  
Intrawell Parametric

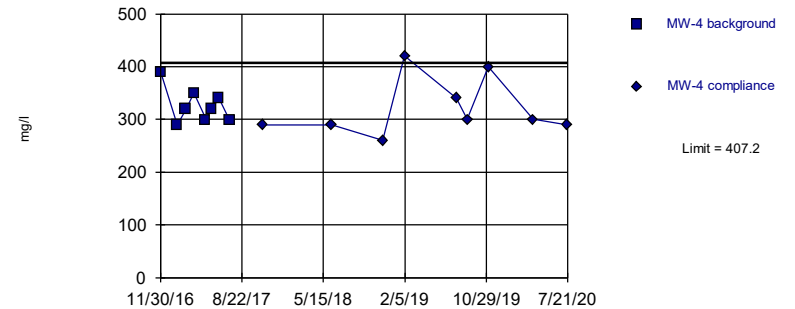


Background Data Summary: Mean=146.3, Std. Dev.=18.47, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8903, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

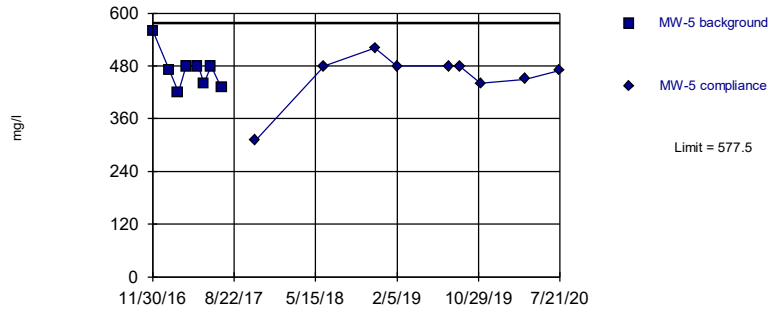
Within Limit

Total Dissolved Solids  
Intrawell Parametric



Within Limit

Total Dissolved Solids  
Intrawell Parametric

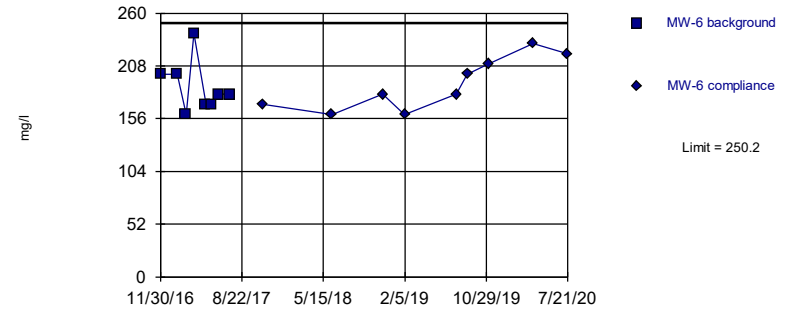


Background Data Summary: Mean=470, Std. Dev.=43.75, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8718, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids  
Intrawell Parametric

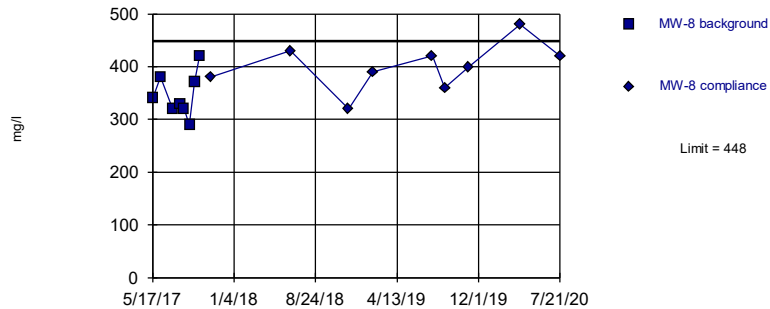


Background Data Summary: Mean=187.5, Std. Dev.=25.5, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8761, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids  
Intrawell Parametric



Background Data Summary: Mean=346.3, Std. Dev.=41.38, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9539, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged  
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

# **Appendix 9**

August 6, 2020 Alternate Source Demonstration

1505 East High Street  
Jefferson City, Missouri 65101  
Telephone (573) 659-9078  
Facsimile (573) 659-9079

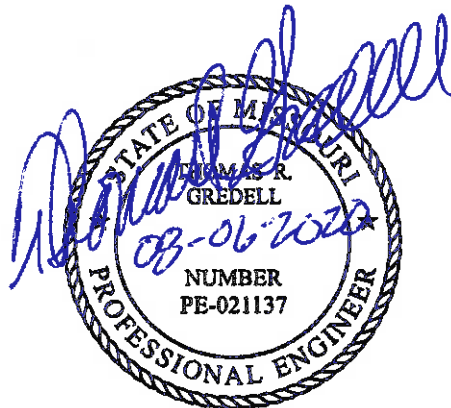
# GREDELL Engineering Resources, Inc.

## Sikeston Board of Municipal Utilities Sikeston Power Station Detection Monitoring Program for Bottom Ash Pond Alternate Source Demonstration

*Prepared for:*



**Sikeston Power Station  
1551 West Wakefield Avenue  
Sikeston, MO 63801**



August 2020

# PROFESSIONAL ENGINEER'S CERTIFICATION

## 40 CFR 257.94(e)(2) Alternate Source Demonstration

I, Thomas R. Gredell, P.E., a professional engineer licensed in the State of Missouri, hereby certify in accordance with 40 CFR 257.94(e)(2) to the accuracy of the alternate source demonstration described in the following report for the Sikeston Board of Municipal Utilities, Sikeston Power Station, Bottom Ash Pond CCR unit. The report demonstrates that the statistically significant increase of total dissolved solids in MW-8 resulted from an analytical false positive and is attributable to an alternate source and not evidence of a release from the Bottom Ash Pond. This demonstration successfully meets the requirements of 40 CFR 257.94(e) as found in federal regulation 40 CFR 257, Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments. In addition, the demonstration was made using EPA Unified Guidance (Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance: EPA 530/R-09-007) and generally accepted methods.

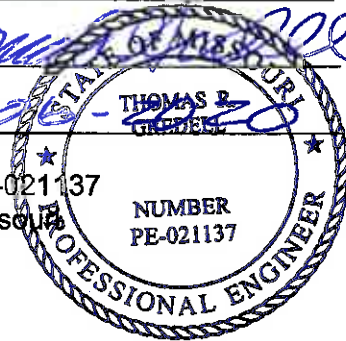
Name: Thomas R. Gredell, P.E.

Signature: 

Date: 08-20-2020

Registration Number: PE-021137

State of Registration: Missouri



**Sikeston Board of Municipal Utilities  
Sikeston Power Station  
Detection Monitoring Program for  
Bottom Ash Pond - Total Dissolved Solids in MW-8  
Alternate Source Demonstration**

**August 2020**

**Table of Contents**

|  |          |
|--|----------|
| <b>1.0 INTRODUCTION.....</b>                           | <b>1</b> |
| <b>2.0 OBSERVATIONS AND DATA COLLECTION .....</b>      | <b>2</b> |
| <b>3.0 SUMMARY OF DATA ANALYSIS AND FINDINGS .....</b> | <b>5</b> |
| <b>4.0 CONCLUSIONS AND RECOMMENDATIONS .....</b>       | <b>8</b> |
| <b>5.0 REFERENCES.....</b>                             | <b>9</b> |

**List of Figures**

**Figure 1 – Site Map and Sampling Locations**

**List of Tables**

**Table 1 – TDS and Relative Percent Difference Results – 2020**

**List of Appendices**

**Appendix 1 – Laboratory Analytical Results and Quality Control Reports - February 2020**

**Appendix 2 – Laboratory Analytical Results and Quality Control Reports - March 2020**

**Appendix 3 – Laboratory Analytical Results and Quality Control Reports - April 2020**



## 1.0 INTRODUCTION

This Alternate Source Demonstration Report has been prepared to address the results of the semi-annual sampling event initiated on February 18, 2020 at the Sikeston Board of Municipal Utilities (SBMU) Sikeston Power Station's (SPS) Bottom Ash Pond, a coal combustion residual (CCR) surface impoundment. Following receipt of final analytical data, it was apparent that an error resulted in delayed analysis for Total Dissolved Solids (TDS) and hold time exceedance. As a consequence, resampling of TDS in all five monitoring wells was conducted on March 30, 2020. Following receipt of final analytical data from that event, statistical analysis was performed by GREDELL Engineering Resources, Inc. (Gredell Engineering) for the parameters listed in Appendix III to Part 257 – Constituents for Detection Monitoring. The results of the statistical evaluation suggested one apparent statistically significant increase (SSI) for TDS in monitoring well MW-8. In response, resampling was conducted at MW-8 on April 8, 2020. This sampling event including collection of a duplicate, and replicate analysis of the primary sample by the analytical laboratory. Results from this event were ambiguous. As a consequence, SBMU-SPS requested that Gredell Engineering conduct a critical evaluation of the analytical results and develop an alternate source demonstration if warranted.

As stated in §257.94(e)(2), an owner or operator may demonstrate that a source other than the CCR unit caused the apparent SSI over background levels for a constituent. The owner or operator must complete the written demonstration within 90 days of detecting an apparent SSI over background levels to include obtaining a certification from a qualified professional engineer verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner of the CCR unit may continue with a detection monitoring program. The owner or operator must also include the certified demonstration in the annual groundwater monitoring and corrective action report required by §257.90(e).

Gredell Engineering has completed an evaluation of the groundwater sampling events, analytical data results, and other potential factors, for the SBMU SPS Bottom Ash Pond groundwater monitoring well system to determine if an alternate source is the cause of the apparent SSI in MW-8. This report presents the results of that evaluation and includes supporting documentation.

## 2.0 OBSERVATIONS AND DATA COLLECTION

The Bottom Ash Pond groundwater monitoring well system consists of five wells, designated MW-3, MW-4, MW-5, MW-6, and MW-8 (Figure 1). Monitoring wells MW-3, MW-4, MW-5, and MW-6 were installed in April 2016, and sampled on an approximate monthly basis beginning in November 2016 and ending in July 2017 to establish a background data base. Monitoring well MW-8 was installed in April 2017, and was sampled at an increased frequency beginning in May 2017 and ending in September 2017. Additional information regarding these wells is available in the Bottom Ash Pond monitoring well design, installation, and development report (Gredell Engineering, 2017a).

The results of the eight independent background sampling events were evaluated in accordance with §257.93, and intra-well analysis using prediction limits was selected as the statistical analysis approach for detection monitoring (Gredell Engineering, 2018a). Following receipt of final analytical data reports from the contract laboratory, the reported concentration for each detection monitoring constituent from each well is compared to its respective prediction limit. If a concentration exceeds the respective prediction limit for a particular constituent well pair, or is outside the predicted range (in the case of pH), SSI over background is suspected.

The SPS conducted its semiannual detection groundwater sampling event for the Bottom Ash Pond on February 18, 2020. The contracted laboratory received the samples on February 20, 2020, but did not prepare and analyze the samples for TDS until February 27, 2020. The analytical method used for TDS (Standard Method (SM) 2540C) has a seven day hold time. Accordingly, the TDS results were qualified with an “H” flag because analysis was conducted nine days after sample collection. Due to the qualified data, the Bottom Ash Pond monitoring system was re-sampled for TDS on March 30, 2020. Final TDS results were received on April 7, 2020. However, the TDS result for the sample collected at MW-8 appeared elevated with respect to the prediction limit. Consequently, MW-8 was re-sampled on April 8, 2020 and both field duplicate and laboratory replicate analyses were performed by the analytical laboratory. Final results for the April 8, 2020 event were received on May 14, 2020.

The following table summarizes the primary and duplicate sample TDS results for the February, March, and April sampling events. Relative Percent Differences (RPDs) between results are also listed where applicable.

**Table 1 – TDS and Relative Percent Difference Results - 2020**

| Sampling Date | Sample Location    | TDS (mg/L) | Dup (mg/L) | RPD (%) |
|---------------|--------------------|------------|------------|---------|
| 2/18/2020     | MW-8               | 420 H      | N/A        | N/A     |
|               | MW-5               | 520 H      | 420 H      | 21.3    |
| 3/30/2020     | MW-8               | 480        | N/A        | N/A     |
| 4/8/2020      | MW-8               | 480        | 330        | 37.0    |
|               | MW-8 Lab Replicate | 430        | N/A        | N/A     |

N/A = Not Prepared or Analyzed  
 H = Sample Analyzed After Hold Time Exceeded  
 MW-8 Prediction Limit = 448 mg/L

The table indicates that the original TDS result in MW-8, while qualified due to hold time exceedance, did not exceed the 448 mg/L prediction limit. However, due to the hold time exceedance, it was considered necessary to re-sample MW-8 and obtain TDS results within the method-specified hold time of seven days. This subsequent result was reported at 480 mg/L or 32 mg/L (7%) above the predicted limit value of 448 mg/L. Review of Laboratory Quality Control Report documents associated with these samples show that matrix spike duplicates (MSDs) for TDS were 8% to 9% higher than the source concentrations. These elevated MSD concentrations are more than sufficient to demonstrate that the reported value of 480 mg/L is within the range of laboratory variability and that the result is a false positive relative to the predicted limit value.

The initial result for the April 8, 2020 sampling was also reported as 480 mg/L, but the TDS concentration in the sample duplicate was reported as 330 mg/L, which is a 37% difference in the reproducibility in results. Moreover, the lab replicate prepared by the analytical laboratory by drawing a second aliquot from the initial sample collected on April 8<sup>th</sup> had a reported TDS concentration of 430 mg/L. Both the sample duplicate and lab replicate results are below the predicted limit value of 448 mg/L, again providing evidence that the initial sample result is a false-positive.

Inherent variability in the analytical method used for TDS (SM 2540C) is also evidenced by the following observations:

- **February 18, 2020:** A comparison of the field duplicate to the original sample collected at MW-5 results in an RPD of 21.3% (Table 1). Additionally, the RPD for the laboratory prepared MSD for TDS was reported as 13% (Appendix 1; Page 11). Both reported levels of variability exceed the percentage required (7%) to trigger a false positive for TDS in MW-8.
- **March 30, 2020:** The RPDs for the laboratory prepared MSDs (DUP1 and DUP2) for TDS were reported as 8% and 9% higher than their respective sources (Appendix 2; Page 4). These percentages are greater than the variability necessary to trigger a false positive for TDS in MW-8 (7%).

April 8, 2020: The lab replicate result (430 mg/L) documents 11% variability in laboratory analysis method (Table 1) and suggests that the 480 mg/L value for the primary sample is a false positive for TDS in MW-8. The RPD for TDS between the primary MW-8 sample and the field duplicate (Table 1) suggests 37% variability between two samples collected consecutively from the effluent stream. While 11% of the 37% may be accounted for with laboratory variability, the remaining 26% is attributed to variability in well performance (yellow “flakes” discussed below). Collectively, this 37% variability is over five times the amount (7%) required to trigger a false positive for TDS in MW-8.

Following review of the field sampling notes, it was also noted that a well performance issue is apparent each time MW-8 was purged. This was recorded in the field sampling logs as the intermittent appearance of yellow “flakes” entrained in the purge water. These flakes are consistent with bacterial fouling that periodically dislodges from the well casing and migrates into the effluent or sample during purging or sampling, respectively. Identical observations were previously noted in MW-8 during the June 2018 sampling event and resulted in elevated analytical results (Gredell Engineering, 2019). The previous bacterial fouling was rectified by well redevelopment conducted consistent with Groundwater Monitoring Sampling and Analysis Plan (Gredell Engineering, 2018b).

### 3.0 SUMMARY OF DATA ANALYSIS AND FINDINGS

The U.S. Environmental Protection Agency (USEPA) provides Unified Guidance for statistical analysis of groundwater monitoring data (USEPA, 2009). This Unified Guidance document was reviewed to assess the validity of the apparent SSIs. Chapter 4 of the Unified Guidance discusses groundwater monitoring programs and statistical analysis of the associated data. A key component of statistical analysis is “to determine whether or not the increase is actually due to a contaminant release”. Several of these considerations are pertinent to the data associated with the Bottom Ash Pond groundwater monitoring well system and for that reason are listed below.

1. Chapter 4, page 4-8: *Is the result a false positive? That is, were the data tested simply an unusual sample of the underlying population triggering an SSI? Generally, this can be evaluated with repeat sampling.*
2. Chapter 4, page 4-9: *Have there been changes in well performance over time?*
3. Chapter 4, page 4-11: *Were there calibration problems, e.g., drift in instrumentation?*
4. Chapter 4, page 4-11: *Were there “spikes” or unusually high values on certain sampling events (either for one constituent among many wells or related analytical constituents) that would suggest laboratory error?*

Each of these considerations were used to evaluate the background data and the validity of the apparent SSI for TDS in MW-8. The results of this evaluation are discussed below.

#### **Unified Guidance Consideration 1**

The suspicion that the March 30, 2020 results are a false positive was considered and, as suggested by Unified Guidance, was evaluated with repeat sampling. In this case a primary sample and a duplicate were collected from MW-8 on April 8, 2020. The primary sample was also replicated by the analytical laboratory by independently analyzing two aliquots for TDS. These results are presented in Table 1 and indicate substantial variability relative to the magnitude of prediction limit exceedance (32 mg/L) by the 480 mg/L result

#### **Unified Guidance Consideration 2**

Each time MW-8 was sampled (February, March, and April, 2020), yellow flakes were observed in the effluent intermittently during purging. These observations suggest a well performance issue in the form of bacterial fouling being released during pumping. Similar observations were noted in June 2018 and were associated with elevated levels of Calcium, Chloride, and Sulfate. As a consequence of these observations, MW-8 was redeveloped, which successfully mitigated the well fouling and associated elevated constituent concentrations until the February 2020 sampling event.

The recurrence of bacterial fouling in MW-8 and the intermittent release of yellow flakes during purging and sampling provides additional explanation for the variability in TDS results. Not all samples would contain consistent proportions of the suspended yellow flakes. Consequently, variable amounts of this

material may pass through the 1.5 micron filter used during preparation of the samples for laboratory analysis. Further, differing proportions of yellow flake remaining after filtration may explain the difference in TDS results between the primary sample collected on April 8, 2020 and the laboratory replicate (Table 1). It may also explain the higher degree of variability between the primary sample and the sample duplicate in MW-8 (37.0% RPD), where well performance issues were apparent, relative to the RPD between the primary sample and sample duplicate from MW-5 (21.3%), where well performance issues were not apparent.

### **Unified Guidance Consideration 3**

Analytical Laboratory Quality Control documentation was reviewed to assess if instrument drift occurred that could account for the reported TDS results. The Matrix Spike Duplicate RPDs suggest that, during the analysis of the March samples, the laboratory instruments were reporting concentrations 8% to 9% higher than the source concentrations. However, the reported TDS concentration in MW-8 in March (480 mg/L) exceeded the prediction limit (448 mg/L) by only 7%.

Additionally, SM 2540C procedures were reviewed relative to the TNI/NELAP Proficiency Testing acceptance limits for laboratory accreditation to assess acceptable error ranges using this method of analysis. The laboratory senior project manager was contacted and provided documentation for Proficiency Testing, which involves analysis of a (blind) standard. In order to secure TNI/NELAP accreditation for TDS analysis, the analytical result reported by the laboratory using the (blind) standard must be within +/-45 mg/L of the assigned value to be considered within acceptance limits. This range in results necessary to achieve accreditation is more than adequate to demonstrate that apparent SSI for TDS in MW-8 is a false positive.

### **Unified Guidance Consideration 4**

The initial result for TDS in MW-8 (February 2020), while analyzed outside hold time, was below the prediction limit and was consistent with historical results collected between May 2017 and November 2019. However, the March 2020 sampling results yielded an unusually high TDS value for this well that was above the prediction limit. In response, the possibility of sampling and/or laboratory error was then evaluated by sampling the well again in April 2020. A primary sample and sample duplicate were collected. In addition, a lab replicate of the primary sample was analyzed to assess inherent variability in the analysis of TDS for this well. Reported results from these three samples varied from 330 mg/L to 480 mg/L

The results described above suggest a degree of variability that could be related to a false positive “spike” in values. While a false positive stemming from laboratory analysis is referred to as a “laboratory error” the connotation is misleading if the variability that resulted in the false positive is within the required acceptance limits for national accreditation. Similarly, although a false positive stemming from sample collection is referred to as “sampling error”, it should not be viewed as a reflection on the field technician if the proper sampling procedures are followed. In these

cases, the false positive for TDS during the March 2020 sampling exceeded the prediction limit by 32 mg/L, which is within the acceptable tolerances for the laboratory method SM 2540C accreditation (+/-45 mg/L), and the variation apparent in the three analyses completed for the April 2020 sampling event was 150 mg/L.

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

Gredell Engineering concludes that the apparent SSI of TDS in MW-8 is a false positive and is attributable to an alternate source and not evidence of a release from the Bottom Ash Pond. The following supports this conclusion:

- Analytical results for TDS in MW-8 during the February, March, and April sampling are highly variable, with three of the results below the prediction limit and two of the results above the prediction limit. Groundwater sample analytical results for TDS demonstrated that considerable variability is inherent in the field sampling method and the laboratory analytical method used.
- Laboratory prepared MSDs for TDS are 8% to 9% higher than their respective sources and are greater than the variability necessary to trigger a false positive for TDS in MW-8 (7%).
- TNI/NELAP Proficiency Testing acceptance limits for laboratory accreditation using SM 2540C are +/- 45 mg/L for TDS. This nationally accepted range in tolerance limits is greater than the range in values between the prediction limit and reported values.
- A recurrence of bacterial fouling in MW-8 is evidenced by the observation of yellow flakes intermittently appearing in the effluent during purging and sampling. Variable proportions of this material in samples collected during the February, March, and April 2020 sampling can cause interferences during analysis and result in excessive drift or variability in reported TDS values.

Based on these conclusions, Gredell Engineering recommends the following:

- Continue with semi-annual detection monitoring in accordance with §257.94;
- Re-develop MW-8 to improve well performance.



## 5.0 REFERENCES

Freeze, R.A. and Cherry J.A., 1979, *Groundwater*. Prentice-Hall, Inc. Englewood Cliffs, New Jersey, 604 p.

GREDELL Engineering Resources, Inc., 2017a, Sikeston Power Station Site Characterization for Compliance with Missouri State Operating Permit #MO-0095575. Prepared for Sikeston Board of Municipal Utilities, May 31, 2017.

GREDELL Engineering Resources, Inc., 2017b, Sikeston Power Station Documentation of Monitoring Well Design, Installation & Development for Compliance with 40 CFR 257.91. Prepared for Sikeston Board of Municipal Utilities, October 17, 2017.

GREDELL Engineering Resources, Inc., 2018a, Sikeston Power Station 2017 Annual Groundwater Monitoring and Corrective Action Report for Bottom Ash Pond for Compliance with USEPA 40 CFR 257.90(e). Prepared for Sikeston Board of Municipal Utilities, January 26, 2018.

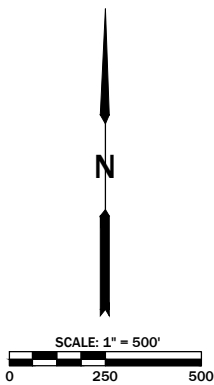
GREDELL Engineering Resources, Inc., 2018b, Sikeston Power Station Groundwater Monitoring Sampling and Analysis Plan. Prepared for Sikeston Board of Municipal Utilities, September 10, 2018.

GREDELL Engineering Resources, Inc., 2019, Sikeston Power Station 2018 Annual Groundwater Monitoring and Corrective Action Report for Bottom Ash Pond for Compliance with USEPA 40 CFR 257.90(e). Prepared for Sikeston Board of Municipal Utilities, January 30, 2019.

Sanitas Statistical Software, © 1992-2020 SANITAS TECHNOLOGIES, Alamosa Colorado 81101-0012.

USEPA, 2009, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance: EPA 530/R-09-007*, Office of Resource Conservation and Recovery, Program Implementation and Information Division, Washington, D.C.

# FIGURES



**LEGEND**

PROPERTY LINE  
(APPROXIMATE)



MONITORING WELL



UP GRADIENT  
MONITORING LOCATION

UG

DOWN GRADIENT  
MONITORING LOCATION

DG

**NOTES:**

1. IMAGE PROVIDED BY BING MAPS.
2. MONITORING WELL LOCATIONS/ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.

**FIGURE 1  
SIKESTON POWER STATION**

**GREDELL Engineering Resources, Inc.**

**ENVIRONMENTAL ENGINEERING LAND - AIR - WATER**

1505 East High Street  
Jefferson City, Missouri

Telephone: (573) 659-9078  
Facsimile: (573) 659-9079

MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

**BOTTOM ASH POND GROUNDWATER  
MONITORING WELL SYSTEM**

| DATE        | SCALE           | PROJECT NAME         | REVISION          |
|-------------|-----------------|----------------------|-------------------|
| 6/2020      | AS NOTED        | SIKESTON             |                   |
| DRAWN<br>CP | APPROVED<br>MCC | FILE NAME<br>BAP ASD | SHEET #<br>1 OF 1 |

# APPENDICES

# **Appendix 1**

Laboratory Analytical Results and  
Quality Control Reports – February 2020



March 16, 2020

Luke St Mary  
Sikeston BMU, Sikeston Power Station  
1551 W Wakefield  
Sikeston, MO 63801

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

Please find enclosed the analytical results for the **7** sample(s) the laboratory received on **2/20/20 10:10 am** and logged in under work order **0023536**. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or [lgrant@pdclab.com](mailto:lgrant@pdclab.com).

Sincerely,

Kurt Stepping  
Senior Project Manager  
(309) 692-9688 x1719  
[kstepping@pdclab.com](mailto:kstepping@pdclab.com)



## ANALYTICAL RESULTS



ANALYTICAL RESULTS

Sample: 0023536-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 02/18/20 09:20
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0023536-02
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 02/18/20 10:25
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0023536-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 02/18/20 11:39
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.

Sample: 0023536-04
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 02/18/20 12:36
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Radium 226 and Radium 228 - subcontracted.



**ANALYTICAL RESULTS**

**Sample:** 0023536-05  
**Name:** MW-4  
**Matrix:** Ground Water - Grab

**Sampled:** 02/18/20 14:13  
**Received:** 02/20/20 10:10  
**PO #:** 23573

| Parameter   | Result | Unit  | Qualifier | Prepared | Dilution | MRL   | Analyzed | Analyst | Method      |
|---|--------|-------|-----------|----------|----------|-------|----------|---------|-------------|
| <b>Miscellaneous - PACE Analytical - Greensburg</b> |        |       |           |          |          |       |          |         |             |
| Radium 226 - subcontracted                          | 0.071  | pCi/L |           |          | 1        | 0.52  |          |         | 904.0 903.1 |
| Radium 228 - subcontracted                          | 1.05   | pCi/L |           |          | 1        | 0.709 |          |         | 904.0 903.1 |

**Sample:** 0023536-06  
**Name:** FIELD DUPLICATE  
**Matrix:** Ground Water - Field Duplicate

**Sampled:** 02/18/20 00:00  
**Received:** 02/20/20 10:10  
**PO #:** 23573

| Parameter   | Result | Unit  | Qualifier | Prepared | Dilution | MRL   | Analyzed | Analyst | Method      |
|---|--------|-------|-----------|----------|----------|-------|----------|---------|-------------|
| <b>Miscellaneous - PACE Analytical - Greensburg</b> |        |       |           |          |          |       |          |         |             |
| Radium 226 - subcontracted                          | 0.291  | pCi/L |           |          | 1        | 0.541 |          |         | 904.0 903.1 |
| Radium 228 - subcontracted                          | 0.936  | pCi/L |           |          | 1        | 0.696 |          |         | 904.0 903.1 |

**Sample:** 0023536-07  
**Name:** FIELD BLANK  
**Matrix:** Ground Water - Field Blank

**Sampled:** 02/18/20 00:00  
**Received:** 02/20/20 10:10  
**PO #:** 23573

| Parameter   | Result | Unit  | Qualifier | Prepared | Dilution | MRL   | Analyzed | Analyst | Method      |
|---|--------|-------|-----------|----------|----------|-------|----------|---------|-------------|
| <b>Miscellaneous - PACE Analytical - Greensburg</b> |        |       |           |          |          |       |          |         |             |
| Radium 226 - subcontracted                          | 0.115  | pCi/L |           |          | 1        | 0.691 |          |         | 904.0 903.1 |
| Radium 228 - subcontracted                          | 0.693  | pCi/L |           |          | 1        | 0.626 |          |         | 904.0 903.1 |

**ANALYTICAL RESULTS**





ANALYTICAL RESULTS

Sample: 0023536-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 02/18/20 09:20
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Anions - PIA (Chloride, Fluoride, Sulfate), General Chemistry - PIA (Solids - total dissolved solids (TDS)), and Total Metals - PIA (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Selenium, Thallium, Lithium).



**ANALYTICAL RESULTS**

**Sample:** 0023536-02  
**Name:** MW-6  
**Matrix:** Ground Water - Grab

**Sampled:** 02/18/20 10:25  
**Received:** 02/20/20 10:10  
**PO #:** 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|---------|-------------------|
| <b><u>Anions - PIA</u></b>            |         |      |           |                |          |       |                |         |                   |
| Chloride                              | 1.7     | mg/L |           | 02/28/20 09:02 | 1        | 1.0   | 02/28/20 09:02 | LAM     | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L | Q3        | 02/21/20 14:36 | 1        | 0.250 | 02/21/20 14:36 | n.a.    | EPA 300.0 REV 2.1 |
| Sulfate                               | 24      | mg/L |           | 02/28/20 09:21 | 5        | 5.0   | 02/28/20 09:21 | LAM     | EPA 300.0 REV 2.1 |
| <b><u>General Chemistry - PIA</u></b> |         |      |           |                |          |       |                |         |                   |
| Solids - total dissolved solids (TDS) | 170     | mg/L | H         | 02/27/20 08:59 | 1        | 26    | 02/27/20 09:26 | cpc     | SM 2540C          |
| <b><u>Total Metals - PIA</u></b>      |         |      |           |                |          |       |                |         |                   |
| Antimony                              | < 3.0   | ug/L |           | 03/03/20 12:27 | 5        | 3.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Arsenic                               | 2.4     | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Barium                                | 180     | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Boron                                 | 40      | ug/L |           | 03/11/20 10:06 | 5        | 10    | 03/12/20 09:00 | JMW     | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Calcium                               | 41000   | ug/L |           | 03/03/20 12:27 | 5        | 100   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 03/03/20 12:27 | 5        | 4.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 03/03/20 12:27 | 5        | 2.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 03/03/20 12:27 | 5        | 0.20  | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Molybdenum                            | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:40 | JMW     | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 03/03/20 12:27 | 1        | 0.020 | 03/04/20 10:11 | ZSA     | EPA 6010B*        |



ANALYTICAL RESULTS

Sample: 0023536-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 02/18/20 11:39
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Anions - PIA (Chloride, Fluoride, Sulfate), General Chemistry - PIA (Solids - total dissolved solids (TDS)), and Total Metals - PIA (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Selenium, Thallium, Lithium).



ANALYTICAL RESULTS

Sample: 0023536-04
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 02/18/20 12:36
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Anions - PIA (Chloride, Fluoride, Sulfate), General Chemistry - PIA (Solids - total dissolved solids (TDS)), and Total Metals - PIA (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Selenium, Thallium, Lithium).



### ANALYTICAL RESULTS

Sample: 0023536-05  
Name: MW-4  
Matrix: Ground Water - Grab

Sampled: 02/18/20 14:13  
Received: 02/20/20 10:10  
PO #: 23573

| Parameter                             | Result  | Unit | Qualifier | Prepared       | Dilution | MRL   | Analyzed       | Analyst | Method            |
|---------------------------------------|---------|------|-----------|----------------|----------|-------|----------------|---------|-------------------|
| <b>Anions - PIA</b>                   |         |      |           |                |          |       |                |         |                   |
| Chloride                              | 11      | mg/L |           | 02/28/20 10:51 | 5        | 5.0   | 02/28/20 10:51 | LAM     | EPA 300.0 REV 2.1 |
| Fluoride                              | < 0.250 | mg/L |           | 02/21/20 17:20 | 1        | 0.250 | 02/21/20 17:20 | n.a.    | EPA 300.0 REV 2.1 |
| Sulfate                               | 66      | mg/L |           | 02/28/20 11:09 | 25       | 25    | 02/28/20 11:09 | LAM     | EPA 300.0 REV 2.1 |
| <b>General Chemistry - PIA</b>        |         |      |           |                |          |       |                |         |                   |
| Solids - total dissolved solids (TDS) | 290     | mg/L | H         | 02/27/20 08:59 | 1        | 26    | 02/27/20 09:26 | cpc     | SM 2540C          |
| <b>Total Metals - PIA</b>             |         |      |           |                |          |       |                |         |                   |
| Antimony                              | < 3.0   | ug/L |           | 03/03/20 12:27 | 5        | 3.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Arsenic                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Barium                                | 72      | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Beryllium                             | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Boron                                 | 930     | ug/L |           | 03/03/20 12:27 | 5        | 10    | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Cadmium                               | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Calcium                               | 67000   | ug/L |           | 03/03/20 12:27 | 5        | 100   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Chromium                              | < 4.0   | ug/L |           | 03/03/20 12:27 | 5        | 4.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Cobalt                                | < 2.0   | ug/L |           | 03/03/20 12:27 | 5        | 2.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Lead                                  | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Mercury                               | < 0.20  | ug/L |           | 03/03/20 12:27 | 5        | 0.20  | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Molybdenum                            | 5.1     | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Selenium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Thallium                              | < 1.0   | ug/L |           | 03/03/20 12:27 | 5        | 1.0   | 03/04/20 08:51 | JMW     | EPA 6020A         |
| Lithium                               | < 0.020 | mg/L |           | 03/03/20 12:27 | 1        | 0.020 | 03/04/20 10:16 | ZSA     | EPA 6010B*        |



ANALYTICAL RESULTS

Sample: 0023536-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 02/18/20 00:00
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Anions - PIA (Chloride, Fluoride, Sulfate), General Chemistry - PIA (Solids - total dissolved solids (TDS)), and Total Metals - PIA (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Selenium, Thallium, Lithium).



ANALYTICAL RESULTS

Sample: 0023536-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 02/18/20 00:00
Received: 02/20/20 10:10
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Anions - PIA (Chloride, Fluoride, Sulfate), General Chemistry - PIA (Solids - total dissolved solids (TDS)), and Total Metals - PIA (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Selenium, Thallium, Lithium).



QC SAMPLE RESULTS

| Parameter  | Result | Unit | Qual | Spike Level                           | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|--|--------|------|------|---------------------------------------|---------------|------|-------------|-----|-----------|
| <b><u>Batch B004627 - IC No Prep - EPA 300.0 REV 2.1</u></b> |        |      |      |                                       |               |      |             |     |           |
| <b>Calibration Blank (B004627-CCB1)</b>                      |        |      |      | Prepared & Analyzed: 02/21/20         |               |      |             |     |           |
| Fluoride   | 0.00   | mg/L |      |                                       |               |      |             |     |           |
| <b>Calibration Check (B004627-CCV1)</b>                      |        |      |      | Prepared & Analyzed: 02/21/20         |               |      |             |     |           |
| Fluoride   | 4.89   | mg/L |      | 5.000                                 |               | 98   | 90-110      |     |           |
| <b>Matrix Spike (B004627-MS1)</b>                            |        |      |      | Prepared & Analyzed: 02/21/20         |               |      |             |     |           |
| Fluoride   | 1.40   | mg/L | Q1   | 1.500                                 | 0.210         | 79   | 80-120      |     |           |
| <b>Matrix Spike (B004627-MS2)</b>                            |        |      |      | Prepared & Analyzed: 02/21/20         |               |      |             |     |           |
| Fluoride   | 1.12   | mg/L | Q1   | 1.500                                 | ND            | 75   | 80-120      |     |           |
| <b>Matrix Spike (B004627-MS3)</b>                            |        |      |      | Prepared & Analyzed: 02/21/20         |               |      |             |     |           |
| Fluoride   | 1.45   | mg/L |      | 1.500                                 | ND            | 97   | 80-120      |     |           |
| <b>Matrix Spike Dup (B004627-MSD1)</b>                       |        |      |      | Prepared & Analyzed: 02/21/20         |               |      |             |     |           |
| Fluoride   | 1.43   | mg/L |      | 1.500                                 | 0.210         | 81   | 80-120      | 2   | 20        |
| <b>Matrix Spike Dup (B004627-MSD2)</b>                       |        |      |      | Prepared & Analyzed: 02/21/20         |               |      |             |     |           |
| Fluoride   | 1.14   | mg/L | Q2   | 1.500                                 | ND            | 76   | 80-120      | 1   | 20        |
| <b>Matrix Spike Dup (B004627-MSD3)</b>                       |        |      |      | Prepared & Analyzed: 02/21/20         |               |      |             |     |           |
| Fluoride   | 1.46   | mg/L |      | 1.500                                 | ND            | 97   | 80-120      | 0.8 | 20        |
| <b><u>Batch B004955 - No Prep - SM 2540C</u></b>             |        |      |      |                                       |               |      |             |     |           |
| <b>Blank (B004955-BLK1)</b>                                  |        |      |      | Prepared & Analyzed: 02/27/20         |               |      |             |     |           |
| Solids - total dissolved solids (TDS)                        | < 17   | mg/L |      |                                       |               |      |             |     |           |
| <b>LCS (B004955-BS1)</b>                                     |        |      |      | Prepared & Analyzed: 02/27/20         |               |      |             |     |           |
| Solids - total dissolved solids (TDS)                        | 967    | mg/L |      | 1000                                  |               | 97   | 67.9-132    |     |           |
| <b>Duplicate (B004955-DUP1)</b>                              |        |      |      | Prepared & Analyzed: 02/27/20         |               |      |             |     |           |
| Solids - total dissolved solids (TDS)                        | 473    | mg/L | M    |                                       | 540           |      |             | 13  | 5         |
| <b><u>Batch B005170 - IC No Prep - EPA 300.0 REV 2.1</u></b> |        |      |      |                                       |               |      |             |     |           |
| <b>Calibration Blank (B005170-CCB1)</b>                      |        |      |      | Prepared & Analyzed: 02/28/20         |               |      |             |     |           |
| Sulfate  | 0.00   | mg/L |      |                                       |               |      |             |     |           |
| Chloride   | 0.578  | mg/L |      |                                       |               |      |             |     |           |
| <b>Calibration Check (B005170-CCV1)</b>                      |        |      |      | Prepared & Analyzed: 02/28/20         |               |      |             |     |           |
| Sulfate  | 5.19   | mg/L |      | 5.000                                 |               | 104  | 90-110      |     |           |
| Chloride   | 5.07   | mg/L |      | 5.000                                 |               | 101  | 90-110      |     |           |
| <b><u>Batch B005306 - SW 3015 - EPA 6020A</u></b>            |        |      |      |                                       |               |      |             |     |           |
| <b>Blank (B005306-BLK1)</b>                                  |        |      |      | Prepared: 03/03/20 Analyzed: 03/04/20 |               |      |             |     |           |
| Antimony   | < 3.0  | ug/L |      |                                       |               |      |             |     |           |
| Arsenic  | < 1.0  | ug/L |      |                                       |               |      |             |     |           |
| Barium   | < 1.0  | ug/L |      |                                       |               |      |             |     |           |
| Beryllium  | < 1.0  | ug/L |      |                                       |               |      |             |     |           |
| Boron  | 77.4   | ug/L | B    |                                       |               |      |             |     |           |
| Cadmium  | < 1.0  | ug/L |      |                                       |               |      |             |     |           |
| Calcium  | < 100  | ug/L |      |                                       |               |      |             |     |           |
| Chromium   | < 4.0  | ug/L |      |                                       |               |      |             |     |           |
| Cobalt   | < 2.0  | ug/L |      |                                       |               |      |             |     |           |





QC SAMPLE RESULTS

| Parameter                                  | Result  | Unit | Qual               | Spike Level | Source Result                         | %REC | %REC Limits | RPD | RPD Limit |
|--|---------|------|--------------------|-------------|---------------------------------------|------|-------------|-----|-----------|
| <b>Batch B005306 - SW 3015 - EPA 6020A</b> |         |      |                    |             |                                       |      |             |     |           |
| <b>Blank (B005306-BLK1)</b>                |         |      |                    |             |                                       |      |             |     |           |
|  |         |      |                    |             | Prepared: 03/03/20 Analyzed: 03/04/20 |      |             |     |           |
| Lead                                       | < 1.0   | ug/L |                    |             |                                       |      |             |     |           |
| Mercury                                    | < 0.20  | ug/L |                    |             |                                       |      |             |     |           |
| Molybdenum                                 | < 1.0   | ug/L |                    |             |                                       |      |             |     |           |
| Selenium                                   | < 1.0   | ug/L |                    |             |                                       |      |             |     |           |
| Thallium                                   | < 1.0   | ug/L |                    |             |                                       |      |             |     |           |
| Lithium                                    | < 0.020 | mg/L |                    |             |                                       |      |             |     |           |
| <b>LCS (B005306-BS1)</b>                   |         |      |                    |             |                                       |      |             |     |           |
|  |         |      |                    |             | Prepared: 03/03/20 Analyzed: 03/04/20 |      |             |     |           |
| Antimony                                   | 535     | ug/L |                    | 555.6       |                                       | 96   | 80-120      |     |           |
| Arsenic                                    | 569     | ug/L |                    | 555.6       |                                       | 102  | 80-120      |     |           |
| Barium                                     | 531     | ug/L |                    | 555.6       |                                       | 96   | 80-120      |     |           |
| Beryllium                                  | 527     | ug/L |                    | 555.6       |                                       | 95   | 80-120      |     |           |
| Boron                                      | 605     | ug/L |                    | 555.6       |                                       | 109  | 80-120      |     |           |
| Cadmium                                    | 526     | ug/L |                    | 555.6       |                                       | 95   | 80-120      |     |           |
| Calcium                                    | 5580    | ug/L |                    | 5556        |                                       | 100  | 80-120      |     |           |
| Chromium                                   | 555     | ug/L |                    | 555.6       |                                       | 100  | 80-120      |     |           |
| Cobalt                                     | 560     | ug/L |                    | 555.6       |                                       | 101  | 80-120      |     |           |
| Lead                                       | 562     | ug/L |                    | 555.6       |                                       | 101  | 80-120      |     |           |
| Mercury                                    | 51.6    | ug/L |                    | 55.56       |                                       | 93   | 80-120      |     |           |
| Molybdenum                                 | 545     | ug/L |                    | 555.6       |                                       | 98   | 80-120      |     |           |
| Selenium                                   | 581     | ug/L |                    | 555.6       |                                       | 105  | 80-120      |     |           |
| Thallium                                   | 533     | ug/L |                    | 555.6       |                                       | 96   | 80-120      |     |           |
| Lithium                                    | 0.558   | mg/L |                    | 0.5556      |                                       | 100  | 80-120      |     |           |
| <b>Matrix Spike (B005306-MS1)</b>          |         |      |                    |             |                                       |      |             |     |           |
|  |         |      | Sample: 0023672-06 |             | Prepared: 03/03/20 Analyzed: 03/04/20 |      |             |     |           |
| Antimony                                   | 543     | ug/L |                    | 555.6       | ND                                    | 98   | 75-125      |     |           |
| Arsenic                                    | 574     | ug/L |                    | 555.6       | ND                                    | 103  | 75-125      |     |           |
| Barium                                     | 539     | ug/L |                    | 555.6       | 10.5                                  | 95   | 75-125      |     |           |
| Beryllium                                  | 514     | ug/L |                    | 555.6       | ND                                    | 93   | 75-125      |     |           |
| Boron                                      | 851     | ug/L |                    | 555.6       | 315                                   | 96   | 75-125      |     |           |
| Cadmium                                    | 512     | ug/L |                    | 555.6       | ND                                    | 92   | 75-125      |     |           |
| Calcium                                    | 292000  | ug/L |                    | 5556        | 288000                                | 77   | 75-125      |     |           |
| Chromium                                   | 536     | ug/L |                    | 555.6       | 4.97                                  | 96   | 75-125      |     |           |
| Cobalt                                     | 531     | ug/L |                    | 555.6       | ND                                    | 96   | 75-125      |     |           |
| Lead                                       | 533     | ug/L |                    | 555.6       | ND                                    | 96   | 75-125      |     |           |
| Mercury                                    | 56.0    | ug/L |                    | 55.56       | ND                                    | 101  | 75-125      |     |           |
| Molybdenum                                 | 557     | ug/L |                    | 555.6       | 0.783                                 | 100  | 75-125      |     |           |
| Selenium                                   | 581     | ug/L |                    | 555.6       | ND                                    | 105  | 75-125      |     |           |
| Thallium                                   | 509     | ug/L |                    | 555.6       | ND                                    | 92   | 75-125      |     |           |
| <b>Matrix Spike Dup (B005306-MSD1)</b>     |         |      |                    |             |                                       |      |             |     |           |
|  |         |      | Sample: 0023672-06 |             | Prepared: 03/03/20 Analyzed: 03/04/20 |      |             |     |           |
| Antimony                                   | 539     | ug/L |                    | 555.6       | ND                                    | 97   | 75-125      | 0.6 | 20        |
| Arsenic                                    | 579     | ug/L |                    | 555.6       | ND                                    | 104  | 75-125      | 1   | 20        |
| Barium                                     | 544     | ug/L |                    | 555.6       | 10.5                                  | 96   | 75-125      | 0.8 | 20        |
| Beryllium                                  | 520     | ug/L |                    | 555.6       | ND                                    | 94   | 75-125      | 1   | 20        |
| Boron                                      | 865     | ug/L |                    | 555.6       | 315                                   | 99   | 75-125      | 2   | 20        |
| Cadmium                                    | 516     | ug/L |                    | 555.6       | ND                                    | 93   | 75-125      | 0.8 | 20        |



QC SAMPLE RESULTS

| Parameter   | Result                    | Unit | Qual | Spike Level                                  | Source Result | %REC | %REC Limits | RPD  | RPD Limit |
|---|---------------------------|------|------|--|---------------|------|-------------|------|-----------|
| <b><u>Batch B005306 - SW 3015 - EPA 6020A</u></b> |                           |      |      |  |               |      |             |      |           |
| <b>Matrix Spike Dup (B005306-MSD1)</b>            | <b>Sample: 0023672-06</b> |      |      | <b>Prepared: 03/03/20 Analyzed: 03/05/20</b> |               |      |             |      |           |
| Calcium   | 293000                    | ug/L |      | 5556   | 288000        | 97   | 75-125      | 0.4  | 20        |
| Chromium  | 544                       | ug/L |      | 555.6  | 4.97          | 97   | 75-125      | 2    | 20        |
| Cobalt  | 530                       | ug/L |      | 555.6  | ND            | 95   | 75-125      | 0.01 | 20        |
| Lead  | 529                       | ug/L |      | 555.6  | ND            | 95   | 75-125      | 0.7  | 20        |
| Mercury   | 53.1                      | ug/L |      | 55.56  | ND            | 96   | 75-125      | 5    | 20        |
| Molybdenum  | 561                       | ug/L |      | 555.6  | 0.783         | 101  | 75-125      | 0.7  | 20        |
| Selenium  | 592                       | ug/L |      | 555.6  | ND            | 107  | 75-125      | 2    | 20        |
| Thallium  | 508                       | ug/L |      | 555.6  | ND            | 91   | 75-125      | 0.2  | 20        |
| <b><u>Batch B006011 - SW 3015 - EPA 6020A</u></b> |                           |      |      |  |               |      |             |      |           |
| <b>Blank (B006011-BLK1)</b>                       |                           |      |      | <b>Prepared: 03/11/20 Analyzed: 03/12/20</b> |               |      |             |      |           |
| Boron   | < 10                      | ug/L |      |  |               |      |             |      |           |
| <b>LCS (B006011-BS1)</b>                          |                           |      |      | <b>Prepared: 03/11/20 Analyzed: 03/12/20</b> |               |      |             |      |           |
| Boron   | 499                       | ug/L |      | 555.6  |               | 90   | 80-120      |      |           |



### NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

\* Not a TNI accredited analyte

### Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050

TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279  
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553

Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)

Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPIL - Springfield, IL - 1210 Capitol Airport Drive, Springfield, IL 62707

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17592

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - Pending

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050

Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

### Qualifiers

- B Present in the method blank at 77.4 ug/L.
- H Test performed after the expiration of the appropriate regulatory/advisory maximum allowable hold time.
- M Analyte failed to meet the required acceptance criteria for duplicate analysis.
- Q1 Matrix Spike failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
- Q2 Matrix Spike Duplicate failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
- Q3 Matrix Spike/Matrix Spike Duplicate both failed % recovery acceptance limits. The associated blank spike recovery was acceptable.



Certified by: Kurt Stepping, Senior Project Manager

March 11, 2020

Ms. Janet Clutters  
PDC Laboratories  
2231 W. Altorfer Drive  
Peoria, IL 61615

RE: Project: 0023536  
Pace Project No.: 30351798

Dear Ms. Clutters:

Enclosed are the analytical results for sample(s) received by the laboratory on February 25, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Alexis E. Ozoroski  
alexis.ozoroski@pacelabs.com  
(724)850-5600  
Project Manager

Enclosures

cc: Ms. Valerie Bennett, PDC Laboratories  
Margie Nobiling, PDC Laboratories



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 0023536  
Pace Project No.: 30351798

### **Pace Analytical Services Pennsylvania**

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: 0023536  
Pace Project No.: 30351798

| Lab ID      | Sample ID  | Matrix | Date Collected | Date Received  |
|-------------|------------|--------|----------------|----------------|
| 30351798001 | 0023536-01 | Water  | 02/18/20 09:20 | 02/25/20 09:20 |
| 30351798002 | 0023536-02 | Water  | 02/18/20 10:25 | 02/25/20 09:20 |
| 30351798003 | 0023536-03 | Water  | 02/18/20 11:39 | 02/25/20 09:20 |
| 30351798004 | 0023536-04 | Water  | 02/18/20 12:36 | 02/25/20 09:20 |
| 30351798005 | 0023536-05 | Water  | 02/18/20 14:13 | 02/25/20 09:20 |
| 30351798006 | 0023536-06 | Water  | 02/18/20 00:00 | 02/25/20 09:20 |
| 30351798007 | 0023536-07 | Water  | 02/18/20 00:00 | 02/25/20 09:20 |

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 0023536  
Pace Project No.: 30351798

| Lab ID      | Sample ID  | Method                   | Analysts | Analytes Reported | Laboratory |
|-------------|------------|--------------------------|----------|-------------------|------------|
| 30351798001 | 0023536-01 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798002 | 0023536-02 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798003 | 0023536-03 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798004 | 0023536-04 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798005 | 0023536-05 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798006 | 0023536-06 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |
| 30351798007 | 0023536-07 | EPA 903.1                | MK1      | 1                 | PASI-PA    |
|             |            | EPA 904.0                | VAL      | 1                 | PASI-PA    |
|             |            | Total Radium Calculation | JAL      | 1                 | PASI-PA    |

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 0023536  
Pace Project No.: 30351798

---

**Method:** EPA 903.1  
**Description:** 903.1 Radium 226  
**Client:** PDC Laboratories Inc  
**Date:** March 11, 2020

**General Information:**

7 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 0023536  
Pace Project No.: 30351798

---

**Method:** EPA 904.0  
**Description:** 904.0 Radium 228  
**Client:** PDC Laboratories Inc  
**Date:** March 11, 2020

**General Information:**

7 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 0023536  
Pace Project No.: 30351798

---

**Method:** Total Radium Calculation

**Description:** Total Radium 228+226

**Client:** PDC Laboratories Inc

**Date:** March 11, 2020

**General Information:**

7 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 0023536  
Pace Project No.: 30351798

| Sample: 0023536-01 |                          | Lab ID: 30351798001            | Collected: 02/18/20 09:20 | Received: 02/25/20 09:20 | Matrix: Water  |            |      |
|--------------------|--------------------------|--------------------------------|---------------------------|--------------------------|----------------|------------|------|
| PWS:               |                          | Site ID:                       | Sample Type:              |                          |                |            |      |
| Parameters         | Method                   | Act ± Unc (MDC) Carr Trac      |                           | Units                    | Analyzed       | CAS No.    | Qual |
| Radium-226         | EPA 903.1                | <b>-0.0667 ± 0.392 (0.875)</b> |                           | pCi/L                    | 03/09/20 11:52 | 13982-63-3 |      |
|                    |                          | <b>C:NA T:78%</b>              |                           |                          |                |            |      |
| Radium-228         | EPA 904.0                | <b>0.341 ± 0.289 (0.571)</b>   |                           | pCi/L                    | 03/10/20 14:47 | 15262-20-1 |      |
|                    |                          | <b>C:79% T:92%</b>             |                           |                          |                |            |      |
| Total Radium       | Total Radium Calculation | <b>0.341 ± 0.681 (1.45)</b>    |                           | pCi/L                    | 03/11/20 12:13 | 7440-14-4  |      |

| Sample: 0023536-02 |                          | Lab ID: 30351798002          | Collected: 02/18/20 10:25 | Received: 02/25/20 09:20 | Matrix: Water  |            |      |
|--------------------|--------------------------|------------------------------|---------------------------|--------------------------|----------------|------------|------|
| PWS:               |                          | Site ID:                     | Sample Type:              |                          |                |            |      |
| Parameters         | Method                   | Act ± Unc (MDC) Carr Trac    |                           | Units                    | Analyzed       | CAS No.    | Qual |
| Radium-226         | EPA 903.1                | <b>0.523 ± 0.415 (0.539)</b> |                           | pCi/L                    | 03/09/20 12:14 | 13982-63-3 |      |
|                    |                          | <b>C:NA T:93%</b>            |                           |                          |                |            |      |
| Radium-228         | EPA 904.0                | <b>0.736 ± 0.373 (0.638)</b> |                           | pCi/L                    | 03/10/20 14:47 | 15262-20-1 |      |
|                    |                          | <b>C:76% T:92%</b>           |                           |                          |                |            |      |
| Total Radium       | Total Radium Calculation | <b>1.26 ± 0.788 (1.18)</b>   |                           | pCi/L                    | 03/11/20 12:13 | 7440-14-4  |      |

| Sample: 0023536-03 |                          | Lab ID: 30351798003          | Collected: 02/18/20 11:39 | Received: 02/25/20 09:20 | Matrix: Water  |            |      |
|--------------------|--------------------------|------------------------------|---------------------------|--------------------------|----------------|------------|------|
| PWS:               |                          | Site ID:                     | Sample Type:              |                          |                |            |      |
| Parameters         | Method                   | Act ± Unc (MDC) Carr Trac    |                           | Units                    | Analyzed       | CAS No.    | Qual |
| Radium-226         | EPA 903.1                | <b>0.373 ± 0.424 (0.669)</b> |                           | pCi/L                    | 03/09/20 12:14 | 13982-63-3 |      |
|                    |                          | <b>C:NA T:90%</b>            |                           |                          |                |            |      |
| Radium-228         | EPA 904.0                | <b>0.576 ± 0.372 (0.701)</b> |                           | pCi/L                    | 03/10/20 14:47 | 15262-20-1 |      |
|                    |                          | <b>C:76% T:92%</b>           |                           |                          |                |            |      |
| Total Radium       | Total Radium Calculation | <b>0.949 ± 0.796 (1.37)</b>  |                           | pCi/L                    | 03/11/20 12:13 | 7440-14-4  |      |

| Sample: 0023536-04 |                          | Lab ID: 30351798004          | Collected: 02/18/20 12:36 | Received: 02/25/20 09:20 | Matrix: Water  |            |      |
|--------------------|--------------------------|------------------------------|---------------------------|--------------------------|----------------|------------|------|
| PWS:               |                          | Site ID:                     | Sample Type:              |                          |                |            |      |
| Parameters         | Method                   | Act ± Unc (MDC) Carr Trac    |                           | Units                    | Analyzed       | CAS No.    | Qual |
| Radium-226         | EPA 903.1                | <b>0.188 ± 0.325 (0.581)</b> |                           | pCi/L                    | 03/09/20 12:14 | 13982-63-3 |      |
|                    |                          | <b>C:NA T:88%</b>            |                           |                          |                |            |      |
| Radium-228         | EPA 904.0                | <b>0.814 ± 0.431 (0.762)</b> |                           | pCi/L                    | 03/10/20 14:47 | 15262-20-1 |      |
|                    |                          | <b>C:78% T:84%</b>           |                           |                          |                |            |      |
| Total Radium       | Total Radium Calculation | <b>1.00 ± 0.756 (1.34)</b>   |                           | pCi/L                    | 03/11/20 12:13 | 7440-14-4  |      |

| Sample: 0023536-05 |           | Lab ID: 30351798005           | Collected: 02/18/20 14:13 | Received: 02/25/20 09:20 | Matrix: Water  |            |      |
|--------------------|-----------|-------------------------------|---------------------------|--------------------------|----------------|------------|------|
| PWS:               |           | Site ID:                      | Sample Type:              |                          |                |            |      |
| Parameters         | Method    | Act ± Unc (MDC) Carr Trac     |                           | Units                    | Analyzed       | CAS No.    | Qual |
| Radium-226         | EPA 903.1 | <b>0.0706 ± 0.322 (0.520)</b> |                           | pCi/L                    | 03/09/20 12:14 | 13982-63-3 |      |
|                    |           | <b>C:NA T:83%</b>             |                           |                          |                |            |      |
| Radium-228         | EPA 904.0 | <b>1.05 ± 0.449 (0.709)</b>   |                           | pCi/L                    | 03/10/20 14:47 | 15262-20-1 |      |
|                    |           | <b>C:74% T:88%</b>            |                           |                          |                |            |      |

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 0023536  
Pace Project No.: 30351798

| Parameters  | Method                   | Act ± Unc (MDC) Carr Trac  | Units | Analyzed       | CAS No.   | Qual |
|---|--------------------------|----------------------------|-------|----------------|-----------|------|
| <b>Sample: 0023536-05</b> <b>Lab ID: 30351798005</b> Collected: 02/18/20 14:13      Received: 02/25/20 09:20      Matrix: Water<br>PWS:      Site ID:      Sample Type: |                          |                            |       |                |           |      |
| Total Radium  | Total Radium Calculation | <b>1.12 ± 0.771 (1.23)</b> | pCi/L | 03/11/20 12:13 | 7440-14-4 |      |

| Parameters  | Method                   | Act ± Unc (MDC) Carr Trac                   | Units | Analyzed       | CAS No.    | Qual |
|---|--------------------------|---|-------|----------------|------------|------|
| <b>Sample: 0023536-06</b> <b>Lab ID: 30351798006</b> Collected: 02/18/20 00:00      Received: 02/25/20 09:20      Matrix: Water<br>PWS:      Site ID:      Sample Type: |                          |   |       |                |            |      |
| Radium-226  | EPA 903.1                | <b>0.291 ± 0.344 (0.541)</b><br>C:NA T:87%  | pCi/L | 03/09/20 12:14 | 13982-63-3 |      |
| Radium-228  | EPA 904.0                | <b>0.936 ± 0.425 (0.696)</b><br>C:76% T:87% | pCi/L | 03/10/20 14:47 | 15262-20-1 |      |
| Total Radium  | Total Radium Calculation | <b>1.23 ± 0.769 (1.24)</b>                  | pCi/L | 03/11/20 12:13 | 7440-14-4  |      |

| Parameters  | Method                   | Act ± Unc (MDC) Carr Trac                   | Units | Analyzed       | CAS No.    | Qual |
|---|--------------------------|---|-------|----------------|------------|------|
| <b>Sample: 0023536-07</b> <b>Lab ID: 30351798007</b> Collected: 02/18/20 00:00      Received: 02/25/20 09:20      Matrix: Water<br>PWS:      Site ID:      Sample Type: |                          |   |       |                |            |      |
| Radium-226  | EPA 903.1                | <b>0.115 ± 0.357 (0.691)</b><br>C:NA T:96%  | pCi/L | 03/09/20 12:14 | 13982-63-3 |      |
| Radium-228  | EPA 904.0                | <b>0.693 ± 0.369 (0.626)</b><br>C:74% T:86% | pCi/L | 03/10/20 14:48 | 15262-20-1 |      |
| Total Radium  | Total Radium Calculation | <b>0.808 ± 0.726 (1.32)</b>                 | pCi/L | 03/11/20 12:13 | 7440-14-4  |      |

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 0023536  
Pace Project No.: 30351798

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

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**SUBCONTRACT ORDER**  
Transfer Chain of Custody

**WO# : 30351798**

PDC Laboratories, Inc.  
0023536



**SENDING LABORATORY**

PDC Laboratories, Inc.  
2231 W Altorfer Dr  
Peoria, IL 61615  
(800) 752-6651

**RECEIVING LABORATORY**

PACE Analytical - Greensburg  
1638 Roseytown Road - Suites 2,3,4  
Greensburg, PA 15601  
(724) 850-5600

**Sample: 0023536-01**  
**Name: MW-3**

**Sampled: 02/18/20 09:20**  
**Matrix: Ground Water**  
**Preservative: HNO3, pH <2**

001

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 09:20 |          |

**Sample: 0023536-02**  
**Name: MW-6**

**Sampled: 02/18/20 10:25**  
**Matrix: Ground Water**  
**Preservative: HNO3, pH <2**

002

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 10:25 |          |

**Sample: 0023536-03**  
**Name: MW-5**

**Sampled: 02/18/20 11:39**  
**Matrix: Ground Water**  
**Preservative: HNO3, pH <2**

003

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 11:39 |          |

**Sample: 0023536-04**  
**Name: MW-8**

**Sampled: 02/18/20 12:36**  
**Matrix: Ground Water**  
**Preservative: HNO3, pH <2**

004

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 12:36 |          |

**Sample: 0023536-05**  
**Name: MW-4**

**Sampled: 02/18/20 14:13**  
**Matrix: Ground Water**  
**Preservative: HNO3, pH <2**

005

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 14:13 |          |



**SUBCONTRACT ORDER**  
**Transfer Chain of Custody**

#-30351798

PDC Laboratories, Inc.

0023536

**SENDING LABORATORY**

PDC Laboratories, Inc.  
 2231 W Altorfer Dr  
 Peoria, IL 61615  
 (800) 752-6651

**RECEIVING LABORATORY**

PACE Analytical - Greensburg  
 1638 Roseytown Road - Suites 2,3,4  
 Greensburg, PA 15601  
 (724) 850-5600

Sample: 0023536-06  
 Name: FIELD DUPLICATE

Sampled: 02/18/20 00:00  
 Matrix: Ground Water  
 Preservative: HNO<sub>3</sub>, pH <2

006

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 00:00 |          |

Sample: 0023536-07  
 Name: FIELD BLANK

Sampled: 02/18/20 00:00  
 Matrix: Ground Water  
 Preservative: HNO<sub>3</sub>, pH <2

007

| Analysis          | Due            | Expires        | Comments |
|-------------------|----------------|----------------|----------|
| 01-Radium 226/228 | 03/02/20 16:00 | 08/16/20 00:00 |          |

Please email results to Kurt Stepping at [kstepping@pdclab.com](mailto:kstepping@pdclab.com)

Date Shipped: 2-21-20 Total # of Containers: 7 Sample Origin (State): IL PO #: L41026

Turn-Around Time Requested  NORMAL  RUSH Date Results Needed: \_\_\_\_\_

|                     |                      |                   |                      |   |  |
|---------------------|----------------------|-------------------|----------------------|---|--|
| Relinquished By     | Date/Time            | Received By       | Date/Time            | Sample Temperature Upon Receipt           | _____ °C                                   |
| <i>Alan W. Hoag</i> | <i>2-21-20 11:30</i> | <i>M. M. Pace</i> | <i>2/25/20 10:00</i> | Sample(s) Received on Ice                 | Y or N <input checked="" type="checkbox"/> |
|                     |                      |                   |                      | Proper Bottles Received in Good Condition | Y or N <input checked="" type="checkbox"/> |
|                     |                      |                   |                      | Bottles Filled with Adequate Volume       | Y or N <input checked="" type="checkbox"/> |
|                     |                      |                   |                      | Samples Received Within Hold Time         | Y or N <input checked="" type="checkbox"/> |
|                     |                      |                   |                      | Date/Time Taken From Sample Bottle        | Y or N <input checked="" type="checkbox"/> |

Pittsburgh Lab Sample Condition Upon Receipt

# 30351798



Client Name: PDC LABS

Project # \_\_\_\_\_

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 7778 2971 2530

Custody Seal on Cooler/Box Present:  yes  no      Seals Intact:  yes  no

Thermometer Used \_\_\_\_\_      Type of Ice: Wet Blue None °C      Final Temp: \_\_\_\_\_ °C

Cooler Temperature \_\_\_\_\_      Observed Temp \_\_\_\_\_ °C      Correction Factor: \_\_\_\_\_ °C

Temp should be above freezing to 6°C

|            |           |
|------------|-----------|
| Label      | <u>NG</u> |
| LIMS Login | <u>NG</u> |

|   |                     |
|---|---------------------|
| pH paper Lot#                                   | <u>10D2191</u>      |
| Date and initials of person examining contents: | <u>NG 2/26/2020</u> |

| Comments:  | Yes No N/A                |   |  | 18.  |
|--|---------------------------|---|--|--|
|  | Chain of Custody Present: | / |  |  |
| Chain of Custody Filled Out:   | /                         |   |  | 2.   |
| Chain of Custody Relinquished:   | /                         |   |  | 3.   |
| Sampler Name & Signature on COC:   | /                         |   |  | 4.   |
| Sample Labels match COC:   | /                         |   |  | 5.   |
| -Includes date/time/ID      Matrix: <u>W</u>   | /                         |   |  | 6.   |
| Samples Arrived within Hold Time:  | /                         |   |  | 7.   |
| Short Hold Time Analysis (<72hr remaining):  | /                         |   |  | 8.   |
| Rush Turn Around Time Requested:   | /                         |   |  | 9.   |
| Sufficient Volume:   | /                         |   |  | 10.  |
| Correct Containers Used:   | /                         |   |  | 11.  |
| -Pace Containers Used:   | /                         |   |  | 12.  |
| Containers Intact:   | /                         |   |  | 13.  |
| Orthophosphate field filtered  | /                         |   |  | 14.  |
| Hex Cr Aqueous sample field filtered   | /                         |   |  | 15.  |
| Organic Samples checked for dechlorination:  | /                         |   |  | 16.  |
| Filtered volume received for Dissolved tests<br>All containers have been checked for preservation. | /                         |   |  |  |
| exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon,<br>Non-aqueous matrix                       |                           |   |  |  |
| All containers meet method preservation requirements.  | /                         |   |  | Initial when completed: <u>NG</u> Date/time of preservation: _____ |
|  |                           |   |  | Lot # of added preservative: _____                                 |
| Headspace in VOA Vials (>6mm):   | /                         |   |  | 17.  |
| Trip Blank Present:  | /                         |   |  | 18.  |
| Trip Blank Custody Seals Present   | /                         |   |  |  |
| Rad Samples Screened < 0.5 mrem/hr   | /                         |   |  | Initial when completed: <u>NG</u> Date: <u>2/26/2020</u>           |

Client Notification/ Resolution: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

Person Contacted: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

\*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



|                              |                       |
|------------------------------|-----------------------|
| REGULATORY PROGRAM (CIRCLE): | NPDES                 |
| MORBCA                       | RCRA                  |
| CCDD                         | TACO: RES OR IND/COMM |

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

|  |   |  |   |  |  |  |
|--|---|--|---|--|--|--|
| 1 CLIENT<br><b>Sikeston Power station</b>        | PROJECT NUMBER                                    | PROJECT LOCATION   | PURCHASE ORDER #                          | 3 ANALYSIS REQUESTED<br><b>RAD 206/208<br/>F, As, Ba, Be, Cd, Co<br/>Cr, Hg, Li, Mo, Pb<br/>Sb, Se, Ti</b> | 4 (FOR LAB USE ONLY)<br>LOGIN # <b>0023536-7</b><br>LOGGED BY: <i>[Signature]</i><br>CLIENT: _____<br>PROJECT: _____<br>PROJ. MGR.: _____<br>CUSTODY SEAL #: _____ |  |
|  | ADDRESS<br><b>1551 West Wakefield</b>             | PHONE NUMBER<br><b>Bottom Ash CCR<br/>APP III and APP IV</b> | E-MAIL                                    |  |  | DATE SHIPPED   |
|  | CITY<br>STATE<br>ZIP<br><b>Sikeston, MO 63801</b> | SAMPLER (PLEASE PRINT)<br><b>Daniel Dillingham</b>           | SAMPLER'S SIGNATURE<br><i>[Signature]</i> |  |  | MATRIX TYPES:<br>WW- WASTEWATER<br>DW- DRINKING WATER<br>GW- GROUND WATER<br>WWSL- SLUDGE<br>NAS- NON AQUEOUS SOLID<br>LC/LT-LEACHATE<br>OIL-OIL<br>SO-SOIL<br>SOL-SOLID |
| CONTACT PERSON<br><b>Ken Ewers/Luke St. Mary</b> |   |  |   |  |  |  |

| 2 SAMPLE DESCRIPTION<br>(UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT) | DATE COLLECTED | TIME COLLECTED | SAMPLE TYPE |      | MATRIX TYPE | BOTTLE COUNT | PRES CODE CLIENT PROVIDED | ANALYSIS |   |   |   |   |   |   |   | REMARKS |   |    |  |
|---|----------------|----------------|-------------|------|-------------|--------------|---------------------------|----------|---|---|---|---|---|---|---|---------|---|----|--|
|   |                |                | GRAB        | COMP |             |              |                           | 1        | 2 | 3 | 4 | 5 | 6 | 7 | 8 |         | 9 | 10 |  |
| MW 3  | 2-18-20        | 0920           | X           |      | GW          | 3            |                           | X        | X | X | X |   |   |   |   |         |   |    |  |
| MW 6  | 2-18-20        | 1025           | X           |      | GW          | 3            |                           | X        | X | X | X |   |   |   |   |         |   |    |  |
| MW 5  | 2-18-20        | 1139           | X           |      | GW          | 3            |                           | X        | X | X | X |   |   |   |   |         |   |    |  |
| MW 8  | 2-18-20        | 1236           | X           |      | GW          | 3            |                           | X        | X | X | X |   |   |   |   |         |   |    |  |
| MW 4  | 2-18-20        | 1413           | X           |      | GW          | 3            |                           | X        | X | X | X |   |   |   |   |         |   |    |  |
| Field Duplicate   | 2-18-20        |                |             | X    | GW          | 3            |                           | X        | X | X | X |   |   |   |   |         |   |    |  |
| Field Blank   | 2-18-20        |                |             | X    | DI          | 3            |                           | X        | X | X | X |   |   |   |   |         |   |    |  |

CHEMICAL PRESERVATION CODES: 1 - HCL 2 - H2SO4 3 - HNO3 4 - NAOH 5 - NA2S2O3 6 - UNPRESERVED 7 - OTHER

|   |   |  |
|---|---|--|
| 5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH<br>(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) | DATE RESULTS NEEDED   | 6 I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities. |
| RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE  | PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) _____ |  |
| EMAIL IF DIFFERENT FROM ABOVE: _____ PHONE # IF DIFFERENT FROM ABOVE: _____   |   |  |

|   |                         |                          |      |   |
|---|-------------------------|--------------------------|------|---|
| 7 RELINQUISHED BY: (SIGNATURE)<br><b>Ashish Patel</b> | DATE<br><b>02-19-20</b> | RECEIVED BY: (SIGNATURE) | DATE | 8 COMMENTS: (FOR LAB USE ONLY)<br><br>SAMPLE TEMPERATURE UPON RECEIPT <b>17 °C</b><br>CHILL PROCESS STARTED PRIOR TO RECEIPT<br>SAMPLE(S) RECEIVED ON ICE<br>SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED<br>DATE AND TIME TAKEN FROM SAMPLE BOTTLE <b>2/20/20 1110</b> |
|   | TIME<br><b>0830</b>     | RECEIVED BY: (SIGNATURE) | TIME |   |
|   | DATE                    | RECEIVED BY: (SIGNATURE) | DATE |   |
| RELINQUISHED BY: (SIGNATURE)                          | TIME                    | RECEIVED BY: (SIGNATURE) | TIME |   |
| RELINQUISHED BY: (SIGNATURE)                          | DATE                    | RECEIVED BY: (SIGNATURE) | DATE |   |
|   | TIME                    |                          | TIME |   |

Page 30 of 30

# **Appendix 2**

Laboratory Analytical Results and  
Quality Control Reports – March 2020



April 07, 2020

Luke St Mary  
Sikeston BMU, Sikeston Power Station  
1551 W Wakefield  
Sikeston, MO 63801

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

Please find enclosed the analytical results for the **7** sample(s) the laboratory received on **4/1/20 11:00 am** and logged in under work order **0040090**. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or [lgrant@pdclab.com](mailto:lgrant@pdclab.com).

Sincerely,

Kurt Stepping  
Senior Project Manager  
(309) 692-9688 x1719  
[kstepping@pdclab.com](mailto:kstepping@pdclab.com)



## ANALYTICAL RESULTS



ANALYTICAL RESULTS

Sample: 0040090-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 03/30/20 08:29
Received: 04/01/20 11:00
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method

General Chemistry - PIA

Table row: Solids - total dissolved solids (TDS), 180, mg/L, 04/02/20 11:06, 1, 26, 04/02/20 11:06, CPC, SM 2540C

Sample: 0040090-02
Name: MW-4
Matrix: Ground Water - Grab

Sampled: 03/30/20 12:49
Received: 04/01/20 11:00
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method

General Chemistry - PIA

Table row: Solids - total dissolved solids (TDS), 300, mg/L, 04/02/20 11:06, 1, 26, 04/02/20 11:06, CPC, SM 2540C

Sample: 0040090-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 03/30/20 10:35
Received: 04/01/20 11:00
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method

General Chemistry - PIA

Table row: Solids - total dissolved solids (TDS), 450, mg/L, 04/02/20 11:06, 1, 26, 04/02/20 11:06, CPC, SM 2540C

Sample: 0040090-04
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 03/30/20 09:20
Received: 04/01/20 11:00
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method

General Chemistry - PIA

Table row: Solids - total dissolved solids (TDS), 230, mg/L, 04/02/20 11:06, 1, 26, 04/02/20 11:06, CPC, SM 2540C



### ANALYTICAL RESULTS

**Sample:** 0040090-05  
**Name:** MW-8  
**Matrix:** Ground Water - Grab

**Sampled:** 03/30/20 11:51  
**Received:** 04/01/20 11:00  
**PO #:** 23573

| Parameter | Result | Unit | Qualifier | Prepared | Dilution | MRL | Analyzed | Analyst | Method |
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|

**General Chemistry - PIA**

|                                       |     |      |  |                |   |    |                |     |          |
|---------------------------------------|-----|------|--|----------------|---|----|----------------|-----|----------|
| Solids - total dissolved solids (TDS) | 480 | mg/L |  | 04/02/20 11:06 | 1 | 26 | 04/02/20 11:06 | CPC | SM 2540C |
|---------------------------------------|-----|------|--|----------------|---|----|----------------|-----|----------|

**Sample:** 0040090-06  
**Name:** FIELD DUPLICATE  
**Matrix:** Ground Water - Grab

**Sampled:** 03/30/20 00:00  
**Received:** 04/01/20 11:00  
**PO #:** 23573

| Parameter | Result | Unit | Qualifier | Prepared | Dilution | MRL | Analyzed | Analyst | Method |
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|

**General Chemistry - PIA**

|                                       |     |      |  |                |   |    |                |     |          |
|---------------------------------------|-----|------|--|----------------|---|----|----------------|-----|----------|
| Solids - total dissolved solids (TDS) | 460 | mg/L |  | 04/02/20 11:06 | 1 | 26 | 04/02/20 11:06 | CPC | SM 2540C |
|---------------------------------------|-----|------|--|----------------|---|----|----------------|-----|----------|

**Sample:** 0040090-07  
**Name:** FIELD BLANK  
**Matrix:** Ground Water - Grab

**Sampled:** 03/30/20 00:00  
**Received:** 04/01/20 11:00  
**PO #:** 23573

| Parameter | Result | Unit | Qualifier | Prepared | Dilution | MRL | Analyzed | Analyst | Method |
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|
|-----------|--------|------|-----------|----------|----------|-----|----------|---------|--------|

**General Chemistry - PIA**

|                                       |      |      |  |                |   |    |                |     |          |
|---------------------------------------|------|------|--|----------------|---|----|----------------|-----|----------|
| Solids - total dissolved solids (TDS) | < 17 | mg/L |  | 04/02/20 11:06 | 1 | 17 | 04/02/20 11:06 | CPC | SM 2540C |
|---------------------------------------|------|------|--|----------------|---|----|----------------|-----|----------|



**QC SAMPLE RESULTS**

| Parameter  | Result | Unit | Qual | Spike Level                   | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|--|--------|------|------|-------------------------------|---------------|------|-------------|-----|-----------|
| <b><u>Batch B007813 - No Prep - SM 2540C</u></b> |        |      |      |                               |               |      |             |     |           |
| <b>Blank (B007813-BLK1)</b>                      |        |      |      | Prepared & Analyzed: 04/02/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | < 17   | mg/L |      |                               |               |      |             |     |           |
| <b>LCS (B007813-BS1)</b>                         |        |      |      | Prepared & Analyzed: 04/02/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 1010   | mg/L |      | 1000                          |               | 101  | 67.9-132    |     |           |
| <b>Duplicate (B007813-DUP1)</b>                  |        |      |      | Prepared & Analyzed: 04/02/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 370    | mg/L | M    |                               | 340           |      |             | 8   | 5         |
| <b>Duplicate (B007813-DUP2)</b>                  |        |      |      | Prepared & Analyzed: 04/02/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 350    | mg/L | M    |                               | 320           |      |             | 9   | 5         |





NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

\* Not a TNI accredited analyte

**Certifications**

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050

TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279  
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230  
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553  
Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)  
Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)  
Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPIL - Springfield, IL - 1210 Capitol Airport Drive, Springfield, IL 62707

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17592

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389  
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080  
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050  
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

**Qualifiers**

M Analyte failed to meet the required acceptance criteria for duplicate analysis.



Certified by: Kurt Stepping, Senior Project Manager



**PDC Laboratories, Inc.**  
P.O. Box 9071 • Peoria, IL 61612-9071  
(309) 692-9688 • (800) 752-6651 • FAX (309) 692-9689



## **DATA PACKAGE**

**CLIENT; Sikeston BMU**

**PROJECT: Sikeston Power Station**

**PDC LAB WORKORDER: 0040090**

**DATE ISSUED: April 7, 2020**

**CASE NARRATIVE –**

**PDC Work Order 0040090**

PDC Laboratories, Inc. received 7 water samples on April 1, 2020 in good condition at our Peoria, IL facility. This sample set was designated as work order 0040090.

| Sample ID's     |            | Date      |          |
|-----------------|------------|-----------|----------|
| Field           | Lab ID     | Collected | Received |
| MW-3            | 0040090-01 | 3/30/20   | 4/1/20   |
| MW-4            | 0040090-02 | 3/30/20   | 4/1/20   |
| MW-5            | 0040090-03 | 3/30/20   | 4/1/20   |
| MW-8            | 0040090-04 | 3/30/20   | 4/1/20   |
| MW-8            | 0040090-05 | 3/30/20   | 4/1/20   |
| Field Duplicate | 0040090-06 | 3/30/20   | 4/1/20   |
| Field Blank     | 0040090-07 | 3/30/20   | 4/1/20   |

**QC Summary:**

**All items met acceptance criteria with the following noted exceptions:**

**TDS: Batch duplicate samples flagged M, outside RPD acceptance criteria**

**Certification**

Signature:



Name: Kurt Stepping

Date: April 7, 2020

Title: Senior Project Manager



PDC LABORATORIES, INC.  
WWW.PDCLAB.COM

|                                 |  |  |
|---------------------------------|--|--|
| REGULATORY PROGRAM (Check one:) |  | NPDES <input type="checkbox"/>                 |
| MORBCA <input type="checkbox"/> |  | RCRA <input type="checkbox"/>                  |
| CCDD <input type="checkbox"/>   |  | TACO: RES OR IND/COMM <input type="checkbox"/> |

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

|   |   |  |   |  |                             |   |   |                         |  |
|---|---|--|---|--|-----------------------------|---|---|-------------------------|--|
| <b>1 CLIENT</b><br>SIKESTON BMU POWER STATION   |   | PROJECT NUMBER<br>_____  | PROJECT LOCATION<br>BOTTOM ASH TDS ONLY   | PURCHASE ORDER #<br>23573              | <b>3 ANALYSIS REQUESTED</b> |   | <b>4 (FOR LAB USE ONLY)</b><br>LOGIN # <u>0040090-07</u><br>LOGGED BY: <u>Dew</u><br>CLIENT: <u>SIKESTON BMU</u><br>PROJECT: <u>BOTTOM ASH TDS ONLY</u><br>PROJ. MGR.: <u>KURT</u><br>CUSTODY SEAL #: _____ |                         |  |
| ADDRESS<br>1551 W WAKEFIELD   |   | PHONE NUMBER<br>573.475.3131   | E-MAIL<br>LSTMARY@SBMU.NET  |  | DATE SHIPPED<br>_____       |   | REMARKS   |                         |  |
| CITY STATE ZIP<br>SIKESTON, MO 63801  | SAMPLER (PLEASE PRINT)<br>Daniel Dillingham |  | MATRIX TYPES:<br>WW- WASTEWATER<br>DW- DRINKING WATER<br>GW- GROUND WATER<br>WWSL- SLUDGE<br>NAB- NON AQUEOUS SOLID<br>LCHT- LEACHATE<br>OL- OIL<br>SO- SOL<br>SOL- SOLID |  |                             | CONTACT PERSON<br>LUKE ST MARY  |   | SAMPLER'S SIGNATURE<br> |  |
| <b>2 SAMPLE DESCRIPTION</b><br>(UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)                |   | DATE COLLECTED   | TIME COLLECTED  | SAMPLE TYPE<br>GRAB COMP               | MATRIX TYPE                 | BOTTLE COUNT  | PRES CODE CLIENT PROVIDED   | TDS                     |  |
| MW-3  |   | 3-30-20  | 0829  | X                                      | GW                          | 1   |   | X                       |  |
| MW-4  |   | 3-30-20  | 1249  | X                                      | GW                          | 1   |   | X                       |  |
| MW-5  |   | 3-30-20  | 1035  | X                                      | GW                          | 1   |   | X                       |  |
| MW-6  |   | 3-30-20  | 0920  | X                                      | GW                          | 1   |   | X                       |  |
| MW-8  |   | 3-30-20  | 1151  | X                                      | GW                          | 1   |   | X                       |  |
| DUPLICATE WELL  |   | 3-30-20  |   | X                                      | GW                          | 1   |   | X                       |  |
| FIELD BLANK   |   | 3-30-20  |   | X                                      | GW                          | 1   |   | X                       |  |
| CHEMICAL PRESERVATION CODES:  |   | 1 - HCL  | 2 - H2SO4   | 3 - HNO3                               | 4 - NAOH                    | 5 - NA2S2O3   | 6 - UNPRESERVED   | 7 - OTHER               |  |
| <b>5</b> TURNAROUND TIME REQUESTED (PLEASE CHECK)<br>(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) |   | <input checked="" type="checkbox"/> NORMAL <input type="checkbox"/> RUSH |   | DATE RESULTS NEEDED<br>_____           |                             | <b>6</b> I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities. |   |                         |  |
| RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL <input type="checkbox"/> PHONE <input type="checkbox"/>                |   | EMAIL IF DIFFERENT FROM ABOVE: _____                                     |   | PHONE # IF DIFFERENT FROM ABOVE: _____ |                             | PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) _____   |   |                         |  |
| <b>7</b> RELINQUISHED BY: (SIGNATURE)<br>   |   | DATE<br>3-31-2020  | RECEIVED BY: (SIGNATURE)<br>  |  | DATE<br>_____               | <b>8</b> COMMENTS: (FOR LAB USE ONLY)   |   |                         |  |
| RELINQUISHED BY: (SIGNATURE)  |   | TIME<br>0730   | RECEIVED BY: (SIGNATURE)  |  | TIME<br>_____               | SAMPLE TEMPERATURE UPON RECEIPT <u>1.7</u> °C   |   |                         |  |
| RELINQUISHED BY: (SIGNATURE)  |   | DATE<br>_____  | RECEIVED BY: (SIGNATURE)  |  | DATE<br>4/1/20              | CHILL PROCESS STARTED PRIOR TO RECEIPT<br>SAMPLE(S) RECEIVED ON ICE<br>SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED   |   |                         |  |
| RELINQUISHED BY: (SIGNATURE)  |   | TIME<br>_____  | RECEIVED BY: (SIGNATURE)  |  | TIME<br>1100                | DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____  |   |                         |  |

# **Appendix 3**

Laboratory Analytical Results and  
Quality Control Reports – April 2020



May 14, 2020

Luke St Mary  
Sikeston BMU, Sikeston Power Station  
1551 W Wakefield  
Sikeston, MO 63801

RE: Sikeston NPDES Groundwater

Dear Luke St Mary:

Please find enclosed the analytical results for the **15** sample(s) the laboratory received on **4/10/20 10:00 am** and logged in under work order **0042173**. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or [lgrant@pdclab.com](mailto:lgrant@pdclab.com).

Sincerely,

Kurt Stepping  
Senior Project Manager  
(309) 692-9688 x1719  
[kstepping@pdclab.com](mailto:kstepping@pdclab.com)



## ANALYTICAL RESULTS



ANALYTICAL RESULTS

Sample: 0042173-08
Name: MW-8
Matrix: Ground Water - Regular Sample

Sampled: 04/08/20 10:55
Received: 04/10/20 10:00
PO #: 23575

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method

General Chemistry - PIA

Table row: Solids - total dissolved solids (TDS), 430 mg/L, 04/13/20 13:25, 1, 26, 04/13/20 14:25, CPC, SM 2540C

Sample: 0042175-01
Name: MW-8
Matrix: Ground Water - Regular Sample

Sampled: 04/08/20 10:55
Received: 04/10/20 10:00
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method

General Chemistry - PIA

Table row: Solids - total dissolved solids (TDS), 480 mg/L, 04/13/20 13:25, 1, 26, 04/13/20 14:25, CPC, SM 2540C

Sample: 0042175-02
Name: FIELD DUPLICATE
Matrix: Ground Water - Regular Sample

Sampled: 04/08/20 00:00
Received: 04/10/20 10:00
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method

General Chemistry - PIA

Table row: Solids - total dissolved solids (TDS), 330 mg/L, 04/13/20 13:25, 1, 26, 04/13/20 14:25, CPC, SM 2540C

Sample: 0042175-03
Name: FIELD BLANK
Matrix: Ground Water - Regular Sample

Sampled: 04/07/20 00:00
Received: 04/10/20 10:00
PO #: 23573

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method

General Chemistry - PIA

Table row: Solids - total dissolved solids (TDS), < 17 mg/L, 04/13/20 13:25, 1, 17, 04/13/20 14:25, CPC, SM 2540C



**QC SAMPLE RESULTS**

| Parameter  | Result | Unit | Qual | Spike Level                   | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|--|--------|------|------|-------------------------------|---------------|------|-------------|-----|-----------|
| <b><u>Batch B008700 - No Prep - SM 2540C</u></b> |        |      |      |                               |               |      |             |     |           |
| <b>Blank (B008700-BLK1)</b>                      |        |      |      | Prepared & Analyzed: 04/13/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | < 17   | mg/L |      |                               |               |      |             |     |           |
| <b>LCS (B008700-BS1)</b>                         |        |      |      | Prepared & Analyzed: 04/13/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 980    | mg/L |      | 1000                          |               | 98   | 67.9-132    |     |           |
| <b>Duplicate (B008700-DUP1)</b>                  |        |      |      | Prepared & Analyzed: 04/13/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 410    | mg/L |      |                               | 430           |      |             | 5   | 5         |
| <b>Duplicate (B008700-DUP2)</b>                  |        |      |      | Prepared & Analyzed: 04/13/20 |               |      |             |     |           |
| Solids - total dissolved solids (TDS)            | 800    | mg/L |      |                               | 820           |      |             | 2   | 5         |





## NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

\* Not a TNI accredited analyte

### Memos

Revised report. Confirmed that filed duplicate label was put on wrong bottle. Value for -02 corrected to reflect the proper container.

TDS Lab duplicate from separate login group added.

### Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050

TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553

Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)

Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050

Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050



Certified by: Kurt Stepping, Senior Project Manager



**PDC Laboratories, Inc.**  
P.O. Box 9071 • Peoria, IL 61612-9071  
(309) 692-9688 • (800) 752-6651 • FAX (309) 692-9689



## **DATA PACKAGE**

**CLIENT; Sikeston BMU**

**PROJECT: Sikeston Power Station**

**PDC LAB WORKORDER: 0042175**

**DATE ISSUED: May 13, 2020**

## CASE NARRATIVE –

### PDC Work Order 0042175

PDC Laboratories, Inc. received 3 water samples on April 10, 2020 in good condition at our Peoria, IL facility. This sample set was designated as work order 0042175.

| Sample ID's    |            | Date      |          |
|----------------|------------|-----------|----------|
| Field          | Lab ID     | Collected | Received |
| MW-8           | 0042175-01 | 4/8/20    | 4/10/20  |
| DUPLICATE WELL | 0042175-02 | 4/8/20    | 4/10/20  |
| FIELD BLANK    | 0042175-03 | 4/7/20    | 4/10/20  |

#### QC Summary:

All items met acceptance criteria with the following noted exceptions for this revised report:

No exceptions for this report.

Lab duplicate sample for MW-8 shows on report as 0042173-08. Duplicate analysis was performed on same bottle (also used for another monitoring program) in the same analytical batch.

#### Certification

Signature:



Name: Kurt Stepping

Date: May 13, 2020

Title: Senior Project Manager



|                                 |  |
|---------------------------------|--|
| REGULATORY PROGRAM (Check one:) | NPDES <input type="checkbox"/>                 |
| MORBCA <input type="checkbox"/> | RCRA <input type="checkbox"/>                  |
| CCDD <input type="checkbox"/>   | TACO: RES OR IND/COMM <input type="checkbox"/> |

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

|  |  |                              |   |   |                             |   |  |   |  |                 |
|--|--|------------------------------|---|---|-----------------------------|---|--|---|--|-----------------|
| <b>1 CLIENT</b><br>SIKESTON BMU POWER STATION  |  | PROJECT NUMBER<br>_____      | PROJECT LOCATION<br>BOTTOM ASH TDS ONLY | PURCHASE ORDER #<br>23573   | <b>3 ANALYSIS REQUESTED</b> |   | <b>4 (FOR LAB USE ONLY)</b><br>LOGIN # <u>0042175-03</u><br>LOGGED BY: <u>DCW</u><br>CLIENT: SIKESTON BMU<br>PROJECT: BOTTOM ASH TDS ONLY<br>PROJ. MGR.: KURT<br>CUSTODY SEAL #: _____ |   |  |                 |
| ADDRESS<br>1551 W WAKEFIELD  |  | PHONE NUMBER<br>573.475.3131 | E-MAIL<br>LSTMARY@SBMU.NET              | DATE SHIPPED<br>4-9-2020  |                             | MATRIX TYPES:<br>WW- WASTEWATER<br>DW- DRINKING WATER<br>GW- GROUND WATER<br>WWSL- SLUDGE<br>NAS- NON AQUEOUS SOLID<br>LCHL- LEACHATE<br>OIL- OIL<br>SO- SOIL<br>SOL- SOLID |  | REMARKS   |  |                 |
| CITY<br>STATE<br>ZIP<br>SIKESTON, MO 63801   | SAMPLER<br>(PLEASE PRINT)<br>Daniel Dillingham |                              | CONTACT PERSON<br>LUKE ST MARY          |   | SAMPLER'S<br>SIGNATURE<br>  |   |  |   |  |                 |
| <b>2 SAMPLE DESCRIPTION</b><br>(UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)   |  | DATE<br>COLLECTED            | TIME<br>COLLECTED                       | SAMPLE TYPE<br>GRAB    COMP   | MATRIX<br>TYPE              |   |  |   |  | BOTTLE<br>COUNT |
| MW-8   |  | 4/8/2020                     | 1055                                    | X   | GW                          | 1   |  | X   |  |                 |
| DUPLICATE WELL   |  | 4/8/2020                     |   | X   | GW                          | 1   |  | X   |  |                 |
| FIELD BLANK  |  | 4/7/2020                     |   | X   | GW                          | 1   |  | X   |  |                 |
| CHEMICAL PRESERVATION CODES:    1 - HCL    2 - H2SO4    3 - HNO3    4 - NAOH    5 - NA2S2O3    6 - UNPRESERVED    7 - OTHER  |  |                              |   |   |                             |   |  |   |  |                 |
| <b>5</b> TURNAROUND TIME REQUESTED (PLEASE CHECK)<br>(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) <input checked="" type="checkbox"/> NORMAL <input type="checkbox"/> RUSH |  | DATE RESULTS<br>NEEDED       |   | <b>6</b> I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities. |                             | RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL <input type="checkbox"/> PHONE <input type="checkbox"/>  |  | PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) _____ |  |                 |
| <b>7</b> RELINQUISHED BY: (SIGNATURE)<br>  |  | DATE<br>4-9-2020             | RECEIVED BY: (SIGNATURE)                |   | DATE                        | <b>8</b> COMMENTS: (FOR LAB USE ONLY)   |  |   |  |                 |
| RELINQUISHED BY: (SIGNATURE)   |  | DATE                         | RECEIVED BY: (SIGNATURE)                |   | DATE                        | SAMPLE TEMPERATURE UPON RECEIPT <u>2.2</u> °C   |  |   |  |                 |
| RELINQUISHED BY: (SIGNATURE)   |  | DATE                         | RECEIVED BY: (SIGNATURE)                |   | DATE<br>4/10/20             | CHILL PROCESS STARTED PRIOR TO RECEIPT <input type="checkbox"/> Y OR N <input type="checkbox"/> Y OR N  |  |   |  |                 |
|  |  | TIME<br>8000                 |   |   | TIME<br>1000                | SAMPLE(S) RECEIVED ON ICE <input type="checkbox"/> Y OR N <input type="checkbox"/> Y OR N   |  |   |  |                 |
|  |  | TIME                         |   |   |                             | REPORT IS NEEDED <input type="checkbox"/> Y OR N <input type="checkbox"/> Y OR N  |  |   |  |                 |
|  |  |                              |   |   |                             | DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____  |  |   |  |                 |