

1505 East High Street
Jefferson City, Missouri 65101
Telephone (573) 659-9078
Facsimile (573) 659-9079

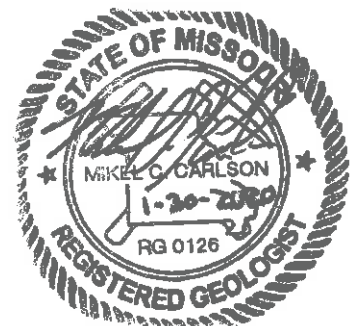
GREDELL Engineering Resources, Inc.

**Sikeston Power Station
2019 Annual Groundwater Monitoring Report for
Bottom Ash Pond
For Compliance with USEPA 40 CFR 257.90(e)**

Prepared for:



**Mr. Luke St. Mary
Sikeston Power Station
1551 West Wakefield Avenue
Sikeston, Missouri 63801**



January 30, 2020

Sikeston Power Station
2019 Annual Groundwater Monitoring Report for
Bottom Ash Pond
For Compliance with USEPA 40 CFR 257.90(e)

Prepared for:
Sikeston Board of Municipal Utilities
1551 West Wakefield Avenue
Sikeston, Missouri 63801

January 2020

Prepared by:
GREDELL Engineering Resources, Inc.
1505 East High Street
Jefferson City, Missouri 65101
Phone: (573) 659-9078
www.ger-inc.biz

**Sikeston Power Station
2019 Annual Groundwater Monitoring Report for
Bottom Ash Pond
For Compliance with USEPA 40 CFR 257.90(e)**

January 2020

Table of Contents

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

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 – May 28, 2019

Figure 2 –Groundwater Contour Map – August 28, 2019

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

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 actively 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 the 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, five additional rounds of background data have been collected. The eighth round of sampling is scheduled for the third quarter of 2020.

This 3rd annual report describes the results of the fourth and fifth semi-annual detection groundwater sampling events conducted at the Sikeston Power Station bottom ash pond on May 28 and August 28, 2019, 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.

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 May and August, 2019 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 fourth and fifth semi-annual detection groundwater sampling events on May 28 and August 28, 2019, 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 replicate, 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 May 28 and August 28, 2019 sampling events included the collection of one field blank and one field replicate sample per sampling event. During both events, the replicate was collected from MW-5 (identified as DUP in 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 May sampling event were received by the primary facility on May 30, 2019. However, preliminary results received on June 17, 2019 did not include analysis of all six detection monitoring constituents listed in §257 Appendix III and required under §257.94(b) (Table 4).

Following discussion with the primary facility, PDC Labs initiated analysis of Fluoride, Sulfate, and Chloride on June 19, 2019, but it was recognized that analysis of TDS would be performed outside of accepted hold times. As a consequence, all five wells were resampled specifically for TDS on July 23, 2019. Final hard copy analytical results, excluding TDS, were received from PDC Labs on July 5, 2019. Final hard copy analytical results for TDS were received on August 2, 2019.

Samples from the August sampling event were received by the primary facility on August 30, 2019 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 October 2, 2019.

4.0 ANALYTICAL SUMMARY

Hard copy analytical data for each monitoring well sampled during the May and August, 2019 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 replicate and field blank results.

4.1 Laboratory Quality Control

Laboratory analytical data for the May and August, 2019 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 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 May 2019 sampling event indicates that all quality controls met acceptance criteria. The case narrative for the August 2019 sampling event indicates that the TDS batch duplicate did not meet the acceptance criteria and MW-5 was flagged "M" accordingly. Additionally, the Sulfate, Boron, and Calcium values for MW-3 were over four times the respective batch matrix spikes and matrix spike duplicate values and were flagged "Q4" accordingly.

Additional QA/QC comments include the following:

- *Field Replicates:* Analyses of replicate samples are used to define the total variability of the sampling/analytical system as a whole. One field replicate from MW-5 was collected during each of the 2019 sampling events. The RPD was calculated for all detected chemical parameters for each sampling event. Accordingly RPDs were calculated for all parameters during both sampling events except Fluoride. A summary table showing the results of the RPD calculations is included as Table 5. Using a tolerance level of ± 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 2019. The May 2019 field blank analytical results indicate concentrations of Boron (18

ug/L) and Calcium (0.16 mg/L). The August 2019 field blank analytical results also indicate concentrations of Boron (12 ug/L) and Calcium (0.10 mg/L). All other parameters during the May and August events 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 replicate 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.

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 9.5.32; 2017). 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 May and August 2019 detection monitoring events were compared to the prediction limits (Table 6) to determine if statistically significant increases (SSIs) over background exist in the data set.

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 2019 sampling events are described below. 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. 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. Box and whiskers plots of background data are presented in Appendix 7. Prediction limit charts are provided in Appendix 8.

5.1 Statistical Results

May 28, 2019 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 420 mg/L is below the prediction limit and failed to confirm the SSI. Consequently, detection monitoring should continue on a semi-annual basis as specified in §257.94(b).

August 28, 2019 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 August 28, 2019 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 October 22, 2019 and the result (7.3 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 fourth and fifth groundwater detection monitoring events conducted on May 28 and August 28, 2019, respectively, do not indicate the presence of confirmed SSIs associated with 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 ASD (Gredell Engineering, 2019) should also continue through the completion of the 8th round during the 3rd quarter 2020.

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**

Monitoring Well ID^{1,2}	Northing Location^{3,4}	Easting Location^{3,4}	Ground Surface Elevation^{3,4} (feet)	Top of Riser Elevation^{3,4} (feet)	Well Depth⁵ (feet)	Base of Well Elevation⁶ (feet)	Screen Length⁷ (feet)	Top of Screen Elevation (feet)
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	296.78
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	298.25	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

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
May 28, 2019**

Monitoring Well I.D.	Hydraulic Position	Initial Water Level (ft, BTOC ²)	Final Water Level (ft, BTOC ²)	Minimum ³ Purge Vol. (ml ⁴)	Actual Purge Vol. (ml ⁴)	pH (S.U. ⁵)
MW-3	Upgradient	9.60	9.60	300	4,880	6.4
MW-4	Downgradient	9.60	9.60	300	6,100	7.3
MW-5	Downgradient	9.11	9.11	300	2,000	6.9
MW-6	Upgradient	9.81	9.81	300	4,300	6.7
MW-8	Downgradient	8.61	8.61	300	3,180	7.1

**Water Level and Field Parameter Summary
August 28, 2019**

Monitoring Well I.D.	Hydraulic Position	Initial Water Level (ft, BTOC ²)	Final Water Level (ft, BTOC ²)	Minimum ³ Purge Vol. (ml ⁴)	Actual Purge Vol. (ml ⁴)	pH (S.U. ⁵)
MW-3	Upgradient	11.00	11.00	300	2,800	6.4
MW-4	Downgradient	10.80	10.80	300	4,160	7.2/7.3
MW-5	Downgradient	10.44	10.44	300	2,560	6.8
MW-6	Upgradient	11.21	11.21	300	1,920	6.7
MW-8	Downgradient	9.86	9.86	300	2,380	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. Re-Sample data shown for pH at MW-4 during August 28, 2019 sampling 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 - Constituents for Detection Monitoring		Appendix IV - 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 -
May 28, 2019**

Chemical Parameter	Units	MW-5	DUP	Relative Percent Difference
pH	S.U.	6.9	6.9	0.00
Boron	µg/L	280	300	6.90
Calcium	mg/L	110	110	0.00
Chloride	mg/L	10	11	9.52
Fluoride	mg/L	<0.250	<0.250	N/A
Sulfate	mg/L	190	190	0.00
Total Dissolved Solids*	mg/L	480	460	4.26

* Total Dissolved Solids sampled July 23, 2019.

**Relative Percent Difference Summary -
August 28, 2019**

Chemical Parameter	Units	MW-5	DUP	Relative Percent Difference
pH	S.U.	6.8	6.8	0.00
Boron	µg/L	410	430	4.76
Calcium	mg/L	110	110	0.00
Chloride	mg/L	16	16	0.00
Fluoride	mg/L	<0.250	<0.250	NA
Sulfate	mg/L	190	190	0.00
Total Dissolved Solids	mg/L	480	440	8.70

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
40 CFR 257 Appendix III Constituents for Detection Monitoring						
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

APPENDICES

Appendix 1

Field Sampling Notes

Field Sampling Notes – May 28, 2019
(First 2019 Semi-annual Event)

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: ASH.32 Patel

Field Instruments: <u>In-Situ smarTROLL Field Meter</u>	HF scientific, inc. Micro TPI Field Portable Turbidimeter
S/N #: <u>474247</u>	S/N #: <u>201607366</u>

	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	5-28-19	0625	4.00	= 4.0	1413	= 1412.4	Temperature (°C)	= 21.74	= 229.3	Temperature (°C)	= 20.62	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)	= 997.1		1000	= 1000.0				
							Measurement	= 100.0							
End of Day Check	5-28-19	1304	4.00	= 4.1	1413	= 1416.9	Temperature (°C)	= 22.07	= 227.6	Temperature (°C)	= 26.19	0.02	= 0.03		
			7.00	= 7.1			Standard (mV)	= 229.0		Tap Water Source	= Sikeston City			10.0	= 10.06
			10.00	= 10.0			Barometric Pressure (mm/Hg)	= 946.9		1000	= 1000.3				
							Measurement	= 98.3							

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: 5-28-19 By: ASH.32 Patel

Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Groundwater Monitoring
 Monitoring Well ID: MW 3
 Name (Field Staff): A Patel D Dillingham
 Date: 5-28-19

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

5-28-19
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): 9.60

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>5-28-19</u> <u>0744</u>	<u>280</u>	<u>16.42</u>	<u>218.4</u>	<u>0.82</u>	<u>6.4</u>	<u>32.2</u>	<u>9.69</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: SUNNY
75°F

Sample Characteristics: Red Flake, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations: AP
- COLLECT FOR SAMPLE FOR CCR APP III and APP IV

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

Date: 5-28-19 By: ASHA POSEY Title: LAB TECH

Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Groundwater Monitoring

Monitoring Well ID: MW 6

Name (Field Staff): A Patel O Dillingham

Date: 5-28-19

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] Las Tech 5-28-19
Signed Title Date

Field Sampling Log

Monitoring Well ID: MW 6 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 9.81 Date: 5-28-19
 Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y/N

PURGE INFORMATION

Date: 5-28-19
 Name (Sample Collector): D Dillingham
 Method of Well Purge: Low Flow Peristaltic Pump Dedicated Tubing? Y/N
 Time Purging Initiated: 0816 One (1) Well Volume (mL): NA
 Beginning Water Level (feet btoc): 9.81 Total Volume Purged (mL): 4300
 Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y/N
 Well Total Depth (feet btoc): 37.75 Water Level after Sampling (feet btoc): 9.81
 (i.e., pump is off)
 Casing Diameter (feet) 2" Sch 40 PVC Time Sampling Completed: 0842

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)
0818		380	18.56	438.0	0.68	6.6	-55.2	12.20	9.81	Yellow, no odor
0822	270	920	17.51	389.9	0.54	6.7	-46.5	11.97	9.81	" "
0822	270	1460	17.14	393.9	0.50	6.7	-44.9	13.43	9.81	" "
0824	280	2020	17.03	404.2	0.46	6.7	-46.1	9.57	9.81	Clear, no odor
0826	280	2580	17.01	413.0	0.38	6.7	-47.5	8.82	9.81	" "
0828	290	3160	16.92	415.2	0.37	6.7	-47.3	7.60	9.81	" "
0830	280	3720	16.96	422.8	0.35	6.7	-48.5	7.53	9.81	" "
0832	290	4300	16.93	418.2	0.34	6.7	-48.2	7.15	9.81	" "

btoc - below top of casing

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): 9.81

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>5-28-19</u> <u>0832</u>	<u>290</u>	<u>16.93</u>	<u>418.2</u>	<u>0.34</u>	<u>6.7</u>	<u>-48.2</u>	<u>7.15</u>

Instrument Calibration Data:

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

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

General Information:

Weather Conditions @ time of sampling: Sunny
79°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect Field Blank

Collect Sample for CCR APP III and APP IV

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

Date: 5-28-19 By: Ashley R. Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Groundwater Monitoring

Monitoring Well ID: MW 5

Name (Field Staff): A Patel O Dillingham

Date: 5-28-19

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

5-28-19
Date

Field Sampling Log

Monitoring Well ID: MWS Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 9.11 Date: 5-28-19
Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 5-28-19
Name (Sample Collector): D Dillingham
Method of Well Purge: Low Flow Peristaltic Pump Dedicated Tubing? (Y) / N
Time Purging Initiated: 0925 One (1) Well Volume (mL): NA
Beginning Water Level (feet btoc): 9.11 Total Volume Purged (mL): 2000
Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)
Well Total Depth (feet btoc): 37.15 Water Level after Sampling (feet btoc): 9.11
(i.e., pump is off)
Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0955

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)
0927		400	20.86	820.2	0.66	6.7	-60.4	6.87	9.11	Yellow, no
0929	260	920	18.68	860.5	0.69	6.8	-60.7	3.53	9.11	Flake, no
0931	270	1460	18.45	853.6	0.62	6.8	-59.4	2.80	9.11	" "
0933	270	2000	18.31	861.1	0.60	6.9	-59.1	3.71	9.11	" "

btoc - below top of casing

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): 9.11

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>5-28-19</u> <u>0933</u>	<u>270</u>	<u>18.31</u>	<u>861.1</u>	<u>0.60</u>	<u>6.9</u>	<u>-59.1</u>	<u>3.71</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

82°F

Sample Characteristics: Yellow Flake, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect Duplicate

Collect sample for CCR APP III and APP IV

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

Date: 5-28-19 By: [Signature] Title: US Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
 Monitoring Well ID: MW 8
 Name (Field Staff): A Patel D O'Dillingham
 Date: 5-28-19

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: Ash Patel Lab Tech 5-28-19
 Signed Title Date

Field Sampling Log

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

Initial Water Level (feet btoc): <u>8.61</u>	Date: <u>5-28-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? Y / <input checked="" type="radio"/> N

PURGE INFORMATION

Date: <u>5-28-19</u>	
Name (Sample Collector): <u>D Dillingham</u>	
Method of Well Purge: <u>Low Flow Peristaltic Pump</u>	Dedicated Tubing? <input checked="" type="radio"/> Y / N
Time Purging Initiated: <u>1027</u>	One (1) Well Volume (mL): <u>NA</u>
Beginning Water Level (feet btoc): <u>8.61</u>	Total Volume Purged (mL): <u>3180</u>
Beginning Groundwater Elevation (NAVD88): _____	Well Purged To Dryness? Y / <input checked="" type="radio"/> N
Well Total Depth (feet btoc): <u>37.04</u>	Water Level after Sampling (feet btoc): <u>8.61</u> (i.e., pump is off)
Casing Diameter (feet): <u>2" Sch 40 PVC</u>	Time Sampling Completed: <u>1053</u>

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)
<u>1029</u>		<u>340</u>	<u>22.23</u>	<u>784.9</u>	<u>0.46</u>	<u>6.9</u>	<u>-94.6</u>	<u>2.87</u>	<u>8.61</u>	<u>Clear, odor</u>
<u>1031</u>	<u>230</u>	<u>800</u>	<u>19.69</u>	<u>819.2</u>	<u>0.41</u>	<u>7.0</u>	<u>-93.4</u>	<u>2.14</u>	<u>8.61</u>	<u>" "</u>
<u>1033</u>	<u>230</u>	<u>1260</u>	<u>19.13</u>	<u>828.7</u>	<u>0.41</u>	<u>7.0</u>	<u>-92.5</u>	<u>1.07</u>	<u>8.61</u>	<u>" "</u>
<u>1035</u>	<u>240</u>	<u>1740</u>	<u>18.61</u>	<u>836.4</u>	<u>0.36</u>	<u>7.0</u>	<u>-92.1</u>	<u>4.32</u>	<u>8.61</u>	<u>" "</u>
<u>1037</u>	<u>230</u>	<u>2200</u>	<u>18.35</u>	<u>837.7</u>	<u>0.31</u>	<u>7.0</u>	<u>-91.1</u>	<u>4.87</u>	<u>8.61</u>	<u>" "</u>
<u>1039</u>	<u>240</u>	<u>2680</u>	<u>18.07</u>	<u>841.6</u>	<u>0.29</u>	<u>7.1</u>	<u>-90.3</u>	<u>3.95</u>	<u>8.61</u>	<u>" "</u>
<u>1041</u>	<u>250</u>	<u>3180</u>	<u>18.25</u>	<u>836.6</u>	<u>0.29</u>	<u>7.1</u>	<u>-90.6</u>	<u>4.89</u>	<u>8.61</u>	<u>" "</u>
<u>AP</u>										

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): 8.61

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>5-28-19</u> <u>1041</u>	<u>250</u>	<u>18.25</u>	<u>836.6</u>	<u>0.29</u>	<u>7.1</u>	<u>-90.6</u>	<u>4.89</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

85°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

-collect sample + data for CCR APP III & APP IV

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

Date: 5-28-19 By: [Signature] Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 4

Name (Field Staff): A Patel O Dillingham

Date: 5-28-19

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]
Signed

Lab Tech
Title

5-28-19
Date

Field Sampling Log

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

Initial Water Level (feet btoc): 9.60 Date: 5-28-19
 Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / N

PURGE INFORMATION

Date: 5-28-19
 Name (Sample Collector): D Dillingham
 Method of Well Purge: Low Flow Peristaltic Pump Dedicated Tubing? Y / N
 Time Purging Initiated: 1130 One (1) Well Volume (mL): NA
 Beginning Water Level (feet btoc): 9.60 Total Volume Purged (mL): 6100
 Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / N
 Well Total Depth (feet btoc): 37.26 Water Level after Sampling (feet btoc): 9.60
 (i.e., pump is off)
 Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1205

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)
1132		400	22.59	539.6	0.61	7.2	-109.5	6.46	9.60	yellow, no odor
1134	270	940	20.19	570.9	0.53	7.3	-109.0	5.66	9.60	" "
1136	260	1460	18.88	577.2	0.51	7.3	-112.1	3.78	9.60	clear, no odor
1138	270	2000	18.61	585.1	0.45	7.3	-109.5	8.16	9.60	" "
1140	250	2500	18.30	584.4	0.44	7.3	-108.6	4.31	9.60	" "
1142	270	3040	18.25	582.3	0.42	7.3	-108.8	2.09	9.60	" "
1144	260	3560	18.35	585.0	0.41	7.3	-109.1	1.38	9.60	" "
1146	260	4080	18.45	573.6	0.39	7.3	-109.2	4.96	9.60	" "
1148	240	4560	18.50	585.9	0.38	7.3	-108.5	6.54	9.60	" "
1150	250	5060	18.61	585.3	0.38	7.3	-108.9	3.71	9.60	" "
1152	260	5580	18.64	582.4	0.37	7.3	-109.0	3.15	9.60	" "
1154	260	6100	18.65	581.7	0.37	7.3	-108.5	3.30	9.60	" "

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): 9.60

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>5-28-19</u> <u>1154</u>	<u>260</u>	<u>18.65</u>	<u>581.7</u>	<u>0.37</u>	<u>7.3</u>	<u>-108.5</u>	<u>3.30</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

85°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect sample for CCR APP III and APP IV

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

Date: 5-28-19 By: Abhijit Patel Title: Lab Tech

PDC LABORATORIES, INC.
2231 WEST ALTORFER DRIVE
PEORIA, IL 61615

PHONE # 800-752-6651
FAX # 309-692-9689

CHAIN OF CUSTODY RECORD

State where samples collected MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT) - (SAMPLE ACCEPTANCE POLICY ON REVERSE)

1 CLIENT <u>Sikeston Power station</u>		PROJECT NUMBER <u>CCR APP IV ONLY</u>	P. O. NUMBER	MEANS SHIPPED	3 ANALYSIS REQUESTED			4 (FOR LAB USE ONLY)			
ADDRESS <u>1551 W Wakefield</u>		PHONE NUMBER	FAX NUMBER	DATE SHIPPED	<u>228</u> <u>RAD</u> <u>F, As, BA, BE, CD, CO</u> <u>Cr, Hg, Li, Mn, Pb</u> <u>Sb, Se, Tl</u>			LOGIN # _____			
CITY STATE ZIP	<u>Sikeston MO 63801</u>	SAMPLER (PLEASE PRINT) <u>Daniel Dillingham</u>	SAMPLER'S SIGNATURE <i>[Signature]</i>	MATRIX TYPES: WW-WASTEWATER DW-DRINKING WATER GW-GROUND WATER WWSL-SLUDGE NAS-SOLID LCHT-LEACHATE				LOGGED BY: _____		LAB PROJ. # _____	
CONTACT PERSON <u>Luke St. Mary / Ken Ewers</u>		OTHER: _____		TEMPLATE: _____				PROJ. MGR.: _____			
2 SAMPLE DESCRIPTION AS YOU WANT ON REPORT		DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB COMP	MATRIX TYPE	BOTTLE COUNT	REMARKS				
<u>MW 3</u>		<u>5-28-19</u>	<u>0744</u>	<u>X</u>	<u>GW</u>	<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>MW 6</u>		<u>5-28-19</u>	<u>0832</u>	<u>X</u>	<u>GW</u>	<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>MW 5</u>		<u>5-28-19</u>	<u>0933</u>	<u>X</u>	<u>GW</u>	<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>MW 8</u>		<u>5-28-19</u>	<u>1041</u>	<u>X</u>	<u>GW</u>	<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>MW 4</u>		<u>5-28-19</u>	<u>1154</u>	<u>X</u>	<u>GW</u>	<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>Field Duplicate</u>		<u>5-28-19</u>		<u>X</u>	<u>GW</u>	<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>Field Blank</u>		<u>5-28-19</u>		<u>X</u>	<u>DI</u>	<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>		
5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)		NORMAL	RUSH	DATE RESULTS NEEDED	6 The sample temperature will be measured upon receipt at the lab. By initialing this area you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area you allow the lab to proceed with analytical testing regardless of the sample temperature. _____						
RUSH RESULTS VIA (PLEASE CIRCLE) FAX		PHONE	E-MAIL								
FAX #	PHONE #	EMAIL ADDRESS									
7 RELINQUISHED BY: (SIGNATURE) <u>Ashish Patel</u>	DATE <u>5-29-19</u>	RECEIVED BY: (SIGNATURE)			DATE	8 COMMENTS: (FOR LAB USE ONLY)					
	TIME <u>0700</u>				TIME						
RELINQUISHED BY: (SIGNATURE)	DATE	RECEIVED BY: (SIGNATURE)			DATE	SAMPLE TEMPERATURE UPON RECEIPT _____ °C					
	TIME				TIME	CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N					
RELINQUISHED BY: (SIGNATURE)	DATE	RECEIVED AT LAB BY: (SIGNATURE)			DATE	SAMPLE(S) RECEIVED ON ICE Y OR N					
	TIME				TIME	PROPER BOTTLES RECEIVED IN GOOD CONDITION Y OR N					
						BOTTLES FILLED WITH ADEQUATE VOLUME Y OR N					
						SAMPLES RECEIVED WITHIN HOLD TIME(S) Y OR N					
						(EXCLUDES TYPICAL FIELD PARAMETERS)					
						DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____					

PDC LABORATORIES, INC.
 2231 WEST ALTORFER DRIVE
 PEORIA, IL 61615

PHONE # 800-752-6651
 FAX # 309-692-9689

CHAIN OF CUSTODY RECORD

State where samples collected MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT) - (SAMPLE ACCEPTANCE POLICY ON REVERSE)

<p>1 CLIENT Sikeston Power station</p> <p>ADDRESS 1551 W Wakefield</p> <p>CITY STATE ZIP Sikeston MO 63801</p> <p>CONTACT PERSON Luke St Mary/Ken Ewers</p>	<p>PROJECT NUMBER CCR APP III only</p> <p>PHONE NUMBER</p> <p>FAX NUMBER</p> <p>DATE SHIPPED</p>	<p>P.O. NUMBER</p>	<p>MEANS SHIPPED</p>	<p>3 ANALYSIS REQUESTED</p>	<p>4 (FOR LAB USE ONLY)</p> <p>LOGIN # _____</p> <p>LOGGED BY: _____</p> <p>LAB PROJ. # _____</p> <p>TEMPLATE: _____</p> <p>PROJ. MGR.: _____</p>	
<p>SAMPLER (PLEASE PRINT) Daniel Dillingham</p> <p>SAMPLER'S SIGNATURE <i>Daniel Dillingham</i></p>		<p>MATRIX TYPES: WW-WASTEWATER DW-DRINKING WATER GW-GROUND WATER WWSL-SLUDGE NAS-SOLID LCHT-LEACHATE</p> <p>OTHER:</p>		<p>REMARKS</p>		
<p>2 SAMPLE DESCRIPTION AS YOU WANT ON REPORT</p>	<p>DATE COLLECTED</p>	<p>TIME COLLECTED</p>	<p>SAMPLE TYPE GRAB COMP</p>	<p>MATRIX TYPE</p>	<p>BOTTLE COUNT</p>	<p>Cl, F, SO₄ B, Ca TDS</p>
MW 3	5-28-19	0744	X	GW	2	X X X
MW 6	5-28-19	0832	X	GW	2	X X X
MW 5	5-28-19	0933	X	GW	2	X X X
MW 8	5-28-19	1041	X	GW	2	X X X
MW 4	5-28-19	1154	X	GW	2	X X X
Field Duplicate	5-28-19		X	GW	2	X X X
Field Blank	5-28-19		X	DI	2	X X X
<p>5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)</p> <p>RUSH RESULTS VIA (PLEASE CIRCLE) FAX</p> <p>FAX # _____ PHONE # _____ EMAIL ADDRESS _____</p>		<p>NORMAL RUSH</p> <p>DATE RESULTS NEEDED</p> <p>E-MAIL _____</p>	<p>6 The sample temperature will be measured upon receipt at the lab. By initialing this area you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area you allow the lab to proceed with analytical testing regardless of the sample temperature.</p>			
<p>7 RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i></p> <p>RELINQUISHED BY: (SIGNATURE)</p> <p>RELINQUISHED BY: (SIGNATURE)</p>	<p>DATE 5-29-19</p> <p>TIME 0700</p> <p>DATE</p> <p>TIME</p> <p>DATE</p> <p>TIME</p>	<p>RECEIVED BY: (SIGNATURE)</p> <p>RECEIVED BY: (SIGNATURE)</p> <p>RECEIVED AT LAB BY: (SIGNATURE)</p>		<p>DATE</p> <p>TIME</p> <p>DATE</p> <p>TIME</p> <p>DATE</p> <p>TIME</p>	<p>8 COMMENTS: (FOR LAB USE ONLY)</p> <p>SAMPLE TEMPERATURE UPON RECEIPT _____ °C</p> <p>CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N</p> <p>SAMPLE(S) RECEIVED ON ICE Y OR N</p> <p>PROPER BOTTLES RECEIVED IN GOOD CONDITION Y OR N</p> <p>BOTTLES FILLED WITH ADEQUATE VOLUME Y OR N</p> <p>SAMPLES RECEIVED WITHIN HOLD TIME(S) Y OR N</p> <p>(EXCLUDES TYPICAL FIELD PARAMETERS)</p> <p>DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____</p>	

Field Sampling Notes – July 23, 2019
(First 2019 Semi-annual Event - TDS)

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: Ashish Patel

Field Instruments: <u>In-Situ smarTROLL Field Meter</u>	HF scientific, inc. Micro TPI Field Portable Turbidimeter
S/N #: <u>474247</u>	S/N #: <u>201607366</u>

	Date	Time	pH		Specific Conductance		Oxidation Reduction Potential		Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)		Turbidity			
			Standards	Measurements	Standard (µS/cm)	Measurement (µS/cm)	Standard (mV)	Temperature (°C)		Measurement	Standards (NTU)	Measurements (NTU)			
Beginning of Day Calibration	<u>7-23-19</u>	<u>0630</u>	4.00	=	<u>4.0</u>	<u>1413</u>	=	<u>1412.8</u>	Standard (mV) = <u>229.0</u>	=	<u>229.3</u>	Temperature (°C) = <u>21.59</u>	0.02	=	<u>0.02</u>
			7.00	=	<u>7.0</u>							Tap Water Source = <u>Sikeston City</u>		=	<u>10.0</u>
			10.00	=	<u>10.0</u>							Barometric Pressure (mm/Hg) = <u>1006.6</u>		=	<u>1000.0</u>
												Measurement = <u>99.97</u>			
End of Day Check	<u>7-23-19</u>	<u>1452</u>	4.00	=	<u>4.1</u>	<u>1413</u>	=	<u>1364.5</u>	Standard (mV) = <u>229.0</u>	=	<u>228.0</u>	Temperature (°C) = <u>22.88</u>	0.02	=	<u>0.01</u>
			7.00	=	<u>7.1</u>							Tap Water Source = <u>Sikeston City</u>		=	<u>9.95</u>
			10.00	=	<u>10.0</u>							Barometric Pressure (mm/Hg) = <u>1006.9</u>		=	<u>996.6</u>
												Measurement = <u>97.25</u>			

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: 7-23-19 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: 7-23-19

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 Ahish Patel
Signed

Lab Tech
Title

7-23-19
Date

Field Sampling Log

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

Initial Water Level (feet btoc): 10.14 Date: 07-23-19
 Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / N

PURGE INFORMATION
 Date: 07-23-19
 Name (Sample Collector): D Dillingham
 Method of Well Purge: Low Flow Peristaltic Pump Dedicated Tubing? Y / N
 Time Purging Initiated: 0736 One (1) Well Volume (mL): NA
 Beginning Water Level (feet btoc): 10.14 Total Volume Purged (mL): 3720
 Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / N
 Well Total Depth (feet btoc): 36.99 Water Level after Sampling (feet btoc): 10.14
 (i.e., pump is off)
 Casing Diameter (feet) 2" Sch 40 PVC Time Sampling Completed: 0814

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)
0738		340	18.62	202.41	1.68	6.4	105.0	10.69	10.14	Red Flakes, ¹⁰ odor
0740	240	820	17.33	205.91	1.55	6.3	95.7	6.97	10.14	" "
0742	250	1320	16.91	206.27	1.43	6.3	89.3	7.34	10.14	Clear, ¹⁰ odor
0744	240	1800	16.74	204.96	1.15	6.3	84.0	5.91	10.14	" "
0746	260	2320	16.65	204.68	1.02	6.3	80.0	5.33	10.14	" "
0748	240	2800	16.62	203.58	0.97	6.4	76.9	4.10	10.14	" "
0750	230	3260	16.60	203.12	0.93	6.4	74.1	4.46	10.14	" "
0752	230	3720	16.58	203.04	0.88	6.4	71.0	4.96	10.14	" "

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): 10.14

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>07-23-19</u> <u>0752</u>	<u>230</u>	<u>16.58</u>	<u>203.04</u>	<u>0.88</u>	<u>6.4</u>	<u>71.0</u>	<u>4.96</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

65°F

Sample Characteristics: Clear, odorless, colorless

Sample Collection Order: Per SAP

Comments and Observations:

Start time for APP III Bottom Ash is 0814
End time for APP III " " is 0818

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

Date: 7-23-19 By: Abhishek Patel Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Groundwater Monitoring
Monitoring Well ID: MW 6
Name (Field Staff): A Patel & Dillingham
Date: 7-23-19

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
Signed

Lab Test
Title

7-23-19
Date

Field Sampling Log

Monitoring Well ID: MW6 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): <u>10.15</u>	Date: <u>7-23-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? <u>Y</u> / <u>(N)</u>

PURGE INFORMATION

Date: <u>7-23-19</u>	
Name (Sample Collector): <u>D Dillingham</u>	
Method of Well Purge: <u>Low Flow Peristaltic Pump</u>	Dedicated Tubing? <u>(Y)</u> / N
Time Purging Initiated: <u>0859</u>	One (1) Well Volume (mL): <u>NA</u>
Beginning Water Level (feet btoc): <u>10.15</u>	Total Volume Purged (mL): <u>2680</u>
Beginning Groundwater Elevation (NAVD88): _____	Well Purged To Dryness? <u>Y</u> / <u>(N)</u>
Well Total Depth (feet btoc): <u>37.76</u>	Water Level after Sampling (feet btoc): <u>10.15</u> (i.e., pump is off)
Casing Diameter (feet): <u>2" Sch 40 PVC</u>	Time Sampling Completed: <u>0933</u>

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)
0901		320	19.58	434.04	0.97	6.6	-63.1	2.45	10.15	clear, no odor
0903	240	800	18.29	442.25	0.69	6.7	-66.0	2.76	10.15	" "
0905	220	1240	17.86	440.06	0.64	6.7	-65.9	3.51	10.15	" "
0907	240	1720	17.70	435.57	0.57	6.7	-66.2	2.57	10.15	" "
0909	250	2220	17.66	425.49	0.51	6.7	-62.7	2.45	10.15	" "
0911	230	2680	17.64	419.28	0.51	6.7	-59.8	2.03	10.15	" "

btoc - below top of casing

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): 10.15

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>7-23-19</u> <u>0911</u>	<u>230</u>	<u>17.64</u>	<u>419.08</u>	<u>0.51</u>	<u>6.7</u>	<u>-59.8</u>	<u>2.03</u>

Instrument Calibration Data:

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

- 1 - In-Situ SmartTroll 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

70°F

Sample Characteristics: Clear, odorless, colorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect Field Blank for NPDES and Bottomash APP III

Start time for Bottomash APP III is 0933

End time for Bottomash APP III is 0937

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

Date: 7-23-19 By: Ashish 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 Pillingham
 Date: 7-23-19

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 7-23-19
 Signed Title Date

Field Sampling Log

Monitoring Well ID: MW 5 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 9.25 Date: 7-23-19
Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / N

PURGE INFORMATION

Date: 7-23-19
Name (Sample Collector): D Dillingham
Method of Well Purge: Low Flow Peristaltic Pump Dedicated Tubing? Y / N
Time Purging Initiated: 1048 One (1) Well Volume (mL): NA
Beginning Water Level (feet btoc): 9.25 Total Volume Purged (mL): 2220
Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / N
Well Total Depth (feet btoc): 37.15 Water Level after Sampling (feet btoc): 9.25
(i.e., pump is off)
Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1140

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)
1050		320	22.63	796.78	1.38	6.6	-46.1	2.71	9.25	Yellow, no taste, odor
1052	220	760	19.77	790.45	1.15	6.7	-43.4	1.13	9.25	" "
1054	240	1240	18.97	822.88	0.91	6.7	-44.1	1.53	9.25	Clear, no odor
1056	260	1700	18.74	806.36	0.87	6.7	-42.6	1.14	9.25	" "
1058	260	2220	18.66	806.88	0.81	6.8	-44.9	1.34	9.25	" "

btoc - below top of casing

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): 9.25

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>7-23-19</u> <u>1052</u>	<u>260</u>	<u>18.66</u>	<u>826.88</u>	<u>0.81</u>	<u>6.8</u>	<u>-44.9</u>	<u>1.34</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

74°F

Sample Characteristics: Clear, Odorless, Colorless

Sample Collection Order: Per SAP

Comments and Observations:

Duplicate for

Collect Duplicate one for NPDES & Bottomash APP III

Start time for Bottomash APP IV is 1140 (MW 5 + Field Duplicate)

End time for Bottomash APP III is 1148

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

Date: 7-23-19

By: Joshua Pen

Title: Lab Tech

Monitoring Well Field Inspection

Facility: <u>SBMU SPS – CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW 8</u> Name (Field Staff): <u>A. Patel D Dillingham</u> Date: <u>7-23-19</u>		
Access:		
Accessibility:	Good <input checked="" type="checkbox"/>	Fair <input type="checkbox"/> Poor <input type="checkbox"/>
Well clear of weeds and/or debris?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well identification clearly visible?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:		
Concrete Pad:		
Condition of Concrete Pad:	Good <input checked="" type="checkbox"/>	Inadequate <input type="checkbox"/>
Depressions or standing water around well?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:		
Protective Outer Casing: Material = <u>4" x 4" Steel Hinged Casing with Hasp</u>		
Condition of Protective Casing:	Good <input checked="" type="checkbox"/> Damaged <input type="checkbox"/>	
Condition of Locking Cap:	Good <input checked="" type="checkbox"/> Damaged <input type="checkbox"/>	
Condition of Lock:	Good <input checked="" type="checkbox"/> Damaged <input type="checkbox"/>	
Condition of Weep Hole:	Good <input checked="" type="checkbox"/> Damaged <input type="checkbox"/>	
Remarks:		
Well Riser: Material = <u>2" Diameter, Schedule 40 PVC, Flush Threaded</u>		
Condition of Riser:	Good <input checked="" type="checkbox"/> Damaged <input type="checkbox"/>	
Condition of Riser Cap:	Good <input checked="" type="checkbox"/> Damaged <input type="checkbox"/>	
Measurement Reference Point:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:		
Dedicated Purging/Sampling Device: Type = <u>1/4" ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing</u>		
Condition:	Good <input checked="" type="checkbox"/> Damaged <input type="checkbox"/> Missing <input type="checkbox"/>	
Remarks:		
Monitoring Well Locked/Secured Post Sampling?: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:		

Field Certification Ashish Patel Lab Tech 7-23-19
 Signed Title Date

Field Sampling Log

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

Initial Water Level (feet btoc): <u>8.64</u>	Date: <u>7-23-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? Y / <u>N</u>

PURGE INFORMATION

Date: <u>7-23-19</u>	Name (Sample Collector): <u>D Oillingham</u>	
Method of Well Purge: <u>Low Flow Peristaltic Pump</u>	Dedicated Tubing? <u>Y</u> / N	
Time Purging Initiated: <u>1233</u>	One (1) Well Volume (mL): <u>NA</u>	
Beginning Water Level (feet btoc): <u>8.64</u>	Total Volume Purged (mL): <u>2100</u>	
Beginning Groundwater Elevation (NAVD88): _____	Well Purged To Dryness? Y / <u>N</u>	
Well Total Depth (feet btoc): <u>37.07</u>	Water Level after Sampling (feet btoc): <u>8.64</u> (i.e., pump is off)	
Casing Diameter (feet): <u>2" Sch 40 PVC</u>	Time Sampling Completed: <u>1305</u>	

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)
1235		300	23.80	765.01	0.74	7.0	-99.5	1.95	8.64	clear, no odor
1237	220	740	23.72	803.94	0.51	7.1	-94.7	0.60	8.64	" "
1239	230	1200	19.75	815.47	0.39	7.1	-92.8	0.82	8.64	" "
1241	230	1660	19.46	819.05	0.34	7.1	-91.4	1.39	8.64	" "
1243	220	2100	19.34	819.48	0.30	7.1	-90.7	1.39	8.64	" "

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): 8.64

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>07-23-19</u> <u>1243</u>	<u>220</u>	<u>19.34</u>	<u>819.48</u>	<u>0.30</u>	<u>7.1</u>	<u>-90.7</u>	<u>1.39</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
77°F

Sample Characteristics: Clear, colorless, odless.

Sample Collection Order: Per SAP

Comments and Observations:

Start time for Bottomash APP III is 1305

End time for bottomash APP III is 1309

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

Date: 7-23-19 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: 7-23-19

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 Lab Tech 7-23-19
Signed Title Date

Field Sampling Log

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

Initial Water Level (feet btoc): <u>9.64</u>	Date: <u>7-23-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? Y / <input checked="" type="radio"/> N

PURGE INFORMATION

Date: <u>7-23-19</u>	Name (Sample Collector): <u>Dillingham</u>	
Method of Well Purge: <u>Low Flow Perstatic Pump</u>	Dedicated Tubing? <input checked="" type="radio"/> Y / N	
Time Purging Initiated: <u>1326</u>	One (1) Well Volume (mL): <u>NA</u>	
Beginning Water Level (feet btoc): <u>9.64</u>	Total Volume Purged (mL): <u>2600</u>	
Beginning Groundwater Elevation (NAVD88): _____	Well Purged To Dryness? Y / <input checked="" type="radio"/> N	
Well Total Depth (feet btoc): <u>37.25</u>	Water Level after Sampling (feet btoc): <u>9.64</u> (i.e., pump is off)	
Casing Diameter (feet) <u>2" Sch 40 PVC</u>	Time Sampling Completed: <u>1355</u>	

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)
<u>1328</u>		<u>420</u>	<u>21.56</u>	<u>582.01</u>	<u>0.71</u>	<u>7.2</u>	<u>-111.7</u>	<u>0.89</u>	<u>9.64</u>	<u>clear, no odor</u>
<u>1330</u>	<u>270</u>	<u>960</u>	<u>19.68</u>	<u>600.66</u>	<u>0.57</u>	<u>7.3</u>	<u>-108.2</u>	<u>0.45</u>	<u>9.64</u>	<u>" "</u>
<u>1332</u>	<u>270</u>	<u>1500</u>	<u>19.23</u>	<u>607.16</u>	<u>0.50</u>	<u>7.3</u>	<u>-107.3</u>	<u>0.42</u>	<u>9.64</u>	<u>" "</u>
<u>1334</u>	<u>270</u>	<u>2040</u>	<u>19.06</u>	<u>609.91</u>	<u>0.45</u>	<u>7.3</u>	<u>-106.8</u>	<u>0.40</u>	<u>9.64</u>	<u>" "</u>
<u>1336</u>	<u>280</u>	<u>2600</u>	<u>18.88</u>	<u>615.24</u>	<u>0.43</u>	<u>7.3</u>	<u>-105.2</u>	<u>0.36</u>	<u>9.64</u>	<u>" "</u>

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): 9.64

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>7-23-19</u> <u>1336</u>	<u>280</u>	<u>18.88</u>	<u>615.24</u>	<u>0.43</u>	<u>7.3</u>	<u>-105.2</u>	<u>0.36</u>

Instrument Calibration Data:

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

- 1 - In-Situ SmartTroll 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

77°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Coal train and Fly Ash Truck within 100 feet of well

Start time for bottom ash APP III is 1355

End time for bottom ash APP III is 1358

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

Date: 7-23-19 By: Mr. Puzel Title: Lab Tech

PDC LABORATORIES, INC.
 2231 WEST ALTORFER DRIVE
 PEORIA, IL 61615

PHONE # 800-752-6651
 FAX # 309-692-9689

CHAIN OF CUSTODY RECORD

State where samples collected MO

ALL HIGHLIGHTED AREAS **MUST** BE COMPLETED BY CLIENT (PLEASE PRINT) - (SAMPLE ACCEPTANCE POLICY ON REVERSE)

<p>1 CLIENT Sikeston BMU</p> <p>ADDRESS 1551 W Wakefield St</p> <p>CITY STATE ZIP Sikeston, MO 63801</p> <p>CONTACT PERSON Mike St. Mary / Ken Ewers</p>	<p>PROJECT NUMBER CCR APP III</p> <p>PHONE NUMBER</p>	<p>P.O. NUMBER</p> <p>FAX NUMBER</p>	<p>MEANS SHIPPED</p> <p>DATE SHIPPED</p>	<p>3 ANALYSIS REQUESTED</p>	<p>4 (FOR LAB USE ONLY)</p> <p>LOGIN # _____</p> <p>LOGGED BY: _____</p> <p>LAB PROJ. # _____</p> <p>TEMPLATE: _____</p> <p>PROJ. MGR.: _____</p>				
<p>SAMPLER (PLEASE PRINT) Daniel Dillingham</p> <p>SAMPLER'S SIGNATURE <i>Daniel Dillingham</i></p>		<p>MATRIX TYPES: WW-WASTEWATER DW-DRINKING WATER GW-GROUND WATER WW-SLUDGE MS-SOLID LCMT-LEACHATE</p> <p>OTHER: _____</p>		<p>REMARKS</p> <p style="text-align: center; font-size: 2em;">TDS</p>					
<p>2 SAMPLE DESCRIPTION AS YOU WANT ON REPORT</p>		DATE COLLECTED	TIME COLLECTED			SAMPLE TYPE GRAB	COMPLETE COMP	MATRIX TYPE	BOTTLE COUNT
MW 3		7-23-19	0814			X		GW	1
MW 6		7-23-19	0933			X		GW	1
MW 5		7-23-19	1140			X		GW	1
MW 8		7-23-19	1305			X		GW	1
MW 4		7-23-19	1355			X		GW	1
Field Duplicate		7-23-19				X		GW	1
Field Blank		7-23-19		X		DI	1		
<p>5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)</p> <p>RUSH RESULTS VIA (PLEASE CIRCLE) FAX PHONE</p> <p>FAX # PHONE # EMAIL ADDRESS</p>		<p>NORMAL RUSH</p>	<p>DATE RESULTS NEEDED</p> <p>E-MAIL</p>		<p>6 The sample temperature will be measured upon receipt at the lab. By initialing this area you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area you allow the lab to proceed with analytical testing regardless of the sample temperature.</p>				
<p>7 RELINQUISHED BY: (SIGNATURE)</p> <p>RELINQUISHED BY: (SIGNATURE)</p> <p>RELINQUISHED BY: (SIGNATURE)</p>		<p>DATE</p> <p>TIME</p> <p>DATE</p> <p>TIME</p> <p>DATE</p> <p>TIME</p>	<p>RECEIVED BY: (SIGNATURE)</p> <p>RECEIVED BY: (SIGNATURE)</p> <p>RECEIVED AT LAB BY: (SIGNATURE)</p>		<p>8 COMMENTS: (FOR LAB USE ONLY)</p> <p>SAMPLE TEMPERATURE UPON RECEIPT _____ °C</p> <p>CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N</p> <p>SAMPLE(S) RECEIVED ON ICE Y OR N</p> <p>PROPER BOTTLES RECEIVED IN GOOD CONDITION Y OR N</p> <p>BOTTLES FILLED WITH ADEQUATE VOLUME Y OR N</p> <p>SAMPLES RECEIVED WITHIN HOLD TIME(S) Y OR N</p> <p>(EXCLUDES TYPICAL FIELD PARAMETERS)</p> <p>DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____</p>				

Field Sampling Notes – August 28, 2019
(Second 2019 Semi-Annual Event)

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: Ashish Patel

Field Instruments: <u>In-Situ smarTROLL Field Meter</u>	HF scientific, Inc. Micro TPI Field Portable Turbidimeter
S/N #: <u>474247</u>	S/N #: <u>201607366</u>

	Date	Time	pH		Specific Conductance		Oxidation Reduction Potential		Dissolved Oxygen		Turbidity				
			Standards	Measurements	Standard (µS/cm)	Measurement (µS/cm)	Standard (mV)	Measurement (mV)	(%)	Standards (NTU)	Measurements (NTU)				
Beginning of Day Calibration	8-28-19	0615	4.00	= 4.0	1413	= 1408.3	Temperature (°C)	= 22.29	Standard (mV)	= 229.0	= 229.3	Temperature (°C)	= 22.17	0.02	= 0.02
			7.00	= 7.0			Tap Water Source	= Sikeston City				10.0	= 10.0		
			10.00	= 10.0			Barometric Pressure (mm/Hg)	= 1006				1000	= 1000.0		
							Measurement	= 99.98							
End of Day Check	8-28-19	1256	4.00	= 4.1	1413	= 1428.2	Temperature (°C)	= 24.36	Standard (mV)	= 229.0	= 229.4	Temperature (°C)	= 25.37	0.02	= 0.01
			7.00	= 7.1			Tap Water Source	= Sikeston City				10.0	= 9.96		
			10.00	= 10.0			Barometric Pressure (mm/Hg)	= 1007.6				1000	= 1003.0		
							Measurement	= 98.85							

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: 08-28-19 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: 8-28-19

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

8-28-19
Date

Field Sampling Log

Monitoring Well ID: Mw3 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): <u>11.00</u>	Date: <u>8-28-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? <u>Y</u> / <u>N</u>

PURGE INFORMATION

Date: 8-28-19

Name (Sample Collector): D Dillingham

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

Time Purging Initiated: 0716 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 11.00 Total Volume Purged (mL): 2800

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

Well Total Depth (feet btoc): 36.98 Water Level after Sampling (feet btoc): 11.00
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0740

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)
0718		280	19.30	210.18	1.50	6.24	111.9	12.58	11.00	Red Fluke, odor
0720	240	760	17.80	212.73	1.24	6.3	99.4	6.78	11.00	Red fluke, odor
0722	240	1240	17.35	212.19	1.12	6.3	92.4	6.34	11.00	clear, no odor
0724	260	1740	17.16	210.34	1.04	6.3	85.9	4.71	11.00	" "
0726	240	2220	17.05	209.52	0.95	6.3	80.3	4.75	11.00	" "
0728	290	2800	16.97	207.43	0.89	6.4	76.6	4.02	11.00	" "

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): 11.00

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)
8-28-19 0728	290	16.97	207.43	0.89	6.4	75.6	4.02

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

64°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: 8-28-19 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 Oillingham
Date: 8-28-19

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 8-28-19
Signed Title Date

Field Sampling Log

Monitoring Well ID: MW 6 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): <u>11.21</u>	Date: <u>8-28-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? <u>Y/N</u>

PURGE INFORMATION

Date: <u>8-28-19</u>	
Name (Sample Collector): <u>D Dillingham</u>	
Method of Well Purge: <u>Low Flow Peristaltic Pump</u>	Dedicated Tubing? <u>Y/N</u>
Time Purging Initiated: <u>0802</u>	One (1) Well Volume (mL): <u>NA</u>
Beginning Water Level (feet btoc): <u>11.21</u>	Total Volume Purged (mL): <u>1920</u>
Beginning Groundwater Elevation (NAVD88): _____	Well Purged To Dryness? <u>Y/N</u>
Well Total Depth (feet btoc): <u>37.74</u>	Water Level after Sampling (feet btoc): <u>11.21</u> (i.e., pump is off)
Casing Diameter (feet): <u>2" Sch 40 PVC</u>	Time Sampling Completed: <u>0822</u>

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)
0804		440	18.39	450.71	0.80	6.6	-61.6	2.85	11.21	Clear, no odor
0806	250	940	17.92	451.50	0.69	6.6	-64.3	0.96	11.21	" "
0808	250	1440	17.75	449.53	0.67	6.7	-65.1	1.11	11.21	" "
0810	240	1920	17.67	442.21	0.66	6.7	-65.4	1.19	11.21	" "

btoc - below top of casing

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): 11.21

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>8-28-19</u> <u>0810</u>	<u>240</u>	<u>17.67</u>	<u>442.21</u>	<u>0.66</u>	<u>6.7</u>	<u>-65.4</u>	<u>1.15</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
68°F

Sample Characteristics: clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect Field Blank (APP III & APP IV)

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

Date: 8-28-19 By: Ashish Patel Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 5
Name (Field Staff): A Patel Dillingham
Date: 8-28-19

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 8-28-19
Signed Title Date

Field Sampling Log

Monitoring Well ID: MW 5 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): <u>10.44</u>	Date: <u>8-28-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? <u>Y / N</u>

PURGE INFORMATION

Date: <u>8-28-19</u>	
Name (Sample Collector): <u>D Dillingham</u>	
Method of Well Purge: <u>Low Flow Peristaltic Pump</u>	Dedicated Tubing? <input checked="" type="radio"/> Y / <input type="radio"/> N
Time Purging Initiated: <u>0932</u>	One (1) Well Volume (mL): <u>NA</u>
Beginning Water Level (feet btoc): <u>10.44</u>	Total Volume Purged (mL): <u>2560</u>
Beginning Groundwater Elevation (NAVD88): _____	Well Purged To Dryness? <input type="radio"/> Y / <input checked="" type="radio"/> N
Well Total Depth (feet btoc): <u>37.15</u>	Water Level after Sampling (feet btoc): <u>10.44</u> (i.e., pump is off)
Casing Diameter (feet): <u>2" Sch 40 PVC</u>	Time Sampling Completed: <u>1002</u>

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)
0934		400	21.42	800.82	0.73	6.6	-30.6	2.43	10.44	Yellow Flow no odor
0936	280	960	19.24	840.69	0.66	6.7	-39.6	3.39	10.44	" "
0938	260	1480	18.75	847.15	0.67	6.7	-40.8	1.52	10.44	Clear, no odor
0940	260	2000	18.56	848.66	0.63	6.7	-42.4	1.28	10.44	" "
0942	280	2560	18.49	848.38	0.64	6.8	-42.2	0.82	10.44	" "

btoc - below top of casing

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): 10.44

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>8-28-19 0942</u>	<u>280</u>	<u>18.49</u>	<u>848.38</u>	<u>0.64</u>	<u>6.8</u>	<u>-42.2</u>	<u>0.82</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:
Collect Duplicate (APP III & APP IV)

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

Date: 8-28-19 By: Ashish Patel 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: 8-28-19

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

8-28-19
Date

Field Sampling Log

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

Initial Water Level (feet btoc): <u>9.86</u>	Date: <u>8-28-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? Y / <u>N</u>

PURGE INFORMATION

Date: <u>8-28-19</u>	
Name (Sample Collector): <u>D Dillingham</u>	
Method of Well Purge: <u>Low Flow Peristaltic Pump</u>	Dedicated Tubing? <u>Y</u> / N
Time Purging Initiated: <u>1019</u>	One (1) Well Volume (mL): <u>NA</u>
Beginning Water Level (feet btoc): <u>9.86</u>	Total Volume Purged (mL): <u>2380</u>
Beginning Groundwater Elevation (NAVD88): _____	Well Purged To Dryness? Y / <u>N</u>
Well Total Depth (feet btoc): <u>37.06</u>	Water Level after Sampling (feet btoc): <u>9.86</u> (i.e., pump is off)
Casing Diameter (feet): <u>2" Sch 40 PVC</u>	Time Sampling Completed: <u>1041</u>

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)
1021		340	22.24	739.22	0.54	6.9	-98.7	2.75	9.86	Clear, ^{no} odor
1023	240	820	20.12	757.07	0.40	6.9	-94.0	2.21	9.86	" "
1025	250	1320	19.50	763.61	0.32	7.0	-94.7	1.82	9.86	" "
1027	270	1860	19.19	768.43	0.27	7.1	-92.6	1.24	9.86	" "
1029	260	2380	19.38	768.05	0.25	7.1	-90.0	1.25	9.86	" "

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): 9.86

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>8-28-19</u> <u>1029</u>	<u>260</u>	<u>19.38</u>	<u>768.05</u>	<u>0.25</u>	<u>7.1</u>	<u>-90.0</u>	<u>1.25</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
76° 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: 8-28-19 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: 8-28-19

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

8-28-19
Date

Field Sampling Log

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

Initial Water Level (feet btoc): <u>10.80</u>	Date: <u>8-28-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? Y / <input checked="" type="radio"/> N

PURGE INFORMATION

Date: <u>8-28-19</u>	
Name (Sample Collector): <u>D Dillingham</u>	
Method of Well Purge: <u>Low Flow Peristaltic Pump</u>	Dedicated Tubing? <input checked="" type="radio"/> Y / N
Time Purging Initiated: <u>1137</u>	One (1) Well Volume (mL): <u>NA</u>
Beginning Water Level (feet btoc): <u>10.80</u>	Total Volume Purged (mL): <u>4160</u>
Beginning Groundwater Elevation (NAVD88): _____	Well Purged To Dryness? Y / <input checked="" type="radio"/> N
Well Total Depth (feet btoc): <u>37.23</u>	Water Level after Sampling (feet btoc): <u>10.80</u> (i.e., pump is off)
Casing Diameter (feet): <u>2" Sch 40 PVC</u>	Time Sampling Completed: <u>1204</u>

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)
1139		360	24.43	592.51	0.69	7.2	-111.9	0.67	10.80	clear, no odor
1141	280	920	21.15	625.80	0.57	7.2	-106.9	0.52	10.80	" "
1143	270	1460	20.27	636.31	0.53	7.2	-105.1	2.57	10.80	" "
1145	270	2000	19.99	645.50	0.48	7.2	-104.0	1.05	10.80	" "
1147	270	2540	19.78	651.84	0.44	7.2	-103.2	1.61	10.80	" "
1149	270	3080	19.75	647.65	0.43	7.2	-102.6	2.62	10.80	" "
1151	280	3640	19.64	643.29	0.41	7.2	-102.8	2.50	10.80	" "
1153	260	4160	19.60	645.38	0.40	7.2	-101.7	2.31	10.80	" "

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): 10.80

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>8-28-19</u> <u>1153</u>	<u>260</u>	<u>19.60</u>	<u>645.38</u>	<u>0.40</u>	<u>7.2</u>	<u>-101.7</u>	<u>2.31</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
79°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: 8-28-19 By: Ashish Patel Title: Lab Tech

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD
STATE WHERE SAMPLE COLLECTED MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

Project # <u>Reston Power station</u>	PROJECT NUMBER <u>CCR Bottom Ash APP III</u>	PROJECT LOCATION <u>W Wakefield</u>	PURCHASE ORDER # <u>3</u>	ANALYSIS REQUESTED <u>RAO 226/228</u>				(FOR LAB USE ONLY)						
PHONE NUMBER <u>APP IV</u>	E-MAIL	DATE SHIPPED	MATRIX TYPES: WW-WASTEWATER DW-DRINKING WATER GW-GROUND WATER WWSL-SLUDGE NAS-NON AQUEOUS SOLID LCHT-LEACHATE OIL-OIL SO-OIL SOL-SOLID				LOGIN #	LOGGED BY:						
SAMPLER (PLEASE PRINT) <u>Daniel Dillingham</u>	SAMPLER'S SIGNATURE <u>Daniel Dillingham</u>	MATRIX TYPES					CLIENT:	PROJECT:						
LOCATION <u>Reston, MO 63801</u>	SON <u>Mary/Ken Ewers</u>	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	REMARKS						
<u>MW 3</u>	<u>8-28-19</u>	<u>0728</u>	<u>X</u>		<u>GW</u>	<u>3</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>			
<u>MW 6</u>	<u>8-28-19</u>	<u>0810</u>	<u>X</u>		<u>GW</u>	<u>3</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>			
<u>MW 5</u>	<u>8-28-19</u>	<u>0942</u>	<u>X</u>		<u>GW</u>	<u>3</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>			
<u>MW 8</u>	<u>8-28-19</u>	<u>1029</u>	<u>X</u>		<u>GW</u>	<u>3</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>			
<u>MW 4</u>	<u>8-28-19</u>	<u>1153</u>	<u>X</u>		<u>GW</u>	<u>3</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>			
<u>old Duplicate</u>	<u>8-28-19</u>		<u>X</u>		<u>GW</u>	<u>3</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>			
<u>old Blank</u>	<u>8-28-19</u>		<u>X</u>		<u>DI</u>	<u>3</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>			

SERVATION CODES:	1 - HCL	2 - H2SO4	3 - HNO3	4 - NAOH	5 - NA2S2O3	6 - UNPRESERVED	7 - OTHER
------------------	---------	-----------	----------	----------	-------------	-----------------	-----------

TURN AROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH	DATE RESULTS NEEDED	<input checked="" type="checkbox"/> 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.
RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE	PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS)	

SHIPPED BY: (SIGNATURE) <u>Sh Patel</u>	DATE <u>8-29-19</u>	RECEIVED BY: (SIGNATURE)	DATE	COMMENTS: (FOR LAB USE ONLY) SAMPLE TEMPERATURE UPON RECEIPT _____ °C CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N SAMPLE(S) RECEIVED ON ICE Y OR N SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR N DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____
TIME <u>0700</u>	TIME	DATE	TIME	
BY: (SIGNATURE)	DATE	RECEIVED BY: (SIGNATURE)	DATE	
TIME	TIME	DATE	TIME	
BY: (SIGNATURE)	DATE	RECEIVED BY: (SIGNATURE)	DATE	
TIME	TIME	DATE	TIME	

Field Sampling Notes – October 22, 2019
(Second 2019 Semi-Annual Event –
MW-4 pH Re-Sample)

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: *Robert M. Hill*

Field Instruments: <u>In-Situ smarTROLL Field Meter</u>	HF scientific, inc. Micro TPI Field Portable Turbidimeter
S/N #: <u>474247</u>	S/N #: <u>201607366</u>

	Date	Time	pH		Specific Conductance		Oxidation Reduction Potential		Dissolved Oxygen		Turbidity										
			Standards	Measurements	Standard (µS/cm)	Measurement (µS/cm)	Standard (mV)	Measurement (mV)	(%)	Standards (NTU)	Measurements (NTU)										
Beginning of Day Calibration	10-22-2019	0623	4.00	=	4.00	1413	=	1412	Temperature (°C)	=	21.46	229.4	Temperature (°C)	=	20.35	0.02	=	0.02			
			7.00	=	7.00				Standard (mV)	=	229		Tap Water Source	=	Sioux Falls City				10.0	=	10.0
			10.00	=	10.00								Barometric Pressure (mm/Hg)	=	1001.0						
									Measurement	=	99.33%										
End of Day Check	10-22-2019	1350	4.00	=	4.06	1413	=	1451.4	Temperature (°C)	=	20.25	229.3	Temperature (°C)	=	18.38	0.02	=	0.01			
			7.00	=	7.07				Standard (mV)	=	229		Tap Water Source	=	Sioux Falls City				10.0	=	9.86
			10.00	=	10.01								Barometric Pressure (mm/Hg)	=	1003.0						
									Measurement	=	99.77%										

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: 10-22-2019 By: *Robert M. Hill*

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW-4

Name (Field Staff): H. McGill D. Dillingham

Date: 10-23-19

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

H. McGill D. Dillingham
Signed Title

10-23-19
Date

Field Sampling Log

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

Initial Water Level (feet btoc): <u>11.21'</u>	Date: <u>10-23-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? Y / <input checked="" type="radio"/> N

PURGE INFORMATION

Date: <u>10-23-19</u>	
Name (Sample Collector): <u>D. Dillingham</u>	
Method of Well Purge: <u>Low Flow Peristaltic Pump</u>	Dedicated Tubing? <input checked="" type="radio"/> Y / N
Time Purging Initiated: <u>1151</u>	One (1) Well Volume (mL): <u>NA</u>
Beginning Water Level (feet btoc): <u>11.21'</u>	Total Volume Purged (mL): <u>2120</u>
Beginning Groundwater Elevation (NAVD88): _____	Well Purged To Dryness? Y / <input checked="" type="radio"/> N
Well Total Depth (feet btoc): <u>37.25'</u>	Water Level after Sampling (feet btoc): <u>11.21'</u> (i.e., pump is off)
Casing Diameter (feet): <u>2" Sch 40 PVC</u>	Time Sampling Completed: <u>1222</u>

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)
1153		300	20.58	598.60	0.99	7.2	-110.4	2.67	11.21'	Clear
1155	230	760	19.71	606.73	0.79	7.2	-110.7	2.22	"	"
1157	210	1180	19.13	616.17	0.72	7.2	-116.0	1.49	"	"
1159	230	1640	18.97	613.72	0.65	7.3	-110.8	1.58	"	"
1201	240	2120	18.90	619.99	0.55	7.3	-110.6	1.93	"	"

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): 11.21'

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>10-23-19</u> <u>1201</u>	<u>240</u>	<u>18.90</u>	<u>619.99</u>	<u>0.55</u>	<u>7.3</u>	<u>-110.6</u>	<u>1.93</u>

Instrument Calibration Data:

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

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

General Information:

Weather Conditions @ time of sampling: Cool 54°F Very Windy

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: 10-23-19 By: [Signature] Title: Lead

Appendix 2

Laboratory Analytical Results

Laboratory Analytical Results – May 28, 2019
(First 2019 Semi-annual Event)



PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

July 05, 2019

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 5/30/19 9:40 am and logged in under work order 9055762. 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

Sample: 9055762-01
Name: MW-3
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 07:44
Received: 05/30/19 09:40

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

Sample: 9055762-02
Name: MW-6
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 08:32
Received: 05/30/19 09:40

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

Sample: 9055762-03
Name: MW-5
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 09:33
Received: 05/30/19 09:40

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

Sample: 9055762-04
Name: MW-8
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 10:41
Received: 05/30/19 09:40

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



ANALYTICAL RESULTS

Sample: 9055762-05
Name: MW-4
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 11:54
Received: 05/30/19 09:40

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.938	pCi/L			1	0.751			904.0 903.1
Radium 228 - subcontracted	0.523	pCi/L			1	0.806			904.0 903.1

Sample: 9055762-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 00:00
Received: 05/30/19 09:40

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.789	pCi/L			1	0.563			904.0 903.1
Radium 228 - subcontracted	0.237	pCi/L			1	0.83			904.0 903.1

Sample: 9055762-07
Name: FIELD BLANK
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 00:00
Received: 05/30/19 09:40

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.063	pCi/L			1	0.754			904.0 903.1
Radium 228 - subcontracted	0.554	pCi/L			1	0.763			904.0 903.1

ANALYTICAL RESULTS



ANALYTICAL RESULTS

Sample: 9055762-01
Name: MW-3
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 07:44
Received: 05/30/19 09:40

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



ANALYTICAL RESULTS

Sample: 9055762-02
Name: MW-6
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 08:32
Received: 05/30/19 09:40

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



ANALYTICAL RESULTS

Sample: 9055762-03
Name: MW-5
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 09:33
Received: 05/30/19 09:40

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



ANALYTICAL RESULTS

Sample: 9055762-04
Name: MW-8
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 10:41
Received: 05/30/19 09:40

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



ANALYTICAL RESULTS

Sample: 9055762-05
Name: MW-4
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 11:54
Received: 05/30/19 09:40

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



ANALYTICAL RESULTS

Sample: 9055762-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 00:00
Received: 05/30/19 09:40

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



ANALYTICAL RESULTS

Sample: 9055762-07
Name: FIELD BLANK
Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 00:00
Received: 05/30/19 09:40

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

Laboratory Analytical Results – July 23, 2019
(First 2019 Semi-annual Event - TDS)



PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

August 02, 2019

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

RE: Sikeston BMU-App III Only

Dear Luke St Mary:

Please find enclosed the analytical results for the 7 sample(s) the laboratory received on **7/26/19 9:50 am** and logged in under work order **9075407**. 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

Sample: 9075407-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 07/23/19 08:14
Received: 07/26/19 09:50
PO #: 20926

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method

General Chemistry - PIA

Table row: Solids - total dissolved solids (TDS), 140, mg/L, 07/30/19 16:26, 1, 17, 07/30/19 16:48, TMS, SM 2540C

Sample: 9075407-02
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 07/23/19 09:33
Received: 07/26/19 09:50
PO #: 20926

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, M, 07/29/19 06:50, 1, 26, 07/29/19 07:46, TMS, SM 2540C

Sample: 9075407-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 07/23/19 11:40
Received: 07/26/19 09:50
PO #: 20926

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, 07/29/19 06:50, 1, 26, 07/29/19 07:46, TMS, SM 2540C

Sample: 9075407-04
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 07/23/19 13:05
Received: 07/26/19 09:50
PO #: 20926

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, 07/29/19 06:50, 1, 26, 07/29/19 07:46, TMS, SM 2540C



ANALYTICAL RESULTS

Sample: 9075407-05
Name: MW-4
Matrix: Ground Water - Grab

Sampled: 07/23/19 13:55
Received: 07/26/19 09:50
PO #: 20926

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	340	mg/L		07/29/19 06:50	1	26	07/29/19 07:46	TMS	SM 2540C

Sample: 9075407-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 07/23/19 00:00
Received: 07/26/19 09:50
PO #: 20926

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	460	mg/L		07/29/19 06:50	1	26	07/29/19 07:46	TMS	SM 2540C

Sample: 9075407-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 07/23/19 00:00
Received: 07/26/19 09:50
PO #: 20926

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		07/29/19 06:50	1	17	07/29/19 07:46	TMS	SM 2540C



January 13, 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 **revised** analytical results for the **12** sample(s) the laboratory received on **7/26/19 9:50 am** and logged in under work order **9075380**. 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

Sample: 9075380-09
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 07/23/19 12:43
Received: 07/26/19 09:50
PO #: 20925

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	420	mg/L		07/29/19 06:50	1	26	07/29/19 07:46	TMS	SM 2540C

Laboratory Analytical Results – August 28, 2019
(Second 2019 Semi-Annual Event)



PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

October 02, 2019

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 8/30/19 10:00 am and logged in under work order 9086366. 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

Sample: 9086366-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 08/28/19 07:28
Received: 08/30/19 10:00

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

Sample: 9086366-02
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 08/28/19 08:10
Received: 08/30/19 10:00

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

Sample: 9086366-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 08/28/19 09:42
Received: 08/30/19 10:00

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

Sample: 9086366-04
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 08/28/19 10:29
Received: 08/30/19 10:00

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: 9086366-05
Name: MW-4
Matrix: Ground Water - Grab

Sampled: 08/28/19 11:53
Received: 08/30/19 10:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.161	pCi/L			1	0.498			904.0 903.1
Radium 228 - subcontracted	0.76	pCi/L			1	0.748			904.0 903.1

Sample: 9086366-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 08/28/19 00:00
Received: 08/30/19 10:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.387	pCi/L			1	0.664			904.0 903.1
Radium 228 - subcontracted	0.33	pCi/L			1	0.662			904.0 903.1

Sample: 9086366-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 08/28/19 00:00
Received: 08/30/19 10:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0	pCi/L			1	0.631			904.0 903.1
Radium 228 - subcontracted	0.821	pCi/L			1	0.672			904.0 903.1

ANALYTICAL RESULTS



ANALYTICAL RESULTS

Sample: 9086366-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 08/28/19 07:28
Received: 08/30/19 10:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u>Anions - PIA</u>									
Chloride	1.1	mg/L		09/03/19 18:33	1	1.0	09/03/19 18:33	MGU	EPA 300.0
Sulfate	18	mg/L	Q4	09/03/19 20:05	5	5.0	09/03/19 20:05	MGU	EPA 300.0
<u>General Chemistry - PIA</u>									
Fluoride	< 0.250	mg/L		09/10/19 11:30	1	0.250	09/10/19 11:30	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	140	mg/L		09/03/19 07:34	1	26	09/03/19 10:55	TMS	SM 2540C
<u>Total Metals - PIA</u>									
Antimony	< 3.0	ug/L		09/05/19 13:06	5	3.0	09/09/19 08:19	JMW	SW 6020
Lithium	< 0.020	mg/L		09/05/19 13:06	1	0.020	09/10/19 08:12	ZSA	SW 6010*
Arsenic	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:19	JMW	SW 6020
Barium	110	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:19	JMW	SW 6020
Beryllium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:19	JMW	SW 6020
Boron	35	ug/L		09/05/19 13:06	5	10	09/10/19 09:00	JMW	SW 6020
Cadmium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:19	JMW	SW 6020
Calcium	15000	ug/L		09/05/19 13:06	5	100	09/10/19 09:00	JMW	SW 6020
Chromium	< 4.0	ug/L		09/05/19 13:06	5	4.0	09/09/19 08:19	JMW	SW 6020
Cobalt	< 2.0	ug/L		09/05/19 13:06	5	2.0	09/09/19 08:19	JMW	SW 6020
Lead	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:19	JMW	SW 6020
Mercury	< 0.20	ug/L		09/05/19 13:06	5	0.20	09/09/19 08:19	JMW	SW 6020
Molybdenum	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:19	JMW	SW 6020
Selenium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:19	JMW	SW 6020
Thallium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:19	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 9086366-02
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 08/28/19 08:10
Received: 08/30/19 10:00

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



ANALYTICAL RESULTS

Sample: 9086366-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 08/28/19 09:42
Received: 08/30/19 10:00

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



ANALYTICAL RESULTS

Sample: 9086366-04
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 08/28/19 10:29
Received: 08/30/19 10:00

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



ANALYTICAL RESULTS

Sample: 9086366-05
Name: MW-4
Matrix: Ground Water - Grab

Sampled: 08/28/19 11:53
Received: 08/30/19 10:00

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



ANALYTICAL RESULTS

Sample: 9086366-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 08/28/19 00:00
Received: 08/30/19 10:00

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



ANALYTICAL RESULTS

Sample: 9086366-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 08/28/19 00:00
Received: 08/30/19 10:00

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, Lithium, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Selenium, Thallium).

Appendix 3

Laboratory Quality Assurance/Quality Control Data

Laboratory Quality Assurance/Quality Control Data –
May 28, 2019
(First 2019 Semi-annual Event)



NOTES

Specific method revisions used for analysis are available upon request.

* Not a TNI accredited analyte

Certifications

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

TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279

Illinois Department of Public Health Bacteriological 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, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100230

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

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

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

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

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

TNI Accreditation through IL EPA Lab No. 100323

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

USEPA DMR-QA Program

STL - St. Louis, MO - 3278 N Highway 67, Florissant, MO 63033

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389

TNI Accreditation for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080

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

Missouri Department of Natural Resources

Microbiological Laboratory Service for Drinking Water



Certified by: Kurt Stepping, Senior Project Manager



July 03, 2019

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

RE: Project: 9055762
Pace Project No.: 30297880

Dear Mr. Stepping:

Enclosed are the analytical results for sample(s) received by the laboratory on June 05, 2019. 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,

Laura M. Pirilla
laura.pirilla@pacelabs.com
(724)850-5616
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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



CERTIFICATIONS

Project: 9055762
Pace Project No.: 30297880

Pennsylvania Certification IDs

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

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



SAMPLE SUMMARY

Project: 9055762
Pace Project No.: 30297880

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30297880001	9055762-01	Water	05/28/19 07:44	06/05/19 10:50
30297880002	9055762-02	Water	05/28/19 08:32	06/05/19 10:50
30297880003	9055762-03	Water	05/28/19 09:33	06/05/19 10:50
30297880004	9055762-04	Water	05/28/19 10:41	06/05/19 10:50
30297880005	9055762-05	Water	05/28/19 11:54	06/05/19 10:50
30297880006	9055762-06	Water	05/28/19 00:00	06/05/19 10:50
30297880007	9055762-07	Water	05/28/19 00:00	06/05/19 10:50

REPORT OF LABORATORY ANALYSIS

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



SAMPLE ANALYTE COUNT

Project: 9055762
 Pace Project No.: 30297880

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30297880001	9055762-01	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30297880002	9055762-02	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30297880003	9055762-03	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30297880004	9055762-04	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30297880005	9055762-05	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30297880006	9055762-06	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30297880007	9055762-07	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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



PROJECT NARRATIVE

Project: 9055762
Pace Project No.: 30297880

Method: EPA 903.1
Description: 903.1 Radium 226
Client: PDC Laboratories Inc
Date: July 03, 2019

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

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



PROJECT NARRATIVE

Project: 9055762
Pace Project No.: 30297880

Method: EPA 904.0
Description: 904.0 Radium 228
Client: PDC Laboratories Inc
Date: July 03, 2019

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

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



PROJECT NARRATIVE

Project: 9055762
Pace Project No.: 30297880

Method: Total Radium Calculation
Description: Total Radium 228+226
Client: PDC Laboratories Inc
Date: July 03, 2019

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

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 9055762
Pace Project No.: 30297880

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: 9055762-01 Lab ID: 30297880001 Collected: 05/28/19 07:44 Received: 06/05/19 10:50 Matrix: Water						
PWS: Site ID: Sample Type:						
Radium-226	EPA 903.1	0.0644 ± 0.520 (1.02) C:NA T:90%	pCi/L	06/27/19 10:47	13982-63-3	
Radium-228	EPA 904.0	0.852 ± 0.524 (0.984) C:73% T:75%	pCi/L	06/20/19 16:27	15262-20-1	
Total Radium	Total Radium Calculation	0.916 ± 1.04 (2.00)	pCi/L	06/27/19 13:44	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: 9055762-02 Lab ID: 30297880002 Collected: 05/28/19 08:32 Received: 06/05/19 10:50 Matrix: Water						
PWS: Site ID: Sample Type:						
Radium-226	EPA 903.1	0.519 ± 0.543 (0.851) C:NA T:93%	pCi/L	06/27/19 10:47	13982-63-3	
Radium-228	EPA 904.0	0.764 ± 0.436 (0.800) C:79% T:84%	pCi/L	06/20/19 16:27	15262-20-1	
Total Radium	Total Radium Calculation	1.28 ± 0.979 (1.65)	pCi/L	06/27/19 13:44	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: 9055762-03 Lab ID: 30297880003 Collected: 05/28/19 09:33 Received: 06/05/19 10:50 Matrix: Water						
PWS: Site ID: Sample Type:						
Radium-226	EPA 903.1	0.377 ± 0.492 (0.812) C:NA T:85%	pCi/L	06/27/19 10:47	13982-63-3	
Radium-228	EPA 904.0	1.32 ± 0.575 (0.987) C:82% T:78%	pCi/L	06/24/19 11:46	15262-20-1	
Total Radium	Total Radium Calculation	1.70 ± 1.07 (1.80)	pCi/L	06/27/19 13:44	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: 9055762-04 Lab ID: 30297880004 Collected: 05/28/19 10:41 Received: 06/05/19 10:50 Matrix: Water						
PWS: Site ID: Sample Type:						
Radium-226	EPA 903.1	0.613 ± 0.429 (0.517) C:NA T:95%	pCi/L	06/27/19 10:47	13982-63-3	
Radium-228	EPA 904.0	0.294 ± 0.379 (0.806) C:79% T:79%	pCi/L	06/24/19 11:47	15262-20-1	
Total Radium	Total Radium Calculation	0.907 ± 0.808 (1.32)	pCi/L	06/27/19 13:44	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: 9055762-05 Lab ID: 30297880005 Collected: 05/28/19 11:54 Received: 06/05/19 10:50 Matrix: Water						
PWS: Site ID: Sample Type:						
Radium-226	EPA 903.1	0.938 ± 0.598 (0.751) C:NA T:90%	pCi/L	06/27/19 10:47	13982-63-3	
Radium-228	EPA 904.0	0.523 ± 0.374 (0.724) C:76% T:85%	pCi/L	06/24/19 11:47	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 9055762
 Pace Project No.: 30297880

Sample: 9055762-05		Lab ID: 30297880005	Collected: 05/28/19 11:54	Received: 06/05/19 10:50	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC)	Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	1.46 ± 0.972 (1.48)		pCi/L	06/27/19 13:44	7440-14-4	

Sample: 9055762-06		Lab ID: 30297880006	Collected: 05/28/19 00:00	Received: 06/05/19 10:50	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC)	Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.789 ± 0.499 (0.563)		pCi/L	06/27/19 10:47	13982-63-3	
		C:NA T:94%					
Radium-228	EPA 904.0	0.237 ± 0.382 (0.830)		pCi/L	06/24/19 11:47	15262-20-1	
		C:76% T:81%					
Total Radium	Total Radium Calculation	1.03 ± 0.881 (1.39)		pCi/L	06/27/19 13:44	7440-14-4	

Sample: 9055762-07		Lab ID: 30297880007	Collected: 05/28/19 00:00	Received: 06/05/19 10:50	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC)	Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0628 ± 0.369 (0.754)		pCi/L	06/27/19 10:47	13982-63-3	
		C:NA T:83%					
Radium-228	EPA 904.0	0.554 ± 0.390 (0.763)		pCi/L	06/24/19 11:47	15262-20-1	
		C:79% T:90%					
Total Radium	Total Radium Calculation	0.617 ± 0.759 (1.52)		pCi/L	06/27/19 13:44	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: 9055762
 Pace Project No.: 30297880

QC Batch: 347403 Analysis Method: EPA 903.1
 QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
 Associated Lab Samples: 30297880001, 30297880002, 30297880003, 30297880004, 30297880005, 30297880006, 30297880007

METHOD BLANK: 1689539 Matrix: Water
 Associated Lab Samples: 30297880001, 30297880002, 30297880003, 30297880004, 30297880005, 30297880006, 30297880007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.540 ± 0.424 (0.589) C:NA T:90%	pCi/L	06/27/19 10:47	

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

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: 9055762
 Pace Project No.: 30297880

QC Batch: 347172 Analysis Method: EPA 904.0
 QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
 Associated Lab Samples: 30297880001, 30297880002

METHOD BLANK: 1688509 Matrix: Water
 Associated Lab Samples: 30297880001, 30297880002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.914 ± 0.453 (0.792) C:77% T:83%	pCi/L	06/20/19 16:11	

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

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: 9055762
 Pace Project No.: 30297880

QC Batch: 347409 Analysis Method: EPA 904.0
 QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
 Associated Lab Samples: 30297880003, 30297880004, 30297880005, 30297880006, 30297880007

METHOD BLANK: 1689548 Matrix: Water
 Associated Lab Samples: 30297880003, 30297880004, 30297880005, 30297880006, 30297880007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.656 ± 0.340 (0.602) C:82% T:93%	pCi/L	06/24/19 11:46	

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

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



QUALIFIERS

Project: 9055762
Pace Project No.: 30297880

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

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

SUBCONTRACT ORDER
Transfer Chain of Custody

WO# : 30297880

PDC Laboratories, Inc.
9055762



SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-8651

RECEIVING LABORATORY

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

Sample: 9055762-01
Name: MW-3

Sampled: 05/28/19 07:44
Matrix: Ground Water
Preservative: HNO3, pH <2

001

Analysis	Due	Expires	Price	Comments
01-Radium 226/228	06/11/19 16:00	11/24/19 07:44	150.00	THIS IS A CCR PROJECT

Sample: 9055762-02
Name: MW-6

Sampled: 05/28/19 08:32
Matrix: Ground Water
Preservative: HNO3, pH <2

002

Analysis	Due	Expires	Price	Comments
01-Radium 226/228	06/11/19 16:00	11/24/19 08:32	150.00	THIS IS A CCR PROJECT

003

Sample: 9055762-03
Name: MW-5

Sampled: 05/28/19 09:33
Matrix: Ground Water
Preservative: HNO3, pH <2

Analysis	Due	Expires	Price	Comments
01-Radium 226/228	06/11/19 16:00	11/24/19 09:33	150.00	THIS IS A CCR PROJECT

Sample: 9055762-04
Name: MW-8

Sampled: 05/28/19 10:41
Matrix: Ground Water
Preservative: HNO3, pH <2

004

Analysis	Due	Expires	Price	Comments
01-Radium 226/228	06/11/19 16:00	11/24/19 10:41	150.00	THIS IS A CCR PROJECT

Sample: 9055762-05
Name: MW-4

Sampled: 05/28/19 11:54
Matrix: Ground Water
Preservative: HNO3, pH <2

005

Analysis	Due	Expires	Price	Comments
01-Radium 226/228	06/11/19 16:00	11/24/19 11:54	150.00	THIS IS A CCR PROJECT

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.
 9055762

30297880

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: **9055762-06**
 Name: **FIELD DUPLICATE**

Sampled: 05/28/19 00:00
 Matrix: Ground Water
 Preservative: HNO3, pH <2

006

Analysis	Due	Expires	Price	Comments
01-Radium 226/228	06/11/19 16:00	11/24/19 00:00	150.00	THIS IS A CCR PROJECT

Sample: **9055762-07**
 Name: **FIELD BLANK**

Sampled: 05/28/19 00:00
 Matrix: Ground Water
 Preservative: HNO3, pH <2

007

Analysis	Due	Expires	Price	Comments
01-Radium 226/228	06/11/19 16:00	11/24/19 00:00	150.00	THIS IS A CCR PROJECT

Please email results to Kurt Stepping at kstepping@pdclab.com

Date Shipped: 6-3-19 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	<u>N/A</u> °C
<i>[Signature]</i>	<u>6-3-19 15:15</u>	<i>[Signature]</i>	<u>06-05-19 10:54</u>	Sample(s) Received on Ice	Y or <input checked="" type="radio"/> N
				Proper Bottles Received in Good Condition	<input checked="" type="radio"/> or N
				Bottles Filled with Adequate Volume	<input checked="" type="radio"/> or N
				Samples Received Within Hold Time	<input checked="" type="radio"/> or N
				Date/Time Taken From Sample Bottle	<input checked="" type="radio"/> or N

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: PDC Labs

Project# 30297880

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: 7753 7916 7073

Label	<u>hlc</u>
LIMS Login	<u>DL</u>

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

Thermometer Used N/A 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:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
				<u>10D3581</u>	<u>DL 06-05-13</u>
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.	
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.	
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.	
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	
Sample Labels match COC: -includes date/time/ID Matbc: <u>WT</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	
Short Hold Time Analysis (<72hr remaining):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	
Correct Containers Used: -Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.	
Orthophosphate field filtered	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12.	
Hex Cr Aqueous sample field filtered	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13.	
Organic Samples checked for dechlorination:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14.	
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15.	
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.	<u>PHCZ</u>
All containers meet method preservation requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed	Date/time of preservation
				<u>DL</u>	
				Lot # of added preservative	
Headspace in VOA Vials (>8mm):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.	
Trip Blank Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18.	
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Rad Samples Screened < 0.5 mrem/hr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed	Date: <u>06-05-13</u>
				<u>DL</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.



Quality Control Sample Performance Assessment

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test: Ra-226
Analyst: MK1
Date: 6/19/2019
Batch ID: 48214
Matrix: DW

Method Blank Assessment		
MB Sample ID	1889539	
MB concentration:	0.540	
MB Counting Uncertainty:	0.419	
MB MDC:	0.589	
MB Numerical Performance Indicator:	2.52	
MB Status vs Numerical Indicator:	N/A	
MB Status vs. MDC:	Pass	

Laboratory Control Sample Assessment	LCS (Y or N)?	N
		LCS48214
Count Date:	6/27/2019	
Spike I.D.:	19-022	
Spike Concentration (pCi/mL):	32.121	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.652	
Target Conc. (pCi/L, g, F):	4.930	
Uncertainty (Calculated):	0.232	
Result (pCi/L, g, F):	4.877	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.998	
Numerical Performance Indicator:	-0.10	
Percent Recovery:	98.92%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	6/11/2019	
Sample I.D.	30299148001	
Sample MS I.D.	30299148001MS	
Sample MSD I.D.		
Spike I.D.:	19-022	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.122	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.509	
MS Target Conc. (pCi/L, g, F):	12.616	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.593	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.489	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.394	
Sample Matrix Spike Result:	14.620	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	2.006	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:	1.413	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	112.17%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Duplicate Sample Assessment		
Sample I.D.:	30299144001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.:	30299144001DUP	
Sample Result (pCi/L, g, F):	0.219	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.304	
Sample Duplicate Result (pCi/L, g, F):	0.686	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.451	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-1.882	
Duplicate RPD:	103.07%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail	
% RPD Limit:	32%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

~~Batch must be re-prepped due to unacceptable precision.~~

OK call post

OK 6/27/19

6-27-19 we



Quality Control Sample Performance Assessment

Test: Ra-228
Analyst: JLW
Date: 6/18/2019
Worklist: 48192
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment		
MB Sample ID	1888509	
MB concentration:	0.814	
M/B Counting Uncertainty:	0.423	
MB MDC:	0.792	
MB Numerical Performance Indicator:	4.24	
MB Status vs Numerical Indicator:	N/A	
MB Status vs. MDC:	See Comment*	

Laboratory Control Sample Assessment		
	LCS# (Y or N)?	Y
	LCS48192	LCS#48192
Count Date:	6/20/2019	6/20/2019
Spike I.D.:	19-026	19-026
Spike Concentration (pCi/mL):	36.440	36.440
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.805	0.802
Target Conc. (pCi/L, g, F):	4.527	4.546
Uncertainty (Calculated):	0.222	0.223
Result (pCi/L, g, F):	5.007	4.412
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.723	0.760
Numerical Performance Indicator:	1.24	-0.33
Percent Recovery:	110.61%	97.04%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass

Sample Matrix Spike Control Assessment	
Sample Collection Date:	6/6/2019
Sample I.D.:	30299042001
Sample MS I.D.:	30299042001MS
Sample MSD I.D.:	
Spike I.D.:	19-026
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	36.609
Spike Volume Used in MS (mL):	0.20
Spike Volume Used in MSD (mL):	
MS Aliquot (L, g, F):	0.804
MS Target Conc. (pCi/L, g, F):	9.112
MSD Aliquot (L, g, F):	
MSD Target Conc. (pCi/L, g, F):	
Spike uncertainty (calculated):	0.446
Sample Result:	0.952
Sample Result Counting Uncertainty (pCi/L, g, F):	0.441
Sample Matrix Spike Result:	10.084
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	0.933
Sample Matrix Spike Duplicate Result:	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
MS Numerical Performance Indicator:	0.053
MSD Numerical Performance Indicator:	
MS Percent Recovery:	100.33%
MSD Percent Recovery:	
MS Status vs Numerical Indicator:	N/A
MSD Status vs Numerical Indicator:	
MS Status vs Recovery:	Pass
MSD Status vs Recovery:	

Duplicate Sample Assessment		
Sample I.D.:	LCS48192	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.:	LCS#48192	
Sample Result (pCi/L, g, F):	5.007	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.723	
Sample Duplicate Result (pCi/L, g, F):	4.412	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.760	
Are sample and/or duplicate results below MDC?	NO	
Duplicate Numerical Performance Indicator:	1.112	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	13.07%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D.:	
Sample MS I.D.:	
Sample MSD I.D.:	
Sample Matrix Spike Result:	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	
Sample Matrix Spike Duplicate Result:	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
Duplicate Numerical Performance Indicator:	
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:	
MS/MSD Duplicate Status vs Numerical Indicator:	
MS/MSD Duplicate Status vs RPD:	

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*The method blank result is below the reporting limit for this analysis and is acceptable.

JJ
6/21/19



Quality Control Sample Performance Assessment

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test: Ra-228
Analyst: JLW
Date: 6/19/2019
Worklist: 48220
Matrix: DW

Method Blank Assessment	
MB Sample ID	1689548
MB concentration:	0.658
M/B Counting Uncertainty:	0.320
MB MDC:	0.602
MB Numerical Performance Indicator:	4.03
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	See Comment*

Laboratory Control Sample Assessment		LCS (Y or N)?	N
		LCS48220	LCS48220
Count Date:	6/24/2019		
Spike I.D.:	19-026		
Spike Concentration (pCi/mL):	96.395		
Volume Used (mL):	0.10		
Aliquot Volume (L, g, F):	0.808		
Target Conc. (pCi/L, g, F):	4.514		
Uncertainty (Calculated):	0.221		
Result (pCi/L, g, F):	4.527		
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.600		
Numerical Performance Indicator:	0.04		
Percent Recovery:	100.28%		
Status vs Numerical Indicator:	N/A		
Status vs Recovery:	Pass		

Sample Matrix Spike Control Assessment	
Sample Collection Date:	6/5/2019
Sample I.D.	30298457001
Sample MS I.D.	30298457001MS
Sample MSD I.D.	
Spike I.D.:	19-026
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	36.822
Spike Volume Used in MS (mL):	0.20
Spike Volume Used in MSD (mL):	
MS Aliquot (L, g, F):	0.803
MS Target Conc. (pCi/L, g, F):	8.122
MSD Aliquot (L, g, F):	
MSD Target Conc. (pCi/L, g, F):	
Spike uncertainty (calculated):	0.447
Sample Result:	0.253
Sample Result Counting Uncertainty (pCi/L, g, F):	0.339
Sample Matrix Spike Result:	10.716
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	0.919
Sample Matrix Spike Duplicate Result:	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
MS Numerical Performance Indicator:	2.441
MSD Numerical Performance Indicator:	
MS Percent Recovery:	114.69%
MSD Percent Recovery:	
MS Status vs Numerical Indicator:	N/A
MSD Status vs Numerical Indicator:	
MS Status vs Recovery:	Pass
MSD Status vs Recovery:	

Duplicate Sample Assessment		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Sample I.D.:	30298129002	
Duplicate Sample I.D.:	30298129002DUP	
Sample Result (pCi/L, g, F):	1.232	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.396	
Sample Duplicate Result (pCi/L, g, F):	1.828	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.540	
Are sample and/or duplicate results below MDC?	See Below ##	
Duplicate Numerical Performance Indicator:	-1.744	30298129002
Duplicate RPD:	38.94%	30298129002DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail**	

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D.	
Sample MS I.D.	
Sample MSD I.D.	
Sample Matrix Spike Result:	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	
Sample Matrix Spike Duplicate Result:	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
Duplicate Numerical Performance Indicator:	
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:	
MS/MSD Duplicate Status vs Numerical Indicator:	
MS/MSD Duplicate Status vs RPD:	

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*The method blank result is below the reporting limit for this analysis and is acceptable.

***Batch must be re-prepped due to unacceptable precision. *OK 6/19/19*

*JJ
6-25-19*



PDC Laboratories, Inc.
P.O. Box 1011 • Fenton, MI 48430
517-637-3000 • 800-773-4451 • FAX 517-637-3001



DATA PACKAGE

CLIENT: Sikeston BMU

PROJECT: Sikeston Power Station

PDC LAB WORKORDER: 9055762

DATE ISSUED: July 5, 2019

CASE NARRATIVE –

PDC Work Order 9055762

PDC Laboratories, Inc. received 7 water samples on May 30, 2019 in good condition at our Peoria, IL facility. This sample set was designated as work order 9055762. Samples were initially logged for just APP IV list. App III list was identified later and those parameters were added. TDS was beyond hold time, and will be re-sampled at a later date.

Sample ID's		Date	
Field	Lab ID	Collected	Received
MW-3	9055762-01	5/28/19	5/30/19
MW-6	9055762-02	5/28/19	5/30/19
MW-5	9055762-03	5/28/19	5/30/19
MW-8	9055762-04	5/28/19	5/30/19
MW-4	9055762-05	5/28/19	5/30/19
Field Duplicate	9055762-06	5/28/19	5/30/19
Field Blank	9055762-07	5/28/19	5/30/19

QC Summary:

All items met acceptance criteria:

Certification

Signature:



Name: Kurt Stepping

Date: July 5, 2019

Title: Senior Project Manager


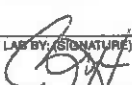
PDC LABORATORIES, INC.
 2231 WEST ALTORFER DRIVE
 PEORIA, IL 61615

PHONE # 800-752-6651
 FAX # 309-692-9689

State where samples collected MO

CHAIN OF CUSTODY RECORD

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT) - (SAMPLE ACCEPTANCE POLICY ON REVERSE)

1 CLIENT Sikeston Power station CCR APP 17 ONLY		PROJECT NUMBER P.O. NUMBER	MEANS SHIPPED DATE SHIPPED	3 ANALYSIS REQUESTED		4 (FOR LAB USE ONLY) LOGIN # <u>9055767-07</u> LOGGED BY: <u>DCW</u> LAB PROJ. # _____ TEMPLATE: _____ PROJ. MGR: _____	
ADDRESS 1551 W Wakefield		PHONE NUMBER FAX NUMBER	DATE SHIPPED	CITY STATE ZIP Sikeston MO 63801		MATRIX TYPES: WW-WASTEWATER DW-DRINKING WATER GW-GROUND WATER WWSL-SLUDGE HAS-SOLID LCHT-LEACHATE OTHER:	
CONTACT PERSON Luke St. Man / Ken Ewers		SAMPLER (PLEASE PRINT) Daniel Dillingham	SAMPLER'S SIGNATURE 	CITY STATE ZIP Sikeston MO 63801		MATRIX TYPES: WW-WASTEWATER DW-DRINKING WATER GW-GROUND WATER WWSL-SLUDGE HAS-SOLID LCHT-LEACHATE OTHER:	
2 SAMPLE DESCRIPTION AS YOU WANT ON REPORT		DATE COLLECTED	TIME COLLECTED	DATE TOGP	MATRIX TYPE	BOTTLE COUNT	REMARKS
MW 3		5-28-19	0744	X	GW	3	
MW 6		5-28-19	0832	X	GW	3	
MW 5		5-28-19	0933	X	GW	3	
MW 8		5-28-19	1041	X	GW	3	
MW 4		5-28-19	1154	X	GW	3	
Field Duplicate		5-28-19		X	GW	3	
Field Blank		5-28-19		X	DI	3	
5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) RUSH RESULTS VIA (PLEASE CIRCLE) FAX PHONE NORMAL RUSH DATE RESULTS NEEDED		FAX # _____ PHONE # _____ EMAIL ADDRESS _____		6 The sample temperature will be measured upon receipt at the lab. By initialing this area you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area you allow the lab to proceed with analytical testing regardless of the sample temperature.		7 RELINQUISHED BY: (SIGNATURE) <u>Ashish Patel</u> DATE: <u>5/28/19</u> TIME: <u>1:00</u>	
RELINQUISHED BY: (SIGNATURE) _____		RECEIVED BY: (SIGNATURE) _____		DATE: _____ TIME: _____		8 COMMENTS: (FOR LAB USE ONLY) <u>4</u> SAMPLE TEMPERATURE UPON RECEIPT _____ °C CHILL PROCESS STARTED PRIOR TO RECEIPT _____ SAMPLE(S) RECEIVED ON ICE _____ PROPER BOTTLES RECEIVED IN GOOD CONDITION _____ BOTTLES FILLED WITH ADEQUATE VOLUME _____ SAMPLES RECEIVED WITHIN HOLD TIME(S) _____ (EXCLUDES TYPICAL FIELD PARAMETERS) DATE AND TIME TAKEN FROM SAMPLE BOTTLE	
RELINQUISHED BY: (SIGNATURE) _____		RECEIVED AT LAB BY: (SIGNATURE) 		DATE: <u>5/28/19</u> TIME: <u>1:40</u>			

Copies: white should accompany samples to PDC Labs.

Yellow copy to be retained by the client.

Laboratory Quality Assurance/Quality Control Data –
July 23, 2019
(First 2019 Semi-annual Event - TDS)



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B916705 - No Prep - SM 2540C</u>									
Blank (B916705-BLK1)	Prepared & Analyzed: 07/29/19								
Solids - total dissolved solids (TDS)	< 17	mg/L							
Duplicate (B916705-DUP1)	Sample: 9075380-07 Prepared & Analyzed: 07/29/19								
Solids - total dissolved solids (TDS)	195	mg/L			190			3	5
Duplicate (B916705-DUP2)	Sample: 9075407-02 Prepared & Analyzed: 07/29/19								
Solids - total dissolved solids (TDS)	175	mg/L	M		185			6	5
<u>Batch B916944 - No Prep - SM 2540C</u>									
Blank (B916944-BLK1)	Prepared & Analyzed: 07/30/19								
Solids - total dissolved solids (TDS)	< 17	mg/L							
Duplicate (B916944-DUP1)	Sample: 9075380-06 Prepared & Analyzed: 07/30/19								
Solids - total dissolved solids (TDS)	133	mg/L	M		143			7	5



NOTES

Specific method revisions used for analysis are available upon request.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314 W Crystal Lake Road A, McHenry, IL 60050
TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279
Illinois Department of Public Health Bacteriological 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, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100230
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17553
Drinking Water Certifications: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Hazardous/Solid Waste Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPIL - Springfield, IL - 1210 Capitol Airport Drive, Springfield, IL 62707
TNI Accreditation through IL EPA Lab No. 100323

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807
USEPA DMR-QA Program

STL - St. Louis, MO - 3278 N Highway 67, Florissant, MO 63033
TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389
TNI Accreditation for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
Missouri Department of Natural Resources
Microbiological Laboratory Service for Drinking Water

Qualifiers

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

Certified by: Kurt Stepping, Senior Project Manager



PDC LABORATORIES, INC.
 2231 WEST ALTORFER DRIVE
 PEORIA, IL 61615

PHONE # 800-752-6651
 FAX # 309-692-9689

CHAIN OF CUSTODY RECORD

State where samples collected MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT) - (SAMPLE ACCEPTANCE POLICY ON REVERSE)

1 CLIENT Sikeston, BMU 1551 W. Woodford St Sikeston, MO 63801 100 W. Main / 100A Evans	PROJECT NUMBER CCR APP III	P. O. NUMBER	MEANS SHIPPED	3 ANALYSES REQUESTED	4 (FOR LAB USE ONLY) LOGIN # <u>9075407-7</u> LOGGED BY: <u>Blj</u> LAB PROJ. # _____ TEMPLATE: _____ PROJ. MGR.: _____	
	PHONE NUMBER	FAX NUMBER	DATE SHIPPED			
	SAMPLES PLEASE PRINT General Diff	MATRIX TYPES: WW-WASTEWATER DW-DRINKING WATER GW-GROUND WATER WWSL-SLUDGE MS-SOLID LCH-LEACHATE OTHER: _____				
2 SAMPLE DESCRIPTION AS INDICATED ON REPORT	TDS				REMARKS	
MW 3	7-23-19	0814	X	GW	1	X
MW 6	7-23-19	0933	X	GW	1	X
MW 5	7-23-19	1140	X	GW	1	X
MW 8	7-23-19	1305	X	GW	1	X
MW 4	7-23-19	1355	X	GW	1	X
Field Duplicate	7-23-19		X	GW	1	X
Field Blank	7-23-19		X	DI	1	X
6 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)	NORMAL	RUSH	DATE RESULTS NEEDED	6 The sample temperature will be measured upon receipt at the lab. By initiating this area you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.7-6.0°C. By not initiating this area you allow the lab to proceed with analytical testing regardless of the sample temperature.		
RUSH RESULTS VIA (PLEASE CIRCLE)	FAX	PHONE	E-MAIL			
FAX #	PHONE #	EMAIL ADDRESS				
7 RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	8 COMMENTS: (FOR LAB USE ONLY) SAMPLE TEMPERATURE UPON RECEIPT <u>2</u> °C CHILL PROCESS STARTED PRIOR TO RECEIPT SAMPLE(S) RECEIVED ON ICE PROPER BOTTLES RECEIVED IN GOOD CONDITION BOTTLES FILLED WITH ADEQUATE VOLUME SAMPLES RECEIVED WITHIN HOLD TIME(S) (EXCLUDES TYPICAL FIELD PARAMETERS) DATE AND TIME TAKEN FROM SAMPLE BOTTLE
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED AT LAB BY: (SIGNATURE)	DATE	TIME	

Page 3 of 6

Copies: white should accompany samples to PDC Labs. Yellow copy to be retained by the client.

PAGE ____ OF ____



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B916705 - No Prep - SM 2540C</u>									
Blank (B916705-BLK1)				Prepared & Analyzed: 07/29/19					
Solids - total dissolved solids (TDS)	< 17	mg/L							
Duplicate (B916705-DUP1)				Prepared & Analyzed: 07/29/19					
Solids - total dissolved solids (TDS)	195	mg/L			190			3	5
Duplicate (B916705-DUP2)				Prepared & Analyzed: 07/29/19					
Solids - total dissolved solids (TDS)	175	mg/L	M		185			6	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

THIS IS A REVISED REPORT. ONLY REPORTING TDS FOR MW8 PER GREDELL/KEN E. REQUEST.

Certifications

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

TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279

Illinois Department of Public Health Bacteriological 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, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100230

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

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

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

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

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

TNI Accreditation through IL EPA Lab No. 100323

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

USEPA DMR-QA Program

STL - St. Louis, MO - 3278 N Highway 67, Florissant, MO 63033

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389

TNI Accreditation for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080

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

Missouri Department of Natural Resources

Microbiological Laboratory Service for Drinking Water

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: 9075380

DATE ISSUED/REVISED: January 13, 2020

CASE NARRATIVE –

PDC Work Order 9075380

PDC Laboratories, Inc. received 12 water samples on July 26 16, 2019 in good condition at our Peoria, IL facility. This sample set was designated as work order 9075380.

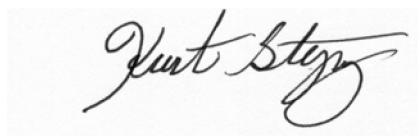
Sample ID's		Date	
Field	Lab ID	Collected	Received
MW-2	9075380-01	7/24/19	7/26/19
MW-1	9075380-02	7/24/19	7/26/19
MW-7	9075380-03	7/24/19	7/26/19
MW-9	9075380-04	7/24/19	7/26/19
DUPLICATE TWO	9075380-05	7/24/19	7/26/19
MW-3	9075380-06	7/23/19	7/26/19
MW-6	9075380-07	7/23/19	7/26/19
MW-5	9075380-08	7/23/19	7/26/19
MW-8	9075380-09	7/23/19	7/26/19
MW-4	9075380-10	7/23/19	7/26/19
DUPLICATE ONE	9075380-11	7/23/19	7/26/19
FIELD BLANK	9075380-12	7/23/19	7/26/19

QC Summary:

All items met acceptance criteria with the following noted exceptions for this revised report:
TDS batch QC sample flagged with M, RPD outside acceptance criteria

Certification

Signature:



Name: Kurt Stepping

Date: January 13, 2020

Title: Senior Project Manager



PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD
STATE WHERE SAMPLE COLLECTED MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

1 CLIENT Sikeston Power Station		PROJECT NUMBER NPDES Groundwater		PROJECT LOCATION		PURCHASE ORDER #		3 ANALYSIS REQUESTED		4 (FOR LAB USE ONLY)					
ADDRESS 1551 W Wakefield		PHONE NUMBER		E-MAIL		DATE SHIPPED		AI, Sb, As, Ba, Be, B, Cd, Co, Cr, Cu, Pb, Fe, Hurdness, Ni, Li, Mn, Hg, Mo, Ni, RAD 226, 228, Se, Ag, Na, Sdu, Ti, TDS, TOC, ToH, Zn		LOGIN # 9075380-12					
CITY Sikeston, MO 63801		SAMPLER (PLEASE PRINT) Daniel Dillingham		MATRIX TYPES: WW- WASTEWATER DW- DRINKING WATER WWSL- SLUDGE NAS- NON AQUEOUS SOLID LCHL- LEACHATE OIL- OIL SO- SOIL SOL- SOLID						LOGGED BY: DCW		CLIENT:			
CONTACT PERSON Luke St. Mary/Ken Ewers		SAMPLER'S SIGNATURE Daniel Dillingham								PROJECT:		PROJ. MGR.:			
2 SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)		DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	REMARKS						
MW 2		7-24-19	0725	X		GW	7		X	X	X	X	X	X	
MW 1		7-24-19	0852	X		GW	7		X	X	X	X	X	X	
MW 7		7-24-19	1032	X		GW	7		X	X	X	X	X	X	
MW 9		7-24-19	1204	X		GW	7		X	X	X	X	X	X	
Duplicate TWO		7-24-19		X		GW	7		X	X	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 (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		EMAIL IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FROM ABOVE:		PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS)											
7 RELINQUISHED BY: (SIGNATURE) Ashish Patel		DATE 7-25-19	TIME 0700	RECEIVED BY: (SIGNATURE)				DATE	8 COMMENTS: (FOR LAB USE ONLY)						
RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)				DATE	SAMPLE TEMPERATURE UPON RECEIPT 5 °C CHILL PROCESS STARTED PRIOR TO RECEIPT SAMPLE(S) RECEIVED ON ICE SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED DATE AND TIME TAKEN FROM SAMPLE BOTTLE						
RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)				DATE 7/26/19					TIME 950		



PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD
STATE WHERE SAMPLE COLLECTED Mo

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

1 CLIENT Sikeston Power Station ADDRESS 1551 W Wakefield CITY STATE ZIP Sikeston, MO 63801 CONTACT PERSON Luke St. Mary / Ken Ewers		PROJECT NUMBER NPDES Groundwater PROJECT LOCATION PHONE NUMBER E-MAIL DATE SHIPPED		3 ANALYSIS REQUESTED A, Sb, As, Ba, Br, B, Cd, Cr, Cu, Fe, Pb, Hg, Mn, Mo, Ni, Se, Ag, Na, S, Zn, T, TOC, TDS, TSS, NH ₄ ⁺ , NO ₃ ⁻ , NO ₂ ⁻ , PO ₄ ³⁻ , F, Hardness, Fe, Pb, Li, Mn, Hg, Mo, Ni, RAD 226, 228, Se, Ag, Na, S, Zn, T, TOC, TDS, TSS		4 (FOR LAB USE ONLY) LOGIN # 9075380-12 LOGGED BY: CLIENT: PROJECT: PROJ. MGR.: CUSTODY SEAL #:		
2 SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)		DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	REMARKS
MW 3		7-23-19	0752	X	GW	7		
MW 6		7-23-19	0911	X	GW	7		
MW 5		7-23-19	1058	X	GW	7		
MW 8		7-23-19	1243	X	GW	7		
MW 4		7-23-19	1336	X	GW	7		
Field Duplicate one		7-23-19		X	GW	7		
Field Blank		7-23-19		X	DI	7		
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 (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE EMAIL IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FROM ABOVE:		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. PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS)				
7 RELINQUISHED BY: (SIGNATURE) Ashish Patel DATE 7-25-19 TIME 0700		RECEIVED BY: (SIGNATURE)		DATE		8 COMMENTS: (FOR LAB USE ONLY) SAMPLE TEMPERATURE UPON RECEIPT 5 °C CHILL PROCESS STARTED PRIOR TO RECEIPT SAMPLE(S) RECEIVED ON ICE SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED DATE AND TIME TAKEN FROM SAMPLE BOTTLE		
RELINQUISHED BY: (SIGNATURE)		RECEIVED BY: (SIGNATURE)		DATE				
RELINQUISHED BY: (SIGNATURE)		RECEIVED BY: (SIGNATURE)		DATE 7/26/19 TIME 950				

Laboratory Quality Assurance/Quality Control Data –
August 28, 2019



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B919895 - No Prep - SM 2540C</u>									
Blank (B919895-BLK1)				Prepared & Analyzed: 09/03/19					
Solids - total dissolved solids (TDS)	< 17	mg/L							
Duplicate (B919895-DUP1)				Sample: 9086366-03 Prepared & Analyzed: 09/03/19					
Solids - total dissolved solids (TDS)	535	mg/L	M		485			10	5
<u>Batch B920048 - IC No Prep - EPA 300.0</u>									
Calibration Blank (B920048-CCB1)				Prepared & Analyzed: 09/03/19					
Sulfate	0.00	mg/L							
Chloride	0.584	mg/L							
Fluoride	0.00	mg/L							
Calibration Check (B920048-CCV1)				Prepared & Analyzed: 09/03/19					
Chloride	4.94	mg/L		5.000		99	90-110		
Sulfate	5.00	mg/L		5.000		100	90-110		
Fluoride	4.88	mg/L		5.000		98	90-110		
Matrix Spike (B920048-MS3)				Sample: 9086366-01 Prepared & Analyzed: 09/03/19					
Chloride	2.4	mg/L		1.500	1.1	91	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	17.9	NR	80-120		
Matrix Spike Dup (B920048-MSD3)				Sample: 9086366-01 Prepared & Analyzed: 09/03/19					
Chloride	2.5	mg/L		1.500	1.1	94	80-120	2	20
Sulfate	1.00E9	mg/L	Q4	1.500	17.9	NR	80-120	0	20
<u>Batch B920230 - SW 3015 - SW 6020</u>									
Blank (B920230-BLK1)				Prepared: 09/05/19 Analyzed: 09/09/19					
Antimony	< 3.0	ug/L							
Lithium	< 0.020	mg/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Beryllium	< 1.0	ug/L							
Boron	< 1.0	ug/L							
Cadmium	< 1.0	ug/L							
Calcium	< 100	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							
LCS (B920230-BS1)				Prepared: 09/05/19 Analyzed: 09/09/19					
Antimony	491	ug/L		555.6		88	80-120		
Lithium	0.661	mg/L		0.5556		119	80-120		
Arsenic	578	ug/L		555.6		104	80-120		
Barium	594	ug/L		555.6		107	80-120		
Beryllium	564	ug/L		555.6		101	80-120		



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B920230 - SW 3015 - SW 6020</u>									
LCS (B920230-BS1)				Prepared: 09/05/19 Analyzed: 09/10/19					
Boron	549	ug/L		555.6		99	80-120		
Cadmium	591	ug/L		555.6		106	80-120		
Calcium	6230	ug/L		555.6		112	80-120		
Chromium	601	ug/L		555.6		108	80-120		
Cobalt	601	ug/L		555.6		108	80-120		
Lead	606	ug/L		555.6		109	80-120		
Mercury	50.6	ug/L		55.56		91	80-120		
Molybdenum	574	ug/L		555.6		103	80-120		
Selenium	589	ug/L		555.6		106	80-120		
Thallium	596	ug/L		555.6		107	80-120		
Matrix Spike (B920230-MS1)				Sample: 9085960-01		Prepared: 09/05/19 Analyzed: 09/09/19			
Antimony	482	ug/L		555.6	2.61	86	75-125		
Arsenic	576	ug/L		555.6	2.58	103	75-125		
Barium	692	ug/L		555.6	107	105	75-125		
Beryllium	518	ug/L		555.6	0.861	93	75-125		
Boron	80100	ug/L	Q4	555.6	81600	NR	75-125		
Cadmium	579	ug/L		555.6	11.0	102	75-125		
Calcium	657000	ug/L	Q4	555.6	656000	34	75-125		
Chromium	563	ug/L		555.6	ND	101	75-125		
Cobalt	579	ug/L		555.6	16.0	101	75-125		
Lead	544	ug/L		555.6	0.544	98	75-125		
Mercury	53.0	ug/L		55.56	0.650	94	75-125		
Molybdenum	728	ug/L		555.6	155	103	75-125		
Selenium	2480	ug/L		555.6	1840	115	75-125		
Thallium	548	ug/L		555.6	4.94	98	75-125		
Matrix Spike Dup (B920230-MSD1)				Sample: 9085960-01		Prepared: 09/05/19 Analyzed: 09/09/19			
Antimony	484	ug/L		555.6	2.61	87	75-125	0.4	20
Arsenic	574	ug/L		555.6	2.58	103	75-125	0.4	20
Barium	699	ug/L		555.6	107	107	75-125	1	20
Beryllium	523	ug/L		555.6	0.861	94	75-125	0.9	20
Boron	80800	ug/L	Q4	555.6	81600	NR	75-125	0.9	20
Cadmium	580	ug/L		555.6	11.0	102	75-125	0.2	20
Calcium	647000	ug/L	Q4	555.6	656000	NR	75-125	2	20
Chromium	571	ug/L		555.6	ND	103	75-125	1	20
Cobalt	579	ug/L		555.6	16.0	101	75-125	0.1	20
Lead	546	ug/L		555.6	0.544	98	75-125	0.4	20
Mercury	52.5	ug/L		55.56	0.650	93	75-125	0.8	20
Molybdenum	721	ug/L		555.6	155	102	75-125	0.9	20
Selenium	2420	ug/L		555.6	1840	105	75-125	2	20
Thallium	553	ug/L		555.6	4.94	99	75-125	0.8	20
<u>Batch B920576 - No Prep - SM 4500-F C</u>									
Calibration Blank (B920576-CCB1)				Prepared & Analyzed: 09/10/19					



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<i>Batch B920576 - No Prep - SM 4500-F C</i>									
Calibration Blank (B920576-CCB1)				Prepared & Analyzed: 09/10/19					
Fluoride	0.0330	mg/L							
Calibration Blank (B920576-CCB2)				Prepared & Analyzed: 09/11/19					
Fluoride	0.0410	mg/L							
Calibration Check (B920576-CCV1)				Prepared & Analyzed: 09/10/19					
Fluoride	0.704	mg/L		0.7000		101	90-110		
Callbration Check (B920576-CCV2)				Prepared & Analyzed: 09/11/19					
Fluoride	0.681	mg/L		0.7000		97	90-110		
Matrix Spike (B920576-MS2)				Sample: 9086366-01		Prepared & Analyzed: 09/10/19			
Fluoride	0.683	mg/L		0.5000	0.169	103	80-120		
Matrix Spike Dup (B920576-MSD2)				Sample: 9086366-01		Prepared & Analyzed: 09/10/19			
Fluoride	0.719	mg/L		0.5000	0.169	110	80-120	5	20



NOTES

Specific method revisions used for analysis are available upon request.

* Not a TNI accredited analyte

Certifications

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

TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279

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

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

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

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

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

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

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

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

TNI Accreditation through IL EPA Lab No. 100323

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

USEPA DMR-QA Program

STL - St. Louis, MO - 3278 N Highway 67, Florissant, MO 63033

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389

TNI Accreditation for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080

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

Missouri Department of Natural Resources

Microbiological Laboratory Service for Drinking Water

Qualifiers

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

Q4 The matrix spike recovery result is unusable since the analyte concentration in the sample is greater than four times the spike level. The associated blank spike was acceptable.

Certified by: Kurt Stepping, Senior Project Manager





September 30, 2019

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

RE: Project: 9086366
Pace Project No.: 30323517

Dear Mr. Stepping:

Enclosed are the analytical results for sample(s) received by the laboratory on September 06, 2019. 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,

Laura M. Pirilla
laura.pirilla@pacelabs.com
(724)850-5616
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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



CERTIFICATIONS

Project: 9086366
Pace Project No.: 30323517

Pennsylvania Certification IDs

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

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



SAMPLE SUMMARY

Project: 9086366
Pace Project No.: 30323517

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30323517001	9086366-01	Water	08/28/19 07:28	09/06/19 09:00
30323517002	9086366-02	Water	08/28/19 08:10	09/06/19 09:00
30323517003	9086366-03	Water	08/28/19 09:42	09/06/19 09:00
30323517004	9086366-04	Water	08/28/19 10:29	09/06/19 09:00
30323517005	9086366-05	Water	08/28/19 11:53	09/06/19 09:00
30323517006	9086366-06	Water	08/28/19 00:00	09/06/19 09:00
30323517007	9086366-07	Water	08/28/19 00:00	09/06/19 09:00

REPORT OF LABORATORY ANALYSIS

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



SAMPLE ANALYTE COUNT

Project: 9086366
 Pace Project No.: 30323517

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30323517001	9086366-01	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30323517002	9086366-02	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30323517003	9086366-03	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30323517004	9086366-04	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30323517005	9086366-05	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30323517006	9086366-06	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30323517007	9086366-07	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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



PROJECT NARRATIVE

Project: 9086366
Pace Project No.: 30323517

Method: EPA 903.1
Description: 903.1 Radium 226
Client: PDC Laboratories Inc
Date: September 30, 2019

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

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



PROJECT NARRATIVE

Project: 9086366
Pace Project No.: 30323517

Method: EPA 904.0
Description: 904.0 Radium 228
Client: PDC Laboratories Inc
Date: September 30, 2019

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:

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

REPORT OF LABORATORY ANALYSIS

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



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 9086366
 Pace Project No.: 30323517

Sample: 9086366-01 Lab ID: 30323517001 Collected: 08/28/19 07:28 Received: 09/06/19 09:00 Matrix: Water
 PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.502 ± 0.481 (0.732) C:NA T:95%	pCi/L	09/20/19 13:01	13982-63-3	
Radium-228	EPA 904.0	0.379 ± 0.316 (0.630) C:76% T:88%	pCi/L	09/27/19 10:38	15262-20-1	

Sample: 9086366-02 Lab ID: 30323517002 Collected: 08/28/19 08:10 Received: 09/06/19 09:00 Matrix: Water
 PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.380 ± 0.489 (0.814) C:NA T:97%	pCi/L	09/20/19 13:01	13982-63-3	
Radium-228	EPA 904.0	-0.0125 ± 0.290 (0.680) C:78% T:86%	pCi/L	09/27/19 10:22	15262-20-1	

Sample: 9086366-03 Lab ID: 30323517003 Collected: 08/28/19 09:42 Received: 09/06/19 09:00 Matrix: Water
 PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.254 ± 0.457 (0.805) C:NA T:105%	pCi/L	09/20/19 13:13	13982-63-3	
Radium-228	EPA 904.0	0.387 ± 0.323 (0.647) C:77% T:92%	pCi/L	09/27/19 10:22	15262-20-1	

Sample: 9086366-04 Lab ID: 30323517004 Collected: 08/28/19 10:29 Received: 09/06/19 09:00 Matrix: Water
 PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.267 ± 0.455 (0.802) C:NA T:84%	pCi/L	09/20/19 13:13	13982-63-3	
Radium-228	EPA 904.0	0.225 ± 0.339 (0.732) C:79% T:84%	pCi/L	09/27/19 10:22	15262-20-1	

Sample: 9086366-05 Lab ID: 30323517005 Collected: 08/28/19 11:53 Received: 09/06/19 09:00 Matrix: Water
 PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.161 ± 0.279 (0.498) C:NA T:96%	pCi/L	09/20/19 13:13	13982-63-3	
Radium-228	EPA 904.0	0.760 ± 0.413 (0.748) C:77% T:84%	pCi/L	09/27/19 10:22	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 9086366
 Pace Project No.: 30323517

Sample: 9086366-06 Lab ID: 30323517006 Collected: 08/28/19 00:00 Received: 09/06/19 09:00 Matrix: Water
 PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.387 ± 0.422 (0.664) C:NA T:95%	pCi/L	09/20/19 13:13	13982-63-3	
Radium-228	EPA 904.0	0.330 ± 0.322 (0.662) C:78% T:89%	pCi/L	09/27/19 10:22	15262-20-1	

Sample: 9086366-07 Lab ID: 30323517007 Collected: 08/28/19 00:00 Received: 09/06/19 09:00 Matrix: Water
 PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.291 (0.631) C:NA T:94%	pCi/L	09/20/19 13:24	13982-63-3	
Radium-228	EPA 904.0	0.821 ± 0.391 (0.672) C:78% T:95%	pCi/L	09/27/19 10:38	15262-20-1	

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: 9086366
 Pace Project No.: 30323517

QC Batch: 360664 Analysis Method: EPA 903.1
 QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
 Associated Lab Samples: 30323517001, 30323517002, 30323517003, 30323517004, 30323517005, 30323517006, 30323517007

METHOD BLANK: 1750513 Matrix: Water
 Associated Lab Samples: 30323517001, 30323517002, 30323517003, 30323517004, 30323517005, 30323517006, 30323517007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0861 ± 0.197 (0.463) C:NA T:101%	pCi/L	09/19/19 13:15	

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

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: 9086366
 Pace Project No.: 30323517

QC Batch: 360665 Analysis Method: EPA 904.0
 QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
 Associated Lab Samples: 30323517001, 30323517002, 30323517003, 30323517004, 30323517005, 30323517006, 30323517007

METHOD BLANK: 1750515 Matrix: Water
 Associated Lab Samples: 30323517001, 30323517002, 30323517003, 30323517004, 30323517005, 30323517006, 30323517007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.560 ± 0.373 (0.710) C:74% T:89%	pCi/L	09/27/19 10:20	

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

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



QUALIFIERS

Project: 9086366
Pace Project No.: 30323517

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

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

SUBCONTRACT ORDER WO# : 30323517
Transfer Chain of Custody

PDC Laboratories, Inc.
 9086366



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: 9086366-01
Name: MW-3

Sampled: 08/28/19 07:28
Matrix: Ground Water
Preservative: HNO3, pH <2

001

Analysis	Due	Expires	Comments
01-Radium 226/228	09/11/19 16:00	02/24/20 07:28	

Sample: 9086366-02
Name: MW-6

Sampled: 08/28/19 08:10
Matrix: Ground Water
Preservative: HNO3, pH <2

002

Analysis	Due	Expires	Comments
01-Radium 226/228	09/11/19 16:00	02/24/20 08:10	

Sample: 9086366-03
Name: MW-5

Sampled: 08/28/19 09:42
Matrix: Ground Water
Preservative: HNO3, pH <2

003

Analysis	Due	Expires	Comments
01-Radium 226/228	09/11/19 16:00	02/24/20 09:42	

Sample: 9086366-04
Name: MW-8

Sampled: 08/28/19 10:29
Matrix: Ground Water
Preservative: HNO3, pH <2

004

Analysis	Due	Expires	Comments
01-Radium 226/228	09/11/19 16:00	02/24/20 10:29	

Sample: 9086366-05
Name: MW-4

Sampled: 08/28/19 11:53
Matrix: Ground Water
Preservative: HNO3, pH <2

005

Analysis	Due	Expires	Comments
01-Radium 226/228	09/11/19 16:00	02/24/20 11:53	

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.
9086366

30323517

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: 9086366-06
Name: FIELD DUPLICATE

Sampled: 08/28/19 00:00
Matrix: Ground Water
Preservative: HNO3, pH <2

006

Analysis	Due	Expires	Comments
01-Radium 226/228	09/11/19 16:00	02/24/20 00:00	

Sample: 9086366-07
Name: FIELD BLANK

Sampled: 08/28/19 00:00
Matrix: Ground Water
Preservative: HNO3, pH <2

007

Analysis	Due	Expires	Comments
01-Radium 226/228	09/11/19 16:00	02/24/20 00:00	

Please email results to Kurt Stepping at kstepping@pdclab.com

Date Shipped: 9-4-19 Total # of Containers: 7 Sample Origin (State): IL PO #: L470240
Turn-Around Time Requested NORMAL RUSH Date Results Needed: _____

Relinquished By	Date/Time	Received By	Date/Time	Sample Temperature Upon Receipt	<u>4/6</u> °C
<u>Alan J. Ho</u>	<u>9-4-19 16:20</u>	<u>Sh R</u>	<u>9/6/19 0900</u>	Sample(s) Received on Ice	Y or <input checked="" type="radio"/> N
				Proper Bottles Received in Good Condition	<input checked="" type="radio"/> Y or N
				Bottles Filled with Adequate Volume	<input checked="" type="radio"/> Y or N
				Samples Received Within Hold Time	<input checked="" type="radio"/> Y or N
				Date/Time Taken From Sample Bottle	<input checked="" type="radio"/> Y or N
Relinquished By	Date/Time	Received By	Date/Time		

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: PDC Labs

Project # # 30323517

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: 7761 5639 6210

Label	<u>SP</u>
LIMS Login	<u>SP</u>

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

Thermometer Used n/a Type of Ice: Wet Blue None

Cooler Temperature _____ Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C
Temp should be above freezing to 8°C

Comments:	pH paper Lot#			Date and initials of person examining contents: <u>SP 9/6/19</u>
	Yes	No	N/A	
Chain of Custody Present:	/			1. 10D3581
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:	/			3.
Sampler Name & Signature on COC:	/			4.
Sample Labels match COC: -Includes date/time/ID Matrix: <u>VT</u>	/			5.
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: -Pace Containers Used:	/			10.
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 All containers have been checked for preservation.	/			15.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	/			16. pH<2
All containers meet method preservation requirements.	/			Initial when completed: <u>SP</u> Date/time of preservation: _____
Headspace In VOA Vials (>6mm):	/			Lot # of added preservative: _____
Trip Blank Present:	/			17.
Trip Blank Custody Seals Present	/			18.
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>SP</u> Date: <u>9/6/19</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.
110. Hwy 6000 • Houston, TX 77061-0741
713.865.7000 • 713.865.7001 • FAX: 713.865.7002



DATA PACKAGE

CLIENT; Sikeston BMU

PROJECT: Sikeston Power Station

PDC LAB WORKORDER: 9086366

DATE ISSUED: October 2, 2019

CASE NARRATIVE –

PDC Work Order 9086366

PDC Laboratories, Inc. received 7 water samples on August 30, 2019 in good condition at our Peoria, IL facility. This sample set was designated as work order 9086366.

Sample ID's		Date	
Field	Lab ID	Collected	Received
MW-3	9086366-01	8/28/19	8/30/19
MW-6	9086366-02	8/28/19	8/30/19
MW-5	9086366-03	8/28/19	8/30/19
MW-8	9086366-04	8/28/19	8/30/19
MW-4	9086366-05	8/28/19	8/30/19
Field Duplicate	9086366-06	8/28/19	8/30/19
Field Blank	9086366-07	8/28/19	8/30/19

QC Summary:

TDS: Batch duplicate sample flagged M, outside RPD acceptance criteria

SO4, B, Ca: Batch MS/MSD flagged Q4, sample value greater than 4 times the spike value.

Certification

Signature:



Name: Kurt Stepping

Date: October 2, 2019

Title: Senior Project Manager

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

Project Number	PROJECT LOCATION	PURCHASE ORDER #	3 ANALYSIS REQUESTED				4 (FOR LAB USE ONLY)			
Reston Power station	CCR Bottom Ash APP III & IV		3				LOGIN # 908 6360-7			
W Wakefield	PHONE NUMBER APP IV	E-MAR.	DATE SHIPPED				LOGGED BY: <i>[Signature]</i>			
Reston, MO 63801	SAMPLER (PLEASE PRINT) Daniel Dillingham	MATRIX TYPES:		RAO 226/228 F, As, Pb, Be, Cd, Cr Cr, Hg, Li, Mn, Pb Sb, Se, Tl				CLIENT:		
SON	SAMPLER'S SIGNATURE <i>[Signature]</i>	THE UNTESTED: DR- DRUMMED WATER SW- SURFACE WATER HW- HULL- SLUDGE MS- NON AQUEOUS SOLID LC- LEACHATE OL- OIL SO- SOLS						PROJECT:		PROJ. MGR.:
Mary/Ken Ewers								CUSTODY SEAL #:		
SAMPLE DESCRIPTION (DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE (GAS COMP)	MATRIX TYPE	BOTTLE COUNT	PRES CODE (CLIENT PROVIDED)	REMARKS			
MW 3	8-28-19	0728	X	GW	3		X	X	X	X
MW 6	8-28-19	0810	X	GW	3		X	X	X	X
MW 5	8-28-19	0942	X	GW	3		X	X	X	X
MW 8	8-28-19	1029	X	GW	3		X	X	X	X
MW 4	8-28-19	1153	X	GW	3		X	X	X	X
1st Duplicate	8-28-19		X	GW	3		X	X	X	X
2nd Blank	8-28-19		X	DI	3		X	X	X	X

SERVATION CODES:	1-HCL	2-H2SO4	3-HNO3	4-NAOH	5-NA2S2O3	6-UNPRESERVED	7-OTHER
------------------	-------	---------	--------	--------	-----------	---------------	---------

SHAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
 (NAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)

3H RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE
 (IF FROM ABOVE: PHONE # IF DIFFERENT FROM ABOVE:)

1 I understand that by intilling 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.
 PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) _____

SIGNED BY: (SIGNATURE) <i>[Signature]</i> DATE 8-29-19 TIME 0700	RECEIVED BY: (SIGNATURE) DATE TIME	COMMENTS: (FOR LAB USE ONLY) SAMPLE TEMPERATURE UPON RECEIPT <u>2</u> °C CHILL PROCESS STARTED PRIOR TO RECEIPT SAMPLE(S) RECEIVED ON ICE SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED DATE AND TIME TAKEN FROM SAMPLE BOTTLE 8/30/19 1000
SIGNED BY: (SIGNATURE) DATE TIME	RECEIVED BY: (SIGNATURE) DATE TIME	
SIGNED BY: (SIGNATURE) DATE TIME	RECEIVED BY: (SIGNATURE) DATE TIME	

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 "Q4"	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	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)	
	6/13/2018	Detection	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	194.9	15.05	49.8	0.47	2.23	6.5	1.5	0.301/0.316	18	100	23	17	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
5/28/2019	Detection	218.4	16.42	32.2	0.82	9.69	6.4	1.3	<0.250	20	-	51	17	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
7/23/2019	Detection	203.0	16.58	71.0	0.88	4.96	-	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8/28/2019	Detection	207.4	16.97	75.6	0.89	4.02	6.4	1.1	<0.250	18	140	35	15	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
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	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	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	468.0	16.07	-101.8	0.53	1.01	7.4	8.8	<0.250	54	260	1100	64	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
5/28/2019	Detection	581.7	18.65	-108.5	0.37	3.30	7.3	11	<0.250	75	-	980	70	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
7/23/2019	Detection	615.2	18.88	-105.2	0.43	0.36	-	-	-	-	340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8/28/2019	Detection	645.4	19.60	-101.7	0.40	2.31	7.2	18	<0.250	110	300	1100	83	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
10/23/2019	Re-sample	620.0	18.90	-110.6	0.55	1.93	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

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. µmhos/cm	Temp. °C	ORP mV	D.O. mg/L	Turbidity NTU	pH S.U.	Chloride mg/L	Fluoride mg/L	Sulfate mg/L	TDS mg/L	Boron ug/L	Calcium mg/L	Antimony ug/L	Arsenic ug/L	Barium ug/L	Beryllium ug/L	Cadmium ug/L	Chromium ug/L	Cobalt ug/L	Lead ug/L	Lithium ug/L	Mercury ug/L	Molybdenum ug/L	Selenium ug/L	Thallium ug/L	Radium 226 and 228 (Combined) 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	591.8	17.45	-77.6	0.85	3.17	6.9	18	<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	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	836.4	14.90	-27.0	0.51	0.38	6.7	17	<0.250	230	520	420	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
5/28/2019	Detection	861.1	18.31	-59.1	0.60	3.71	6.9	10	<0.250	190	-	280	110	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
7/23/2019	Detection	806.9	18.66	-44.9	0.81	1.34	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8/28/2019	Detection	848.4	18.49	-42.2	0.64	0.82	6.8	16	<0.250	190	480	410	110	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
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	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	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	375.3	15.04	-37.6	1.07	1.66	6.7	1.5	0.313/0.290	29	180	46	36	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
5/28/2019	Detection	418.2	16.93	-48.2	0.34	7.15	6.7	2.5	<0.250	30	-	52	40	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
7/23/2019	Detection	419.3	17.64	-59.8	0.51	2.03	-	-	-	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8/28/2019	Detection	442.2	17.67	-65.4	0.66	1.15	6.7	1.0	<0.250	24	200	54	44	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	

**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
MW-8 (DG)	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	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)
	6/13/2018	Detection	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)
	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)
	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)
	11/26/2018	Detection	662.1	15.08	-77.6	0.35	2.88	7.2	45	<0.250	100	320	500	94	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	5/28/2019	Detection	836.6	18.25	-90.6	0.29	4.89	7.1	53	<0.250	130	-	540	100	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/23/2019	Detection	819.5	19.34	-90.7	0.30	1.39	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	7/23/2019	Re-sample	819.5	19.34	-90.7	0.30	1.39	-	-	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	8/28/2019	Detection	769.1	19.38	-90.0	0.25	1.25	7.1	55	<0.250	110	360	460	93	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

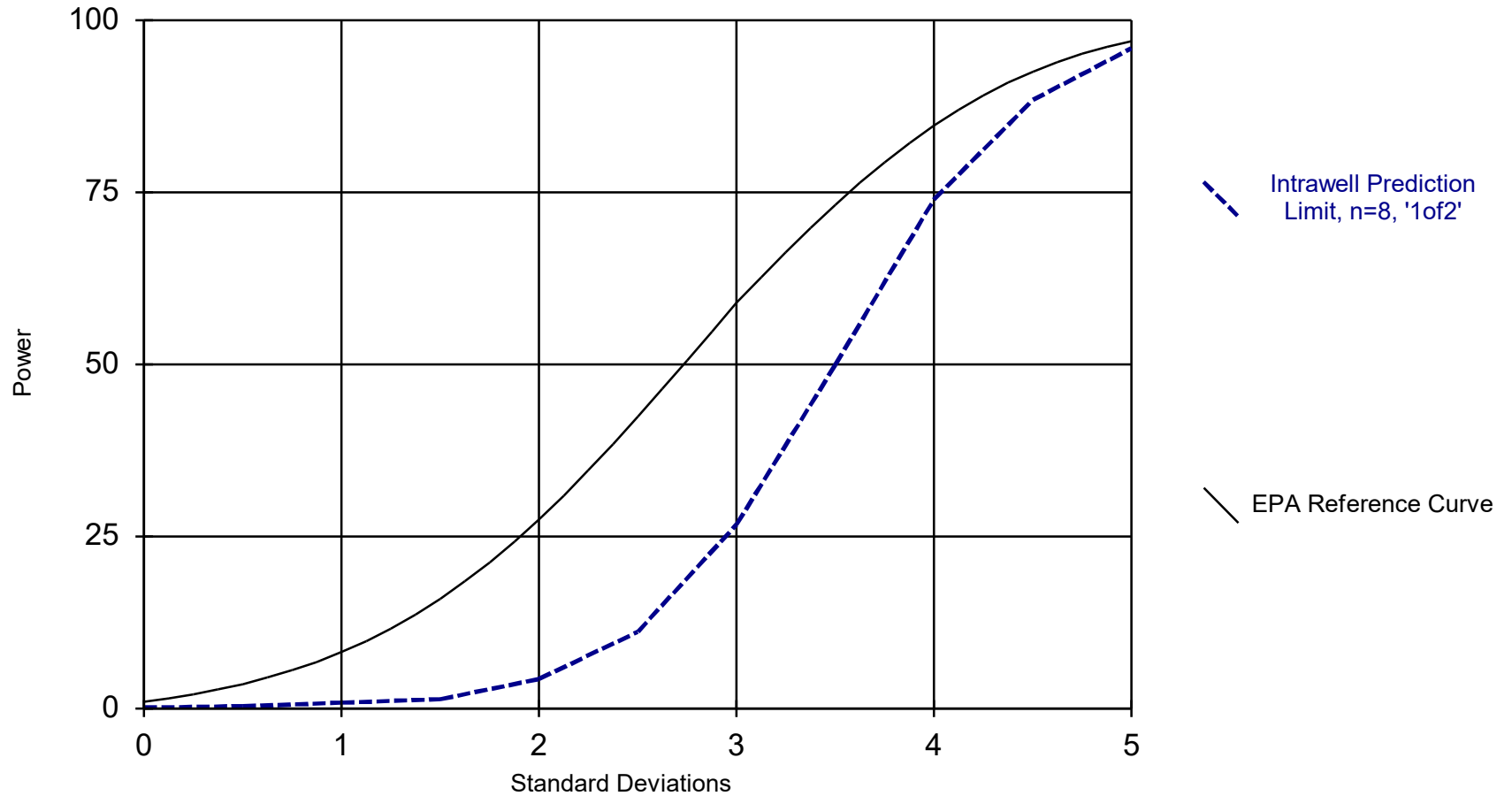
- Notes:
1. All data transcribed from analytical lab data sheets or field notes.
 2. Less than (<) symbol denotes concentration not detected at or above reportable limits.
 3. (ND) denotes Radium 226 and 228 (combined) concentration not detected above minimum detectable concentration.
 4. (NA) denotes analysis not conducted, or not available at time of report.
 5. Background monitoring per USEPA 40 CFR 257.93.
 6. Detection monitoring per USEPA 40 CFR 257.94.
 7. Assessment monitoring per USEPA 40 CFR 257.95.
 8. Federal MCL = Maximum Contaminant Level per CFR 40 Subchapter D Part 141 subpart G Section 141.62 & 141.66, or Part 257 subpart D Section 257.95(h)(2).
 9. 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).

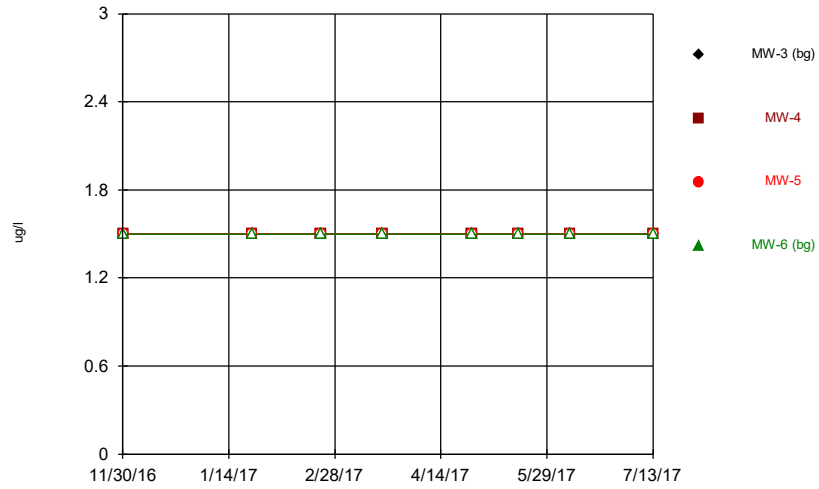
Analysis Run 11/28/2017 4:57 PM View: SBMU-SPS Appendix III

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

Appendix 6

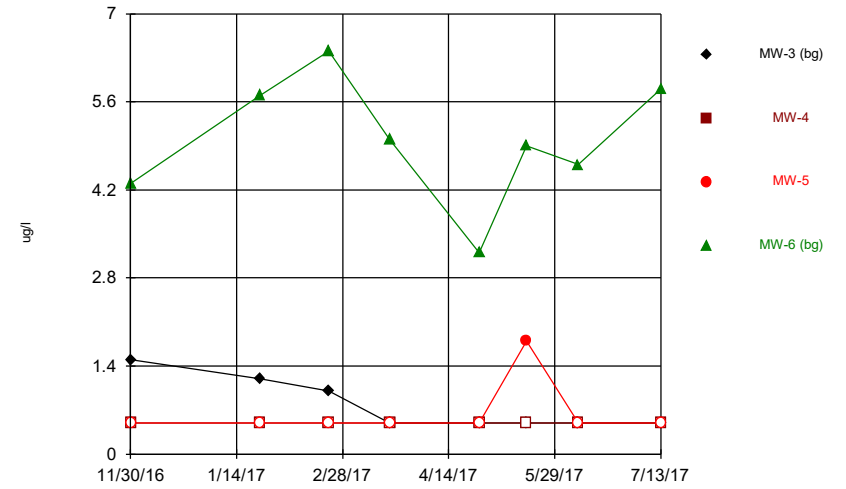
Time Series Plots

Antimony



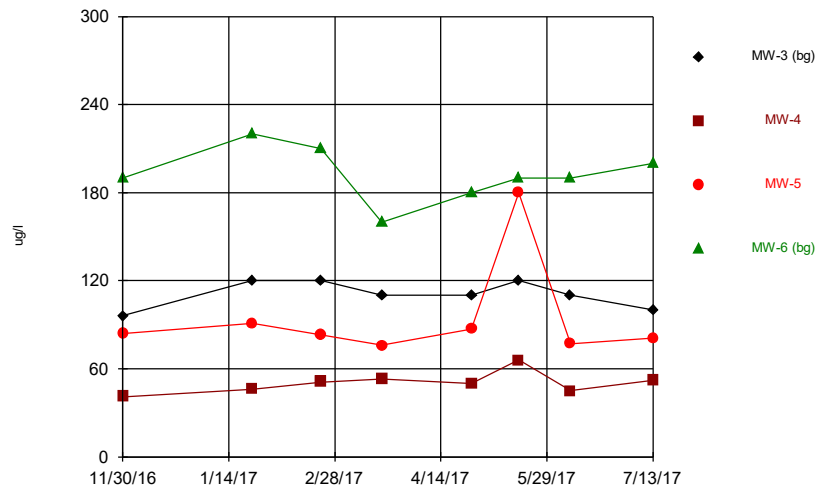
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Arsenic



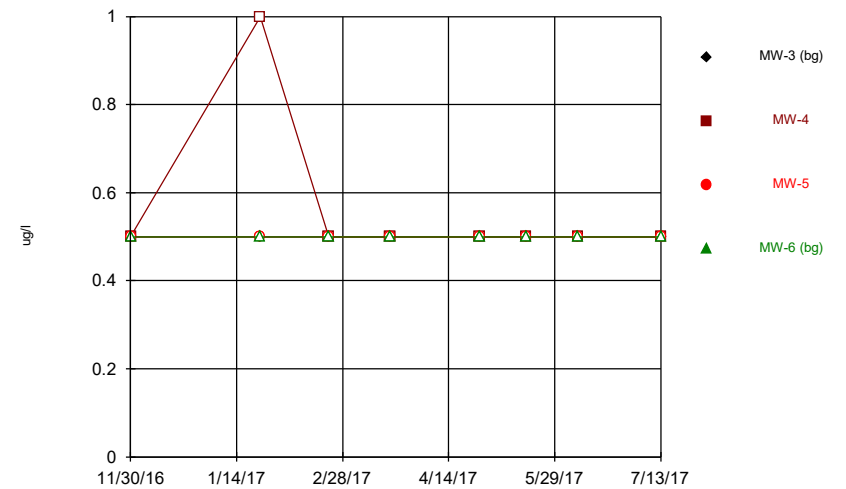
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Barium



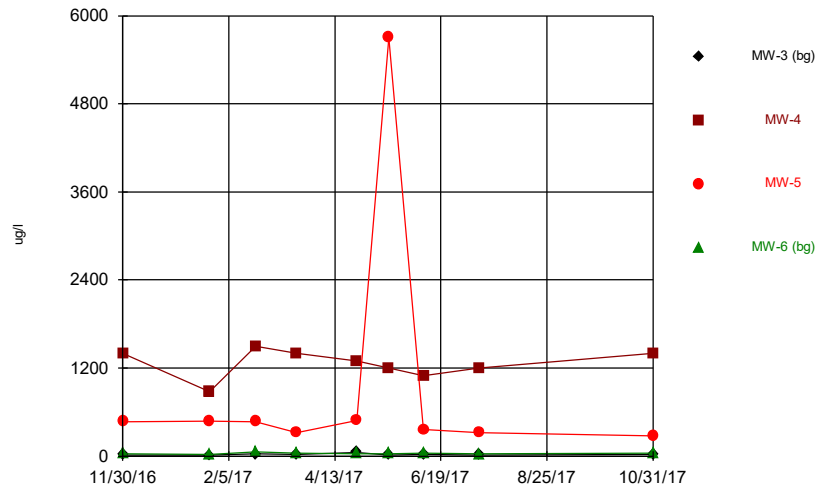
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Beryllium



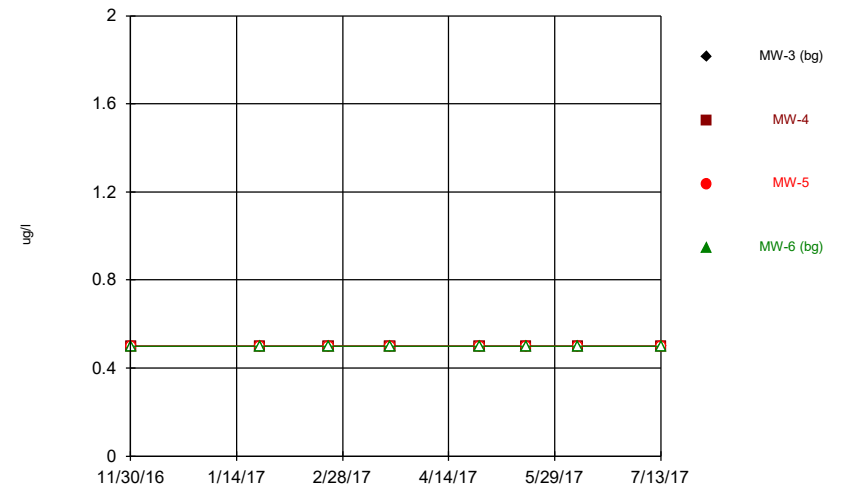
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Boron



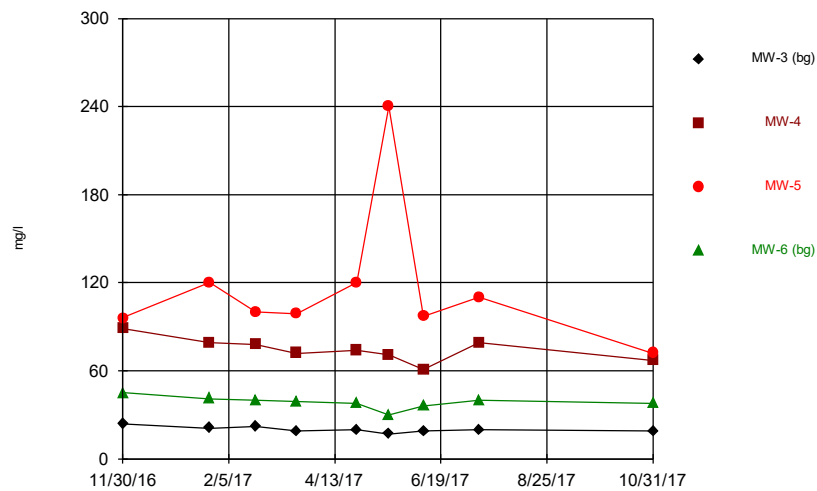
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Cadmium



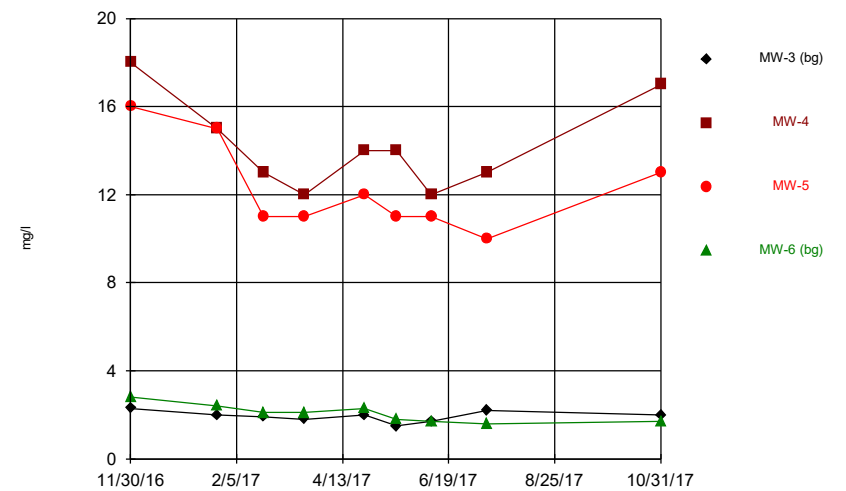
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Calcium



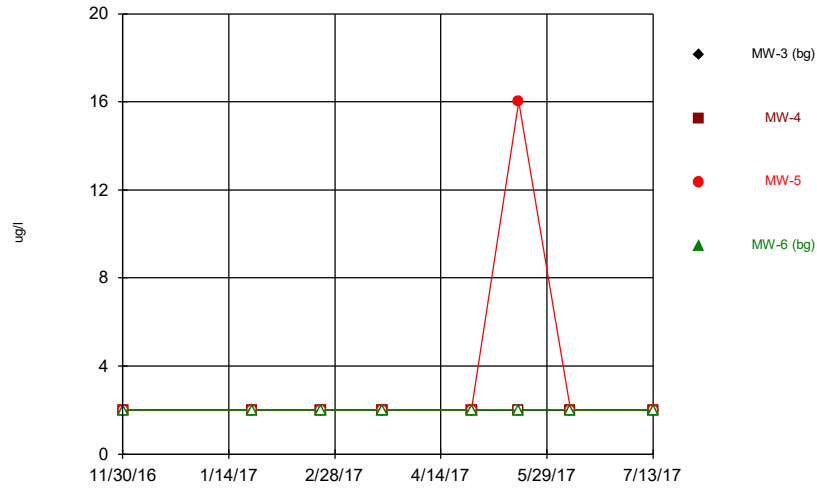
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Chloride



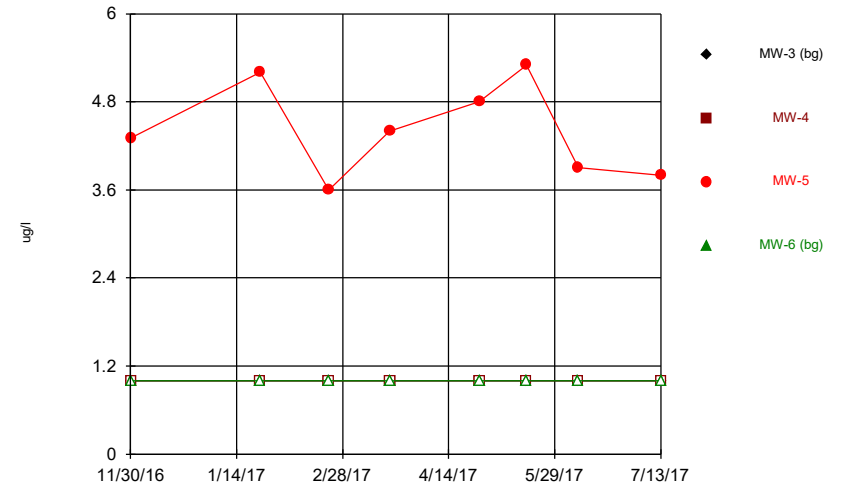
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Chromium



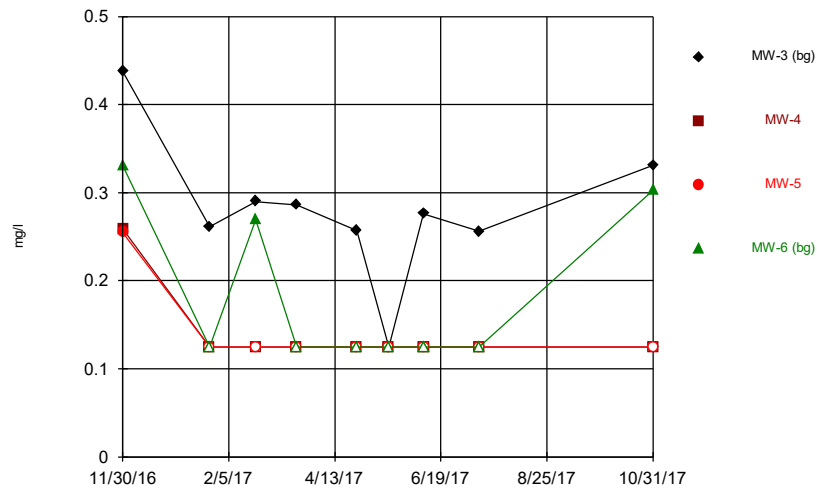
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Cobalt



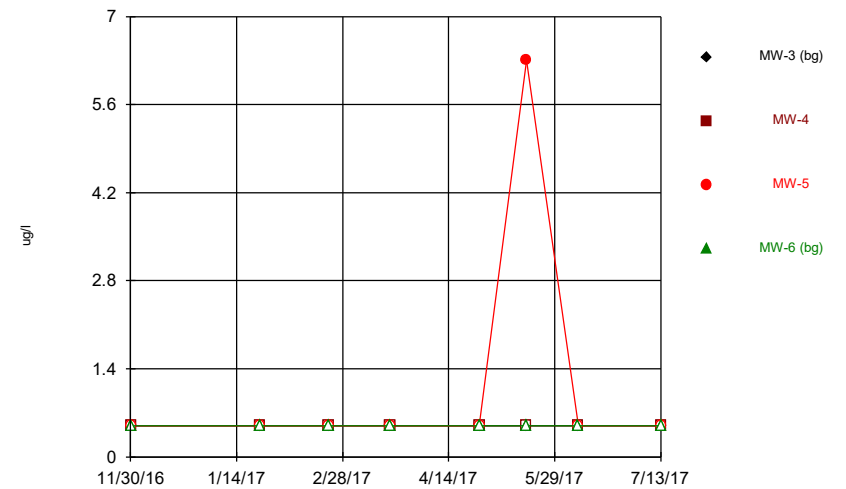
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Fluoride



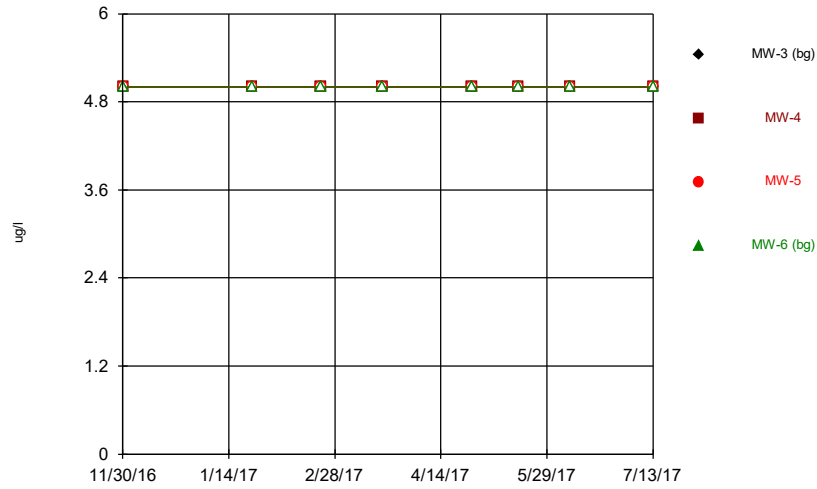
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lead



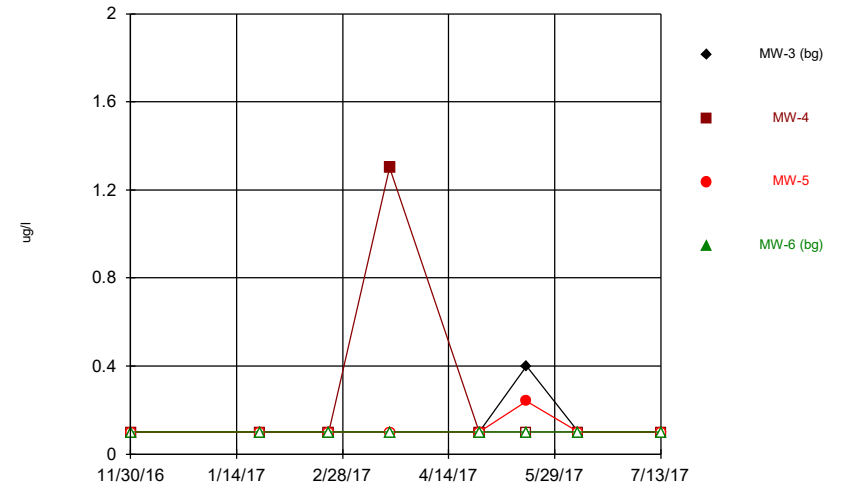
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lithium



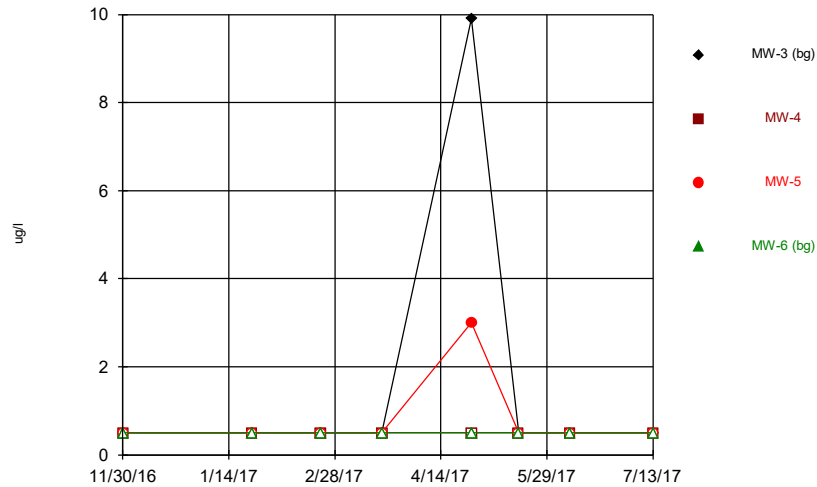
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Mercury



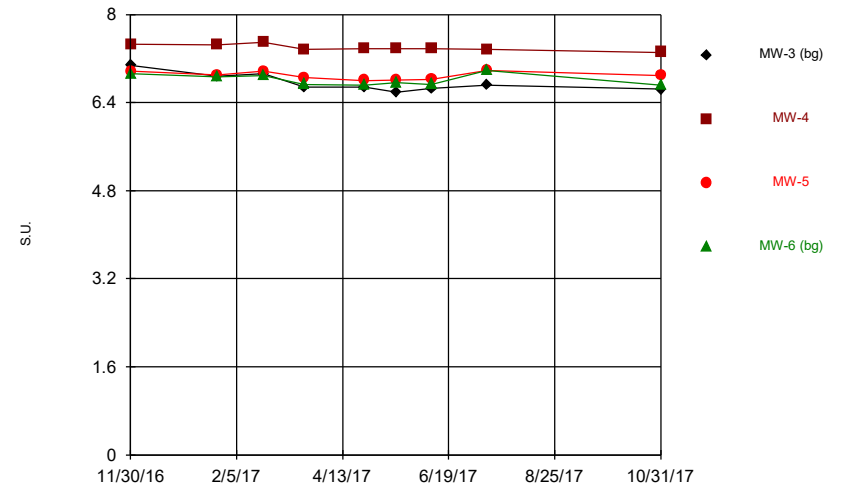
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Molybdenum



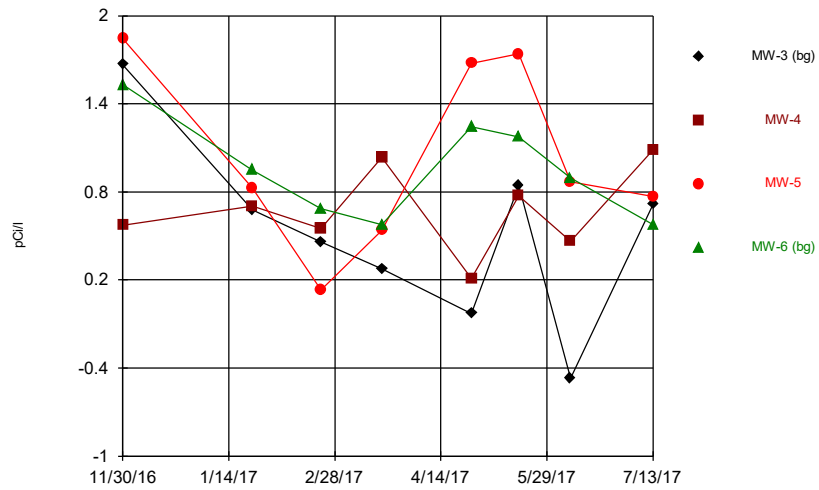
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

pH



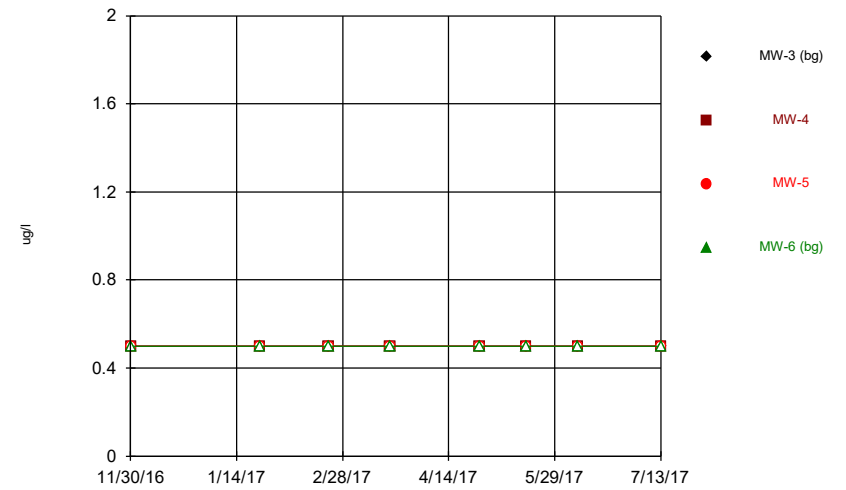
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Radium



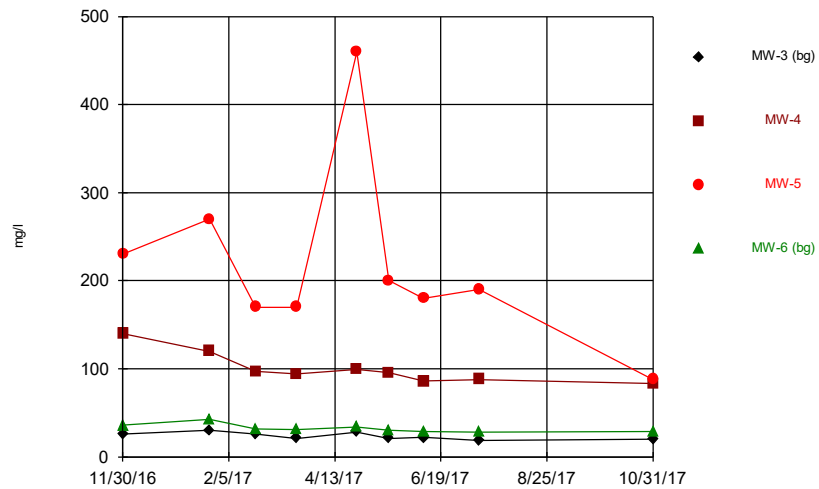
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Selenium



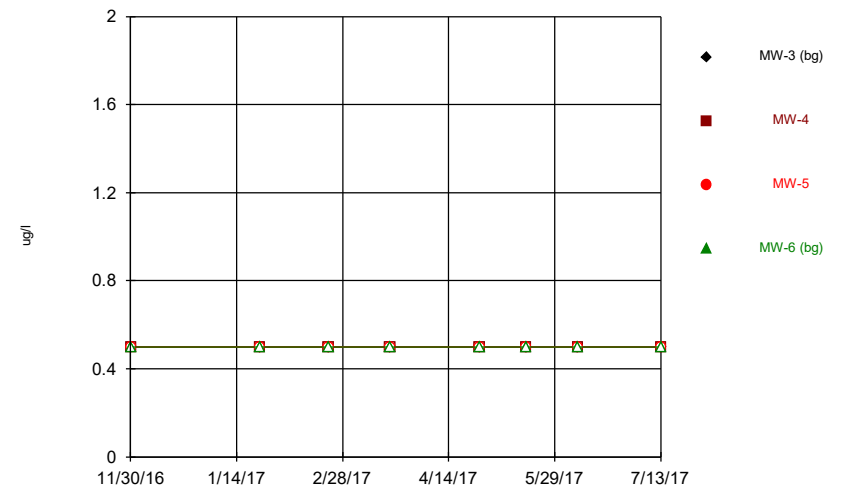
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sulfate



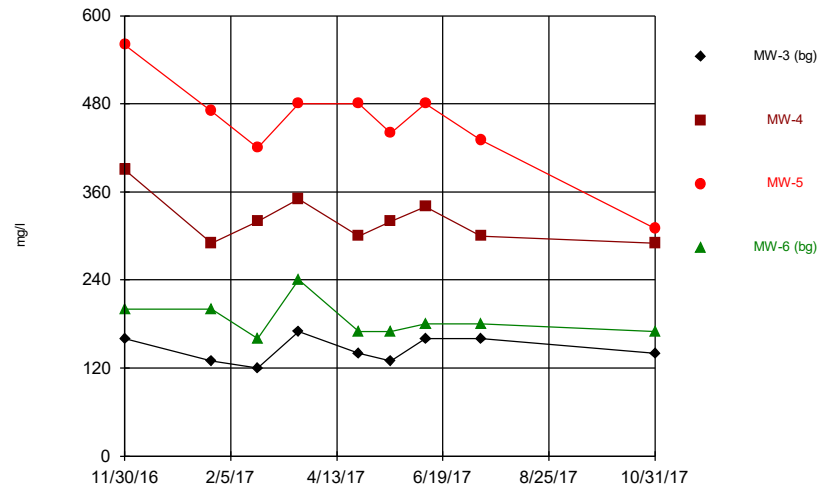
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Thallium



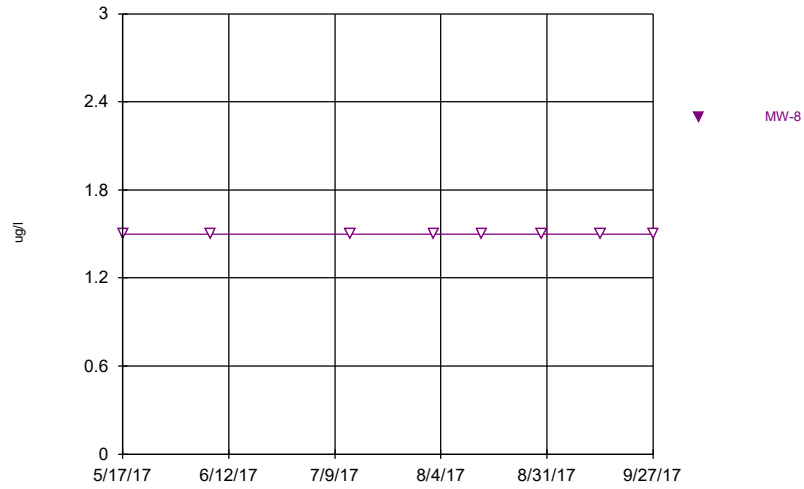
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Total Dissolved Solids



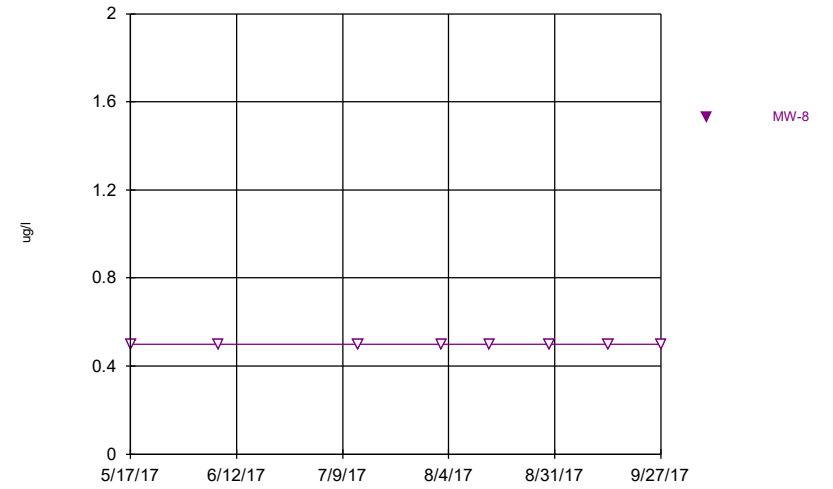
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Antimony



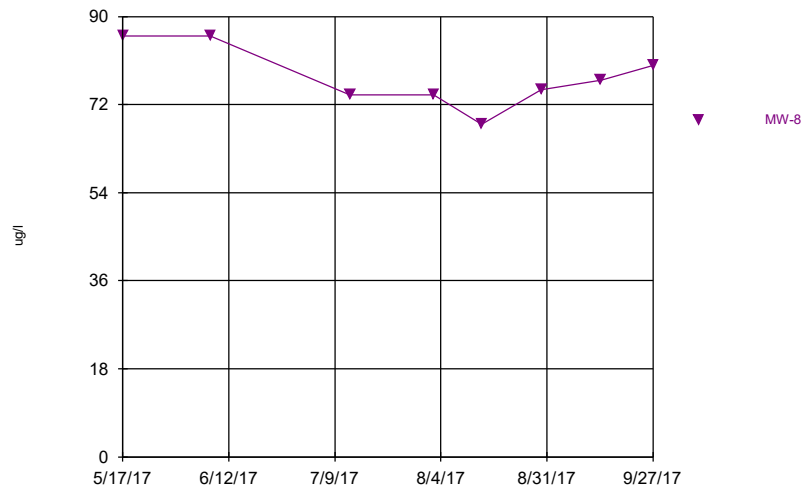
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Arsenic



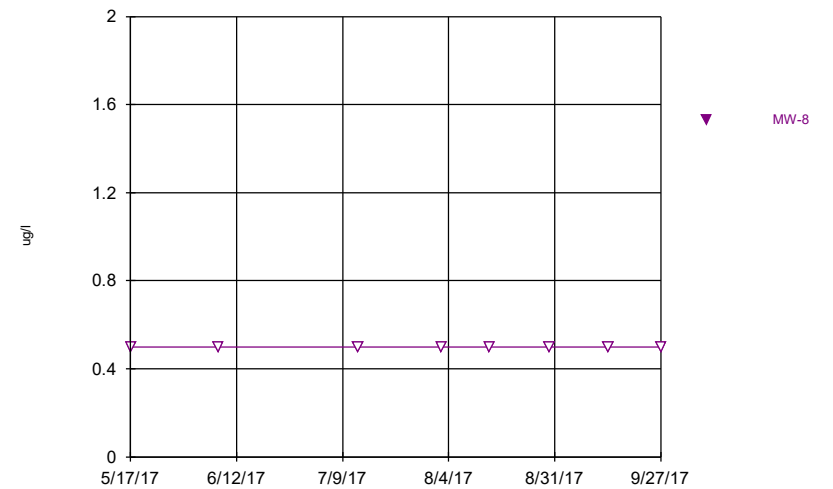
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Barium



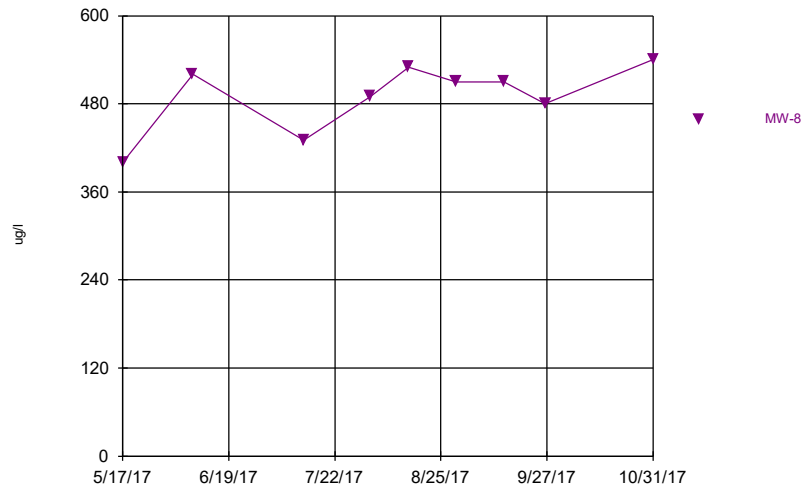
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Beryllium



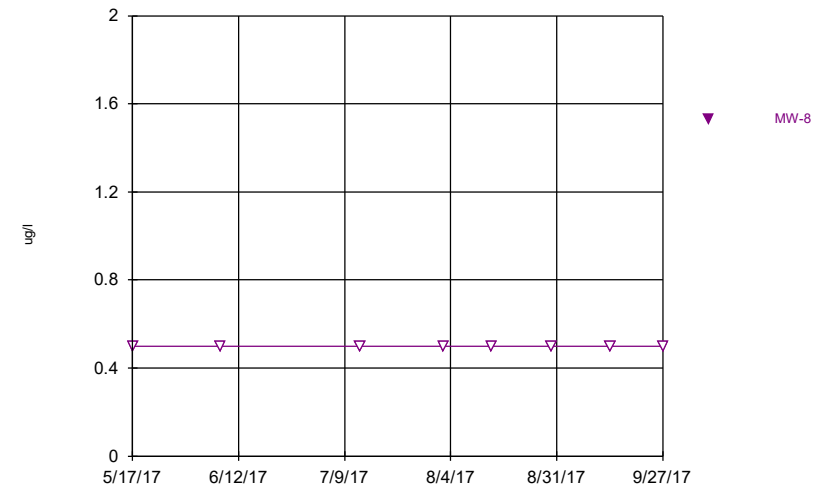
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Boron



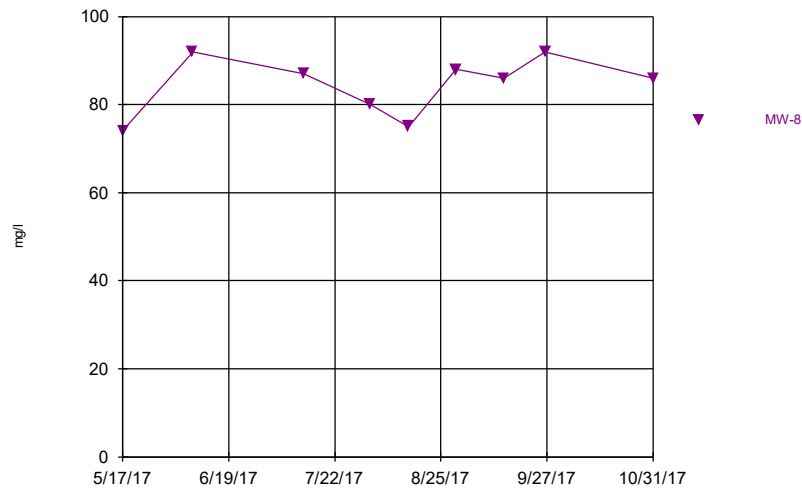
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Cadmium



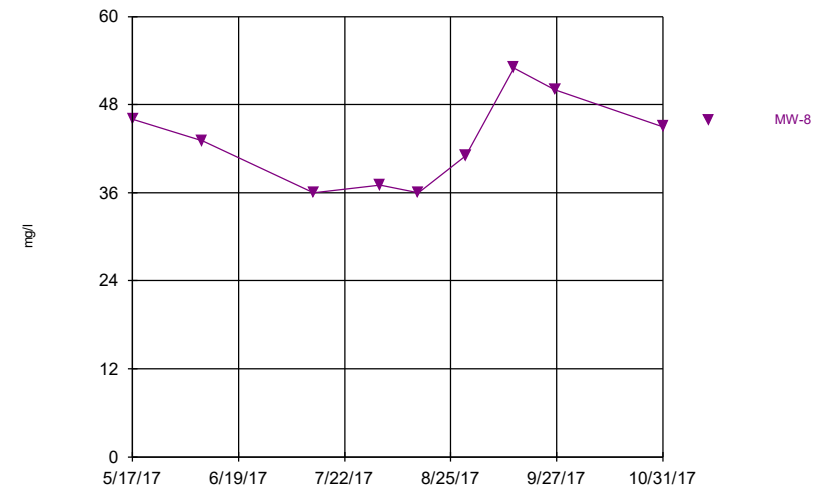
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Calcium



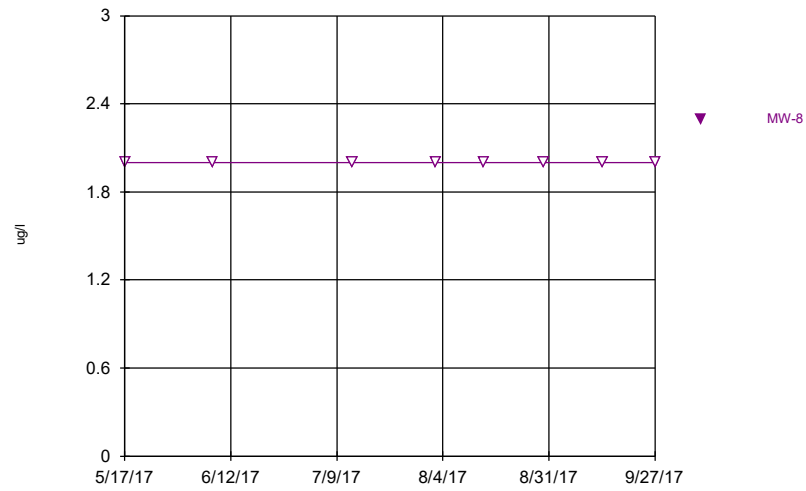
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Chloride



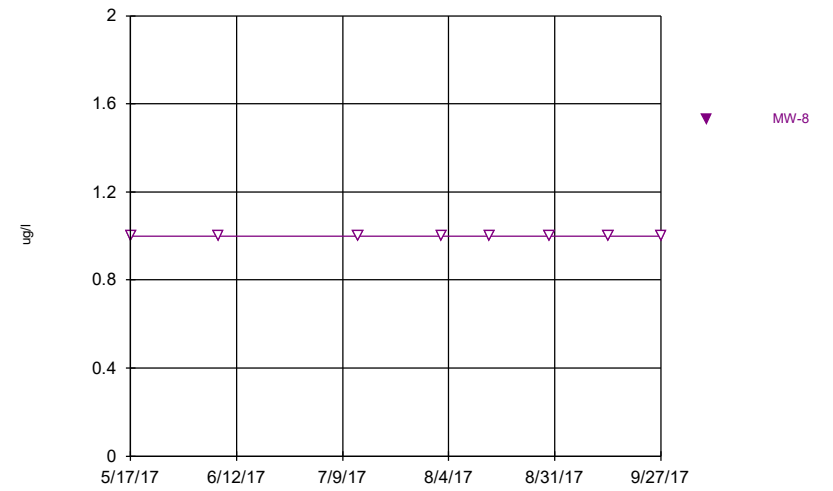
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Chromium



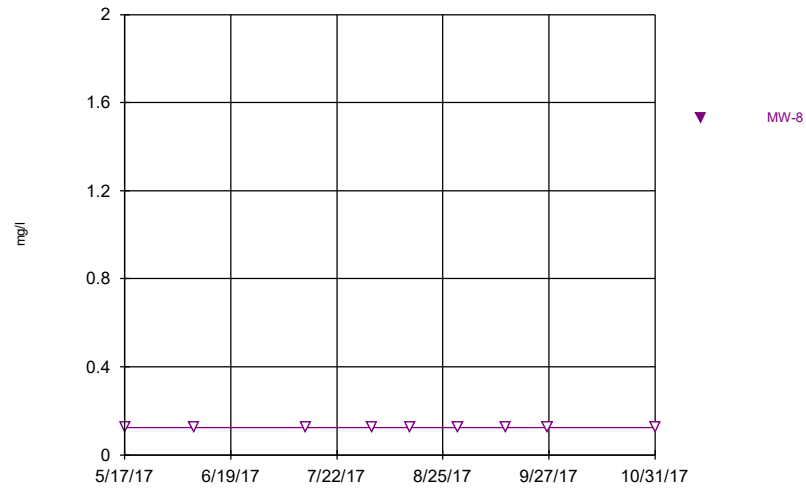
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Cobalt



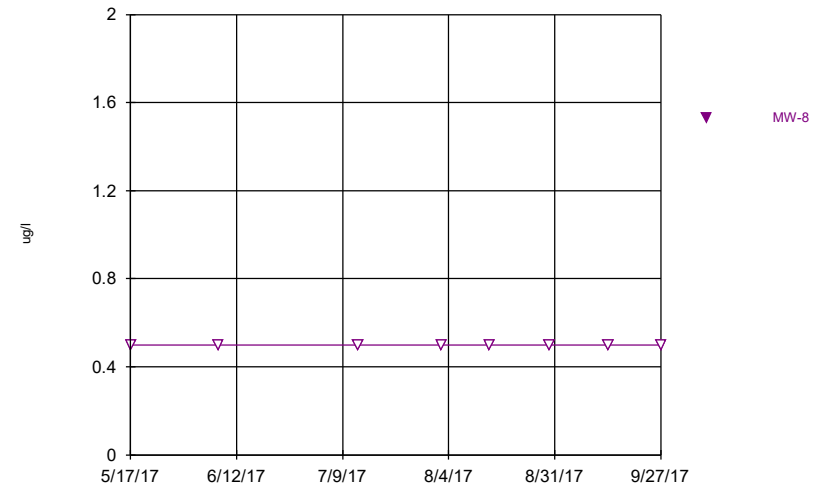
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Fluoride



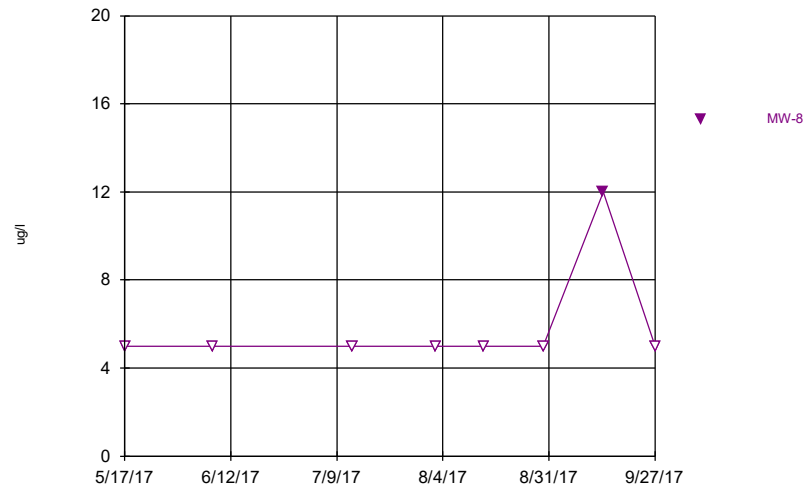
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lead



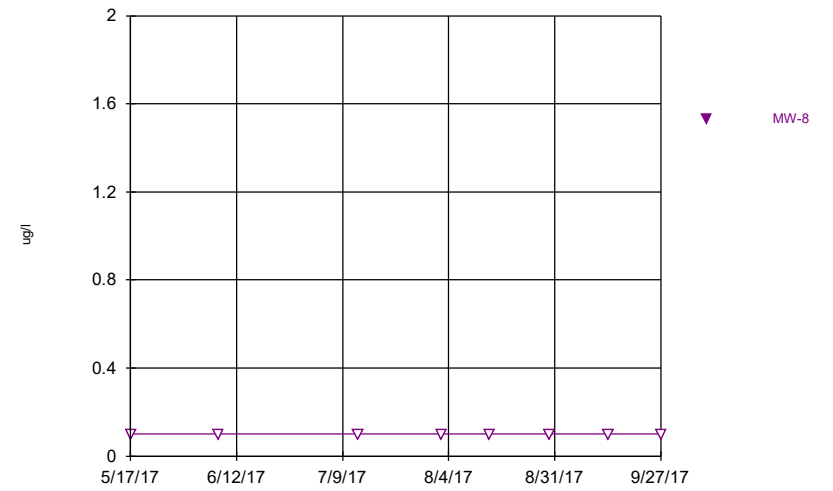
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lithium



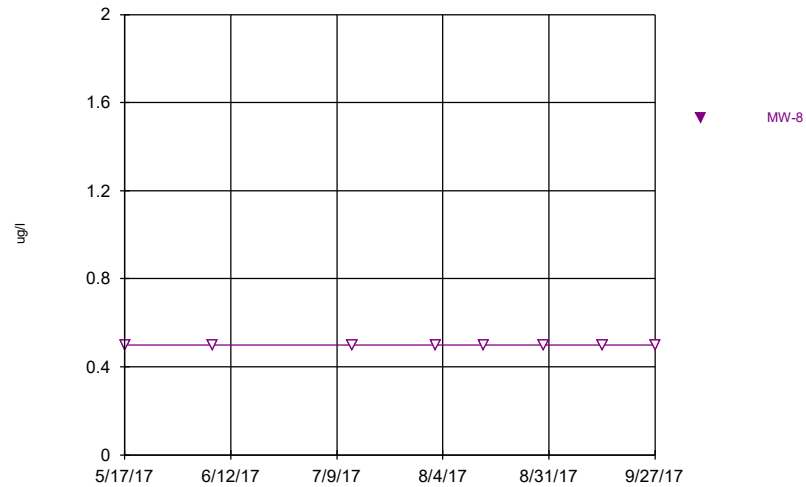
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Mercury



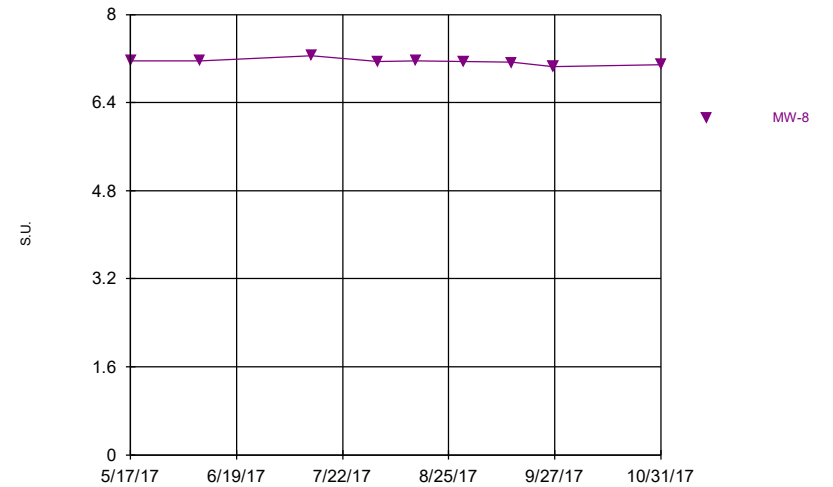
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Molybdenum



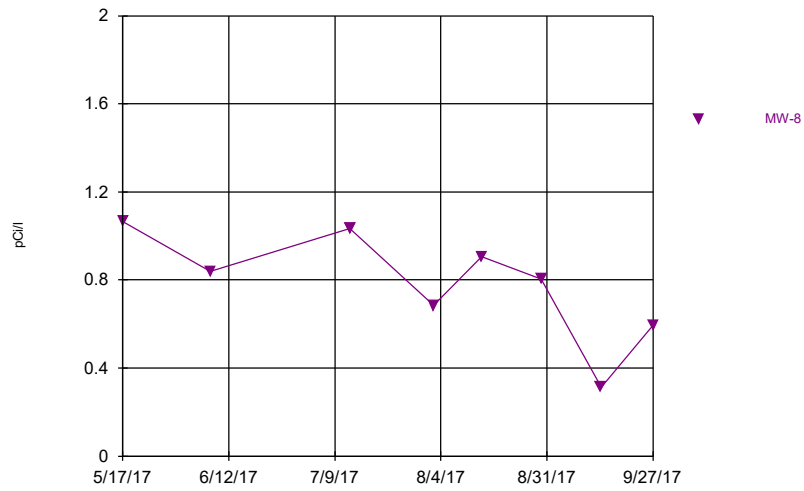
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

pH



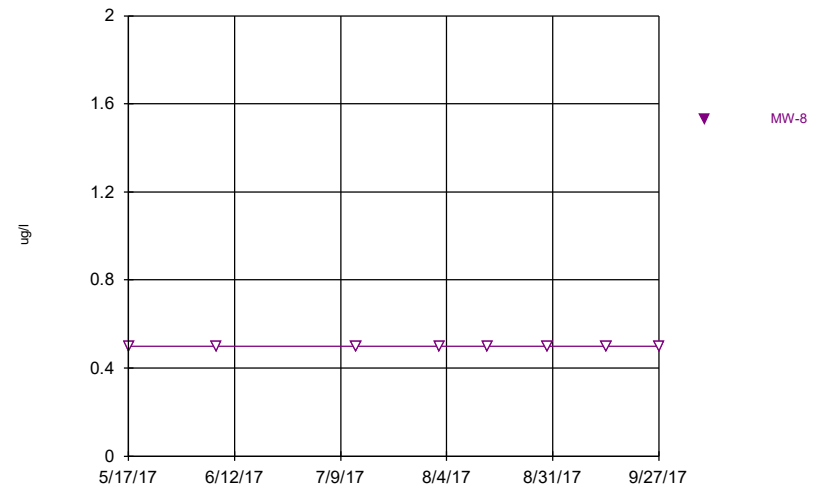
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Radium



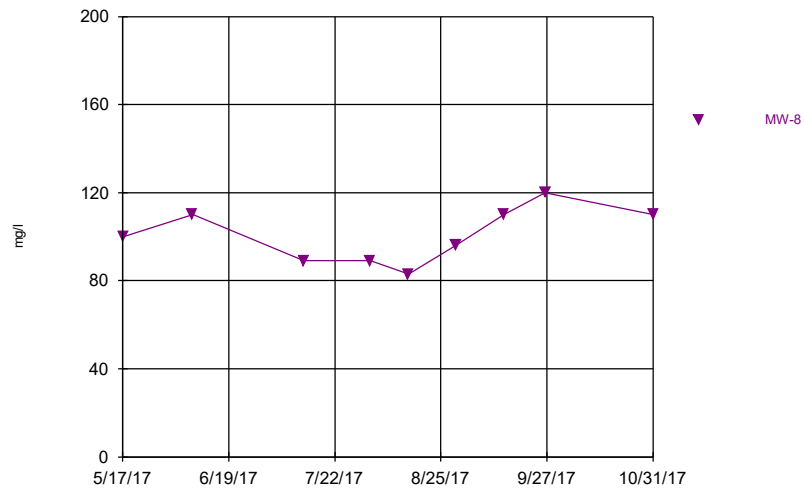
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Selenium



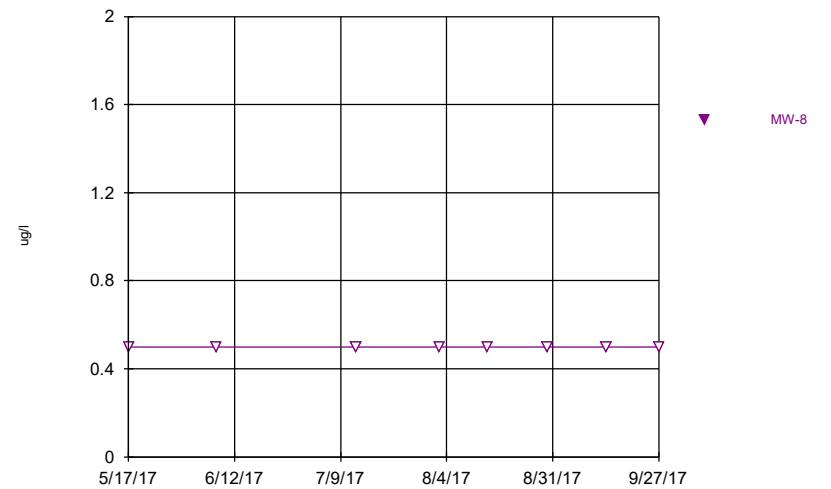
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sulfate



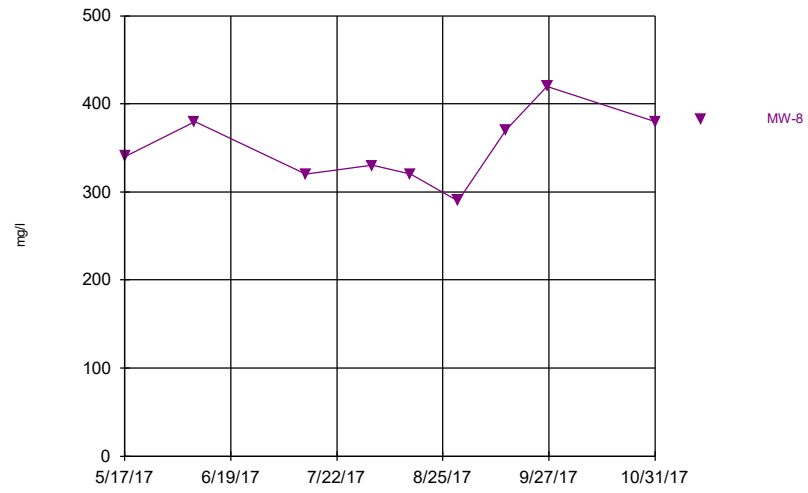
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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

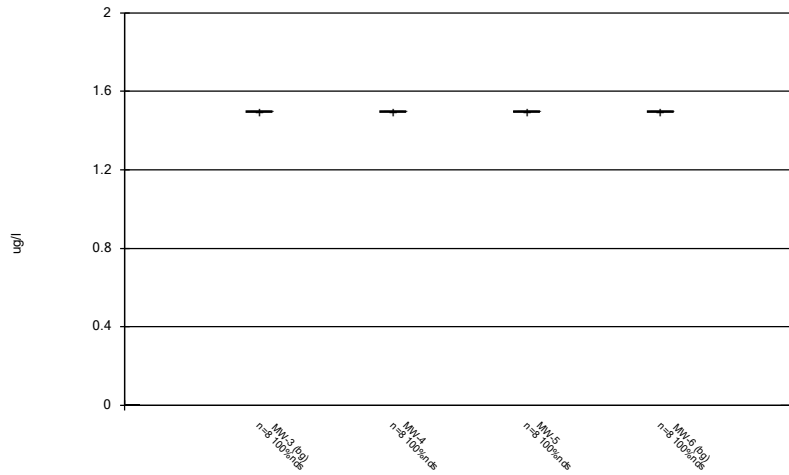
<u>Constituent</u>	<u>Well</u>	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>Lower Q.</u>	<u>Upper Q.</u>	<u>Min.</u>	<u>Max.</u>	<u>%NDs</u>
Antimony (ug/l)	MW-3 (bg)	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Antimony (ug/l)	MW-4	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Antimony (ug/l)	MW-5	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Antimony (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

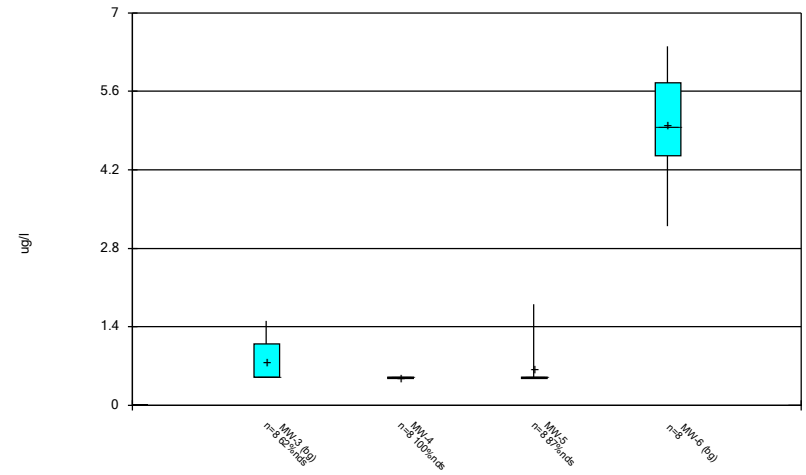
<u>Constituent</u>	<u>Well</u>	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>Lower Q.</u>	<u>Upper Q.</u>	<u>Min.</u>	<u>Max.</u>	<u>%NDs</u>
Lithium (ug/l)	MW-5	8	5	5	5	5	5	5	100
Lithium (ug/l)	MW-6 (bg)	8	5	5	5	5	5	5	100
Mercury (ug/l)	MW-3 (bg)	8	0.1375	0.1	0.1	0.1	0.1	0.4	87.5
Mercury (ug/l)	MW-4	8	0.25	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



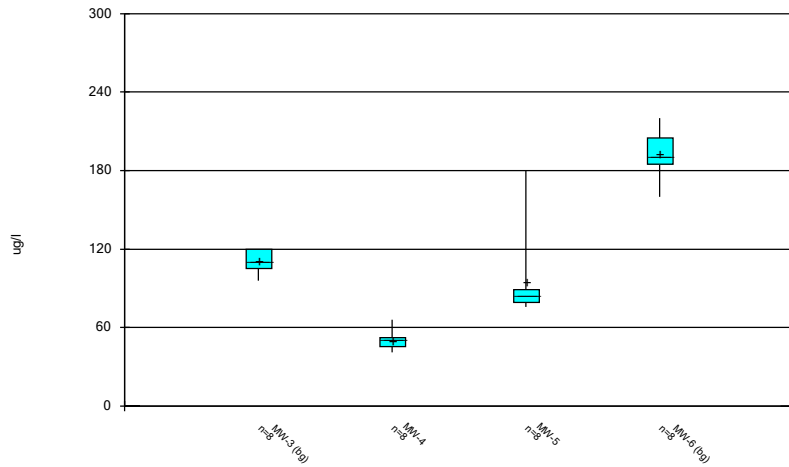
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Arsenic



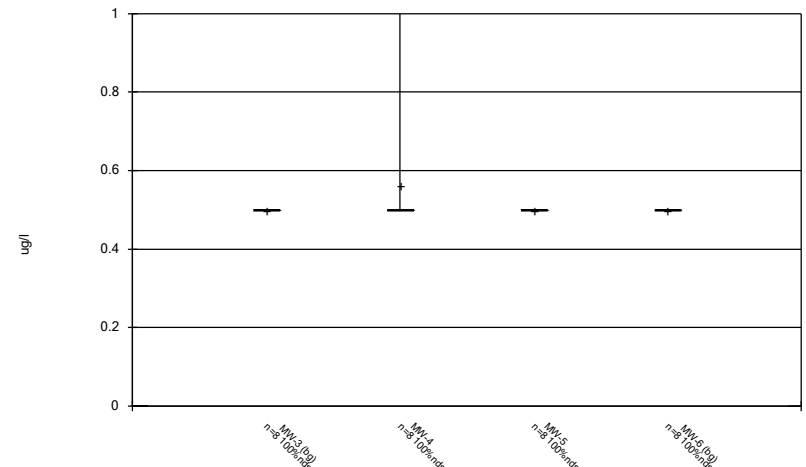
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Barium



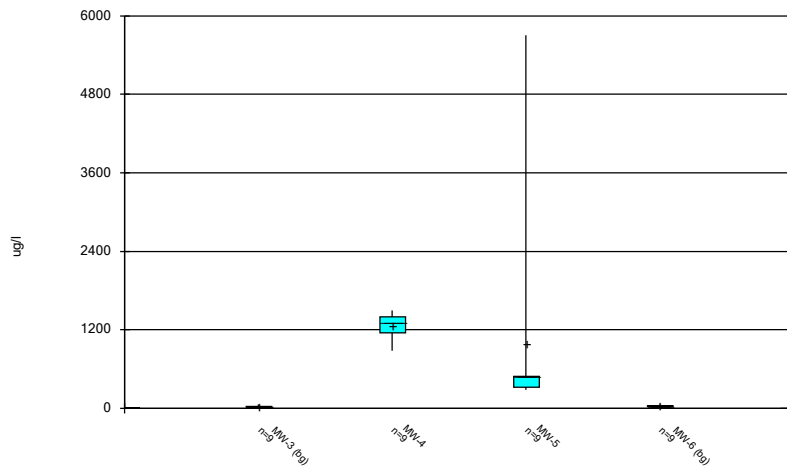
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Beryllium



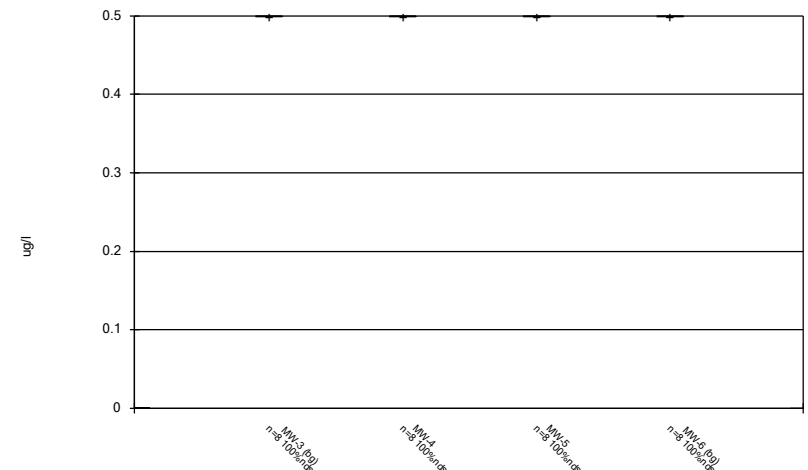
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Boron



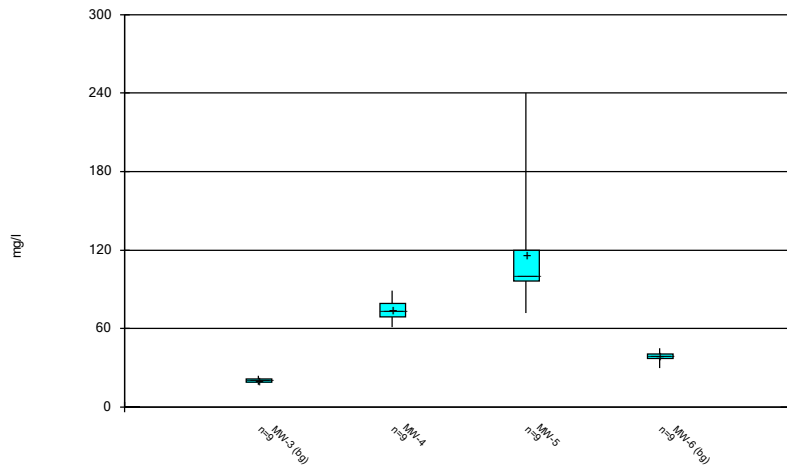
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Cadmium



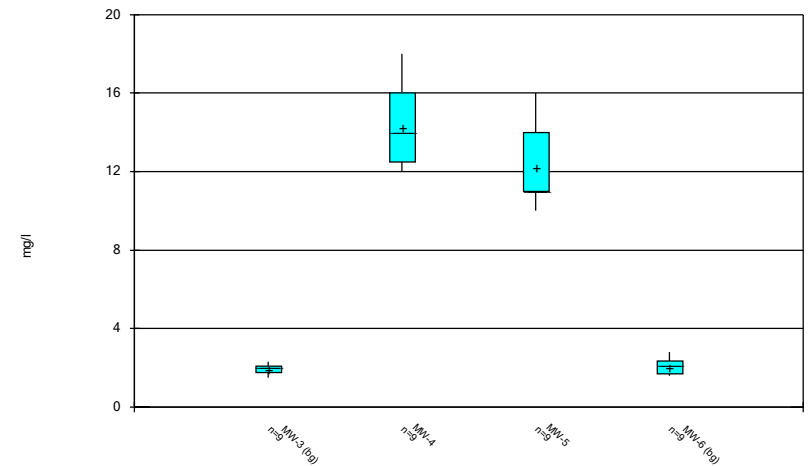
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Calcium



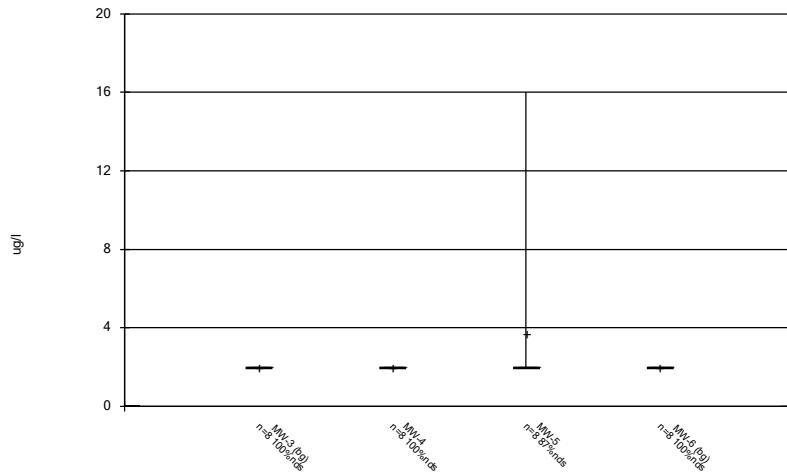
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Chloride



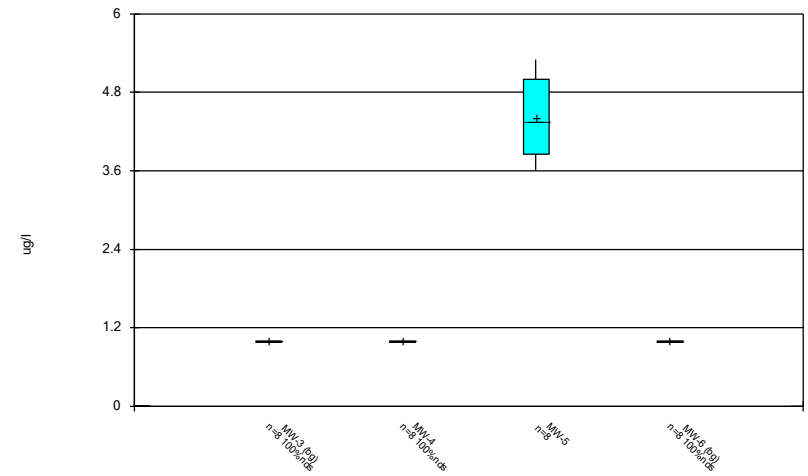
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Chromium



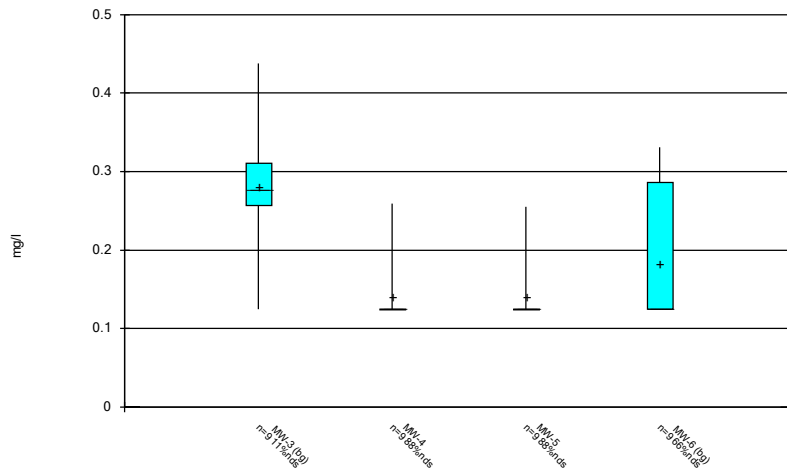
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Cobalt



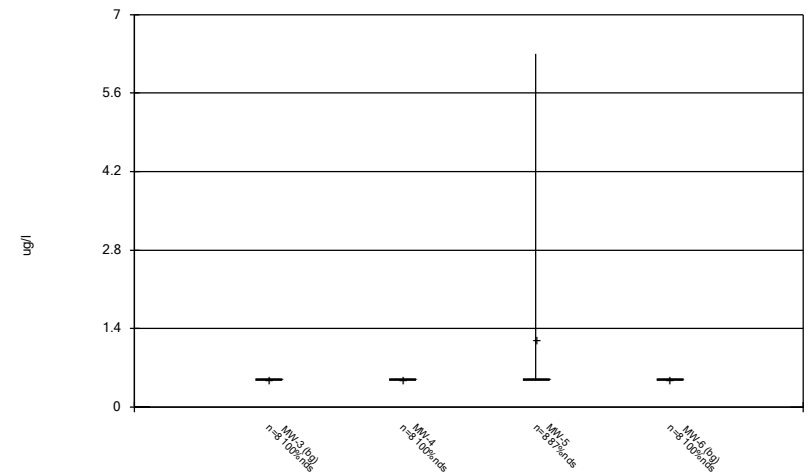
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Fluoride



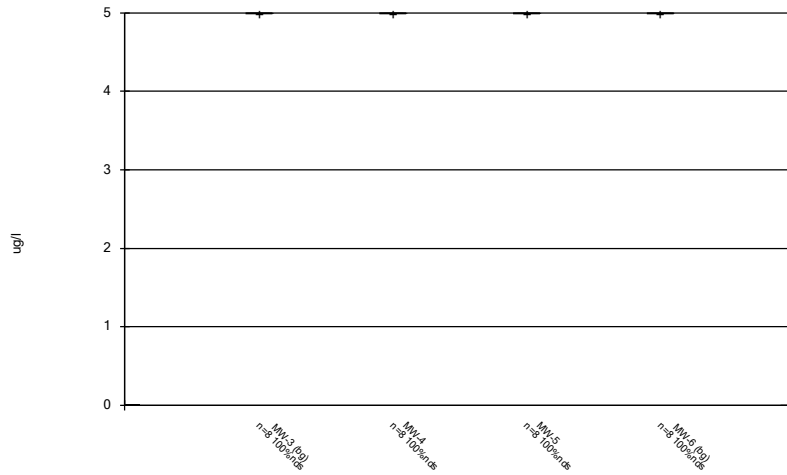
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lead



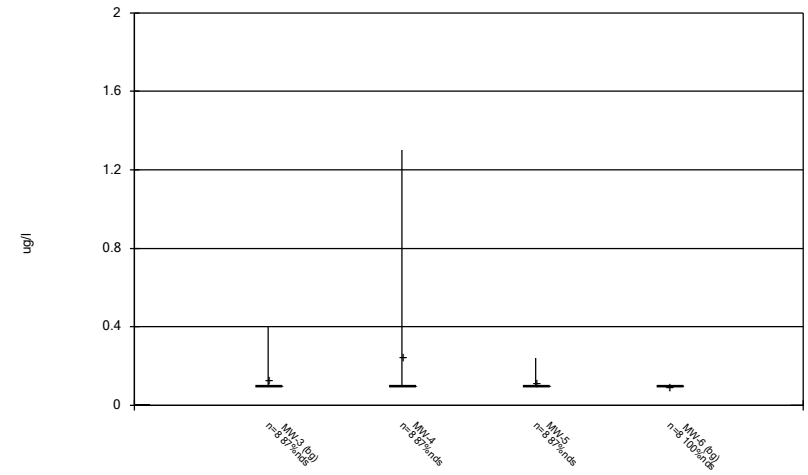
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lithium



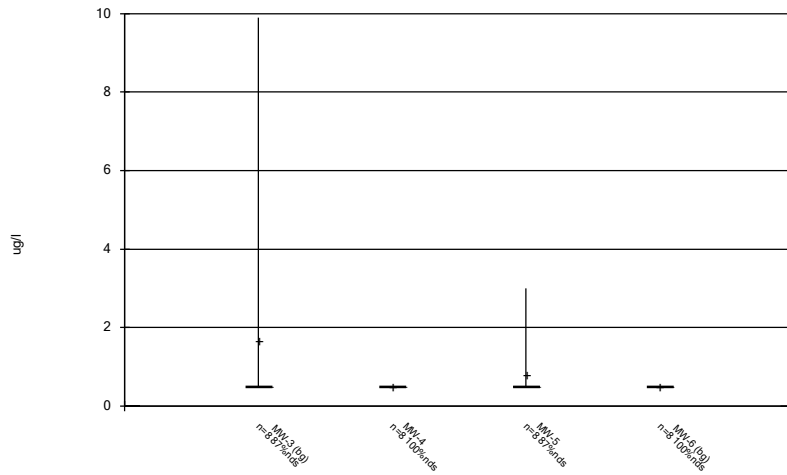
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Mercury



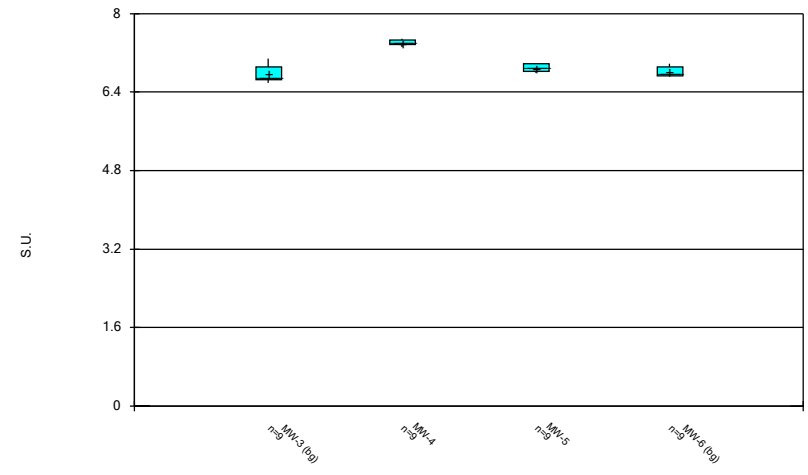
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Molybdenum



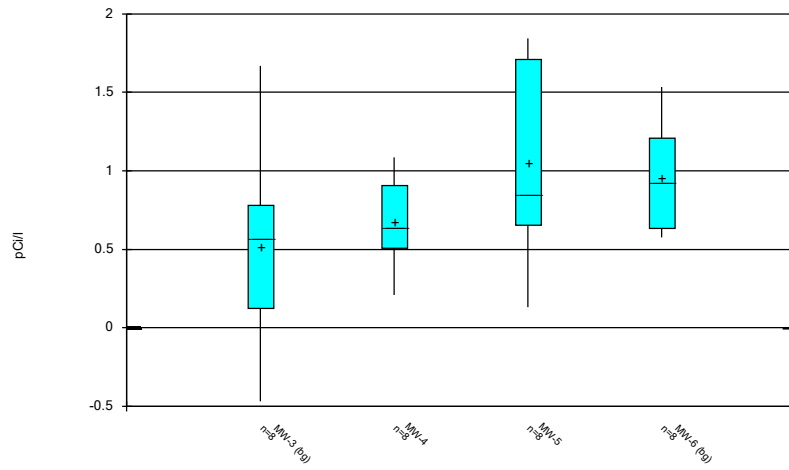
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

pH



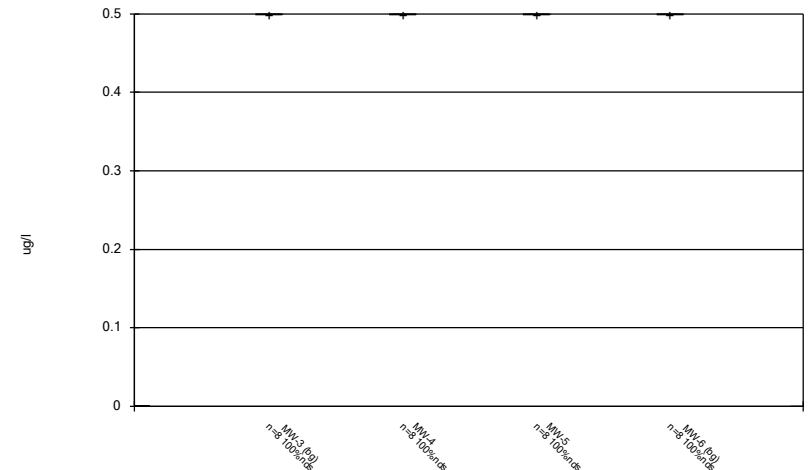
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Radium



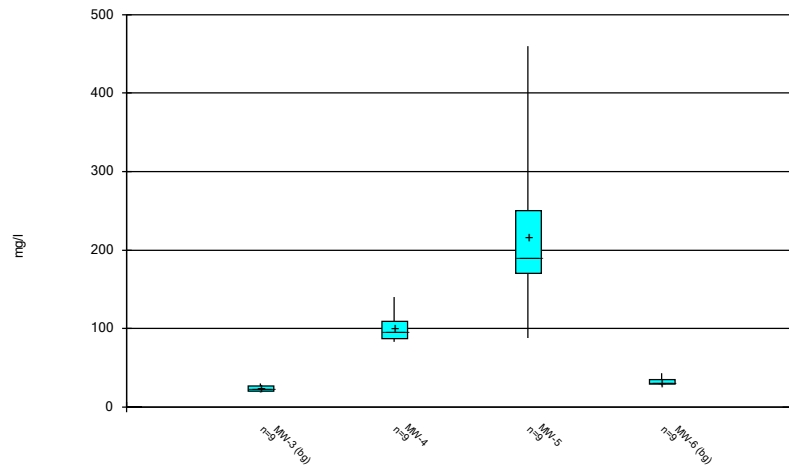
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Selenium



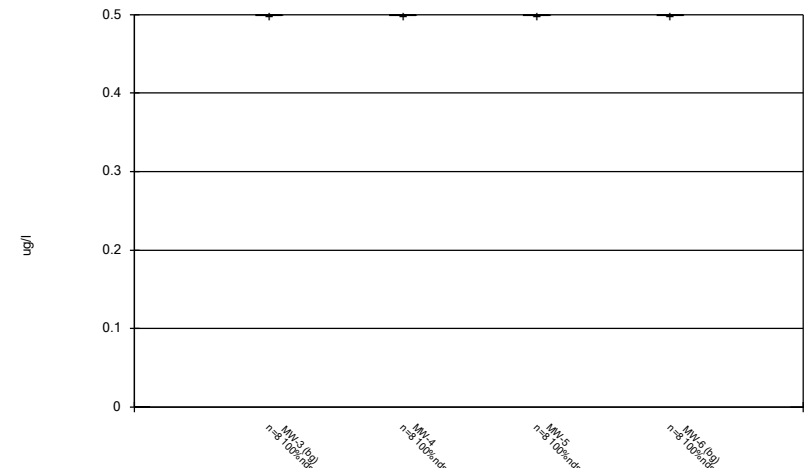
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sulfate



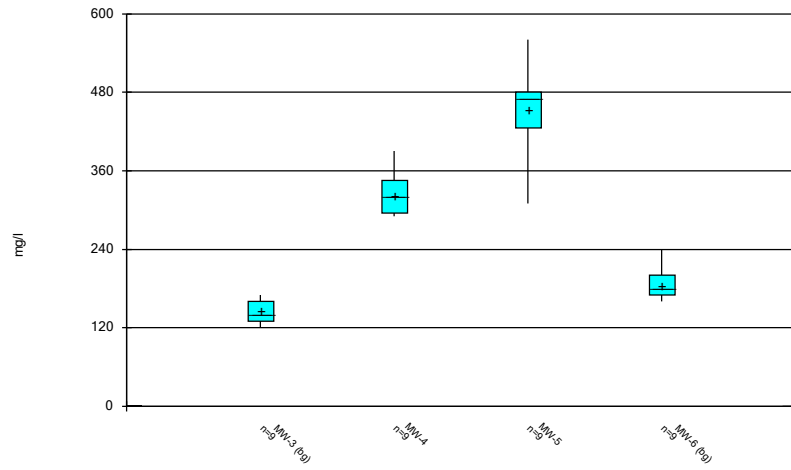
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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



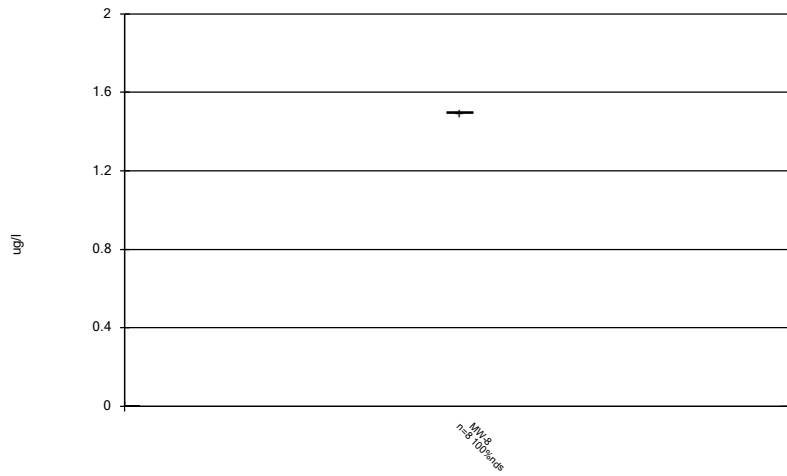
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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

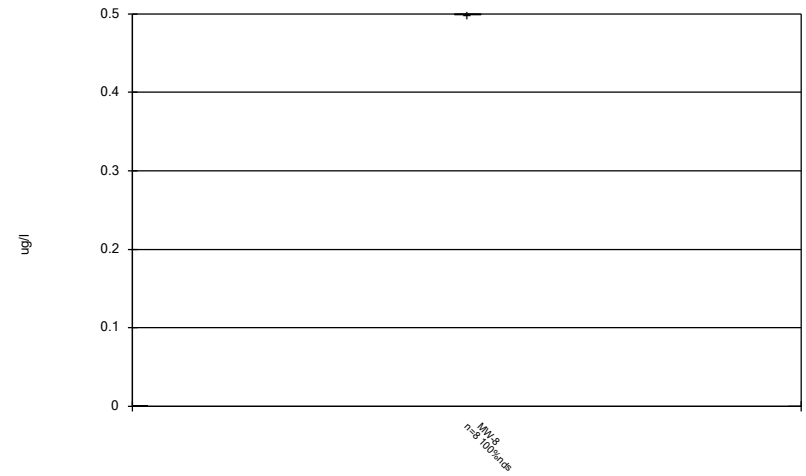
<u>Constituent</u>	<u>Well</u>	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>Lower Q.</u>	<u>Upper Q.</u>	<u>Min.</u>	<u>Max.</u>	<u>%NDs</u>
Antimony (ug/l)	MW-8	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Arsenic (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Barium (ug/l)	MW-8	8	77.5	76	74	83	68	86	0
Beryllium (ug/l)	MW-8	8	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



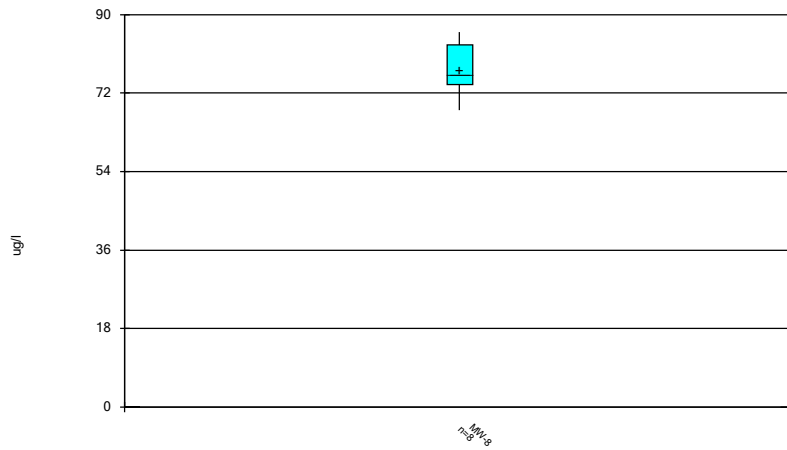
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Arsenic



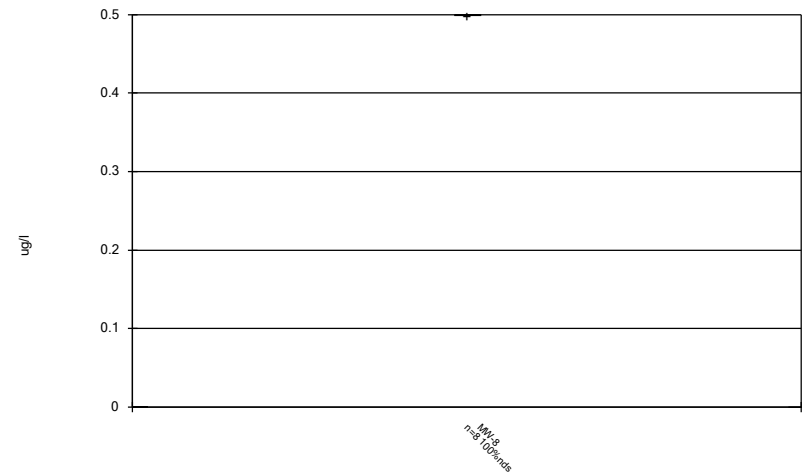
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Barium



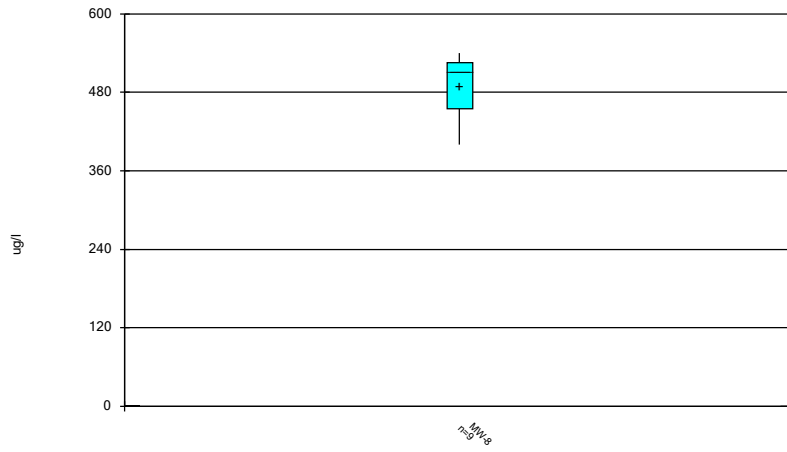
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Beryllium



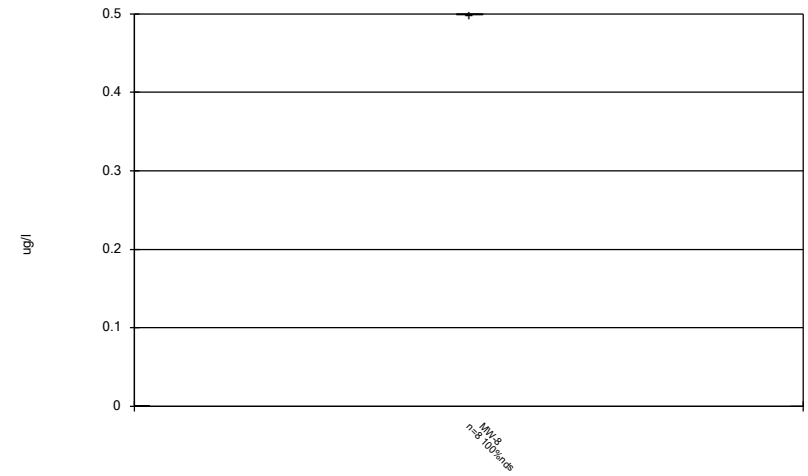
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Boron



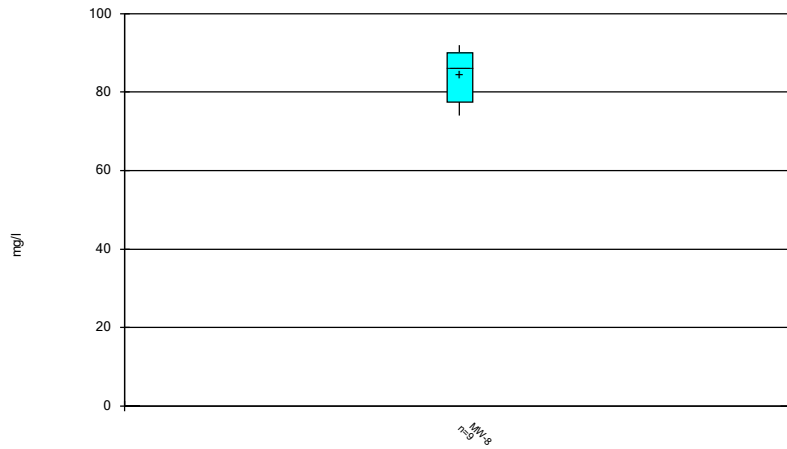
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Cadmium



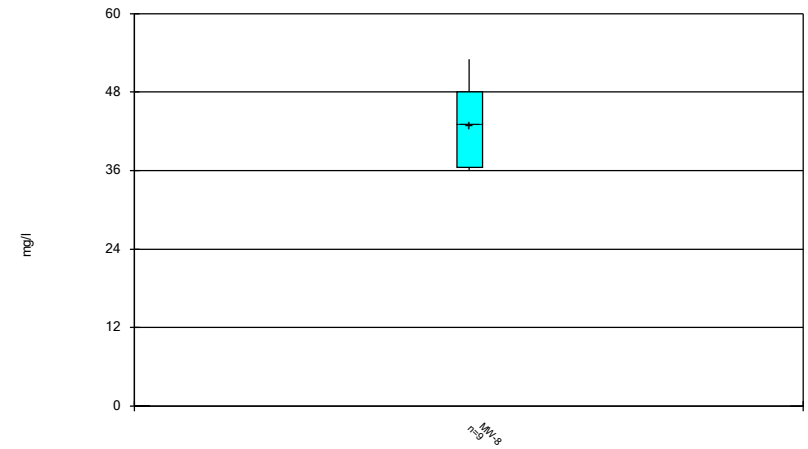
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Calcium



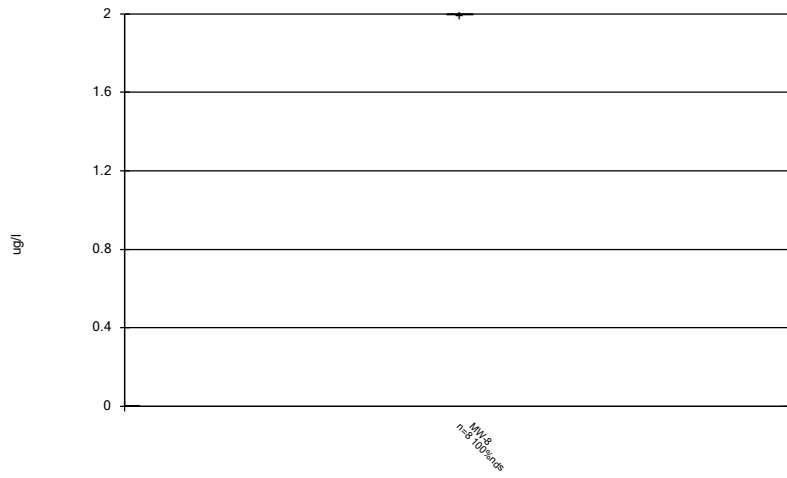
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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



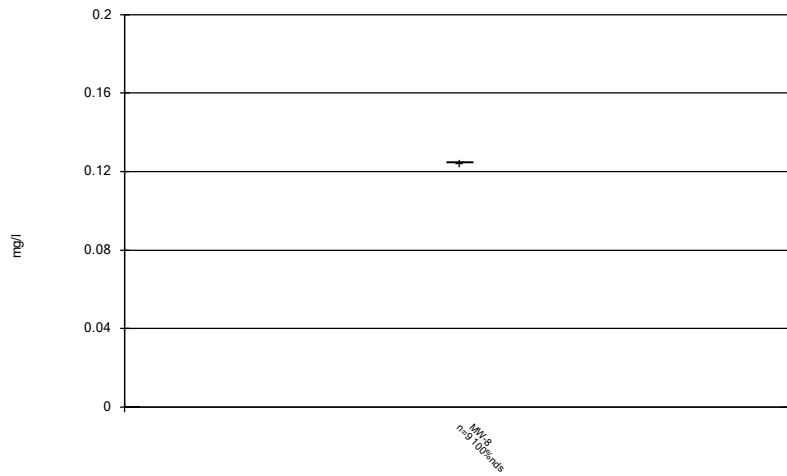
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Cobalt



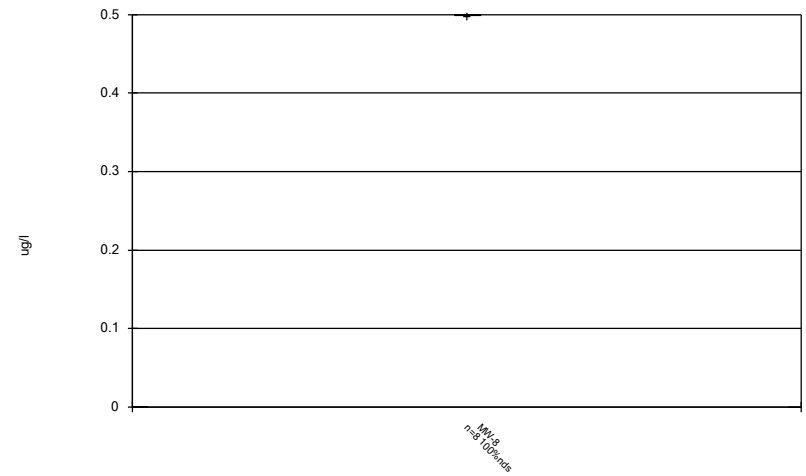
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Fluoride



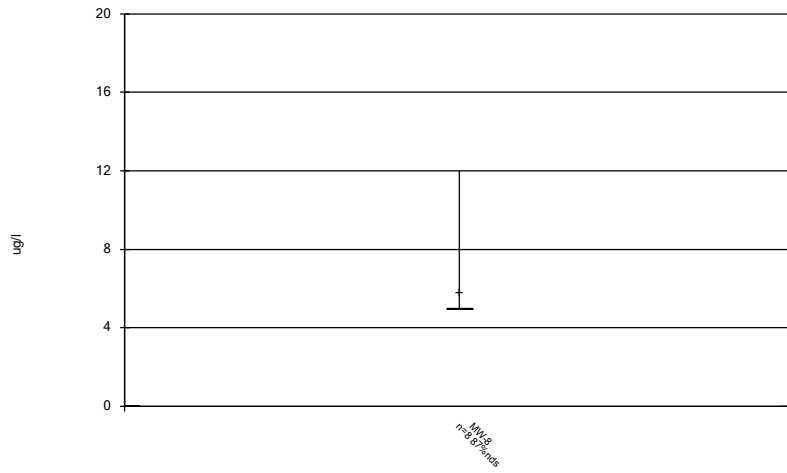
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lead



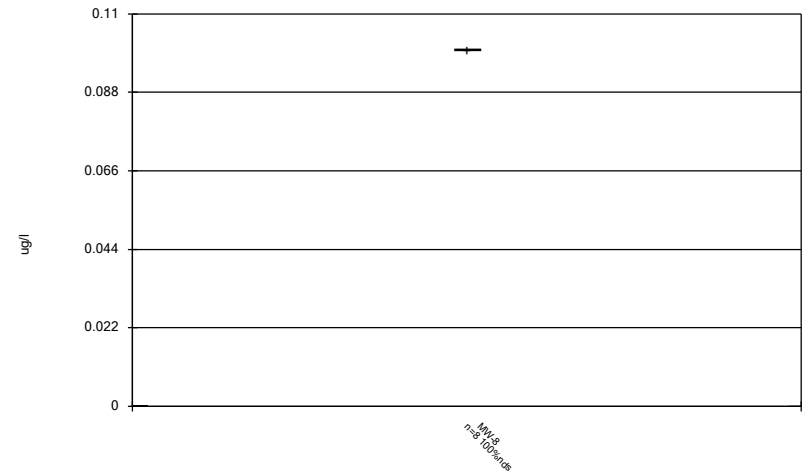
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lithium



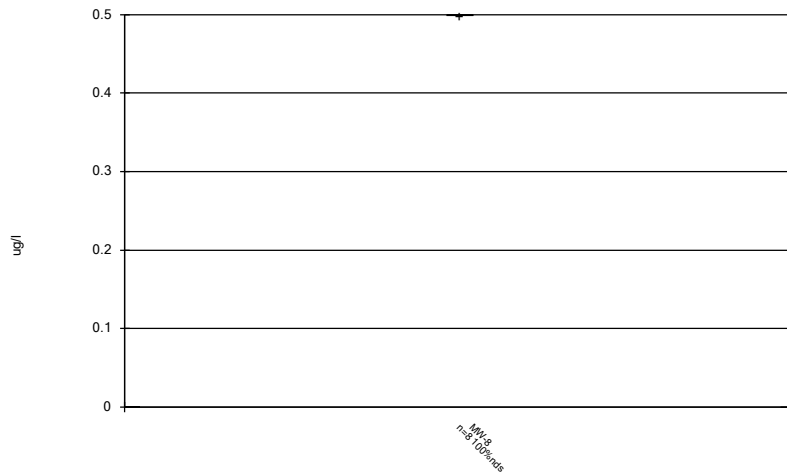
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Mercury



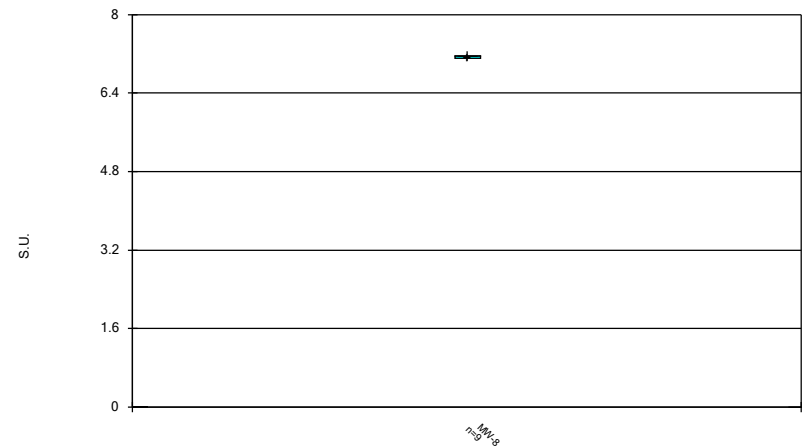
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Molybdenum



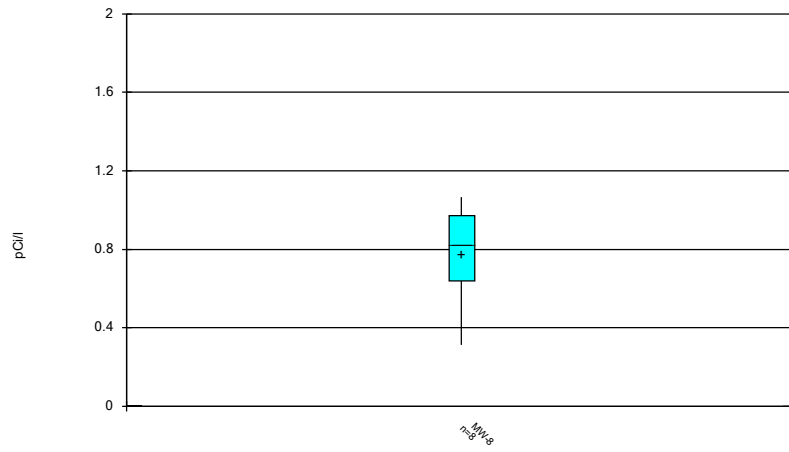
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

pH



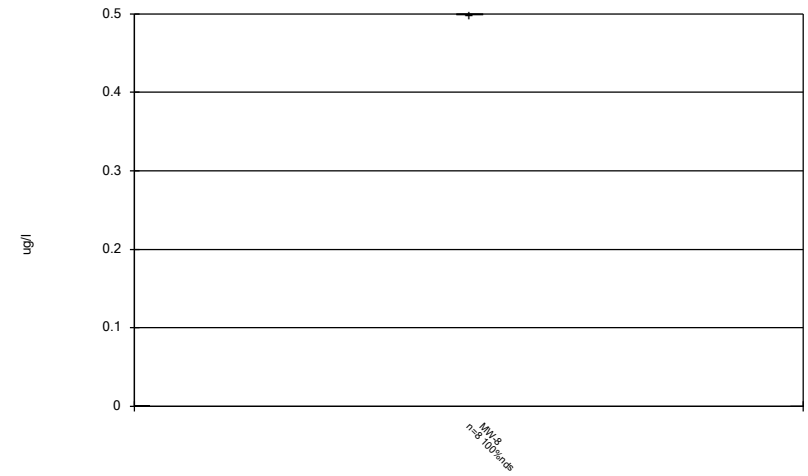
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Radium



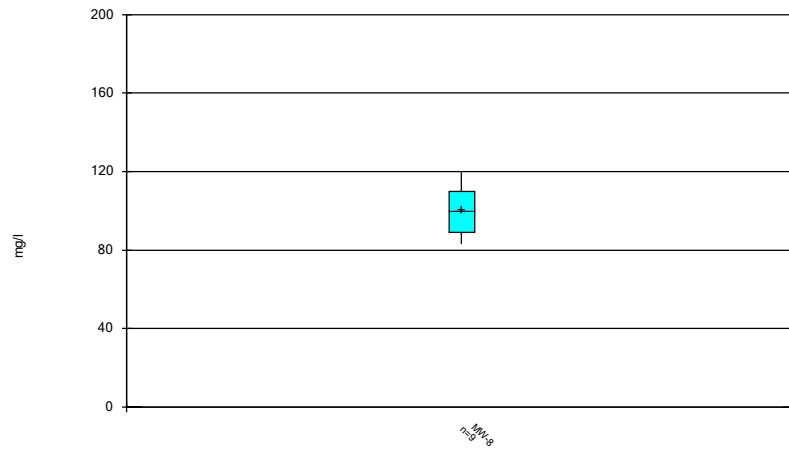
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Selenium



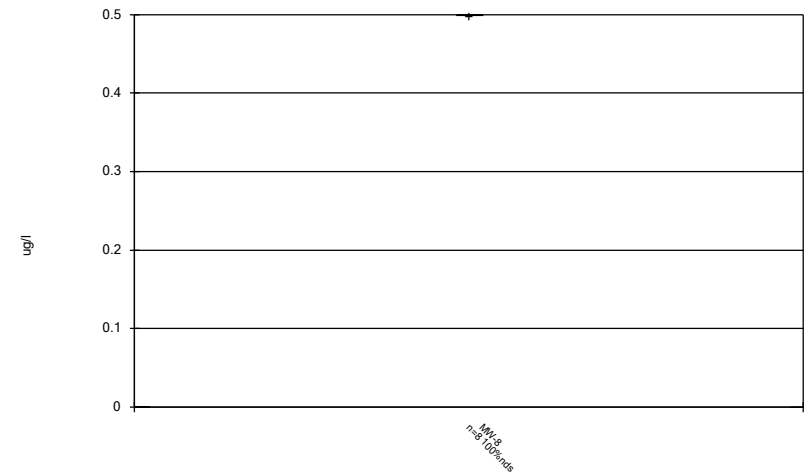
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sulfate



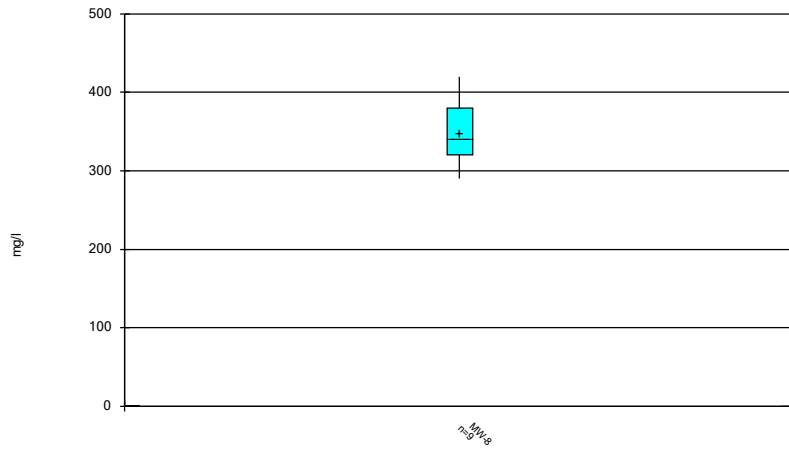
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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

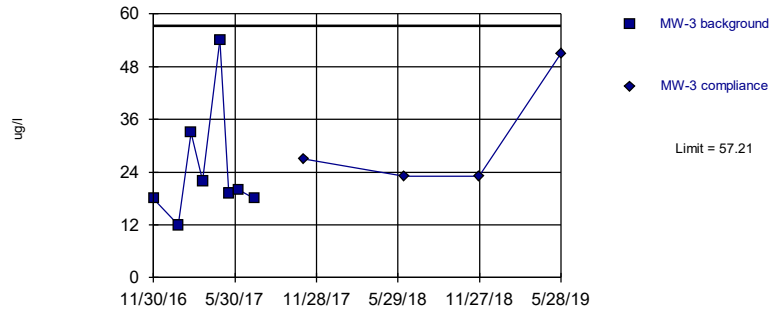
Prediction Limits - MW-3, 4, 5, 6 & 8

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 1/7/2020, 8:55 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	5/28/2019	51	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-4	1734	n/a	5/28/2019	980	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-5	5700	n/a	5/28/2019	280	No	8	0	n/a	0.02144	NP Intra (normality) ...
Boron (ug/l)	MW-6	60.62	n/a	5/28/2019	52	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-8	596.7	n/a	5/28/2019	540	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-3	25.46	n/a	5/28/2019	17	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-4	95.25	n/a	5/28/2019	70	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-5	240	n/a	5/28/2019	110	No	8	0	n/a	0.02144	NP Intra (normality) ...
Calcium (mg/l)	MW-6	49.29	n/a	5/28/2019	40	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-8	101.7	n/a	5/28/2019	100	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-3	2.565	n/a	5/28/2019	1.3	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-4	18.69	n/a	5/28/2019	11	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-5	17.45	n/a	5/28/2019	10	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-6	3.083	n/a	5/28/2019	2.5	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-8	58.72	n/a	5/28/2019	53	No	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-3	0.4819	n/a	5/28/2019	0.125ND	No	8	12.5	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-4	0.259	n/a	5/28/2019	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	5/28/2019	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	5/28/2019	0.125ND	No	8	75	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-8	0.25	n/a	5/28/2019	0.125ND	No	8	100	n/a	0.02144	NP Intra (NDs) 1 of 2
pH (S.U.)	MW-3	7.189	6.363	5/28/2019	6.4	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-4	7.529	7.291	5/28/2019	7.3	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-5	7.078	6.697	5/28/2019	6.9	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-6	7.075	6.575	5/28/2019	6.7	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-8	7.285	7.018	5/28/2019	7.1	No	8	0	No	0.001253	Param Intra 1 of 2
Sulfate (mg/l)	MW-3	33.73	n/a	5/28/2019	20	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-4	147.6	n/a	5/28/2019	75	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-5	484.6	n/a	5/28/2019	190	No	8	0	sqrt(x)	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-6	44.8	n/a	5/28/2019	30	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-8	131.1	n/a	5/28/2019	130	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-3	191.6	n/a	7/23/2019	140	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-4	407.2	n/a	7/23/2019	340	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-5	577.5	n/a	7/23/2019	480	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-6	250.2	n/a	7/23/2019	180	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-8	448	n/a	7/23/2019	420	No	8	0	No	0.002505	Param Intra 1 of 2

Within Limit

Boron
Intrawell Parametric

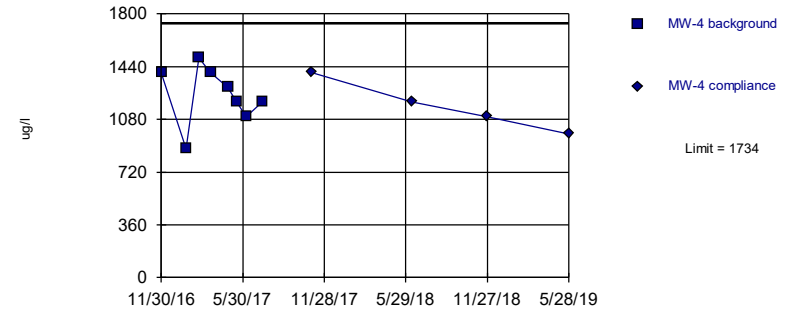


Background Data Summary: Mean=24.5, Std. Dev.=13.31, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7709, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron
Intrawell Parametric

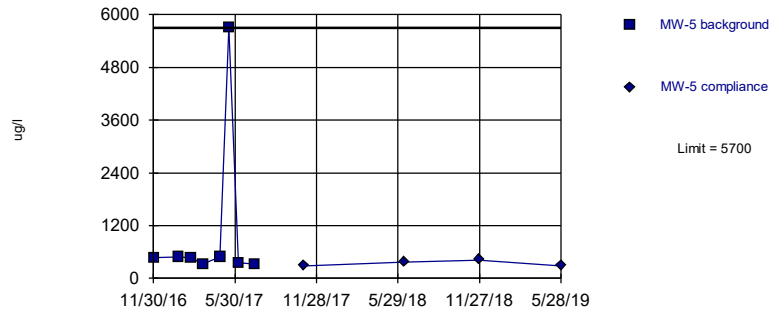


Background Data Summary: Mean=1248, Std. Dev.=198, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9503, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron
Intrawell Non-parametric

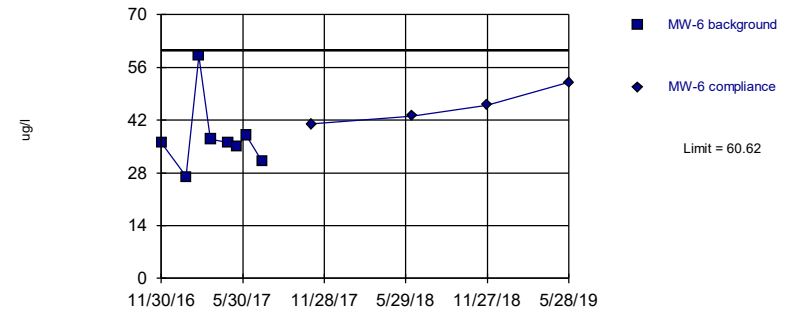


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient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

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

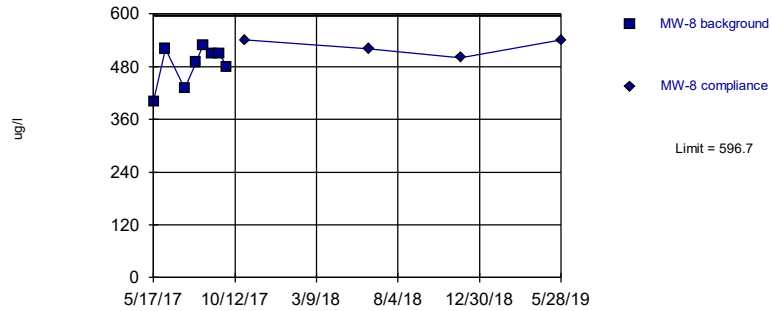
Boron
Intrawell Parametric



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 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

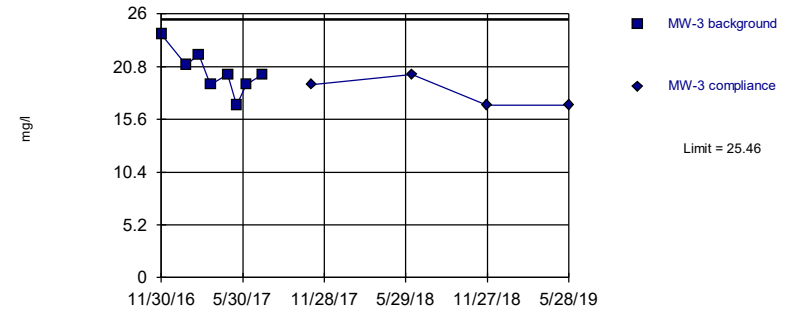
Within Limit
 Boron
 Intrawell Parametric



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 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
 SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

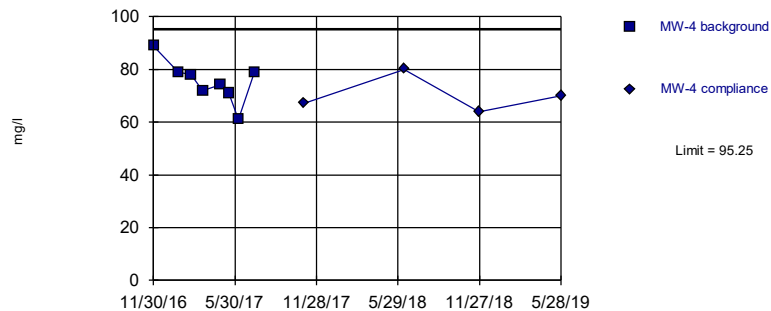
Within Limit
 Calcium
 Intrawell Parametric



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 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
 SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

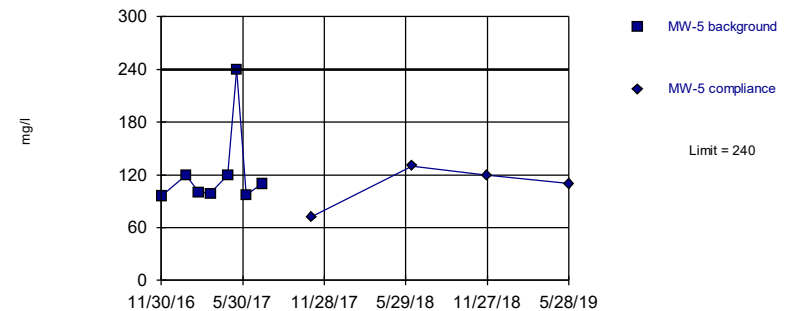
Within Limit
 Calcium
 Intrawell Parametric



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 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
 SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit
 Calcium
 Intrawell Non-parametric

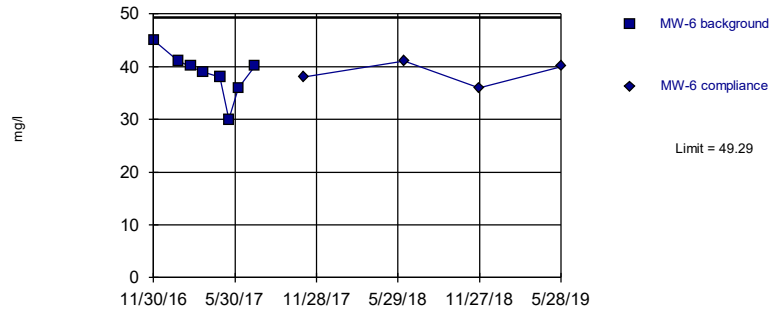


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient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

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
 SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium
Intrawell Parametric

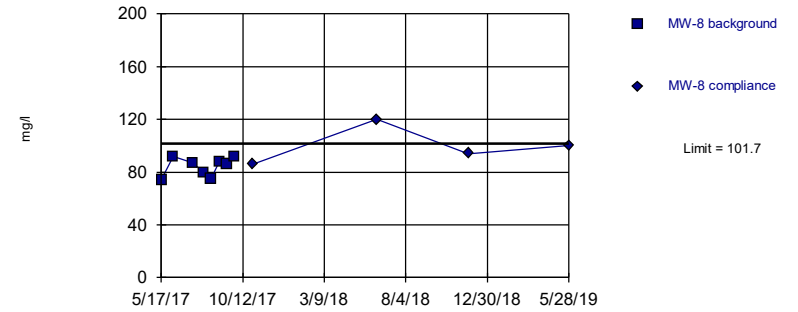


Background Data Summary: Mean=38.63, Std. Dev.=4.34, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9284, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium
Intrawell Parametric

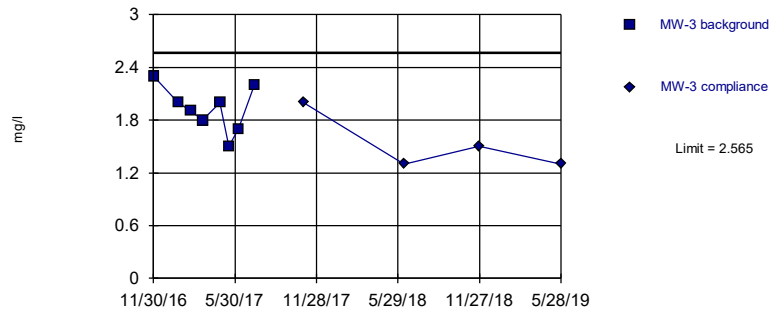


Background Data Summary: Mean=84.25, Std. Dev.=7.106, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8885, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride
Intrawell Parametric

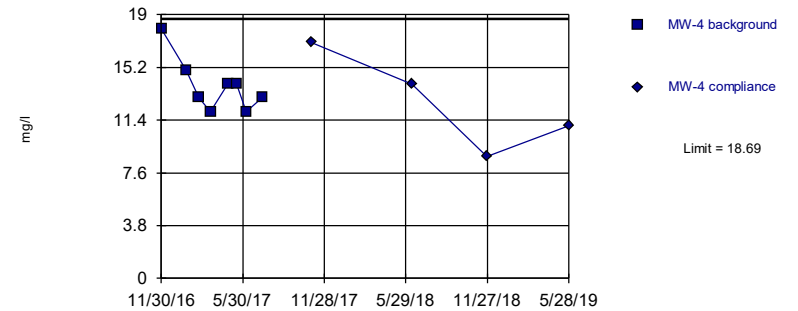


Background Data Summary: Mean=1.925, Std. Dev.=0.2605, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9816, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride
Intrawell Parametric

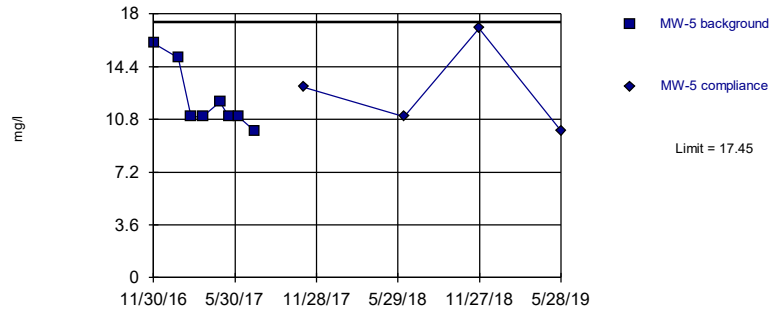


Background Data Summary: Mean=13.88, Std. Dev.=1.959, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8612, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride
Intrawell Parametric

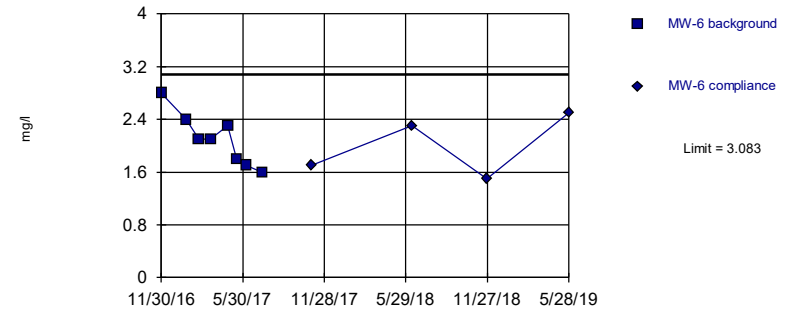


Background Data Summary: Mean=12.13, Std. Dev.=2.167, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7822, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride
Intrawell Parametric

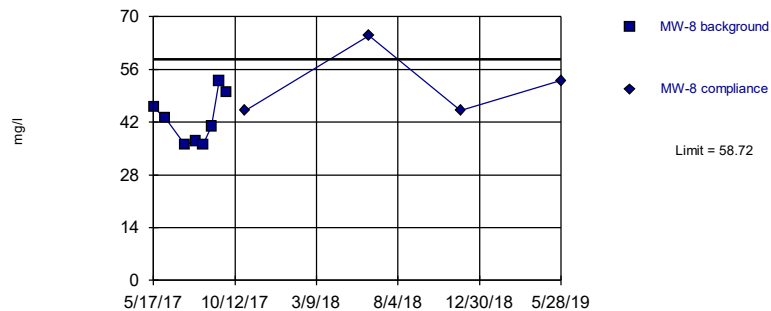


Background Data Summary: Mean=2.1, Std. Dev.=0.4, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride
Intrawell Parametric

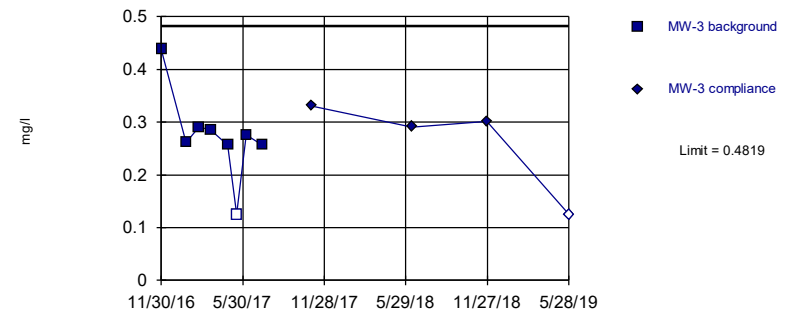


Background Data Summary: Mean=42.75, Std. Dev.=6.497, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9101, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Fluoride
Intrawell Parametric

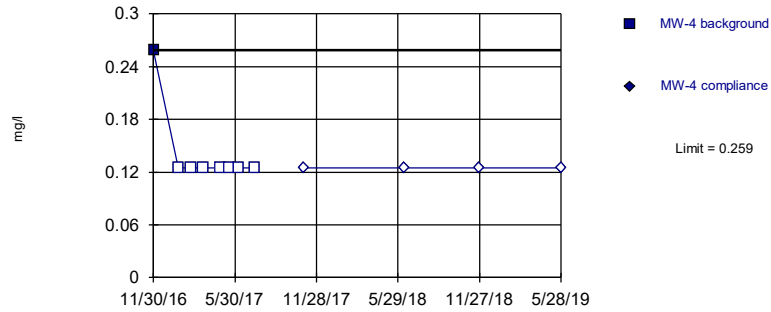


Background Data Summary: Mean=0.2736, Std. Dev.=0.08475, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8446, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

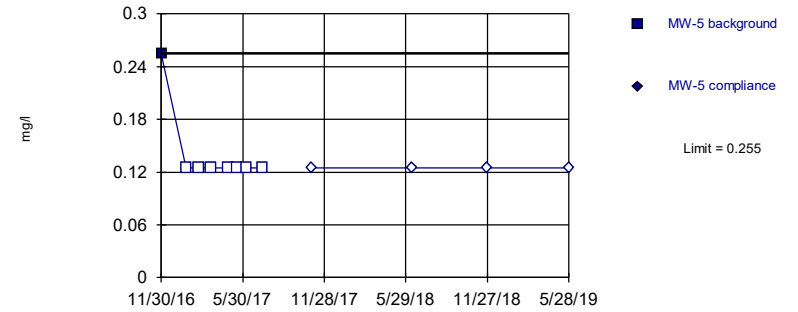
Fluoride
Intrawell Non-parametric



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.

Within Limit

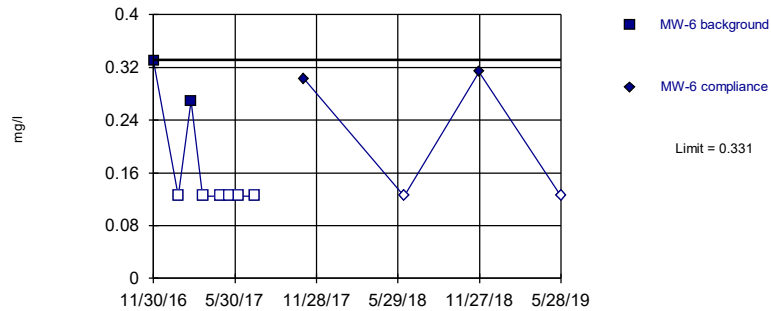
Fluoride
Intrawell Non-parametric



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.

Within Limit

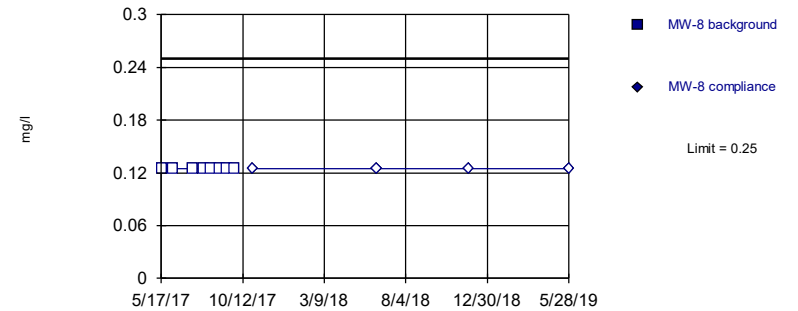
Fluoride
Intrawell Non-parametric



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.

Within Limit

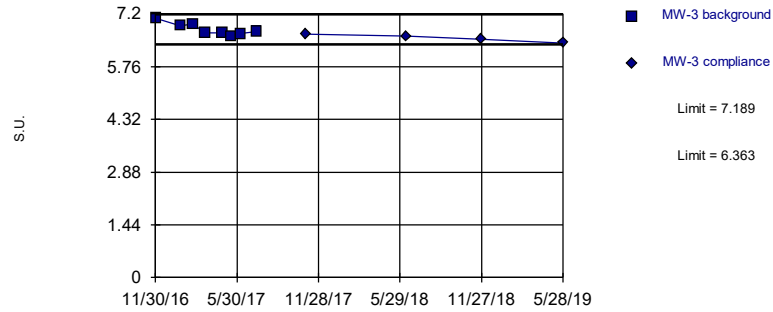
Fluoride
Intrawell Non-parametric



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.

Within Limits

pH
Intrawell Parametric

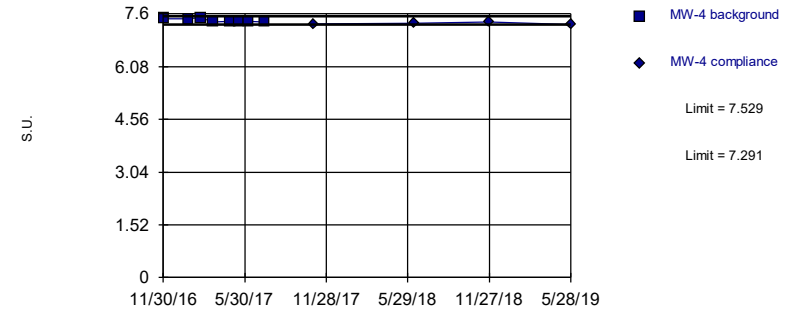


Background Data Summary: Mean=6.776, Std. Dev.=0.1681, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8856, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH
Intrawell Parametric

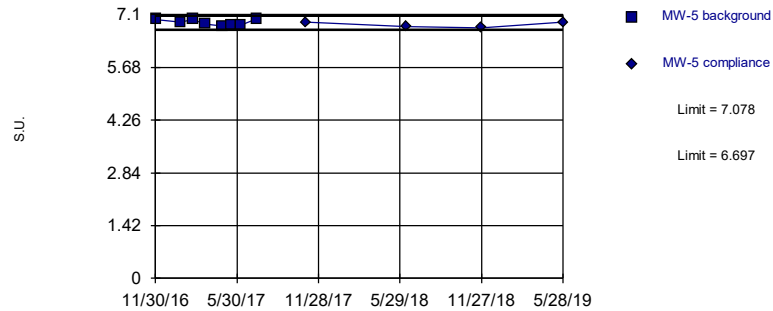


Background Data Summary: Mean=7.41, Std. Dev.=0.0484, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7828, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH
Intrawell Parametric

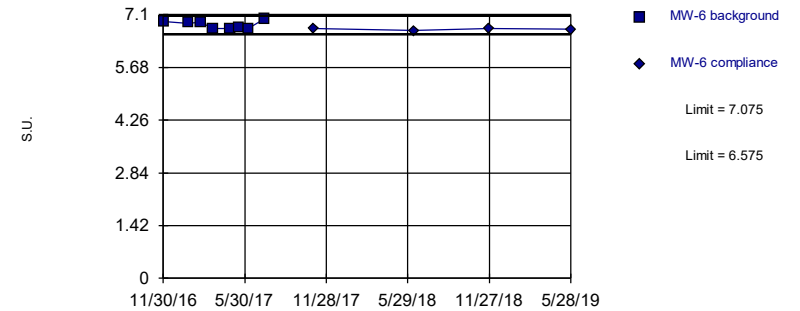


Background Data Summary: Mean=6.888, Std. Dev.=0.07741, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8471, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH
Intrawell Parametric

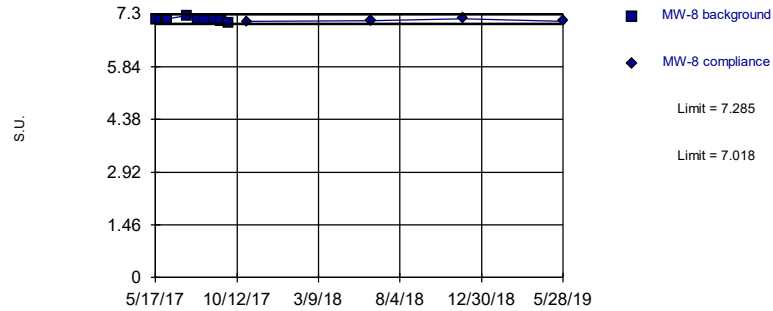


Background Data Summary: Mean=6.825, Std. Dev.=0.1018, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8714, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH
Intrawell Parametric

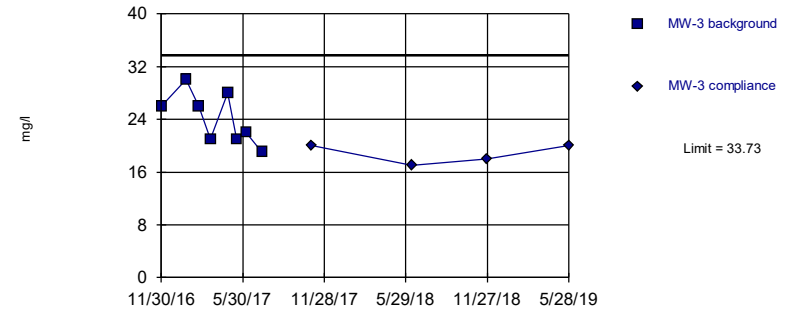


Background Data Summary: Mean=7.151, Std. Dev.=0.05436, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8529, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate
Intrawell Parametric

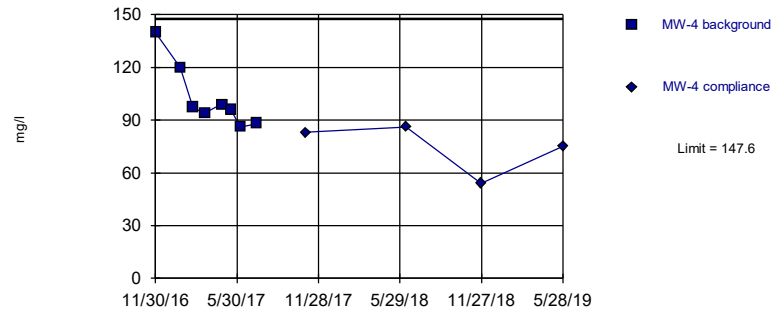


Background Data Summary: Mean=24.13, Std. Dev.=3.907, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9297, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate
Intrawell Parametric

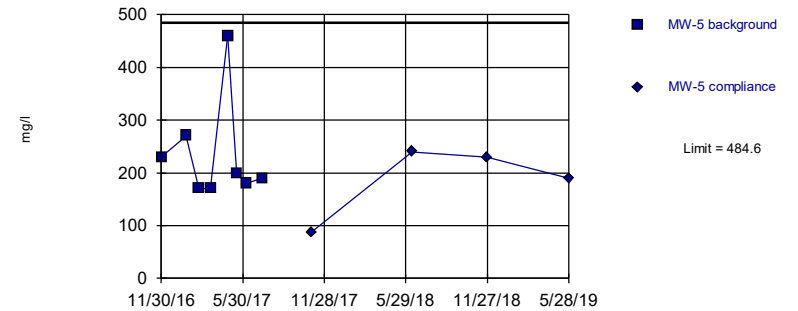


Background Data Summary: Mean=102.5, Std. Dev.=18.33, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8132, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate
Intrawell Parametric

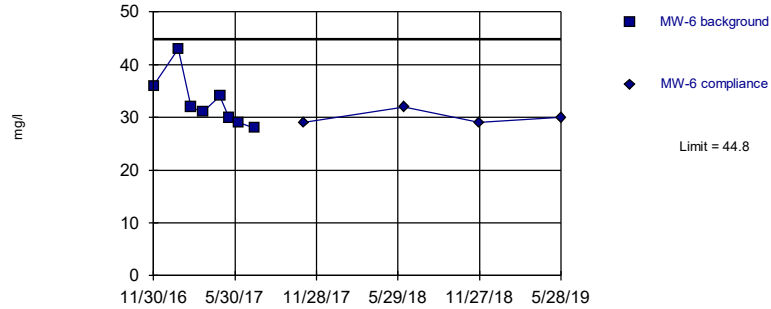


Background Data Summary (based on square root transformation): Mean=15.06, Std. Dev.=2.829, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7511, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate
Intrawell Parametric

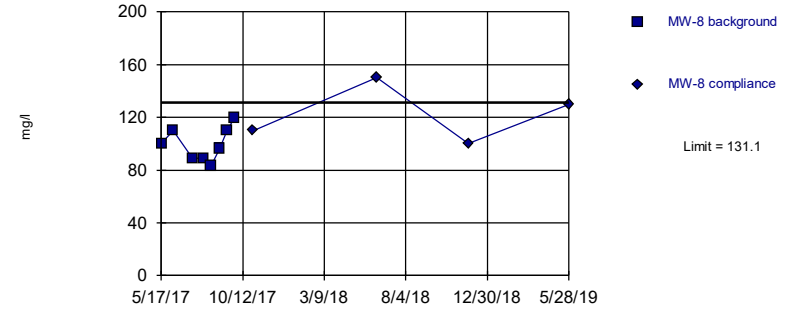


Background Data Summary: Mean=32.88, Std. Dev.=4.853, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8801, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate
Intrawell Parametric

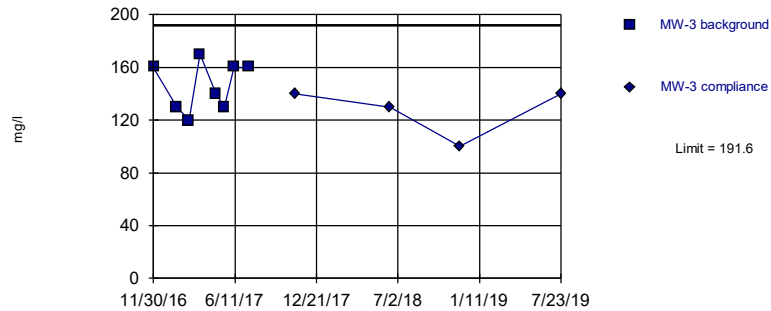


Background Data Summary: Mean=99.63, Std. Dev.=12.79, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9458, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids
Intrawell Parametric

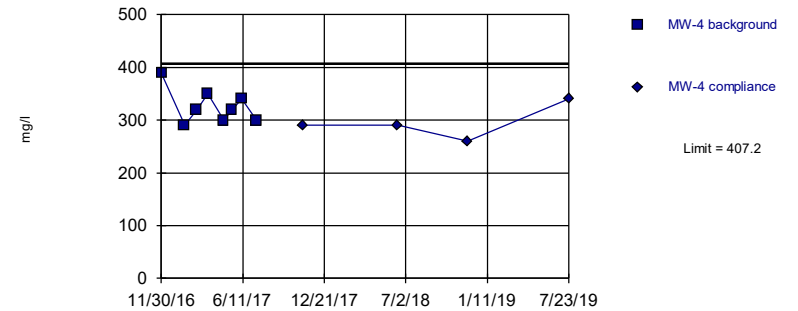


Background Data Summary: Mean=146.3, Std. Dev.=18.47, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8903, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

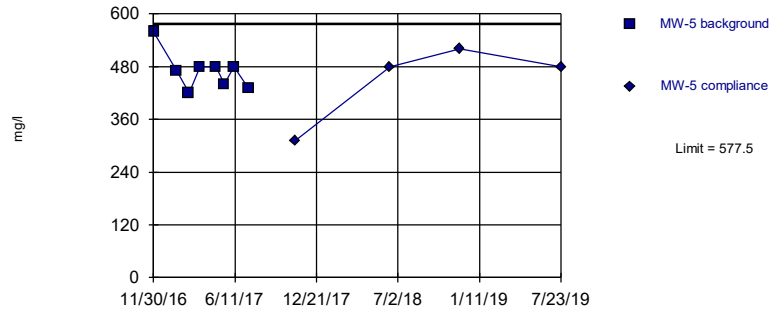
Total Dissolved Solids
Intrawell Parametric



Background Data Summary: Mean=326.3, Std. Dev.=32.92, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9148, 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 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

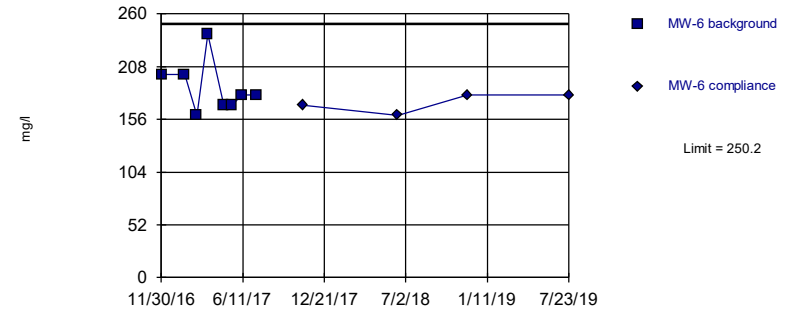
Within Limit
Total Dissolved Solids
Intrawell Parametric



Background Data Summary: Mean=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 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

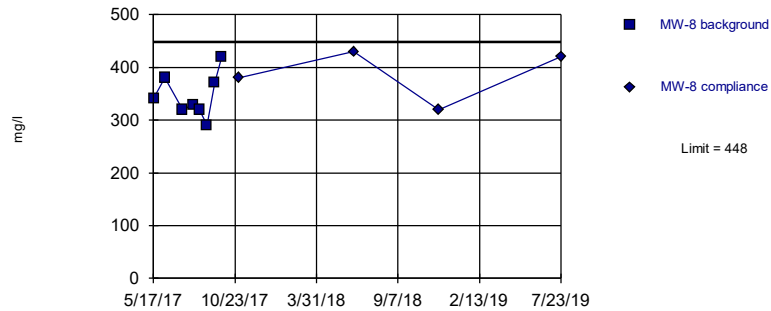
Within Limit
Total Dissolved Solids
Intrawell Parametric



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 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
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 1/7/2020 8:54 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

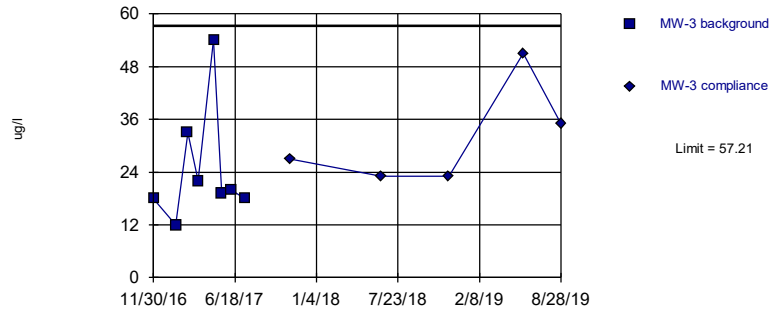
Prediction Limits - MW-3, 4, 5, 6 & 8

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 1/7/2020, 8:57 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	8/28/2019	35	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-4	1734	n/a	8/28/2019	1100	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-5	5700	n/a	8/28/2019	410	No	8	0	n/a	0.02144	NP Intra (normality) ...
Boron (ug/l)	MW-6	60.62	n/a	8/28/2019	54	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-8	596.7	n/a	8/28/2019	460	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-3	25.46	n/a	8/28/2019	15	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-4	95.25	n/a	8/28/2019	83	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-5	240	n/a	8/28/2019	110	No	8	0	n/a	0.02144	NP Intra (normality) ...
Calcium (mg/l)	MW-6	49.29	n/a	8/28/2019	44	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-8	101.7	n/a	8/28/2019	93	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-3	2.565	n/a	8/28/2019	1.1	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-4	18.69	n/a	8/28/2019	18	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-5	17.45	n/a	8/28/2019	16	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-6	3.083	n/a	8/28/2019	1	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-8	58.72	n/a	8/28/2019	55	No	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-3	0.4819	n/a	8/28/2019	0.125ND	No	8	12.5	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-4	0.259	n/a	8/28/2019	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	8/28/2019	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	8/28/2019	0.125ND	No	8	75	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-8	0.25	n/a	8/28/2019	0.125ND	No	8	100	n/a	0.02144	NP Intra (NDs) 1 of 2
pH (S.U.)	MW-3	7.189	6.363	8/28/2019	6.4	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-4	7.529	7.291	10/23/2019	7.3	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-5	7.078	6.697	8/28/2019	6.8	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-6	7.075	6.575	8/28/2019	6.7	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-8	7.285	7.018	8/28/2019	7.1	No	8	0	No	0.001253	Param Intra 1 of 2
Sulfate (mg/l)	MW-3	33.73	n/a	8/28/2019	18	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-4	147.6	n/a	8/28/2019	110	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-5	484.6	n/a	8/28/2019	190	No	8	0	sqrt(x)	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-6	44.8	n/a	8/28/2019	24	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-8	131.1	n/a	8/28/2019	110	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-3	191.6	n/a	8/28/2019	140	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-4	407.2	n/a	8/28/2019	300	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-5	577.5	n/a	8/28/2019	480	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-6	250.2	n/a	8/28/2019	200	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-8	448	n/a	8/28/2019	360	No	8	0	No	0.002505	Param Intra 1 of 2

Within Limit

Boron
Intrawell Parametric

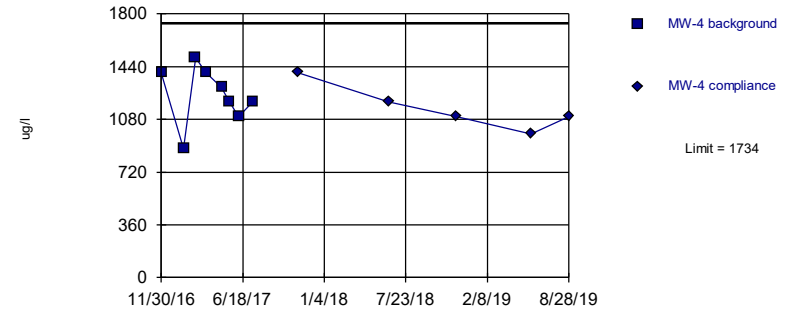


Background Data Summary: Mean=24.5, Std. Dev.=13.31, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7709, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron
Intrawell Parametric

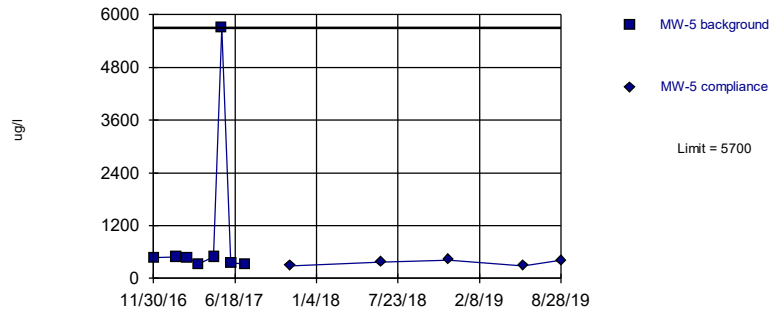


Background Data Summary: Mean=1248, Std. Dev.=198, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9503, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron
Intrawell Non-parametric

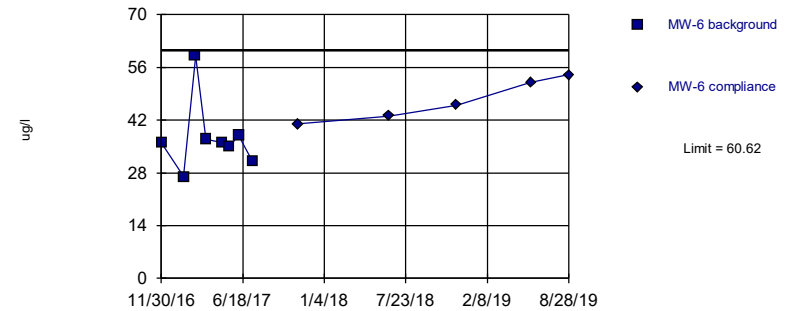


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient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

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron
Intrawell Parametric

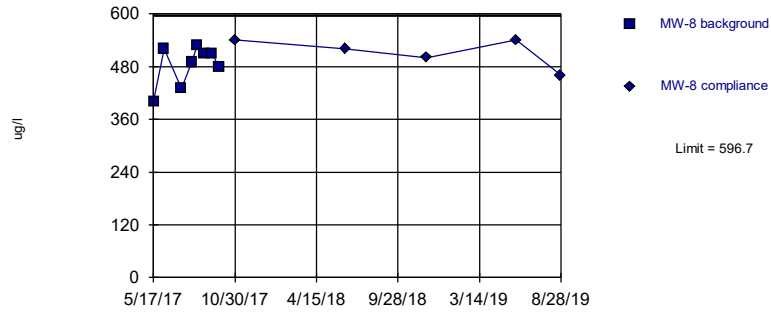


Background Data Summary: Mean=37.38, Std. Dev.=9.456, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7684, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron
Intrawell Parametric

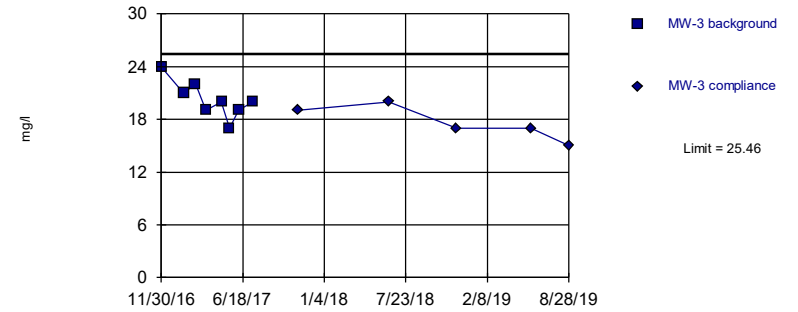


Background Data Summary: Mean=483.8, Std. Dev.=45.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8712, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium
Intrawell Parametric

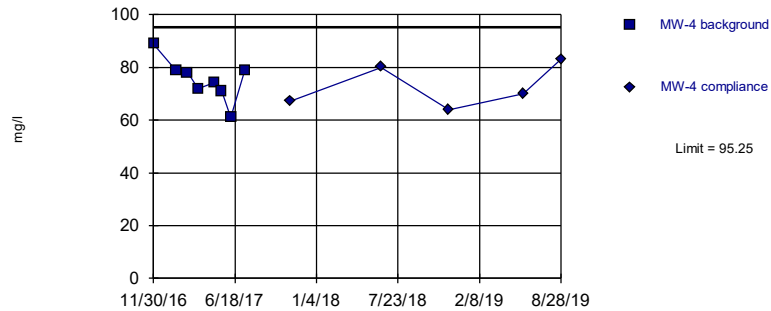


Background Data Summary: Mean=20.25, Std. Dev.=2.121, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9723, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium
Intrawell Parametric

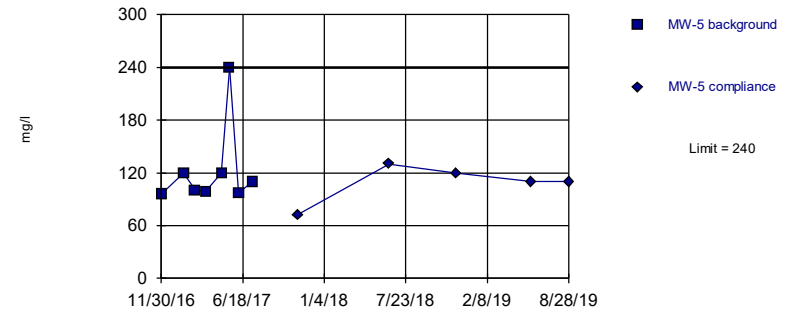


Background Data Summary: Mean=75.38, Std. Dev.=8.088, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9559, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

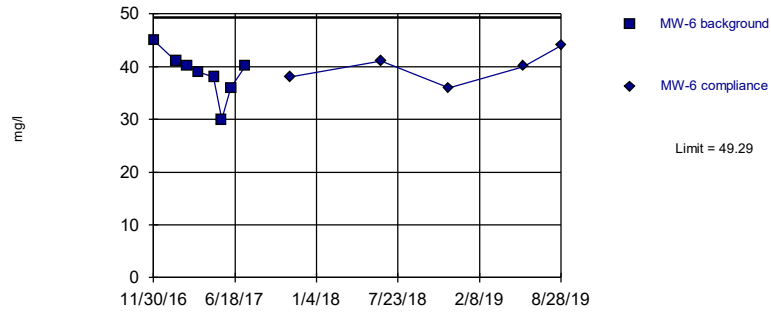
Calcium
Intrawell Non-parametric



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.

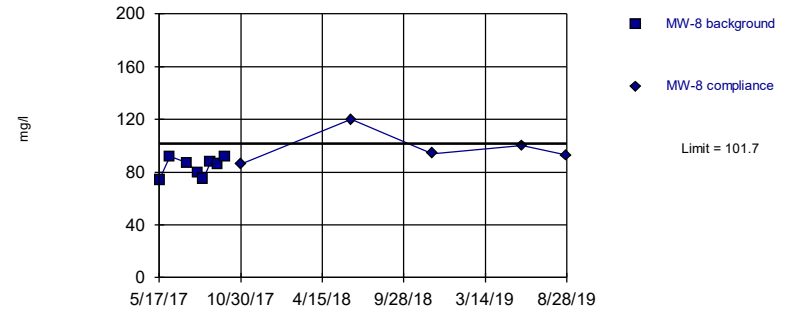
Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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.

Within Limit
Calcium
Intrawell Parametric

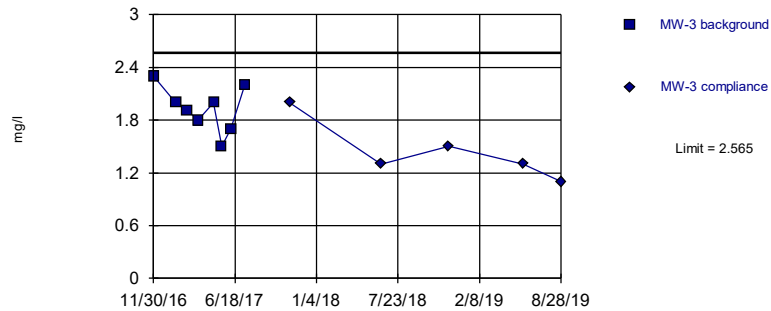


Background Data Summary: Mean=84.25, Std. Dev.=7.106, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8885, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

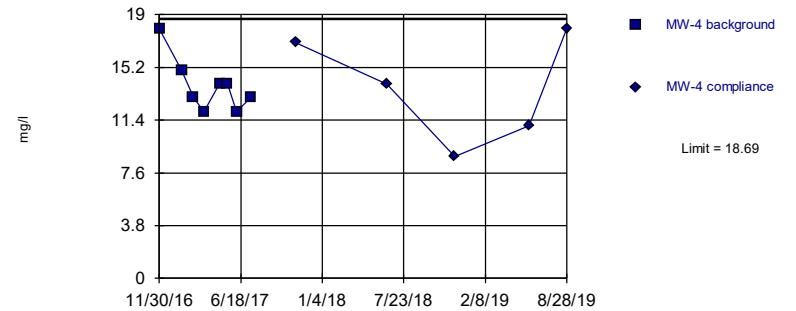
Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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.

Within Limit
Chloride
Intrawell Parametric



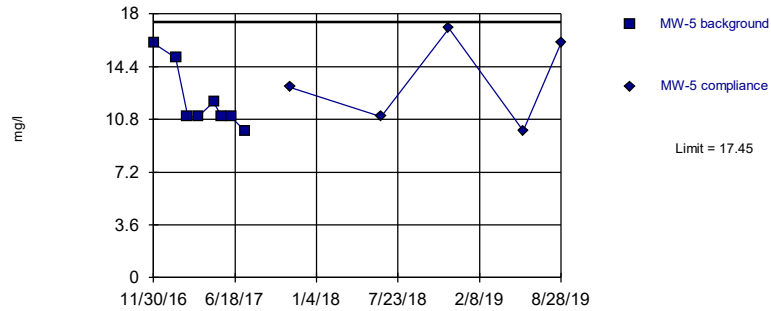
Background Data Summary: Mean=13.88, Std. Dev.=1.959, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8612, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride
Intrawell Parametric

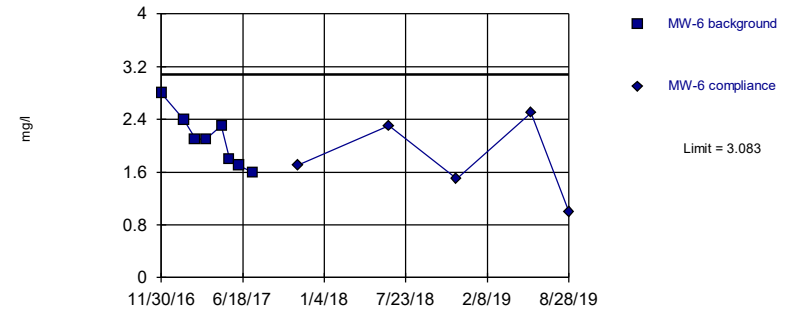


Background Data Summary: Mean=12.13, Std. Dev.=2.167, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7822, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride
Intrawell Parametric

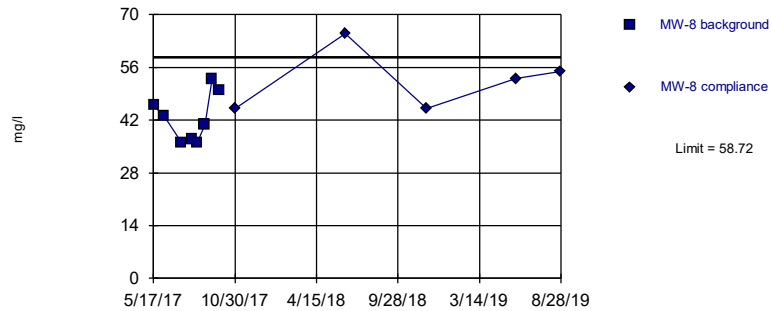


Background Data Summary: Mean=2.1, Std. Dev.=0.4, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride
Intrawell Parametric

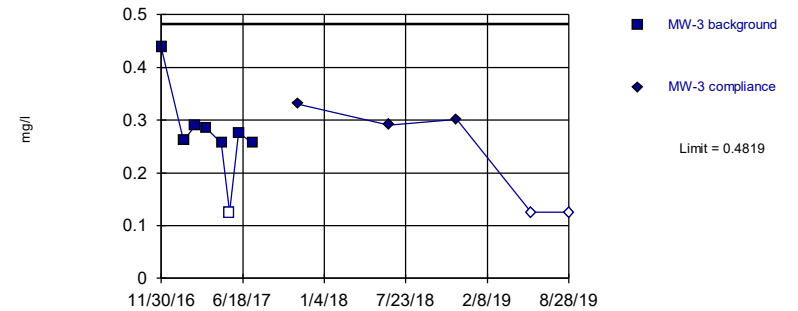


Background Data Summary: Mean=42.75, Std. Dev.=6.497, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9101, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Fluoride
Intrawell Parametric

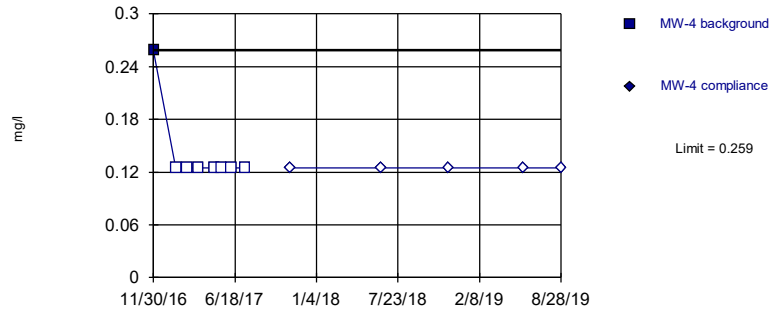


Background Data Summary: Mean=0.2736, Std. Dev.=0.08475, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8446, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

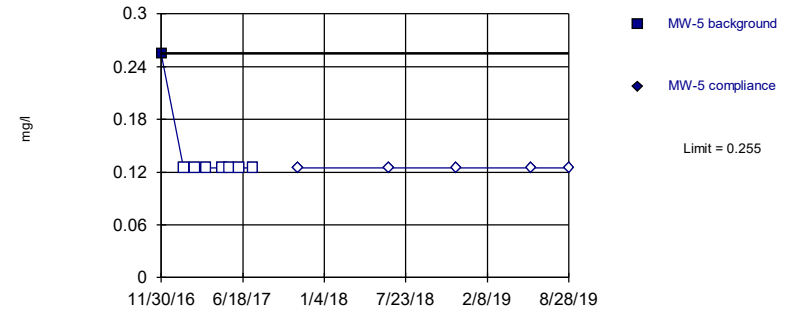
Fluoride
Intrawell Non-parametric



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.

Within Limit

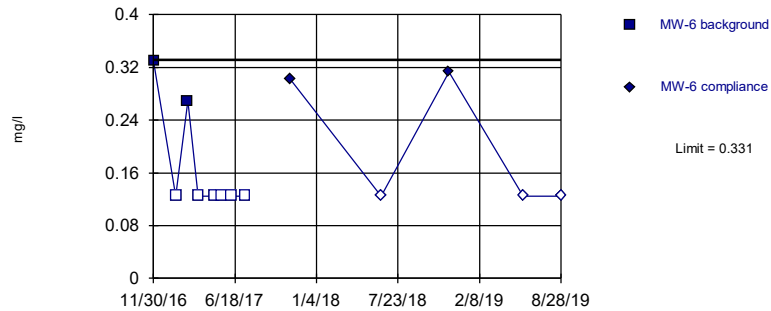
Fluoride
Intrawell Non-parametric



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.

Within Limit

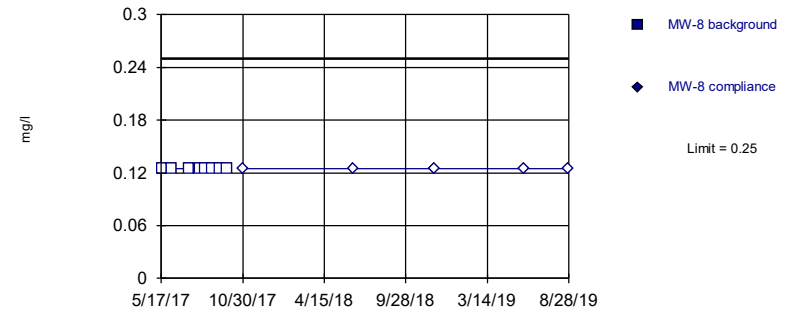
Fluoride
Intrawell Non-parametric



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.

Within Limit

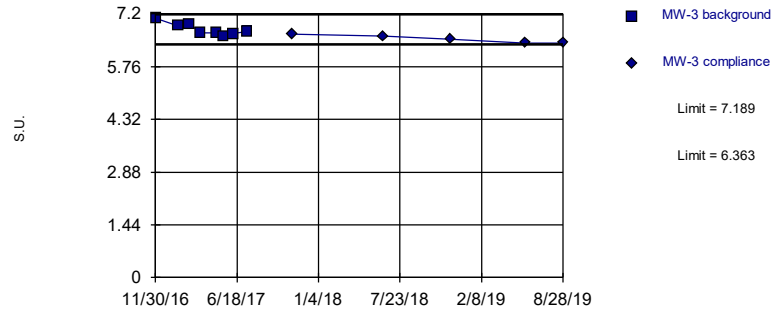
Fluoride
Intrawell Non-parametric



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.

Within Limits

pH
Intrawell Parametric

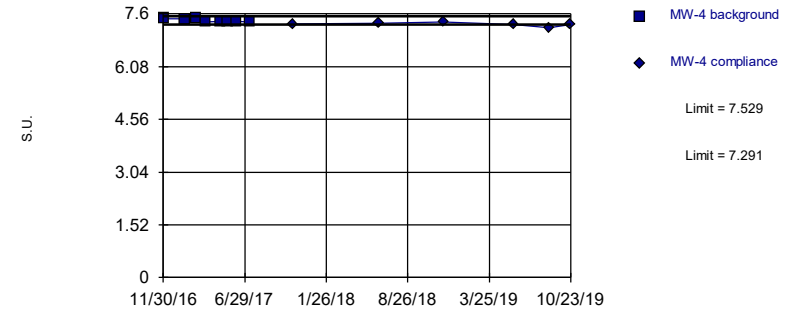


Background Data Summary: Mean=6.776, Std. Dev.=0.1681, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8856, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH
Intrawell Parametric

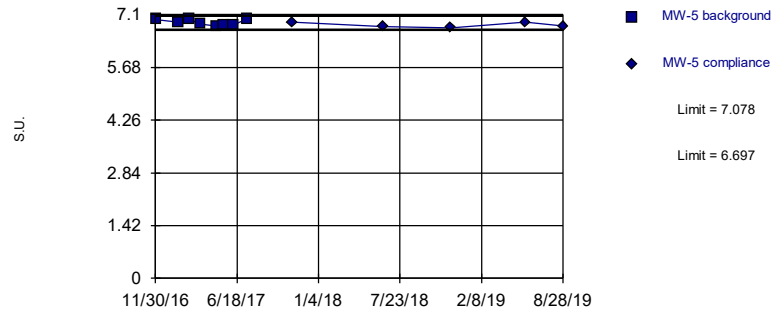


Background Data Summary: Mean=7.41, Std. Dev.=0.0484, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7828, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH
Intrawell Parametric

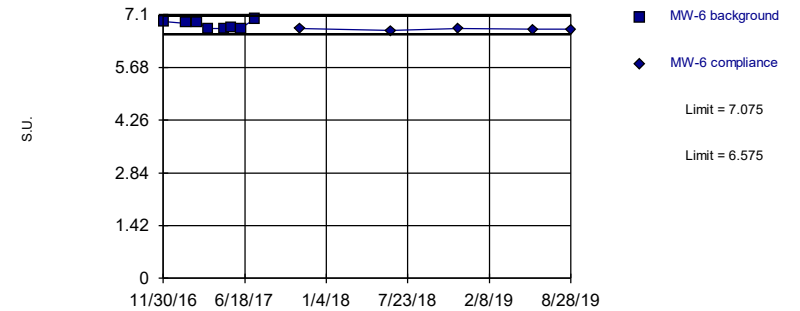


Background Data Summary: Mean=6.888, Std. Dev.=0.07741, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8471, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH
Intrawell Parametric

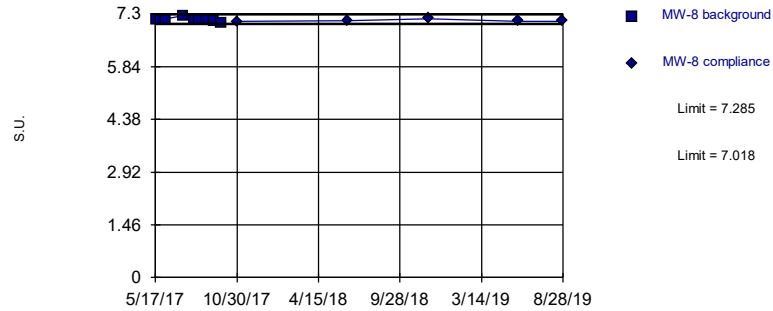


Background Data Summary: Mean=6.825, Std. Dev.=0.1018, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8714, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

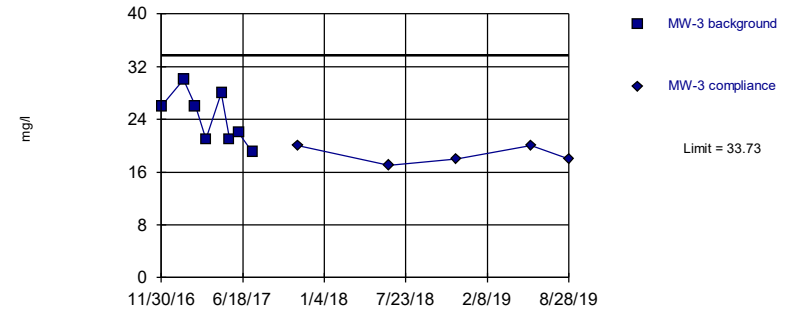
pH
Intrawell Parametric



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.

Within Limit

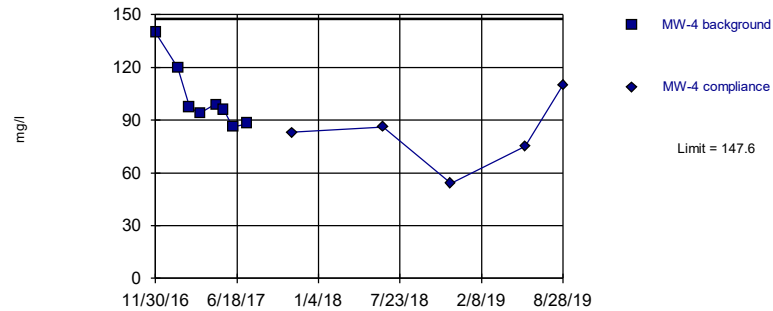
Sulfate
Intrawell Parametric



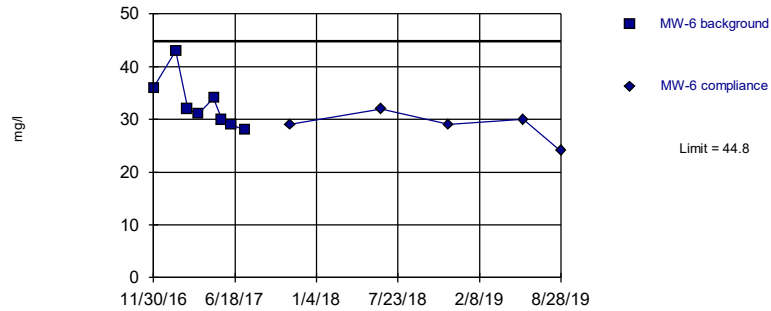
Background Data Summary: Mean=24.13, Std. Dev.=3.907, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9297, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Within Limit

Sulfate
Intrawell Parametric



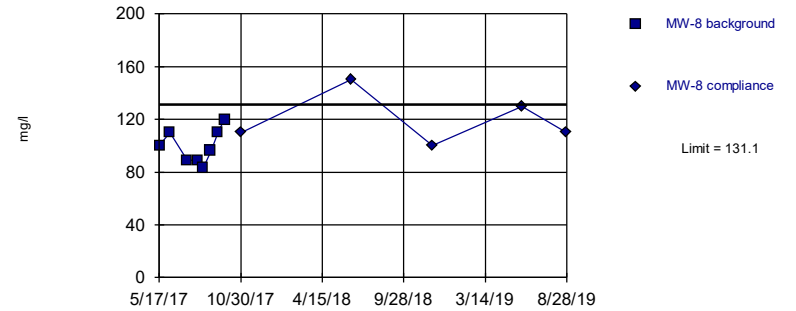
Within Limit Sulfate
Intrawell Parametric



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 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

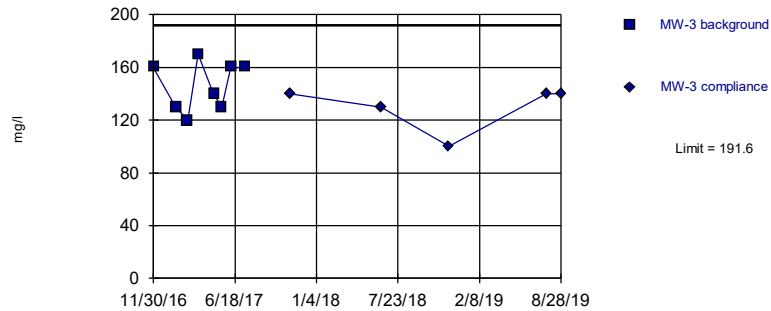
Within Limit Sulfate
Intrawell Parametric



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 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

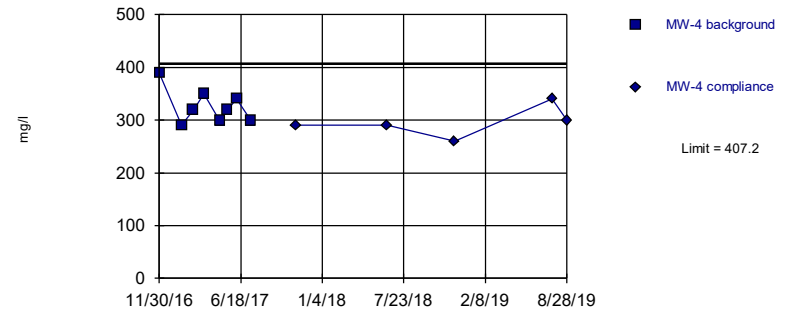
Within Limit Total Dissolved Solids
Intrawell Parametric



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 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit Total Dissolved Solids
Intrawell Parametric

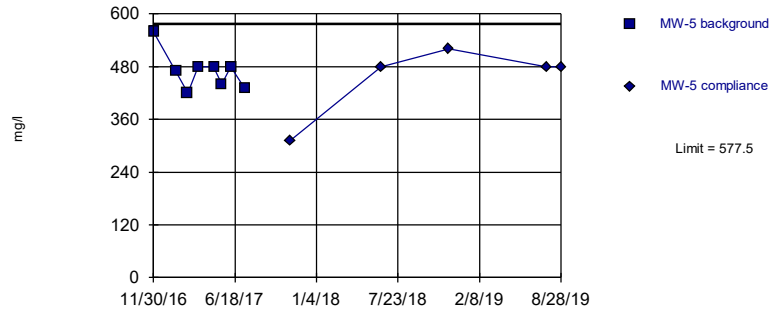


Background Data Summary: Mean=326.3, Std. Dev.=32.92, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9148, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids
Intrawell Parametric

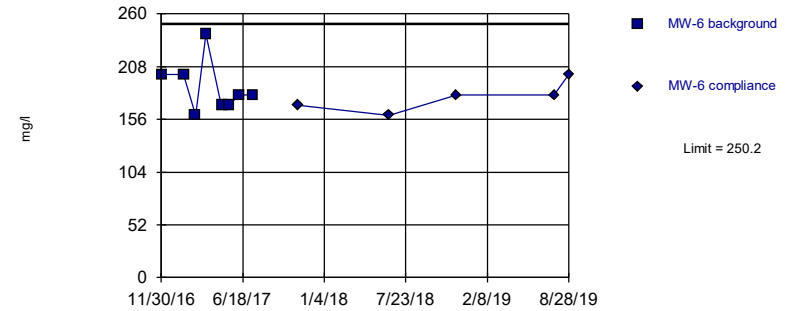


Background Data Summary: Mean=470, Std. Dev.=43.75, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8718, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids
Intrawell Parametric

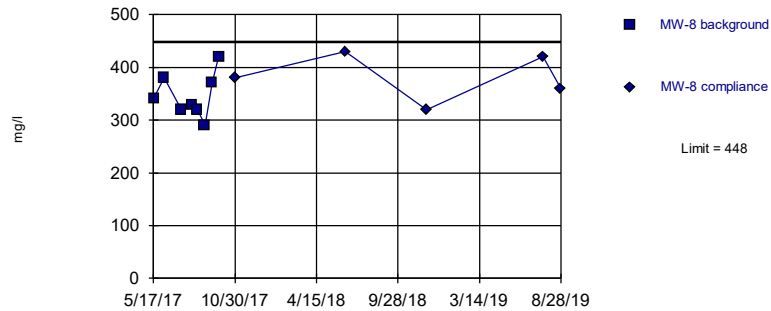


Background Data Summary: Mean=187.5, Std. Dev.=25.5, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8761, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
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 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17