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

# **GREDELL Engineering Resources, Inc.**

# **Sikeston Power Station**

2018 Annual Groundwater Monitoring and Corrective Action Report for Bottom Ash Pond For Compliance with USEPA 40 CFR 257.90(e)

Prepared for:



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



# **Sikeston Power Station**

2018 Annual Groundwater Monitoring and Corrective Action Report for Bottom Ash Pond For Compliance with USEPA 40 CFR 257.90(e)

# **Prepared for:**

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

January 2019

Prepared by:

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

# January 2019

# **Table of Contents**

1.0	INTRODUCTION	1
2.0	GROUNDWATER MONITORING SYSTEM	2
3.0 3.1	FIELD SAMPLING SUMMARYField Quality Assurance/Quality Control	
4.0 4.1 4.2 4.3 4.4 4.5	ANALYTICAL SUMMARY  Laboratory Quality Control  Precision and Accuracy  Representativeness  Comparability  Completeness	5 5 6
5.0 5.1	STATISTICAL ANALYSISStatistical Results	
6.0	SUMMARY	9
7.0	REFERENCES	10

# **List of Tables**

- Table 1 Groundwater Monitoring Network Summary
- Table 2 Historical Groundwater Level Summary
- Table 3 Water Levels 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 June 13, 2018
- Figure 2 Groundwater Contour Map November 26, 2018

# **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
- Appendix 9 Alternate Source Demonstration

# 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 that a statistically significant increase (SSI) in one or more constituents for detection monitoring listed in Appendix III of §257 has occurred, 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.

This report describes the results of the second and third semi-annual detection groundwater sampling events conducted at the Sikeston Power Station bottom ash pond on June 13 and November 26, 2018, 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. 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 June and November, 2018 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 performed groundwater sampling on June 13 and November 26, 2018. These sampling events were the second and third semi-annual detection groundwater sampling events conducted at the Sikeston Power Station, and 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 June 13 and November 26, 2018 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-6 (identified as DUP in Table 5). Rinsate blanks were not collected because dedicated sampling equipment was used. Samples were immediately shipped to PDC Laboratories' primary facility located in Peoria, Illinois using standard chain-of-custody documentation/ procedures.

Samples from the June sampling event were received by the primary facility on June 15, 2018 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 June sampling event were received from PDC Laboratories on June 25, 2018.

Samples from the November sampling event were received by the primary facility on November 28, 2018 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 November sampling event were received from PDC Laboratories on December 7, 2018.

# 4.0 ANALYTICAL SUMMARY

Hard copy analytical data for each monitoring well sampled during the June and November 2018 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 June and November 2018 sampling events were completed by PDC Laboratories, Inc., of Peoria, Illinois, 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 indicates that all quality controls met acceptance criteria except some QC samples. During analysis for each sampling event, the QC sample for TDS was flagged "M" due to RPD exceeding acceptance criteria, and the QC sample for Sulfate was flagged "Q4" because the sample value was greater than four times the spike value. During the analysis of samples for the June 2018 sampling event, the QC sample for Calcium was flagged "Q4" because the sample value was greater than four times the spike value.

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-6 was collected
during each of the 2018 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 during the June 2018 sampling
event. 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 2018. Results for the field blank from the June 2018 event showed that it contained a reportable concentration of Calcium (0.31 mg/L). All other parameters during the June event and all parameters during the November event were below detection limits.
- Laboratory Blanks: Method blanks, artificial, and matrix-less samples are analyzed to
  monitor the laboratory system for interferences and contamination from glassware,
  reagents, etc. Method blanks are taken throughout the entire sample preparation process.
  They are included with each batch of extractions or digestions prepared, or with each 20
  samples, whichever was more frequent. Reference to Appendix 3 should be made for
  comments related to these and other laboratory control samples.

# 4.3 Representativeness

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

A complete background data set has been obtained for groundwater, representing the uppermost aquifer, moving below the bottom ash pond at the SPS. 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<sup>TM</sup> for Ground Water (Version 9.5.32; 2017). Intra-well prediction intervals were compared at the 99 percent confidence level for each constituent. The groundwater results from the June 2018 and November 2018 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<sup>TM</sup>, 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 2018 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

# June 13, 2018 Sampling Event

The results of the statistical analysis for the bottom ash pond groundwater monitoring system suggest the presence of three suspected SSIs in the June 13, 2018 data set. They are specific to MW-8 and include Calcium, Chloride, and Sulfate. The prediction limits for Calcium, Chloride, and Sulfate in MW-8 are 101.7 mg/L, 58.72 mg/L, and 131.1 mg/L, respectively, whereas the reported concentrations were 120 mg/L, 65 mg/L, and 150 mg/L, respectively. MW-8 was resampled on July 10, 2018 and the initial results for Chloride, Sulfate, and Calcium data were confirmed on July 24, 2018. These subsequent results for Calcium, Chloride, and Sulfate were 120 mg/L, 68 mg/L, and 140 mg/L, respectively (Table 1). A replicate sample also taken from MW-8 during the July 10, 2018 resampling event showed that reported concentrations of Calcium, Chloride, and Sulfate were 120 mg/L, 71, mg/L, and 150 mg/L, respectively.

In accordance with §257.94, an Alternate Source Demonstration (ASD) was prepared to address the three suspected SSIs (Gredell Engineering, 2018b). The ASD was completed successfully and certified in accordance with §257.94(e)(2) on September 26, 2018. The ASD report documents that the suspected SSIs of Chloride, Sulfate, and Calcium in MW-8 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 is presented for review in Appendix 9.

### November 26, 2018 Sampling Event

The results of the statistical analysis for the bottom ash pond groundwater monitoring system do not suggest the presence of apparent SSIs in the November 26, 2018 data set. Therefore, detection monitoring in accordance with §257.94 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 second and third groundwater detection monitoring events conducted on June 13 and November 26, 2018, respectively, do not indicate the presence of SSIs associated with the bottom ash pond groundwater monitoring system. Suspected SSIs in MW-8 were shown to be attributable to an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality, as documented in the ASD prepared and certified in accordance with §257.94(e)(2) and included in Appendix 9. Therefore, it is recommended that detection monitoring of the bottom ash pond continue on a semi-annual basis in accordance with §257.94(b).

# 7.0 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.

Sanitas Statistical Software, © 1992-2017 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**

Table 1
Groundwater Monitoring Network Summary - Bottom Ash Pond

Monitoring Well ID <sup>1,2</sup>	Northing Location <sup>3,4</sup>	Easting Location <sup>3,4</sup>	Ground Surface Elevation <sup>3,4</sup> (feet)	Top of Riser Elevation <sup>3,4</sup> (feet)	Well Depth <sup>5</sup> (feet)	Base of Well Elevation <sup>6</sup> (feet)	Screen Length <sup>7</sup> (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.

Prepared by: KAE Checked by: MCC

Table 2
Historical Groundwater Level Summary

Well ID	MW-3	MW-4	MW-5	MW-6	MW-8
Date		Groundwa	ater 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

### 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. NM Not Measured.
- 4. Maximum and minimum groundwater elevations are shaded.

Prepared by: KAE Checked by: MCC

# Table 3 Water Levels and Field Parameter Summary June 13, 2018

Monitoring Well I.D.	Hydraulic Position	Initial Water Level (ft, BTOC <sup>2</sup> )	Final Water Level (ft, BTOC²)	Minimum <sup>3</sup> Purge Vol. (ml <sup>4</sup> )	Actual Purge Vol. (ml <sup>4</sup> )	pH (S.U.⁵)
MW-3	Upgradient	11.22	11.22	300	4,300	6.59
MW-4	Downgradient	10.68	10.68	300	7,140	7.32
MW-5	Downgradient	10.31	10.31	300	4,240	6.77
MW-6	Upgradient	11.25	11.25	300	3,120	6.67
MW-8	Downgradient	9.75	9.75	300	7,720	7.11

# Water Levels and Field Parameter Summary November 26, 2018

Monitoring Well I.D.	Hydraulic Position	Initial Water Level (ft, BTOC <sup>2</sup> )	Final Water Level (ft, BTOC²)	Minimum <sup>3</sup> Purge Vol. (ml <sup>4</sup> )	Actual Purge Vol. (ml <sup>4</sup> )	pH (S.U.⁵)
MW-3	Upgradient	12.92	12.92	300	5,360	6.50
MW-4	Downgradient	11.85	11.85	300	3,060	7.36
MW-5	Downgradient	11.64	11.64	300	3,000	6.74
MW-6	Upgradient	12.81	12.81	300	2,840	6.72
MW-8	Downgradient	10.89	10.89	300	7,460	7.17

### 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.

Table 4
Groundwater Monitoring Constituents

USEPA 40 CFR 257						
Appendix III	-	Appendix IV -				
Constituents for Detection Monitoring		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.  $\mu$ g/L = micrograms per liter.
- 3. mg/L = milligrams per liter.
- 4. pCi/L = picocurie per liter.

Table 5
Relative Percent Differences Summary June 13, 2018

Chemical Parameter	Units	MW-6	DUP	Relative Percent Difference
рН	S.U.	6.67	6.67	0.00
Boron	μg/L	43	42	2.35
Calcium	mg/L	41	44	7.06
Chloride	mg/L	2.3	2.5	8.33
Fluoride	mg/L	<0.250	0.253	N/A
Sulfate	mg/L	32	33	3.08
Total Dissolved Solids	mg/L	160	180	11.76

# Relative Percent Differences Summary - November 26, 2018

Chemical Parameter	Units	MW-6	DUP	Relative Percent Difference
рН	S.U.	6.72	6.72	0.00
Boron	μg/L	46	46	0.00
Calcium	mg/L	36	43	17.72
Chloride	mg/L	1.5	1.4	6.90
Fluoride	mg/L	0.313	0.284	9.72
Sulfate	mg/L	29	26	10.91
Total Dissolved Solids	mg/L	180	210	15.38

# NOTES:

- 1. S.U. = Standard Unit.
- 2.  $\mu$ g/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.

# Table 6 Intra-Well Prediction Limit Summary

Chemical Parameter	Units	MW-3	MW-4	MW-5	MW-6	8-WM
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

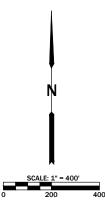
### NOTES:

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

Prepared by: KAE Checked by: MCC

# **FIGURES**





LEGEND	
PROPERTY LINE	PL
GROUNDWATER CONTOUR	
MONITORING WELL	(MW)
UP GRADIENT MONITORING LOCATION	UG
DOWN GRADIENT MONITORING LOCATION	DG
GENERAL FLOW DIRECTION	-

- NOTES:

  1. IMAGE PROVIDED BY BING MAPS.
  2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CUIVERT ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.
  3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON JUNE 13, 2018.
  4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
  5. RANGE OF GROUNDWATER FLOW GRADIENT AS

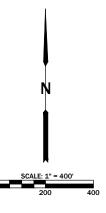
5.	RANGE OF GROUNDWATER FLOW GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0004 FT./FT TO 0.001 FT./FT.

WELL ID	GROUNDWATER ELEVATION	CASING ELEVATION	NORTHING	EASTING
MW-3	297.33	308.55	381130.00	1079946.62
MW-4	294.93	305.61	380804.62	1077766.95
MW-5	295.60	305.91	379858.94	1078477.85
MW-6	296.47	307.72	379874.77	1079384.36
MW-8	295.02	304.77	380311.20	1077940.08

# GREDELL Engineering Resources, Inc. ENVIRONMENTAL ENGINEERING LAND - AIR - WATER 1505 East High Street Telephone: (573) 659-9078 Jefferson City, Missouri Facsimile: (573) 669-9079

FIGURE 1 GROUNDWATER CONTOUR MAP JUNE 13, 2018





LEGEND	
PROPERTY LINE	PL
GROUNDWATER CONTOUR	
MONITORING WELL	(MW)
UP GRADIENT MONITORING LOCATION	UG
DOWN GRADIENT MONITORING LOCATION	DG
GENERAL FLOW DIRECTION	-

- NOTES:
  1. IMAGE PROVIDED BY BING MAPS.
  2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.
  3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON NOVEMBER 26, 2018.
  4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
  5. RANGE OF GROUNDWATER FLOW GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0003 FT./FT. TO 0.0009 FT./FT.

WELL ID	GROUNDWATER ELEVATION	CASING ELEVATION	NORTHING	EASTING
MW-3	295.63	308.55	381130.00	1079946.62
MW-4	293.76	305.61	380804.62	1077766.95
MW-5	294.27	305.91	379858.94	1078477.85
MW-6	294.91	307.72	379874.77	1079384.36
MW-8	293.88	304.77	380311.20	1077940.08

neering Resources, Inc.	8
2018, MONI	URVEYED DESIGNED DRAWN CHECKED APPROVED DATE  NA NA CP KE MCC 12/2018
SINESTON POWER STATION BOTTOM ASH POND 018 ANNUAL GROUNDWATE MONITORING & CORRECTIVE ACTION REPORT	CP CHE
OTTOM ASH PON OTTOM ASH PON NNNUAL GROUND TORING & CORRE ACTION REPORT	CKED APPROVE
SIRESTON POWER STATION BOTTOM ASH POND 2018 ANNUAL GROUNDWATER MONITORING & CORRECTIVE ACTION REPORT	12/2018
~	SCALE AS NOTED SIM
FIGURE 2 GROUNDWATER CONTOUR MA NOVEMBER 26, 2018	RYEYED DESIGNED DRAWN GHECKED APPROVED DATE SCALE PROJECT NAME FILE NAME  NA NA CP KE MCC 12/2018 AS NOTED SIKESTON/GWMAP/BAP GWCONT BAP 11.2018
FIGURE 2 INDWATER CONTOUR NOVEMBER 26, 2018	FILE NAME GWCONT BAP 11-20

ΑP

# **APPENDICES**

# **Appendix 1**

Field Sampling Notes

Field Sampling Notes – June 13, 2018

# Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Gro Monitoring Well ID: MW - Name (Field Staff): A Pa+ Date: 6 -13 -13	3	igham_
Access: Accessibility: Good L Well clear of weeds and/or debris Well identification clearly visible?	s?: Yes	No
Remarks:  Concrete Pad: Condition of Concrete Pad: Depressions or standing water ar Remarks:		Inadequate
Condition of Protective Casing: Condition of Locking Cap:	Good	ed Casing with Hasp  Damaged  Damaged  Damaged  Damaged
Well Riser: Material = 2" Diameter, So Condition of Riser: Condition of Riser Cap: Measurement Reference Point: Remarks:	Good <u>L</u>	n Threaded  Damaged  Damaged  No
Dedicated Purging/Sampling Device: T	Silicone Tubing  Damaged	
Remarks:  Field Certification Mose Signed	Las Title	Tech 6-13-18 Date

# Field Sampling Log

Monitor	ing Well ID;	MW	3 Fac	ility: SBML	J Sikeston P	ower Statio	n - Groundw	rater Monitor	ing		
ıtıal Wate	r Level (feel	t btoc):	. 22			Date:	6-13	-18			
itial Groui	ndwater Ele	vation (NAVD	88):			Air Pressur	e in Well?	Y /(N)			
ate:	FORMATIO 6 -/3  mple Collect	-18	0:11	ingh	CM.						
•	,		Perstaltic F	•		dicated Tub	sing?	Y) / N			
	Well Purge:	<u> </u>		- unip							
me Purgi	ng Initiated:		816				/olume (mL)	•	NA		
eginning '	Water Level	(feet bloc):		1.22	Tot	al Volume I	Purged (mL)	:	430	)	
eginning (	Groundwate	er Elevation (N	NAVD88):		We	ell Purged T	o Dryness?		Y /(0)		
fell Total	Depth (feet	btoc): <b>3</b>	6.97		Wa		fter Sampling	g (feet btoc):	11.2	2	
asing Dia	ımeter (feet)	2" Sch 46	0 PVC		Tin		g Completed		0842		
URGE ST	TABILIZATIO	ON DATA					Ovidation				
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)	(e.g.	Notes , opacity, or, odor)
1818		340	19.63	196.3	1.03	7.16	93,0	19.GI	11.22	Red	Flake
1820	240	820	18.17	199.6	0.76	6.84	79.6	19.89	11.22	"	le la
822	243	1300	17.55	199.4	0.64	6.67	67.5	17.94	11,22	"	le.
824	250	1800	17.33	1985	257	6.60	61.5	14.54	11,22	11	- tr
856	223	2242	17.29	197.5	0.53	6.57	53.3	12.18	11.22	"	1,
828	260	2760	17.27	195.4	0.49	6.58	53.1	12.18	11,22	14	13
733	260	3280	17.45	195.4	0.46	6.57	41.3		11,22	14	()
	250	4300	17.19	1942	0.42	6.54	42.3	7.57	11.22	10	11
70 )		, , , , , , ,									
											making to.
			-								
			-								

btoc - below top of casing

# Field Sampling Log

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	ell ID: M	w 3
apling Informa	ation:						
Nethod of Samplin	ng: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Vater Level @ Sa	mpling (feet btoc)	11.2:	2				
Nonitoring Event:	Annual ( )	Semi-Annua	l (🖊 Quarte	rly ( )	fonthly ( )	Other ( )	
inal Purge Stabiliz	zation Sampling D	Pata:	1			Oxidation	<del></del>
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Reduction Potential (mV)	Turbidity (NTU)
6-13-18	250	17.19	194.2	0.42	6.59	42.3	7.57
nstrument Calib See instrument ca 1 - In-Situ SmarT 2 - HF scientific, i	llibration log of da roll Multi-Probe Fi	ield Meter (Temp	perature, Specifi	ng instruments: c Conductance, Disso	lved Oxygen, pF	ł, Oxidation Red	luction Potentia
General Informat		pling: Sun	ny, SI	ight Bree	28		
pample Character	ristics: Re	ed Fla	ke, od	orless			
Sample Collection	Order:	Per SAP					
Comments and O	bservations:						
						Address &	
						V-1	
9.5							
No.							
certify that same	oling procedures v	vere in accordar	nce with applicat	ole EPA and State pro	tocols.	•	
(_12-1	7	Ast.	1	Title		Tech	
vate: 5 10 1	<b>8</b> By:	1010	6	Itte	i,	1	

Page 2 of 2

# Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring  Monitoring Well ID: MW 4  Name (Field Staff): A Catel D Dillingham
Date: 6-13-18
Accessibility: Good Fair Poor Poor
Well clear of weeds and/or debris?: Yes 🚣 No
Well identification clearly visible?: Yes No
Remarks:
Concrete Pad:  Condition of Concrete Pad:  Good Londing 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 <u>L</u> 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 L Damaged
Measurement Reference Point: Yes No
Remarks:
Dedicated Purging/Sampling Device: Type = ½ " 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 Las 7eek 6-13-18

# Field Sampling Log

Monitoring Well ID: MW 4 Facility: SBMU Sikeston Power Station - Groundwater Monitoring											
tial Water Level (feet btoc): 10.68 Date: 6.73 -18											
tial Groundwater Elevation (NAVD88): Air Pressure in Well? Y / N											
JRGE INFORMATION  ate: G-13-18  ame (Sample Collector): DOILING NAM											
athod of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? Y / N											
	me Purging Initiated:    Latt										
∍ginning \	Water Level	(feet btoc):	10	00	Tota	al Volume F	Purged (mL)	:			-
aginning (	Groundwate	r Elevation (N		\	We	Il Purged To	o Dryness?		YID		
ell Total I	Depth (feet	btoc):	37.29	· · · · · · · · · · · · · · · · · · ·	Wa		ter Sampling	g (feet btoc):	10.6	8	_
asing Dia	meter (feet)	2" Sch 40	PVC		Tim	,	Completed		12.5	5	
JRGE ST	TABILIZATI(	ON DATA					Oxidation				
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Not (e.g., o color,	pacity,
225		340	24.62	441.4	0.78	7.31	*130.5	52.78		drange	Flake
222	240	820	21.04	471.9	0.68		-125.9	34.05	10.68	11	"
224	240	1320	19.77	481.9	0.62	7.32	-123.8	32.21	10.68		A
226	250	1800	19.21	491.0	0.58	7.32	-122.9	25.46	10.68	Cle	ur
228	347	<b>3982</b>	19.11	पहुत्र	0.55	7.32	-122.5	21.64	(3.68	"	- 11
-	240	2760	19.09	484.6	0.50	7.32		22.83	10.68	U	17
232	240		19.08	493.6	2.49	7.32	-122.2	25.39	13.68	u	- 0
234	240	3720	19.05		5.46	7.32		24.89	10.68	eq	
236	240	4200	18.92		0.45	7.32	-121-6	18.47	13.68		- (4
238	250	4700	18.85	501.2	3.42	7.32	-121.1	25.87	10.68	11	-1,
242	243	5183	18.84	495.9	0.43	7.32	-120,9	21. 23	12.68	11	1/
842	253	5680	18.78	512.6	0.51	7. 33		25.69	13.68	u	L)
244	243	6160	18.79	505.2		7.32	-120.8	18.77	10.68	- CC	tr.
Suc	250	6660		509.9	0.43	7.32	-121.0	19.G4	13.68	11	-17
248	243	7143	18.92	511.5	0.44	7.32	-1 23.7	18.50	13.68	ļ	
		-									

btoc - below top of casing

# Field Sampling Log

Facility:	SBMU Sikeston	Power Station -	CCR Gibundwa	ter Monitoring	_ Monito	ring Well ID:	MW4
.npling Informa	ation:				7		
1ethod of Samplin	ig: Low Flow -	Perstaltic Pump	& Tubing			Dedic	cated: (Y) / N
Vater Level @ Sa	mpling (feet btoc)	: <u>10</u> .(	8				
Aonitoring Event:	Arinual ( )	Semi-Annua		rly ( )	Monthly (	) Other	r()
final Purge Stabliz		·					
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific , Conductance (µS/cm)	Dissolved O (mg/L)		H Re	duction duction tential (mV)
6-13-18	240	18.92	511.9	2.44	7.3	12 -12	0.7 18.50
See instrument ca 1 - In-Situ SmarTr 2 - HF scientific, in Seneral Informat	roll Multi-Probe F nc. Micro TPI Fie	ield Meter (Temp	erature, Specifi	c Conductance	e, Dissolved Oxy	gen, pH, Oxid	ation Reduction Potentia
Veather Condition		pling: <u>5</u> v	nny, SI	ight b	HR ZR		
mple Character	istics: · 57%	nye flat	u odor	le35			
Sample Collection	. 2	• Per SAP				1	
		c			e e		
Comments and O	bservations:		41		**		
		*		·*		(8)	Annual Control of the
	2 2	. 8		665 <sub>0</sub> 0	F. 187		
<u>*</u>		. 1	•	<b>3</b>	4		
3)	12	n ' R	,	4 (7)		,	
*	1	4		6	13.77		
*	à		- · ·	and the second s	•		
4			*			*	
- 1	4	• FI 1	S e a		nev 1	¥	3
			the total of the t		I.P.		
certify that samp	oling procedures v	vere in accordar	ice with applicat	le EPA and St	ate protocols.		
ute: 6-13-	H Ru.	Ashor	Ran	-	Title:	45 74	20
ale.	by.		Page	e 2 of 2			

# Monitoring Well Field Inspection

Mo Na	onitoring Well ID:  A Park ante: 6-13-13	15	
Access A	: ccessibility:	Fair_	Poor
	Vell clear of weeds and/or debri		
M	Vell identification clearly visible?	?: Yes 🖊	No
R	emarks:		
<u>Concre</u> C	te Pad: ondition of Concrete Pad:	Good <b></b>	Inadequate
D	epressions or standing water a	round well?; Yes _	No 🛌
R	Remarks:		
Protect	ive Outer Casing: Materia	al = 4" x 4" Steel Hing	ed Casing with Hasp
C	Condition of Protective Casing:	Good L	Damaged
C	Condition of Locking Cap:	Good <u>L</u>	Damaged
C	Condition of Lock:	Good <u>L</u>	Damaged
C	Condition of Weep Hole:	Good 🖊	Damaged
R	Remarks:		
Well Ri	iser: Material = <u>2" Diameter, S</u>	chedule 40 PVC, Flus	h Threaded
C	Condition of Riser:	Good	Damaged
c	Condition of Riser Cap:	Good <u>L</u>	Damaged
N.	Measurement Reference Point:	Yes	No
F	Remarks:		
<u>Dedica</u>	ted Purging/Sampling Device:	Type = ½ " ID Semi-Ri Silicone Tubing	igid Polyethylene & 0.170" ID Flexible
	Condition: Good <u>L</u>	Damaged	Missing
F	Remarks:		
N	Monitoring Well Locked/Secured	d Post Sampling?: Y	/es L No
F	Remarks:		
Field Certific	ation \$227 1.10	101 7	Tech 6-13-18
	Signed	Title	Date

# Field Sampling Log

Monitor	ing Well ID:	MW	5 Faci	lity: SBMU	J Sikeston P	ower Statio	n - Groundw	ater Monitor	ing	
itial Wate	r Level (feet	btoc): JC	2.31			Date: 6	-13-1	3		
		vation (NAVD				Air Pressur	e in Wėll?	· Y/N		
JRGE IN	FORMATIO	N 3 -1-3								
ame (San	nple Collect	or). <b>(</b> )	0:11	ingl	nam					
	Well Purge:	,	/ Perstaltic F	ump	Dec	dicated Tub	oing?	Y) N		
	ng Initiated:	00	749		Oń	e (1) Well V	/olume (mL)	•	NA	
•	Water Level		15	0.31	Tot	al Volume i	Purged (mL)	:	424	<u>J</u>
•		r Elevation (ħ			We	ell Purged T	o Dryness?		Y / N	
		btoc):3			Wa	iter Level at	fter Samplin	g (feet btoc):	10.3	1
		: 2" Sch 4			Tin	,	e., pump is o	•	101	2
URGE S	[ABILIZATIO	ON DATA	,			1	Oxidation		<u> </u>	
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1451		400	25.84	704.2	1.13	6.71	-45.3	21.65	10.31	Omnse Flai
7953	260	920	18.97	755.2	0.97	6.73	-52.1	8.90	13.31	ckar, wat
1955	250	1420	18.44	765.0	1.03	6.74	-53.3	6.96	13.31	(1867, 1000)
1957	315	2050	18.37	772.0	0.92	6.76	·53.5	3.41	10.31	14
7459	315	2680	18.34	766.3	0.89	6.76	-53.9	3.49	10.31	11 /3
101	270	3270	18.30	764.1	0.83	6.76	·54.S	1.86	10.31	11 1/
003	270	37(5	18.27	797. S 756.4	3.83	6.77	-55.2	2.06	13.31	
205	243	4242	18.98	756.4	0.84	6.77	55.6	1.41	13.31	
									<u> </u>	

btoc - below top of casing

# Field Sampling Log

Facility:	SBMU Sikeston	Power Station - (	CCR Groundwa	ter Monitoring	Monitoring We	HID: MI	× 5
npling Informa	ation:						
vlethod of Samplin		Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Nater Level @ Sa		102					
			,	whee C A BA	onthly ( )	Other ( )	
Monitoring Event:	Annual ( )		Quarte	riy ( )	orany ( )	Other ( )	
Final Purge Stabliz	zation Sampling [	)ata:				Oxidation	
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Reduction Potential (mV)	Turbidity -(NTU)
6-13-18	243	18.28	756.4	V8.0	6.77	-55,6	1.91
nstrument Calib. See instrument ca 1 - In-Situ SmarT 2 - HF scientific, i	libration log of da roll Multi-Probe F	ield Meter (Temp	erature, Specifi	ing instruments: ic Conductance, Dissol	ved Oxygen, p⊦	I, Oxidation Red	uction Potentia
General Informat		nlina: Sul	nny, 51	ight Bree	72		
Weather Condition	ns @ time or sam	pling.				-	_
sample Character	ristics: OC	orless,	Clear,	(Ularles)			
Sample Collection	Order:	Per SAP					
Comments and O	bservations;						
							Aurente Pala Pala Pala Pala Pala Pala Pala Pal
							7. V. 11
				ole EPA and State proto	ocols,		
Date: 6-13 -	18 Bv:	Ashish	Case	, Title	Las	Tech	
	7			e 2 of 2	-	•	

1 490 2 01 2

# Monitoring Well Field Inspection

Facility: SBMU SPS – CCR G Monitoring Well ID: Name (Field Staff): A Po  Date: 6 43 -13	W 6	
		airPoor
Well clear of weeds and/or debi	ris?: Yes	No
Well identification clearly visible	?: Yes	No
Remarks:		
Concrete Pad: Condition of Concrete Pad:	G	lood Inadequate
Depressions or standing water	around well?: Y	es No
Remarks:		
Protective Outer Casing: Materi	al = <u>4" x 4" Steel</u>	Hinged Casing with Hasp
Condition of Protective Casing:	Good <u></u>	Damaged
Condition of Locking Cap:	Good 🚣	Damaged
Condition of Lock:	Good 🚩	Damaged
Condition of Weep Hole:	Good L	Damaged
Remarks:		
Well Riser: Material = 2" Diameter, S	Schedule 40 PVC.	Flush Threaded
Condition of Riser:	Good	Damaged
Condition of Riser Cap:	Good ~	Damaged
Measurement Reference Point	_	No
Remarks:	<del></del>	
	Type = ½ " ID Se Silicone T	mi-Rigid Polyethylene & 0.170" ID Flexible ubing
Condition: Good	Damaged	Missing
Remarks:		
Monitoring Well Locked/Secure	d Post Sampling?	?: Yes
Remarks:		
M - 1	10.1	7ceh 6-13-12
eld Certification Signed		7ceh 6-13-12  Date

Monitor	ing Well ID:	MW	<b>6</b> Fac	ility: SBMU	J Sikeston P	ower Statio	n - Groundw	rater Monitori	ing				
ıtıal Wate	r Level (feet	btoc):	11.2	5		Date: 6	-/3-1	8					
itial Grou	utial Groundwater Elevation (NAVD88); Air Pressure in Well? Y / N  URGE INFORMATION												
ate:	(,-13-	N											
ame (San	nple Collect	ог):	Dillir	19 hai	m	4							
	Well Purge:		Perstaltic F			di <b>ć</b> ated Tub	ing?	D/ N					
me Purging Initiated: One (1) Well Volume (mL): NA													
eginning Water Level (feet btoc): 11.25 Total Volume Purged (mL): 3120													
eginning Groundwater Elevation (NAVD88): Well Purged To Dryness?													
/ell Total Depth (feet btoc): 37.71 Water Level after Sampling (feet btoc): /1. & 5													
(i.e., pump is off)													
aoing. Die	(i.e., pump is on)												
URGE STABILIZATION DATA  Oxidation													
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	(e.g., opacity color, odor)	,		
7900		420	14.57	411.7	0.78	6.65	-64.3	٧٥.١6	11.25	Red Flak	6		
1902	280	980	18.17	1180P	2,55	6.73	-65.6	13.21	11,25	M II			
2904	250	1480	17.83	391.1	0.51	6.73	-59-2	17.67	11.25	14 1/			
2906	282	2043	17.68	348.0	3.46	6.72	-45.6	12.66	11.25	11 11			
1908	273	2583	17.59	344.9		6.69	-43.7	13.24	11.25	LC 0	·		
7910	273	3420	17.59	345.4	حها ،ل	6.67	-442	13.84	11.04.3				
					-								
										·			
						-							

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	ell ID:	nw 6
mpling Informa	ation:						
/lethod of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Vater Level @ Sa		): 11.2	25				
Nonitoring Event:	Annual ( )	Semi-Annua		rly ( ) M	onthly ( )	Other ( )	
inal Purge Stabliz			• • •				
<u>Date</u> 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)
0913	270	17.59	345.u	0.43	6.67	-44.0	13.24
2 - HF scientific, i	libration log of da roll Multi-Probe F nc. Micro TPI Fie	ield Meter (Temp	erature, Specif	ing instruments: ic Conductance, Dissol <sup>,</sup>	ved Oxygen, pł	H, Oxidation Red	luction Potentia
3eneral Informat		C.		light diana	1		
Neather Condition	ns @ time of sam	pling: 30	nny, 51	light Bleez	<u>.e</u>		
	1.	ad Alako,	2400	) rC			,
nple Character		,	06010	(3)	•		
Sample Collection	Order:	Per SAP		<u> </u>			
Comments and O		,					
Collect	+ DUPI	icate		(*)			
P 1	, v		- 1 h	*			
	- Andrews						
Branches and							
certify that same	olina procedures v	were in accordar	nce with applical	ole EPA and State proto	ocols.		
			1			-	
9: 6-13-	18 By:	10400	1 Ense	Title	645	1-e CM	-

Page 2 of 2

# Monitoring Well Field Inspection

 Name (Field Staff):  Date: 6-13-18
Accessibility: Good Fair Poor
Well clear of weeds and/or debris?: Yes No
Well identification clearly visible?: Yes No
Remarks:
 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 Lamaged Damaged
Measurement Reference Point: Yes No
Remarks:
Dedicated Purging/Sampling Device: Type = ½ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?; Yes Vo
Remarks:

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitori	ing Well ID:	MW	7 Facil	ity: SBMU	l Sikeston Po			ater Monitori	ing			
ıtıal Water	Level (feet	btoc):	1.75			Date:	-13-	18				
itial Groundwater Elevation (NAVD88): Air Pressure in Well? Y / N												
JRGE INFORMATION ate: 6-13-18 ame (Sample Collector): 0 0:11ing ham												
ethod of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing?												
me Purging Initiated: 1041 One (1) Well Volume (mL): NA												
eginning Water Level (feet bloc): 9.75 Total Volume Purged (mL): 7723												
•		r Elevation (N	AVD88):		We	II Purged To	Dryness?		Y / (1)			
-		_		1	Wa	ter Level af	ter Sampling	(feet btoc):	9.7	5		
Vell Total Depth (feet btoc): 37.04   Water Level after Sampling (feet btoc):   (i.e., pump is off)   Time Sampling Completed:   1/2/1												
URGE ST	ABILIZATIO			0 %	Dissolved		Oxidation		Water	Notes		
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Oxygen (mg/L)	pH (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Level (feet btoc)	(e.g., opacity, color, odor)		
043		450	22.53	7 23.4	0.54	6:94	-106.1	53.79		orange flaka		
045	250	900	19.65	776.4	2,45	7.02	-106.1	148.9	9.75	11		
047	250	1422	18.79	788.1	2.38	7.06	-105.4	14.49	9.75	11 0		
049	250	1900	18.53	791.8	3.35	7.08	-103.9	12.80	9.75	(1 V		
051	270	2440	18.44		5.32	7.09	102.9	15.45	9.75	11 "		
053	247	2452	18.36	794.2	0.35	7.12	-102.3	7.45	9.75	( V		
	242	3400	18.34	742.9		7.10	-101.9		9.75	11 7,		
		3900	17.35			7.10	-122.9		9.75	15 21		
,		4862	18.34		3.25	7.11	-100,5		9.75	11 1/		
103	250		18.36	792.6	2.25	7.11	-1003		9.75	Clear		
1105	240	5842	18.35		2.25	7.11	-99.8		9.75	clear		
107	220	6280	18.29		2.25	7.11	-99.5	A	9.75	clear		
109		6760	18.30	7910	J. 25 J. 24	7.11	-99.1	5.36	9.75	clear		
111	243	1200	18.34	793.3	0.22	7.11	-99.2		9.15	clear		
113	243		18.54		3.23	7.11	-99.1	4.80	9.75	clear		
			,									

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring V	Vell ID: M	W8
mpling Informa	ation:						
/lethod of Samplin	g: Low Flow -	Perstaltic Pump	o & Tubing			Dedicated:	(Y) / N
Vater Level @ Sa	mpling (feet btoc)	9.7	5				
Nonitoring Event:	Annual ( )	Semi-Annua	al ( Quarte	rly ( ) N	nonthly ( )	Other ( )	
inal Purge Stabliz	ration Sampling [	Data:					22
<u>Date</u> 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)
6-13-18	242	18.54	788.6	0.23	7.11	-99.1	4.80
nstrument Calibuse instrument ca 1 - In-Situ SmarTuse - HF scientific, in 3- HF scientific, in	libration log of da roll Multi-Probe F nc. Micro TPI Fie	ield Meter (Tem ld Portable Turb	perature, Specifi idimeter	ic Conductance, Disso		oH, Oxidation Rec	duction Potentia
Veather Condition		pling: SV	nny, S	115h+ B2	REZR		
nple Character	istics: Y	ellor F	lake, a	odorless			
Sample Collection	Order:	Per SAP					
Confinents and Ol		e14 B/C	ink :	,			
		, 100 ·			(41)	2 1/2	/
	h .	1.					
<u> </u>				1)	a		
			Ē	2 4		A	
	157						
				.1	1	£.	П
	90		(4)			(å)	
8			9				
certify that samp		were in accordant	Casel	ole EPA and State pro	tocols. e: <u>Lab</u>	Tech	

Page 2 of 2

								Field Instr						0					
	Facility:	SBMU SPS	CCR G	roun	dwater Sam	pling				Calib	brated by: _	_	Ashish	Pa-	fe	2			
	Field Instr	uments:	In-Situ	sma	rTROLL Fie	ld Meter					HF scientifi	c, iı	nc. Micro TPI Fie	eld Portable Tur	bid	imeter			
		S/N #:			424				SIN#: 201607.366										
	Date	ments (µS/cm) (µS/c							ctance Oxidation Reduction Potential Potential Standard (mV)  Measurement			Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)			Turbidity Standards (NTU)	'	Turbidity Measurements (NTU)	
			4.00	=	4.00				Temperature (°C)	=	23.17			Temperature (°C)	=	22.64	0.02	=	0.02
of Day	6-13-		7.00	=	7.00					TOWN IN THE	Andrews - Con-			Tap Water Source	=	Sikes to	10.0	=	10.0
Beginning of Day Calibration	17	0716	10.00		10. 2	1413	=	1414.5	Standard (mV)	=	224	0	229.2	Barometric Pressure (mm/Hg) Measurement	=	1003.6	1000	=	1000
			4.00	=	4.09				Temperature (°C)	= 4	23.55			Temperature (°C)	=	24.39	0.02	=	0.01
Check	6-13-4	12.2	7.00	=							- TI		_	Tap Water Source	=	CITY	10.0	=	9.93
End of Day Check	18	<i>6</i> √3	10.00	=	10,03	1413	=	1378.	Standard (mV)	= 4	ब्र <i>च</i> ्	=	27.5	Barometric Pressure (mm/Hg)	=	1023.9	1000	=	1009
														Measurement	_	(0).6			
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.																		

Date: 6-13-18

By: ASL31

Page:

Field Sampling Notes – November 26, 2018

# **Monitoring Well Field Inspection**

Facility: SBMU SPS - CCR Groundwater Monitoring  Monitoring Well ID: MW 3.  Name (Field Staff): A Partel D Dillingham  Date: 11 = 26 = 12
Date: 11 - 26 - 18 Access:
Accessibility: Good Fair Poor Poor
Well clear of weeds and/or debris?: Yes No
Well identification clearly visible?: Yes No
Remarks:
Concrete Pad:  Condition of Concrete Pad:  Good L 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 V 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 Vo No
Remarks:
Dedicated Purging/Sampling Device: Type = ½ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good L Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes <a href="mailto:Yes">Yes</a> No
Remarks:
Field Certification 152:52 /2 tel 104 Tech 11-26-18
Field Certification /5/1/2/2/2/200   1/2/5/200   1/2/5/200

Monitor	Monitoring Well ID: MW 3 Facility: SBMU Sikeston Power Station - Groundwater Monitoring  Date: 11 - 26 - 18													
Initial Wate	r Level (feet	btoc):/	2.92			Date: //	-26-1	8						
Initial Groun	ndwater Elev	vation (NAVD	88):			Air Pressur	e in Well?	Y /(N)						
PURGE IN	ORMATIO													
Date:	11-2	6-18	<u> </u>	1 4 4 1										
Name (San	nple Collecto	or): 0	1)111	ingh	arm		-3-50000			<u> </u>				
Method of \	Well Purge:	Low Flow	Perstaltic F	ump	Dec	licated Tub	ing?	Ŷ/ N			j			
Time Purgi	ng Initiated:	09	1/3		One	e (1) Well V	olume (mL)		NA		<u></u>			
Beginning \	Nater Level	(feet btoc):	12	.92	Tota	al Volume F	Purged (mL)		5360	,				
		r Elevation (N	AVD88):		We	li Purged T	o Dryness?		Y /(N)					
Well Total Depth (feet btoc): 36.99 Water Level after Sampling (feet btoc): 12.92														
(I.e., pump is on)														
Casing Dia	meter (leet)	. 2 3611-40	71 40		Tim	e Sampling	Completed	l:	045	0				
PURGE \$1	TABILIZATIO	ON DATA					Oridation							
Time	Purge Rate	Cumulative Volume	Temp	Specific Conductance	Dissolved Oxygen	pΗ	Oxidation Reduction	Turbidity	Water Level		Notes , opacity,			
	(mL/min)	(mL)	(°C)	(µS/cm)	(mg/L)	(S.U.)	Potential (mV)	(NTU)	(feet btoc)	cold	or, odor)			
0915		320	16.56	197.7	1.07	6.46	123.1	29.61	12.92	Red F	1010,000			
0917	280	880	15.80	<b>/</b> 03.2	0.73	6.40	96.7	23.85	12.92		' '/			
09/9	242	1360	15.53	198.0	0.64	6.39	86.0	39,ريد	12.92	88				
2921	250	1860	15.39	198.2	0.61	6.40	79.9	13.79	12.92	9.0				
0653	260	2380	15.30	1968	0.53		74.1	14.03	12,42	4	17			
0925	240	2860	15.23	195.9	0.52	6.44	73.4	6.91	12.92	88	17			
0927	260	3380	15.16	195.1	0.48	6.45	64.5	4.80	12.42					
0929	250	3880	15.12	196.5	0.49	6.46	58.7	4.14	42.92	60				
0931	260	4400		195.4	0.45	6.48	55.1	2.46	12.92	100	17			
0933	250	4900	15.03	195.2	0.44	6.49	51.1	2.53	17'07	88	17			
0935	230	5360	15.05	194.9	0.47	6.50	49.8	2.23	12.92	**				

Facility:	SBMU Sikeston	Power Station - (	CCR Groundwa	ter Monitoring	Monitoring We	elf ID: M	w 3			
Sampling Informa	ation:									
Method of Samplin	ig: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N			
Water Level @ Sa	mpling (feet btoc)	12.92								
Monitoring Event:	Annual ( )	Semi-Annual	() Quarte	rly ( ) Mo	onthly ( )	Other (V				
Final Purge Stabliz	zation Sampling D	ata:			1	Oxidation				
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Reduction Potential (mV)	Turbidity (NTU)			
0935	230	15.05	194.9	0.47	6.50	49.8	2.23			
See instrument ca 1 - In-Situ SmarT	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 Potentia  2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter									
Weather Condition				windy						
Sample Character	ristics:	red Fli	aks, 1	10 odor,	Coloria	235				
Sample Collection	Order:	Per SAP								
Comments and O	observations:  2+ Fie  407+12	Fiek b	nk (B	achdoung	sampl	e) (APP	TV)			
0957	is ste			battle samp	K) (AP	P IIL)				
4										
	-			ble EPA and State proto						
Date: 11-26	5-18 By: A	eshi31	Pase	Title	Lus	72Ch				
			Pag	je 2 of 2						

Prepared by: GREDELL Engineering Resources, Inc.

#### **Monitoring Well Field Inspection**

Facility: SBMU SPS – CCR G  Monitoring Well ID:	WIL	
Name (Field Staff): A Po	HU D DI	Imgrium
Access:		
Accessibility: Good L	Fair	Poor
Well clear of weeds and/or debri		
Well identification clearly visible	?: Yes <u>L</u>	No
Remarks:		
Concrete Pad: Condition of Concrete Pad:	Good	Inadequate
Depressions or standing water a	around well?: Yes _	No <u>~</u>
Remarks:		
Protective Outer Casing: Materia	al = 4" x 4" Steel Hing	ed Casing with Hasp
Condition of Protective Casing:	Good <u>~</u>	Damaged
Condition of Locking Cap:	Good	Damaged
Condition of Lock:	Good	Damaged
Condition of Weep Hole:	Good <u>L</u>	Damaged
Remarks:		
<u>Well Riser</u> : Material = <u>2" Diameter, S</u>	chedule 40 PVC, Flus	h Threaded
Condition of Riser:	Good <u>L</u>	Damaged
Condition of Riser Cap:	Good <u>L</u>	Damaged
Measurement Reference Point:	Yes	No
Remarks:		
<u>Dedicated Purging/Sampling Device</u> :	Type = <u>¼ " ID Semi-R</u> <u>Silicone Tubine</u>	ligid Polyethylene & 0.170" ID Flexible
Condition: Good	Damaged	Missing
Remarks:		
Monitoring Well Locked/Secure	d Post Sampling?:	Yes No
Remarks:		
Field Certification All Pag-	es Crest 2	601 11-56-18
Signed	Title	Date

Monitori	ing Well ID:	Mh	/ U Faci	lity: SBML	J Sikeston P	ower Statio	n - Groundw	ater Monitor	ing			
Initial Water	Level (feet	btoc):	11.8	9		Date:	11-2	6-18				
Initial Grour	ndwater Elev	vation (NAVD	88):		minor dores	Air Pressu	re in Well?	YIN				
PURGE IN											_	
Date:		26-18	^ '	.1 1	4							
Name (Sam	ple Collecto	or):	O1	llingh	am							
Method of V	Vell Purge:	Low Flow	Perstaltic F	ump	De	dicated Tub	oing? (	Y) / N				
Time Purging Initiated: One (1) Well Volume (mL): NA												
Beginning Water Level (feet btoc): 11.85 Total Volume Purged (mL): 30 60												
Beginning Groundwater Elevation (NAVD88): Well Purged To Dryness?												
Well Total I	Well Total Depth (feet btoc): 37.25 Water Level after Sampling (feet btoc): 11.85											
Casing Dia	meter (feet)	2" Sch 40	) PVC				e., pump is o		1512	)		
					Fin	ne Samplin	g Completed	ı;	10 7 -			
PURGE ST	ABILIZATION Purge	ON DATA  Cumulative		Specific	Dissolved		Oxidation		Water	Notes	MACT	
Time	Rate	Volume	Temp (°C)	Conductance (µS/cm)	Oxygen (mg/L)	pH (S.U.)	Reduction Potential	Turbidity (NTU)	Level (feet btoc)	(e.g., opacity, color, odor)	'	
1773.3	(mL/min)	(mL)	11.85	<i>513.</i> 7	1,43	7.36	(mV) -95.1	1.64		Clear 10	~	
1434	230	760	14.44		3,95	7.35	-99.8	0.81	11.85	11	(/	
1436	220	1200	15.34	417.2	2.78	7.35	-100,7	1.96	11.75			
1438	230	1660	15.77	475.4	2.6.0	7.35	-101.9	1.02	11.85	(1 1		
1440	220	2100	15.96			7.35	-120,0	1.72	11.85		,-	
1442	250	2565	16.06	468.0	0.55 2.53	7.36	-102.5	1.06	11.85	11	ŧ,	
1444	<b>2</b> 30	3060	14.07		7107	(130	(O (1)	7.01				
ļ												
					And the state of t							
					1	1		1				

Facility:	SBMU Sikeston	Power Station - (	CCR Groundwa	ter Monitoring	Monitoring We	ell ID:	W 6
Sampling Informa	ition:	200					
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing	and the second s		Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	11.8	'S_				
Monitoring Event:	Annual ( )	Semi-Annua	I() Quarte	rly ( ) Mo	onthly ( )	Other (V)	
Final Purge Stabliz	ation Sampling D	ata:					
<u>Date</u> 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)
॥·२६-।४ ।५५५	250	16.57	468.0	0.53	7.36	-101.8	1.01
Instrument Calibi See instrument ca 1 - In-Situ SmarTi 2 - HF scientific, i	libration log of da roll Multi-Probe Fi	eld Meter (Temp	erature, Specif	ing instruments: c Conductance, Dissolv	ed Oxygen, pl	I, Oxidation Red	uction Potentis
General Informat Weather Condition		pling:	udy, v	vindy			
Sample Character	ristics:	eur od	Me 35	Coloross	ı		К
Sample Collection		Per SAP					
Comments and O		Dupli	cutt (	3 bottle 0	uplica)	e) (A11	IV)
-1612	e 15 Wh D	Da - 2 1		5,000	Δ00 TII	- )	
	s time	Lina D	× 2 Lat	Sumple (		<del>-</del> /	
IXII	12 Cue	TIME OF	N & 701	+16			
I certify that same	oling procedures v	vere in accordar	ice with applical	ole EPA and State proto	ocols.		
-				Title		Tech	
Date:	1 0 By:	1704.35	1477	Ittle		1404	

Page 2 of 2

#### **Monitoring Well Field Inspection**

Facility: <u>SBMU SPS –</u> Monitoring Well ID:	MW 5	
Name (Field Staff): A		Dillingham
Date. IT AS 18		
Access: Accessibility:	Good	Fair Poor
Well clear of weeds and	/or debris?: Yes 上	No
Well identification clear	y visible?: Yes <u>L</u>	No
Remarks:		
Concrete Pad: Condition of Concrete F	ad:	Good Inadequate
Depressions or standing	y water around well?:	Yes No <u>\( \nu \)</u>
Remarks:		
Protective Outer Casing:	Material = $4" \times 4"$ Ste	eel Hinged Casing with Hasp
Condition of Protective	Casing: Good	Damaged
Condition of Locking Ca	ip: Good 🔽	Damaged
Condition of Lock:	Good L	Damaged
Condition of Weep Hole	: Good <u> </u>	Damaged
Remarks:		
Well Riser: Material = 2" Dia	meter, Schedule 40 PV	/C, Flush Threaded
Condition of Riser:	Good 🖊	Damaged
Condition of Riser Cap	Good $ u$	Damaged
Measurement Reference	e Point: Yes	No
Remarks:		
Dedicated Purging/Sampling	Device: Type = ½ " ID S Silicone	Semi-Rigid Polyethylene & 0.170" ID Flexible e Tubing
Condition: Good	Damaged	Missing
Remarks:		
Monitoring Well Locked	//Secured Post Samplin	ng?: Yes No
Remarks:		
Field Certification Ashish	Parel Le	26 Tech 11-26-18 Title Date
Signed		Title Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitor	ing Well ID:	MW	5 Faci	lity: SBMU	J Sikeston Pe	ower Statio	n - Groundv	ater Monito	ring	
Initial Wate	r Level (feet	btoc):	1.60	+		Date:	11-2	6-1-8		
		vation (NAVD			-	Air Pressur	re in Well?	YIE		
PURGE IN	FORMATIO	N								
Date:	11-	26-17								
Name (San	npie Collecte	or):	011	ling	NAM					
Method of	Well Purge:	Low Flow	Perstaltic F	ump	Dec	dicated Tub	oing?	Y)/ N		
Time Purgi	ng Initiated:		124		One	e (1) Well V	/olume (mL)	•	NA	
Beginning '	Water Level	(feet btoc):	11.	G4	Tota	al Volume l	Purged (mL)		3000	)
Beginning (	Groundwate	r Elevation (N	AVD88):		We	ll Purged T	o Dryness?		Y / 🕥	
Well Total	Depth (feet l	btoc):	37.10	6	Wa			g (feet btoc)	11.0	54
Casing Dia	meter (feet)	: 2" Sch 40	) PVC			,	e., pump is o	·		1
					Tim	ne Sampling	g Completed	l:		<u> </u>
PURGE ST	TABILIZATIO						Oxidation			NI-4
Time	Purge Rate	Cumulative Volume	Temp (°C)	Specific Conductance	Dissolved Oxygen	pH (S.U.)	Reduction Potential	Turbidity (NTU)	Water Level	Notes (e.g., opacity,
l	(mL/min)	(mL)		(µS/cm)	(mg/L)		(mV)	1 29	(feet btoc)	color, odor)
1126	211.0	750 750	11.52	287.8	1.35	6.68	-13.1	2.28	11.64	Clear oder
1130	213	1200	14.29	852.4	2.76	6.10	-22.8	0.38	11.64	u u
1132	230	1660	14.58	227.8	0.67	6.71	-24.4	0.36	11.64	11
1134	245	2150	14.72	834.5	0.59	6.72	-25.7	2.36	11.64	11
1136	225	2500	14.72	75-7-1	0.54	G .73		2,34	11.64	" "
1138	200	3000	14.70	836.4	ఎ.51	6.74	-27.3	0.37	11.64	, , , , , , , , , , , , , , , , , , ,
									***	
										<u></u>
*	-	<del> </del>		<del></del>			t			

Facility:	SBMU Sikeston	Power Station - (	CCR Groundwa	ter Monitoring	Monitoring We	ell ID: MI	W 5
Sampling Informa	tion:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	Y / N
Water Level @ Sa	mpling (feet btoc)	11.64	<del>t</del>				
Monitoring Event:	Annual ( )	Semi-Annual	() Quarte	rly ( ) Mo	onthly ( )	Other (L)	
Final Purge Stabliz	ation Sampling D	ata:					
<u>Date</u> 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)
11-26-11	200	14.90	836.4	0.51	6.74	-27.3	0.37
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	libration log of da oll Multi-Probe Fi	eld Meter (Temp	erature, Specifi	ng instruments: c Conductance, Dissolv	red Oxygen, pH	I, Oxidation Red	uction Potentia
General Informat	ion:		- 1				
Weather Condition	ns @ time of sam	oling: <u>C1</u>	ONGA,	windy			
Sample Character	istics:	ar, o	dorles.	s, colores	5		
Sample Collection	Order:	Per SAP					
Comments and O	bservations:	ottle	Field	blank (A	99 111)		
-1153	is star	+ time		APP III			
-1177		+i m?	on r	,(1, 717			
1197	is eng	71111					
					<del></del>		
			=				
	· #1	Е.					
I and the state of	ding property or	vara in accorden	oo with applicat	ale EDA and State prote	ools '		
•			ce with applican	ole EPA and State proto	1 1	T-01	
Date: 11-26	Ву:	コント・フト	10400	Title:	Las	Leva	

Page 2 of 2

# **Monitoring Well Field Inspection**

Facility: SBMU SPS – CCR Groundwater Monitoring  Monitoring Well ID: MW 6  Name (Field Staff): A Part D Dilling ham
Date: 11-26-18
Accessibility: Good Fair Poor
Well clear of weeds and/or debris?: Yes No 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 L 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 = ½ " ID Semi-Rigid Polyethylene & 0.170"  D Flexible Silicone Tubing
Condition: Good Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes V
Remarks:
Field Certification Bhish leter Lab Tech 11-26-17 Signed Title Date

Monitor	ing Well ID:	MW	G Faci	lity: SBML	J Sikeston P	ower Statio	n - Groundw	ater Monitor	ing		
Initial Wate	r Level (feet	btoc):	2.81			Date:	1 - 2	-18			
Initial Grou	ndwater Elev	vation (NAVD	88):			Air Pressu	re in Well?	Y / W			
PURGE IN											
Date:	111-	26-17									
Name (San	nple Collecto	or):	Dill	ingh	c M						
Method of \	Well Purge:	Low Flow	Perstaltic F	Pump	Dec	dicated Tub	oing? (	Y) / N			
Time Purgi	ng Initiated:		1015		On	e (1) Weil \	/olume (mL)	:	NA		-
Beginning \	Water Level	(feet btoc):	10	1.81	Tot	al Volume	Purged (mL)		28 पर	)	
Beginning	Groundwate	r Elevation (N	IAVD88):		We	II Purged T	o Dryness?		Y /(N)		i e
Well Total	Depth (feet l	btoc):	37.7	5	Wa		fter Samplinge., pump is o	g (feet btoc): off)	12.	31	-
Casing Dia	meter (feet)	2" Sch 40	PVC		Tin		g Completed	-	104	<u> </u>	_
PURGE ST	TABILIZATIO	ON 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	Turbidity (NTU)	Water Level (feet btoc)	Note (e.g., op color, c	pacity,
10.00	(1112/11/11)		10 65	**		6.69	(mV)	2 (2	12.81	CIENT	113
1017	063	460	13.50	442.6	(1674)		-53.0	4.86	(2.81	CIEN,	320
1019	250	960	14.49	42.6	1.07	6.74	-51.6		(2.81	11	1,
1021	233	1420	14.87	400.1	1.09	6.73	-45.4	2.09		11	1
1023	553	1800	14.98	-	1.06	_		2.59	12.81	11	11
1025	250	2363	15.03	379.8	0.98	6.72	-38.6	7. GG	12.81	11	1,
1027	240	2840	15.04	3.2.3	.07	6.72	80.0	7.00	12101		
							1				
1											
1											
		1	1	1		1			1		

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station - (	CCR Groundwa	ter Monitoring	Monitoring We	IIID:	1W6
Sampling Informa	tion:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	12. 2	31				
Monitoring Event:	Annual ( )	Semi-Annua	I() Quarte	rly ( ) Mo	onthly ( )	Other (	
Final Purge Stabliz	ation Sampling C	ata:	-a			Louidation	
<u>Date</u> 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)
11-26-18	240	15.04	375.3	1.07	6.12	-37.6	1.66
Instrument Calibi See instrument ca 1 - In-Situ SmarTi 2 - HF scientific, in	libration log of da roll Multi-Probe Fi	eld Meter (Temp	perature, Specifi	ing instruments: ic Conductance, Dissolv	red Oxygen, pH	, Oxidation Red	uction Potentia
Weather Condition	ns @ time of sam	pling: <u>C</u>	ordy,	mindy			
Sample Character	ristics:	ear o	Lorless,	coloness			
Sample Collection		Per SAP			***		113/17
Comments and O		-	Plica R	(Regular	sample:	(APP	711_)
-1047	is Regu		nple c	tart colle	ting ti	me (Al	PA)
	F				Account Control		
I certify that samp	oling procedures v	were in accordar	0	ble EPA and State proto			
Date: 11-24	6-10 By: _	Ashin	Pag	Title:	Lab	TRCH	

Prepared by: GREDELL Engineering Resources, Inc.

# **Monitoring Well Field Inspection**

Facility: SBMU SPS – CCR Groundwater Monitoring Monitoring Well ID: Name (Field Staff): A Pate   D Dillit	
Date: 1/-26-13	
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 U
Remarks:	
Protective Outer Casing: Material = 4" x 4" Steel Hing	ed 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, Flus	sh Threaded
Condition of Riser: Good	Damaged
Condition of Riser Cap: Good	Damaged
Measurement Reference Point: Yes	No
Remarks:	* **
Dedicated Purging/Sampling Device: Type = ½ " ID Semi-R Silicone Tubing	Rigid Polyethylene & 0.170" ID Flexible
Condition: Good Damaged	Missing
Remarks:	
Monitoring Well Locked/Secured Post Sampling?:	Yes No
Remarks:	
Field Certification Ashish Paper Loss Signed Title	Tech 11-26-18 Date

Monitori	ing Well ID:	MW	8 Facil	lity: SBMU	Sikeston Po	wer Station	n - Groundw	ater Monitor	ing		
Initial Water	r Level (feet	btoc):	3.80			Date:	11-26	-18			
,		ration (NAVD		*		Air Pressur	e in Well?	Y / 🕦			
PURGE INF	The second secon	26-19	0.11	• • • •							
Name (Sam	nple Collecto	or):	UIL	ingh	um	· · · · · · · · · · · · · · · · · · ·				in the state of th	
Method of V	Well Purge:	Low Flow	Perstaltic P	ump	Ded	licated Tubi	ing?	Y) N			
Time Purgir	ng Initiated:	12	151		One	(1) Well V	olume (mL):		NA		
Beginning \	Water Level	(feet btoc):	13	7.89	Tota	al Volume F	ourged (mL):	:	746	٥	
		r Elevation (N	AVD88):		We	ll Purged To	Dryness?		Y / N		
Well Total (			37.0	5		-	-	(feet bloc):	10.8	9	
	, ,	2" Sch 40				(i.e	e., pump is o	ff)			_
Casing Dia	meter (reet).	2 0011-10	71 70		Tim	e Sampling	Completed	:	1338		-
PURGE ST	ABILIZATIO	ON DATA					Ovidation				
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)	Not (e.g., o <sub>l</sub> color,	oacity, odor)
1253		342	11.24	731.9	1.18	7.07	-72.5	15.12	<del>-</del>	Yellon	Flora
1259	223	785	13.57	683.6	0.68	7.09	-80.3	25,50	10.89	11	٧
1257	200	1180	14.27	674.6	0.62	7.12	-81.8	14.66	10.89	11	
1259	213	1600	14,49	666.9		7./3	-80.1	16.56	13.89	"	"
1301	222	2040	14.72	669.5	0.58	7.15	-79.7	1.57	12.89		11
1303	250	2542	14.79	667.5	2.56	7.15	-33.6		13.89		11
1305	230	3000	14.82	667.7	0.53	7.16	-79.2		10.89	11	11
1307		3483	14.95		2.49	7.16	-78.9	6.76	10.89		()
1309		3980	14.96	666.8	3.43	7.17	-78.5 -78.9	4.85	13.89	11	()
1311	253	4983	15.03	665.7	2.47	7.17	-70.1	6.03	13.89	11	27
13/3	253	5460	14.99	664.4	2.49	7.17	-79.2	3.63	13.89		11
1315	242			663.7	2 /1/	7.18	-78.8	7.11	13.89	Clear.	
1317	252	5963	15.06		0.43	7.18	-78.4	3.74	10.89	11	1)
1319		6975	19.06	662.7	0.38	7.17	-77.7	3.69	13.89	11	**
1321	260	7463	15.08	6621	3.35	7.17	-77.6	2.88	10.89	"	11
1720	240	17700	13.08	(2 Dec)	7.35	10.17			1 7		
									<del>                                     </del>		
1			-				<del> </del>			1	

Facility:	SBMU Sikeston	Power Station - (	CCR Groundwa	ter Monitoring	Monitoring We	HID: M	W8
Sampling Informa	ition:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	10.8	9				
Monitoring Event:	Annuai ( )	Semi-Annua		rly ( ) Mo	nthly ( )	Other ( )	
Final Purge Stabliz	ration Sampling C	ata:				1 - 2 - 1 - 1	
<u>Date</u> 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)
13 23	24)	15.58	662.1	0.35	7.17	-77.6	2,88
Instrument Callbri See instrument ca 1 - In-Situ SmarTi 2 - HF scientific, i	libration log of da roll Multi-Probe F	ield Meter (Temp	erature, Specifi	ing instruments: ic Conductance, Dissolv	ed Oxygen, pl	I, Oxidation Red	uction Potentia
Weather Condition	ns @ time of sam		•	windy			
Sample Character	ristics: Y	ellon P	10 KD 1	10 04AT, CO	250/10/10		
Sample Collection	Order:	Per SAP					
Comments and O	bservations:						
-1338		7 time	Per 2 6	HK (API	711)	· · · · · · · · · · · · · · · · · · ·	
-1343	is end	71 Mile	- 74		1		
e 1		N .					16
	*						
I certify that sam	pling procedures	were in accordar	nce with applicat	ble EPA and State proto	cols.		
Date: 11 726	-18 By:	Ashish	late	Title:	Lery	Tech	
	•		Pag	e 2 of 2			

Prepared by: GREDELL Engineering Resources, Inc.

Field Instrumentation Calibration Log

Calibrated by: 45232

Facility: SBMU SPS CCR Groundwater Sampling HF scientific, Inc. Micro TPI Field Portable Turbidimeter In-Situ smarTROLL Field Meter Field Instruments: SIN#: 201607366 S/N#: 474247 Oxidation Specific Specific **Turbidity** Turbidity Reduction Dissolved Oxygen pН **Oxidation Reduction Potential** Conductance Conductance Standards Measurements pН **Potential** Measure-(%) Time Date Standard (mV) Standard Measurement (NTU) Standards (NTU) Measurement ments (µS/cm) (µS/cm) (mV) Temperature Temperature 22,43 20.84 0.02 0.02 4.00 4.00 (°C) Beginning of Day Calibration SINCE 111-56 Tap Water 12.3 10.0 7.00 7.00 City Source 0806 229.3 = 1413.5 229 1413 Barometric 2018 Standard = 1333.9 Pressure (mV) 1000.3 1000 (mm/Hg) 10.00 10.00 100.0 Measurement 3.04 Temperature Temperature 19.62 0.02 4.07 4.00 (°C) End of Day Check 10.05 11-26-Tap Water 10.0 7.06 231.0 7.00 Source 1350 2018 1294.2 Barometric 1413 Standard 989.8 Pressure 9.98 (mV) 1000 (mm/Hg) 10.00 101.6 Measurement

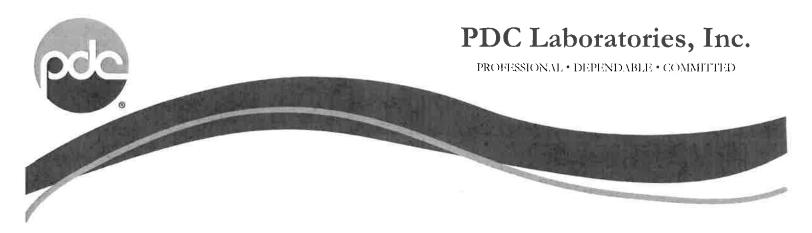
The Multi-Probe Field Meter measures Temperature, Specific Conductance. Dissolved Oxygen. pH, and Oxidation Reduction Potential.
The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.
Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.
I certify that the aforementioned meters were calibrated within the manufacturers specifications.
Date: 11-26-17 By: 125hish Pater

Notes

# **Appendix 2**

Laboratory Analytical Results

Laboratory Analytical Results – June 13, 2018



June 25, 2018

Mark E. McGill Sikeston BMU, Sikeston Power Station 1551 W Wakefield Sikeston, MO 63801

#### Dear Mark E. McGill:

Please find enclosed the analytical results for the sample(s) the laboratory received on 6/15/18 10:00 am and logged in under work order 8062892. All testing is performed according to our current TNI certifications 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 Vice President, John LaPayne with any feedback you have about your experience with our laboratory.

Sincerely,

Kurt Stepping

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





#### PDC Laboratories, Inc.

2231 West Altorfer Drive Peoria, IL 61615 (800) 752-6651

#### **ANALYTICAL RESULTS**

Sample: 8062892-01

Name: MW-3

Matrix: Ground Water - Grab

Sampled: 06/13/18 08:34

Received: 06/15/18 10:00

Parameter	Result	Unit	Qualifier Prepared	Analyzed	Analyst	Method
Anions - PIA						
Chloride	1.3	mg/L	06/18/18 13:58	06/18/18 13:58	LAM	EPA 300.0
Fluoride	0,291	mg/L	06/18/18 13:58	06/18/18 13:58	LAM	EPA 300.0
Sulfate	17	mg/L	06/18/18 14:17	06/18/18 14:17	LAM	EPA 300.0
General Chemistry - PIA						
Solids - total dissolved solids (TDS)	130	mg/L	06/20/18 12:00	06/20/18 13:34	SAH	SM 2540C
Total Metals - PIA						
Boron	23	ug/L	06/20/18 14:05	06/21/18 07:35	JMW	SW 6020
Calcium	20000	ug/L	06/20/18 14:05	06/21/18 11:07	JMW	SW 6020

Sample: 8062892-02

Name: MW-4

Matrix: Ground Water - Grab

Sampled: 06/13/18 12:48

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	14	mg/L		06/18/18 14:54	06/18/18 14:54	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		06/18/18 14:35	06/18/18 14:35	LAM	EPA 300.0
Sulfate	86	mg/L		06/18/18 14:54	06/18/18 14:54	LAM	<b>EPA</b> 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	290	mg/L		06/19/18 13:22	06/19/18 14:07	SAH	SM 2540C
Total Metals - PIA							
Boron	1200	ug/L		06/20/18 14:05	06/21/18 07:46	JMW	SW 6020
Calcium	80000	ug/L		06/20/18 14:05	06/21/18 11:18	JMW	SW 6020



#### PDC Laboratories, Inc.

2231 West Altorfer Drive Peoria, IL 61615 (800) 752-6651

#### **ANALYTICAL RESULTS**

Sample: 8062892-03 Name:

MW-5

Matrix: Ground Water - Grab

Sampled: 06/13/18 10:05

Received: 06/15/18 10:00

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	11	mg/L		06/18/18 15:30	06/18/18 15:30	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		06/18/18 15:12	06/18/18 15:12	LAM	EPA 300.0
Sulfate	240	mg/L		06/19/18 23:06	06/19/18 23;06	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	480	mg/L		06/19/18 13:22	06/19/18 14:07	SAH	SM 2540C
Total Metals - PIA							
Boron	370	ug/L		06/20/18 14:05	06/21/18 07:49	JMW	SW 6020
Calcium	130000	ug/L		06/20/18 14:05	06/21/18 11:22	JMW	SW 6020

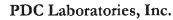
Sample: 8062892-04

MVV-6 Name:

Ground Water - Grab Matrix:

Sampled: 06/13/18 09:10

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method	
Anions - PIA								
Chloride	2.3	mg/L		06/18/18 15:49	06/18/18 15:49	LAM	EPA 300.0	
Fluoride	< 0.250	mg/L		06/18/18 15:49	06/18/18 15:49	LAM	EPA 300.0	
Sulfate	32	mg/L		06/18/18 16:44	06/18/18 16:44	LAM	EPA 300.0	
General Chemistry - PIA								
Solids - total dissolved solids (TDS)	160	mg/L	М	06/19/18 13:22	06/19/18 14:07	SAH	SM 2540C	
<u>Total Metals - PIA</u>								
Boron	43	ug/L		06/20/18 14:05	06/21/18 07:53	JMW	SW 6020	
Calcium	41000	ug/L		06/20/18 14:05	06/21/18 11:25	JMW	SW 6020	





#### **ANALYTICAL RESULTS**

Sample: 8062892-05

Sampled: 06/13/18 11:13

MW-8 Name:

Received: 06/15/18 10:00

Matrix: Ground Water - Grab

Parameter	Result	Unit	Qualifier Prepared	l Analyzed	Analyst	Method
Anions - PIA						
Chloride	65	mg/L	06/18/18 17:	39 06/18/18 17:39	LAM	EPA 300.0
Fluoride	< 0.250	mg/L	06/18/18 17:	21 06/18/18 17:21	LAM	EPA 300.0
Sulfate	150	mg/L	06/18/18 17:	39 06/18/18 17:39	LAM	EPA 300.0
General Chemistry - PIA						
Solids - total dissolved solids (TDS)	430	mg/L	06/19/18 13:	22 06/19/18 14:07	SAH	SM 2540C
Total Metals - PIA						
Boron	520	ug/L	06/20/18 14:	05 06/21/18 07:57	JMW	SW 6020
Calcium	120000	ug/L	06/20/18 14:	:05 06/21/18 11:29	JMW	SW 6020

Sample: 8062892-06 Name: FIELD BLANK

Matrix:

Ground Water - Field Blank

Sampled: 06/13/18 00:00

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	< 1.0	mg/L		06/18/18 09:04	06/18/18 09:04	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		06/18/18 09:04	06/18/18 09:04	LAM	EPA 300.0
Sulfate	< 1.0	mg/L		06/18/18 09:04	06/18/18 09:04	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	< 17	mg/L		06/19/18 13:22	06/19/18 14:07	SAH	SM 2540C
Total Metals - PIA							
Boron	< 10	ug/L		06/20/18 14:05	06/21/18 08:01	JMW	SW 6020
Calcium	310	ug/L		06/20/18 14:05	06/21/18 11:33	JMW	SW 6020



#### PDC Laboratories, Inc.

2231 West Altorfer Drive Peoria, IL 61615 (800) 752-6651

#### **ANALYTICAL RESULTS**

Sample: 8062892-07

FIELD DUPLICATE

Sampled: 06/13/18 00:00

Name: Matrix:

Ground Water - Field Duplicate

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	2.5	mg/L		06/18/18 17:58	06/18/18 17:58	LAM	EPA 300.0
Fluoride	0.253	mg/L		06/18/18 17:58	06/18/18 17:58	LAM	EPA 300.0
Sulfate	33	mg/L		06/18/18 18:16	06/18/18 18:16	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	180	mg/L	М	06/19/18 13:22	06/19/18 14:07	SAH	SM 2540C
Total Metals - PIA							
Boron	42	ug/L		06/20/18 14:05	06/21/18 08:14	JMW	SW 6020
Calcium	44000	ug/L		06/20/18 14:05	06/21/18 11:44	JMW	SW 6020

Laboratory Analytical Results – November 26, 2018



December 07, 2018

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

Dear Luke St Mary:

Please find enclosed the analytical results for the sample(s) the laboratory received on 11/28/18 9:45 am and logged in under work order 8114353. All testing is performed according to our current TNI certifications unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

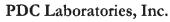
If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

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 Vice President, John LaPayne with any feedback you have about your experience with our laboratory.

Sincerely,

Kurt Stepping

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





#### **ANALYTICAL RESULTS**

Sample: 8114353-01 Name:

MW-3

Matrix:

Ground Water - Grab

Sampled: 11/26/18 09:50

Received: 11/28/18 09:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA					,		
Chloride	1.5	mg/L		11/29/18 18:19	11/29/18 18:19	arl	EPA 300.0
Fluoride	0.301	mg/L		11/29/18 18:19	11/29/18 18:19	arl	EPA 300.0
Sulfate	18	mg/L		11/29/18 18:38	11/29/18 18:38	arl	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	100	mg/L		12/03/18 14:15	12/03/18 15:21	BAH	SM 2540C
Total Metals - PIA							
Boron	23	ug/L		12/04/18 08:41	12/05/18 12:26	JMW	SW 6020
Calcium	17000	ug/L		12/04/18 08:41	12/05/18 12:26	JMW	SW 6020

Sample: 8114353-02

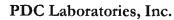
Name: MW-4

Ground Water - Grab Matrix:

Sampled: 11/26/18 15:12

Received: 11/28/18 09:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	8.8	mg/L		11/29/18 19:33	11/29/18 19:33	arl	EPA 300.0
Fluoride	< 0.250	mg/L		11/29/18 19:33	11/29/18 19:33	arl	EPA 300.0
Sulfate	54	mg/L		11/29/18 20:10	11/29/18 20:10	arl	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	260	mg/L		11/28/18 14:12	11/28/18 14:57	BAH	SM 2540C
<u>Total Metals - PIA</u>							
Boron	1100	ug/L		12/04/18 08:41	12/05/18 12:30	JMW	SW 6020
Calcium	64000	ug/L		12/04/18 08:41	12/05/18 12:30	JMW	SW 6020





#### **ANALYTICAL RESULTS**

Sample: 8114353-03

Name: MW-5

Matrix: Ground Water - Grab

Sampled: 11/26/18 11:53

Received: 11/28/18 09:45

Parameter	Result	Unit	Qualifier Prepared	Analyzed	Analyst	Method
Anions - PIA						
Chloride	17	mg/L	11/29/18 20:46	11/29/18 20:46	arl	EPA 300.0
Fluoride	< 0.250	mg/L	11/29/18 20:28	11/29/18 20:28	arl	EPA 300.0
Sulfate	230	mg/L	11/29/18 21:05	11/29/18 21:05	arl	EPA 300.0
General Chemistry - PIA						
Solids - total dissolved solids (TDS)	520	mg/L	11/28/18 14:12	11/28/18 14:57	ВАН	SM 2540C
Total Metals - PIA						
Boron	420	ug/L	12/04/18 08:41	12/05/18 12:34	JMW	SW 6020
Calcium	120000	ug/L	12/04/18 08:41	12/05/18 12:34	JMW	SW 6020

Sample: 8114353-04

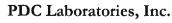
Name: MW-6

Matrix: Ground Water - Grab

Sampled: 11/26/18 10:47

Received: 11/28/18 09:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							"
Chloride	1.5	mg/L		11/29/18 21:23	11/29/18 21:23	arl	EPA 300.0
Fluoride	0.313	mg/L		11/29/18 21:23	11/29/18 21:23	arl	EPA 300.0
Sulfate	29	mg/L	Q4	11/29/18 22:18	11/29/18 22:18	arl	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	180	mg/L		11/28/18 14:12	11/28/18 14:57	BAH	SM 2540C
Total Metals - PIA							
Boron	46	ug/L		12/04/18 08:44	12/06/18 10:35	JMW	SW 6020
Calcium	36000	ug/L	Q4	12/04/18 08:44	12/06/18 17:13	TLH	SW 6020





#### **ANALYTICAL RESULTS**

Sample: 8114353-05

Name: MW-8

Matrix: Ground Water - Grab

Sampled: 11/26/18 13:38

Received: 11/28/18 09:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	45	mg/L		11/29/18 23:32	11/29/18 23:32	arl	EPA 300.0
luoride	< 0.250	mg/L		11/29/18 23:14	11/29/18 23:14	arl	EPA 300.0
Gulfate	100	mg/L		11/29/18 23:32	11/29/18 23:32	arl	EPA 300.0
eneral Chemistry - PIA							
olids - total dissolved solids (TDS)	320	mg/L		11/28/18 14:12	11/28/18 14:57	BAH	SM 2540C
otal Metals - PIA							
oron	500	ug/L		12/04/18 08:44	12/06/18 10:46	WML	SW 6020
alcium	94000	ug/L		12/04/18 08:44	12/06/18 17:21	TLH	SW 6020

Sample: 8114353-06

Name: FIELD DUPLICATE

Matrix: Ground Water - Field Duplicate

Sampled: 11/26/18 00:00

Received: 11/28/18 09:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	1.4	mg/L		11/29/18 23:50	11/29/18 23:50	arl	EPA 300.0
Fluoride	0.284	mg/L		11/29/18 23:50	11/29/18 23:50	arl	EPA 300.0
Sulfate	26	mg/L	Q4	11/30/18 00:46	11/30/18 00:46	arl	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	210	mg/L	М	11/28/18 14:12	11/28/18 14:57	BAH	SM 2540C
Total Metals - PIA							
Boron	46	ug/L		12/04/18 08:44	12/06/18 10:50	JMW	SW 6020
Calcium	43000	ug/L		12/04/18 08:44	12/06/18 17:23	TLH	SW 6020



# PDC Laboratories, Inc.

2231 West Altorfer Drive Peoria, IL 61615 (800) 752-6651

## **ANALYTICAL RESULTS**

Sample: 8114353-07

Name: FIELD BLANK

Matrix: Ground Water - Grab

Sampled: 11/26/18 00:00

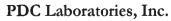
Received: 11/28/18 09:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	< 1.0	mg/L		11/30/18 01:04	11/30/18 01:04	апі	EPA 300.0
Fluoride	< 0.250	mg/L		11/30/18 01:04	11/30/18 01:04	arl	EPA 300.0
Sulfate	< 1.0	mg/L		11/30/18 01:04	11/30/18 01:04	arl	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	< 17	mg/L		11/28/18 14:12	11/28/18 14:57	BAH	SM 2540C
<u>Total Metals - PIA</u>							
Boron	< 10	ug/L		12/04/18 08:44	12/06/18 10:54	JMW	SW 6020
Calcium	< 100	ug/L		12/04/18 08:44	12/06/18 17:25	TLH	SW 6020

# **Appendix 3**

Laboratory Quality Assurance/Quality Control Data

Laboratory Quality Assurance/Quality Control Data – June 13, 2018

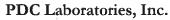




2231 West Altorfer Drive Peoria, IL 61615 (800) 752-6651

# QC SAMPLE RESULTS

				Spike	Source		%REC		RPD
Parameter	Result	Unit	Qual	Level	Result	%REC	Limits	RPD	Limit
Batch B812192 - IC No Prep - EPA 300.0				9					
Calibration Blank (B812192-CCB1)				Prepared &	Analyzed: 06	/18/18			
Fluoride	0.00	mg/L							
Chloride	0.00	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B812192-CCV1)				Prepared &	Analyzed: 06	/18/18			
Chloride	4.94	mg/L		5.000		99	90-110		
Sulfate	5.06	mg/L		5.000		101	90-110		
Fluoride	4.88	mg/L		5.000		98	90-110		
Matrix Spike (B812192-MS1)	Sample: 806289	2-06			Analyzed: 06				
Chloride	1.7	mg/L		1.500	ND	112	80-120		
Fluoride	1.54	mg/L		1.500	ND	103	80-120		
Sulfate	1.65	mg/L		1.500	ND	110	80-120		
Matrix Spike (B812192-MS2)	Sample: 806293			Prepared &	Analyzed: 06	/18/18			
Chloride	1.5	mg/L		1.500	ND	101	80-120		
Sulfate	1.56	mg/L		1.500	ND	104	80-120		
Matrix Spike (B812192-MS3)	Sample: 806293	9-10		Prepared &	Analyzed: 06	/18/18			
Chloride	1.5	mg/L		1.500	ND	98	80-120		
Sulfate	1.50	mg/L		1.500	ND	100	80-120		
Matrix Spike Dup (B812192-MSD1)	Sample: 806289	2-06		Prepared &	Analyzed: 06	/18/18			
Fluoride	1.60	mg/L		1.500	ND	107	80-120	4	20
Sulfate	1.66	mg/L		1.500	ND	111	80-120	0.5	20
Chloride	1.7	mg/L		1.500	ND	112	80-120	0.3	20
Matrix Spike Dup (B812192-MSD2)	Sample: 806293	39-09		Prepared &	Analyzed: 06	/18/18			
Chloride	1.5	mg/L		1.500	ND	100	80-120	0.7	20
Sulfate	1.55	mg/L		1.500	ND	104	80-120	0.09	20
Matrix Spike Dup (B812192-MSD3)	Sample: 806293	39-10		Prepared &	Analyzed: 06	/18/18			
Chloride	1.5	mg/L		1.500	ND	99	80-120	1	20
Sulfate	1.50	mg/L		1.500	ND	100	80-120	0.1	20
Batch B812221 - No Prep - SM 2540C									
Blank (B812221-BLK1)				Prepared &	Analyzed: 06	/19/18			
Solids - total dissolved solids (TDS)	< 17	mg/L							
Duplicate (B812221-DUP1)	Sample: 806289			Prepared &	Analyzed: 06	5/19/18			
Solids - total dissolved solids (TDS)	165	mg/L	M		155			6	5
Duplicate (B812221-DUP2)	Sample: 806289			Prepared &	Analyzed: 06	5/19/18			
Solids - total dissolved solids (TDS)	193	mg/L	М		183			5	5
Batch B812274 - IC No Prep - EPA 300.0									
Calibration Blank (B812274-CCB1)				Prepared 8	Analyzed: 06	5/19/18			
Sulfate	0.00	mg/L							
Calibration Check (B812274-CCV1)				Prepared 8	Analyzed: 06	5/19/18			
Sulfate	4.97	mg/L		5.000	_	99	90-110		
Matrix Spike (B812274-MS1)	Sample: 80631	54-01		Prepared 8	Analyzed: 06	5/19/18			
Sulfate	1.00E9	mg/L	Q4	1,500	15,1	NR	80-120		
Matrix Spike (B812274-MS2)	Sample: 80631	54-02		Prepared 8	Analyzed: 06	5/19/18			
Sulfate	5,59	mg/L	-	1,500	4.11	99	80-120		





2231 West Altorfer Drive Peoria, IL 61615 (800) 752-6651

## **QC SAMPLE RESULTS**

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
						.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Batch B812274 - IC No Prep - EPA 300.0									
Matrix Spike (B812274-MS3)	Sample: 806315	i <b>4-</b> 03		Prepared &	Analyzed: 06	/19/18			
Sulfate	1.00E9	mg/L	Q4	1.500	13.8	NR	80-120		
Matrix Spike Dup (B812274-MSD1)	Sample: 806315	54-01		Prepared &	Analyzed: 06	/19/18	•		
Sulfate	1.00E9	mg/L	Q4	1.500	15.1	NR	80-120	0	20
Matrix Spike Dup (B812274-MSD2)	Sample: 806315	54-02		Prepared &	Analyzed: 06	/19/18			
Sulfate	5.56	mg/L		1.500	4.11	97	80-120	0.4	20
Matrix Spike Dup (B812274-MSD3)	Sample: 806315	54-03		Prepared &	Analyzed: 06	/19/18			
Sulfate	1.00E9	mg/L	Q4	1.500	13.8	NR	80-120	0	20
Batch B812324 - No Prep - SM 2540C									
Blank (B812324-BLK1)				Prepared &	Analyzed: 06	/20/18			
Solids - total dissolved solids (TDS)	< 17	mg/L							
Duplicate (B812324-DUP1)	Sample: 806289	92-01		Prepared &	Analyzed: 06	/20/18			
Solids - total dissolved solids (TDS)	127	mg/L			130			3	5
Duplicate (B812324-DUP2)	Sample: 80631	54-01		Prepared &	Analyzed: 06	/20/18			
Solids - total dissolved solids (TDS)	445	mg/L	M		410			8	5
Batch B812336 - SW 3015 - SW 6020									
Blank (B812336-BLK1)				Prepared: 0	06/20/18 Anai	lyzed: 06/21/1	8		
Boron	< 10	ug/L							
Calcium	< 100	ug/L							
LCS (B812336-BS1)				Prepared: 0	06/20/18 Ana	lyzed: 06/21/1	8		
Boron	553	ug/L		555,6		100	80-120	•	
Calcium	6230	ug/L		5556		112	80-120		
Matrix Spike (B812336-MS1)	Sample: 80628	92-01		Prepared: 0	06/20/18 Ana	lyzed: 06/21/1	8		
Boron	548	ug/L		555.6	23.4	94	75-125		
Calcium	24400	ug/L		5556	19900	83	75-125		
Matrix Spike Dup (B812336-MSD1)	Sample: 80628	92-01		Prepared: (	06/20/18 Ana	lyzed: 06/21/1	8		
Boron	568	ug/L		555.6	23.4	98	75-125	4	20
Calcium	24800	ug/L		5556	19900	89	75-125	1	20



## PDC Laboratories, Inc.

2231 West Altorfer Drive Peoria, IL 61615 (800) 752-6651

## **NOTES**

Specific method revisions used for analysis are available upon request.

## Certifications

## CHI - McHenry, IL

TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes 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

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

SPMO - Springfield, MO USEPA DMR-QA Program

## STL - St. Louis, MO

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389 Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050 Drinking Water Certifications: Missouri (1050) Missouri Department of Natural Resources

\* Not a TNI accredited analyte

## **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.

Just Sty

TNI

Certified by: Kurt Stepping, Senior Project Manager

Customer #: 264748 www.pdclab.com Page 8 of 11



# PDC Laboratories, Inc. PO. Box 9071 • Peoria. IL 51612-9071 | 3001 692-9581 • [8001752-665] • FAX (3001 692-9689)



# **DATA PACKAGE**

CLIENT; Sikeston BMU

**PROJECT: Sikeston Power Station** 

PDC LAB WORKORDER: 8062892

DATE ISSUED: June 25, 2018

# **CASE NARRATIVE –**

## PDC Work Order 8062892

PDC Laboratories, Inc. received 7 water samples on June 15, 2018 in good condition at our Peoria, IL facility. This sample set was designated as work order 8062892.

Sampl	e ID's	Da	ite
Field	Lab ID	Collected	Received
MW-3	8062892-01	6/13/18	6/15/18
MW-4	8062892-02	6/13/18	6/15/18
MW-5	8062892-03	6/13/18	6/15/18
MW-6	8062892-04	6/13/18	6/15/18
MW-8	8062892-05	6/13/18	6/15/18
Field Blank	8062892-06	6/13/18	6/15/18
Duplicate	8062892-07	6/13/18	6/15/18

## **QC Summary:**

All items met acceptance criteria with the following noted exceptions:

Batch QC sample for TDS flagged M. RPD outside acceptance criteria.

Batch QC sample for SO4 flagged Q4. Sample value is greater than 4 times the spiked value.

Signature:	Yent Step	Name:	Kurt Stepping
Date:	June 25, 2018	Title:	Senior Project Manager

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

# **CHAIN OF CUSTODY RECORD**

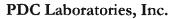
PHONE # 800-752-6651 FAX # 309-692-9689

State where samples collected \_\_\_\_\_\_\_\_

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT) - (SAMPLE ACCEPTANCE POLICY ON REVERSE) (FOR LAB USE ONLY) PROJECT NUMBER P.O. NUMBER MEANS SHIPPED 8062892-7 PHONE NUMBER FAX NUMBER DATE SHIPPED LOGGED BY: \_ LAB PROJ. # .. MATRIX TYPES: TEMPLATE: \_ WW-WASTEWATER 2 DW-DRINKING WATER GW-GROUND WATER PROJ. MGR.: سا Ž REMARKS 5 CW 2 6-13-18 0834 X MW 3 GW X 1005 GW X MW 0910 GW X K MW 6-13-12 GW X 1113 X 6-13-18 2 DI X Field Blank GW 6-13-18 K Ovelli cute The sample temperature will be measured upon receipt at the lab. By initialing NORMAL DATE RESULTS NEEDED TURNAROUND TIME REQUESTED (PLEASE CIRCLE) this area you request that the lab notity you, before proceeding with analysis, if (RUSH TAT IS SUBJECT TO POC LABS APPROVAL AND SURCHARGE) 6 5 the sample temperature is outside of the range of 0.1-6.0°C. By not initialing E-MAIL this area you allow the lab to proceed with analytical testing regardless of the PHONE RUSH RESULTS VIA (PLEASE CIRCLE) FAX sample temperature. EMAIL ADDRESS PHONE # COMMENTS: (FOR LAB USE ONLY) RECEIVED BY: (SIGNATURE) В TIME RECEIVED BY: (SIGNATURE) DATE DATE SAMPLE TEMPERATURE UPON RECEIPT RELINQUISHED BY: (SIGNATURE) SAMPLE TEMPERATURE UPON NECEIPT OR N
CHILL PROCESS STARTED PRIOR TO RECEIPT OR N
SAMPLE(S) RECEIVED ON ICE
PROPER BOTTLES RECEIVED IN GOOD CONDITION
OR N
SOTTLES FILLED WITH ADEQUATE VOLUME
SAMPLES RECEIVED WITHIN HOLD TIME(S)
OR N
(FXC) LIDES TYPICAL FIELD PARAMETERS) TIME TIME DATE RECEIVED AT LAB BY: (SIGNATURE RELINQUISHED BY: (SIGNATURE) (EXCLUDES TYPICAL FIELD PARAMETERS)
DATE AND TIME TAKEN FROM SAMPLE BOTTLE TIME

Page 으

Laboratory Quality Assurance/Quality Control Data – November 26, 2018

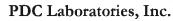




2231 West Altorfer Drive Peoria, IL 61615 (800) 752-6651

## **QC SAMPLE RESULTS**

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPC Limi
Batch B824564 - No Prep - SM 2540C									
Blank (B824564-BLK1)				Prepared &	Analyzed: 11/	28/18			
Solids - total dissolved solids (TDS)	< 17	mg/L						<u> </u>	
Duplicate (B824564-DUP1)	Sample: 811435	=		Prepared &	Analyzed: 11/	28/18			
Solids - total dissolved solids (TDS)	235	mg/L	M	.,	210			11	5
Batch B824729 - No Prep - EPA 300.0									
Calibration Blank (B824729-CCB1)				Prepared &	Analyzed: 11/	29/18			
Chloride	0.00	mg/L		· ·	<u> </u>				•
Fluoride	0.00	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B824729-CCV1)		<del>-</del>		Prepared &	Analyzed: 11/	29/18			
Sulfate	5.07	mg/L		5.000		101	90-110		
Chloride	4.91	mg/L		5.000		98	90-110		
Fluoride	5.06	mg/L		5.000		101	90-110		
Matrix Spike (B824729-MS1)	Sample: 811435	3-04		Prepared &	Analyzed: 11/	29/18			
Fluoride	1.68	mg/L		1.500	0.313	91	80-120	-	
Sulfate	1.00E9	mg/L	Q4	1.500	28.6	NR	80-120		
Chloride	3.0	mg/L		1.500	1.5	100	80-120		
Matrix Spike (B824729-MS2)	Sample: 811435	53-06		Prepared &	Analyzed: 11	/30/18			
Chloride	2.9	mg/L		1.500	1.4	99	80-120		
Fluoride	1.70	mg/L		1.500	0.284	94	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	26.5	NR	80-120		
Matrix Spike (B824729-MS3)	Sample: 811435	3-07		Prepared &	Analyzed: 11	/30/18			
Fluoride	1.59	mg/L		1.500	ND	106	80-120		
Sulfate	1.60	mg/L		1.500	ND	107	80-120		
Chloride	1.6	mg/L		1.500	ND	108	80-120		
Matrix Spike Dup (B824729-MSD1)	Sample: 811435	53-04		Prepared &	Analyzed: 11	/29/18			
Sulfate	1.00E9	mg/L	Q4	1.500	28.6	NR	80-120	0	20
Chloride	3.0	mg/L		1.500	1.5	99	80-120	0.6	20
Fluoride	1.71	mg/L		1.500	0.313	93	80-120	1	20
Matrix Spike Dup (B824729-MSD2)	Sample: 811435	53 <b>-0</b> 6		Prepared &	Analyzed: 11	/30/18			
Chloride	2.9	mg/L		1.500	1.4	100	80-120	0.6	20
Fluoride	1.68	mg/L		1.500	0.284	93	80-120	1	20
Sulfate	1.00E9	mg/L	Q4	1.500	26.5	NR	80-120	0	20
Matrix Spike Dup (B824729-MSD3)	Sample: 811435	53-07		Prepared &	Analyzed: 11.	/30/18			
Sulfate	1.59	mg/L		1.500	ND	106	80-120	1	20
Chloride	1.6	mg/L		1.500	ND	108	80-120	0.2	20
Fluoride	1.55	mg/L		1.500	ND	103	80-120	3	20
Batch B824853 - No Prep - SM 2540C									
Blank (B824853-BLK1)				Prepared &	Analyzed: 12	/03/18			
Solids - total dissolved solids (TDS)	< 17	mg/L		· · · · · · · · · · · · · · · · · · ·	· · ·				
Duplicate (B824853-DUP1)	Sample: 811488	_		Prepared &	Analyzed: 12	/03/18			
Solids - total dissolved solids (TDS)	205	mg/L	М	· · ·	190			8	5
Duplicate (B824853-DUP2)	Sample: 811488	-		Prepared &	Analyzed: 12	/03/18			
Solids - total dissolved solids (TDS)	565	mg/L	M		520		-	8	5





2231 West Altorfer Drive Peoria, IL 61615 (800) 752-6651

## **QC SAMPLE RESULTS**

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC	RPD	RPD Limit
raidmeter			- Quai			701120	Limits		
Batch B824903 - SW 3015 - SW 6020									
Blank (B824903-BLK1)				Prepared: 1	2/04/18 Anal	yzed: 12/05/1	8		
Boron	< 10	ug/L			_				
Calcium	< 100	ug/L							
LCS (B824903-BS1)				Prepared: 1	2/04/18 Anal	yzed: 12/05/1	8		
Boron	524	ug/L		555.6		94	80-120		
Calcium	5770	ug/L		5556		104	80-120		
Matrix Spike (B824903-MS1)	Sample: 811393	1-21		Prepared: 1	2/04/18 Anal	yzed: 12/05/1	8		
Boron	517	ug/L		555.6	13.8	91	75-125		
Calcium	68900	ug/L	Q4	5556	65300	64	75-125		
Matrix Spike Dup (B824903-MSD1)	Sample: 811393	1-21		Prepared: 1	2/04/18 Anal	yzed: 12/05/1	8		
Boron	534	ug/L		555.6	13.8	94	75-125	3	20
Calcium	69800	ug/L	Q4	5556	65300	80	75-125	1	20
Batch B824905 - SW 3015 - SW 6020									
Blank (B824905-BLK1)				Prepared: 1	2/04/18 Anal	yzed: 12/06/1	8		
Boron	< 10	ug/L							
Calcium	< 100	ug/L							
LCS (B824905-BS1)				Prepared: 1	2/04/18 Anal	yzed: 12/06/1	8		
Boron	536	ug/L		555.6		96	80-120		
Calcium	4460	ug/L		5556		80	80-120		
Matrix Spike (B824905-MS1)	Sample: 811435	3-04		Prepared:	12/04/18 Anal	yzed: 12/06/1	8		
Boron	578	ug/L	_	555.6	46.3	96	75-125		
Calcium	45000	ug/L	Q4	5556	36400	156	75-125		
Matrix Spike Dup (B824905-MSD1)	Sample: 811435	3-04		Prepared:	12/04/18 Ana	lyzed: 12/06/1	8		
Boron	583	ug/L		555.6	46.3	97	75-125	0.9	20
Calcium	36400	ug/L	Q4	5556	36400	0.9	75-125	21	20



## PDC Laboratories, Inc.

2231 West Altorfer Drive Peoria, IL 61615 (800) 752-6651

## **NOTES**

Specific method revisions used for analysis are available upon request.

## Certifications

CHI - McHenry, IL

TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes 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

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 Missouri Department of Natural Resources Certificate of Approval for Microbiological Laboratory Service No. 870 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

NELAP/NELAC accredidation through the Illinois EPA, PAS IL 100323

SPMO - Springfield, MO USEPA DMR-QA Program

STL - St. Louis, MO

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389
Accreditation of Laboratories 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
Drinking Water Certifications: Missouri (1050)
Missouri Department of Natural Resources

\* Not a TNI accredited analyte

## 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





## PDC Laboratories, Inc. P.O. Box 5071 \* Peoria, IL 51512-907; (909) 692-9688 \* (800) 752-8651 \* FAX (309) 592-9689



# **DATA PACKAGE**

CLIENT; Sikeston BMU

**PROJECT: Sikeston Power Station** 

PDC LAB WORKORDER: 8114353

DATE ISSUED: December 7, 2018

# **CASE NARRATIVE -**

## PDC Work Order 8114353

PDC Laboratories, Inc. received 7 water samples on November 28, 2018 in good condition at our Peoria, IL facility. This sample set was designated as work order 8114353.

Sample	ID's	Da	te
Field	Lab ID	Collected	Received
MW-3	8114353-01	11/26/18	11/28/18
MW-4	8114353-02	11/26/18	11/28/18
MW-5	8114353-03	11/26/18	11/28/18
MW-6	8114353-04	11/26/18	11/28/18
MW-8	8114353-05	11/26/18	11/28/18
Field Duplicate	8114353-06	11/26/18	11/28/18
Field Blank	8114353-07	11/26/18	11/28/18

## QC Summary:

All items met acceptance criteria with the following noted exceptions:

Batch QC sample for TDS flagged M. RPD outside acceptance criteria (>5%).

Batch QC samples for SO4 and Ca flagged Q4. Sample value is greater than 4 times the spiked value.

Certification Signature:	Yent Step	Name:	Kurt Stepping
Date:	December 7, 2018	Title:	Senior Project Manager

PDC Laboratories, Inc. 2231 W. Altorfer Dr Peoria, IL 61615

# **CHAIN OF CUSTODY RECORD**

State where samples were collected MO

Phone: (800) 752-6651 Fax: (309) 692-9689

www.pdclab.com

[基份公子为是 M. T.		ALL HIS	GHLIGHTED AREAS M	<u>UST</u> BE COMPLET	ED BY ÇUEN	IT (PLEASE PR	IINT)					$\times$			
O FESATIN	P.O. NUM		PROJECT CCR APP			SHIPPED	3	AN	ALYSI	QUES	25 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		(F	WORK ORDER OR LAB USE OF	
WILLER	PHON (573) 475		EMA MARK@SE			SHIPPED	C)		F		u. M	<u>ئ</u> ور ] '	LOGIN #:_	81173	3-7
		AS O NI			MATRIX WW-WA	TYPES: STE WATER KING WATER	1			e <sup>#</sup>	а		LOGGED BY	/:	- Nu
		URE				UND WATER UDGE D	SO4						PROJ MGR:	KUF	RT
2 DAMPEL DESCRIPTION			the said	met.	OTHER:		L.	8	_						
AS YOU WANT TO REPORT	CONTICUED	COLLI	15-D C947U	ECINIP	DAVIETS.	BOTTU COUNT	CL,	В, С	TDS			[		REMARKS	· · · · · · · · · · · · · · · · · · ·
MW-3	11-26-18	099	50 X		GW	2	X	X	X	3- -					
MW-4	11-26-18	15/	a X		GW	2	X	X	X						
MW-5	11-26-18	115	3 X		GW:	2	X	X	X						· · ·
MW-6	11-26-18	104	7 X		GW	2 .	X	X	X						· · · ·
MW-8	11-26-16	133	8 X		GW	2	X	X	X						
FIELD DUPLICATE	11-26-16		X		GW	2	$\mathbf{x}$	X	X				·	<del></del>	
FLIED BLANK	1-26-18		X		GW	2	X		<del>X</del>				<u> </u>		
	·	<del>,</del>						-	+	-		_			
5 TURNAROUND TIME REQUESTED (RUSH TAT IS SUBJECT TO APPROVAL AND SURCHARGE)	NORMAL	RUSH	DATE RESUL	ITS NEEDED	- 1 NOU	DEROTE DEDCEM	DIFFOR INCOME	3 カクスした!	F SF PDA 44	emmia hom	corahum	e in mudi	inkleling this an side of the range ass of the sample	ea, you request the e of 0.1-6,0°C. By e temperature.	nat we notify not initialing
		RECEIVE	D BY (SKGM) TURE	, t		DATE			8		COM	MENT	S (FOR LAB U	ISE ONLY)	
PAT TIM		kčelve	D BY A COMMATURE			TIN	4		CHILL PRO	S) RECEIV	ARTED A	PRIOR	TO RECEIPT	. · .	OFOR'N OZOR N
<b>Ο</b> Δ.	<b>.</b>	NECENT	V JATUR		er er Her	2/1/2	81	7	ROPER E SOTTLES AMPLES	SOTTLES I	RECEIVE 11TH ADI D WITH	ED IN G EQUAT IN HOL	GOOD CONDITIC 'E VOLUME .D TIME(S) METERS)	ON	OPOR N OP OR N

# **Appendix 4**

Groundwater Quality Data Base

# Sikeston Board of Municipal Utilities Sikeston Power Station Bottom Ash Pond Scott County, Missouri

# **Groundwater Quality Data Base**

			Field Parameters Appendix III Monitoring Constituents (Detec											ion)						Appendix IV	Monitorin	g Constitu	uents (As	sessment)			-	
Well	Date	Monitoring Purpose	Spec. Cond.	Temp.	ORP	D.O.	Turbidity	pН	Chloride	Fluoride	Sulfate	TDS	Boron	Calcium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium III	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226 and 228 (Combined)
ID			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	pCi/L
MW-3 (UG)	11/30/2016	Background	254.0	15.75	-27.1	0.41	37.28	7.08	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	6.88	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	6.93	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	6.68	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	6.68	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	6.59	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	6.66	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	6.71	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	6.64	2.0	0.331	20	140	27	19	(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	6.59	1.3	0.291	17	130	23	20	(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	6.50	1.5	0.301	18	100	23	17	(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	7.46	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	7.45	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	7.49	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	7.37	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	7.38	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	7.38	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	7.38	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	7.37	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	7.31	17	<0.250	83	290	1400	67	(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	7.32	14	<0.250	86	290	1200	80	(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	7.36	8.8	<0.250	54	260	1100	64	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-5 (DG)	11/30/2016	Background	808.3	16.20	-48.7	0.50	1.24	6.97	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	6.90	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	6.97	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	6.85	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	6.80	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	6.81	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					6.82		<0.250		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			17.49	6.98	10	<0.250		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	1	0.85		6.89	18	<0.250	88	310	280	72	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection	756.4	18.28		0.84		6.77	11	<0.250		480	370	130	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Detection	836.4	14.90	-27.0			6.74	17	<0.250		520	420	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
															` ′	` ′	` ′	` '	` ′	, ,	) í	` '	<u> </u>	` ′	, ,	, ,		

# Sikeston Board of Municipal Utilities Sikeston Power Station Bottom Ash Pond Scott County, Missouri

# **Groundwater Quality Data Base**

				Field F	Paramet	ers			Appendi	x III Monit	oring Co	nstituen	ts (Detecti	ion)						Appendix IV	Monitorin	g Constitu	uents (Ass	sessment)				
Well	Date	Monitoring Purpose	Spec. Cond.			D.O.	_	+ -	Chloride	Fluoride		TDS	Boron	Calcium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium III	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226 and 228 (Combined)
ID			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	pCi/L
MW-6 (UG)	11/30/2016	Background	369.0	16.39	-49.4	0.85	0.84	6.92	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	6.87	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	6.89	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	6.73	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	6.72	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	6.76	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	6.73	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	6.98	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	6.72	1.7	0.303	29	170	41	38	(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	6.67	2.3	<0.250	32	160	43	41	(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	6.72	1.5	0.313	29	180	46	36	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-8 (DG)	5/18/2017	Background	662.5	17.58	-89.4	0.29	2.39	7.16	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	7.16	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	7.25	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	7.15	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	7.16	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	7.15	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	7.13	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	7.05	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	7.09	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	7.11	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	7.09	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	7.09	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	7.17	45	<0.250	100	320	500	94	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

## Notes:

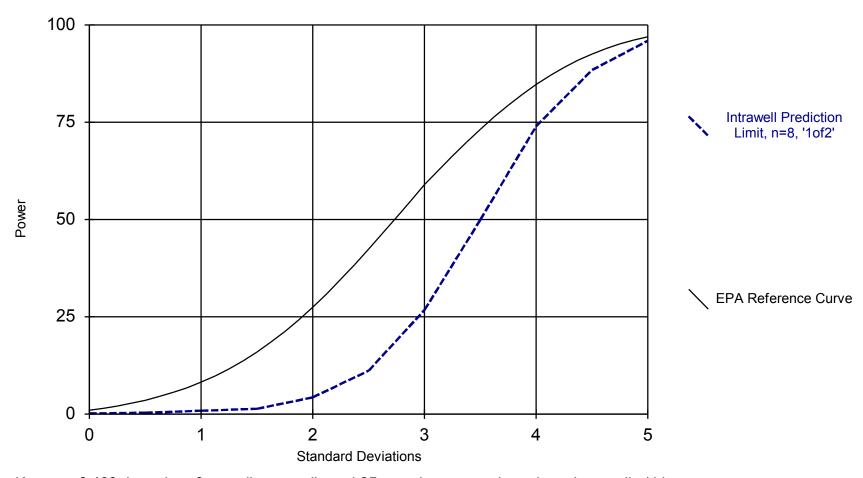
- 1. All data transcribed from analytical lab data sheets or field notes.
- 2. Less than (<) symbol denotes concentration not detected at or above reportable limits.
- 3. (ND) denotes Radium 226 and 228 (combined) concentration not detected above minimum detectable concentration.
- 4. (NA) denotes analysis 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.
- 9. Additional background sampling currently being conducted based on recommendations in Alternate Source Demonstration dated September 26, 2018 (see Appendix 9).

Prepared by: KAE Checked by: MCC

# **Appendix 5**

**Statistical Power Curve** 

## Power Curve MW-3 through MW-8

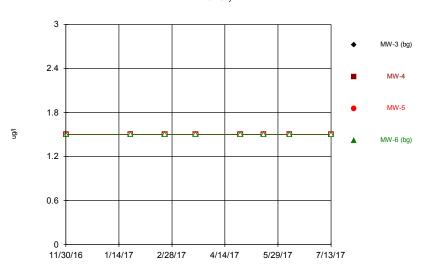


Kappa = 3.403, based on 3 compliance wells and 35 constituents, evaluated semi-annually (this report reflects annual total).

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

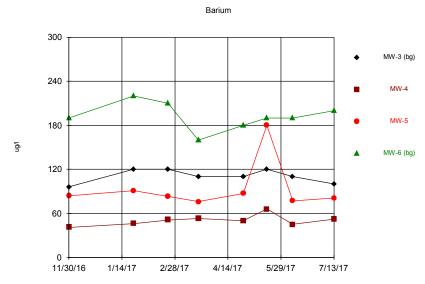
# **Appendix 6**

Time Series Plots



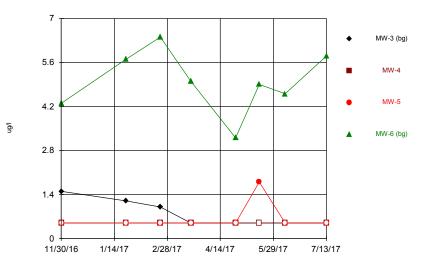
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





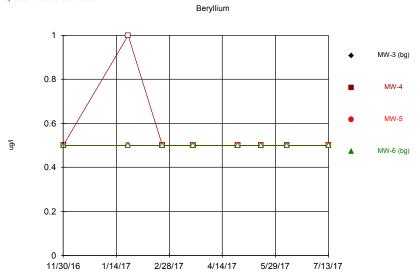
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



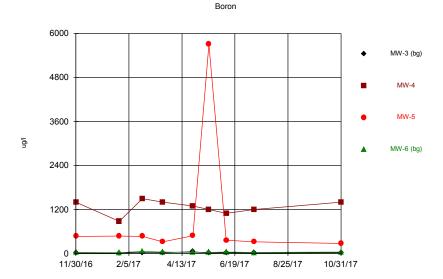


Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

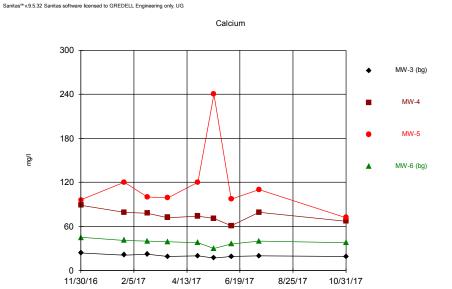
## Sanitas™v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



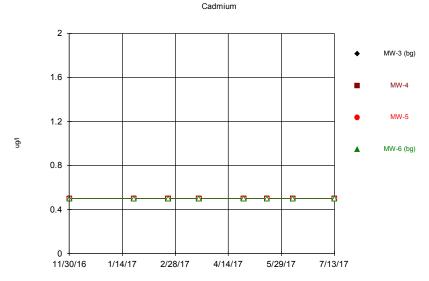
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

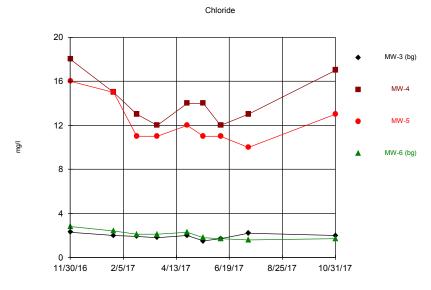


Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

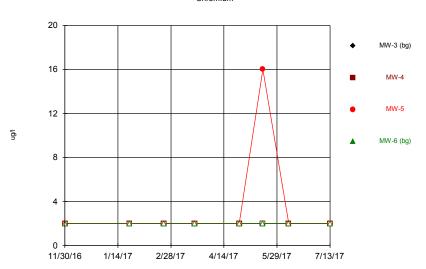


Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

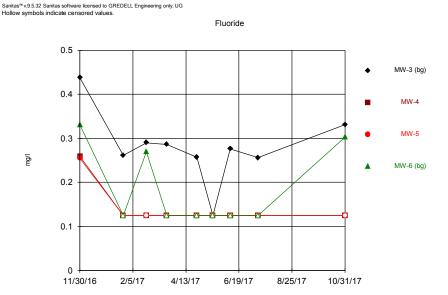
#### Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



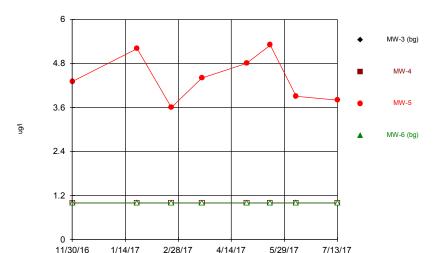
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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



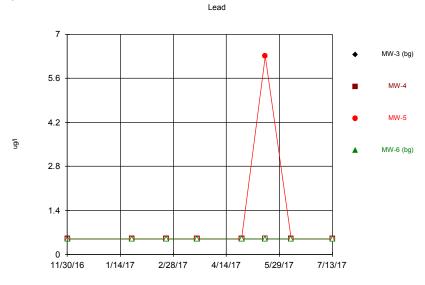
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



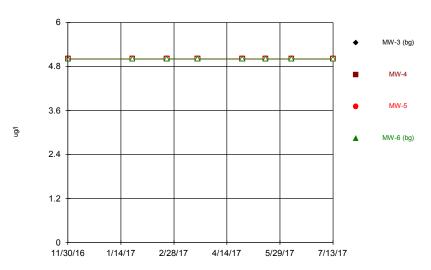
Cobalt

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

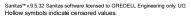
## Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.

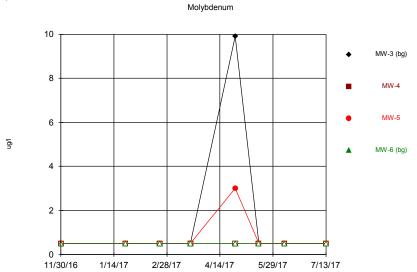


Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



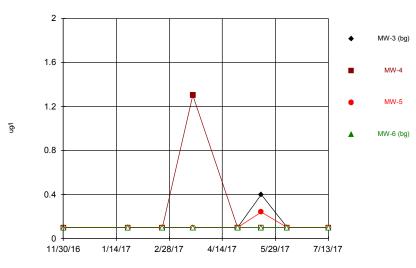
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





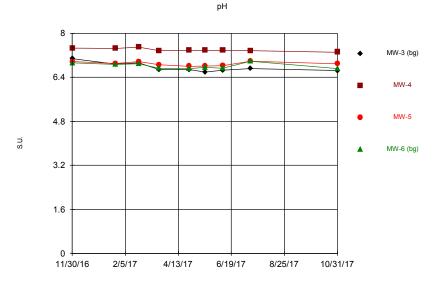
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





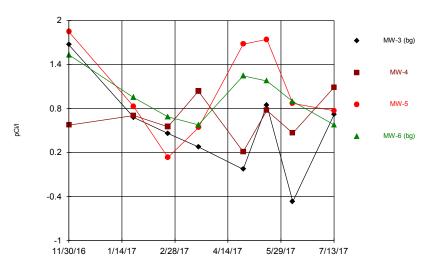
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

#### Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



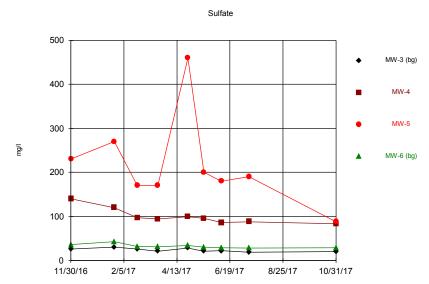
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





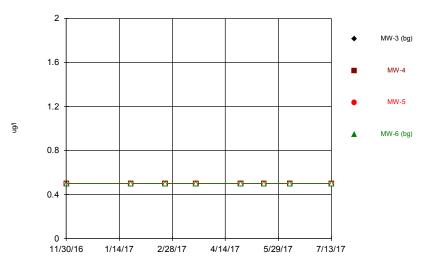
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

#### Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



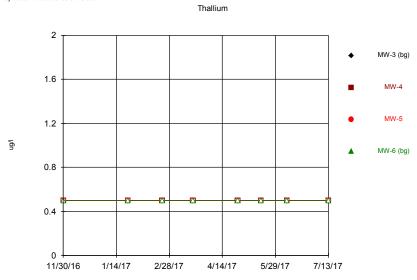
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

#### Selenium



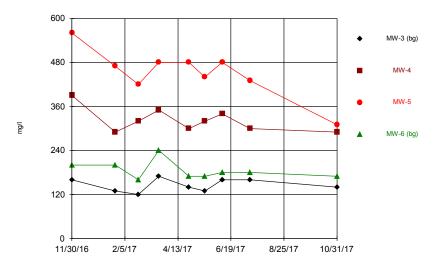
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

## Sanitas™v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



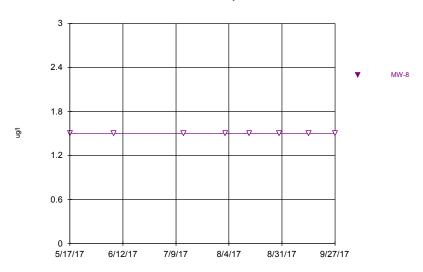
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

## Total Dissolved Solids



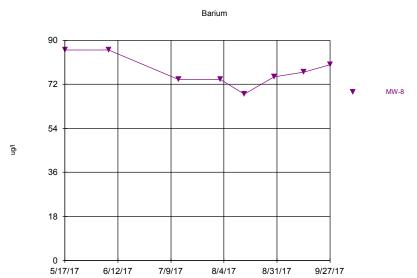
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





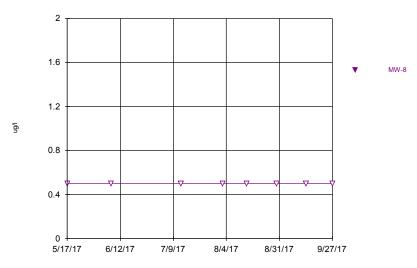
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

#### Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



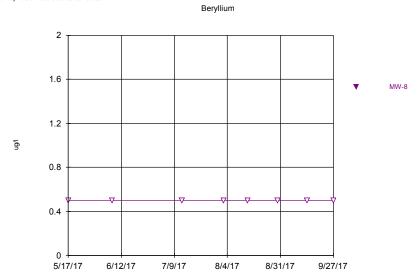
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





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

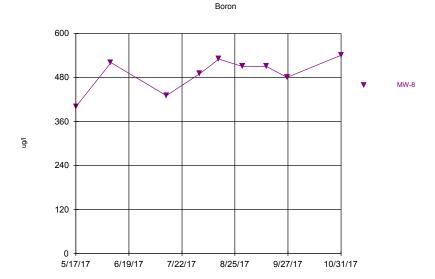
## Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



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

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG

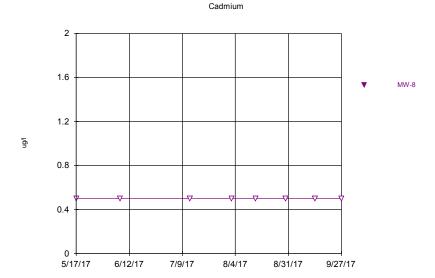
Sanitas  $^{\text{™}}$  v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



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

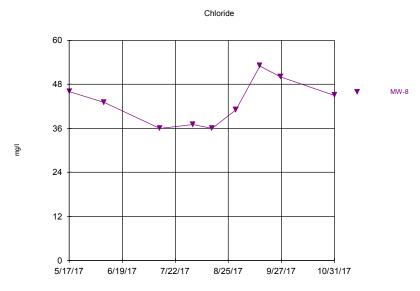
# Calcium 100 80 40 20 5/17/17 6/19/17 7/22/17 8/25/17 9/27/17 10/31/17

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

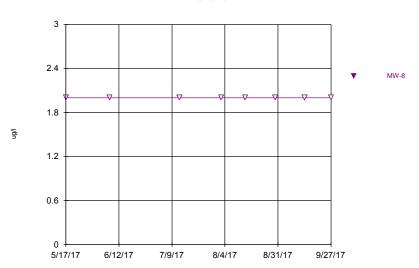


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

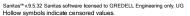
#### Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG

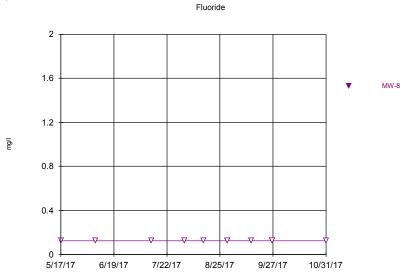


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



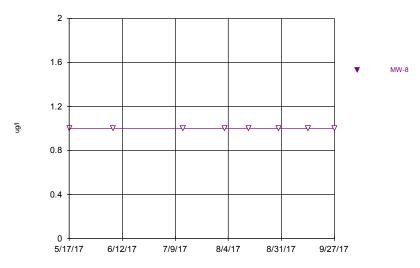
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





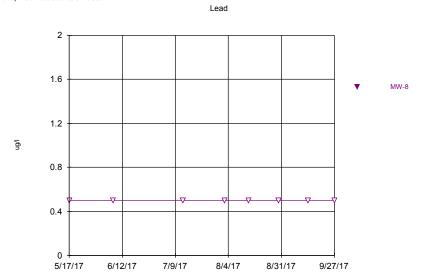
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





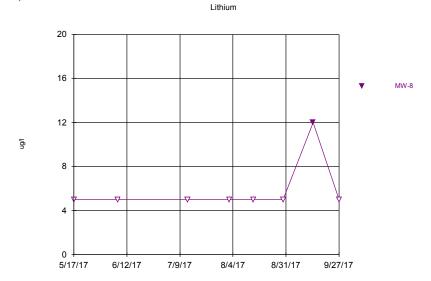
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

## Sanitas™v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.

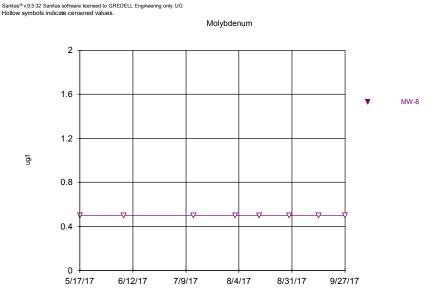


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

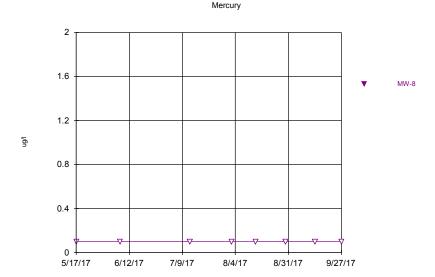
Sanitas  $^{\text{™}}$  v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



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

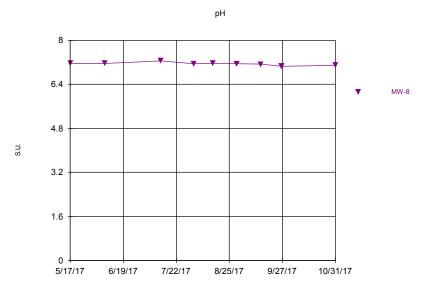


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

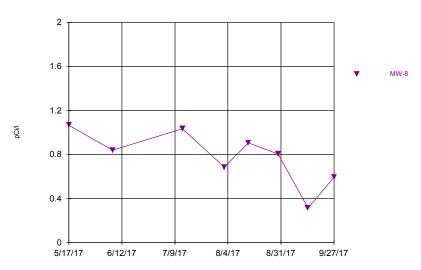




Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

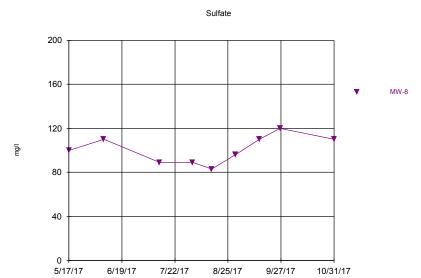
Sanitas  $^{\text{™}}$  v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.





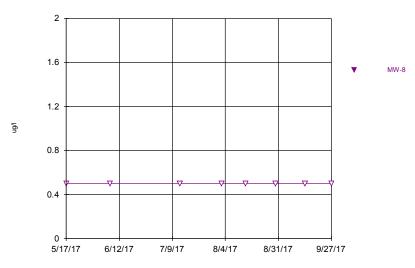
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

#### Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



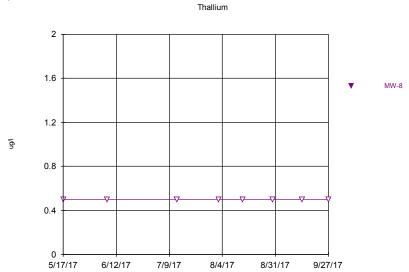
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





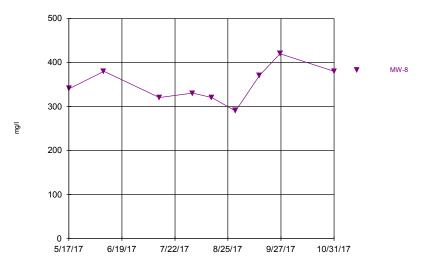
Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

## Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



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

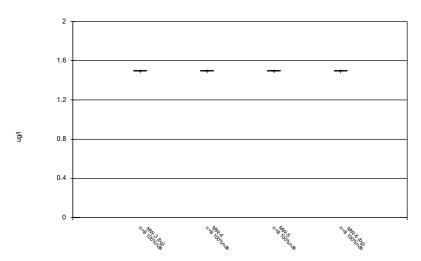
# Box & Whiskers Plot MW-3 through MW-6

	SBMU-Sikeston Power Station	Client: GRED	ELL 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>	Lower Q.	Upper Q.	Min.	Max.	%NDs
Antimony (ug/I)	MW-3 (bg)	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Antimony (ug/I)	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/I)	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/I)	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	1.3	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	2.0	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
		8	4.413	1	1	1	3.0 1	5.5 1	100
Cobalt (ug/l)	MW-6 (bg)	-	0.20	0.276	0.2565	0.2105		0.438	11.11
Fluoride (mg/l) Fluoride (mg/l)	MW-3 (bg) MW-4	9	0.28 0.1399	0.276	0.2565	0.3105 0.125	0.125 0.125	0.436	88.89
		9							
Fluoride (mg/l)	MW-5	9	0.1394	0.125	0.125	0.125	0.125	0.255	88.89 66.67
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

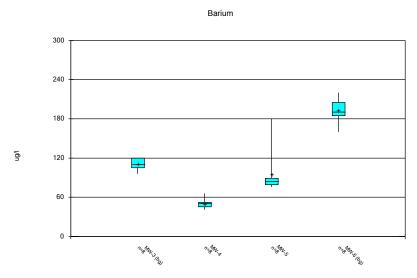
### Box & Whiskers Plot MW-3 through MW-6

	SBMU-Sikeston Power Station	Client: GREDI	ELL Engineering	Data: SBMU	-SPS EDD File 09-	28-17 Printed 11	/29/2017, 3:18 P	М	
Constituent	<u>Well</u>	<u>N</u>	<u>Mean</u>	Median	Lower Q.	Upper Q.	Min.	Max.	%NDs
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



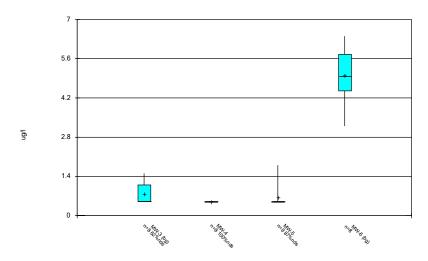


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

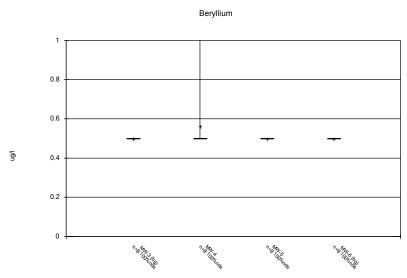


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

#### Arsenic

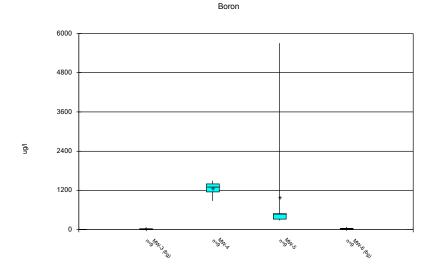


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

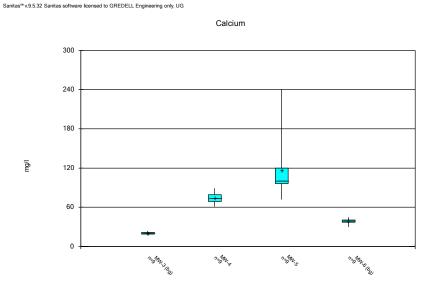


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III

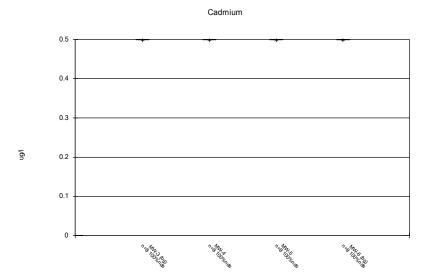
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Box & Whiskers Plot 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

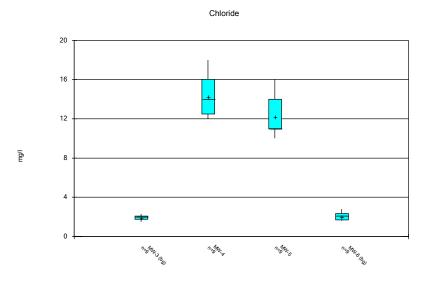


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



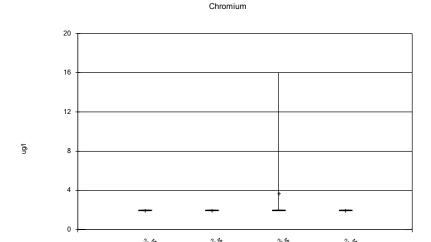
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



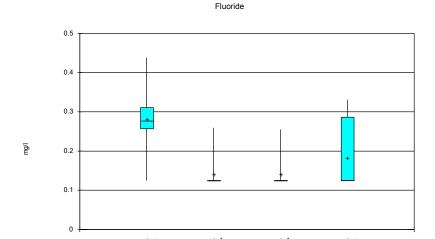


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III

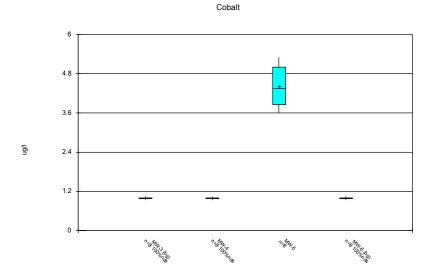
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Box & Whiskers Plot 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

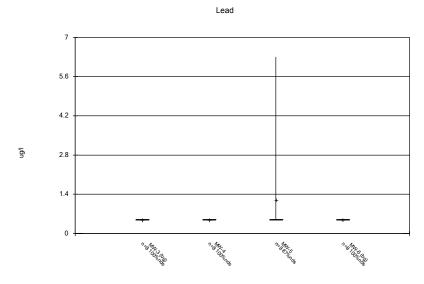


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



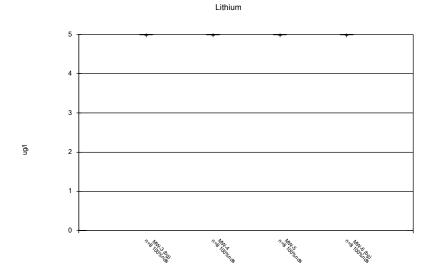
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





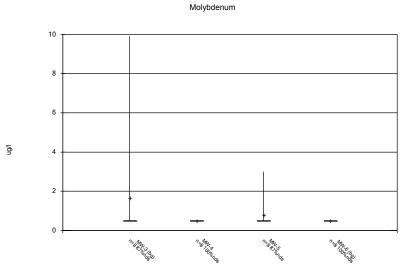
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III

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

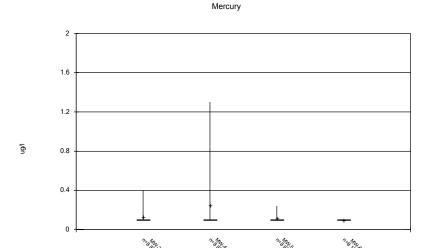


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

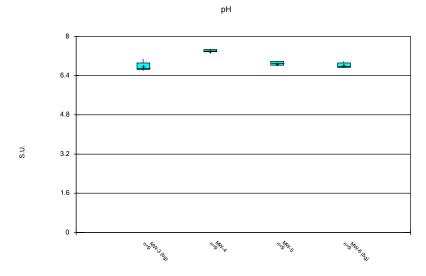




Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

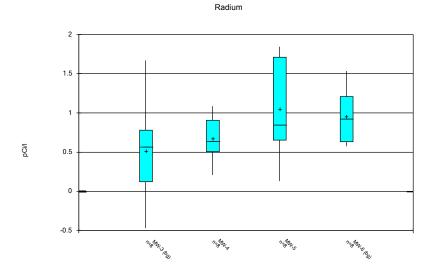


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

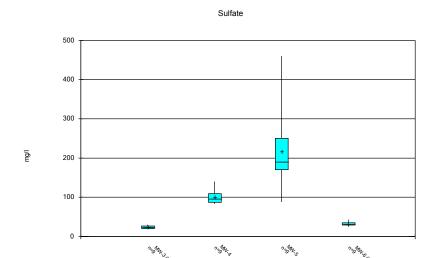


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III

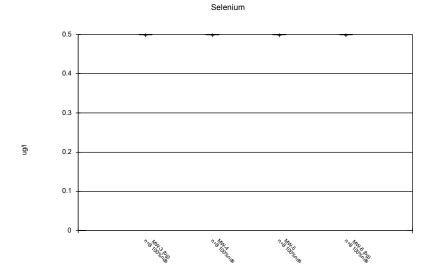
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Box & Whiskers Plot 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

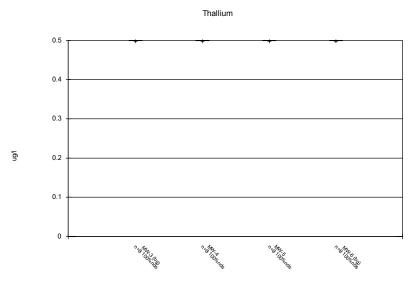


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Box & Whiskers Plot 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

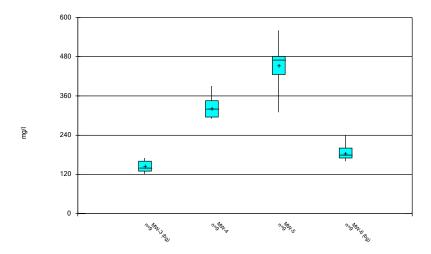




Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III

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

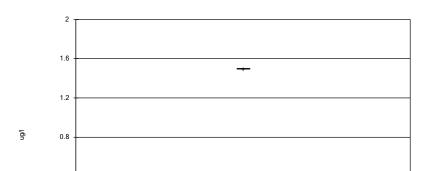
#### Total Dissolved Solids



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

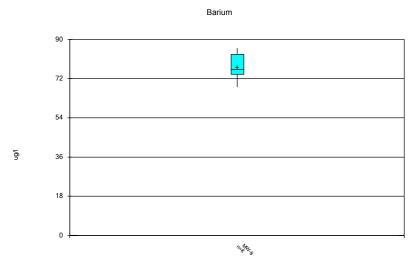
	SBMU-Sikeston Power Station	Client: GRED	ELL Engineering	Data: SBMU	-SPS EDD File 09-	28-17 Printed 11	/29/2017, 9:37 A	.M	
Constituent	<u>Well</u>	<u>N</u>	<u>Mean</u>	Median	Lower Q.	Upper Q.	Min.	Max.	%NDs
Antimony (ug/l)	MW-8	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Arsenic (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	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/I)	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

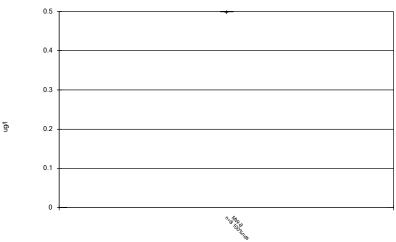




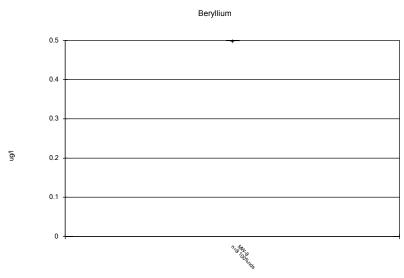
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Arsenic

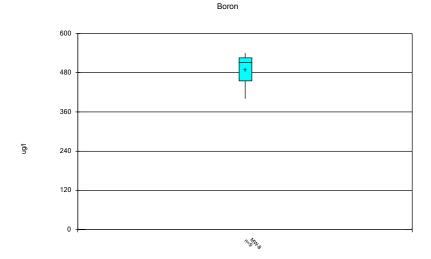


Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

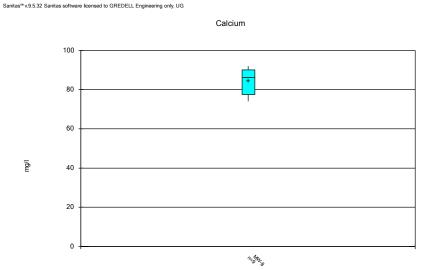


Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III

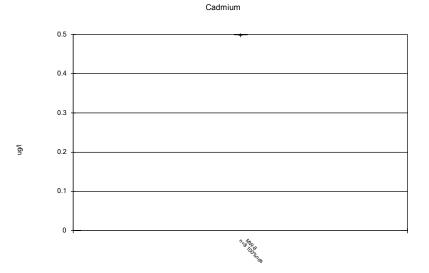
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

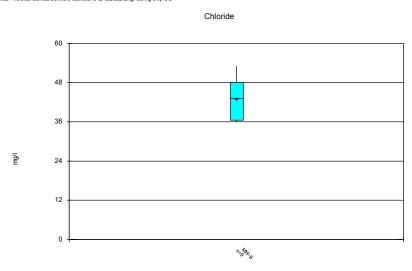


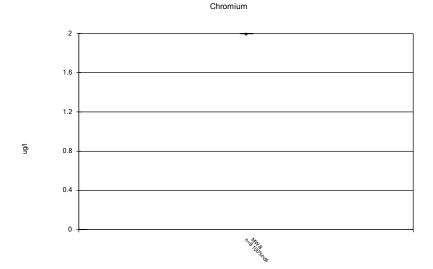
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



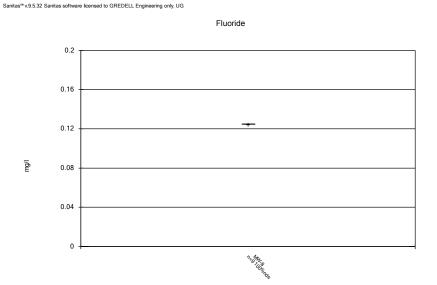
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



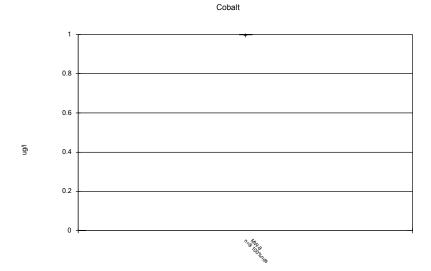




Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

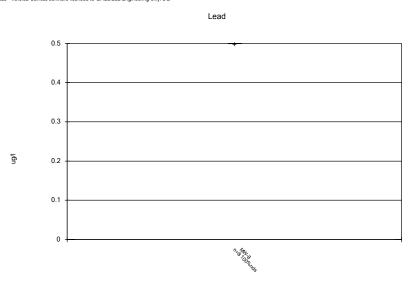


Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

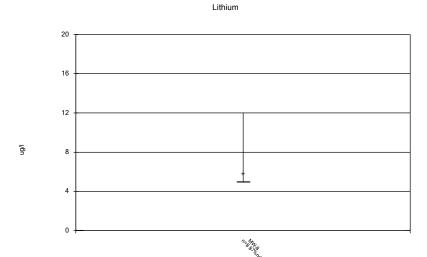


Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

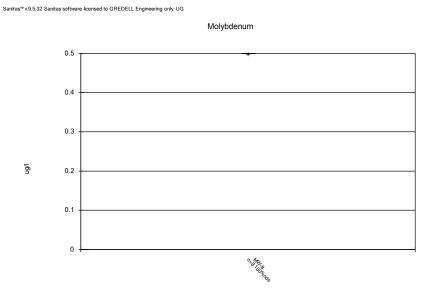




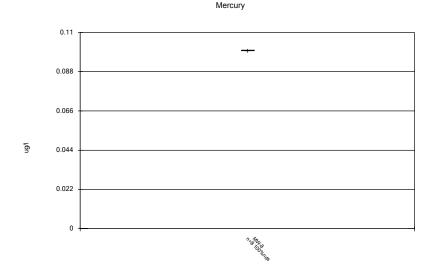
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

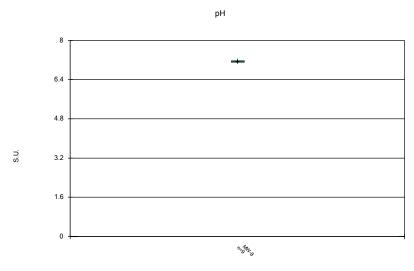


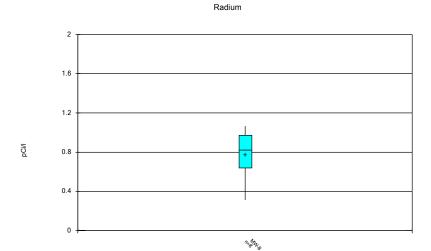
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



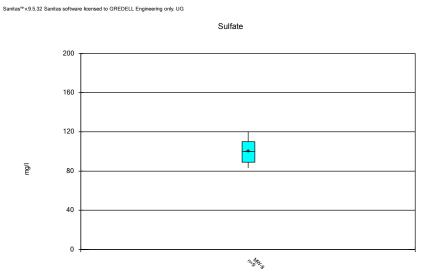
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



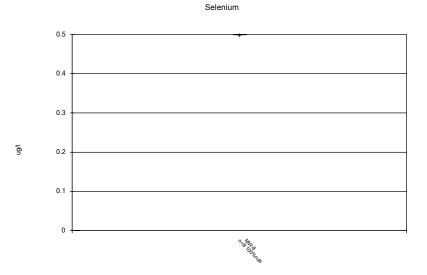




Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

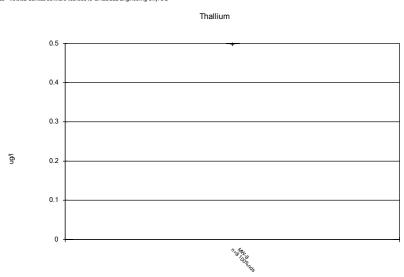


Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

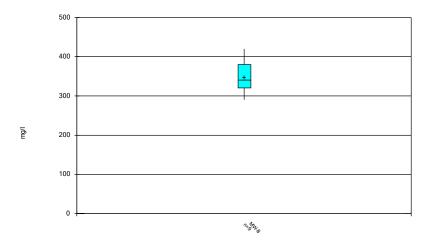


Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





#### 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 1/10/2019, 4:03 PM Constituent Well Upper Lim. Lower Lim. Date Observ. Sig. Bg N %NDs **Transform** <u>Alpha</u> Method Boron (ug/l) MW-3 57.21 6/13/2018 23 No 8 n/a 0 No 0.002505 Param Intra 1 of 2 MW-4 Boron (ug/l) 1734 n/a 6/13/2018 1200 No 8 0 No 0.002505 Param Intra 1 of 2 Boron (ug/l) MW-5 6/13/2018 5700 n/a 370 No 8 0 n/a 0.02144 NP Intra (normality) ... Boron (ug/l) MW-6 60.62 n/a 6/13/2018 43 No 8 0 No 0.002505 Param Intra 1 of 2 MW-8 Boron (ug/l) 596.7 n/a 6/13/2018 520 No 8 0 No Param Intra 1 of 2 0.002505 Calcium (mg/l) MW-3 25.46 n/a 6/13/2018 20 No 8 0 No 0.002505 Param Intra 1 of 2 Calcium (mg/l) MW-4 95.25 n/a 6/13/2018 80 No 8 0 No 0.002505 Param Intra 1 of 2 Calcium (mg/l) MW-5 240 n/a 6/13/2018 130 No 8 0 n/a 0.02144 NP Intra (normality) ... MW-6 Calcium (mg/l) 49.29 n/a 6/13/2018 41 No 8 0 No 0.002505 Param Intra 1 of 2 Calcium (mg/l) MW-8 101.7 6/13/2018 120 Yes 8 0 No n/a 0.002505 Param Intra 1 of 2 MW-3 2.565 6/13/2018 Chloride (mg/l) n/a 1.3 No 8 n No 0.002505 Param Intra 1 of 2 Chloride (mg/l) MW-4 18.69 6/13/2018 14 No 8 0 n/a No 0.002505 Param Intra 1 of 2 MW-5 17.45 6/13/2018 11 No Chloride (mg/l) n/a 8 0 No 0.002505 Param Intra 1 of 2 Chloride (mg/l) MW-6 3.083 n/a 6/13/2018 2.3 Νo 8 0 No 0.002505 Parami Intra 1 of 2 MW-8 6/13/2018 65 Yes 8 0 No Chloride (mg/l) 58.72 n/a 0.002505 Param Intra 1 of 2 Fluoride (mg/l) MW-3 0.4819 n/a 6/13/2018 0.291 No 8 12.5 Νo 0.002505 Param Intra 1 of 2 Fluoride (mg/l) MW-4 0.259 6/13/2018 0.125ND No 8 87.5 n/a n/a 0.02144 NP Intra (NDs) 1 of 2 Fluoride (mg/l) MW-5 0.255 n/a 6/13/2018 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 6/13/2018 0.125ND No 8 75 n/a 0.02144 NP Intra (NDs) 1 of 2 Fluoride (mg/l) MW-8 0.25 n/a 6/13/2018 0.125ND No 8 100 n/a 0.02144 NP Intra (NDs) 1 of 2 pH (S.U.) MW-3 7.189 6.363 6/13/2018 6.59 No 8 0 No 0.001253 Param Intra 1 of 2 pH (S.U.) MW-4 7.529 7.291 6/13/2018 7.32 No 8 0 No 0.001253 Param Intra 1 of 2 MW-5 7.078 6.697 6/13/2018 6.77 pH (S.U.) No 8 0 No 0.001253 Param Intra 1 of 2 MW-6 7.075 6.575 6/13/2018 0 pH (S.U.) 6.67 No 8 No 0.001253 Param Intra 1 of 2 pH (S.U.) MW-8 7.285 7.018 6/13/2018 7.11 No 8 0 No 0.001253 Param Intra 1 of 2 Sulfate (mg/l) MW-3 33.73 n/a 6/13/2018 17 No 8 0 No 0.002505 Param Intra 1 of 2 6/13/2018 Sulfate (mg/l) MW-4 147.6 n/a 86 No 8 0 No 0.002505 Param Intra 1 of 2 Sulfate (mg/l) MW-5 484.6 n/a 6/13/2018 240 No 8 0 sqrt(x) 0.002505 Param Intra 1 of 2 MW-6 44.8 6/13/2018 32 Sulfate (mg/l) n/a Νo 8 0 No 0.002505 Param Intra 1 of 2 MW-8 131.1 6/13/2018 150 Yes 8 0 Sulfate (mg/l) n/a No 0.002505 Param Intra 1 of 2 191.6 Total Dissolved Solids (mg/l) MW-3 n/a 6/13/2018 130 No 0 No 0.002505 Param Intra 1 of 2 Total Dissolved Solids (mg/l) MW-4 407.2 n/a 6/13/2018 290 No 8 0 No 0.002505 Param Intra 1 of 2 Total Dissolved Solids (mg/l) MW-5 577.5 n/a 6/13/2018 480 No 8 0 No 0.002505 Param Intra 1 of 2 Total Dissolved Solids (mg/l) MW-6 250.2 n/a 6/13/2018 160 No 8 0 No 0.002505 Param Intra 1 of 2 ٥ Total Dissolved Solids (mg/l) MW-8 448 6/13/2018 430 No 0.002505 n/a 8 Nο Param Intra 1 of 2

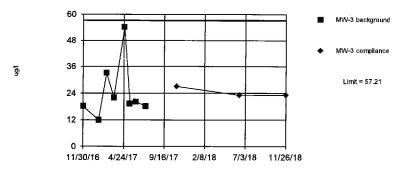
#### Prediction Limits - MW-3, 4, 5, 6, & 8

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 1/10/2019, 4:13 PM Constituent Well Upper Lim. Lower Lim. Date Observ. Sia. Ba N %NDs **Transform** <u>Alpha</u> Method Boron (ug/l) MW-3 57.21 n/a 11/26/2018 23 No 8 0 No 0.002505 Param Intra 1 of 2 Boron (ug/l) MW-4 1734 n/a 11/26/2018 1100 No 8 0 No 0.002505 Param Intra 1 of 2 Boron (ug/l) MW-5 5700 n/a 11/26/2018 420 No 8 0 n/a 0.02144 NP Intra (normality) ... Boron (ug/l) MW-6 60.62 n/a 11/26/2018 46 No 8 0 No 0.002505 Param Intra 1 of 2 Boron (ug/l) MW-8 596.7 n/a 11/26/2018 500 No 8 0 No 0.002505 Param Intra 1 of 2 Calcium (mg/l) MW-3 25.46 11/26/2018 17 n/a No 8 0 No 0.002505 Param Intra 1 of 2 Calcium (mg/l) MW-4 95.25 11/26/2018 n/a No Param Intra 1 of 2 64 8 0 Nο 0.002505 Calcium (mg/l) MW-5 240 11/26/2018 No n/a 120 8 0 n/a 0.02144 NP Intra (normality) ... Calcium (mg/l) MW-6 49.29 11/26/2018 36 n/a No 8 0 No 0.002505 Param Intra 1 of 2 Calcium (mg/l) MW-8 101.7 n/a 11/26/2018 94 No 8 O No 0.002505 Param Intra 1 of 2 Chloride (mg/l) MW-3 2.565 n/a 11/26/2018 1.5 No 8 0 No 0.002505 Param Intra 1 of 2 Chloride (mg/l) MW-4 18.69 11/26/2018 8.8 No 8 0 n/a No 0.002505 Param Intra 1 of 2 Chloride (mg/l) MW-5 11/26/2018 17.45 n/a 17 No 8 0 No 0.002505 Param Intra 1 of 2 Chloride (mg/l) MW-6 3.083 n/a 11/26/2018 1.5 No 8 0 Nο 0.002505 Param Intra 1 of 2 Chloride (mg/l) MW-8 58.72 n/a 11/26/2018 45 No 8 0 No 0.002505 Param Intra 1 of 2 Fluoride (mg/l) MW-3 0.4819 n/a 11/26/2018 0.301 No 8 12.5 Nο 0.002505 Param Intra 1 of 2 Fluoride (mg/l) MW-4 0.259 n/a 11/26/2018 0.125ND No 8 87.5 n/a 0.02144 NP Intra (NDs) 1 of 2 MW-5 Fluoride (mg/l) 0.255 n/a 11/26/2018 0.125ND No 8 87.5 n/a 0.02144 NP intra (NDs) 1 of 2 Fluoride (mg/l) MW-6 0.331 11/26/2018 0.313 n/a No 8 75 n/a 0.02144 NP Intra (NDs) 1 of 2 Fluoride (mg/l) MW-8 0.25 11/26/2018 0.125ND n/a No 8 100 0.02144 NP Intra (NDs) 1 of 2 n/a pH (S.U.) MW-3 7.189 6.363 11/26/2018 6.5 No 8 0 No 0.001253 Param Intra 1 of 2 pH (S.U.) MW-4 7.529 11/26/2018 7.36 7.291 No 8 0 No 0.001253 Param Intra 1 of 2 pH (S.U.) MW-5 7.078 6.697 11/26/2018 6.74 No 8 0 No 0.001253 Param Intra 1 of 2 MW-6 7.075 pH (S.U.) 6.575 11/26/2018 6.72 No 8 0 No 0.001253 Param Intra 1 of 2 pH (S.U.) MW-8 7.285 7.018 11/26/2018 7.17 No 8 0 No 0.001253 Param Intra 1 of 2 Sulfate (mg/l) MW-3 33.73 11/26/2018 n/a 18 No 8 0 No 0.002505 Param Intra 1 of 2 Sulfate (mg/l) MW-4 147.6 n/a 11/26/2018 54 No 0 8 No 0.002505 Param Intra 1 of 2 MW-5 Sulfate (mg/l) 484.6 n/a 11/26/2018 230 No 8 0 sqrt(x) 0.002505 Param Intra 1 of 2 Sulfate (mg/l) MW-6 44.8 11/26/2018 29 n/a No 8 O No 0.002505 Param Intra 1 of 2 Sulfate (mg/l) MW-8 131.1 n/a 11/26/2018 100 No 8 0 Νo 0.002505 Param Intra 1 of 2 Total Dissolved Solids (mg/l) MW-3 191.6 100 n/a 11/26/2018 8 0 No No 0.002505 Param Intra 1 of 2 Total Dissolved Solids (mg/l) MW-4 407.2 n/a 11/26/2018 260 No 8 0 No 0.002505 Param Intra 1 of 2 Total Dissolved Solids (mg/l) MW-5 577.5 n/a 11/26/2018 520 No 8 0 No 0.002505 Param Intra 1 of 2 Total Dissolved Solids (mg/l) MW-6 250.2 n/a 11/26/2018 180 No 8 0 No 0.002505 Param Intra 1 of 2 Total Dissolved Solids (mg/l) MW-8 448 n/a 11/26/2018 320 No В 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 1/10/2019 4:12 PM View: SBMU-SPS Appendix III

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

#### Sanitas™v.9,6,11 Sanitas software licensed to GREDELL Engineering only, UG

Boron Within Limit Intrawell Non-parametric 6000 MW-5 background 4800 MW-5 compliance 3600 £ Limit = 5700 2400 1200 11/30/16 4/24/17 9/16/17 2/8/18 7/3/18 11/26/18

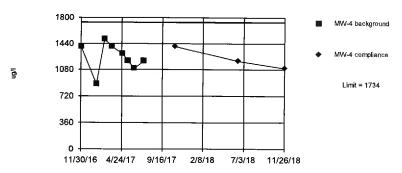
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient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

Prediction Limit Analysis Run 1/10/2019 4:12 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

Within Limit

#### Boron Intrawell Parametric



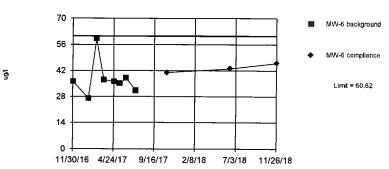
Background Data Summary: Mean=1248, Std. Dev.=198, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9503, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/10/2019 4:12 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software Icensed to GREDELL Engineering only, UG

Within Limit



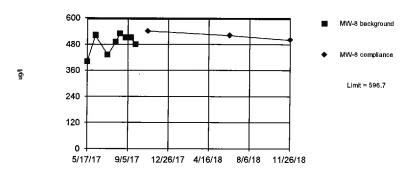


Background Data Summary: Mean=37.38, Std. Dev.=9.456, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7684, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.052055.

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.

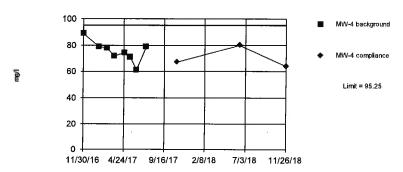
Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

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 (e=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0052055.

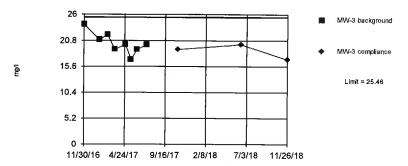
Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

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 = 0.005505.

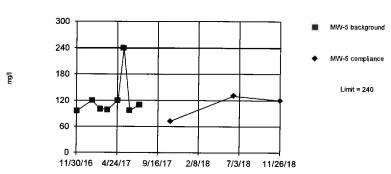
Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

Within Limit

Calcium



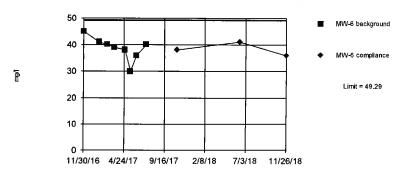


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient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

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.

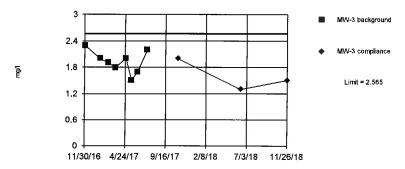
Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL Engineering only. UG

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 = 0.005205.

Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III

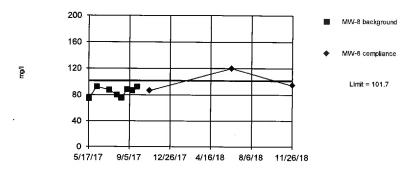
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL Engineering only. UG

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 1/10/2019 4:13 PM View: SBMU-SPS Appendix III

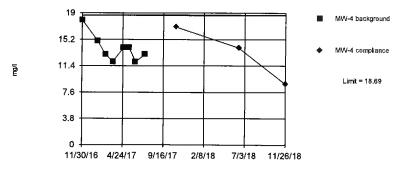
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

Within Limit

Chloride

#### Intrawell Parametric

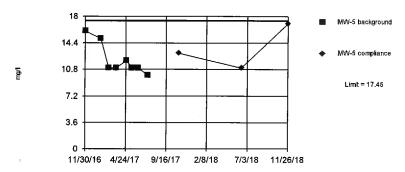


Background Data Summary: Mean=13.88, Std. Dev.=1.959, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8612, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Within Limit

Chloride

#### Intrawell Parametric



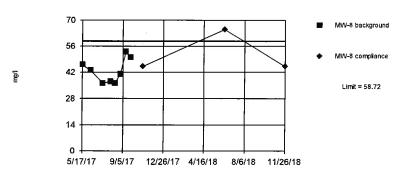
Background Data Summary: Mean=12.13, Std. Dev.=2.167, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7822, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

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 1/10/2019 4:13 PM View: SBMU-SPS Appendix III

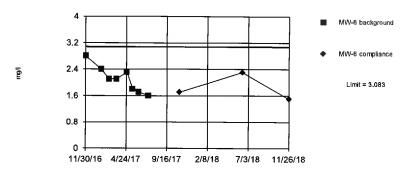
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software Icensed to GREDELL Engineering only, UG

Within Limit

Chloride

#### Intrawell Parametric



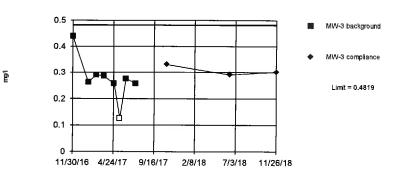
Background Data Summary: Mean=2.1, Std. Dev.=0.4, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas\*\* v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG Hollow symbols indicate censored values,

Within Limit

Fluoride
Intrawell Parametric



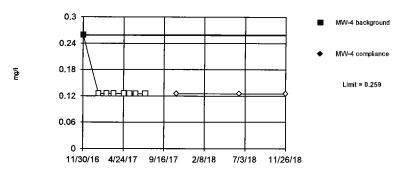
Background Data Summary: Mean=0.2736, Std. Dev.=0.08475, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8446, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha =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

Sanitas™ v.9.6.11 Sanitas software Icensed to GREDELL Engineering only, UG Hollow symbols indicate censored values.

Within Limit

Fluoride

#### Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

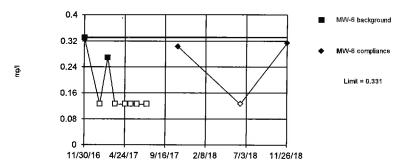
Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™v.9.6.11 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols Indicate censored values.

Within Limit

Fluoride

#### Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

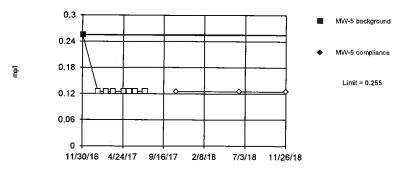
Sanitas<sup>re</sup> v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG Hollow symbols indicate conscred values

iomow symbols indicate censored

Within Limit

Fluoride

#### Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality; data were not deseasonalized.

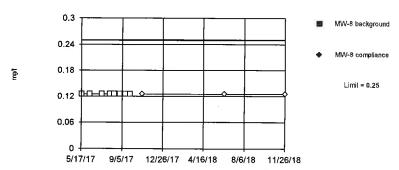
Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas\*\*\* v.9.6.11 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.

Within Limit

Fluoride

#### Intrawell Non-parametric

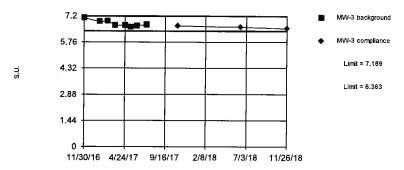


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Within Limits

р**Н** ...\_

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 = 0.0051055.

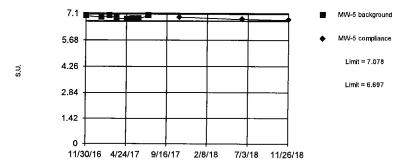
Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

Within Limits

pН

#### Intrawell Parametric



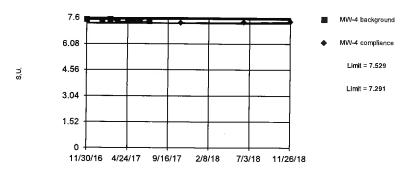
Background Data Summary: Mean=6.888, Std. Dev.=0.07741, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8471, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

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.

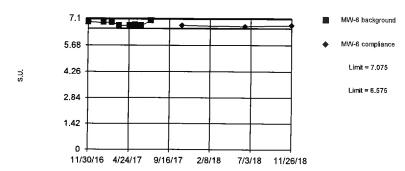
Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas\*\* v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

Within Limits

pН

Intrawell Parametric

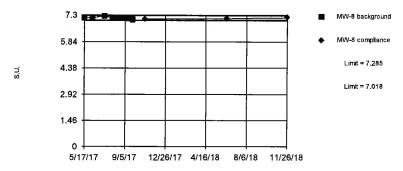


Background Data Summary: Mean=6.825, Std. Dev.=0.1018, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8714, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005205.

Within Limits

рΗ

#### Intrawell Parametric



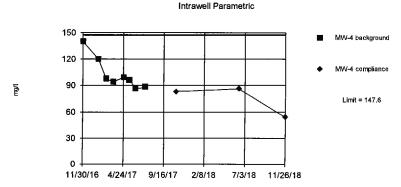
Background Data Summary; Mean=7.151, Std. Dev.=0.05436, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8529, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III 

Sanitas\*\* v.9.6,11 Sanitas software licensed to GREDELL Engineering only, UG

Within Limit

Sulfate



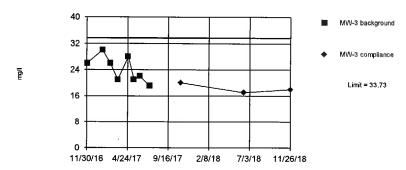
Background Data Summary: Mean=102.5, Std. Dev.=18.33, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8132, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas™v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

Within Limit

Sulfate

#### Intrawell Parametric



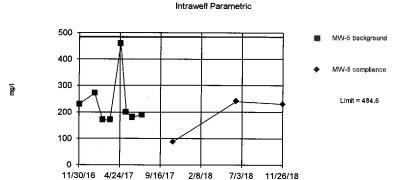
Background Data Summary: Mean=24.13, Std. Dev.=3.907, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9297, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL Engineering only. UG

Within Limit

Sulfate

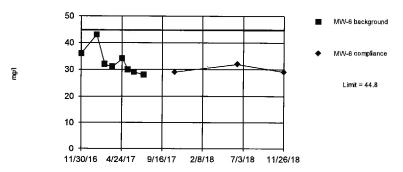


Background Data Summary (based on square root transformation): Mean=15.06, Std. Dev.=2.829, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7511, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132).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

Within Limit

Sulfate

#### Intrawell Parametric



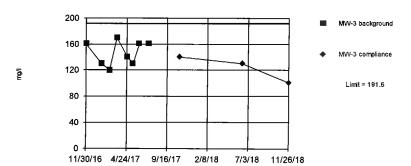
Background Data Summary: Mean=32.88, Std. Dev.=4.853, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8801, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005055.

Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas\*\* v.9.6.11 Sanitas software licensed to GREDELL Engineering only. UG

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 1/10/2019 4:13 PM View: SBMU-SPS Appendix III

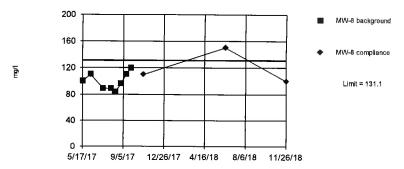
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL, Engineering only, UG

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 despasonalized. 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 = 0.005055.

Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™v,9,6,11 Sanitas software licensed to GREDELL Engineering only, UG

Within Limit

Total Dissolved Solids
Intrawell Parametric

MW-4 background

MW-4 compliance

Limit = 407.2

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.

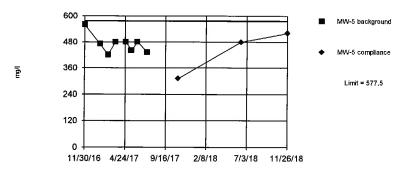
7/3/18 11/26/18

11/30/16 4/24/17 9/16/17 2/8/18

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.

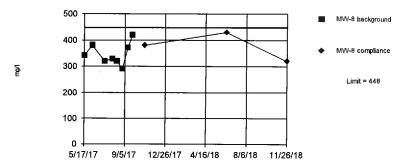
Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

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 = 0.0951505.

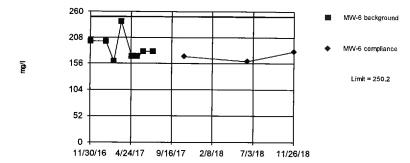
Prediction Limit Analysis Run 1/10/2019 4:13 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.11 Sanitas software licensed to GREDELL Engineering only, UG

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.

## **Appendix 9**

**Alternate Source Demonstration** 

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

## **GREDELL Engineering Resources, Inc.**

# Sikeston Board of Municipal Utilities Sikeston Power Station Detection Monitoring Program for Bottom Ash Pond Alternate Source Demonstration

Prepared for:



Sikeston Power Station 1551 West Wakefield Avenue Sikeston, MO 63801





September 2018

#### PROFESSIONAL ENGINEER'S CERTIFICATION

#### 40 CFR 257.94(e)(2) Alternate Source Demonstration

I, Thomas R. Gredell, P.E., a professional engineer licensed in the State of Missouri, hereby certify in accordance with 40 CFR 257.94(e)(2) to the accuracy of the alternate source demonstration described in the following report for the Sikeston Board of Municipal Utilities, Sikeston Power Station, Bottom Ash Pond CCR unit. The report demonstrates that the statistically significant increase of chloride, sulfate, and calcium in MW-8 resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This demonstration successfully meets the requirements of 40 CFR 257.94(e) as found in federal regulation 40 CFR 257, Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments. In addition, the demonstration was made using EPA Unified Guidance (Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance: EPA 530/R-09-007) and generally accepted methods.

Name:	Thomas R. Gre	dell P.E	The same	$2 n \parallel$	
Signature:	<u> </u>		OF MIS	West of the second	III)
Date:		15/	THOMAS R. GREDELL	X*\\	
	umber: PE-0211	34 5/8	NUMBER		
State of Regist	ration: Missouri	A SO	PE-021137		
		de	SIONAL	4	

## Sikeston Board of Municipal Utilities Sikeston Power Station Detection Monitoring Program for Bottom Ash Pond Alternate Source Demonstration

#### September 2018

#### **Table of Contents**

1.0	INTRODUCTION	1
2.0	OBSERVATIONS AND DATA COLLECTION	2
3.0	DISCUSSION OF ALTERNATVE SOURCE	3
4.0	CONCLUSIONS AND RECOMMENDATIONS	6
5.0	REFERENCES	7

#### **List of Figures**

Figure 1 – Bottom Ash Pond Groundwater Monitoring Well System

Figure 2 – Trend Analysis Plots for Selected Background Data

**List of Tables** 

**Table 1 – Water Quality Data Summary** 

**List of Appendices** 

Appendix 1 - Field Sampling Logs - MW-8

#### 1.0 INTRODUCTION

This Alternate Source Demonstration Report has been prepared to address the results of the semi-annual sampling event conducted on June 13, 2018 at the Sikeston Board of Municipal Utilities (SBMU) Sikeston Power Station's (SPS) Bottom Ash Pond, a coal combustion residual (CCR) surface impoundment. Following receipt of final analytical data, statistical analysis was performed by GREDELL Engineering Resources, Inc. (Gredell Engineering) on June 29, 2018 in accordance with the approved plan for the parameters listed in Appendix III to Part 257 – Constituents for Detection Monitoring. The results of the statistical evaluation suggested the apparent presence of three statistically significant increases (SSIs) in one of five wells constituting the groundwater monitoring well system for the Bottom Ash Pond. These initial results were confirmed by subsequent analytical data received on July 24, 2018, following resampling and reanalysis of the well in question, designated MW-8.

As stated in §257.94(e)(2), an owner or operator may demonstrate that a source other than the CCR unit caused the apparent SSI over background levels for a constituent or that the apparent SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting an apparent SSI over background levels to include obtaining a certification from a qualified professional engineer verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner of the CCR unit may continue with a detection monitoring program. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by §257.90(e), in addition to the certification by a qualified professional engineer.

Gredell Engineering has completed a review of the groundwater sampling and analytical data for the SBMU SPS Bottom Ash Pond groundwater monitoring well system to determine if an alternate source is the cause of the apparent SSIs in monitoring well MW-8. This report presents the results of that evaluation and includes supporting documentation.

#### 2.0 OBSERVATIONS AND DATA COLLECTION

The Bottom Ash Pond groundwater monitoring well system consists of five wells, designated MW-3, MW-4, MW-5, MW-6, and MW-8 (Figure 1). Monitoring wells MW-3, MW-4, MW-5, and MW-6 were installed in April 2016, and sampled on an approximate monthly basis beginning in November 2016 and ending in July 2017 to establish a background data base. Monitoring well MW-8 was installed in April 2017, and was sampled at an increased frequency beginning in May 2017 and ending in September 2017. The increased background sampling frequency of MW-8 was necessary to comply with §257.94(b), which states, "...a minimum of eight independent samples from each background and downgradient well must be collected and analyzed for the constituents listed in appendix III and IV to this part no later than October 17, 2017". Table 1 summarizes the sampling dates and water quality data for each sampling event pertaining to this monitoring well system. Additional information regarding these wells is available in the Bottom Ash Pond monitoring well design, installation, and development report (Gredell Engineering, 2017).

The results of the eight independent background sampling events were evaluated in accordance with §257.93, and intra-well analysis using prediction limits was selected as the statistical analysis approach for detection monitoring (Gredell Engineering, 2018). Following receipt of final analytical data reports from the contract laboratory, the reported concentration for each detection monitoring constituent (Table 1) from each well is compared to its respective prediction limit. If a concentration exceeds the respective prediction limit for a particular constituent well pair, or is outside the predicted range (in the case of pH), a SSI over background is suspected.

The five monitoring wells were sampled October 31, 2017 and June 13, 2018 in accordance with §257.94 Detection Monitoring Program. The results of the October 31, 2017 Detection Monitoring event, including the determination that no SSIs were noted following statistical analysis, are detailed in the 2017 Annual Groundwater Monitoring and Corrective Action Report posted in SBMU's Operating Record on January 31, 2018 (Gredell Engineering, 2018). The results of the June 13, 2018 event are described below.

Following receipt of the analytical data from the June 13, 2018 sampling event, data were compared with their respective prediction limits. Three suspected SSIs were noted for the samples analyzed from MW-8, including Calcium, Chloride, and Sulfate. The prediction limits for Calcium, Chloride, and Sulfate in MW-8 are 101.7 mg/L, 58.72 mg/L, and 131.1 mg/L, respectively, whereas the reported concentrations were 120 mg/L, 65 mg/L, and 150 mg/L, respectively. MW-8 was resampled on July 10, 2018 and the initial results for Chloride, Sulfate, and Calcium data were confirmed on July 24, 2018. These subsequent results for Calcium, Chloride, and Sulfate were 120 mg/L, 68 mg/L, and 140 mg/L, respectively (Table 1). A replicate sample also taken from MW-8 during the July 10, 2018 resampling event showed that reported concentrations of Calcium, Chloride, and Sulfate were 120 mg/L, 71, mg/L, and 150 mg/L, respectively.

#### 3.0 DISCUSSION OF ALTERNATVE SOURCE

The U.S. Environmental Protection Agency (USEPA) provides Unified Guidance for statistical analysis of groundwater monitoring data (USEPA, 2009). This Unified Guidance was reviewed to assess the validity of the apparent SSIs detected in MW-8 following the July 10, 2018 confirmatory resampling event. Chapter 4 of the Unified Guidance discusses groundwater monitoring programs and statistical analysis of the associated data. Within this discussion are a number of items to consider when attempting "to determine whether or not the increase is actually due to a contaminant release". Several of these considerations are pertinent to the data associated with the Bottom Ash Pond groundwater monitoring well system and for that reason are listed below.

- 1. Chapter 4, page 4-8: Could observed SSIs for naturally occurring analytes be due to longer-term (i.e., seasonal or multi-year) variation? Seasonal or other cyclical patterns should be observable in upgradient wells. Is this change occurring in both upgradient and downgradient wells? Depending on the statistical test and frequency of sampling involved, an observed SSI may be entirely due to temporal variation not accounted for in the sampling scheme.
- 2. <u>Chapter 4, page 4-8:</u> Were early sample data following well installation utilized in statistical testing? Initial well measurements are sometimes highly variable during a 'break in' sampling and analysis period and potentially less trustworthy.
- 3. Chapter 4, page 4-9: Have there been changes in well performance over time?
- 4. Chapter 4, page 4-9: Have there been 'mid-stream' changes in sampling procedures, e.g., increased or decreased well purging? Have sampling or purging techniques been consistently applied from well to well or from sampling event to sampling event?
- 5. <u>Chapter 4, page 4-9:</u> Have there been increases in well turbidity and sedimentation, which could affect observed contaminant levels?

Each of these considerations were used to evaluate the background data and the validity of the apparent SSIs for Calcium, Chloride, and Sulfate in MW-8. The results of this evaluation are discussed below.

#### **Unified Guidance Consideration 1**

The background sampling period for well MW-8 spans a timeframe of less than five months. This short sampling period is considered unrepresentative of possible longer-term (seasonal or multi-year) variations in groundwater quality. Furthermore, the background sampling period for the remaining wells spans a timeframe of approximately eight months. Because none of the wells have a background sampling period of at least a year or more, seasonal variation or multi-year trends in background concentrations of Detection Monitoring Constituents (Table 1) cannot be fully assessed. However, the available data set for each well suggests natural seasonal variation may exist within the groundwater monitoring well system.

Figure 2 displays time series plots developed using Excel® for Calcium, Chloride, and Sulfate for each well in the Bottom Ash Pond groundwater monitoring well system. The first column of plots displays Chloride, the second column displays Sulfate, and the third column displays Calcium. Each well is represented by a single row of time series plots, with MW-3 data displayed on the first row and wells MW-4, MW-5, MW-6, and MW-8 displayed in successive rows. Note the horizontal (time) axis is identical on all plots.

Time series plots for wells MW-3, MW-4, MW-5 and MW-6 display background data spanning an eight month period (November 2016 to July 2017). Linear regression models, also developed using Excel®, of the plotted data are displayed to assess potential data trends. Ten of the twelve plots suggest a decreasing trend in the data during the background monitoring period.

Time series plots for MW-8 are displayed on the bottom row of Figure 2. MW-8 background data spans a five month period (May 2017 to September 2017). Data collected during the first three months (May 2017 to July 2017) show a decreasing trend similar to the other wells. However, these three plots also suggest an increasing trend in Chloride, Sulfate, and Calcium during late summer (July 2017 to September 2017), a period of time during which background sampling was not conducted for the remainder of the monitoring well system.

This evaluation strongly suggests that a longer background sampling interval that spans at least one year or more is better suited to assess seasonal or cyclical variation in groundwater quality from the Bottom Ash Pond groundwater monitoring system.

#### **Unified Guidance Consideration 2**

Unified Guidance indicates that chemical data from sampling during a well's 'break-in' period can be highly variable and potentially less trustworthy than data collected later relative to the construction of a well. While Unified Guidance does not specify a 'break-in' period for a well, it does suggest that data trends may indicate sampling was conducted during the 'break-in' period following new well installation. Well construction records were reviewed to assess the time lapse between construction and background sampling. Background sampling of wells MW-3, MW-4, MW-5, and MW-6 began seven months after construction, whereas background sampling of MW-8 began one month after well construction to ensure compliance with §257.94(b). The time series plots for MW-8, discussed above, suggest multiple data trends that suggest sampling was conducted prior to 'break-in'.

This review strongly suggests that allowance of a longer 'break-in' period for monitoring well MW-8 and the incorporation of additional background data collected later relative to the date of well construction may result in more representative background data.

#### Unified Guidance Considerations 3, 4, and 5

Based on field records, changes are apparent in well MW-8 with regard to well performance. The field sampling logs for MW-8 during both the June 13, 2018 sampling event and the July 10, 2018

resampling event (Appendix 1) indicate yellow or orange flakes were present in the purged water and in the sample, but field logs from previous sampling events for this well do not document similar observations. The presence of these flakes are believed indicative of changes in biologic activity in the water column screened by the well, which apparently affected both well performance and the recorded turbidity in purge water removed prior to sampling.

The total purge volume recorded in MW-8 during each of the background sampling events, in milliliters (mL), was; 2,180, 2,180, 2,840, 2,700, 2,600, 2,280, 1,720, and 2,640, respectively (Appendix 1). However, the total purge volume during the June 13, 2018 semi-annual sampling event was 7,720 mL, or approximately three times the average background purge volume for this well. During a post-sampling debriefing, field personnel indicated that the increased purge time and volume was necessary to achieve field parameter (turbidity) stabilization. Review of the Field Sampling Log for this event (Appendix 1) confirms that turbidity values were elevated and required increased purge time and volume relative to previous sampling event observations in order to stabilize.

Based on field sampling logs, the maximum turbidity value recorded from purging of MW-8 during each of the eight background sampling events was, in Nephelometric Turbidity Units (NTU); 3.57, 2.02, 1.66, 0.98, 2.98, 1.79, 0.67, and 0.86, respectively, but the maximum turbidity reading recorded during the June 13, 2018 semi-annual sampling event was 148.9 NTU (Appendix 1). The final (sampled) MW-8 turbidity reading during the June 13, 2018 semi-annual sampling event was 4.80 NTU, which is at least twice the final turbidity value recorded in MW-8 during previous sampling events (Table 1). The field sampling log for the July 10, 2018 resampling event similarly reflects elevated turbidity values (Appendix 1).

These data collectively suggest that well performance, sampling procedures, and turbidity levels changed between the background sampling period and the June 13, 2018 semi-annual sampling event. All of these factors are described by Unified Guidance as potential causes of false positives (and alternate sources) for apparent SSI detections during statistical evaluation.

#### 4.0 CONCLUSIONS AND RECOMMENDATIONS

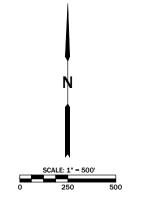
Gredell Engineering concludes that the apparent SSIs of Chloride, Sulfate, and Calcium in MW-8 detected during the June 13, 2018 sampling event are attributable to alternate sources that have created false positives in the analytical data results. The range in concentrations of these three constituents potentially vary seasonally or cyclically over a duration longer than the span of the background sampling period for each of the Bottom Ash Pond groundwater monitoring system wells, as is suggested by time series plots (Figure 2). Additionally, the background sampling period for MW-8 was largely coincident with the 'break-in' period of the well following construction, which likely resulted in the collection of unrepresentative background data. Finally, the performance of MW-8 changed during the June 13, 2018 sampling event relative to previous sampling events. This performance change was manifested by the appearance of orange and yellow flakes potentially attributable to biologic activity and resulting in increased turbidity as observed during well purging. The increased turbidity resulted in significantly increased purge time and volume to achieve the stabilization criteria necessary for collection of a representative groundwater sample. Based on these conclusions, Gredell Engineering recommends the following:

- 1. Continue with semi-annual detection monitoring in accordance with §257.94;
- Re-develop MW-8 to reduce or eliminate turbidity;
- 3. Conduct quarterly sampling of all Bottom Ash Pond wells for the constituents listed in Appendix III and IV to Part 257, and continue data acquisition for a minimum of eight quarters. Data resulting from these sampling events can also be used to fulfil §257.94 requirements for semi-annual detection monitoring of the Bottom Ash Pond groundwater monitoring system, and;
- 4. Update background data sets for the Bottom Ash Pond groundwater monitoring system wells at a frequency in accordance with Unified Guidance.

#### 5.0 REFERENCES

- GREDELL Engineering Resources, Inc., 2017, Sikeston Power Station Documentation of Monitoring Well Design, Installation & Development for Compliance with 40 CFR 257.91. Prepared for Sikeston Board of Municipal Utilities, October 17, 2017.
- GREDELL Engineering Resources, Inc., 2018, Sikeston Power Station 2017 Annual Groundwater Monitoring and Corrective Action Report for Bottom Ash Pond for Compliance with USEPA 40 CFR 257.90(e). Prepared for Sikeston Board of Municipal Utilities, January 26, 2018.
- USEPA, 2009, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance: EPA 530/R-09-007, Office of Resource Conservation and Recovery, Program Implementation and Information Division, Washington, D.C.

# **FIGURES**



#### **LEGEND**

PROPERTY LINE (APPROXIMATE)

MONITORING WELL

UP GRADIENT

MONITORING LOCATION

DOWN GRADIENT MONITORING LOCATION

# MW

UG

DG

#### NOTES:

- 1. IMAGE PROVIDED BY BING MAPS.
- 2. MONITORING WELL LOCATIONS/ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.

# FIGURE 1 SIKESTON POWER STATION

# **GREDELL Engineering Resources, Inc.**

#### **ENVIRONMENTAL ENGINEERING** LAND - AIR - WATER

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

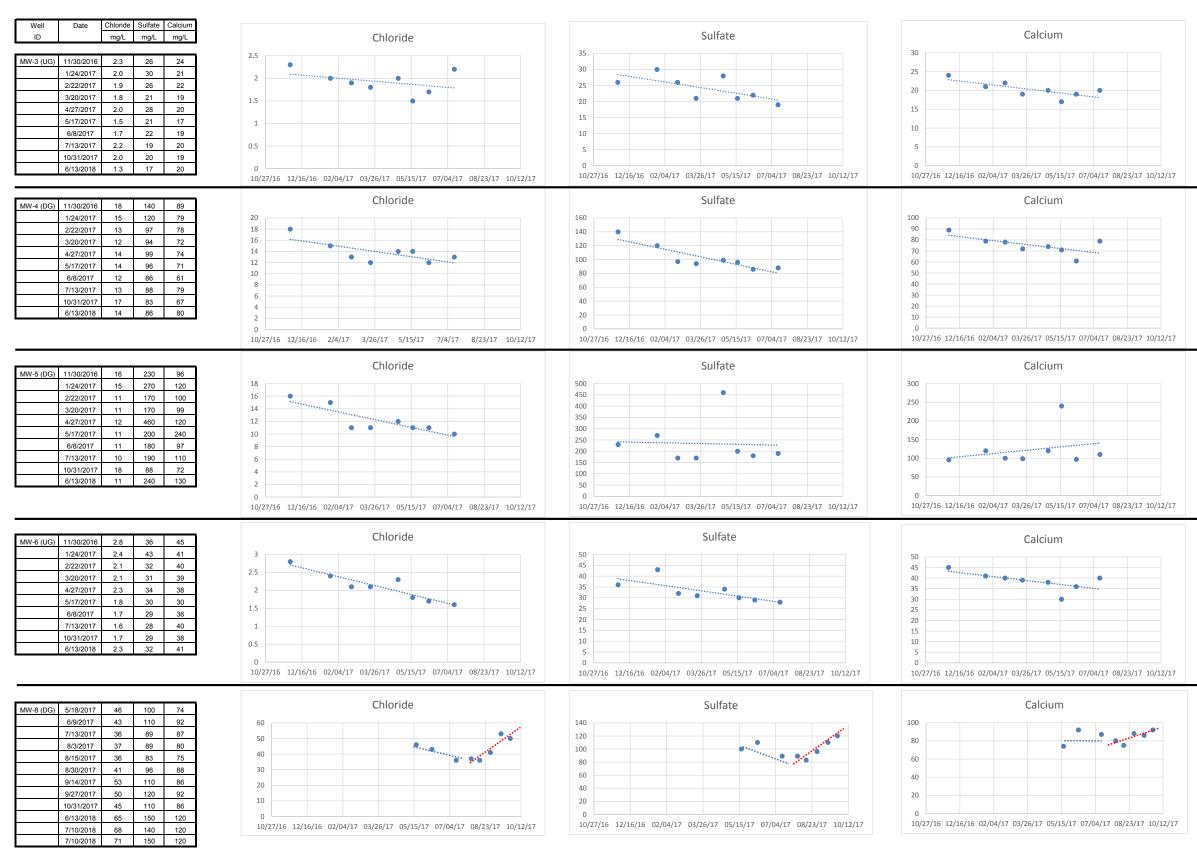
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

BOTTOM ASH POND GROUNDWATER MONITORING WELL SYSTEM

DATE	SCALE	PROJECT NAME	REVISION
10/2018	AS NOTED	SIKESTON	
DRAWN	APPROVED	FILE NAME	SHEET #
CP	MCC	LOCATION RESTRICTION	1 OF 1

#### Sikeston Board of Municipal Utilities Sikeston Power Station Bottom Ash Pond Scott County, Missouri

Figure 2
Time Series Plots for Selected Data



# **TABLES**

#### **Sikeston Board of Municipal Utilities** Sikeston Power Station Bottom Ash Pond Scott County, Missouri

#### Table 1 **Water Quality Data Summary**

												wate		ty Date	Julilli	u. y												
									Detection	n Monitor	ing Cons	tituents	(Appendix	III)						Assessment	Monitorin	g Constitu	uents (App	pendix IV)				
Well	Date	Monitoring Purpose	Spec. Cond.	Temp.	ORP	D.O.	Turbidity	pН	Chloride	Fluoride	Sulfate	TDS	Boron	Calcium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium III	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226 and 228 (Combined)
ID		Monitoring Furpose	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	pCi/L
Federal MCL									None	4.0	None	None	None	None	6	10	2000	4	5	100	6	15	40	2	100	50	2	
MW-3 (UG)	11/30/2016	Background	254.0	15.75	-27.1	0.41	37.28	7.08	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	6.88	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	6.93	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	6.68	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	6.68	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	6.59	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	6.66	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	6.71	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	6.64	2.0	0.331	20	140	27	19	(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	6.59	1.3	0.291	17	130	23	20	(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		0.48	0.61	7.46	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		0.50	0.48	7.45	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		0.51	1.19	7.49	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 4/27/2017	Background	562.8 536.9	18.58 17.25		0.69	1.70 2.38	7.37	12 14	<0.250 <0.250	94 99	350 300	1400	72 74	<3.0 <3.0	<1.0 <1.0	53 50	<1.0 <1.0	<1.0 <1.0	<4.0 <4.0	<2.0 <2.0	<1.0 <1.0	<10 <10	1.3 <0.20	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	1.036 0.210(ND)
	5/17/2017	Background Background	554.9	17.25		0.91	3.02	7.38	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	0.210(ND) 0.774(ND)
	6/8/2017	Background	509.7	18.24		0.86	0.84	7.38	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	0.774(ND) 0.464(ND)
	7/13/2017	Background	575.5	19.46		0.52	1.43	7.37	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	1	0.63	1.07	7.31	17	<0.250	83	290	1400	67	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection	511.5	18.92		0.44	18.50	7.32	14	<0.250	86	290	1200	80	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
																. ,	` ′		` ′	` ′	` /			` ′			` ′	` ′
MW-5 (DG)	11/30/2016	Background	808.3	16.20	-48.7	0.50	1.24	6.97	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	6.90	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	6.97	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	6.85	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	6.80	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	6.81	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	6.82	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		1.08	17.49	6.98	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	1	0.85	3.17	6.89	18	<0.250	88	310	280	72	(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	6.77	11	<0.250	240	480	370	130	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MM 0 (110)	44/00/0040	Dealman	200.0	40.00	40.4	0.05	0.04	0.00	0.0	0.004	- 00	000	- 00	45	-0.0	4.0	400	-4.0	-4.0	-4.0	-0.0	-1.0	-10	-0.00	-4.0	-1.0	-1.0	4.500
MW-6 (UG)	11/30/2016 1/24/2017	Background Background	369.0 358.9	16.39 16.29	1	0.85	0.84	6.92	2.8	0.331 <0.250	36 43	200	36 27	45 41	<3.0 <3.0	4.3 5.7	190 220	<1.0 <1.0	<1.0 <1.0	<4.0 <4.0	<2.0 <2.0	<1.0 <1.0	<10 <10	<0.20 <0.20	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	1.532 0.948(ND)
	2/22/2017	Background	352.5	17.20	1	0.81	15.27	6.89	2.4	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	0.946(ND) 0.685(ND)
	3/20/2017	Background	360.8	16.90		0.36	9.70	6.73	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	0.5577(ND)
	4/27/2017	Background	331.5	15.71		0.39	8.35	6.72	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		0.45	7.13	6.76	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		0.33	3.86	6.73	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	6.98	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	6.72	1.7	0.303	29	170	41	38	(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	6.67	2.3	<0.250	32	160	43	41	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-8 (DG)	5/18/2017	Background	662.5	17.58	-89.4	0.29	2.39	7.16	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	7.16	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		0.23	1.20	7.25	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			0.98	7.15	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		0.38	0.99	7.16	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)
<del></del>	8/30/2017	Background	644.2	18.62		0.29	1.18	7.15	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)
<del></del>	9/14/2017	Background	707.9	18.52	+	0.48	0.67	7.13	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	+		0.58	7.05	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	+	0.38	0.94	7.09	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	+	0.23	4.80	7.11	65	<0.250	150	430	520	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/10/2018 7/10/2018	Re-sample Re-sample/DUP	899.4 899.4	18.52 18.52	+	0.35	2.69	7.09	68 71	(NA) (NA)	140 150	(NA)	(NA) (NA)	120 120	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)	(NA) (NA)
	111012010	те-затре/дог	039.4	10.02	-34.2	0.00	2.03	1.08	/1	(1474)	100	(INA)	(1474)	120	(INA)	(11/4)	(14/4)	(11/11)	(1474)	(INA)	(14/4)	(14/4)	(14A)	(14/4)	(1NA)	(INA)	(14/4)	(INA)
						•																						

- 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.

- 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. Enders Mol. Maximum C.

  9. Enders Mol. Maximum C.

  10. Section 1
- 8. Federal MCL = Maximum Contaminant Level per CFR 40 Subchapter D Part 141 subpart G Section 141.62 & 141.66.

# **APPENDICES**

# **Appendix 1**

Monit	oring Well I	): Mu	) <b>8</b> Fa	sellity: SBM	IU Sikeston I	Power Stat	ion - Ground	water Monito	oring	norma surficiale Auto.
Initial Wa	ter Level (fe	et btoc)	9.10			Date:	5-18-	17		-
Initial Gro	undwater El	evation (NAVI	D88):		Prior dispusance	Air Pressi	ure in Well?	Y /1	)	
PURGE	NFORMATIO	NC								
Date:	5-18	'-17		and	336 232 232		33. 36. 34. But	AND REPORT OF THE PARTY OF THE		
Name (Sa	mple Collec	tor)	A. Pa	tel						Adopted September 1
Method of	Well Purge	Low Flov	v Perstaltic	Pump	De	dicated Tu	bing? (	Ŷ/ N		
Time Purg	ing Initiated	:	1057		On	e (1) Well	Volume (mL)	:	NA	
Beginning	Water Leve	I (feet btoc).		9.10	Tol	tal Volume	Purged (mL)	):	2180	
Beginning	Groundwate	er Elevation (N	NAVD88);		We	ell Purged 1	To Dryness?		Y / 🔞	
Well Total	Depth (feet	btoc):			Wa	iter Level a	ifter Samplin	g (feet bloc)	_	
Casing Dia	ameter (feet)	): 2" Sch 40	0 PVC				e., pump is o	,		*
					Tin	ne Samplin	g Completed	l:	1/35	
PURGE S	TABILIZATI		The Atlanting of Party Code   of			P-14-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	Oxidation	manager (Secretary Section 1)		
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1059		220	22.04	612.6	0,92	7.14	-84.6	2.25	9.10	
1101	240	700	18.70	646.2	0.42	7.17	-92.2	3.57	64	generalise
1103	250	1200	17.85	661.7	0.36	j. A	-90.7	2.46	It	
1105	250	1700	17.53	667.1	0.32	Ar .	-89.8	1.56	11	
1107	240	2180	17.58	662.5	0.29	7.16	-89.4	2.39	l a	
		. FOC WAY						wheel white with supplied 17 properties or 17		
			-	reserve or an extension of the second						
				e the Charles and Charles						
			**************************************		and the state of t				- legg-	and the second s
								The second secon		
			and the second s							
							Section of the party of the par			
						i. Otrovi – W.A.& Albertonion Assessment Ass				
		-								
							***			
			angilinanamahinnan Marajahan 1923, Maraja m			alialis de la September de Sept				
						Contraction of the	Access to the last of the last			

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ater Monitoring	Monitoring V	/eli ID:	18
Sampling Informa	ation:						
Method of Samplin	ng: Low Flow	Perstaltic Pump	& Tubing	depline when the same and the s	anne paga paga paga da di salaman sa	Dedicated:	
Water Level @ Sa	mpling (feet btoc)	): 9	./0'				
Monitoring Event:	Annual ( )	Semi-Annua	I() Quarte	rly()	fonthly ( )	Other (X)	
Final Purge Stabliz	ation Sampling D	Data:					
<u>Date</u> 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>5-18-1</u> 7	240	17.58	662.5	0.29	7.16	-89,4	2,39
See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in General Informati	oll Multi-Probe Finc. Micro TPI Fiel	eld Meter (Temp	erature, Specifi	ng instruments: c Conductance, Disso	ved Oxygen, p	H, Oxidation Redu	uction Potentia
Weather Condition		alina:	lane &	10	7000		
vveather Condition	s @ time or samp	oning.	ICM My	tera wassly,	13 /	Parkers designation of the design to the continued by a stage of the continued by a stage of the continued by a	
Sample Characterion		C lear Per SAP	Loluelass, s	durles S			Makes die elementerwerterwerterwerterwerterwerter der der der der der der der der der d
Comments and Ob	servations:						•
, the Association and the adoption to applied a 2 Japanese construction and the Association and the Associ							
		B. Albah B.P.F.   WELLINGER   November and continuous communication and continuous communication and continuous communication and continuous co					
	and the state of t	r vir allene from from della della companya della companya della companya della companya della companya della co		A section per version and section and sect			
						mayonyi e ketilayi fadir a ngayiga ngamara da isame nda asamin sa mayony ntangsa anda na	The state of the s
certify that sampli	ng procedures we	ere in accordanc	e with applicable	e EPA and State prote	ocols.	- 17 Abb	A SECTION OF THE PROPERTY OF T
Date: <u>\$-18-17</u>	Ву:	1/1-		Title	146	tenh	

1 090 2 07

Monite	oring Well IE	M	<b>√ 8</b> Fa	cility: SBM	IU Sikeston I	Power Stati	on - Ground	water Monito	oring	
Initial Wat	ler Level (fe	et btoc):	9.	20		Date:	6-9	- 201	7	
Initial Gro	undwater El	evation (NAV	D88):			Air Pressu	re in Well?	Y /(N)	)	
	NFORMATIC	And the second s			Y18					
Date:		-2017		0.111						
Name (Sa	mple Collec	tor) 17	MC	Gill						May 17 Top of the company of the com
Method of	Well Purge	Low Flov	v Perstaltic	Pump	De	dicated Tut	oing? (	Y/ N		
Time Purg	ing Initiated	091	0		On	e (1) Well \	/olume (mL)	<b>)</b> :	NA	
Beginning	Water Leve	(feet btoc):	9.	20	To	tal Volume	Purged (mL	<b>)</b> :	218	0
Beginning	Groundwate	er Elevation (I	NAVD88);	Acceptable and the second	We	ell Purged T	o Dryness?		Y 🚯	
Well Total	Depth (feet	btoc): 3	7.04		Wa			g (feet btoc)	4,6	10
Casing Dia	ameter (feet	): 2" Sch 4	0 PVC				e., pump is			
					Tin	ne Samplin	g Completed	d:	093	
PURGE S	TABILIZATI	T T					Oxidation	T		
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (\$.U.)	Reduction Potential	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0912		460	20.10	651	0.52	7. 15	(mV) -113.1	2,02	9.20	
0914	3%	1100	18.52		0,38	7.15	-112,4		9,20	
0916	230	1600	18.08	680,3	0.34	7.16	-11a4	1.21	9,20	
0919	290	2180	17.90	678.2	0.31	7.16	-1085	3,47	9.20	
							120.00			
								en annual anticonficiente de contra de c	7	and the second s
									THE STREET AND COMMENTS OF THE	
										MANAGE AND THE STREET
										-
				+.				Proc Mandalandal Sancia en	, ,	
								M. d		
							- Calubour system			
							White a state of the state of t			

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	ell ID:	1W8
Sampling Informa	ation:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing	90.5027************************************	Ann. 1987	Dedicated	(Y) / N
Water Level @ Sa	mpling (feet bloc)	9.0	0				
Monitoring Event:	Annual ( )	Semi-Annua	I() Quarte	rly() M	onthly ( )	Other 🖊	
Final Purge Stabilz	ation Sampling D	ata:					
<u>Date</u> 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)
6-9-2018	290	17.90	678.2	0.31	7.16	-128.5	0,47
2 - HF scientific, in	ibration log of dai oll Multi-Probe Fi ac. Micro TPI Fiel	eld Meter (Temp	erature, Specific	ng instruments: c Conductance, Dissolv	ved Oxygen, pł	H, Oxidation Redi	uction Potentia
General Informati		5.	. A. A. J.	:nau 70'	E		
Weather Condition	s @ ume or samp	ing:	MININA W	ingh, 30.			
Sample Characteris	stics: C1	eor, Co	100 less	odoness			
Sample Collection	Order:	Per SAP			Control operations and the second section of the Second Section Sectio	ry-terminational discount of the language of the special state of the sp	Anna aggr ( paggr
Comments and Ob	servations:	Work	ing 30	Yarks fro	m VS.	They o	110
digging		in sami	Charles .	20 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			7.79
, p. commencer and property of the contract of	<b>3</b> )\ **	4) substitute representation of the special section of the specia			The state of the s	~ (	E E. September of Sandahada V
Printermonologica ( ) A No Philosophysion reconstruction Let ( ) 280	Parameter (Marie al Marie al M	- And Alle Company of the Company of	· a security of the security o	The second secon	an any a morning of	Marie Contract of the Contract	The second section is transported to the second
The later on the confidence of	allelings and the second section of the section of	рукурунда түүл түүл түү ( ) —	11	(x,y) = (x,y) + (x,y	entantan'ny tanàna indrindra dia kaominina d	MIR. Phys. Legis Physiocenterior description days . App.	* 1 to the second specific product of the last of the second seco
n kemmin van gryptigsgeger var y van keer van die Albeitske anderswêre van de Albeitsk	taah nagyarang matininin san tit anta anta sias san agamba min any any ann a man	r en en autorior en par en glagonio en moltracello a such 2000, e gide consupera e successiva		00000 to the control of the control	The state of the s	ganah madanadi ya sana sana sana sana sana sana sana s	
en is ellerbe giggggggggggggggggggggggggggggggggggg		**************************************	and the same of th				
		angagamanganangang - J. el. s					
certify that sampli	na procedures we	ere in accordanc	e with applicable	e EPA and State protoc	cols		
Date: 6-9-20	Λ.	shi si	Para				
Date: 6-4-40	By; /	0 4	1 740(	Title:	Las	Tech	V

Page 2 of 2

Tield Sampling Log												
Monitoring Well ID MWS Facility	y: SBMU Sikeston	Power Station - Grou	ndwater Monito	pring								
Initial Water Level (feet bloc): 10.07		Date: 7 - /	3 - 20									
Initial Groundwater Elevation (NAVD88):		Air Pressure in Wel	7 Y 🕦									
PURGE INFORMATION												
Date <u>7-(3-2017</u>	*											
Name (Sample Collector): 1-1 Mc(	Gill	and the second section of the second		de la company de	- Sacramontal Succession Salary							
Method of Well Purge Low Flow Perstaltic Pur	mp De	edicated Tubing?	(Ŷ/N									
Time Purging Initiated: 09 0 5	O1	ne (1) Well Volume (r	nL):	NA								
Beginning Water Level (feet btoc):	07 To	otal Volume Purged (r	nL):	284	3							
Beginning Groundwater Elevation (NAVD88):	W	ell Purged To Drynes	s?	Y / N.								
Well Total Depth (feet bloc). 37, 05	w	ater Level after Samp		10.0	77_							
Casing Diameter (feet): 2" Sch 40 PVC		(i e., pump		~~ **								
	Ti	me Sampling Comple	ted:	093	9							
PURGE STABILIZATION DATA												
	Specific Dissolved	Oxidation DH Reduction	1	Water	Notes							
Rate Volume Co	onductance Oxygen (µS/cm) (mg/L)	(S.U.) Potentia (mV)		Level (feet btoc)	(e.g., opacity, color, odor)							
2907 460 21.21	6325 0.36	7.24 -111.4	1	10.07								
9909 343 1140 19.33 6.	5820.31	7,24 -108	8 1.66	10,07	and the same of th							
5411 240 1700 18.78 6.	58.2 0.26	7.25 -1-38.	21.24	10,07	-							
	67,2 0,25	7.29 -108.		10,07								
	61.5 0,23	7.25 -107.	11.20	10.07	~							
	•											

btoc - below top of casing

I certify that sampling procedures were in accordance with applicable EPA and State protocols	Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ater Monitoring	Monitoring We	ell ID: MV	V 8
Water Level @ Sampling (feet bloc): \( \begin{align*} \int O. O. 7 \\ \text{Monthoring Event:} \tanspire Annual () \text{ Semi-Annual ()} \text{ Quarterly ()} \text{ Monthly ()} \text{ Other (M)} \\ \text{Final Purge Stabilization Sampling Data:} \\ \text{Date Sample Rate remp (mU/min)} \text{ Temp (°C) } \text{ Specific Conductance (p.S/cm)} \text{ Dissolved Oxygen pH (s.U.) Potential (mV)} \\ \text{ Potential Purge Stabilization Data:} \\ \text{ See instrument Calibration Data:} \\ \text{ See instrument Calibration Data:} \\ \text{ See instrument Calibration log of daily calibration data for the following instruments:} \\  1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	Sampling Informa	ation:			•			
Monttoring Event: Annual () Semi-Annual () Quarterly () Monthly () Other (X)  Final Purge Stabilization Sampling Data:    Date   Sample Rate   Temp   Conductance (ml/mlm)   (*C)   Conductance (mg/L)   Dissolved Oxygen   pH   Reduction (NTU)   Potential (mV)   7-43-17   300   18.57   661.5   0.23   7.25   -107.1   1.20   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 - NF scientific, inc. Micro TPI Field Portable Turbidimeter    General Information:   Sunny Slight breeze   Warm   humid	Method of Samplin	g: Low Flow	- Perstaltic Pump	& Tubing		noon der Wertstellereichte der einer verreichte erstelle der	Dedicated:	⟨Ŷ / N
Final Purge Stabilization Sampling Data:    Date   Sample Rate   Temp   Conductance   Dissolved Oxygen   pH   Reduction   Reduction   Potential (NTU)	Water Level @ Sa	mpling (feet btoc	10.0	7				
Date Sample Rate (ml/min)   Temp ("C)   Conductance (µS/cm)   Dissolved Oxygen (mg/L)   (S.U.)   Ph (Reduction Potential (mW))   (NTU)	Monitoring Event:	Annual ( )	Semi-Annua	I() Quarte	rly ( ) M	onthly ( )	Other (c)	
Date   Sample Time   Sample Rate   (mL/min)   Temp   Conductance (μS/cm)   Dissolved Oxygen (mg/L)   Reduction   Turbidity (NTU)   T-(3-(7)   300   18.57   661.5   0.23   7.25   -107.1   1.20	Final Purge Stabliz	ation Sampling D	Data:			4		
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 Potentia 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter  General Information: Weather Conditions @ time of sampling: Sunny, Slight breeze, Warm, humid  Sample Characteristics: Coloriess, Odorless, Clear  Sample Collection Order: Per SAP  Comments and Observations: Collect Duplicate  Control Duplicate  I certify that sampling procedures were in accordance with applicable EPA and State protocols		'	,	Conductance		,	Reduction Potential	1
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 Potentia 2 - HF scientific, inc. Micro TPI Field Portable TurbidImeter  General Information:  Weather Conditions @ time of sampling: Sunny Slight breeze, Warm, hum; d  Sample Characteristics: Coloriess, odorless, Clear  Sample Collection Order: Per SAP  Comments and Observations:  Collect Duplicate  I certify that sampling procedures were in accordance with applicable EPA and State protocols		300	18.57	661.5	0.23	7.25	-127.1	1.20
Weather Conditions @ time of sampling: Sunny, Slight breeze, Warm, humid  Sample Characteristics: Coloriess, Odorless, Clear  Sample Collection Order: Per SAP  Comments and Observations:  Collect Duplicate  I certify that sampling procedures were in accordance with applicable EPA and State protocols	See instrument cal 1 - In-Situ SmarTr	ibration log of da oll Multi-Probe Fi	eld Meter (Temp	erature, Specifi		/ed Oxygen, p⊦	I, Oxidation Red	uction Potentia
Sample Characteristics: Coloriess, odorless, Cizar  Sample Collection Order: Per SAP  Comments and Observations:  Collect Duplicate  I certify that sampling procedures were in accordance with applicable EPA and State protocols	General Informati	on:		· cl·al			1 . 1	
Sample Collection Order:  Per SAP  Comments and Observations:  Collect Duplicate  I certify that sampling procedures were in accordance with applicable EPA and State protocols	Weather Condition	s @ time of sam	pling: Sun	ny stigh	nt breeze,	Warm,	humid	The state of the s
Contect Duplicate  Cottect Duplicate  I certify that sampling procedures were in accordance with applicable EPA and State protocols	Sample Characteri	stics: Col	lorless,	odorl	less, clear			
Collect Duplicate  I certify that sampling procedures were in accordance with applicable EPA and State protocols	Sample Collection	Order:	Per SAP	or and design the property of the second	- selekkonnessen en som en	$\mathcal{A}^{-}$ ship hybriquiting equiview-pure-range $\phi^{\dagger}\phi^{\dagger}\phi\phi^{\dagger}\phi\phi^{\dagger}\phi\phi^{\dagger}\phi\phi^{\dagger}\phi^{\dagger}$ $X,Y,Y,S,\Phi^{\dagger}\phi$	ettinkapipaksia ammatinin magamuurin, liji 222. 1928 3. atumpipaksidahnee eksterel	Was Promote and Asia
			cate					
	eregisterisellistististististististististististististi		andre in the contract of the c			enementus anno 1778 (1877), se repropulsamentus des legis	Banks (M. 17) (1967) Assymmetry Spatial advance of	
	and communication of approximately 1.50 through displacements	A - 1 may depend on the contract of the contra	man, page of the second page of		THE PARTY OF THE P	- Terrent like papagan	annia del constante del grave del constante quanda del constante del con	hilling of the complete and the complete
	The State of the S	electromagnetiquette, selectric sele	- no saw	a 3				neuer des fillentières des fillentes en de manières en que en en en que payaga en gge
							The state of the s	
Date: 7-13-17 By: Ashish Parel Title: Lab Tech	I certify that sampli	ng procedures w	ere in accordanc	e with applicabl	le EPA and State proto	cols		
The state of the s	Date: 7-13 - 1	7 By: As	ihish t	Parel	Title:	Lab -	Tech_	ONE STATE OF STREET

Page 2 of 2

Monito	oring Well ID	MW	/ <b>8</b> Fac	cility: SBM	U Sikeston F	ower Stati	on - Ground	water Monito	oring	
Initial Wat	er Level (fee	et btoc):	10.65			Date:	8-3	-201	7	
Initial Grou	undwater Ele	evation (NAVI	088):			Air Pressu	re in Well?	Y /(N)	<b>)</b>	
A STATE OF THE PERSON NAMED IN COLUMN	NFORMATIC					Same or a second or a second or				
Date:	8-13	-201	7							
Name (Sa	mple Collect	tor):	1 M	CGILL	. Wite you've at your exceptable flowership in the		polyn Marine Marine (M. M. or Salah Addisor)	Course of principles and remarks a single description with		
Method of	Well Purge:	Low Flov	v Perstaltic I	Pump	De	dicated Tul	bing? (	Y/N		
	ing Initiated		25		On	e (1) Well '	Volume (mL)	:	NA	
Beginning	Water Leve	I (feet btoc):	10	265	Tot	tal Volume	Purged (mL)	):	270	S
Beginning	Groundwate	er Elevation (N	NAVD88)		We	ell Purged 1	To Dryness?		Y / N	;
Well Total	Depth (feet	btoc): 3	7.05		Wa	ater Level a	ifter Samplin e., pump is o	g (feet btoc)	10.6	5
Casing Dia	ameter (feet)	2" Sch 40	0 PVC	· · · · · · · · · · · · · · · · · · ·	Tin		g Completed	•	1055	
ם וום מב פי	TABILIZATIO	ONIDATA				io Sampiin	g Completed	1.	1000	
FUNGE 3	Purge	Cumulative		Specific	Dissolved		Oxidation	<del></del>	Water	Notes
Time	Rate (mL/min)	Volume (mL)	Temp (°C)	Conductance (µS/cm)	Oxygen (mg/L)	pH (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Level (feet btoc)	(e.g., opacity, color, odor)
1027	3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	400	23.39	6230	0,47	7.15	-127.2	0.53	10.65	
1029	295	980	20.21	657.1	0,41	7.16	-116.9		10,65	
1031	3/3	1600	19.50	656.9	0.29	7.16	-1/3.4	0,93	13.65	
1033	250		19.23	6630	0,26	7.15	-1102		10.65	
1035	300	2700	19.06	6657	0.24	7.15	- 08.6	0.48	10.65	
	Annual Children Company (Callestone Company		***	) p No No						
	· · · · · · · · · · · · · · · · · · ·									
										:
	.;			(r) (r)	64-36-36 yr 1996-94-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4			The second secon		
					77 - 200.0					A. M. S.
		C7.C4								
			A 3-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1							
		121								

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	'ell ID: N	M.g.
Sampling Informa	ation:						
Method of Samplin	g: Low Flow -	Perstaltic Pum	p & Tubing		A 200	Dedicated;	(Y) / N
Water Level @ Sa	mpling (feet btoc	10.	65				
Monitoring Event:	Annual ( )	Semi-Annua	al ( ) Quarte	rly() M	lonthly ( )	Other 50	
Final Purge Stabilz	ation Sampling D	)ata:					
<u>Date</u> 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)
8-3-2017	300	19.06	665.7	0.24	7.15	-108.4	0.98
1 - In-Situ SmarTr 2 - HF scientific, fr Seneral Informati	nc. Micro TPI Fiel	d Portable Turb	idimeter	c Conductance, Dissol		H, Oxidation Redu	uction Potentle
Weather Condition	s @ time of sam	pling: S	unny, s	slight bee	ŞÓ		
Sample Characterion Sample Collection Comments and Ob These in	Order:	Per SAP		elf.	\$ 18		
, ,			ce with applicabl	le EPA-and State proto			
Date: <b>8-3-</b> 2	017 By: 🕰	14,32	ten	Title:	43	telh	To company to the control of the con

Monito	ring Well ID	Mw	ξ Fac	ility: SBMI	J Sikeston P	ower Statio	on - Groundy	vater Monito	ring	9		
Initial Wate	er Level (fee	t btoc)	(2)	.791		Date:	8-15-17		38			
Initial Grou	ındwater Ele	vation (NAVC	088):		and the second	Air Pressu	re in Well?	Y / Ø				
PURGE IN	IFORMATIO	N										
Date	8-15-	17										
Name (Sar	mple Collect	or):	1. Patel									
Method of	Well Purge:	Low Flow	Perstaltic I	oump	Dec	dicated Tub	oing?	YIN				
Time Purgi	ing Initiated:		0755		One	e (1) Well \	√olume (mL)		NA			
Beginning	Water Level	(feet btoc)		10.74	Tot	al Volume	Purged (mL)	):	2600			
		r Elevation (N	JAVD88):				o Dryness?		Y /10 8-1			
			m 81547	7.05		_			W~	10.79		
	(i.e., pump is off)											
Dasing Die	imeter (lect)	2 001141	77 70		Tim	ne Samplin	g Completed	1:	0137	arraph contribute algorithic access, southed place to the place of the contribute access to the		
PURGE ST	TABILIZATIO	ON DATA	١		on account of the contraction of		Ovidation			707 th. (1414)		
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)		
0157		300	21,44	582.8	0.68	7.08	1.78-	1.43	10.79			
0154	220	140	19.59	590.9	0152	7.11	-84.2	1.72	.,	Specific Company of the Company of t		
1080	2.30	1200	18:47	593.4	0.46	7,12	-84,6	7.48				
0803	230	1600	18.72	600,4	8,49	7.14	-87.1	0.93	"			
DRAN	245	2150	18161	603.3	0,35	7:15	-88.1	1.34	.,			
0807	225	2400	18.56	594.9	0.38	7.14	-88.7	0.99	11	magni "Malini "makhinggangan minim mengangangan mengang keraja" (m		
							Amountaing deplaces for 1 per visite for 1 we					
										Application and a first str., the property of the street o		
								-		THE PERSON NAMED IN COLUMN TO PE		
								ARTHUR THE TAXABLE TO SELECT TO SELE				
									7	- Professor Control of the Control o		

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring V	Vell ID: //	ws
Sampling Informa	ation:						
Method of Samplin	eg: Low Flow	Perstaltic Pump	& Tubing	2 2 manufacture - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 1	A CONTRACTOR OF THE PERSON NAMED IN CONT	Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc	): 10.7	15				
Monitoring Event:	Annual ( )	Semi-Annua	I() Quarte	rly ( ) · M	onthly ( )	Other (X)	
Final Purge Stabliz	ation Sampling D	)ala:					-
<u>Date</u> 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)
080g	าป	18.56	594.9	0.38	7.16	-88.7	0.99
See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in General Informati Weather Condition	oll Multi-Probe Fi nc. Micro TPI Fiel ion:	eld Meter (Temp d Portable Turbi	perature, Specifi dimeter	c Conductance, Dissolv			uction Potentia
Sample Character Sample Collection		Per SAP	clear	cohrless, adar	{<5}		
Comments and Ob							
	Despherita	Yakta	A A COMMITTEE TO THE PARTY OF T	STORY WAS AND	and the same of th	8 1 347	
	AAAAANS SIAAAAN WAXAAN AANAAN AANAAN AANAAN AANAAN AANAAN AANAAN			alake allasa			the facility of TAY and an array and a state of the same
pugger or research delitable shall all lightly to province announcement index	na <sub>rense</sub> in – / 3 System deletative eti minimismismistariaka – 97 SSS PASSER	gogiffer i megapusarahmatnaghih sa 4 g - mpambantukan akumum gurupagapar	ogyatus, 1985, 1979/1986 telektrionischen jammaanneiter acht och sch. 1988 – "V			A STATE OF THE STA	eveletiinis n. m.t.n. en la var seveneseevelesee
	annangan ang ang ang ang ang ang ang ang						
g hairbagh ann air ainn a tha cumaga a rainn ann ann an an ann an an an an an an a	ggronn oo huulinin 1994 ah 1995 billiji hindidaana aaraa ka bara dhaha dha dha dha dha dha dha dha dha			and the second s		hall the limited and segment and about the contract of the contract of the gas have seen againg again of	
	the special control of the state of the stat	ent diditation habitation follows propriet and an advantage and the desire and the desire and the second and th					
		aggygganasaganasaganasaganasaganasaganasaganasaganasaganasaganasaganasaganasaganasaganasaganasaganasaganasagan	graph glandelischen den Arien Arien Anderstellingsgestellen eine Arien Arien anderstelle son anderstelle son a 5 g. 78 g. juniorität auch villindaminten anderstellen stille den juniorität i 1890 F. 197 Forderstelle son anderstelle son and				eministra. — a proprincipo (qualmini il mandali mandali il mandali
certify that sample	ing procedures w	rere in accordance	ce with applicab	le EPA and State proto	cols.		
Date: 8-1577	Ву:	- A-	Ley.	Title,	Lal	tech	3
			Page	2 of 2			

Monito	ring Well ID	ML	<b>≯%</b> Fac	cility: SBM	U Sikeston P	ower Statio	on - Groundy	vater Monito	ring	-
Initial Wate	er Level (fee	et btoc):	11.8	51		Date:	8-30-1	7		
Initial Grou	indwater Ele	evation (NAVE	)88):		prispoplanina	Air Pressu	re in Well?	Y 100		
	FORMATIC									
Date.	8.	30-17								
Name (Sar	mple Collect	tor): <u>H</u>	Mesil	1						
Method of	Well Purge.	Low Flow	/ Perstaltic	Pump	De	dicated Tub	oing?	Ƴ/ N		
Time Purgi	ing Initiated:		0915		On	e (1) Well \	/olume (mL):	;	NA	
Beginning	Water Leve	I (feet btoc):	1	1.05			Purged (mL)		2260	Salaking-ujiyasan Arimonyilin kasa muunun kuunsaa ka Aja Asaadi
li .					We	ll Purged T	o Dryness?		Y 100	
		btoc):					fter Sampling	(feet bloc)	//s	2 //. •5 '
(i.e., pump is Casing Diameter (feet): 2" Sch 40 PVC										
Casing Dia	iniciei (i <b>ec</b> i,	2 301140	71 00		Tim	ne Samplin	g Completed	:	0957	
PURGE ST	FABILIZATION TO STATE OF THE PROPERTY OF THE P	ON DATA	1,						7	
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)
50/17		300	क्र.०५	610.2	1.03	7.10	-\$5 A	0.10	11.05	The state of the s
0919	240	780	19,92	632.7	9.54	7.1	-90.6	\$.68	11	district of the second
0921	250	128-	19.08	642.6	0.87	7,13	. 09.0	1.79	14	
0923	250	1780	18,79	647.0	0.33	7.14	-90.4	1,59	И	-
0925	250	28.80	19.60	694.2	0,19	1.15	191.3	- Vik	_ 11	
		Samuella, air samuella air samuella	anna danima kanadappa dalik k Mikilipi kanya			destribition terminal and terminal and the second				
			4.18774, 148.2		- Complete and a				ļ	
								THE R. D. OF PERSONS ASSESSED.		
			-			W				
			on the state of th			-to top to the Trade Off Production				by E. A. Budda also
								terresistance (1 of 16 to 16 t		
					-					·
					and and a separate SE, 17 Sec y annual sec.			one and the state of the same		
			The second secon							
										The second secon
			***************************************							
'		100								

btoc - below top of casing

racility:	SBMU Sikeston	Power Station -	CCR Groundwa	iter informound	MODILIONING VV	eli ID.	1470
Sampling Informa	ation:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc	: //,01	*				
Monitoring Event:	Annual ( )	Semi-Annua	I() Quarte	erly ( .) Mo	onthly ( )	Other (/)	
Final Purge Stabliz	zation Sampling D	ata:					
<u>Date</u> 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)
8:30-2017 DA 25	250	18.62	644.2	0.29	7.15	-91.3	1.18
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, ir General Informati Weather Condition	libration log of da roll Multi-Probe Fi nc. Micro TPI Fiel ion:	eld Meter (Temp d Portable Turbi	erature, Specifi dimeter	ing instruments: ic Conductance, Dissolv			uction Potentia
Sample Characteri	Order:	'Per SAP		. Rel Jelia	# # # # # # # # # # # # # # # # # # #		
Comments and Ob							
and the second s	phense Tak	E 1969 ;		NOT THE PARTY THREE PRINTS PRINTS ASSESSMENT ASSESSMENT OF STATE OF	егу к у года докумерт бубренуй петеризультановый. Ун	Ob., J. 47 Scholassinskinskinskinski storegar	dependence of the second of th
The second secon		annahalan dan dari sa 1988 - 1987 - Alfred Amerikan yang yang menununun sa dan	gettillerindemmenteparajaheteruserrevelija s ?	(b) - com (gam_arggage/conservationback.d) — 64 - supplied a proof implied	abilitarios para del esta esta esta esta esta esta esta esta	allinin delikalise de dille " errorreprintenteriore medite est	T 1 TO CO. CO. CO. CO. CO. CO. CO. CO. CO. CO
The Market Million of the Control of	and the second s			g vide. ( ) triggermant ( ) transmissionementalment health in state ( ) state ( ) the	indicate the second		and the second s
		and water and a supplement of the state of the supplement and the supplement of the		manager or the control of the contro		ettermineren mantetti (ili 1644) järttetti tuoliman mines osaan	Managada (K. 1.) Tim M. Highways and Aggregation and Aggregati
				ann aitean a' Bhairle ag leith a mar aithreithe ann an thairt an taillean aire deillean deillean deillean deil	Antition of the State of the St	ernament persi ligggi dipografitari qu'an terrativantes crosse populationi	
				enterente en			ng, antiquidat notificação que ameno apopologica que gánico.
49. 18		the sufficient field districts accommodate the latest states of the sufficient field districts accommodate to the		alge en varant det de verste de de telestation des se different de telestation de particular de la companya del companya de la companya de la companya del companya de la companya del la companya de la	A STATE OF THE STA	and the same and t	
I certify that sampli	ing procedures w	ere in accordant	ce with applicab	le EPA and State proto	cols.		
Date: 8-30-2	<b>Ю17</b> Ву:	24	-Sul	Title:		tely.	

Monito	ring Well ID	MW	Fac	eility: SBML	J Sikeston P	ower Static	n - Groundw	ater Monitor	ing	THE Chamber		
Initial Wate	er Level (fee	t btoc):	11.	ZO'		Date:	9-14-20	17				
Initial Grou	ındwater Ele	vation (NAVE	988):		opportunity of the second	Air Pressul	re in Well?	YIO				
PURGE IN	FORMATIC	N										
Date:	9-14-	2017										
Name (Sa	mple Collect	or):		errorrorroller orangisk-jollon, "reziden det et sterstein	riskaldiniquas jim. karyista yaniqqa aqlanilikki kirib-digilar		Capagagayay ya essali addy a Artis fallotti - Playerd					
Method of	Well Purge:	Low Flow	Perstaltic	Pump	Dec	dicated Tub	oing?	Y) N				
Time Purg	Time Purging Initiated: 0914 One (1) Well Volume (mL): NA											
Beginning	Beginning Water Level (feet btoc): 11.20 Total Volume Purged (mL): 1720											
Beginning	Beginning Groundwater Elevation (NAVD88): Well Purged To Dryness? Y / N											
Well Total	Well Total Depth (feet btoc): 37. • 5 Water Level after Sampling (feet btoc): 27. • 5											
Casing Dia	Casing Diameter (feet): 2" Sch 40 PVC (i.e., pump is off)											
0110000	Time Sampling Completed: 0952  PURGE STABILIZATION DATA											
PURGE S		Cumulative	A 1000	Specific	Dissolved	errente en la marchine de la Cal	Oxidation	CHANGE CONTRACTOR CONT	141-1	Notes		
Time	Purge Rate (mL/min)	Volume (mL)	Temp (°C)	Conductance (µS/cm)		pH (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	(e.g., opacity, color, odor)		
0916		300	20.44	674.4	0.13	7.15	-87.2	0.49	11.12			
0718	240	780	18.47	676.0	0.74	7.13	-87.5	m.59	91			
17920	240	1260	11.79	7.4.9	0.57	7.13	-84.3	0.44				
0922	131	1720	18.52	707.9	5.48	7.13	-90.1	0.67	"			
		N white constitution of the contract of the co	annessamment te fairmes sent teathering to the last to tag the				The second secon	ment home, as were a second of the second of		75-15 (day ) Landaman and Mark Mark Mark Mark Mark Mark Mark Mark		
			a un direjot (13) (1000) entre		alana ana Bilistiko ja 20 a.i. pyrantamolese rapramonasy			andrews and a supervision of the state of th	The state of the s			
	**************************************							er assorre				
						Annada anie o anie o Albania (1960)						
	Face and processing							and the second s		0.417		
	Minimum Company Solder 100									ng. (° . 2° C. pripanti-sultanis, "may, ingenimental all hongs) and hongs) and hongs		
			and the state of t									
									a discorded the experience of the contract of	and the subsection of the subs		
										- AMI MICCAL Mineral Agency - The Company of the Co		
-			L	Inches and the second	L				1			

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	ell ID:	IWY
Sampling Informa	tion:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)						
Monitoring Event:	Annual ( )	Semi-Annual	l() Quarte	rly ( )	Monthly ( )	Other (v)	
Final Purge Stabliz	ation Sampling D	ata:	,				
<u>Date</u> 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)
9-14-2017 0922	236	18.52	707.9	0.48	7.13	-90.1	0.67
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	ibration log of da oll Multi-Probe Fi	eld Meter (Temp	erature, Specifi	ing instruments: ic Conductance, Diss	olved Oxygen, pl	ન, Oxidation Red	uction Potentia
General Informati	on:						
Weather Condition	s @ time of sam	oling:	Sunny	C lated			
Sample Characteri	stics:	Clear, colorle	els oderies				
Sample Collection	Order:	Per SAP			<del></del>	Planting to the second of the	bir-regishlikirin-siyah asso fan fa shillindarkar assoring regishlikirin sa s
Comments and Ob	eservations:						
Dugica	de dolan						
	despination and a surround and purity of mineral site. Made high the "Afficial State Plane" the Annual State		name of the later				21
Name (AAN) infridencial design in a desta flagspasse describer in the destribution of specimen in money and an			n var sjek venter i millionereg sin det er de vende vener de de ser de ble de 1800 in 1800 in 1800 in 1800 in	and the second	god a seriente erro e de erro de erro de erro a de erro de de la la la la la la erro de erro de erro de erro d		
		un dalam mengepak masan an namberdigan, man dan genan dan mengepentuk dan gesaduah sasati dan sebagai dalam sa					
				ation by the through the first through the state of the state of the special companion of the state of the special companion of the state of the sta			
tamonetimolerosquirosatelassegassestitus que <u>susquis</u> ettigi edicil d'edeptifore successib							
	agangalagangilan pingalagan digitan kagina, at tililiji proper problem make institute saana	noinalloideallinkonnoinilleidillinkii yolissaaliin. Yolineityöppinayyyy <u>yy</u>	ugie reproduct vitika entre entra distributably, dupos produces grade autore autoria dist	toran-rangementa-upa-upa-upa-upa-upa-upa-range-tilihah-mah-ya. gybinkustikezin-hadastetti	erretainen eta erretainen erretainen erretainen eta eta erretainen	rolestarioni dellori di limbilitatata estabate alla estabate estabate estabate estabate estabate estabate esta	1886-1884 allahatidak sasahilisi serenduksya 44°-dar-4-i-yapaylar
I certify that sample	ing procedures w	ere in accordance	ce with applicat	ole EPA and State pro	otocols.		
Date: 4-14-1	8 <b>9</b> (2) By:	- Zh	rlie	Tit	le:	ha	

Page 2 of 2

Monito	ring Well ID	): <u>Mb}</u>	g Fac	cility: SBMI	J Sikeston P	ower Statio	on - Groundw	vater Monitor	ring	47 <b>+ 1</b> 1		
Initial Wat	er Level (fee	et btoc):	11.51			Date:	9-27	-17				
Initial Grou	ındwater Ele	evation (NAVE	)88):			Air Pressu	re in Well?	Y/(N)				
	FORMATIC				to the same of the same of the							
Date:	0-3	7-17										
Name (Sa	mple Collect	lor);										
Method of	Well Purge:	Low Flow	Perstaltic	Pump	De	dicated Tut	ping? (	Y) N				
Time Purg	ing Initiated:				One	e (1) Well \	/olume (mL):	:	NA			
Beginning	Water Leve	l (feet btoc):		11.51	Tot	al Volume	Purged (mL)	•	2640			
Beginning Groundwater Elevation (NAVD88): Well Purged To Dryness? Y												
Well Total Depth (feet btoc): 37.05° Water Level after Sampling (feet btoc): 1.51°												
Casing Diameter (feet): 2" Sch 40 PVC (i.e., pump is off)												
PURGE S	Time Sampling Completed: //4  PURGE STABILIZATION DATA											
Time	Purge Cumulative Temp Specific Dissolved pH Reduction Turbidity Level (e.g., opa							Notes (e.g., opacity, color, odor)				
1105		300	22.24	684.4	0,67	7.04	-90.3	0.86	11.51			
ren	720	746	20.25	706.9	p.53	7.03	-88.0	0.76	и			
1105	230	1200	19,81	770.3	0.38	7.04	-88.8	8.77	u			
1111	250	1700	19:31	7.54.0	8133	7.04	-85,0	0.79	H	Alian .		
1113	230	2140	19.18	76410	0,31	7.05	-89.1	8.76	i (			
1115	240	2640	19.11	764.0	0.30	7.05	-89.6	0.58	11			
			received and the second se									
								-				

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	nter Monitoring	Monitoring W	ell ID:	1W8
Sampling Informa	ation:						
Method of Samplir	ng: Low Flow	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	): 11.51	4				
Monitoring Event:	Annual ( )	Semi-Annua	() Quarte	rly ( )	Monthly ( )	Other (~)	
Final Purge Stabili	ration Sampling D	Data:					
<u>Date</u> 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>9-27-17</u> 1115	240	19.11	764.0	0.30	7,05	-89.6	0.58
Instrument Calibi See instrument ca 1 - In-Situ SmarTr 2 - HF scientific, ii General Informati	ibration log of da oil Multi-Probe Fi nc. Micro TPI Fiel	ield Meter (Temp	erature, Specifi	ng instruments: c Conductance, Disso	il <b>ve</b> d Oxygen, pl	H, Oxidation Redu	uction Potentia
		ht	rat i i		,		
Weather Condition	s @ time of sam	pling:	Mostly cla	edy Slight	precse		kumbaryanemin elementen yez sal enaglasyamihalasadas
Sample Characteri	18	Clear , (o	lorless, Dulo	rless			
Comments and Ob							-
certify that sample	ing procedures w	ere in accordanc	e with applicable	le EPA and State prot	ocols.	2	
Date: <u>9-27-1</u>	7 By:	4	2 C	Title	: Lab fe	64 <u>.</u>	ger - gopponen-worksk som som stelle styrmen var som som som ger

Initial Water Level (feet bloc)	Monito	oring Well ID	MW	Fac	cility: SBM	U Sikeston F	ower Statio	on - Groundy	water Monito	ring	-
Date	Initial Wat	er Level (fee	et bloc)	11.57'			Date.	10-31-	17		
Date:   10-31-17     Name (Sample Collector):   A .   Patt   Purge   Low Flow Perstaltic Pump   Dedicated Tubing?   Y   N	Initial Grou	undwater Ele	evation (NAVI	088):			Air Pressu	re in Well?	Y/W	)	
Mame (Sample Collector):	PURGE IN	NFORMATIC	N								
Method of Well Purge:   Low Flow Perstaltic Pump   Dedicated Tubing?   Y / N	Date:	10-3	11-17			A COMPANY OF STREET, S					
Time Purging Initiated   1256   One (1) Well Volume (mL):   NA	Name (Sa	mple Collec	tor):	1. Pate	4						
Beginning Water Level (feet btoc):	Method of	Well Purge:	Low Flov	v Perstaltic	Pump	De	dicated Tut	oing? (	YIN		_
Well Purged To Dryness?   Y   N	Time Purg	ing Initiated		256		On	e (1) Well \	Volume (mL)	:	NA	and the state of t
Well Total Depth (feet btoc):         37, 65'         Water Level after Sampling (feet btoc):         //. 57'           Casing Diameter (feet)         2" Sch 40 PVC           Time Sampling Completed:         //. 57'           PURGE STABILIZATION DATA           Time 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) (NTU) (feet btoc)         Water Level (e.g., opacity, color, odor)           1258         300         20.25         (/3.3)         1,23         7.06         -104,9         /.43         1/.57'           1302         220         12.00         18.46         687.9         0.55         7.01         -95.8         0.83         1	Beginning	Water Leve	I (feet btoc):		1.57'	Tol	tal Volume	Purged (mL)	<b>)</b> :	1700	
Casing Diameter (feet) 2" Sch 40 PVC  Time Sampling Completed: 1309  PURGE STABILIZATION DATA  Time Purge Rate (mL/min) Cumulative (mL) Conductance (µS/cm) (mg/L) Dissolved (mg/L) PH (S.U.) PH (S.U.) Photential (mV) Color, odor)  1258 300 20.25 (73.3 1.23 7.06 -104.9 1.43 1.57' -1302 220 1200 18.06 702.6 0.45 7.07 -95.8 0.83 III - 1302 220 1200 18.06 702.6 0.45 7.07 -95.8 0.83 III - 1302 220 1200 18.06 702.6 0.45 7.07 -95.8 0.83 III - 1302 220 1200 18.06 702.6 0.45 7.07 -95.8 0.83 III - 1302 220 1200 18.06 702.6 0.45 7.07 -95.8 0.83 III - 1302 220 1200 18.06 702.6 0.45 7.07 -95.8 0.83 III - 1302 220 1200 18.06 702.6 0.45 7.07 -95.8 0.83 III - 1302 220 1200 18.06 702.6 0.45 7.07 -95.8 0.83 III - 1302 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6 0.45 702.6	Beginning	Groundwate	er Elevation (I	NAVD88):		We	ell Purged T	To Dryness?		Y / 🕦	
Purge Stabilization Data   Purge Rate (mL/min)   Red (mL)   Red (mS/cm)   Red (mS/cm	Well Total	Depth (feet	btoc):	37.0	5'	Wa	nter Level a	fter Samplin	g (feet bloc)	11.57	
Time Purge Rate (mL/min) Cumulative Volume (mL) Temp (°C) Specific Conductance (µS/cm) PH (S.U.) Potential (mV) Turbidity (NTU) Level (feet bloc) color, odor)  1258 300 20:25 (73:3 1:23 7:06 -104.9 1:43 1:57! —  1300 230 740 18:46 687.9 0.56 7.07 -96.8 1.47 !! —  1302 220 1200 18:06 702.6 0.45 7.07 -95.8 0.83 !!	Casing Dia	emeter (feet)	2" Sch 4	0 PVC		Tin		,	•	1309	
Time Rate (mL/min) Volume (mL) Temp (°C) Conductance (µS/cm) (mg/L) PH (S.U.) Reduction Potential (mV) Turbidity (NTU) (feet bloc) (e.g., opacity, color, odor) PH (S.U.) Reduction Potential (mV) (NTU) (feet bloc) (feet blo	PURGE S	TABILIZATI	ON DATA			a spinor and a spi	***************************************	[ Outstation ]		,	
1258 300 20.25 673.3 1.23 7.06 -104.9 1.43 11.571 — 1300 230 760 18.46 687.9 0.56 7.07 -96.8 1.47 11 — 1302 220 1200 18.08 702.6 0.45 7.07 -95.8 0.83 11 —	Time	Rate	Volume		Conductance	Oxygen		Reduction Potential		Level	(e.g., opacity,
1302 220 1200 18.08 702 6 0.45 7.07 75.8 0.83 11	1258		300	20.25	673.3	1,23	7.06		1.43	11.571	
	1300	230	740	18.46	687.9	0.56	7.07	-96.8	1.47	11	
1304 250 1700 17.99 698.1 0.31 7.01 -76.3 0.94 "	1302	220	1200		7026	0.45	7.07	-95.8		11	
	1304	250	1700	17,99	698.1	0.31	7.09	-96.3	0.94	10	
			· · · · · · · · · · · · · · · · · · ·			- de partir production de la constitución de la con			******		
					THE RESERVE OF THE PERSON OF T				) - discrepancy Cont.   - Color Anthro Security April and Period Anthropia Agricultural Agricult	The state of the s	
		N/1900		Anglige, gamp 20,680% arrived for							times massement and a second control of
				or a SELECT MINISTER OF A PERSON NAMED OF THE					***************************************		
										,	TTTTTATETATEACTURE AND
			The second secon	3. non-alternitedisability per respectations	The simulaterises as success of ARTHURSON ST	F-20, 12	ement , 1,15 Yellila' sullinas direntennegation	7777			And the second s
					***************************************		AND STATE OF STREET, S				
				ranning agus di amalikadikaladi alah yayage yi		-b determinated at 10 1 Call Plantaur demanding	harte (1987) (1987) (1987) (1987) (1987) (1987) (1987) (1987) (1987)				
									The state of the s	Marian State Commission Commissio	
									- Andrew of Baselmann's conformal analysis and		

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	IIID:	¥6
Sampling Informa	ation:						
Method of Samplin	ng: Low Flow -	Perstaltic Pum	p & Tubing			Dedicated:	(Ÿ) / N
Water Level @ Sa	mpling (feet bloc	: 11,57	Proposition of the section of the se				
Monitoring Event:	Annual ( )	Semi-Annua	al ( <b>X</b> Quarte	rly ( ) N	fonthly ( )	Other ( )	
Final Purge Stabliz	ration Sampling C	ata;					
<u>Date</u> 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)
1304	250	17.99	698.1	0.38	7.09	-96.3	0.94
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	libration log of da oll Multi-Probe Fi	eld Meter (Tem	perature, Specifi	ng instruments: c Conductance, Disso	lved Oxygen, pH	, Oxidation Redu	uction Potentia
General Informati	ion:						
Weather Condition	is @ time of sam	pling:	Sunny,	pleasant,	Slight bre	77.4	
Sample Characteric Sample Collection Comments and Observation	Order:	Per SAP	plotless, p	dorks			
						and the second s	ngangan ngang gunus mulamanan sa ku K dalilim nganating interiorismin membe
Programme and the second secon							
			11.				
						Mikinianania. 17 oli Moletto-Adminiana ana 7-saar sa as	
I certify that sampl	ing procedures w	ere in accordar	nce with applicab	le EPA and State prot	ocols.		
Date: 10-31-	<b>17</b> By:	-//2	- di	<u>G</u> Title	Lob y	ceda	
			Page	2 of 2			

Prepared by: GREDELL Engineering Resources, Inc.

Monito	Monitoring Well ID: MW Facility: SBMU Sikeston Power Station - Groundwater Monitoring													
Initial Wat	er Level (fee	et btoc):	9.79		The copylys-th-	Date:	C-13	-18						
Initial Gro	undwater Ele	evation (NAVI	D88);		Particular	Air Pressu	ire in Well?	Y /(N)						
	VFORMATIC	ON												
Date:	Name (Sample Collector): D Dilling ham													
Name (Sa	mple Collec	tor):	V. III	ng hai	M				Art (					
Method of	Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing?													
Time Purging Initiated: 1041 One (1) Well Volume (mL): NA														
Beginning Water Level (feet bloc): 4.75 Total Volume Purged (mL): 7723														
Beginning Groundwater Elevation (NAVD88): Well Purged To Dryness?														
Well Total Depth (feet bloc): 37.04 Water Level after Sampling (feet bloc): 9.15														
Casing Diameter (feet): 2" Sch 40 PVC														
Time Sampling Completed:														
PURGE S	TABILIZATI	T T	I				Oxidation		<u> </u>	1				
Time	Purge Rate	Cumulative Volume	Temp (°C)	Specific Conductance	Dissolved Oxygen	pH	Reduction	Turbidity	Water Level	Note (e.g., op				
	(mL/min)	(mL)		(µS/cm)	(mg/L)	(S.U.)	Potential (mV)	(NTU)	(feet btoc)	color, a				
1043	0.60	450	22.53	7 23.4	0.54	6:94	-126.1	53.79		omnse	FLAKO			
1045	253	900	14.65	776.4	2.43	7.02	-106.1	148.9	9.75	14	"			
1047	255	14 22	18.79	788.1	3.38	7.06	-105.4	14.49	9.75	11	**			
1049	250	1900	17.55	791.8	3.35	7.08	-153.9	12.80	9.75	71	U			
1057	270	2443	18.84		0.30	7.09	102.9	15.45	9.75		¥			
1053	242	3400	18.36	794.2	0.35	7.13	-/00.3	2.45	9.15	11	V			
1055	250	3900	18.34	742.9	2.29	7.10	-131.9	7.65	9.75	71	7,			
1057	200	443	18.35	793.8	0.26	7.10	-101.3	5.60 9.24	9.75	18	2]			
1059	233	4860	18.34		373	-	-100.5		9.75	31	1,			
1103	250	5360	10.16		2.25	7.11	-1003		9.75	Clea	<u></u>			
	240	5842	18.35			7.11	-99.7		9.75	120				
1107	220	6280		792.2	J. 25	7.1	-99.5		9.75	Clea				
1109	240	6760		7910	J. 24	7.11	-99.1		9.75	clea				
1111	243	1240	10° 2 U	793.3	0,02	7.11	- 99.2	4.64	9.15	cheo				
1113	243			788.6		7.11	-90.1	4.80	9.75	clea	w			

Facility:	SBMU Sikeston	Power Station -	- CCR Groundwa	ater Monitoring	Monitoring V	Vell ID:	W8
mpling Inform	ation:						
Method of Samplir	ng: Low Flow -	Perstaltic Pum	p & Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	9.7	5				
Monitoring Event:	Annual ( )	Semi-Annu	al ( Quarte	rly() M	onthly ( )	Other ( )	
Final Purge Stabliz	zation Sampling D	ata:				, ,	
<u>Date</u> 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)
6-13-18	242	18.54	788.6	0.23	7.11	-99.1	4.80
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	ibration log of dai oll Multi-Probe Fie	eld Meter (Tem	perature, Specific	ng instruments: c Conductance, Dissol	ved Oxygen, pl	H, Oxidation Red	uction Potentia
General Informati	on:			10.1			
Weather Condition	s @ time of samp	oling: Sv	inny, 5	light Bz	eeze		
nple Characteri	stics:	nor F	lake, c	dorless			* 3
Sample Collection	Order:	Per SAP			- No. of		The Address of the property of the Address of the A
Comments and Ob	servations:						
colle	-	219 810	ink	a (2)			
				= 7		1	A Company
		•			•		emmine den deligio del consecutamente del conferenció de la conferenció de la conferenció de la conferenció de
an caracanta and discribed the different filling accommission to the commission of t	· · · · · · · · · · · · · · · · · · ·	Biggiffer and the ferming of manifest in the second	Marie Control of the				manuscraphopolist sistems and it
4						om fra greek til skylle synniger syn serverinn av till mellem et kan skylle syd gryptiske av stateten i	
			*				
energies y V. <del>Territorio de la company de l</del>	· .		W. S.		en de de la descripción de la descripción de descri	gener menerantakkan international angan menyembek dia disembek dag Palas, adanggan " 1" — 19 Pal	a 1864 et a sono associativo di communicación con conferencialmente
men construit alman note med little fillellellellellerengen mel mengen species versom alman sich stellelle.	SE Q 2009 2 THE RESIDENCE OF THE PROPERTY OF T	yaya "angilkankar ananyaningayangangan danahayahahaman kanada asas Kalifikha	· Pagalitatija verket erromanna erromanna kina etimoria. Pagalitati	The second secon	*	The second secon	n 'y palangang. '' wat de la remandant de la r
	anton dinamentari mangang Mangapapang ang ang ang ang ang ang ang ang ang		) ))=:		Marie and the second se		we explanate $a_{ij}(\theta+\theta)$ , and $a_{ij}(\theta+\theta)$ and the definition of the state of
I certify that sampli	ng procedures we	ere in accordance	ce with applicable	EPA and State protoc	cols.		
=:6-13-1	в ву:	shish	Care	Title:	Las	7ech	
			D (	2 -42			

Page 2 of 2

Monito	oring Well ID	Mh	18 Fac	cility: SBM	U Sikeston F	Power Statio	on - Groundy	vater Monito	ring		
Initial Wat	er Level (fee	et btoc):	10.40			Date:	7-10.	2018	>		
Initial Gro	undwater Ele	evation (NAVI	D88):			Air Pressu	re in Well?	YN	)		
	NFORMATIO										
		-2018			40						
Name (Sa	mple Collec	tor):	0:11:	ngha	<b>/</b> \						-
Method of	Well Purge	Low Flor	w Perstaltic I	Pump	De	dicated Tut	oing? (	Y)/N			
Time Purging Initiated: 0854 One (1) Well Volume (mL): NA											
Beginning Water Level (feet btoc): 10.49 Total Volume Purged (mL):											
Beginning Groundwater Elevation (NAVD88): Well Purged To Dryness? Y / N											
Well Total Depth (feet btoc): 37.30 Water Level after Sampling (feet btoc): 0.40											
	(i.e., pump is off)										
Time Sampling Completed:											
PURGE S	TABILIZATI	ON DATA				province	(0):4:5:				
Time	Purge Rate	Cumulative Volume	Temp	Specific Conductance	Dissolved Oxygen	pН	Oxidation Reduction	Turbidity	Water Level	Not (e.g., o	il
	(mL/min)	(mL)	(°C)	(µS/cm)	(mg/L)	(S.U.)	Potential (mV)	(NTU)	(feet btoc)	color,	
0856			21.32	863.8	2.95	7.10	-78.1	19.88	し、40	Yellow	Flake
0858	240	780	19.41	88 4.4	0.55	7.06	-83.4	6.98	12,40		-
0900	243	1260	18.81	893,7	0.41	7.06	-86.4	5.19	10.40	46110M	flake
0902	243	1740	18.65	896.9		7.06	-38.1	8.95	13.40		
0904		2160	18.55	897.4	0.70	7.07	-890	10.97	13.43		
0906	The state of the s	2600	18.52	898.9	0.65	7.07	-90,0	4.02	13,40	7.	17
0908	250	3100	18.52	8090	0.43	7.07	-90.5		10,40		-,
0910	240	3580	18.52		0.57	7.07	-91.3	4.90	13.43		
0912		4050		848.5	3.56	7.08	-92.5		13.43	11	1,
0914		4520	18.49	899.3	0.54	7.08	- 92.2		12.40		
0916	250	5020	18.52	898.3	0.42	7.08	-92.6	4.50	12.40	76	11
0918	245	5500	18.50	897.6	0.43	7.08	-92.9	6.73	13.45		V
0920	250	6000	18.52	897.4	0.38	7.08	-93.4	2.95	12.43	(1	
0922	243	6480	18.52	901.2	0.36	7.09	-94.1	2.83	10.40		TI.
0924	240	6960	18.52	४५१.4	0.35	7.09	-947	2.69	10.40	"	٧
								V. D. C. Williamson, quart in this bird black in the control of th			
	V										
)80				The second secon							

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	ell ID:	NW8
Sampling Informa	ation:	÷					
Method of Samplir	ng: Low Flow -	Perstaltic Pump	& Tubing	- Allelanolar		Dedicated:	Y / N
Water Level @ Sa	mpling (feet btoc)	10.4	0				
Monitoring Event:	Annual ( )	Semi-Annua	Quarte	rly ( ) Me	onthly ( )	Other ( )	
Final Purge Stabliz	ation Sampling D	)ata:					
<u>Date</u> 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)
7-12-18	242	18.52	899.4	0.35	7,09	-94.2	2.69
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	libration log of da oll Multi-Probe Fi	eld Meter (Temp	erature, Specifi	ng instruments: c Conductance, Dissolv	ved Oxygen, pl	I, Oxidation Rec	luction Potentia
General Informati	on:						
Weather Condition	s @ time of sam	pling: <u>SU</u>	nny, w	arm			
Sample Characteri	stics: YE	110W F1	ake, oc	lorless			his Statistics of processors and Maria Statistics
Sample Collection	Order:	Per SAP					
Conments and Ob		Blank	and	DVPICAH	2	4	
3			OR CONTROL OF THE PROPERTY OF				3
	* *						
				2074			
							404.44600
I certify that sampli	ng procedures w	ere in accordan	ce with applicabl	le EPA and State proto	cols.		
Date: 1-10-14	Ву: /-	Isher	1	Title.	Leis	Tech	

Page 2 of 2