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GREDELL Engineering Resources, Inc.

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

Prepared for:



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1.0 INTRODUCTION

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

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

Prior to completion of the 2018 Annual Groundwater Monitoring and Corrective Action Report (Gredell Engineering, 2019), an Alternate Source Demonstration (ASD) was prepared to address three suspected SSIs in one of the wells comprising the groundwater monitoring network for the bottom ash pond. The ASD was successfully completed and certified in accordance with §257.94(e)(2) on September 26, 2018. The ASD report (Gredell Engineering, 2019) documented that the suspected SSIs in monitoring well MW-8 (Chloride, Sulfate, and Calcium) resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. As a result of the successful ASD, detection monitoring in accordance with §257.94 has continued on a semi-annual basis as specified in §257.94(b). The ASD also concluded that a minimum of eight additional rounds of background data be collected and analyzed for the constituents listed in Appendix III and IV to Part 257. To date, five additional rounds of background data have been collected. The eighth round of sampling is scheduled for the third quarter of 2020.

This 3rd annual report describes the results of the fourth and fifth semi-annual detection groundwater sampling events conducted at the Sikeston Power Station bottom ash pond on May 28 and August 28, 2019, respectively. Included is a description of the sampling event, groundwater elevations, water table surface, summary of field activities, analytical results, and statistical analysis results. Field sampling and reporting activities were conducted in accordance with the site-specific GMSAP (Gredell Engineering, 2018a). Statistical analysis was performed in accordance with §257.93(f) using the appropriate statistical analysis method as filed in the SBMU-SPS operating record on October 17, 2017.

2.0 GROUNDWATER MONITORING SYSTEM

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

Table 1 presents a construction summary of the wells comprising the bottom ash pond groundwater monitoring system. Figures 1 and 2 depict well locations and groundwater contour maps of the uppermost aquifer for the May and August, 2019 semi-annual sampling events respectively. These maps confirm that water in the uppermost aquifer continues to move in a west-southwesterly direction, consistent with the conclusions of the Site Characterization Report (Gredell Engineering, 2017). All groundwater wells are equipped with dedicated tubing for use with a peristaltic pump. This system has been used for chemical sampling since inception of groundwater sampling with the bottom ash pond monitoring system.

3.0 FIELD SAMPLING SUMMARY

SPS environmental staff initiated the fourth and fifth semi-annual detection groundwater sampling events on May 28 and August 28, 2019, respectively, at the Sikeston Power Station. Each event was conducted in the same manner as described in the following paragraphs.

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

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

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

3.1 Field Quality Assurance/Quality Control

Field QA/QC during both the May 28 and August 28, 2019 sampling events included the collection of one field blank and one field replicate sample per sampling event. During both events, the replicate was collected from MW-5 (identified as DUP in Table 5). Rinsate blanks were not collected because dedicated sampling equipment was used. Samples were immediately shipped to PDC Laboratories' (PDC Labs) primary facility located in Peoria, Illinois using standard chain-of-custody documentation/ procedures.

Samples from the May sampling event were received by the primary facility on May 30, 2019. However, preliminary results received on June 17, 2019 did not include analysis of all six detection monitoring constituents listed in §257 Appendix III and required under §257.94(b) (Table 4).

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

Samples from the August sampling event were received by the primary facility on August 30, 2019 and subsequently analyzed for the six detection monitoring constituents listed in §257 Appendix III and required under §257.94(b) (Table 4). Final hard copy analytical results for the August sampling event were received from PDC Labs on October 2, 2019.

4.0 ANALYTICAL SUMMARY

Hard copy analytical data for each monitoring well sampled during the May and August, 2019 detection monitoring events are provided in Appendix 2. The data pertain to water quality results from the uppermost aquifer in the area bordering the bottom ash pond, along with sample replicate and field blank results.

4.1 Laboratory Quality Control

Laboratory analytical data for the May and August, 2019 sampling events were completed by PDC Labs and were accompanied by appropriate QA/QC documentation. That documentation is presented in Appendix 3.

4.2 Precision and Accuracy

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

The analyses were performed within appropriate hold times and both initial and continuing calibrations met acceptance criteria for all analyses. Similarly, method blanks and LCS analyses met acceptance criteria. The case narrative for the May 2019 sampling event indicates that all quality controls met acceptance criteria. The case narrative for the August 2019 sampling event indicates that the TDS batch duplicate did not meet the acceptance criteria and MW-5 was flagged "M" accordingly. Additionally, the Sulfate, Boron, and Calcium values for MW-3 were over four times the respective batch matrix spikes and matrix spike duplicate values and were flagged "Q4" accordingly.

Additional QA/QC comments include the following:

- Field Replicates: Analyses of replicate samples are used to define the total variability of the sampling/analytical system as a whole. One field replicate from MW-5 was collected during each of the 2019 sampling events. The RPD was calculated for all detected chemical parameters for each sampling event. Accordingly RPDs were calculated for all parameters during both sampling events except Fluoride. A summary table showing the results of the RPD calculations is included as Table 5. Using a tolerance level of ±20 percent, all calculated RPDs were within acceptable ranges for each parameter.
- Field Blank: One field blank was incorporated into the data set for each sampling event in 2019. The May 2019 field blank analytical results indicate concentrations of Boron (18

- ug/L) and Calcium (0.16 mg/L). The August 2019 field blank analytical results also indicate concentrations of Boron (12 ug/L) and Calcium (0.10 mg/L). All other parameters during the May and August events were below detection limits.
- Laboratory Blanks: Method blanks, artificial, and matrix-less samples are analyzed to monitor the laboratory system for interferences and contamination from glassware, reagents, etc. Method blanks are taken throughout the entire sample preparation process. They are included with each batch of extractions or digestions prepared, or with each 20 samples, whichever was more frequent. Reference to Appendix 3 should be made for comments related to these and other laboratory control samples.

4.3 Representativeness

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

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

4.4 Comparability

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

4.5 Completeness

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

5.0 STATISTICAL ANALYSIS

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

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

Statistical analysis was performed in accordance with §257.93 using Sanitas[™] for Ground Water (Version 9.5.32; 2017). Intra-well prediction intervals were compared at the 99 percent confidence level for each constituent with a 1 of 2 retest methodology to improve accuracy and reduce false positives. The groundwater results from the May and August 2019 detection monitoring events were compared to the prediction limits (Table 6) to determine if statistically significant increases (SSIs) over background exist in the data set.

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

The results of the statistical analysis for the 2019 sampling events are described below. A statistical power curve, based on the background data, is provided in Appendix 5. Trend analysis (time-series) plots of background data for all detection monitoring constituents are presented in Appendix 6. A complete database summarizing the sample results, dates of sampling, and the purpose of sampling event, as per §257.90(e)(3), is provided in Appendix 4. Box and whiskers plots of background data are presented in Appendix 7. Prediction limit charts are provided in Appendix 8.

5.1 Statistical Results

May 28, 2019 Sampling Event

The initial results of the statistical analysis for the bottom ash pond groundwater monitoring system suggested the presence of one suspected SSI (TDS in MW-8). The prediction limit for TDS in MW-8 is 448 mg/L (Table 6), whereas the reported concentration was 480 mg/L (Appendix 2 and Appendix 4). A second sample was obtained from MW-8 and analyzed for TDS (Appendix 2). The reported concentration of 420 mg/L is below the prediction limit and failed to confirm the SSI. Consequently, detection monitoring should continue on a semi-annual basis as specified in §257.94(b).

August 28, 2019 Sampling Event

The results of the statistical analysis for the bottom ash pond groundwater monitoring system suggested the presence of an apparent statistically significant <u>decrease</u> in pH in MW-4. During the August 28, 2019 event, the field measurement for pH in MW-4 (Appendix 1 and Appendix 4) was 7.2 S.U. and the lower prediction limit is 7.291 S.U. (Table 6). Consequently, field pH was resampled (Appendix 1) on October 22, 2019 and the result (7.3 S.U.) did not confirm a statistically significant change in pH. Therefore, detection monitoring should continue on a semi-annual basis as specified in §257.94(b).

6.0 SUMMARY

The statistical analysis results for samples obtained during the fourth and fifth groundwater detection monitoring events conducted on May 28 and August 28, 2019, respectively, do not indicate the presence of confirmed SSIs associated with the bottom ash pond groundwater monitoring system. Therefore, it is recommended that detection monitoring of the bottom ash pond continue on a semi-annual basis in accordance with §257.94(b).

Additional background sampling in accordance with the ASD (Gredell Engineering, 2019) should also continue through the completion of the 8th round during the 3rd quarter 2020.

7.0 LIMITATIONS

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

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

8.0 REFERENCES

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

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

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

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

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

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

TABLES

Table 1 Groundwater Monitoring Network Summary

Monitoring Well ID ^{1,2}	Northing Location ^{3,4}	Easting Location ^{3,4}	Ground Surface Elevation ^{3,4} (feet)	Top of Riser Elevation ^{3,4} (feet)	Well Depth ⁵ (feet)	Base of Well Elevation ⁶ (feet)	Screen Length ⁷ (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		Groundw	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	203 20
06/13/18	297.33	294.93	295.60	296.47	295.02
11/26/18	295.63	293.76	294.27	294.91	293.88
12/26/18	296.04	294.19	294.64	295.36	294.31
01/08/19	296.38	294.62	295.17	. 295.77	294.73
02/05/19	296.73	294.99	295.46	296.06	295.07
02/22/19	298.35	298 58	297.33	297.94	296 (1)
03/27/19	298.51	296.05	296.72	297.69	296.15
04/16/19	298.93	296,58	297.31	298.22	296.67
05/14/19		296.36	297.10	298.21	296.45
05/28/19	298.95	296.01	296.80	297.91	296.16
06/12/19	298.82	296.00	296.71	297.82	296.10
07/17/19	298.38	295.84	296.46	297.44	295.97
07/24/19	298.41	295.97	296.66	297.57	296.13
08/14/19	297.80	295.03	295.70	296.76	295.12
08/28/19	297.55	294.81	295.47	296.51	294.91
09/16/19	297.22	294.51	295.20	296.20	294.63
10/10/19	296.84	294.29	294.89	295.85	294.36
10/22/19	296.80	294.40	295.00	295.88	294.50
11/04/19	297.34	295.24	295.80	296.57	295.32

NOTES:

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

Prepared by: KAE Checked by: MCC

Table 3 Water Level and Field Parameter Summary May 28, 2019

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

Water Level and Field Parameter Summary August 28, 2019

Monitoring Well I.D.	Hydraulic Position	Initial Water Level (ft, BTOC ²)	Final Water Level (ft, BTOC ²)	Minimum ³ Purge Vol. (ml ⁴)	Actual Purge Vol. (ml ⁴)	pH (S.U.⁵)
MW-3	Upgradient	11.00	11.00	300	2,800	6.4
MW-4	Downgradient	10.80	10.80	300	4,160	7.2/7.3
MW-5	Downgradient	10.44	10.44	300	2,560	6.8
MW-6	Upgradient	11.21	11.21	300	1,920	6.7
MW-8	Downgradient	9.86	9.86	300	2,380	7.1

NOTES:

- 1. Sequence of sampling is MW-3, MW-6, MW-5, MW-8, MW-4.
- 2. BTOC: Below Top of Casing
- 3. Purge calculations based on 1/4" ID tubing and complete evacuation of single tubing volume.
- 4. ml: milliliter
- 5. S.U.: Standard Unit. Re-Sample data shown for pH at MW-4 during August 28, 2019 sampling event.

Table 4
Groundwater Monitoring Constituents

	U	SEPA 40 CFR 257				
Appendix III	-	Appendix IV -				
Constituents for Detectio	n 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. μ g/L = micrograms per liter.
- 3. mg/L = milligrams per liter.
- 4. pCi/L = picocurie per liter.

Table 5 Relative Percent Difference Summary May 28, 2019

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

^{*} Total Dissolved Solids sampled July 23, 2019.

Relative Percent Difference Summary - August 28, 2019

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

NOTES:

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

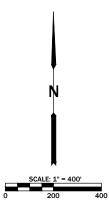
NOTES:

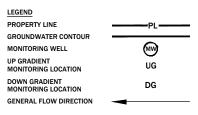
1. Prediction limits for MW-3 through MW-6 calculated using background data set spanning November 2016 to July 2017. Prediction limits for MW-8 calculated using background data set spanning May 2017 to September 2017.

Prepared by: KAE Checked by: MCC

FIGURES







- 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 AUGUST 28, 2019.
 4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SIKPER® SOFTWARE.
 5. RANGE OF HYDRAULIC 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	297.55	308.55	381130.00	1079946.62
MW-4	294.81	305.61	380804.62	1077766.95
MW-5	295.47	305.91	379858.94	1078477.85
MW-6	296.51	307.72	379874.77	1079384.36
MW-8	294.91	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

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

FIGURE 1 GROUNDWATER CONTOUR MAP AUGUST 28, 2019





PL
MW
UG
DG
-

- 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 MAY 28, 2019.
 4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
 5. RANGE OF HYDRAULIC GRADIENT AS DETERMINED BY SURFER® SOFTWARE.
 6. ONLY OF THE STAFF ON MAY 18, 2019.
 7. RANGE OF HYDRAULIC GRADIENT AS DETERMINED BY SURFER® SOFTWARE.
 7. ONLY OF THE STAFF ON MAY 18, 2019.

WELL ID	GROUNDWATER ELEVATION	CASING ELEVATION	NORTHING	EASTING
MW-3	298.95	308.55	381130.00	1079946.62
MW-4	296.01	305.61	380804.62	1077766.95
MW-5	296.80	305.91	379858.94	1078477.85
MW-6	297.91	307.72	379874.77	1079384.36
MW-8	296.16	304.77	380311.20	1077940.08

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

FIGURE 2 GROUNDWATER CONTOUR MAP MAY 28, 2019

APPENDICES

Appendix 1

Field Sampling Notes

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

Field Instrumentation Calibration Log

Date Time PH Measure- Conductance Conductance Oxidation Reduction Potential Potential Potential Stan	Turbidity tandards (NTU)	Turbidity
Date Time PH Standards Measurement Standards (vs. (cm) (vs. (cm))	tandards	
		Measurements (NTU)
	0.02 =	0,02
Tap Water Source = 51425181 1	10.0 =	100
	1000 =	100010
Measurement = 120.5		, , , , ,
	0.02 =	0.03
5 5-22- 7.00 = 7.1	10.0 =	10.06
1413 = 1476.9 Standard = 220 3 = 6607.6 Pressure = GLC 9	1000 =	1000.3
ы Measurement = 98.3		
Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential.		
The HF scientific, inc, Micro TPI Field Portable Turbidimeter measures Turbidity.		
Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.		

Date: 5-28-19

By: 51-31 C-fel

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: Name (Field Staff): A Poster D Dillingham
Date: 5-28-19
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 Inadequate
Depressions or standing water around well?: Yes No
Remarks:
Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good Damaged
Condition of Locking Cap: Good Damaged
Condition of Lock: Good Damaged
Condition of Weep Hole: Good Damaged
Remarks:
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good Damaged
Condition of Riser Cap: Good Damaged
Measurement Reference Point: Yes No
Remarks:
<u>Dedicated Purging/Sampling Device</u> : Type = <u>1⁄4 " ID Semi-Rigid Polyethylene & 0.170" ID Flexible</u> <u>Silicone Tubing</u>
Condition: Good Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes No
Remarks:
Field Certification And Real Las Tech 5-28-19
Signed Title Date

Field Sampling Log

Monitori	ng Well ID	MW	3 Faci	lity: SBMU	J Sikeston Po	ower Station	n - Groundwa	ater Monitori	ng	***************************************
Initial Water	Level (feet	btoc)	9.60	+: (0)		Date:	5-28	-19	A STATE OF THE STA	
Initial Grour	idwater Elev	vation (NAVD	88):			Air Pressur	é in Well?	Y/N		
PURGE INF	ORMATIO	N							•	
	5 200				*					
Name (Sam	ple Collecto	or):	Dil	ling	1Gm	v				
Method of V	Vell Purge:	Low Flow	Perstaltic P	ump	Dec	dicated Tub	ing?	W/N		
Time Purgir	ng Initiated:		726		One	e (1) Well V	/olume (mL):		NA	with design representative and the second se
Beginning V	Vater Level	(feet btoc):	9.	60	Tot	al Volume l	Purged (mL):		488	70
Beginning (3roundwate	r Elevation (N	IAVD88);	·	We	II Purged T	o Dryness?		Y / 😰	
Well Total [Depth (feet l	otoc):	6.99		Wa		fter Sampling		9,1	60
Casing Dia	meter (feet)	: 2" Sch 40) PVC				e., pump is o		075	
					Tim	ne Sampling	g Completed	:	670	1
PURGE ST	ABILIZATIO	ON DATA	- 1	77. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10			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)	Notes (e.g., opacity, color, odor)
0728		360	18.16	206.7	1.90	6.5	71.1	21.86		ARE FIRM, SLEE
0730	280	920	16.85	212.2	1.62	6.4	647	18.44	9.60	(t))
0732	270	1485	16.56	214.0	1.31	6.4	59.5	19.43	4.60	11 1/
0734	275	2020	16.47	216.1	1.19	6.4	54.6	17.84	9.60	
5736	290	2600	16.42	215.1	1.01	6.4	46.6	13.41	9.6	11 0
0738	280	3160	16,42	216.9	1.01	6.4	42.7	10.48	9.60	N 11
0743	280	3720	16.41	216.41	0.43	6.4	30.9	9.69	9.60	c. "
0742	300	4320	16.42	215.4	0.82	6.4	35.1	9.27	9-60	1
0744	283	4880	16.42	218.4	0.82	6.4	3-2, 2	4.69	7.60	
					×				-	
				AND	-	 				
								×		The size of the si
			Total Service Management (Service Service Serv				1,		X-00-1907	The state of the s
			<u> </u>				-			
				-		-		-		

Field Sampling Log

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	ell ID:	W3		
Sampling Informa	ition:				7				
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N		
Water Level @ Sa	mpling (feet btoc)	9.60)						
Monitoring Events	Annual ()	Semi-Annua	() Quarte	rly_(_) Mo	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)		
5-28-19	280	16.42	રાષ્ટ્ર.પ	0.82	6.4	32,2	9.69		
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	ibration log of dai oll Multi-Probe Fi	eld Meter (Temp	erature, Specifi	ng instruments: c Conductance, Dissolv	ved Oxygen, pH	Ⅎ, Oxidation Redu	uction Potentia		
General Informati	on:								
Weather Condition	s @ time of samp	oling: S	YANY						
Sample Characteri	stics: Red	FIAKE	, cola	less, odor	Less	,			
Sample Collection	Order:	Per SAP				- Charles - Mortana - Ch			
Comments and Observations: AP - COLLECT FOR Sample for CCA APP III. and APP IV									
	r en eg grunnung mung mang samun seriem dibera deben di bibb (felició de galdadi bibbi de bibb		Hallinian esaliaan eskesiana esan es en en tronce en esa en esa en						
			ana kanangangangan mangan ini arawa manan mangan mangan mangan mangan mangan mangan mangan kanan mangan kanan						
ENTERNING WHICH					and the second s				
				20A-45300001.00000000000001.2565-A8000-2.69***	The second secon		Marine State of the State of th		
I certify that sampl	ing procedures w	ere in accordan	ce with applicab	le EPA and State proto	ocols.				
Date: 5-28	.19 By: /	Shish	Pas	Title:	Les	Tech	1		

Page 2 of 2

Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Groundwater Monitoring
Monitoring Well ID: Name (Field Staff): A fale: O Dilingham
Date: 5 - 28 - 19
Accessibility: Good Good Fair Poor
Well clear of weeds and/or debris?: Yes V No
Well identification clearly visible?: Yes Vo No
Remarks:
Concrete Pad: Condition of Concrete Pad: Good Inadequate
Depressions or standing water around well?: Yes No
Remarks:
Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good Damaged
Condition of Locking Cap: Good Damaged
Condition of Lock: Good 📂 Damaged
Condition of Weep Hole: Good ⊬ Damaged
Remarks:
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good 📈 Damaged
Condition of Riser Cap: Good V Damaged
Measurement Reference Point: Yes No
Remarks:
Dedicated Purging/Sampling Device: Type = 1/4 " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes No
Remarks:
Field Certification Signed LOS Cech 5-28-17 Signed Title Date

Field Sampling Log

Monitor	ring Well ID:	MW	Fac	ility: SBML	J Sikeston P	ower Statio	n - Groundw	ater Monitor	ing	enkacytotore.	
Initial Wate	r Level (fee	t btoc):	4.8			Date:	5-2X	-19			
Initial Grou	ndwater Ele	vation (NAVE	088):			Air Pressu	e in Well?	Y /(N)			
PURGE IN	FORMATIO							S12-403-41707			1
Date:	5-0	28-19				and the second s					
Name (San	nple Collect	or):	O Di	Iling	ham						
Method of	Well Purge:	Low Flow	/ Perstaltic F	Pump	Dec	dicated Tub	ping?	Y) N			
Time Purgi	ng Initiated:	_ 0	816		One	e (1) Well \	/olume (mL):		NA		
Beginning \	Water Level	(feet btoc):	9.	81	Tota	al Volume l	Purged (mL)		430	<u>S</u>	
Beginning	Groundwate	r Elevation (N	NAVD88):		We	II Purged T	o Dryness?		Y / (N)		
Well Total	Depth (feet	btoc):	37.79	5	Wa		fter Sampling e., pump is o		9.	8/_	
Casing Dia	meter (feet)	2" Sch 40	PVC		Tim	·	g Completed		OXU	<u>, </u>	
PURGE ST	rabilizatio	ON DATA			1111	ie Gampiini	y completed	. ,			
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., opa color, oc	city,
0818		380	18.56	4385	0.68	6.6	-55.~	12,20	9.81	VALIGH F-MHP	046)
0820	270	920	17.51	389.9	0.54	6.7	-46.5	11.97	9.81	" ′	"
0822	270	1460	17.14	343.9	0,50	6.7	-44.9	13.43	9.81	11	U
NEBO	280	2020	17.03	404.2	0.46	6.7	-46.1	9.57	9.81	clear,	YOK
0×26	280	2580	17.01	413.0	0.38	6.7	-47.5	8.82	4.87	* 1	1/
0828	243	3/60	16.92	45.2	0.37	6.7	-47.3	7.60	9,71	11	(,
0830	5%0	3720	16.96	422.8	0.35	6.7	-48.5	7.53	9.81	()	y
0132	290	4300	16.93	418.2	0.34	6.7	-48.1	7.15	9.81	**	ŋ
						MAN SHALL SECURIAR SECTION AND A SECURIAR SECTION AS					commence of the position of th
					***	Constantina and Constantina an			######################################		
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btoc - below top of casing

Field Sampling Log

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	ellid: M	WG
Sampling Informa	ation:	€: -€:					
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	9.8	/				
Monitoring Event:	Annual ()	Semi-Annua	I () Quarte	rly () Mo	onthly ()	Other (
Final Purge Stabliz	ation Sampling D	ata:					
<u>Date</u> Sample Time	Sample Rate (m⊡min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
<u>5-28-19</u> 0832	290	16-93	418.2	0.34	6.7	-48.2	7.15
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	libration log of da roll Multi-Probe Fi	eld Meter (Temp	erature, Specif	ing instruments: ic Conductance, Dissolv	ved Oxygen, p⊦	I, Oxidation Red	uction Potentia
General Informat	ion:	and the same of th					
Weather Condition 79 F Sample Character			on My	5 02 0VL	255		
Sample Collection		Per SAP		• • • • •			
Comments and Ol		619	Blank	<u> </u>			f se se
Collec	t San	ple s	RY CC	R APPT	T) ar	2 APP	IV
						And the second s	
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,			-4	ole EPA and State proto			
Date: 5-28-	19 By: 7	15hs2	6.	Title	Las	7004	

Page 2 of 2

Facility: SBMU SPS – CCR Groundwater Monitoring Monitoring Well ID: 5
Name (Field Staff): A Partel O Dillingham
Date: 5 -28-19
Access: Accessibility: Good Fair Poor
Well clear of weeds and/or debris?: Yes No
Well identification clearly visible?: Yes No
Remarks:
Concrete Pad: Condition of Concrete Pad: Good Inadequate
Depressions or standing water around well?: Yes No
Remarks:
<u>Protective Outer Casing:</u> Material = $\underline{4}$ " x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good Damaged
Condition of Locking Cap: Good Locking Cap. 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 1 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" ID Flexible Silicone Tubing
Condition: Good Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes No
Remarks:
Field Certification of Las Teen 5-28-19
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitor	ing Well ID:	MW	5 Fac	ility: SBML	J Sikeston Po	ower Statio	n - Groundw	ater Monitor	ing	· ·	
Initial Wate	r Level (feet	btoc):	9.11			Date:	5-28	-14			
initial Grou	ndwater Ele	vation (NAVD	988):	<i>Y</i>		Air Pressu	re in Well?	Y / (N)			
PURGE IN	FORMATIO	N					and the second s	•			
Date.	5-2	7-14									
Name (San	nple Collecto	or):	<u>o:</u>	lling	ham						
Method of	Well Purge:	Low Flow	Perstaltic F	Pump	Dec	dicated Tub	oing?	Y/ N			
Time Purgi	ng Initiated:		925		One	e (1) Well \	/olume (mL)	:	NA		
Beginning \	Water Level	(feet btoc):	9.	11	Tot	al Volume	Purged (mL)	:	2000	>	
Beginning	Groundwate	r Elevation (N	AVD88):		We	II Purged T	o Dryness?		Y / 🔊		
Well Total	Depth (feet l	otoc):	37.19	5	Wa		fter Samplin		9.	1/	W Control of the Cont
Casing Dia	meter (feet)	2" Sch 40	PVC		Tim	,	g Completed		095	55	
PURGE ST	TABILIZATIO	ON DATA						•			
Time	Purge Rate	Cumulative Volume	Temp	Specific Conductance	Dissolved Oxygen	рН	Oxidation Reduction	Turbidity	Water Level	Notes (e.g., opac	itv.
	(mL/min)	(mL)	(°C)	(µS/cm)	(mg/L)	(S.U.)	Potential (mV)	(NTU)	(feet btoc)	color, odd	or)
0427	1	400	23.86	822.2	0,66	6.7	-60.4	6.87	9.11	AK . IS AC .	0-6
0429	260	920	18.68	8605	0.69	6.8	-60.7	3,53	9:11	11	es .
0431	270	1460	18.45	853.6	0.62	6.8		2.80	9.11	26	10
0933	210	2000	18.31	861.1	2.60	6.9	-59.1	3.71	9.11		V
										Action Comments	ACT AND ADDRESS COUNTRY
							-				
					,						

						-				VCMCMQ-VVM-VV-VV-VV-VV-VV-VV-VV-VV-VV-VV-VV-VV	
					-	-					
						-					NA ANDRONE MARKET

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	ell ID: M	W 5			
Sampling Informa	ition:									
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	Y / N			
Water Level @ Sa	mpling (feet btoc)	9.11								
Monitoring Event:	Annual ()	Semi-Annua	I() Quarte	rly ()	Monthly ()	Other (L)				
Final Purge Stabliz	ation Sampling D	ata:				Ouldation				
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxyge (mg/L)	en pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)			
5-28.19	270	18.30	861.1	0.60	6.9	-59.1	3.71			
See instrument ca 1 - In-Situ SmarTr	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 Informat	ion:									
Weather Condition			mny			4				
Sample Character	istics:	110W S	Flake,	COLONES	s, odon	229				
Sample Collection	Order:	Per SAP					9000 V 4 V 4 V 4 V 4 V 6 V 6 V 6 V 6 V 6 V 6			
Comments and Ol		licate		8	,		603399832			
Collec	+ Sam	Ple Fr	r CCP	L APP	III and	APP	V.			
Name of the last o										
	The second secon									
	alta V Core-state of the second secon									
I certify that same	ling procedures w	vere in accordan	ce with applicat	ole EPA and State	protocols.					
Date: 5-28-	• .	-	14			Tech				
Date:	By: /	8	_		Title:					

Page 2 of 2

Facility: SBMU SPS – CCR Groundwater Mon Monitoring Well ID: Name (Field Staff): A Page 1	Dillnyham
Date: <u>5 - 28 - 19</u>	
Access: Accessibility: Good F	fair Poor
Well clear of weeds and/or debris?: Yes	
Well identification clearly visible?: Yes	
Remarks:	
Concrete Pad: Condition of Concrete Pad:	Good Landequate
Depressions or standing water around well?:	Yes No 🖊
Remarks:	
Protective Outer Casing: Material = 4" x 4" Stee	l Hinged Casing with Hasp
Condition of Protective Casing: Good 🔟	Damaged
Condition of Locking Cap: Good 🔟	Damaged
Condition of Lock: Good	Damaged
Condition of Weep Hole: Good	Damaged
Remarks:	
Well Riser: Material = 2" Diameter, Schedule 40 PVC	, Flush Threaded
Condition of Riser: Good	Damaged
Condition of Riser Cap: Good 🔟	Damaged
Measurement Reference Point: Yes	No
Remarks:	
Dedicated Purging/Sampling Device: Type = ½ " ID S Silicone	emi-Rigid Polyethylene & 0.170" ID Flexible Tubing
Condition: Good Damaged	Missing
Remarks:	
Monitoring Well Locked/Secured Post Sampling	?: Yes No
Remarks:	
Field Certification Ahish Paper Lan	5 Tech 5-22-19
	itle Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitor	ing Well ID:	Mr	V8 Fac	ility: SBML	J Sikeston Po	ower Statio	n - Groundw	ater Monitor	ing		
Initial Water Level (feet btoc): 8.6/						Date:	5-28	-19			
Initial Grou		Air Pressur	e in Well?	Y / 🔞	_						
PURGE IN	FORMATIO	N				A					
Date:	5-21	3-19									
Name (Sar	nple Collect	or):	DI	liny)	nam						-
Method of	Well Purge:	Low Flow	/ Perstaltic F	oump	Dec	licated Tub	oing?	Y N			
Time Purgi	ng Initiated:		027		One	e (1) Well V	/olume (mL):		NA		-
Beginning '	Water Level	(feet btoc):	8.	61	Tot	al Volume l	Purged (mL)	: .	318)	-
Beginning	Groundwate	r Elevation (N	NAVD88):		We	II Purged T	o Dryness?		Y / (1)		
Well Total	Depth (feet	btoc):	37.0	4	Wa		fter Sampling		<u>8. c</u>		_
Casing Dia	meter (feet)	2" Sch 40	0 PVC			•	e., pump is d	·	105		
					Tim	ie Sampling	g Completed	:	103		-
PURGE S	TABILIZATIO			0 26	Dissalved	***************************************	Oxidation	edizande di de sidande adam y en est es entre de si	Water	Note	
Time	Purge Rate	Cumulative Volume	Temp (°C)	Specific Conductance		pH (S.U.)	Reduction Potential	Turbidity (NTU)	Level	(e.g., op color, o	acity,
7-5-	(mL/min)	(mL)		(μS/cm)	(mg/L)	6.9	(mV)		(feet btoc)		A
1029	2= -		22.23 19.69	819.2	0.46	7.0	-94.6 -93.4	2,87 2,14	8.61	Clear,	650V
1033	230	1260	19.13	828.7	0.41	7.0	-9-25	1.07	8.61	"	T _f
1035	240	1740	18.61	836.4	0.36	70	- 42 1	4.33	8.61	41	V
1037		2200	18.35	837.7	0.31	7.0	-91.1	4.87	8.61		1/
1039	240	2630	18.07	841.6	0.29	7.1	+403	3.95	8.61	"	11
1041	250	3180	18-25	836.6	0.29	7./	-90.6	4.89	8.61	11	- 5/
polls.					h						The state of the s
	7,00				ye kempanin ye ye cilik kambanor Mabili salas mbahal	CONTRACTOR OF THE WANTED AND THE					
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		VACCORCIO									
						ANNOUNCE TO SERVICE OF THE PARTY OF THE PART					2000
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											W. Manager
		-				<u> </u>			***************************************		

btoc - below top of casing

E - We	CDMII Citroston	Dawes Challen		tor Manitorina	Monitoring We	ALLID: A	1W8
	SBMU Sikeston	Power Station - I	CCR Groundwa	ter Monitoring	workorng vve	11 (D. <u>1</u>	
Sampling Informa	ition:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	: 8,61		v.			
Monitoring Event:	Annual ()	Semi-Annual	() Quarte	rly () Mo	onthly ()	Other 😝	
Final Purge Stabliz	ation Sampling D	ata:			I	T Ovidation	T 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)
5-28-19	250	18.29	836.6	J. 29	7.1	-90.6	4.89
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	libration log of da roll Multi-Probe Fi	eld Meter (Temp	erature, Specifi	ing instruments: ic Conductance, Dissolv	red Oxygen, pH	I, Oxidation Red	uction Potentia
General Informati	ion:						
Weather Condition		yg	unny				
Sample Character	istics:	ar, Col	orless,	OLMIRSS			
Sample Collection	-	Per SAP			nderek proposition of the contract of the cont		which work is administrated to have graphing at \$100 pt \$100 pt operations have
Comments and OI	bservations: F Sam	Ple +	Data	for CCA	APP III	's AP	PIV
Nymero							
			. 1	ble EPA and State proto		Teon	

Facility: SBMU SPS - CCR Groundwater Monitoring Monitoring Well ID: Name (Field Staff): A (A+PI D DILING KAM) Date: 5-28-19
Access: Accessibility: Good Fair Poor Poor Well clear of weeds and/or debris?: Well identification clearly visible?: Yes No
Remarks: Concrete Pad: Condition of Concrete Pad: 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
Remarks: Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded Condition of Riser: Good Damaged
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 A L Las Tech S-28-19 Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitor	ring Well ID:	MW	L Faci	lity: SBMU	Sikeston Po	ower Statio	n - Groundwa	ater Monitori	ng		
Initial Wate	r Level (feet	t btoc):	9.60)		Date: 5	-28	-19			
Initial Grou	ndwater Ele	vation (NAVD	988):			Air Pressur	re in Well?	Y /			
	FORMATIO				80						1
Date:	5-2	9-19	A'11	5 1							
Name (Sar	nple Collect	or):	Dill	ingh	am						
Method of	Well Purge:	Low Flow	Perstaltic F	ump	Dec	licated Tub	oing?	D/N			
Time Purgi	ng Initiated:	1	130		One	e (1) Well \	/olume (mL):		NA		_
Beginning \	Water Level	(feet btoc):	9.	60	Tota	al Volume l	Purged (mL):	-	6100	<u> </u>	_ `
Beginning	Groundwate	r Elevation (N	NAVD88):		We	II Purged T	o Dryness?	1	Y /(N)		
Well Total	Depth (feet	btoc):	37. 2	6	Wa	ter Level a	fter Sampling	(feet btoc):	9.	60	
Casing Dia	meter (feet)	2" Sch 40	PVC			•	e., pump is o	•	120	5	
					Tim	e Samplin	g Completed:		100		-
PURGE S	TABILIZATIO						Oxidation			NI	
Time	Purge Rate	Cumulative Volume	Temp (°C)	Specific Conductance	Oxygen	pH (S.U.)	Reduction Potential	Turbidity (NTU)	Water Level (feet btoc)	Not (e.g., o color,	pacity,
1100	(mL/min)	(mL)	42.59	(μS/cm)	(mg/L)	7.2	(mV)	6 110	9.60	MUNICH	Λυ
1132	242	940	AO.19		0.61	7.3	-1095		81.60	EIRKS"	, <u>Jel</u> 01
1126	260	1460	18.83	577.2	0.53 0.51	7.3		3.75	4.60	cuar,	NO.
1/38	210	2000	18.61	585.1	0.45	7.3	709S	The same of the sa	9.60	"	4
1140		2500	18.30	- Sharen		7.3	-108.6	4.31	4.60	10	y
1142		3040	18.25	582.3	يها. ت	7.5	-128.8	2.09	9.60	И	1/
1144	260	3560	18.35	585.0	2.41	7.5	-109.1	1.38_	9.60	11	1
1146	260	4080	18.45	573.6		7.5	-109.2		9.63	81	V
1148		4560	18.50	585.9	0.38	7.3	-108.5	6.54	9.60	li	1/
1150	250	5060	18.01	585.3 582.4	3.38	7.3	-108.9	3.7/	9.60	1	1
1152	260	5580	18.64	582. L	3.37	7.3	-1090	3.75	9.10	11	/1
1154	260	6100	18.65	581.7	2.37	7.3	-128.5	3.32	4.60		- NOW CHANGE OF THE PARTY OF TH
					,						
			***************************************		M						The second secon
									4		
			1	Ì							

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	rell ID: M	W 4			
Sampling Informa	ation:									
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing		,	Dedicated	(Y) / N			
Water Level @ Sa	mpling (feet btoc)	9.60								
Monitoring Event:	Annual ()	Semi-Annua	() Quarte	rly () N	ionthly ()	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)			
5-28-19 1154	260	18.69	581.7	0.37	7.3	-108.5	3.35			
See instrument ca 1 - In-Situ SmarTr	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 Informat	ion:	_								
Weather Condition			νηηγ							
Sample Character	istics:	lear, C	010Mes	5, 0000	ess					
Sample Collection	Order:	Per SAP	b.	J.	*	,	\$			
Comments and Ol	oservations:	mole	For	CCR AP	PI	ans Af	Y IV			
F v	The state of the s			•						
3004x.2	Erober eitenbergeget Tod 2 in 1900 in 1900 in 1900 om Schriftenberger	No-HADMAC (WZ). Administrativa (ACQC) No 10044 NGC (STOTO STOTO STOTO NO					proceed design product the latter than the second control of the s			
	- 18									
processing and the second control of the sec			2007a. COV.			THE COLUMN TWO IS NOT THE OWNER OF THE OWNER OWNER OF THE OWNER				
					and an explanation of the second of the seco		The second secon			
I certify that samp	I certify that sampling procedures were in accordance with applicable EPA and State protocols.									
Date: 5-28-	19 By: A	A21.82	bloc	1 Title	e: Ces	Tech				

Page 2 of 2

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 __MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT) - (SAMPLE ACCEPTANCE POLICY ON REVERSE) (FOR LAB USE ONLY) P.O. NUMBER MEANS SHIPPED ANALYSIS REQUESTED Sikeston Power Station 0117 LOGIN # PHONE NUMBER FAX NUMBER DATE SHIPPED LOGGED BY: _ LAB PROJ. # __ SAMPLER MATRIX TYPES: (PLEASE PRINT) WW-WASTEWATER DW-DRINKING WATER GW-GROUND WATER TEMPLATE:__ PROJ. MGR.: _ 98 BA SAMPLER'S Luke St. Mary / Iken Ewers NAS-SOLID LCHT-LEACHATE DATE TIME SAM LETYPE COLLECTED COLLECTED GRAB COMP MATRIX BOTTLE REMARKS SAMPLE DESCRIPTION TYPE COUNT V AS YOU WANT ON REPORT GW 5-28-19 0744 MW3 X GW XX XX XX MIV 3 GW XX X X MW XX Field Duplicate 5-28-19 XX 3 XX Field Blank DI X 5-28-19 The sample temperature will be measured upon receipt at the lab. By initialing DATE RESULTS NEEDED TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH this area you request that the lab notify you, before proceeding with analysis, if (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) 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) RELINQUISHED BY: (SIGNATURE) RECEIVED BY: (SIGNATURE) DATE SAMPLE TEMPERATURE UPON RECEIPT RELINQUISHED BY: (SIGNATURE) Y OR N CHILL PROCESS STARTED PRIOR TO RECEIPT SAMPLE(S) RECEIVED ON ICE Y OR N PROPER BOTTLES RECEIVED IN GOOD CONDITION YORN BOTTLES FILLED WITH ADEQUATE VOLUME DATE Y OR N DATE RECEIVED AT LAB BY: (SIGNATURE) RELINQUISHED BY: (SIGNATURE) SAMPLES RECEIVED WITHIN HOLD TIME(S) YORN (EXCLUDES TYPICAL FIELD PARAMETERS) TIME TIME DATE AND TIME TAKEN FROM SAMPLE BOTTLE

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

MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT) - (SAMPLE A CCEPTANCE POLICY ON REVERSE) P.O. NUMBER PROJECT NUMBER MEANS SHIPPED Sikeston Power stution ANALYSIS REQUESTED 4 3 onlx DATE SHIPPED PHONE NUMBER FAX NUMBER 1551 W Wakefield LOGGED BY: LAR PROJE# SAMPLER MATRIX TYPES: (PLEASE PRINT) WW-WASTEWATER DW-DRINKING WATER TEMPLATE: GW-GROUND WATER PROJ. MGR.: , WWSL-SLUDGE SAMPLER'S NAS-SOLID LCHT-LEACHATE Luke St Mary/Ken EWEVS O BOTTLE MATRIX SAMPLE TYPE DATE SAMPLE DESCRIPTION REMARKS TYPE GRAB COMP COUNT COLLECTED COLLECTED 20 AS YOU WANT ON REPORT 5-28-19 0744 X X X K 5-28-19 1041 GW X X 5-28-19 1154 GW Pullicate GW 5-28-19 X X nI 5-28-14 BIGAK E: 619 The sample temperature will be measured upon receipt at the lab. By initialing DATE RESULTS NEEDED RUSH TURNAROUND TIME REQUESTED (PLEASE CIRCLE) this area you request that the lab notify you, before proceeding with analysis, if (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area you allow the lab to proceed with analytical testing regardless of the PHONE E-MAIL RUSH RESULTS VIA (PLEASE CIRCLE) FAX sample temperature. EMAIL ADDRESS COMMENTS: (FOR LAB USE ONLY) S -29-19 DATE RECEIVED BY: (SIGNATURE) RELINQUISHED BY: (SIGNATURE) 8 7 TIME DATE RECEIVED BY: (SIGNATURE) SAMPLE TEMPERATURE UPON RECEIPT RELINQUISHED BY: (SIGNATURE) DATE YORN CHILL PROCESS STARTED PRIOR TO RECEIPT TIME TIME SAMPLE(S) RECEIVED ON ICE YORN PROPER BOTTLES RECEIVED IN GOOD CONDITION YORN BOTTLES FILLED WITH ADEQUATE VOLUME YORN DATE RECEIVED AT LAB BY: (SIGNATURE) RELINQUISHED BY: (SIGNATURE) SAMPLES RECEIVED WITHIN HOLD TIME(S) YORN (EXCLUDES TYPICAL FIELD PARAMETERS) TIME TIME DATE AND TIME TAKEN FROM SAMPLE BOTTLE

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

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: ASA:SA Cate(

Field Instruments: In-Situ smarTROLL Field Meter

HF scientific, inc. Micro TPI Field Portable Turbidimeter

S/N#: 474247

S/N#: 201607366

Date Time Standard MeasureStandard MeasureS

	Date	Time	pH Standards	pH Measure- ments	Specific Conductanc Standard (µS/cm)	- 1	Specific Conductance Measurement (µS/cm)		duction Potential dard (mV)	Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)	Turbidity Standards (NTU)	Turbidity Measurements {NTU)
y of Day ation	7-23-	of 22	7.00 =					(°C)			Temperature (°C) Tap Water Source = ***********************************	10.0	= 0.07
Beginning of Day Calibration	19.	0630	10,00 =	ں, ص	1413	= 1412.8	Standard (mV)	= 229.0	₹ २२9.3	Barometric Pressure (mm/Hg) Measurement = 99.7	1000	= 10as.o	
송			4.00 =	4.1				Temperature (°C)	= 4% 9%		Temperature = 24.4	0.02	= 0.0/
y Check	7-23-	1450	7.00 =	7.1							Tap Water Source	10.0	= 9.95
End of Day	19	.54	10.00 =	10.0	1413	= (³ 64.5	Standard (mV)	= ने२१.6	a 28.0	Barometric Pressure (mm/Hg) = 1006.	1000	996.6

tes:	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.

certify that the aforementioned meters	were calibrated within the manu-	facturers specifications
certify that the aforementioned meters Date: 7-23-19	BV: AShish	paser
	*	

Facility: SBMU SPS - CCR Groundwater Monitoring Monitoring Well ID: MW 3 Name (Field Staff): A Pate () Dillingham
Date: 7-23-19
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 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 Locking Cap. Damaged
Condition of Lock: Good Damaged
Condition of Weep Hole: Good Damaged
Remarks:
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good Damaged
Condition of Riser Cap: Good Damaged
Measurement Reference Point: Yes No
Remarks:
Dedicated Purging/Sampling Device: Type = 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 & 1.5h Patel Cos Tech 7-23-19 Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitor	ing Well ID	MW	S Faci	lity: SBMU	•				ng	
Initial Wate	r Level (feet	btoc):	10.14			Date: 0	7-25	-19		
Initial Groun	ndwater Elev	ration'(NAVD	88):		/	Air Pressur	e in Well?	Y/N		
	O7-2									
	nple Collecto	N	Dil	lling	han	1.				
Method of V	Nell Purge:	Low Flow	Perstaltic P			icated Tub	ing?	D/ N		
Time Purgii	ng Initiated:	07:				e (1) Well V	olume (mL):		NA	
Beginning \	Water Level	(feet btoc):).14_	Tota	al Volume f	Purged (mL):		37 -	20
Beginning (Groundwate	Elevation (N	IAVD88):		_	_	o Dryness?		Y /(N)	
Well Total I	Depth (feet b	otoc) <u>3</u>	6.99		Wa	ter Level at (i.e	ter Sampling e., pump is c	(feet btoc): ff)	10.	14
Casing Dia	meter (feet)	2" Sch 40	PVC		Tim	•	Completed		08/	4
PURGE 51	rabilizatio				8: 1 4		Oxidation		Water	Notes
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)	Level (feet btoc)	(e.g., opacity, color, odor)
0738		340	18.62	202.41	1.68	6.4	105.0	10.69	Ю.14	Ace Flake, Uday
0740	240	820	17.33	205.41	1.55	6.3	95.7	6.97	12.14	
0742	250	1323	16.91	206.27	1.43	6.3	89.3	7.34	13.14	Clear Stor
0744	342	1800	16.74	204.96	1.15	6.3	84.0	5.91	13.14	V U
0746	260	2323	1	204.68	1.02	6.3	83.3	5.33	13.14 13.14	W 0
0748		2800		203.58	3.47	6.4	76.9	4.46	10.14	11
0750	230	3260	16.60	203.12	0.93	6.4	74.1	4.96	13.14	73
0752	230	3720	16 .58	203.04	0.00	6.4	77.0	1.10		
							1			
		<u> </u>								
			1							
				=				-		
				1				<u> </u>		1

Facility:	SBMU Sikeston I	Power Station -	CCR Groundwat	er Monitoring	Monitoring W	ell ID: M	W3
Sampling Informa	tion:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sai	mpling (feet btoc)	10.10	4				
Monitoring Event:	Annual ()	Semi-Annua	l() Quarter	ty 🚺 M	onthly ()	Other ()	
Final Purge Stabliz	ation Sampling D	ata:				Ovidation	
<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)
07-23-19	230	16.58	203.04	0.88	6.4	71.0	4.96
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	ibration log of dai oll Multi-Probe Fi	eld Meter (Tem	perature, Specifi	ng instruments: c Conductance, Disso	lved Oxygen, p	H, Oxidation Red	uction Potentia
General Informati	ion:						
Weather Condition			nny	0.10			
Sample Character	istics: '	lear,	OGOY 14	255; Co.10	russ.	<u> </u>	S S
Sample Collection	Order:	Per SAP	•	* * *	7. 7.		7:
Comments and Ol	oservations:	•		,			
Start +	IME for	APP I	Bot for	n Ash is	0814	•	
End tim	o for A	中田		23 15 0	08 18 ···		¥7.
	1.0	2'		h.1	181	•	
		The second se					
A SHARLEST CONTRACTOR							
		And the state of t					
			_	ole EPA and State pro		_	
Date: 7-23	-/9 By: Z	82:52	Pase	Titl	e: <u>Las</u>	Teh	

Page 2 of 2

Facility: SBMU SPS – CCR Groundwater Monitoring Monitoring Well ID: MW G
Monitoring Well ID: Name (Field Staff): A Page 1 Dilling ham
Date: 7-23-19
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 Inadequate
Depressions or standing water around well?: Yes No
Remarks:
Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good Damaged
Condition of Locking Cap: Good Damaged
Condition of Lock: Good Damaged
Condition of Weep Hole: Good Damaged
Remarks:
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good Damaged
Condition of Riser Cap: Good Damaged
Measurement Reference Point: Yes No
Remarks:
Dedicated Purging/Sampling Device: Type = 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:
Remarks: Field Cartification An 1 1 1 Text 7-23-19

Title

Signed

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Date

Monito	ring Well ID:	WW	fac	ility: SBMU	J Sikeston P	ower Statio	n - Groundv	vater Monitor	ing	delitation -
Initial Wate	r Level (feet	btoc):	0.15			Date: 7	1-23	-14		
Initial Grou	ndwater Ele	vation (NAVE	088):			Air Pressur	re in Well?	Y /(N)		
PURGE IN	FORMATIO	N			ėl					
Date:	7-27	-19		1-	1					
Name (Sar	nple Collect	or):	011	ting	ham					
Method of	Well Purge:	Low Flow	Perstaltic F	ump	Dec	dicated Tub	oing? (Y) / N		
Time Purgi	ng Initiated.	0	859		One	e (1) Well V	/olume (mL)	: .	NA	
Beginning '	Water Level	(feet btoc):	10	.15	Tot	al Volume i	Purged (mL)	: .	268	0
Beginning	Groundwate	r Elevation (N	AVD88)		We	II Purged T	o Dryness?		Y 1 (1)	
Well Total	Depth (feet l	btoc):	37.76		Wa		fter Samplin e., pump is o	g (feet btoc):	10.	15
Casing Dia	meter (feet)	2" Sch 40	PVC			,	g Completed	•	092	a
PURGE ST	rabiliza t io	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 (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1090		320	19.58	434.24	2.97	6.6	-63.1	2.45	10.15	dear, odor
0903	240	200	18.29	442.25	0.69	6.7	-66.0	2.76	10.15	7
0405	223	1240	17.86	440.06		6.7	-65.9	3.51	10.15	11 0
0907	242	1720	17.70	435.57	0.57	6.7	-66-2	2.57	<i>10.15</i>	11 0
0909	250	2220	17.66	425.49		6.7	-6-2.7	2,45	10.15	4
0911	230	2670	17.64	419.28	0,51	6.7	-59.8	2.03	13.15	
										·
										A .
							-			-
								1		

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwat	ter Monitoring	Monitoring W	ell ID: //	W 6
Sampling Informa	ation:						
Method of Samplin	ng: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	10.1	5				
Monitoring Event:	Annual ()	Semi-Annua	d () 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)
7-25-19	230	17.64	419.38	0.51	6.7	-59.8	2.03
Instrument Calib See instrument ca 1 - In-Situ SmarT 2 - HF scientific, i	libration log of da roll Multi-Probe F	ield Meter (Tem	perature, Specifi	ng instruments: c Conductance, Dissot	ved Oxygen, p	H, Oxidation Red	luction Potentia
General Informat	ns @ time of sam	pling: St	nny				
70°F		ear, 1	adorle.	ss, cola	1255		1 1 1
Sample Character		Per SAP		33/			
Sample Collection	Older.	TELONI				K.	
Comments and O		and the second	0.1	/ F= 1 4.00	Cc /-	مرات ا	c é la
S Coll	ect -	1619	15 Lanr	< for NPC	(E) and	APP T	
						1,1,1	
C1446 1	time so	r Botto	m Acl	APP TI	15 09	2 2	
Start 1	me for	B07-6N		APP TI ;	093		307
Ene Til	10V 40V	יון כדי די כרו		PAR III) 0/5		
			4 449				
I certify that samp	oling procedures	were in accorda	nce with applica	ble EPA and State pro	tocols.		
Date: 7 · 23-	19 By: /	ASL:31	- Pas	Lec	= Las	Toch	
			Pag	je 2 of 2			

Facility: SBMU SPS – CCR Groundwater Monitoring Monitoring Well ID: MW 5
Monitoring Well ID: Name (Field Staff): A Patel D Dillingham
Date: 7-23-19
Access:
Accessibility: Good / Fair Poor
Well clear of weeds and/or debris?: Yes No
Well identification clearly visible?: Yes Vo No 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 V Damaged
Condition of Locking Cap: Good L Damaged
Condition of Lock: Good 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 🔑 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 ASLIST Rate LOS Tech 7-23-19
Field Certification Signed Title Date

Мо	nitor	ing Well ID;	MW	5 Fac	ility: SBML	J Sikeston P	ower Statio	n - Groundw	ater Monitor	ing		
Initial V	Initial Water Level (feet btoc): 9, 25 Date: 7-23-19											
Initial C	Srou:	ndwater Ele	vation (NAVD	988):	*		Air Pressu	re in Well?	Y / 🕖			
		FORMATIO					AND SECTION					1
Date:		7-2			1 - 1							
Name	(San	nple Collect	or):	0,1	lingh	un						-
Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? Y / N												
Time Purging Initiated: 1048 One (1) Well Volume (mL): NA									_			
Beginn	ing \	Nater Level	(feet btoc):	9.0	2.5	Tot	al Volume	Purged (mL)	:	2 र र	2	_
Beginn	ing (Groundwate	r Elevation (N	IAVD88):		We	il Purged T	o Dryness?		Y / Ø		
Well T	otal I	Depth (feet l	btoc):	37.15		Wa		fter Sampling		9.2	5	
Casing) Dia	meter (feet)	2" Sch 40	PVC		Tim	,	g Completed	•	114	6	
						1111	ie Sampiin	g Completed	•			
PURG	E SI	ABILIZATIO Purge	ON DATA Cumulative		Specific	Dissolved		Oxidation		Water	No	tes
Tim	е	Rate (mL/min)	Volume (mL)	Temp (°C)	Conductance (µS/cm)		pH (S.U.)	Reduction Potential	Turbidity (NTU)	Level (feet btoc)	(e.g., o color,	pacity,
105	9	(,	320	22.63	756.78		6.6	(mV)	2.71	9.25	rellaw Flake	100 ar
109		223	760	12.77	790.45		6.7	-43.4	1.13	9.25	M.	11
105		240	1240		822.88	0.91	6.7	-44./	1.53	9.25	Clear,	7060
105	6	230	1700	18.74	806.36	0.87	6.7	-42.6	1.14	9.25	11	1)
109	8	260	2220	18.66	806.88	9.81	6.8	-44.9	1.34	9.25		7
												
				<u> </u>								
								-			-	
								-				
1								-			 	

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring Monitoring Well ID:	MW 5
Sampling Information:	
Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dec	dicated: (Y) / N
Water Level @ Sampling (feet btoc): 9.25	
Monitoring Event: , Annual () Semi-Annual () Quarterly () Monthly () Oth	ner()
Final Purge Stablization Sampling Data:	Oxidation
Date Sample Rate Temp Specific Dissolved Oxygen pH F	Reduction Turbidity Potential (NTU) (mV)
7-23-19 260 18.66 806.88 0.81 6.8 -1	44.9 1.34
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, Ox 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter	idation Reduction Potentia
General Information:	
Weather Conditions @ time of sampling: SVAAY 74°F	
Sample Characteristics: CRUY, Odorless, Colorless	
Sample Collection Order: Per SAP	1 :
Comments and Observations:	r
Collect, Duplicate one for NPDES & Bottom	rash APP TIT
Startime for Bottomash APP III is 1140 (MV	VI OVPlicak
End time for Bottom ash APP III is 1148	3,3
I certify that sampling procedures were in accordance with applicable EPA and State protocols.	
Date: 7-23-19 By: ABLISH Pun Title: Les Te	

Facility: SBMU SPS - CCR Groundwater Monitoring
Monitoring Well ID: Name (Field Staff): A Pale I D Dillingham
Date: 7-23-19
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 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 No
Remarks:
Dedicated Purging/Sampling Device: Type = 1/4 " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes No
Remarks:
Field Certification Hhish Paser lab Tech 7-23-19
Signed Title Date

Initial Water Level (feet btoc): 8.64 Date: 7 – 23 – 19 Initial Groundwater Elevation (NAVD88): Air Pressure in Well? Y / © PURGE INFORMATION Date: 7 – 23 – 19 Name (Sample Collector): 0 0:11 ingham	
PURGE INFORMATION Date: 7-23-19	
Date: 7-23-19	
- 11/500 1000	
Haliner (Commis Collector)	
Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? Y / N	11
Time Purging Initiated: 1233 One (1) Well Volume (mL): NA	
Beginning Water Level (feet bloc): Z 64 Total Volume Purged (mL): 2100	
Beginning Groundwater Elevation (NAVD88): Well Purged To Dryness? Y / 🕙	
Well Total Depth (feet bloc): 37.07 Water Level after Sampling (feet bloc): 8.64	İ
(i.e., pump is on)	
Time Sampling Completed: /305	
PURGE STABILIZATION DATA Purge Currentstive Specific Dissolved Oxidation Water Notes	
Time Rate Volume Temp Conductance Oxygen (S.U.) Potential (NTU)	
(mL/min) (mL) (µS/cm) (mg/L) (mV) (reet bloc) color, or	
2077 20 44 2 64 2 64 2 64 2 64 2 64 2 64 2 6	11
7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7	W
1241 233 1660 19.46 819.06 0.34 7.1 -91.4 1.39 8.64 "	-11
1243 220 2100 19.34 819.48 0.30 7.1 -90.7 1.39 8.64 "	(t

Facility:	SBMU Sikeston	Power Station -	CCR Groundwat	ter Monitoring	Monitoring W	/ell ID: My	V-8-
Sampling Informa	ation:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing		- 1/4 + 1/4 - 1/4	Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	8.64					
Monitoring Event:	Annual ()	Semi-Annua	() Quarte	rly (LY M	onthly ()	Other ()	
Final Purge Stabliz	ation Sampling D	ala:			7	1 0 14-4	
<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)
07-23-19	220	19.34	819.48	0.30	7.1	- 93.7	1.39
Instrument Caliba See instrument ca 1 - In-Situ SmarTa 2 - HF scientific, i	libration log of <mark>d</mark> a roll Multi-Probe F	ield Meter (Tem	perature, Specifi	ng instruments: c Conductance, Dissol	ved Oxygen, p	oH, Oxidation Red	uction Potentia
General Informat	ion;					(i	
Weather Condition	ns @ time of sam	pling: Su	MUY				
77 F		6.1	4	-1-1-			
Sample Character	istics:	lear,	Colorle	ss, odore	<u>ss</u>		2
Sample Collection	Order:	Per SAP		1			
Comments and O	bservations: fime	for Bo	ttom as	sh APP =	IL is	1305	
End tim	le for	hothe	nash	APP III	15	1309	
b- es co	And the second s		A -				
100							
DAMES							å
I certify that samp	ling procedures \	were in accorda	nce with applicat	ble EPA and State pro	tocols.		
Date: 1/23			Pase			Tel	٨

Page 2 of 2

Facility: SBMU SPS - CCR Groundwater Monitoring Monitoring Well ID: MW H Name (Field Staff): A Patel D Dillingham Date: 7-23-19
Access: Accessibility: Good Fair Poor Well clear of weeds and/or debris?: Yes No Well identification clearly visible?: Yes No Remarks:
Concrete Pad: Condition of Concrete Pad: Depressions or standing water around well?: 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 L Damaged Condition of Riser Cap: Good L Damaged Measurement Reference Point: Yes L No Remarks:
Dedicated Purging/Sampling Device: Type = ½ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing Condition: Good Damaged Missing Missing Missing Monitoring Well Locked/Secured Post Sampling?: Yes No Remarks:
Field Certification ASUSI Result Lab Tech 7-23-19 Signed Title Date Prepared by: GREDELL Engineering Resources, Inc. January 2017

Prepared by: GREDELL Engineering Resources, Inc.

Monito	ring Well ID	MW	4 Faci	lity: SBMU	Sikeston Po	ower Statio	on - Groundw	ater Monitor	ing	a produced the species of	ANGEL (1990) 141 15
Initial Wate	r Level (feet	btoc):	9.6	4		Date	7 - 23 -	19			
Initial Grou	ndwater Elev	vation (NAVD	88).			Air Pressu	re in Well?	Y /(N)			
PURGE IN	FORMATIO	N									
	7-2	-									,
Name (Sar	nple Collecto	or):	lling	ham		ž					_
Method of	Well Purge:	Low Flow	Perstaltic F	ump	Ded	licated Tul	bing?	Ŷ/ N			
Time Purgi	ng Initiated:	1.3	326		One	(1) Well \	Volume (mL):		NA		_
Time Purging Initiated: 00ne (1) Well Volume (mL): NA Beginning Water Level (feet btoc): 9.64 Total Volume Purged (mL): 2633											
		r Elevation (N	IAVD88):		We	ll Purged 1	* To Dryness?		Y / (N)		
		btoc):		5		_	after Samplin		•	64	
		2" Sch 40				(i,	e., pump is d	off)			
Casing Dia	imeter (leet)	2 301140) F V C		Tim	e Samplin	ng Completed	i:		55_	_
PURGE S	TABILIZATIO	ON DATA					Oxidation		ı	T	
Time	Purge Rate	Cumulative Volume	Temp	Specific Conductance	Dissolved Oxygen	рН	Reduction	Turbidity	Water Level	(e.g.,	otes opacity,
11	(mL/min)	(mL)	(°C)	(μS/cm)	(mg/L)	(S.U.)	Potential (mV)	(NTU)	(feet btoc)		, odor)
1328		420	21.56	582.01	3.71	7.2	-111.7	0.89	9.64	clear,	000
13317	270	960	19.68	600.66	0.57	7.3	-107.3		9.64	"	77
(332	270	(500 2040	19.23	607.16	0.45	7.3	-106.8		9.64	11	i)
1336	280	2600	18.88	615.24	0.43	7.3		0.36	9.64	"	V
											1,32
						-					
			4								
								-	•		

bloc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	'ell ID:	W4
Sampling Informa	ation:						
Method of Samplin	ng: Low Flow -	Perstaltic Pum	p & Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	9.6	4				
Monitoring Event:	Annual ()	Semi-Annua	al() Quarter	rly (L) M	onthly ()	Other ()	
Final Purge Stabliz	zation Sampling D	ata:	7		7	0.11.6	
<u>Date</u> Sample Time	Samplé Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
7-25-19	280	18.88	615.24	0,43	7.3	-105.2	0,36
Instrument Calibo See instrument ca 1 - In-Situ SmarTi 2 - HF scientific, in	libration log of da roll Multi-Probe Éi	eld Meter (Tem	perature, Specifi	ng instruments: c Conductance, Dissol	ved Oxygen, p	H, Oxidation Red	luction Potentia
General Informat	ion;	~					
Weather Condition	ns @ time of sam	oling: 5	VNV Y				
Sample Character	istics:	ear, co	nomess,	OGWIER			
Sample Collection	Order:	Per SAP	9				-
Comments and Ol	hservations:	Ű		37 (40)		. 7	
	ain an	4 FLY	Ash 7N	ick withi	n 1:00	feet of	Well
				The state of the s	Χ,		
	A A A A A A A A A A A A A A A A A A A		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
Start t	ime fo	r BOH	om ash	APP II	وز ۲	1355	
End tin	ne for	Both	m ash	APP TU	is,	358	
1 tif - 41 4	i	in noonedne	es with applicab	ula EDA and State aret	neols.		
•		Λ	nce with applicab	le EPA and State prote		7004	
Date: 7-23 -	Ву:	11/	rasel	Title	165	7291	

Page 2 of 2

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

MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT) - (SAMPLE A CCEPTANCE POLICY ON REVERSE) (FOR LAB USE ONLY) PROJECT NUMBER P.O. NUMBER MEANS SHIPPED ANALYSIS REQUESTED ikeston BMU LOGIN # ._ FAX NUMBER DATE SHIPPED PHONE NUMBER LOGGED BY: LAB PROJ. # ----SAMPLER MATRIX TYPES: (PLEASE PRINT) WW-WASTEWATER DW-DRINKING WATER TEMPLATE: ____ GW-GROUND WATER PROJ. MGR.: __ WWSL-SLUDGE MAS-SOLID SIGNATURE LCHT-LEACHATE MATRIX BOTTLE SALIFLETYPE DATE REMARKS SAMPLE DESCRIPTION COLLECTED COLLECTED GRAB COMP TYPE COUNT AS YOU WANT ON REPORT MW 7-23-19 0314 7-23-19 093 MW 7-23-19 11 40 7-23-19 1355 CW Orplicate 欠 GW 7-23-19 7-23-19 NORMAL RUSH DATE RESULTS NEEDED The sample temperature will be measured upon receipt at the lab. By initialing TURNAROUND TIME REQUESTED (PLEASE CIRCLE) this area you request that the lab notify you, before proceeding with analysis, if 5 (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) the sample temperature is outside of the range of 0.1-6.0°C. By not initialing PHONE E-MAIL this area you allow the lab to proceed with analytical testing regardless of the RUSH RESULTS VIA (PLEASE CIRCLE) FAX sample temperature. EMAIL ADDRESS PHONE # COMMENTS: (FOR LAB USE ONLY) RECEIVED BY: (SIGNATURE) RELINQUISHED BY: (SIGNATURE) DATE 7 8 TIME TIME RECEIVED BY: (SIGNATURE) DATE DATE RELINQUISHED BY: (SIGNATURE) SAMPLE TEMPERATURE UPON RECEIPT YORN CHILL PROCESS STARTED PRIOR TO RECEIPT TIME TIME SAMPLE(S) RECEIVED ON ICE PROPER BOTTLES RECEIVED IN GOOD CONDITION YORN DATE DATE BOTTLES FILLED WITH ADEQUATE VOLUME YORN RELINQUISHED BY: (SIGNATURE) RECEIVED AT LAB BY: (SIGNATURE) SAMPLES RECEIVED WITHIN HOLD TIME(S) YORN (EXCLUDES TYPICAL FIELD PARAMETERS) TIME TIME DATE AND TIME TAKEN FROM SAMPLE BOTTLE

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

Field Instrumentation Calibration Log

Calibrated by: #84.54 /afec

	Facility:	SBMU SPS	CCR G	rou	ndwater San	npling				Ca	librated by:	_	71041	7 1 4		2		-	
	Field Instruments: In-Situ smarTROLL Field Meter						HF scientif	ic, i	nc. Micro TPI Fi	eld Portable Tu	rbid	limeter							
		S/N #:	4	7	424	7	 :		S	/N	#: 20	/ (6073	56	Ř				
	Date	Time	pH Standa	ırds	pH Measure- ments	Specific Conductan Standard (µS/cm)	ice 1	Specific Conductance Measurement (µS/cm)	Oxidation Re Stan		uction Potent rd (mV)	ial	Oxidation Reduction Potential Measurement (mV)	Dissolved (%		xygen	Turbidity Standards (NTU)		Turbidity Measurements (NTU)
>			4.00	=	4.0				Temperature (°C)	=	22.29			Temperature (°C)	11.0	24.17	0.02	=	0.02
of De	8-28-		7.00	=	7.0									Tap Water Source	=	Sikesta City	10.0	=	10.0
Beginning of Day	19	0615	10.00	=	100	1413	=	1408.3	Standard (mV)	=	229.0	=	229.3	Barometric Pressure (mm/Hg)	=	1006	1000	=	1000.0
Ď														Measurement	=	99.98			
×			4.00	=	4.1		Γ		Temperature (°C)	=	24.36			Temperature (°C)		25.37		=	0.01
Chec	8-28-	/	7.00	=	7.1			1000	, , , ,					Tap Water Source	=	51ke 5151	10.0	=	9.96
of Day Check	19	1256	10.00		10.0	1413	=	1428.2	Standard (mV)	=	229.0	=	229.4	Barometric Pressure (mm/Hq)	1	1207.6		=	1003.0

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

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

10.00 = 10.0

(mm/Hg) Measurement

End of

Monitoring Well ID: Name (Field Staff): Date: 3-28-19 Access: Accessibility: Good Fair Poor Well clear of weeds and/or debris?: Yes No
Access: Accessibility: Good Fair Poor Poor Poor Poor Poor Poor Poor Po
Accessibility: Good Fair Poor
P001
Well clear of weeds and/or debris?: Yes No
Well identification clearly visible?: Yes 🔟 No
Remarks:
Concrete Pad: Condition of Concrete Pad: Good Inadequate
Depressions or standing water around well?: Yes No Remarks:
Condition of Death at the Control of Death at the Cont
Condition of Protective Casing: Good Damaged
Condition of Locking Cap: Good Damaged
Condition of Lock: Good Lock 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" ID Flexible Silicone Tubing
Condition: Good Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes — No
Remarks:
ield Certification Ashish Pater Lab Tech 8-28-19 Signed Title

Prepared by: GREDELL Engineering Resources, Inc.

Monitor	ring Well ID	MV	Fac	ility: SBML	J Sikeston P	ower Statio	on - Groundw	ater Monitor	ring	_	
Initial Wate	r Level (fee	t btoc):	11.00)		Date:	3-28	-19			
Initial Grou	ndwater Ele	vation (NAVD	088):		_	Air Pressu	re in Well?	Y / 🗑			
PURGE IN	FORMATIO	N						-			
Date:	8-2	9-19									
Name (San	nple Collect	or): D	011	lingh	nam	× .					
Method of \	Well Purge:	Low Flow	Perstaltic I	oump	De	dicated Tub	oing?	Y) / N			
Time Purgi	ng Initiated:	0	716		On	e (1) Well \	Volume (mL)		NA		
Beginning \	Water Leve	I (feet btoc):		.00	Tot	al Volume	Purged (mL)	:	280	D	
Beginning (Groundwate	er Elevation (N	NAVD88):		We	ell Purged 1	To Dryness?		Y /(1)		
 Well Total	Depth (feet	btoc):	36.9	8	Wa		ifter Samplin		11.0	00	
Casing Dia	meter (feet)	2" Sch 40) PVC			,	e., pump is o		074	40	
					Tin	ne Samplin	g Completed	:		10	
PURGE ST	TABILIZATI	ON DATA					Oxidation			T	
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., opac color, odd	
0718		280	19.30	210.18	1.50	6.14	111.9	12.58	11,00	Add Fig.	
טב דט	240	760	17.80	212.73	1.24	6.3	99.4	6.78	11.00	Red Fluke	AD)
07 22	240	1240	17.35	212.19	1.12	6.3	92.4	6.34	11,00	Clear no	
0724	250	1740	17.16	210,34	1.04	6.3	85.9	4.71	11.00		'n
0726	240	2220	1705	209.52	0.95	6.3	803	4.75	11.00		1,
0728	290	2800	16.97	207.43	0.89	6.4	75.6	4.02	11,00	61	
						-					_
										-	
							× .				
									-		

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	ell ID: M	w 3
Sampling Informa	ation:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing		-	Dedicated:	Y / N
Water Level @ Sa	mpling (feet btoc)	: 11.0	3				
Monitoring Event:	Annual ()	Semi-Annua	I() Quarte	rly () Mo	onthly ()	Other (V)	
Final Purge Stabliz	zation Sampling D	Data:	1			Oxidation	
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (\$.U.)	Reduction Potential (mV)	Turbidity (NTU)
8-28-19	290	16.97	257.43	٥.89	6.4	75.6	4.02
Instrument Calibrate See instrument calibrate 1 - In-Situ SmarTrace 2 - HF scientific, in	libration log of da roll Multi-Probe Fi	ield Meter (Temp	erature, Specifi	ng instruments: c Conductance, Dissolv	ved Oxygen, pl	I, Oxidation Red	uction Potentia
General Informati	ion:						
Weather Condition			nny				
Sample Character	istics: <u>Au</u>	zar, Co	10 les	, odorless	5		
Sample Collection	Order:	Per SAP					
Comments and Ob	osérvations:						
	- x			7 10 10 10 10 10 10 10 10 10 10 10 10 10			
				——————————————————————————————————————			
				····			

3							
				le EPA and State proto			
Date: 8-28	19 By:	Ashish	Pare	Title:	65	Lech	

Page 2 of 2

	Facility: SBMU SPS - CCR G		
	Monitoring Well ID: Name (Field Staff): A		naham
	Date: 8-28-19		
Acce	Accessibility: Good L	Fair	Poor
	Well clear of weeds and/or debri	s?: Yes 🖊	No
	Well identification clearly visible	?: Yes 🔽	No
	Remarks:		
Cond	<u>crete Pad</u> : Condition of Concrete Pad:	Good <u>I</u>	Inadequate
	Depressions or standing water a	round well?: Yes _	No L
	Remarks:		
Prote	ective Outer Casing: Materia	al = 4" x 4" Steel Hing	ed Casing with Hasp
	Condition of Protective Casing:	Good 🖊	Damaged
5	Condition of Locking Cap:	Good <u></u>	Damaged
	Condition of Lock:	Good	Damaged
	Condition of Weep Hole:	Good <u></u>	Damaged
	Remarks:		
Well	Riser: Material = 2" Diameter, S	chedule 40 PVC, Flus	h Threaded
	Condition of Riser:	Good <u>L</u>	Damaged
	Condition of Riser Cap:	Good <u></u>	Damaged
	Measurement Reference Point:	Yes	No
	Remarks:		
<u>Dedi</u>	cated Purging/Sampling Device:	Type = ½ " ID Semi-R Silicone Tubing	igid Polyethylene & 0.170" ID Flexible 1
	Condition: Good	Damaged	Missing
	Remarks:		
	Monitoring Well Locked/Secure	d Post Sampling?: Y	res No
	Remarks:		
Field Certif	ication Ashish Par	el cus 7	ech 8-28-19

Signed

Title

Date

Monito	ring Well ID:	MW	6 Fac	cility: SBMU	J Sikeston P	ower Statio	on - Groundy	vater Monitor	ing	
Initial Wate	er Level (fee	t btoc):	11.21		_	Date: 8	-28	19		
Initial Grou	ındwater Ele	vation (NAVE	088):			Air Pressu	re in Well?	YIN		
	IFORMATIO									
Date:	8- 28		D : 11	1.						
Name (Sa	mple Collect	or):	0.11	ingh	am					- H
Method of	Well Purge:	Low Flov	v Perstaltic	Pump	Dec	dicated Tul	bing? (Ŷ/ N		
Time Purg	ing Initiated:	07	302		One	e (1) Well \	Volume (mL)	:	NA	
Beginning	Water Level	(feet btoc):	11.	21	Tot	al Volume	Purged (mL)	E .	192	3
Beginning	Groundwate	er Elevation (f	NAVD88):		We	II Purged 1	Γο Dryness?		Y /N	
Well Total	Depth (feet	btoc):	37.7	4	Wa	iter Level a	ifter Samplin	g (feet btoc):	11.2	5 /
		2" Sch 4				(i.	.e., pump is o	off)	C-03	
		Section 1999			Tim	ne Samplin	g Completed	l: ,	085	/ ~
PURGE S	TABILIZATIO	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)	Notes (e.g., opacity, color, odor)
0804		445	18.39	450.71	0.80	6.5	-61.6	2.85	11.21	Clear, No odo
0806	250	943	17.92	451.50		6.6	-64.3	0.96	11.21	11 3
0803	250	1443	17.75			6.7	-65.1	1.1/	11.00	et v
0810	240	1920	17.67	442.21	0.66	6.7	-65.4	1.15	11.21	
	200 - 10					·				
							-			
	I									-

Facility: SBMU	Sikeston Power Station -	CCR Groundwa	ter Monitoring	Monitoring Wel	IID: M	w 6
Sampling Information:						
Method of Sampling: Lo	ow Flow - Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sampling (0
Monitoring Event: A	nnual () Semi-Annua	ıl () Quarte	rly() Mo	onthly ()	Other (L)	
Final Purge Stablization Sa	ampling Data:					
,	ole Rate Temp _/min) (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8-28-19 21	43 17.67	442.21	0.66	6.7	-65.4	1.15
Instrument Calibration Do See instrument calibration 1 - In-Situ SmarTroll Multi- 2 - HF scientific, inc. Micro	log of daily calibration da -Probe Field Meter (Temp	perature, Specifi	_	ed Oxygen, pH,	Oxidation Redu	uction Potentia
General Information:						
Weather Conditions @ time	e of sampling.	unny				
Sample Characteristics:	Clear, C	olorle	ss, odor	(es_s		
Sample Collection Order:	Per SAP			0-10-1		
Collect F	ons: Field Blo	ank (APP TITE	, APP I	<u>v</u>)	
				11 111 23		
			v			
I certify that sampling proc	edures were in accordan	ce with applicab	le EPA and State protoc	cols.		
Date: 3-23-19	By: Ashish	Parel	Title:	665	Tech	

Page 2 of 2

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring Monitoring Well ID: MW 5 Name (Field Staff): A Patel 0 0://	ingham
Date: <u>\$-28-19</u>	
Access: Accessibility: Good Fair	Poor
Well clear of weeds and/or debris?: Yes // / Well identification clearly visible?: 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></u>
Remarks:	
Protective Outer Casing: Material = 4" x 4" Steel Hinge	d 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 I	Damaged
Measurement Reference Point: Yes	No
Remarks:	
Dedicated Purging/Sampling Device: Type = ½ " ID Semi-Rig Silicone Tubing	gid Polyethylene & 0.170" ID Flexible
Condition: Good Damaged	Missing
Remarks:	,
Monitoring Well Locked/Secured Post Sampling?: Ye	es No
Remarks:	
Field Cartification All 1 May 11.1	Tech 8-28-19

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Date

Mon	toring Well ID	MW	5 Fac	cility: SBMU	J Sikeston P	ower Stati	on - Groundv	vater Monitor	ring	
Initial W	ater Level (fee	t btoc):	10.4	4		Date: 8	3-28	-19		
Initial Gr	oundwater Ele	vation (NAVI	088):		_	Air Pressu	ıre in Well?	Y / 🗞		
PURGE	INFORMATIC									
Date:	8-2			V						
Name (S	ample Collect	or):	Pil	lingh	am					
Method	of Well Purge:	Low Flov	v Perstaltic	Pump	De	dicated Tu	bing? (Y) / N		
Time Pu	rging Initiated:	0	932		On	e (1) Well	Volume (mL)	:	NA	
Beginnir	g Water Leve	I (feet btoc):	10.	44	Tot	al Volume	Purged (mL)):	256	3
Beginnir	g Groundwate	er Elevation (N	NAVD88):		We	ell Purged	Γο Dryness?		Y / (N)	
Well Tot	al Depth (feet	btoc):	37.1	5	Wa		after Samplin		10	.44
Casing [)iameter (feet)	2" Sch 4	0 PVC			·	.e., pump is o	·	100	17
					Tin	ne Samplin	g Completed	d:	100) «
PURGE	STABILIZATI	ON DATA			ř		Oxidation		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)
09.34	7	400	21.42	80082	0.73	6.6	-30.6	2.43	10.44	YELLIN FLORE
0930		960		240.69		6.7	-39.6	3.39	12,44	4
09 39	260	1480	18.75	847.15		6.7	-40.8		10.44	clear, As oddy
०व्य		2000	18.56		-	6.7	-434	1.28	10.44	W !/
094	र 280	2560	18.49	848.38	3.64	6.8	-42.2	০ প্র	10.44	4
	-									
	-									
								22		

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	IIID: M	W 5
Sampling Informa	ition:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	10.44	1			1	
Monitoring Event:	Annual ()	Semi-Annua	I() Quarte	rly () Mo	onthly ()	Other 🔰	
Final Purge Stabliz	ation Sampling D	ata:	7	energy and the second	<u> </u>	T Outdeting	
<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)
8-28-19	280	18.49	848.38	0.64	6.8	-42.2	٥.४२
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	ing instruments: ic Conductance, Dissolv	ed Oxygen, pH	, Oxidation Red	uction Potentia
General Informati	ion:	0					
Weather Condition			3114			Total Advances - Auri	
Sample Character	istics:	ear, Co	1 or/ess	, odorles	5		
Sample Collection	Order:	Per SAP					
Comments and Ot	oservations:	icak (CAPP:	III +. API	IV)		
					=======================================		
-				ole EPA and State proto	cols.		
Date: 8- 28-	19 By: /	ちようよ	fatel	Títle:	Las -	Legh	

Page 2 of 2

Monitoring Well Field Inspection

	Facility: SBMU SPS – CCR G Monitoring Well ID: MW	roundwater Monitoring	L
	Name (Field Staff): A Pa	ver poillin	yham
	Date: <u>8-28-19</u>		
Acces	ss: Accessibility: Good	Fair	Poor
	Well clear of weeds and/or debr	is?: Yes	No
	Well identification clearly visible	?: Yes 🖊	No
	Remarks:		V - 23
Conc	rete Pad: Condition of Concrete Pad:	Good _	Inadequate
	Depressions or standing water a	around well?: Yes _	No 🖊
	Remarks:		
Prote	ctive Outer Casing: Materia	al = <u>4" x 4" Steel Hing</u>	ed Casing with Hasp
	Condition of Protective Casing:	Good V	Damaged
21 1 p ² 5	Condition of Locking Cap:	Good V	Damaged
***.	Condition of Lock:	Good V	Damaged
	Condition of Weep Hole:	Good	Damaged
	Remarks:		
Well	Riser: Material = <u>2" Diameter, S</u>	chedule 40 PVC, Flus	h:Threaded
	Condition of Riser:	Good V	Damaged
	Condition of Riser Cap:	Good $ u$	Damaged
	Measurement Reference Point:	Yes 🖊	No
	Remarks:		
Dedic	cated Purging/Sampling Device:	Type = <u>1⁄4 " ID Semi-Ri</u> Silicone Tubing	igid Polyethylene & 0.170" ID Flexible
	Condition Good V	Damaged	Missing
	Remarks:		
	Monitoring Well Locked/Secured	d Post Sampling?: Y	/es No
	Remarks:		
Field Certifi	cation Ashish Pan	L Cas T	ech 8-28-19 Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monito	ring Well ID	MW	Fac	cility: SBM	U Sikeston P	ower Station	on - Groundy	vater Monitor	ring		
Initial Water	er Level (fee	t btoc):	7.86			Date: 8	- 28.	-19			
Initial Grou	ındwater Ele	vation (NAVE	088):			Air Pressu	re in Well?	Y / 🗑			
	IFORMATIC	- William Parket Control of the Cont						******		-	
Date:	8-27	8-19									
Name (Sar	mple Collect	or):	Dilli	nghar	M						
Method of	Well Purge:	Low Flov	v Perstaltic	Pump	De	dicated Tul	bing? (Ŷ/ N			
Time Purg	ing Initiated:	10	19		On	e (1) Well \	Volume (mL)	:	NA		
Beginning	Water Leve	(feet btoc):	9.	86	Tot	al Volume	Purged (mL)	: É	238	D	
Beginning	Groundwate	er Elevation (N	NAVD88):		We	ell Purged 1	Γο Dryness?		Y / 🔃		
Well Total	Depth (feet	btoc): _3	7.06		Wa	iter Level a	ifter Samplin	g (feet btoc):	9.86	•	
Casing Dia	ameter (feet)	: 2" Sch 4	0 PVC			(i.	.e., pump is o	off)			
				2-1111	Tin	ne Samplin	g Completed	l:	104		
PURGE S	TABILIZATI	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	Turbidity (NTU)	Water Notes Level (e.g., opacity, color, odor)		
1021	(momm)	340	22.04	739.28		6.9	(mV) -98.7	2.75	9.86	Clear, no	•
1023	240	820		757.07		6.9	-94.0	2.21	9.86	11	V
1025		1320		763.61	0.32	7.5	-94.7	1.82	9.86	"	t/
1027	270	1860		768.43	0.27	7.1	-92.6	1.24	9.86	II.	9
1029	260	2380	19.38	768.05		7.1	-90.0	1.25	9.86	11	1)
							-				
											_
							-				
							-				
											_

Facility:	SBMU Sikeston	Power Station - (CCR Groundwa	ter Monitoring	Monitoring We	HID: MW	8
Sampling Informa	tion:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	9.86					
Monitoring Event:	Annual ()	Semi-Annual	I() Quarte	rly () Mo	onthly ()	Other 🛩	
Final Purge Stabliz	ation Sampling D	ata:				Coddetter 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)
8-28-19	260	19.38	768.05	0.25	7.1	-90.0	1.25
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	ibration log of dai	eld Meter (Temp	erature, Specifi	ing instruments: ic Conductance, Dissolv	red Oxygen, pH	, Oxidation Redu	uction Potentia
General Informati	on:	0					
Weather Condition			nny				
Sample Character	stics: 0/e	ar, Col	or 1235,	odorless			
Sample Collection		Per SAP					
Comments and Ot	oservations:						
· · · · · · · · · · · · · · · · · · ·							
I certify that sample	ing procedures w	vere in accordan	ce with applicat	ole EPA and State proto	cols.		
Date: 8-28					Lab -	Tech	

Page 2 of 2

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring Monitoring Well ID: MW H	
Monitoring Well ID: Name (Field Staff): A Patel D Dillingham	
Date: 8-28-19	
Access:	
Accessibility: Good // Fair Poor	
Well clear of weeds and/or debris?: Yes No	
Well identification clearly visible?: Yes Vo No	
Remarks:	
Concrete Pad: Condition of Concrete Pad: Good Inadequate	
Depressions or standing water around well?: Yes No 🔽	
Remarks:	
Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp	
Condition of Protective Casing: Good Damaged	
Condition of Locking Cap: Good Damaged	
Condition of Lock: Good Damaged	
Condition of Weep Hole: Good Damaged	
Remarks:	
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded	
Condition of Riser: Good Damaged	
Condition of Riser Cap: Good Damaged	
Measurement Reference Point: Yes No	
Remarks:	
<u>Dedicated Purging/Sampling Device</u> : Type = 1/4 " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing	
Condition: Good Damaged Missing	
Remarks:	
Monitoring Well Locked/Secured Post Sampling?: Yes No	
Remarks:	
ield Certification Ashish Rater Las Tech 8-28-19	}
Signed Title Date	

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitor	ring Well ID	MW	4 Fac	cility: SBMU	U Sikeston P	ower Statio	on - Groundy	vater Monito	ring	
Initial Wate	er Level (fee	t btoc):	10.8	כ'		Date:	8-28	-19		
Initial Grou	ndwater Ele	vation (NAVE)88):			Air Pressu	re in Well?	Y /(N)		
	FORMATIO									
Date:	8-2	8-14	٥.	11:00	12 1.00)				
Name (San	nple Collect	or):	0	iling	Nur					
Method of \	Well Purge:	Low Flow	v Perstaltic F	² ump	De	dicated Tub	oing? (Y) / N		
Time Purging Initiated: //37 One (1) Well Volume (mL): NA										
Beginning \	Water Level	(feet btoc):	10	.80	Tot	al Volume	Purged (mL)) :	416	
Beginning (Groundwate	er Elevation (N			We	ell Purged T	o Dryness?	4	Y / (N)	
Well Total	Depth (feet	btoc):	37.	23	Wa		fter Samplin e., pump is o	g (feet btoc)	_10	.80
Casing Dia	meter (feet)	2" Sch 40	0 PVC		— Tim		g Completed		120	04
PURGE ST	TABILIZATION TABIL	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)	Notes (e.g., opacity, color, odor)
1139	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		24.43	592.51		7.2	(mV) -/11, 9	0.67	10.80	color, odor)
1141	280	920	21.15	63.60		7.2	-106.9		10.80	" ON OF
1143	270		20.27	2	0.53	7.2	-105.1	2.57	10.80	4 17
1145	270	2000	19.99	645.50		7.2	-104.0	1.05	10.80	"
1147	270	2540	19.78	651.84	0.44	7.2	-103.2	1.61	10.80	いり
1149	270	3090	19.75	6 47.65		7.2	-102.6		10.30	"
1151	280	3640	19.64	643.29		7.2	-102.8	2.50	10.80	(U
1153	260	4160	19.60	645.38	3.40	7.2	-101.7	2.31	10.85	" "
-										
			Т.							14 A
				2						

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	ell ID: Mu	v 4
Sampling Informa	ition:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	10.80)				
Monitoring Event:	Annual ()	Semi-Annual	() Quarte	rly () Mo	onthly ()	Other (1)	
Final Purge Stabliz	ation Sampling D	ata:			1	Ovidation	
<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)
8-28-19 1153	260	19.62	645.38	0.43	7.2	-101.7	2.3/
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	ibration log of dai oll Multi-Probe Fi	eld Meter (Temp	erature, Specifi	ing instruments: ic Conductance, Dissolv	red Oxygen, p⊦	I, Oxidation Red	uction Potentia
General Informati	on:						
Weather Condition	s @ time of samp	oling: Sur	nny				
Sample Characteri	stics: C/e	ar, Co	ordess	, odones	S		
Sample Collection	Order:	Per SAP					
Comments and Ob	oservations:						
7							
	P						14 E a ((a) () () () ()
						50:00	
9-1							
			15.40	le EPA and State proto			
Date: 8-28-	19 By: A	Shish	Carl	Title:	Lab	Tech	

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PDC LABORATORIES, INC. WWW.PDCLAB.COM

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

CHAIN OF CUSTODY RECORD STATE WHERE SAMPLE COLLECTED MO

		HIGHLIGHTED AR	EAS <u>MUST</u>	BE COM	PLETED BY	CLIENT (PL	EASE PRIN	T)							
seston Auwer Statio	PROJEC	otom A	PRO	JECT LOC	CATION		E ORDER #) AN	ALYSI	S REC	UESTE	D	(FOR LAB USE ONL	.Y)
	PHONI	NUMBER	120	E-MAIL	1	DATES	SHIPPED	+	3	4				LOGIN#	
w wakefield		TY.						, 'yo	1	NO.		œ		LOGGED BY:	
8100, MO 6380/	SAMPLER (PLEASE PRI		a lla	100		WW- WASTEWA DW- DRINKING GW- GROUND V	WATER VATER	1238	8		ì			PROJECT:	
ON /KRIN EVOA	SAMPLER'S SIGNATURE		(.	1		WWSL-SLUDGE NAS-NON AQUE LCHT-LEACHAT OIL-OIL SO-SOIL SOL-SOLID	ENTIR SULTA	226	AC	H9, L	56			PROJ. MGR.:	- "
SAMPLE DESCRIPTION ESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPL GRAB	E TYPE COMP	MATRIX TYPE	BOTTLE	PRES	90	AS		S.			REMARKS	
Mw 3	8-28-10	27.47	×		(1)	3	PROVIDED	×	TT,	ڻ	S		_		
MW G	7-28-10	0810	×		GW	3	<u> </u>	X	大	K ,	X				
MW 5	8-28-19	0942	×		GW	3		×	X	X-	7				
nw 8	8-28-19	1029	×		GW	3		x	K	X	4				
1W4	8-28-19	1153	×		GW	3		X	×	×	×				
12 Duplicate	8-28-19		×		GW	3		X	X	X -	7				
11 Blank	8-28-19		X		DI	3		X	χ	人	*				
													-		
												_	-		
ERVATION CODES: I - HCL 2 - H2SO4	3 – HNO3 4 – N/	10H 5-NA2	S203	6 – UNPI	RESERVED	7 - OTHER		<u> </u>							
NAROUND TIME REQUESTED (PLEASE CIRCLE) H TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHAI	-		DATE RESU NEEDEI		6	not meet all	sample conf	formance	e requi	remen	s as d	efined	in the re	proceed with analysis, even though ceiving facility's Sample Acceptar	ice
H RESULTS VIA (PLEASE CIRCLE) EMAIL PHOI T FROM ABOVE: PHONE # IF DIFFERENT FRO						-	e data will b NITH ANALY	•						eptable to report to all regulatory	authorities.
SHED BY: (SIGNATURE) A PARL TI	75-29-19	RECEIVE	D BY: (SIGN	NATURE)			DAT			10	8)	CC	MMENT	S: (FOR LAB USE ONLY)	
,	ME 0700	DECEME	D DV- (0101	IATHOR			TIME			1,		_			
	ATE	KEGEIVE	D BY: (SIGN	wioke)			TIME			1				TED PRIOR TO RECEIPT	OR N
BY: (SIGNATURE)	ATE	RECEIVE	D BY: (SIGN	NATURE)			DAT	E		SA	MPLE	(S) RE	CEIVED PTANCE	ON ICE NONCONFORMANT	OR N
Т	ME						TIME							N FROM SAMPLE BOTTLE	- N N

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

Field Instrumentation Calibration Log

Standards ments (µS/cm) Neasurement (µS/cm		Field Inst	ruments:	In-Situ	SM	arTROLL Fie	eld Meter		•		_			nc. Micro TPI Fi	eld Portable Tu	rbic	limeter	•		M.
Date Time PH Standards Measurement (µS/cm) A.00 = 4.60 7.00 = 7.00 1413 = 1413 = 1451.4 Temperature (nV) Temperatur			S/N #:	41	43	40		-		S	M/S	#: Jolu (7	366		•				
A		Date	Time		- 1	Measure-	Conductan Standard	ce	Conductance	1			tial	Reduction Potential Measurement			cygen	Standards		Turbidity Measurements (NTU)
Temperature (°C) = 30.35 0.02 = 10.00 1413 = 1451.4 Standard (mV) = 221 221	>			4.00	=	4.00					=	21.46				=	20.35	0.02	=	0.02
Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential. Temperature (°C) = 10.05 Temperature (°C) Temperature (°C) Tap Water Source T	of Da ion	10-23-	. 23	7.00	=	7.00						Chr. and Life, a particular				=	Sikeshe	10.0	=	10.0
Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential. Temperature (ec) = 0.35	ginning	2019	062		=		1413	=	1415		×	225	=	339.4	Barometric Pressure	=	1001-0		=	1000
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.	å														Measurement	=	99,350	9		• • •
The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential. Tap Water Source Barometric Pressure (mm/Hg) Measurement = 10.00 = 1	~			4.00	=	4.ol.					=	20.25				=		0.02	=	0.01
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.	Chec	10-22		7.00	=	The second secon							na chemistrate de la constante			=		10.0	=	9.8%
Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential. The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.	d of Day	Joly	1350	10.00	=		1413	=	1451.4		1	229	1	239.3	Barometric Pressure	=		1000)	992.3
The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.	ũ	ES ACT TO BE ACT	The state of the s	NO.		10.0(On the last				Measurement	=	PO.TO	8		
		The HF so	lentific, inc.	Micro TF	의 Fie	eld Portable	Turbidimeter n	neas	sures Turbidity.				on R	eduction Potenti	el,					
		All of the second																		(
I certify that the aforementioned meters were calibrated within the manufacturers specifications.							10 . I 10-1-	Men												

Monitoring Well Field Inspection

	BMU SPS - CCR G		lonitoring		
•	/ell ID: Mw	- 4		1	
Name (Field		16011	O. Dill	ng han	
Date:/p-	21-15				
Access: Accessibility	Good :		Fair	_	Poor
Well clear of	f weeds and/or debr	is?: Yes	<u> </u>	No	
Well identific	cation clearly visible	?: Yes	_	No	
Remarks:					
Concrete Pad: Condition of	Concrete Pad:		Good _	Inadeq	uate
Depressions	s or standing water a	around well?:	Yes _	No	
Remarks:					
Protective Outer C	Casing: Materi	al = <u>4" x 4" S</u>	teel 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: Materi	ial = <u>2" Diameter,</u> S	chedule 40 P	VC, Flusi	h Threaded	
Condition of	Riser:	Good		Damaged	-
Condition of	Riser Cap:	Good		Damaged	_
Measureme	nt Reference Point:	Yes _		No	
Remarks:					
Dedicated Purging	/Sampling Device:		Semi-Ri ne Tubing		ne & 0.170" ID Flexible
Condition:	Good <u></u>	Damaged _		Missing	
Remarks:					
Monitoring V	Vell Locked/Secure	d Post Sampl	ing?: Y	es	No
Remarks:			State State State Springs Constitution		
Field Certification	-11.0	ne Sall	1.		10-23-19
. IOIA OUTHINGUIT	Signed	- and	Title	~~Km	Date

Monito	ring Well ID:	MM-	Fac	sility: SBML	J Sikeston Po	ower Statio	n - Groundw	ater Monitor	ing	
Initial Wate	er Level (fee	t btoc):/	1,21			Date:	10-23-19			
Initial Grou	ndwater Ele	vation (NAVD	988):			Air Pressur	re in Well?	Y / 👁		
PURGE IN	FORMATIO	N								
Date:	10-23-1	9								
Name (Sar	nple Collect	or): <u> </u>	Dilling	han-						
		Low Flow				licated Tub		Y) / N		
Time Purgi	ing Initiated:		51		One	e (1) Well V	/olume (mL):		NA	
Beginning	Water Level	(feet btoc):		21'	Tota	al Volume I	Purged (mL):	:	2120	- Marie Carlo
Beginning	Groundwate	r Elevation (N	IAVD88):		We	II Purged T	o Dryness?		Y 100	
Well Total	Depth (feet	btoc):	37. 25	- 1	Wa	ter Level at	fter Sampling	g (feet btoc):	11.21	
Casing Dia	meter (feet)	2" Sch 40) PVC			•	e., pump is o	•	1222	
DITECE 6.	TABILIZATIO	ON DATA			1 1814	ie sambiini	g Completed	•	1666	
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1153		300	\$2.56	598.60	0.99	7.2	-110,4	2.67	11.21	Clear
1/55	330	760	19.71	606.73	0.79	7.2	-110.7	2.27	11	40
1157	210	1180	19.13	616.17	0.72	7.2	-111,0	1.49	łę	te
1159	230	1646	18.97	613.72	0.65	7.3	-110.8	1.58	11	(I
1201	24,	2120	18:30	619.99	0.55	7.3	-110.6	1.93	4	и
							-			
	1									
1						1				

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	ell ID: M	W-4
Sampling Informa	ation:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	: //, 21'	. 1011-100-10-1				
Monitoring Event:	Annual ()	Semi-Annua	I () Quarte	rly (X) 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)
1501	240	18,90	619.99	0,55	7.3	-110.6	1.53
Instrument Calibi See instrument ca 1 - In-Situ SmarTi 2 - HF scientific, in	libration log of da roll Multi-Probe Fi	ield Meter (Temp	perature, Specifi	ing instruments: ic Conductance, Dissol	ved Oxygen, pl	H, Oxidation Red	uction Potentia
General Informat	ion:						
Weather Condition	ns @ time of sam	pling:	Cool 5	4°F Very L	I hally		
Sample Character	istics:	Clew.	cobriss	alories		, (A)	
Sample Collection	Order:	Per SAP			<u>,</u>		
Comments and Ol	oservations:						
					.11		
To the state of th	<u>-:</u>		A				
I certify that samp	ling procedures w	vere in accordan	ce with applicat	ole EPA and State prote	ocols.		
Date: _/o - 23-	/ j By:	7/1	rim a	All Title	Leade		
			Pag	e 2 of 2			

Prepared by: GREDELL Engineering Resources, Inc.

Appendix 2

Laboratory Analytical Results

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

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

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

Please find enclosed the analytical results for the 7 sample(s) the laboratory received on 5/30/19 9:40 am and logged in under work order 9055762. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

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

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

Sincerely,

Kurt Stepping Senior Project Manager (309) 692-9688 x1719

kstepping@pdclab.com





Sample: 9055762-01

Name: MW-3

Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 07:44

Received: 05/30/19 09:40

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical	l - Greensi	ourg							
Radium 226 - subcontracted	0.064	pCi/L			1	1.02			904.0 903.1
Radium 228 - subcontracted	0.852	pCi/L			1	0.984			904.0 903.1

Sample: 9055762-02

Name: MW-6

Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 08:32

Received: 05/30/19 09:40

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytica	l - Greens	burg							
Radium 226 -	0.519	pCi/L			1	0.851			904.0 903.1
subcontracted Radium 228 - subcontracted	0.764	pCi/L			1	8.0			904.0 903.1

Sample: 9055762-03 Name: MW-5

Matrix: Ground Water - Regular Sample

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

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical	- Greensl	ourg				-			
Radium 226 - subcontracted	0.377	pCi/L			1	0.812			904.0 903.1
Radium 228 - subcontracted	1.32	pCi/L			-1	0.987			904.0 903.1

Sample: 9055762-04 Name: MW-8

Matrix: Ground Water - Regular Sample

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

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical	- Greensi	ourg							
Radium 226 -	0.613	pCi/L			1	0.517			904.0 903.1
subcontracted Radium 228 - subcontracted	0.294	pCi/L			11	0.806			904.0 903.1



Sample: 9055762-05

Name: MW-4

Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 11:54

Received: 05/30/19 09:40

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical	- Greensi	ourg				-			
Radium 226 -	0.938	pCi/L			1	0.751			904.0 903.1
subcontracted Radium 228 -	0.523	pCi/L			1	0.806			904.0 903.1
subcontracted		F - " -			·	0.000			501.0 000.1

Sample: 9055762-06 Name: FIELD DUPLICATE

Matrix: Ground Water - Regular Sample

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

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

Sample: 9055762-07 Name: FIELD BLANK

Matrix: Ground Water - Regular Sample

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

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

ANALYTICAL RESULTS



Sample: 9055762-01

Name: MW-3

Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 07:44

Parameter	Result	Unit	Qualifler Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA								
Chloride	1.3	mg/L	06/19/19 22:38	1	1.0	06/19/19 22:38	mgu	EPA 300.0
Sulfate	20	mg/L	06/19/19 22:57	5	5.0	06/19/19 22:57	mgu	EPA 300.0
General Chemistry - PIA								
Fluoride	< 0.250	mg/L	06/20/19 18:25	1	0.250	06/20/19 18:25	ттн	SM 4500-F C
Total Metals - PIA								
Antimony	< 3.0	ug/L	06/11/19 09:30	5	3.0	06/13/19 13:30	JMW	SW 6020
Lithlum	< 0.010	mg/L	06/11/19 09:30	1	0.010	06/13/19 16:14	JMW	SW 6010*
Arsenic	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:30	JMW	SW 6020
Barium	110	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:30	JMW	SW 6020
Beryllium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:30	JMW	SW 6020
Boron	51	ug/L	06/11/19 09:30	5	10	06/13/19 13:30	JMW	SW 6020
Cadmium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:30	JMW	SW 6020
Calcium	17000	ug/L	06/11/19 09:30	5	100	06/13/19 13:30	JMW	SW 6020
Chromium	< 4.0	ug/L	06/11/19 09:30	5	4.0	06/13/19 13:30	JMW	SW 6020
Cobalt	< 2.0	ug/L	06/11/19 09:30	5	2.0	06/13/19 13:30	JMW	SW 6020
Lead	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:30	JMW	SW 6020
Mercury	< 0.20	ug/L	06/11/19 09:30	5	0.20	06/13/19 13:30	JMW	SW 6020
Molybdenum	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:30	JMW	SW 6020
Selenium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:30	JMW	SW 6020
Thallium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:30	JMW	SW 6020



Sample: 9055762-02

Name: MW-6

Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 08:32

Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA		<u> </u>			-			
Chloride	2.5	mg/L	06/19/19 23:15	1	1.0	06/19/19 23:15	mgu	EPA 300.0
Sulfate	30	mg/L	06/20/19 00:10	5	5.0	06/20/19 00:10	mgu	EPA 300.0
General Chemistry - PIA								
Fluoride	< 0.250	mg/L	06/20/19 18:29	1	0.250	06/20/19 18:29	ттн	SM 4500-F C
Total Metals - PIA								
Antimony	< 3.0	ug/L	06/11/19 09:30	5	3.0	06/13/19 13:34	JMW	SW 6020
Lithium	< 0.010	mg/L	06/11/19 09:30	1	0.010	06/13/19 16:15	JMW	SW 6010*
Arsenic	3.2	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:34	JMW	SW 6020
Barium	190	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:34	JMW	SW 6020
Beryllium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:34	JMW	SW 6020
Boron	52	ug/L	06/11/19 09:30	5	10	06/13/19 13:34	JMW	SW 6020
Cadmium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:34	WML	SW 6020
Calcium	40000	ug/L	06/11/19 09:30	5	100	06/13/19 13:34	JMW	SW 6020
Chromium	< 4.0	ug/L	06/11/19 09:30	5	4.0	06/13/19 13:34	JMW	SW 6020
Cobalt	< 2.0	ug/L	06/11/19 09:30	5	2.0	06/13/19 13:34	JMW	SW 6020
Lead	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:34	JMW	SW 6020
Mercury	< 0.20	ug/L	06/11/19 09:30	5	0.20	06/13/19 13:34	JMW	SW 6020
Molybdenum	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:34	JMW	SW 6020
Selenium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:34	JMW	SW 6020
Thallium	< 1.0	u g/L	06/11/19 09:30	5	1.0	06/13/19 13:34	JMW	SW 6020



Sample: 9055762-03

Name: MW-5

Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 09:33

Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA						· · · · · ·		
Chloride	10	mg/L	06/20/19 00:29	5	5.0	06/20/19 00:29	mgu	EPA 300.0
Sulfate	190	mg/L	06/20/19 00:47	50	50	06/20/19 00:47	mgu	EPA 300.0
General Chemistry - PIA								
Fluoride	< 0.250	mg/L	06/20/19 18:50	1	0.250	06/20/19 18:50	πн	SM 4500-F C
<u>Total Metals - PIA</u>								
Antimony	< 3.0	ug/L	06/11/19 09:30	5	3.0	06/13/19 13:38	JMW	SW 6020
Lithlum	< 0.010	mg/L	06/11/19 09:30	1	0.010	06/13/19 16:17	JMW	SW 6010*
Arsenic	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:38	JMW	SW 6020
Barium	81	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:38	JMW	SW 6020
Beryllium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:38	JMW	SW 6020
Boron	280	ug/L	06/11/19 09:30	5	10	06/13/19 13:38	JMW	SW 6020
Cadmium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:38	JMW	SW 6020
Calcium	110000	ug/L	06/11/19 09:30	5	100	06/13/19 13:38	JMW	SW 6020
Chromium	< 4.0	ug/L	06/11/19 09:30	5	4.0	06/13/19 13:38	JMW	SW 6020
Cobalt	2.6	ug/L	06/11/19 09:30	5	2.0	06/13/19 13:38	JMW	SW 6020
Lead	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:38	JMW	SW 6020
Mercury	< 0.20	ug/L	06/11/19 09:30	5	0.20	06/13/19 13:38	JMW	SW 6020
Molybdenum	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:38	JMW	SW 6020
Selenium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:38	JMW	SW 6020
Thallium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:38	JMW	SW 6020



Sample: 9055762-04

Name: MW-8

Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 10:41

Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA								
Chloride	53	mg/L	06/20/19 01:05	25	25	06/20/19 01:05	mgu	EPA 300.0
Sulfate	130	mg/L	06/20/19 01:05	25	25	06/20/19 01:05	mgu	EPA 300.0
General Chemistry - PIA								
Fluoride	< 0.250	mg/L	06/20/19 19:07	1	0.250	06/20/19 19:07	πн	SM 4500-F C
Total Metals - PIA								
Antimony	< 3.0	ug/L	06/11/19 09:30	5	3.0	06/13/19 13:41	JMW	SW 6020
Lithium	< 0.010	mg/L	06/11/19 09:30	1	0.010	06/13/19 16:18	JMW	SW 6010*
Arsenic	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:41	JMW	SW 6020
Barium	85	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:41	JMW	SW 6020
Beryllium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:41	JMW	SW 6020
Boron	540	ug/L	06/11/19 09:30	5	10	06/13/19 13:41	JMW	SW 6020
Cadmium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:41	JMW	SW 6020
Calcium	100000	ug/L	06/11/19 09:30	5	100	06/13/19 13:41	JMW	SW 6020
Chromium	< 4.0	ug/L	06/11/19 09:30	5	4.0	06/13/19 13:41	JMW	SW 6020
Cobalt	< 2.0	ug/L	06/11/19 09:30	5	2.0	06/13/19 13:41	JMW	SW 6020
Lead	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:41	JMW	SW 6020
Mercury	< 0.20	ug/L	06/11/19 09:30	5	0.20	06/13/19 13:41	JMW	SW 6020
Molybdenum	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:41	JMW	SW 6020
Selenium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:41	JMW	SW 6020
Thallium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:41	JMW	SW 6020



Sample: 9055762-05

Name: MW-4

Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 11:54

Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA								
Chloride	11	mg/L	06/20/19 01:	24 5	5.0	06/20/19 01:24	mgu	EPA 300.0
Sulfate	75	mg/L	06/20/19 01:	42 25	25	06/20/19 01:42	mgu	EPA 300.0
General Chemistry - PIA								
Fluoride	< 0.250	mg/L	06/20/19 19:	13 1	0.250	06/20/19 19:13	TTH	SM 4500-F C
Total Metals - PIA								
Antimony	< 3.0	ug/L	06/11/19 09:	30 5	3.0	06/13/19 13:45	JMW	SW 6020
Lithium	< 0.010	mg/L	06/11/19 09:	30 1	0.010	06/13/19 16:20	MMC	SW 6010*
Arsenic	< 1.0	ug/L	06/11/19 09:	30 5	1.0	06/13/19 13:45	JMW	SW 6020
Barium	81	ug/L	06/11/19 09:	30 5	1.0	06/13/19 13:45	JMW	SW 6020
Beryllium	< 1.0	ug/L	06/11/19 09:	30 5	1.0	06/13/19 13:45	JMW	SW 6020
Boron	980	ug/L	06/11/19 09:	30 5	10	06/13/19 13:45	JMW	SW 6020
Cadmium	< 1.0	ug/L	06/11/19 09:	30 5	1.0	06/13/19 13:45	JMW	SW 6020
Calcium	70000	ug/L	06/11/19 09:	30 5	100	06/13/19 13:45	JMW	SW 6020
Chromium	< 4.0	ug/L	06/11/19 09:	30 5	4.0	06/13/19 13:45	JMW	SW 6020
Cobalt	< 2.0	ug/L	06/11/19 09:	30 5	2.0	06/13/19 13:45	JMW	SW 6020
Lead	< 1.0	ug/L	06/11/19 09:	30 5	1.0	06/13/19 13:45	JMW	SW 6020
Mercury	< 0.20	ug/L	06/11/19 09:	30 5	0.20	06/13/19 13:45	WML	SW 6020
Molybdenum	3.5	ug/L	06/11/19 09:	30 5	1.0	06/13/19 13:45	JMW	SW 6020
Selenium	< 1.0	ug/L	06/11/19 09:	30 5	1.0	06/13/19 13:45	JMW	SW 6020
Thallium	< 1.0	ug/L	06/11/19 09:	:30 5	1.0	06/13/19 13:45	JMW	SW 6020



Sample: 9055762-06

Name: FIELD DUPLICATE

Matrix: Ground Water - Regular Sample

Sampled: 05/28/19 00:00

Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA								_
Chloride	11	mg/L	06/20/19 02:01	5	5.0	06/20/19 02:01	mgu	EPA 300.0
Sulfate	190	mg/L	06/20/19 02:19	50	50	06/20/19 02:19	mgu	EPA 300.0
General Chemistry - PIA								
Fluoride	< 0.250	mg/L	06/20/19 19:20	1	0.250	06/20/19 19:20	TTH	SM 4500-F C
Total Metals - PIA								
Antimony	< 3.0	ug/L	06/11/19 09:30	5	3.0	06/13/19 13:49	JMW	SW 6020
Lithium	< 0.010	mg/L	06/11/19 09:30	1	0.010	06/13/19 16:21	JMW	SW 6010*
Arsenic	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:49	JMW	SW 6020
Barium	79	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:49	JMW	SW 6020
Beryllium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:49	JMW	SW 6020
Boron	300	ug/L	06/11/19 09:30	5	10	06/13/19 13:49	JMW	SW 6020
Cadmium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:49	JMW	SW 6020
Calcium	110000	ug/L	06/11/19 09:30	5	100	06/13/19 13:49	JMW	SW 6020
Chromium	< 4.0	ug/L	06/11/19 09:30	5	4.0	06/13/19 13:49	JMW	SW 6020
Cobalt	2.7	ug/L	06/11/19 09:30	5	2.0	06/13/19 13:49	JMW	SW 6020
Lead	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:49	JMW	SW 6020
Mercury	< 0.20	ug/L	06/11/19 09:30	5	0.20	06/13/19 13:49	JMW	SW 6020
Molybdenum	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:49	JMW	SW 6020
Selenium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:49	JMW	SW 6020
Thallium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:49	JMW	SW 6020



Sample: 9055762-07

Sampled: 05/28/19 00:00

Name: FIELD BLANK

Received: 05/30/19 09:40

Matrix: Ground Water - Regular Sample

Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA								
Chloride	< 1.0	mg/L	06/20/19 02:37	1	1.0	06/20/19 02:37	mgu	EPA 300.0
Sulfate	< 1.0	mg/L	06/20/19 02:37	1	1.0	06/20/19 02:37	mgu	EPA 300.0
General Chemistry - PIA								
Fluoride	< 0.250	mg/L	06/20/19 18:34	1	0.250	06/20/19 18:34	ттн	SM 4500-F C
Total Metals - PIA								
Antimony	< 3.0	ug/L	06/11/19 09:30	5	3.0	06/13/19 13:53	JMW	SW 6020
Lithium	< 0.010	mg/L	06/11/19 09:30	1	0.010	06/13/19 16:23	JMW	SW 6010*
Arsenic	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:53	JMW	SW 6020
Barium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:53	JMW	SW 6020
Beryllium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:53	JMW	SW 6020
Boron	18	ug/L	06/11/19 09:30	5	10	06/13/19 13:53	JMW	SW 6020
Cadmium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:53	JMW	SW 6020
Calcium	160	ug/L	06/11/19 09:30	5	100	06/13/19 13:53	JMW	SW 6020
Chromium	< 4.0	ug/L	06/11/19 09:30	5	4.0	06/13/19 13:53	JMW	SW 6020
Cobalt	< 2.0	ug/L	06/11/19 09:30	5	2.0	06/13/19 13:53	JMW	SW 6020
Lead	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:53	JMW	SW 6020
Mercury	< 0.20	ug/L	06/11/19 09:30	5	0.20	06/13/19 13:53	JMW	SW 6020
Molybdenum	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:53	JMW	SW 6020
Selenium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:53	JMW	SW 6020
Thallium	< 1.0	ug/L	06/11/19 09:30	5	1.0	06/13/19 13:53	JMW	SW 6020

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

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

RE: Sikeston BMU-App III Only

Dear Luke St Mary:

Please find enclosed the analytical results for the 7 sample(s) the laboratory received on 7/26/19 9:50 am and logged in under work order 9075407. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

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

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

Sincerely,

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

TINI



Sample: 9075407-01

Name: MW-3

Matrix: Ground Water - Grab

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

PO #:

20926

Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
140	mg/L		07/30/19 16:26	1	17	07/30/19 16:48	TMS	SM 2540C
ter - Grab								
Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
180	mg/L	M	07/29/19 06:50	1	26	07/29/19 07:46	TMS	SM 2540C
ter - Grab								
Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
480	mg/L		07/29/19 06:50	1	26	07/29/19 07:46	TMS	SM 2540C
l ater - Grab						Received: 07/26/	19 09:50	
Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
			-					
480	mg/L		07/29/19 06:50	1	26	07/29/19 07:46	TMS	SM 2540C
	140 Result 180 Result 480 Result Result	140 mg/L Result Unit 180 mg/L ter - Grab Result Unit 480 mg/L	ter - Grab Result Unit Qualifier 180 mg/L M ter - Grab Result Unit Qualifier 480 mg/L ter - Grab Result Unit Qualifier	140 mg/L 07/30/19 16:26 Result Unit Qualifier Prepared 180 mg/L M 07/29/19 06:50 ter - Grab	140 mg/L 07/30/19 16:26 1	140 mg/L 07/30/19 16:26 1 17	140 mg/L 07/30/19 16:26 1 17 07/30/19 16:48	Sampled: 07/23/19 09:33 Received: 07/26/19 09:50 PO #: 20926 Result Unit Qualifier Prepared Dilution MRL Analyzed Analyst



Sample: 9075407-05

Name: MW-4

Matrix: Ground Water - Grab

Sampled: 07/23/19 13:55

Received: 07/26/19 09:50

PO #: 20926

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

Sample: 9075407-06
Name: FIELD DUPLICATE

Matrix: Ground Water - Field Duplicate

Sampled: 07/23/19 00:00 **Received:** 07/26/19 09:50

PO #: 20926

Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA								
Solids - total dissolved solids (TDS)	460	mg/L	07/29/19 06	50 1	26	07/29/19 07:46	TMS	SM 2540C
Complex 0075407 07						Sampled: 07/23/	19 00:00	

Sample: 9075407-07 Name: FIELD BLANK

Matrix: Ground Water - Field Blank

Sampled: 07/23/19 00:00 Received: 07/26/19 09:50

PO #: 20926

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



PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

January 13, 2020

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

RE: Sikeston NPDES Groundwater

Dear Luke St Mary:

Please find enclosed the **revised** analytical results for the **12** sample(s) the laboratory received on **7/26/19 9:50** am and logged in under work order **9075380**. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

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

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

Sincerely,

Kurt Stepping

Senior Project Manager (309) 692-9688 x1719

kstepping@pdclab.com





Sample: 9075380-09

Sampled: 07/23/19 12:43

Name: MW-8

Received: 07/26/19 09:50

Matrix: Ground Water - Grab

PO #: 20925

Parameter	Result	Unit	Qualifier F	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	420	mg/L	07/2	29/19 06:50	1	26	07/29/19 07:46	TMS	SM 2540C

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

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

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

Please find enclosed the analytical results for the 7 sample(s) the laboratory received on 8/30/19 10:00 am and logged in under work order 9086366. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

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

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

Sincerely,

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





Sample: 9086366-01

Name: MW-3

Matrix: Ground Water - Grab

Sampled: 08/28/19 07:28

Received: 08/30/19 10:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytica	l - Greensl	ourg							
Radium 226 - subcontracted	0.502	pCi/L			1	0.732			904.0 903.1
Radium 228 - subcontracted	0.379	pCi/L			1	0.63			904.0 903.1

Sample: 9086366-02

Name: MW-6

Matrix: Ground Water - Grab

Sampled: 08/28/19 08:10

Received: 08/30/19 10:00

Parameter	Result	Unit	Qualifler	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical	- Greensb	urg							
Radium 226 - subcontracted	0.38	pCi/L			1	0.814			904.0 903.1
Radium 228 - subcontracted	-0.0125	pCi/L			Ħ	0.68			904.0 903.1

Sample: 9086366-03

Name: MW-5

Matrix: Ground Water - Grab

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

Parameter Result Unit Qualifier Prepared Dilution Analyzed Analyst Method Miscellaneous - PACE Analytical - Greensburg 904.0 903.1 0.805 Radium 226 - subcontracted 0.254 pCi/L 1 Radium 228 - subcontracted 0.387 pCi/L 0.647 904.0 903.1

Sample: 9086366-04

Name: MW-8

Matrix: Ground Water - Grab

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

Parameter	Result	Unit	Qualifler	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytic	al - Greens	burg							
Radium 226 - subcontracted	0.267	pCi/L			1	0.802			904.0 903.1
Radium 228 - subcontracted	0.225	pCi/L			4	0.732			904.0 903.1



Sample: 9086366-05

Name: MW-4

Matrix: Ground Water - Grab

Sampled: 08/28/19 11:53

Received: 08/30/19 10:00

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

Sample: 9086366-06

Name: FIELD DUPLICATE

Matrix: Ground Water - Field Duplicate

Sampled: 08/28/19 00:00

Received: 08/30/19 10:00

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

Sample: 9086366-07 Name: FIELD BLANK

Matrix: Ground Water - Field Blank

Sampled: 08/28/19 00:00

Received: 08/30/19 10:00

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

ANALYTICAL RESULTS



Sample: 9086366-01

Name: MW-3

Matrix: Ground Water - Grab

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

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



Sample: 9086366-02

Name: MW-6

Matrix: Ground Water - Grab

Sampled: 08/28/19 08:10

Received: 08/30/19 10:00

Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA								
Chloride	1.0	mg/L	09/03/19 20:23	1	1.0	09/03/19 20:23	MGU	EPA 300.0
Sulfate	24	mg/L	09/03/19 20:41	5	5.0	09/03/19 20:41	MGU	EPA 300.0
General Chemistry - PIA								
Fluoride	< 0.250	mg/L	09/10/19 11:48	1	0.250	09/10/19 11:48	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	200	mg/L	09/03/19 07:34	1	26	09/03/19 10:55	TMS	SM 2540C
Total Metals - PIA								
Antimony	< 3.0	ug/L	09/05/19 13:06	5	3.0	09/09/19 08:23	JMW	SW 6020
Lithium	< 0.020	mg/L	09/05/19 13:06	1	0.020	09/10/19 08:14	ZSA	SW 6010*
Arsenic	3.6	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:23	JMW	SW 6020
Barium	210	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:23	JMW	SW 6020
Beryllium	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:23	JMW	SW 6020
Boron	54	ug/L	09/05/19 13:06	5	10	09/10/19 09:31	WML	SW 6020
Cadmium	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:23	JMW	SW 6020
Calcium	44000	ug/L	09/05/19 13:06	5	100	09/10/19 09:31	JMW	SW 6020
Chromium	< 4.0	ug/L	09/05/19 13:06	5	4.0	09/09/19 08:23	JMW	SW 6020
Cobalt	< 2.0	ug/L	09/05/19 13:06	5	2.0	09/09/19 08:23	JMW	SW 6020
Lead	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:23	JMW	SW 6020
Mercury	< 0.20	ug/L	09/05/19 13:06	5	0.20	09/09/19 08:23	JMW	SW 6020
Molybdenum	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:23	JMW	SW 6020
Selenium	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:23	JMW	SW 6020
Thallium	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:23	JMW	SW 6020



Sample: 9086366-03

Name: MW-5

Matrix: Ground Water - Grab

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

Parameter	Result	Unit	Qualifler	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	16	mg/L		09/03/19 21:18	5	5.0	09/03/19 21:18	MGU	EPA 300.0
Sulfate	190	mg/L		09/03/19 21:36	50	50	09/03/19 21:36	MGU	EPA 300.0
General Chemistry - PIA									
Fluoride	< 0.250	mg/L		09/10/19 11:53	1	0.250	09/10/19 11:53	ттн	SM 4500-F C
Solids - total dissolved solids (TDS)	480	mg/L	М	09/03/19 07:34	1	26	09/03/19 10:55	TMS	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		09/05/19 13:06	5	3.0	09/09/19 08:26	JMW	SW 6020
Lithium	< 0.020	mg/L		09/05/19 13:06	1	0.020	09/10/19 08:15	ZSA	SW 6010*
Arsenic	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:26	JMW	SW 6020
Barium	88	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:26	JMW	SW 6020
Beryllium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:26	JMW	SW 6020
Boron	410	ug/L		09/05/19 13:06	5	10	09/10/19 09:35	JMW	SW 6020
Cadmium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:26	JMW	SW 6020
Calcium	110000	ug/L		09/05/19 13:06	5	100	09/10/19 09:35	JMW	SW 6020
Chromium	< 4.0	ug/L		09/05/19 13:06	5	4.0	09/09/19 08:26	JMW	SW 6020
Cobalt	4.6	ug/L		09/05/19 13:06	5	2.0	09/09/19 08:26	JMW	SW 6020
Lead	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:26	JMW	SW 6020
Mercury	< 0.20	ug/L		09/05/19 13:06	5	0.20	09/09/19 08:26	JMW	SW 6020
Molybdenum	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:26	JMW	SW 6020
Selenium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:26	JMW	SW 6020
Thallium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 08:26	JMW	SW 6020



Sample: 9086366-04

Name: MW-8

Matrix: Ground Water - Grab

Sampled: 08/28/19 10:29

Received: 08/30/19 10:00

Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA					_			-
Chloride	55	mg/L	09/03/19 22:12	25	25	09/03/19 22:12	MGU	EPA 300.0
Sulfate	110	mg/L	09/03/19 22:12	25	25	09/03/19 22:12	MGU	EPA 300.0
General Chemistry - PIA								
Flúoride	< 0.250	mg/L	09/10/19 11:58	1	0.250	09/10/19 11:58	ΤΤΗ	SM 4500-F C
Solids - total dissolved solids (TDS)	360	mg/L	09/03/19 07:34	1	26	09/03/19 10:55	TMS	SM 2540C
Total Metals - PIA								
Antimony	< 3.0	ug/L	09/05/19 13:06	5	3.0	09/09/19 08:57	JMW	SW 6020
Lithium	< 0.020	mg/L	09/05/19 13:06	1	0.020	09/10/19 08:17	ZSA	SW 6010*
Arsenic	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:57	JMW	SW 6020
Barium	84	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:57	JMW	SW 6020
Beryllium	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:57	JMW	SW 6020
Boron	460	ug/L	09/05/19 13:06	5	10	09/10/19 09:38	JMW	SW 6020
Cadmium	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:57	JMW	SW 6020
Calcium	93000	ug/L	09/05/19 13:06	5	100	09/10/19 09:38	JMW	SW 6020
Chromium	< 4.0	ug/L	09/05/19 13:06	5	4.0	09/09/19 08:57	JMW	SW 6020
Cobalt	< 2.0	ug/L	09/05/19 13:06	5	2.0	09/09/19 08:57	JMW	SW 6020
Lead	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:57	JMW	SW 6020
Mercury	< 0.20	ug/L	09/05/19 13:06	5	0.20	09/09/19 08:57	JMW	SW 6020
Molybdenum	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:57	JMW	SW 6020
Selenium	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:57	JMW	SW 6020
Thallium	< 1.0	ug/L	09/05/19 13:06	5	1.0	09/09/19 08:57	JMW	SW 6020



Sample: 9086366-05

Name: MW-4

Parameter

Anions - PIA Chloride

Sulfate

Fluoride

solids (TDS)

Antimony

Lithium

Arsenic

Barium

Boron

Beryllium

Cadmium

Calcium

Cobalt

Lead

Mercury

Selenium

Thallium

Molybdenum

Chromium

Ground Water - Grab Matrix:

< 2.0

< 1.0

< 0.20

4.2

< 1.0

< 1.0

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

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

Result Unit Qualifier Dilution MRL Prepared Analyzed Analyst Method 18 mg/L 09/03/19 23:25 5 5.0 09/03/19 23:25 MGU **EPA 300.0** mg/L 110 09/03/19 23:44 25 25 09/03/19 23:44 MGU **EPA 300.0 General Chemistry - PIA** < 0.250 mg/L 09/10/19 12:04 1 0.250 09/10/19 12:04 TTH SM 4500-F C Solids - total dissolved 300 mg/L 09/03/19 07:34 1 26 09/03/19 10:55 TMS SM 2540C Total Metals - PIA < 3.0 ug/L 09/05/19 13:06 5 3.0 09/09/19 09:01 JMW SW 6020 < 0.020 mg/L 09/05/19 13:06 1 0.020 09/10/19 08:18 ZSA SW 6010* < 1.0 ug/L 09/05/19 13:06 5 1.0 09/09/19 09:01 **JMW** SW 6020 89 ug/L 09/05/19 13:06 5 1.0 09/09/19 09:01 **JMW** SW 6020 < 1.0 ug/L 09/05/19 13:06 5 1.0 09/09/19 09:01 **JMW** SW 6020 1100 ug/L 09/05/19 13:06 10 09/10/19 09:42 JMW SW 6020 < 1.0 ug/L 09/05/19 13:06 5 1.0 09/09/19 09:01 JMW SW 6020 83000 ug/L 09/05/19 13:06 100 5 09/10/19 09:42 **JMW** SW 6020 < 4.0 ug/L 09/05/19 13:06 5 4.0 09/09/19 09:01 JMW SW 6020

5

5

5

5

5

5

2.0

1.0

0.20

1.0

1.0

1.0

09/09/19 09:01

09/09/19 09:01

09/09/19 09:01

09/09/19 09:01

09/09/19 09:01

09/09/19 09:01

JMW

JMW

JMW

JMW

JMW

JMW

SW 6020

SW 6020

SW 6020

SW 6020

SW 6020

SW 6020

09/05/19 13:06

09/05/19 13:06

09/05/19 13:06

09/05/19 13:06

09/05/19 13:06

09/05/19 13:06



Sample: 9086366-06

Name: FIELD DUPLICATE

Matrix: Ground Water - Field Duplicate

Sampled: 08/28/19 00:00

Received: 08/30/19 10:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA								•	
Chloride	16	mg/L		09/04/19 00:20	5	5.0	09/04/19 00:20	MGU	EPA 300.0
Sulfate	190	mg/L		09/04/19 00:38	50	50	09/04/19 00:38	MGU	EPA 300.0
General Chemistry - PIA									
Fluoride	< 0.250	mg/L		09/10/19 12:22	1	0.250	09/10/19 12:22	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	440	mg/L		09/03/19 07:34	1	26	09/03/19 10:55	TMS	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		09/05/19 13:06	5	3.0	09/09/19 09:05	JMW	SW 6020
Lithium	< 0.020	mg/L		09/05/19 13:06	1	0.020	09/10/19 08:20	ZSA	SW 6010*
Arsenic	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:05	JMW	SW 6020
Barium	85	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:05	JMW	SW 6020
Beryllium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:05	JMW	SW 6020
Boron	430	ug/L		09/05/19 13:06	5	10	09/10/19 09:46	JMW	SW 6020
Cadmium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:05	JMW	SW 6020
Calcium	110000	ug/L		09/05/19 13:06	5	100	09/10/19 09:46	JMW	SW 6020
Chromium	< 4.0	ug/L		09/05/19 13:06	5	4.0	09/09/19 09:05	WML	SW 6020
Cobalt	3.3	ug/L		09/05/19 13:06	5	2.0	09/09/19 09:05	JMW	SW 6020
Lead	1.2	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:05	JMW	SW 6020
Mercury	< 0.20	ug/L		09/05/19 13:06	5	0.20	09/09/19 09:05	JMW	SW 6020
Molybdenum	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:05	JMW	SW 6020
Selenium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:05	JMW	SW 6020
Thallium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:05	JMW	SW 6020



Sample: 9086366-07 Name: FIELD BLANK

Matrix: Ground Water - Field Blank

Sampled: 08/28/19 00:00

Received: 08/30/19 10:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		09/04/19 00:57	1	1.0	09/04/19 00:57	MGU	EPA 300.0
Fluoride	< 0.250	mg/L		09/04/19 00:57	1	0.250	09/04/19 00:57	MGU	EPA 300.0
Sulfate	< 1.0	mg/L		09/04/19 00:57	1	1.0	09/04/19 00:57	MGU	EPA 300.0
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		09/03/19 07:34	1	17	09/03/19 10:55	TMS	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		09/05/19 13:06	5	3.0	09/09/19 09:08	JMW	SW 6020
Lithium	< 0.020	mg/L		09/05/19 13:06	1	0.020	09/10/19 08:32	ZSA	SW 6010*
Arsenic	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:08	JMW	SW 6020
Barlum	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:08	JMW	SW 6020
Beryllium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:08	JMW	SW 6020
Boron	12	ug/L		09/05/19 13:06	5	10	09/10/19 09:50	JMW	SW 6020
Cadmium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:08	JMW	SW 6020
Calcium	100	ug/L		09/05/19 13:06	5	100	09/10/19 09:50	JMW	SW 6020
Chromium	< 4.0	ug/L		09/05/19 13:06	5	4.0	09/09/19 09:08	JMW	SW 6020
Cobalt	< 2.0	ug/L		09/05/19 13:06	5	2.0	09/09/19 09:08	JMW	SW 6020
Lead	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:08	JMW	SW 6020
Mercury	< 0.20	ug/L		09/05/19 13:06	5	0.20	09/09/19 09:08	JMW	SW 6020
Molybdenum	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:08	JMW	SW 6020
Selenium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:08	JMW	SW 6020
Thallium	< 1.0	ug/L		09/05/19 13:06	5	1.0	09/09/19 09:08	JMW	SW 6020

Appendix 3

Laboratory Quality Assurance/Quality Control Data

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



NOTES

Specific method revisions used for analysis are available upon request.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314 W Crystal Lake Road A, McHenry, IL 60050
 TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279
 Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

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

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

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

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

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

TNi Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389
TNI Accreditation for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
Missouri Department of Natural Resources
Microbiological Laboratory Service for Drinking Water

Certified by: Kurt Stepping, Senior Project Manager







July 03, 2019

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

RE: Project: 9055762

Pace Project No.: 30297880

Dear Mr. Stepping:

Enclosed are the analytical results for sample(s) received by the laboratory on June 05, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Laura M. Pirilla

laura.pirilla@pacelabs.com

Laura Firella

(724)850-5616 Project Manager

Enclosures





CERTIFICATIONS

Project: 9055762
Pace Project No.: 30297880

Pennsylvania Certification IDs

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

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA Colorado Certification #: PA01547 Connecticut Certification #: PH-0694

Delaware Certification EPA Region 4 DW Rad

Florida/TNI Certification #: E87683 Georgia Certification #: C040 Florida: Cert E871149 SEKS WET

Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: KY90133 KY WW Permit #: KY0098221 KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457 Michigan/PADEP Certification #: 9991 Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010 Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282

South Dakota Certification
Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad Wyoming Certification #: 8TMS-L



SAMPLE SUMMARY

Project: 9055762
Pace Project No.: 30297880

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

REPORT OF LABORATORY ANALYSIS



SAMPLE ANALYTE COUNT

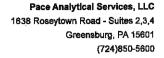
Project:

9055762

Pace Project No.:

30297880

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30297880001	9055762-01	EPA 903.1	 MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30297880002	9055762-02	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30297880003	9055762-03	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	СМС	1	PASI-PA
30297880004	9055762-04	EPA 903.1	MK1	31	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	61	PASI-PA
30297880005	9055762-05	EPA 903.1	MK1		PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	СМС	1	PASI-PA
30297880006	9055762-06	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	СМС	1	PASI-PA
30297880007	9055762-07	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	J LW	1	PASI-PA
		Total Radium Calculation	СМС	1	PASI-PA





PROJECT NARRATIVE

Project: Pace Project No.:

9055762 30297880

Method:

EPA 903.1

Client:

Description: 903.1 Radium 226 PDC Laboratories Inc.

Date:

July 03, 2019

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:





PROJECT NARRATIVE

Project:

Pace Project No.:

9055762 30297880

Method:

EPA 904.0

Client:

Description: 904.0 Radium 228 PDC Laboratories Inc

Date:

July 03, 2019

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:





PROJECT NARRATIVE

Project: Pace Project No.:

9055762 30297880

Method:

Total Radium Calculation Description: Total Radium 228+226 PDC Laboratories Inc.

Client: Date:

July 03, 2019

General Information:

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

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 9055762
Pace Project No.: 30297880

Pace Project No.: 30297880				_		
Sample: 9055762-01	Lab ID: 30297		Received:	06/05/19 10:50 N	latrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0644 ± 0.520 (1.02) C:NA T:90%	pCi/L	06/27/19 10:47	13982-63-3	
Radium-228	EPA 904.0	0.852 ± 0.524 (0.984) C:73% T:75%	pCi/L	06/20/19 16:27	15262-20-1	
Total Radium	Total Radium Calculation	0.916 ± 1.04 (2.00)	pCi/L	06/27/19 13:44	7440-14-4	
Sample: 9055762-02	Lab ID: 3029	7880002 Collected: 05/28/19 08:32	Received:	06/05/19 10:50 N	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.519 ± 0.543 (0.851)	pCi/L	06/27/19 10:47	13982-63-3	
Radium-228	EPA 904.0	C:NA T:93% 0.764 ± 0.436 (0.800) C:79% T:84%	pCi/L	06/20/19 16:27	15262-20-1	
Total Radium	Total Radium Calculation	1.28 ± 0.979 (1.65)	pCi/L	06/27/19 13:44	7440-14-4	
Sample: 9055762-03	Lab ID: 3029	7880003 Collected: 05/28/19 09:33	Received:	06/05/19 10:50 M	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.377 ± 0.492 (0.812)	pCi/L	06/27/19 10:47	13982-63-3	
Radium-228	EPA 904.0	C:NA T:85% 1.32 ± 0.575 (0.987) C:82% T:78%	pCi/L	06/24/19 11:46	15262-20-1	
Total Radium	Total Radium Calculation	1.70 ± 1.07 (1.80)	pCi/L	06/27/19 13:44	7440-14-4	
Sample: 9055762-04 PWS:	Lab ID: 3029 Site ID:	7880004 Collected: 05/28/19 10:41 Sample Type:	Received:	06/05/19 10:50	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.613 ± 0.429 (0.517) C:NA T:95%	pCi/L	06/27/19 10:47	13982-63-3	_
Radium-228	EPA 904.0	0.294 ± 0.379 (0.806)	pCi/L	06/24/19 11:47	15262-20-1	
Total Radium	Total Radium Calculation	C:79% T:79% 0.907 ± 0.808 (1.32)	pCi/L	06/27/19 13:44	7440-14-4	
Sample: 9055762-05 PWS:	Lab ID: 3029 Site ID:	7880005 Collected: 05/28/19 11:54 Sample Type:	Received:	: 06/05/19 10:50	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.938 ± 0.598 (0.751) C:NA T:90%	pCi/L	06/27/19 10:47	13982-63-3	
Radium-228	EPA 904.0	0.523 ± 0.374 (0.724) C:76% T:85%	pCi/L	06/24/19 11:47	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project:

9055762

Pace Project No.:

30297880

Sample: 9055762-05

Lab ID: 30297880005

Collected: 05/28/19 11:54

Received: 06/05/19 10:50

Matrix: Water

PWS:

Site ID:

Sample Type:

CAS No.

Total Radium

Method

Total Radium

Calculation

Act ± Unc (MDC) Carr Trac 1.46 ± 0.972 (1.48)

Units pCi/L

06/27/19 13:44 7440-14-4

Analyzed

Quai

Sample: 9055762-06

Parameters

Parameters

Lab ID: 30297880006

Collected: 05/28/19 00:00

Received: 06/05/19 10:50

PWS:

Site ID:

Act ± Unc (MDC) Carr Trac Method

Sample Type:

Units

pCi/L

pCi/L

pCi/L

pCi/L

Radium-226

EPA 903.1

0.789 ± 0.499 (0.563) C:NA T:94%

06/24/19 11:47 15262-20-1

Analyzed

CAS No. Qual 06/27/19 10:47 13982-63-3

Radium-228

Total Radium

EPA 904.0

Total Radium

Calculation

0.237 ± 0.382 (0.830) C:76% T:81%

1.03 ± 0.881 (1.39)

06/27/19 13:44 7440-14-4

Sample: 9055762-07

Parameters

Lab ID: 30297880007

Collected: 05/28/19 00:00 Sample Type:

Received: 06/05/19 10:50

Matrix: Water

Qual

PWS:

Site ID:

Method Act ± Unc (MDC) Carr Trac

Units Analyzed

CAS No.

EPA 903.1 Radium-226

0.0628 ± 0.369 (0.754)

C:NA T:83%

(0.763)

pCi/L

06/27/19 10:47 13982-63-3

Radium-228

Total Radium

EPA 904.0

 0.554 ± 0.390 C:79% T:90% 0.617 ± 0.759 (1.52)

pCi/L 06/24/19 11:47 15262-20-1

06/27/19 13:44 7440-14-4

Calculation

Total Radium

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

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Qualifiers



QUALITY CONTROL - RADIOCHEMISTRY

Project:

9055762

Pace Project No.:

30297880

QC Batch:

Radium-226

347403

Analysis Method:

EPA 903.1

QC Batch Method:

EPA 903.1

Analysis Description:

903.1 Radium-226

Associated Lab Samples:

30297880001, 30297880002, 30297880003, 30297880004, 30297880005, 30297880006, 30297880007

METHOD BLANK: 1689539

Matrix: Water

Associated Lab Samples:

Parameter

Act ± Unc (MDC) Carr Trac 0.540 ± 0.424 (0.589) C:NA T:90%

Units pCi/L

Analyzed 06/27/19 10:47

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





QUALITY CONTROL - RADIOCHEMISTRY

Project:
Pace Project No.:

9055762 30297880

QC Batch:

347172

Analysis Method:

EPA 904.0

QC Batch Method:

EPA 904.0

Analysis Description:

904.0 Radium 228

METHOD BLANK: 1688509

Associated Lab Samples: 30297880001, 30297880002

Matrix: Water

Associated Lab Samples:

30297880001, 30297880002

Parameter

Act ± Unc (MDC) Carr Trac

Units

Analyzed

Qualifiers

Radium-228

0.914 ± 0.453 (0.792) C:77% T:83%

pCi/L

06/20/19 16:11

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





QUALITY CONTROL - RADIOCHEMISTRY

Project: Pace Project No.: 9055762 30297880

QC Batch:

347409

Analysis Method:

EPA 904.0

QC Batch Method:

EPA 904.0

Analysis Description:

904.0 Radium 228

30297880003, 30297880004, 30297880005, 30297880006, 30297880007

Associated Lab Samples:

METHOD BLANK: 1689548

Matrix: Water

Associated Lab Samples:

30297880003, 30297880004, 30297880005, 30297880006, 30297880007

Parameter

Act ± Unc (MDC) Carr Trac

Units

Analyzed

Qualifiers

Radium-228

0.656 ± 0.340 (0.602) C:82% T:93%

pCi/L

06/24/19 11:46

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





QUALIFIERS

Project:

9055762

Pace Project No.:

30297880

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC institute.

LABORATORIES

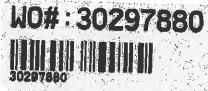
Date: 07/03/2019 05:05 PM

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

SUBCONTRACT ORDER Transfer Chain of Custody

PDC Laboratories, inc. 9055762



SENDING LABORATORY

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

RECEIVING LABORATORY

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

Sample: 9055762-01

Name: MW-3

Sampled: 05/28/19 07:44

001

002

Matrix: Ground Water Preservative: HNO3, pH <2

Analysis Due Expires Price Comments

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

Sample: 9055762-02

Name: MW-6

Sampled: 05/28/19 08:32

Matrix: Ground Water Preservative: HNO3, pH <2

Analysis Due Expires Price Comments

01-Radium 226/228 06/11/19 18:00 11/24/19 08:32 150.00 THIS IS A CCR PROJECT

Sample: 9055762-03

Name: MW-5

Sampled: 05/28/19 09:33 Matrix: Ground Water

Preservative: HNO3, pH <2

Analysis Due Expires Price Comments

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

Sample: 9055762-04 Name: MW-8

32-04

Sampled: 05/28/19 10:41 Matrix: Ground Water

Preservative: HNO3, pH <2

Analysis Due Expires Price Comments

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

Sample: 9055762-05

Name: MW-4

Sampled: 05/28/19 11:54 Matrix: Ground Water

Preservative: HNO3, pH <2

Analysis Due Expires Price Comments

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

004

009

SUBCONTRACT ORDER Transfer Chain of Custody

PDC Laboratories, Inc.

#_30297880

9055762

SENDING LABORATORY

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

RECEIVING LABORATORY

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

Sample: 9055762-06

Name: FIELD DUPLICATE

Sampled: 05/28/19 00:00

Matrix: Ground Water

000

007

Preservative: HNO3, pH <2

 Analysis
 Due
 Expires
 Price
 Comments

 01-Radium 226/228
 06/11/19 16:00
 11/24/19 00:00
 150.00
 THIS IS A CCR PROJECT

Sample: 9055762-07 Name: FIELD BLANK Sampled: 05/28/19 00:00

Matrix: Ground Water

Preservative: HNO3, pH <2

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

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

Date Shipped: 6-3-/9 Total # of Containers:	Sample Origin ((State): PO #:6 ults Needed:
Relinquished By	Date/Time	Sample Temperature Upon Receipt Sample(s) Received on Ice Y or Proper Bottles Received in Good Condition or N Bottles Filled with Adequate Volume Samples Received Within Hold Time
Relinquished By Date/Time Received By	Date/Time	Date/Time Taken From Sample Bottle

Page 15 of 19 Page 26 of 33

Pittsburgh L	ab Sample Condit	ion (Jpon	Re	ceipt
Pace Analytical	Client Name:		PD	C L	labς Projec## 30297880
Courier: Fed Ex	UPS USPS Client		omme	rdal	Pace Other Label Pill
Tracking #: 77	53 7916 7073				LIMS Login 104
Custody Seal on Coole	er/Box Present: Dyes	Zn	0	Seals	s intact: yes no
Thermometer Used	_N/N	Туре	of ice:	Wet	t Blue Mone
Cooler Temperature	Observed Temp	_	• 0	Corre	ection Factor. C Final Temp: C
Temp should be above fre	ezing to 6°C		-		
					pH paper Lot# Date and Initials of person examining contents: DIC CG: 2719
Comments:		Yes	No	N/A	1000001
Chain of Custody Prese	nt:		ļ		1.
Chain of Custody Filled					2.
Chain of Custody Relino					3.
Sampler Name & Signa		!			4.
Sample Labels match C			L		5
-includes date/time/ii	D Matrix	W	P		
Samples Arrived within	Hold Time:		_		6.
Short Hold Time Analy	sis (<72hr remaining):				7.
Rush Turn Around Tin	ne Requested:			<u> </u>	8.
Sufficient Volume:					9.
Correct Containers Use	đ:				_10.
-Pace Containers Us	ed:	L		<u> </u>	
Containers Intact:					11.
Orthophosphate field filt	ered				12.
Hex Cr Aqueous sample	field filtered				13.
Organic Samples che	cked for dechlorination:				14.
Filtered volume received					15.
All containers have been cl	hacked for preservation.				16. pHZ
exceptions: VOA, collifo Non-aqueous matrix	orm, TOC, O&G, Phenolics,	Radon,			
All containers meet meti requirements.	nod preservation				Initial when DC Date/time of preservation
					Lot # of added preservative
Headspace in VOA Vials	s (>6mm):			/	17.
Trip Blank Present:					18.
Trip Blank Custody Seal	s Present				
Rad Samples Screened			,		Initial when completed; DM Date: 06-05-19
Client Notification/ Res	colution; a.a			74 32 S.m.	
Person-Contacted				-Date/	*
Comments/ Resolution		······			Oddinata D.
					·
□ 4 -bb-44b	have Indianan that additi	11	-f	47	n has been whened in eveneurs

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

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

Face Analytical

Quality Control Sample Performance Assessment

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

Method Blank Assessment		_
MB Sample ID	1689539	
MB concentration:	0.540	
M/B Counting Uncertainty:	0.419	
MB MDC:	0.589	
MB Numerical Performance Indicator.	2.52	
MB Status vs Numerical Indicator:	N/A	
MD Status on MDCs	Doco	

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
· ·	LC\$48214	LCSD48214
Count Date:	6/27/2019	
Spike i.D.:	19-022	
Spike Concentration (pCl/mL):	32,121	
Volume Used (mL):	0.10	}
Aliquot Volume (L, g, F):	0.652	
Target Conc. (pCl/L, g, F):	4.930	·
Uncertainty (Calculated):	0.232	
Result (pCi/L, g, F):	4.877	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.998	
Numerical Performance Indicator:	-0.10	1
Percent Recovery:	98.92%	
Status vs Numerical Indicator:	N/A	1
Status vs Recovery:	Pass	1
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	1

Duplicate Sample Assessment		
Sample I.D.;	30299144001	Enter Duplicate
Duplicate Sample I.D.	30299144001DUP	sample IDs if
Sample Result (pCi/L, g, F):	0.219	other than
Sample Result Counting Uncertainty (pCl/L, g. F):	0,304	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	0.686	the space below.
Sample Duplicate Result Counting Uncertainty (pCi/L, g. F):		
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-1.882	30299144001
Duplicate RPD:	103.07%	30299144001DUP
Duplicate Status vs Numerical Indicator:	N/A	-
Duplicate Status vs RPD:		
% RPD Limit:	32%	

Analyst Must Manually Enter All Fields Highlighted in Yellow.

	Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
	Sample Collection Date:	6/11/2019	
	Sample i.D.		
	Sample MS i.D.	30299146001MS	
	Sample MSO I.D.		
i	Spike t.D.:	19-022	
	MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.122	
ĺ	Spike Votume Used in MS (mL):	0.20	
	Spike Volume Used in MSD (mL):		
	MS Aliquot (L. g, F):		
	MS Target Conc.(pCl/L, g, F):	12.616	
	MSD Aliquot (L, g, F):		
	MSD Target Conc. (pCl/L, g, F):		
_	MS Spike Uncertainty (calculated):	0.593	
П	MSD Spike Uncertainty (calculated):		
П	Sample Result:	0.469	
Ш	Sample Result Counting Uncertainty (pCi/L, g, F):	0.394	
Ш	Sample Matrix Spike Result:	14.620	
1	Matrix Spike Result Counting Uncertainty (pCl/L, g, F):	2.006	
Ш	Sample Matrix Spike Duplicate Result:		
Ш	Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g. F): MS Numerical Performance Indicator:	1,413	
Ш		1.413	
П	MSD Numerical Performance Indicator: MS Percent Recovery:	112,17%	
Н	MSD Percent Recovery:	112-1170	
ı	MS Status vs Numerical Indicator.	N/A	
П	MSD Status vs Numerical Indicator.	1907	
П	MS Status vs Recovery:	Pass	
Н	MSD Status vs Recovery:	1 4349	
П	MS/MSD Upper % Recovery Limits:	136%	•
	MS/MSD Lower % Recovery Limits:	71%	

Matrix Spike/Ma	rlx Spike Duplicate Sample Assessment	
	Sample I.D.	
	Sample MS I.D. Sample MSD I.D.	
	Sample Matrix Spike Result:	
Math	x Spike Result Counting Uncertainty (pCl/L, g, F): Sample Matrix Spike Duplicate Result:	
Matrix Spike Di	uplicate Result Counting Uncertainty (pCi/L, g, F):	
(Based on ti	Duplicate Numerical Performance Indicator: he Percent Recoveries) MS/ MSD Duplicate RPD:	
	AS/ MSD Duplicate Status vs Numerical Indicator:	İ
	MS/ MSD Duplicate Status vs RPD: % RPD Limit:	

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

Comments:

Batch must be re-prepped due to unacceptable precision.

000 132

MITAINA

Pace Analytical

Quality Control Sample Performance Assessment

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

Method Blank Assessment	
MB Sample ID	1688509
MB concentration:	0.914
M/B Counting Uncertainty:	0.423
MB MDC:	0.792
MB Numerical Performance Indicator:	4.24
MB Status vs Numerical Indicator:	N/A
MB Status vs. MOC:	See Comment*

Laboratory Control Sample Assessment	LCSD (Y or N)?	Υ
	LCS48192	LCSD48192
Count Date:	6/20/2019	6/20/2019
Spike I.D.:	19-026	19-026
Spike Concentration (pCl/mL):	36.440	36,440
Volume Used (mL):		0.18
Aliquol Volume (L, g, F):	0.805	0.802
Target Conc. (pCl/L, g, F):	4.527	4.546
Uncerteinty (Calculated):	0.222	0.223
Result (pCl/L, g, F):	5.007	4,412
LCS/LCSD Counting Uncertainty (pCl/L, g, F):	0.723	0.760
Numerical Performance Indicator:		-0.33
Percent Recovery:	110.61%	97.04%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass

Duplicate Sample Assessment		
Sample I.D.: Duplicate Sample I.D.: Sample Result (pCVL, g, F): Sample Result Counting Uncertainty (pCVL, g, F): Sample Duplicate Result Counting Uncertainty (pCVL, g, F): Are sample and/or duplicate results below MDC?	LCS48192 LCSD48192 5.007 0.723 4.412 0.760 NO	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Numerical Performance Indicator: (Based on the LCS/LCSO Percent Recoveries) Duplicate RPD: Duplicate Status vs Numerical Indicator: Duplicate Status vs RPD:	1.112 13.07% N/A Pass	

Analyst Must Manually Enter All Fields Highlighted in Yellow.

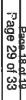
	Sample Matrix Spike Control Assessment	
	Sample Collection Date:	6/6/2019
	Sample I.D.	30299042001
	Sample MS I.D.	30299042001MS
	Sample MSD I.O.	
	Spike I.D.:	19-026
	MS/MSD Decay Corrected Spike Concentration (pCl/mL):	36.609
	Spike Volume Used in MS (mL):	0.20
	Spike Volume Used in MSD (mL):	
	MS Allquot (L, g, F):	0.804
	MS Target Conc.(pCi/L, g, F):	9.112
	MSD Aliquot (L, g, F):	
	MSD Target Conc. (pCi/L, g. F):	
1	Spike uncertainty (calculated):	0.446
ı	Sample Result:	0.952
ı	Sample Result Counting Uncertainty (pCi/L, g, F):	0.441
L	Sample Matrix Spike Result	10.094
ı	Matrix Spike Result Counting Uncertainty (pCVL, g, F):	0.933
ı	Sample Matrix Spike Duplicate Result:	
	Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
1	MS Numerical Performance Indicator:	0,053
	MSD Numerical Performance Indicator.	
	MS Percent Recovery:	100.33%
	MSD Percent Recovery:	
	MS Status vs Numerical Indicator:	N/A
l	MSD Status vs Numerical Indicator:	
l	MS Status vs Recovery:	Pass
1	MSD Status vs Recovery:	

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample LD.	
Sample MS t.D.	
Sample MSD LD.	1
Sample Matrix Spike Result:	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	i
Sample Matrix Spike Duplicate Result:	
Matrix Spike Duplicate Result Counting Uncertainty (pCVL, g, F):	
Duplicate Numerical Performance Indicator:	ŀ
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:	l
MS/ MSD Duplicate Status vs Numerical Indicator:	
MS/ MSD Duplicate Status vs RPD:	

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

Comments

"The mathod blank result is below the reporting limit for this analysis and is acceptable.



Re-228 NEUAC DW2 Printed: 6/21/2019 4:48 PM



Quality Control Sample Performance Assessment

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

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

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

aboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS48220	LCSD48220
Count Date:	6/24/2019	Į.
Spike LD.:	19-026	
Spike Concentration (pCl/mL):	36,395	
Volume Used (ml.):	0.10	
Aliquot Volume (L, g, F):	0,808	
Target Conc. (pCi/L, g, F):	4,514	ļ
Uncertainty (Calculated):	0,221	ļ
Result (pCVL, g, F):	4.527	ŀ
LCS/LCS/D Counting Uncertainty (pCl/L, g, F):	0.600	
Numerical Performance Indicator:		
Percent Recovery:	100,28%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery	Pass	

Duplicate Sample Assessment		
Sample I.D.:		Enter Duplicate
Ouplicate Sample I.D.	30299129002DUP	sample iDs if
Sample Result (pCi/L, g, F):	1.232	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.396	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	1.826	the space below.
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.540	
Are sample and/or duplicate results below MDC?	See Below ##	
Duplicate Numerical Performance Indicator:	-1.744	30299129002
Duplicate RPD:	38,94%	30299129002DUP
Duplicate Status vs Numerical Indicator:	N/A	
Dupficate Status vs RPD:		

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Sample Matrix Spike Control Assessment	
Sample Collection Date:	6/5/2019
Sample I.D.	30299457001
Sample MS I.D.	30299457001MS
Sample MSD I.D.	
Spike I.D.:	19-026
MS/MSD Decay Corrected Spike Concentration (pCl/mL):	36.622
Soike Volume Used in MS (mL):	0.20
Spike Volume Used in MSD (mL):	
MS Aliquot (L, g, F):	0.803
MS Target Conc.(pCi/L, g, F):	9.122
MSD Allquot (L, g, F):	
MSD Target Conc. (pCl/L, g, F):	
Soike uncertainty (calculated):	0,447
Sample Result:	0.253
Sample Result Counting Uncertainty (pCl/L, g, F):	0.339
Sample Matrix Spike Result:	10.716
Matrix Spike Result Counting Uncertainty (pCI/L, g, F):	0.919
Sample Matrix Spike Duplicate Result:	
Matrix Spike Duplicate Result Counting Uncertainty (pCI/L, g, F):	
MS Numerical Performance Indicator:	2.441
MSD Numerical Performance Indicator:	
MS Percent Recovery:	114.69%
MSD Percent Recovery:	
MS Status vs Numerical Indicator;	N/A
MSD Status vs Numerical Indicator:	
MS Status vs Recovery:	Pass
MSD Status vs Recovery:	

1	Matrix Spike/Matrix Spike Duplicate Sample Assessment
ı	Sample LD.
1	Sample MS i.D.
1	Sample MSD J.D.
1	Sample Metrix Spike Resuft:
1	Matrix Spike Result Counting Uncertainty (pCif., g, F):
I	Sample Matrix Spike Duplicate Result:
١	Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):
ĺ	Duplicate Numerical Performance Indicator:
5	(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:
•	MS/ MSD Duplicate Status vs Numerical Indicator:
	MS/ MSD Duplicate Status vs RPD:

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

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

Ra-228 NELAC DW2 Printed: 6/25/2019 9:36 AM

Ra-228_48220_DW_W Ra-228 (R085-7 12Aug2016).xls





DATA PACKAGE

CLIENT; Sikeston BMU

PROJECT: Sikeston Power Station

PDC LAB WORKORDER: 9055762

DATE ISSUED: July 5, 2019

CASE NARRATIVE –

PDC Work Order 9055762

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

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

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.	.31		ш	24	I V	ï

All items met acceptance criteria:

Certification Signature:	Yent Step	Name:	Kurt Stepping
Date:	July 5, 2019	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 _MO

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

Si Keston Power Station	CCR APP.19	P.O. NUMBER	MEANS S	HIPPED	(3)) ANA	ysis re	QUESTED	(FOR LAB USE ONLY)	
1551 w Wakefreld	PHONE NUMBER	FAX NUMBER	DATE S	IIPPED		0.60	2		LOGGED BY:	
STATE STATE OF MO 63801	BAMPLER (PLEASE PRINT) Devotal D:1/1	eto hersel	MATRIX TY WW-WASTEN DW-CRINGING GW-GROUND	MIER 3 WATER WATER	~	8E.	3		TEMPLATE:	
LUKE St. Man / Ken Ewers	SAMPLERS	Milledia	WWSL-SLUD NAS-SOLID LOHT-LEACH	ATE	. 2	8	13			
AS YOU WANT ON HER OFF	portrois confert	基於計畫	MATTIES I	SDUAT.	3	F As	3 3		REMARKS	
MW3	5-28-19 0744	X	GW	3	X.	X	X 1			
MW 6	5-28-19 3832	X	GW	3	×	×	< ×			
MW 5	5-28 19 0933	×	GW	3	X	× >	< ×			
MIN 8	5-28-19 10 UI	X	GW	3	X	X	< ×			
MW 4	5-28-19 1154		GM	3	X	X 2	< ×			
Field Duplicate	5-28-19	X	GW	_3	×	X	××			
Field Blank	5-28-19	X	DI	3	×	X.	××			
						\dashv	+			
:						\Box				
					H		+			
TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL FUSH (RUSH TAT IS SUBJECT TO PDC LASS APPROVAL AND SURCHARGE) RUSH RESULTS VIA (PLEASE CIRCLE) FAX 8 PHONE IS E-MAIL DATE RESULTS NEEDED The sample temperature will be measured upon receipt at the leb. By initiating the area you request that the lab notify you, before proceeding with analysis, if the sample temperature is existed of the range of 0.1-6.0°C. By not initiating this array you allow the lab to proceed with analysis esting regardless of the earnite temperature.							ore proceeding with enalysis, if of 0.1-6.0°C. By not initialing			
RELANDUABHED BY: (SIGNATURE) DA	RECEIVED BY: (SIGN	ATURE)	 		CATT		0	COMM	ENTS: (FOR LAB USE ONLY)	
RELINQUISHED BY: (SIGNATURE) DATE:	E RECEIVED BY: (SIGN	ATURE)			TIM	E	SAMP CHILL SAMP PROP	E TEMPER/ PROCESS S LE(S) RECEI	NTURE UPON RECEIPT VOR N TO THE PRIOR TO RECEIPT VOR N YOUR N YOUR N YOUR ON NO HECHAEL IN GOOD CONDITION OF N WITH A DEQUATE VOLUME OF N ED WITHIN HOLD TIME (6) OR N	
RELINQUISHED BY: (SIGNATURE) TWO		(STONATURIE)			地	5/19 740	(EXCL	LIES RECEIV	MITH ADEQUATE VOLUME OR N ED MITHIN HOLD TIME(6) OR N SAL FIELD PARAMETERS) IKEN FROM SAMPLE BOTTLE	
Coples: white should accompany samples	to PDC Labs. Yes	Copies: white should accompany samples to PDC Labs. Yellow copy to be retained by the client.								

Laboratory Quality Assurance/Quality Control Data – July 23, 2019

(First 2019 Semi-annual Event - TDS)



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limi
Batch B916705 - No Prep - SM 2540C	·					/BIALC	Liiliita		Liffiii
Blank (B916705-BLK1)		Prepared & Analyzed: 07/29/19							
Solids - total dissolved solids (TDS)	< 17	mg/L							
Duplicate (B916705-DUP1)	Sample: 907538	Sample: 9075380-07 Prepared & Analyzed: 07/29/19							
Solids - total dissolved solids (TDS)	195	mg/L				3			
Duplicate (B916705-DUP2)	Sample: 907540	7-02	Prepared & Analyzed: 07/29/19						
Solids - total dissolved solids (TDS)	175	mg/L	М		6	5			
Batch B916944 - No Prep - SM 2540C									
Blank (B916944-BLK1)				Prepared &	Analyzed: 07/	30/19			
Solids - total dissolved solids (TDS)	< 17	mg/L	-						
Duplicate (B916944-DUP1)	Sample: 907538		Prepared & Analyzed: 07/30/19						
Solids - total dissolved solids (TDS)	133	mg/L	М		143			7	5



NOTES

Specific method revisions used for analysis are available upon request.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314 W Crystal Lake Road A, McHenry, IL 60050
 TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279
 Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

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

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

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

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

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

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

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

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

Missouri Department of Natural Resources

Microbiological Laboratory Service for Drinking Water

Qualifiers

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

Certified by: Kurt Stepping, Senior Project Manager



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

CHAIN OF CUSTODY RECORD

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

State where samples collected _______

	ALL HIGHLIGHTE	D AREAS MUST BE CO	MPLETED BY C	LIENT (PLE	ASE PRINT) - ((SAMPLE A CCEPTANCE I	POLICY ON REVERSE)
	PROJECT NUMBER	P. O. NUMBER	MEANS	SHIPPED			(FOR LAB USE ONLY)
	CCA APPI	II .					9075407-1
	PHONE NUMBER	FAX NUMBER	DATE S	HIPPED			LOGGED BY:
			MATRIX TY				TEMPLATE:
			AM-MABLE	IG WATER D WATER			PROJ. MGR.:
			HAS SOLIO LOHT-LEACH	WITE	5		
SANMES DESCRIPTION AS YOU WANT ON REPORT	1855 1966 St. 1811 1966 St. 1812 1966		220008 7/64	La fi	J-		REMARKS
Mw 3	7-23-19 08	14 X	6~	1	14		
MW 6	7-23-19 09	33 ×	GW		84		
MW 5	7-23-19 11 L	12 X	GW		40		
MW 8	7-72-613	0 5 X	GW	1	26		
MW 4	7-23-19 13	54 X	GW		R		
Field Orplicate	7-23-19		GN	1	2		
Fiew Blank	7-23-19	×	OI	1	12		
FILE BLANK		12	102				
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							A B A B A B A B A B A B A B A B A B A B
(6) (RUSH TAT IS SUBJECT TO POC LASS APPROVAL AND SURCHARGE)	RMAL RUSH PHONE	DATE RESULTS NEEDE		this area y	ou request that a temperature is ou allow the lab	If he measured upon réceip he lab notify you, before pro outside of the range of 0.7-t to proceed with analytical k	ceeding with analysis, if 5.0°C. By not initialing
	RECEIVED BY: (SIGNATURE)		<u></u>	DATE	COMMENTS	(FOR LAB USE ONLY)
					YME		7.
RELINQUISHED BY: (SIGNATURE)		SIGNATURE)			DATE	SAMPLE TEMPERATURE CHILL PROCESS STARTE SAMPLE(S) RECEIVED OF PROPER BOTTLES RECEIVED BOTTLES FILLED WITH A	UPON RECEIPT COR N
THAT		11,5	\rightarrow		TIME	SAMPLE(S) RECEIVED OF PROPER BOTTLES RECEIVED	N ICE EDINGCOD CONDITION OF N DECLINE VOLUME ACCES
RELINQUISHED BY: (SKINATURÉ) DATE TIME		AN BY: (BIONATURE)			9990514 25 \ \D	SAMPLES RECEIVED WIT (EXCLUDES TYPICAL FIE DATE AND TIME TAKEN FI	LD PARAMETERS)

Page 6 of 6



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



NOTES

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

* Not a TNI accredited analyte

Memos

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

Certifications

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

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

Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

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

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

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

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

Qualifiers

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

Certified by: Kurt Stepping, Senior Project Manager







DATA PACKAGE

CLIENT; Sikeston BMU

PROJECT: Sikeston Power Station

PDC LAB WORKORDER: 9075380

DATE ISSUED/REVISED: January 13, 2020

CASE NARRATIVE -

PDC Work Order 9075380

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

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

QC Summary:

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

TDS batch QC sample flagged with M, RPD outside acceptance criteria

Signature:	Yent Step	Name:	Kurt Stepping
Date:	January 13, 2020	Title:	Senior Project Manager



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

CHAIN OF CUSTODY RECORD STATE WHERE SAMPLE COLLECTED M3

		ALL HIC	GHLIGHTED ARI	EAS MUST	BE COM	PLETED BY	CLIENT (PLEA	ASE PRINT)									
1) Sikeston Power Stution		PROJECT	NUMBER	PRO	JECT LOC	ATION	PURCHASE	ORDER#	3) AN	ALYSI	S REQI	JESTE	ED		(FOR LAB US	,
ADDRESS	/ / /	PHONE	NUMBER	CGN	E-MAIL	*	DATE SH	HPPED	3							LOGIN # 9075	380-12
1551 W Wakefield									8,	3	63	3		F	12		W
CITY	SAMI	PLER ASE PRINT	7				MATRIX T		2	3	G.	£	Z	SJu,		CLIENT:	
Sikeston, Mo 63801		ente		1240	1.0.		WW- WASTEWATE DW- DRINKING WA GW- GROUND WA' WWSL- SLUDGE	ER ATER TER	84			1	8		TOH,	PROJECT:	
CONTACT PERSON	SAMI	PLER'S ATURE	. 611	ling		~	LCHT-LEACHATE	OUS SOLID	£,	0	3	I	9	Z		PROJ. MGR.: CUSTODY SEAL #:	
Luke St. Mary/Ken Eme	US T	-	Dà.	De	llia	kans	OIL-OIL SO-SOIL SOL-SOLID		55,1	5	-turdness	W	B	19,1	700,	COSTODY SEAL #:_	7
SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)		ATE LECTED	TIME	SAMPL GRAB	COMP	MATRIX TYPE	BOTTLE	PRES CODE CLIENT PROVIDED	AIS	COO.	工工	Lin	RAD	Se, t	T05	REMARK	s
MW 2	7-2	4-19	0725	X		GW	7		X	X	X	X	x	X	×		
MWI	7-2	4-19	0852	×		GW	7		X	x	x	×	X	X	×		
MW 7	7-2	4-19	1032	X		GW	7		X	×	X	x	X	X	×		
MW 9	7-2	4-19	1204	×		GW	7		X	X	X	X	X	X	×		
ouplinate two	7-2	4-19		×		GW	7		×	K	X	X.	X	×	×		
																	,
CHEMICAL PRESERVATION CODES: I – HCL 2 – H2SO	4 3 – HNO3	4 – NAC	DH 5 – NA2	2S2O3	6 – UNP	RESERVED	7 – OTHER	T									
TURNAROUND TIME REQUESTED (PLEASE CIRCLE) (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCH.	NORMAL R	USH		DATE RES		6	I understand	that by initial	ling this	box I	give ti	ne lab j	permis	ssion t	o proc	eed with analysis, ever	though it may
RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHO	ONE															ring facility's Sample A able to report to all regu	
EMAIL IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FR							PROCEED W			QUAL	IFY RI	SULT		***************************************			
RELINQUISHED BY: (SIGNATURE)	7-25-10	4	RECEIVE	D BY: (SIG	NATURE)			DATE			10	8	CC	OMME	NTS: (I	FOR LAB USE ONLY)	
Ashish Palel	5700							TIME]`						_
	DATE		RECEIVE	D BY: (SIG	NATURE)			DATE			SA	MPLE	TEMP	PERAT	URE U	PON RECEIPT	5_∘c
	TIME		200	D BY: (SIG	MATURE			TIME		^		HILL PE				PRIOR TO RECEIPT	Y OR N
	DATE	_	RECEIVE	. B1: (SIG	(NATURE)		, 1	DATE	26	19	SA		ACCE	PTAN		NCONFORMANT	YORN
	TIME		1	and the same of th	-		Ny	TIME	150)	DA	TE AN	D TIM	IE TAK	EN FR	OM SAMPLE BOTTLE	
Qualtrax ID #3219															Pa	ige of F	Page 7 of 8



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

CHAIN OF CUSTODY RECORD STATE WHERE SAMPLE COLLECTED MO

		GHLIGHTED ARI													
1 Cilcos ton Power Station	PROJECT			JECT LOC		PURCHASE	ORDER#	(3) AN	ALYSI	S REQ	UESTI	ED		(FOR LAB USE ONLY)
Silvestal home sinilian			wgr		•				,						9 MEZEN-IT
ADDRESS	PHONE I	NUMBER		E-MAIL		DATE SH	IIPPED	उ						2	LOGIN#
1551 w wakefield								20)	79	3	2		1-	N	LOGGED BY:
CITY	SAMPLER (PLEASE PRINT	n				MATRIX T		8	~	F.	3	30	Sou	I	CLIENT:
ZIPSIKESton, MO 63801	Danie		13	1		WW- WASTEWATE DW- DRINKING WA GW- GROUND WA'	TER	Sa,	3		-	30	S	TOH,	PROJECT:
CONTACT PERSON	SAMPLER'S	Di Di	li'ng	HQM		WWSL- SLUDGE	US SOLID	6,3	Ç,	15,	£	9	15		PROJ. MGR.:
lune st. Mary Ken Ewers	SIGNATURE		11	1		LCHT-LEACHATE OIL-OIL SO-SOIL SOL-SOLID		₹,	-	V	~	20	1	70C	CUSTODY SEAL #:
	DATE	TIME	SAMP	BTYPE	MATRIX	BOTTLE	PRES	55	5	Mare	5	0	4	's'	
2 (UNIQUE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	COLLECTED	COLLECTED	GRAB	COMP	TYPE	COUNT	CODE CLIENT PROVIDED	A1,55,	8	L	7:7	*	Se	10	REMARKS
MW 3	7-23-19	0752	X		GW	7		X	X	X	K	X	X	×	
MW 6	7-23-19	1190	X		GW	7		K	K	X	X	X	X	X	
MW 5	7-2319	1058	X		GW	7		X	X	K	X	K	X	×	
MW 8	7-23-19	1243	×		GW	7		X	×	X	×	×	X	X	
MW 4	7-23-19	1336	×		GW	7		X	×	X	X	X	X	×	
Field DuPlicate one	7-23-19		×		GW	7		X	×	X	X	X	X	×	
Field Blank	7-23-19		×		OI	7		X	X	X	X	X	X	У	* _ X *
OTELINIONE TREATMENT OF THE PROPERTY OF THE PR	HNO3 4 - NAC				RESERVED	7 – OTHER		***************************************							
TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORM (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)	AL RUSH		DATE RES NEEDE		6										eed with analysis, even though it may
RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE						Policy and the	data will be	qualific	ed. Qu	alified	data m	ay <u>NC</u>	OT be a	ccept	ring facility's Sample Acceptance able to report to all regulatory authorities.
EMAIL IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FROM ABOV	E:					PROCEED W	ITH ANALYS	SIS AND	QUAL	IFY R	ESULT	S: (IN	ITIALS)	
RELINQUISHED BY: (SIGNATURE)	35-19	RECEIVE	D BY: (SIG	NATURE)	•		DATE			1	8	C	OMME	NTS: (FOR LAB USE ONLY)
47-1 /G-481 TIME	700						TIME			1	9				
RELINQUISHED BY: (SIGNATURE) DATE	, 00	RECEIVE	D BY: (SIG	NATURE)			DATE			1					PON RECEIPT °C
TIME							TIME								on the sent
RELINQUISHED BY: (SIGNATURE) DATE		RECEIVE	D BY: (SIG	NATURE)			DATE	nil	19	SA	MPLE	(S) RE	CEIVE	D ON	PRIOR TO RECEIPT (YOR N) ICE (YOR N) PRIOR TO RECEIPT (YOR N)
TIME	/		-	0	, 1	2	TIME	COL		RE	PORT	IS NE	EDED		YORN
1	6	4				Ja	9	50		DA	ATE AN	ID TIN	ME TAK	EN FF	ROM SAMPLE BOTTLE
Qualtrax ID #3219	•													Pa	Page 8 of 8

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



Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPI Lim
Batch B919895 - No Prep - SM 2540C									
Blank (B919895-BLK1)				Prepared &	Analyzed: 09	/03/19			
Solids - total dissolved solids (TDS)	< 17	mg/L							
Duplicate (B919895-DUP1)	Sample: 908636	-		Prepared &	Analyzed: 09	/03/19			
Solids - total dissolved solids (TDS)	535	mg/L	M	·	485			10	5
Batch B920048 - IC No Prep - EPA 300.0									
Calibration Blank (B920048-CCB1)				Prepared &	Analyzed: 09	/03/19			
Sulfate	0.00	mg/L							
Chloride	0.584	mg/L							
Fluoride	0.00	mg/L							
Calibration Check (B920048-CCV1)				Prepared &	Analyzed: 09	/03/19			
Chloride	4.94	mg/L		5.000		99	90-110		
Sulfate	5.00	mg/L		5.000		100	90-110		
Fluoride	4.88	mg/L		5.000		98	90-110		
Matrix Spike (B920048-MS3)	Sample: 908636	66-01		Prepared &	Analyzed: 09.	/03/19			
Chloride	2.4	mg/L		1.500	1.1	91	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	17.9	NR	80-120		
Matrix Spike Dup (B920048-MSD3)	Sample: 908636	66-01		Prepared &	Analyzed: 09	/03/19			
Chloride	2.5	mg/L		1.500	1.1	94	80-120	2	20
Sulfate	1.00E9	mg/L	Q4	1.500	17.9	NR	80-120	0	20
Batch B920230 - SW 3015 - SW 6020									
Blank (B920230-BLK1)				Prepared: 0	9/05/19 Anal	yzed: 09/09/1)		
					_				
Antimony	< 3.0	ug/L							
	< 3.0 < 0.020	ug/L mg/L		•					
Antimony		_							
Antimony Lithium	< 0.020	mg/L							
Antimony Lithium Arsenic	< 0.020 < 1.0	mg/L ug/L							
Antimony Lithium Arsenic Barium	< 0.020 < 1.0 < 1.0	mg/L ug/L ug/L							
Antimony Lithium Arsenic Barium Beryllium	< 0.020 < 1.0 < 1.0 < 1.0	mg/L ug/L ug/L ug/L							
Antimony Lithium Arsenic Barium Beryllium Boron	< 0.020 < 1.0 < 1.0 < 1.0 < 10	mg/L ug/L ug/L ug/L ug/L							
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 10	mg/L ug/L ug/L ug/L ug/L ug/L							
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 1.0 < 100	mg/L ug/L ug/L ug/L ug/L ug/L							
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium Chromium	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 1.0 < 100 < 4.0	mg/L ug/L ug/L ug/L ug/L ug/L ug/L							
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 1.0 < 100 < 4.0 < 2.0	mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u							
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Lead	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 1.0 < 100 < 4.0 < 2.0 < 1.0	mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u							
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Lead Mercury	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 10 < 1.0 < 10 < 1.0 < 100 < 1.0 < 2.0 < 1.0 < 0.20	mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u							
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Lead Mercury Molybdenum	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 10 < 10 < 1.0 < 100 < 4.0 < 2.0 < 1.0 < 0.20 < 1.0	mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u							
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Lead Mercury Molybdenum Selenium	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 10 < 100 < 4.0 < 2.0 < 1.0 < 0.20 < 1.0 < 1.0	mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u		Prepared: 0	19/05/19 Anal	yzed: 09/09/19	3		
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Lead Mercury Molybdenum Selenium Thallium	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 10 < 100 < 4.0 < 2.0 < 1.0 < 0.20 < 1.0 < 1.0	mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u		Prepared: 0 555.6	19/05/19 Anal	yzed: 09/09/1	80-120		
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Lead Mercury Molybdenum Selenium Thallium LCS (B920230-BS1)	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 10 < 100 < 4.0 < 2.0 < 1.0 < 0.20 < 1.0 < 1.0	mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u			19/05/19 Anal				
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Lead Mercury Molybdenum Selenium Thallium LCS (B920230-BS1) Antimony	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 100 < 4.0 < 2.0 < 1.0 < 1.0 < 1.0 < 1.0 < 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u		555.6	9/05/19 Anal	88	80-120		
Antimony Lithium Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Lead Mercury Molybdenum Selenium Thallium LCS (B920230-BS1) Antimony Lithium	< 0.020 < 1.0 < 1.0 < 1.0 < 10 < 10 < 100 < 4.0 < 2.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0	mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u		555.6 0,5556	9/05/19 Anal	88 119	80-120 80-120		



				Spike	Source		%REC		RPD
Parameter	Result	Unit	Qual	Level	Result	%REC	Limits	RPD	Lim
Batch B920230 - SW 3015 - SW 6020									
LCS (B920230-BS1)				Prepared: 0	9/05/19 Analy	yzed: 09/10/1	9		
Boron	549	ug/L		555,6		99	80-120		
Cadmium	591	ug/L		555.6		106	80-120		
Calcium	6230	ug/L		5556		112	80-120		
Chromium	601	ug/L		555.6		108	80-120		
Cobalt	601	ug/L		555.6		108	80-120		
Lead	606	ug/L		555.6		109	80-120		
Mercury	50.6	ug/L		55.56		91	80-120		
Molybdenum	574	ug/L		555.6		103	80-120		
Selenium	589	ug/L		555.6		106	80-120		
Thallium	596	ug/L		555.6		107	80-120		
Matrix Spike (B920230-MS1)	Sample: 908596	80-01		Prepared: 0	9/05/19 Anal	yzed: 09/09/1	9		
Antimony	482	ug/L		555.6	2.61	86	75-125		
Arsenic	576	ug/L		555.6	2.58	103	75-125		
Barlum	692	ug/L		555.6	107	105	75-125		
Beryllium	518	ug/L		555.6	0.861	93	75-125		
Boron	80100	ug/L	Q4	555.6	81600	NR	75-125		
Cadmium	579	ug/L		555.6	11.0	102	75-125		
Calcium	657000	ug/L	Q4	5556	656000	34	75-125		
Chromium	563	ug/L		555.6	ND	101	75-125		
Cobalt	579	ug/L		555.6	16.0	101	75-125		
Lead	544	ug/L		555.6	0.544	98	75-125		
Mercury	53.0	ug/L		55.56	0.650	94	75-125		
- Molybdenum	728	ug/L		555.6	155	103	75-125		
Selenium	2480	ug/L		555.6	1840	115	75-125		
Thallium	548	ug/L		555.6	4.94	98	75-125		
Matrix Spike Dup (B920230-MSD1)	Sample: 908596	-			9/05/19 Anal				
Antimony	484	ug/L		555.6	2.61	87	75-125	0.4	20
Arsenic	574	ug/L		555.6	2.58	103	75-125	0.4	20
Barium	699	ug/L		555.6	107	107	75-125	1	20
Beryllium	523	ug/L		555.6	0.861	94	75-125	0.9	20
Boron	80800	ug/L	Q4	555.6	81600	NR	75-125	0.9	20
Cadmium	.580	ug/L		555.6	11.0	102	75-125	0.2	20
Calcium	647000	ug/L	Q4	5556	656000	NR	75-125	2	20
Chromium	571	ug/L		555.6	ND	103	75-125	1	20
Cobalt	579	ug/L		555.6	16.0	101	75-125	0.1	20
Lead	546	ug/L		555.6	0.544	98	75-125	0.4	20
Mercury	52.5	ug/L		55.56	0.650	93	75-125	0.8	20
Molybdenum	721	ug/L		555.6	155	102	75-125	0.9	20
Selenium	2420	ug/L		555.6	1840	105	75-125	2	20
Thallium	553	ug/L		555.6	4.94	99	75-125	0.8	20
Batch B920576 - No Prep - SM 4500-F C		-							
_				B		4040			
Calibration Blank (B920576-CCB1)				Prepared &	Analyzed: 09	/10/19			



Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limi
Batch B920576 - No Prep - SM 4500-F C									
Calibration Blank (B920576-CCB1)				Prepared &	Analyzed: 09	/10/19			
Fluoride	0.0330	mg/L				-			
Calibration Blank (B920576-CCB2)				Prepared &	Analyzed: 09	/11/19			
Fluoride	0.0410	mg/L							
Calibration Check (B920576-CCV1)				Prepared &	Analyzed: 09	/10/19			
Fluoride	0.704	mg/L		0.7000		101	90-110		
Calibration Check (B920576-CCV2)				Prepared &	Analyzed: 09	/11/19			
Fluoride	0.681	mg/L	-	0.7000		97	90-110		
Matrix Spike (B920576-MS2)	Sample: 908636	66-01		Prepared &	Analyzed: 09	/10/19			
Fluoride	0.683	mg/L		0.5000	0.169	103	80-120		
Matrix Spike Dup (B920576-MSD2)	Sample: 908630	86-01		Prepared &	Analyzed: 09	/10/19			
Fluoride	0.719	mg/L		0.5000	0.169	110	80-120	5	20



NOTES

Specific method revisions used for analysis are available upon request.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314 W Crystal Lake Road A, McHenry, IL 60050
 TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279
 Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

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

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

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

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

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

Qualifiers

- M Analyte failed to meet the required acceptance criteria for duplicate analysis.
- Q4 The matrix spike recovery result is unusable since the analyte concentration in the sample is greater than four times the spike level. The associated blank spike was acceptable.

Certified by: Kurt Stepping, Senior Project Manager







September 30, 2019

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

RE: Project: 9086366

Pace Project No.: 30323517

Dear Mr. Stepping:

Enclosed are the analytical results for sample(s) received by the laboratory on September 06, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Laura M. Pirilla

laura.pirilla@pacelabs.com

Laura Bulla

(724)850-5616 Project Manager

Enclosures







CERTIFICATIONS

Project:

9086366 30323517

Pace Project No.:

Pennsylvania Certification IDs

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

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA Colorado Certification #: PA01547 Connecticut Certification #: PH-0694

Delaware Certification EPA Region 4 DW Rad

Florida/TNI Certification #: E87683 Georgia Certification #: C040 Florida: Cert E871149 SEKS WET

Guam Certification Hawaii Certification Idaho Certification Illinois Certification Indiana Certification Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: KY90133 KY WW Permit #: KY0098221 KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457 Michigan/PADEP Certification #: 9991 Missouri Certification #: 235 Montana Certification #: Cert0082 Nebraska Certification #: NE-OS-29-14 Nevada Certification #: PA014572018-1 New Hampshire/TNI Certification #: 297617 New Jersey/TNI Certification #: PA051

New Jersey/TNI Certification #: PA05
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010 Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282

South Dakota Certification
Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad Wyoming Certification #: 8TMS-L



SAMPLE SUMMARY

Project: 9086366
Pace Project No.: 30323517

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

REPORT OF LABORATORY ANALYSIS



SAMPLE ANALYTE COUNT

Project:

9086366

Pace Project No.:

30323517

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30323517001	9086366-01	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30323517002	9086366-02	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30323517003	9086366-03	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30323517004	9086366-04	EPA 903.1	MK1	23	PASI-PA
		EPA 904.0	VAL	3	PASI-PA
30323517005	9086366-05	EPA 903.1	MK1	3	PASI-PA
		EPA 904.0	VAL	- 1	PASI-PA
30323517006	9086366-06	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	- 1	PASI-PA
30323517007	9086366-07	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	ij	PASI-PA

REPORT OF LABORATORY ANALYSIS



PROJECT NARRATIVE

Project: Pace Project No.:

9086366 30323517

Method:

EPA 903.1

Client: Date:

Description: 903.1 Radium 226 PDC Laboratories Inc.

September 30, 2019

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:





PROJECT NARRATIVE

Project: Pace Project No.: 9086366 30323517

Method:

EPA 904.0

Client:

Description: 904.0 Radium 228 PDC Laboratories Inc

Date:

September 30, 2019

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project:

9086366

Pace Project No.:

30323517

_	
Sample:	9086366-01

Lab ID: 30323517001

Site ID:

Collected: 08/28/19 07:28 Received: 09/06/19 09:00 Matrix: Water

Sample Type:

PWS:

Parameters Method EPA 903.1 Radium-226

Act ± Unc (MDC) Carr Trac 0.502 ± 0.481 (0.732) C:NA T:95%

Analyzed 09/20/19 13:01 13982-63-3

CAS No.

Qual

Qual

Radium-228

EPA 904.0

 $0.379 \pm 0.316 \quad (0.630)$ C:76% T:88%

pCi/L pCi/L

Units

pCi/L

pCi/L

Units

09/27/19 10:38 15262-20-1

Sample: 9086366-02 PWS:

Radium-228

Lab ID: 30323517002 Site ID:

Method

Collected: 08/28/19 08:10 Received: 09/06/19 09:00 Matrix: Water

Sample Type:

Act ± Unc (MDC) Carr Trac

EPA 903.1 Radium-226 EPA 904.0

Parameters

Parameters

Parameters

Parameters

0.380 ± 0.489 (0.814) C:NA T:97% -0.0125 ± 0.290 (0.680) C:78% T:86%

CAS No. Analyzed 09/20/19 13:01 13982-63-3

09/27/19 10:22 15262-20-1

Sample: 9086366-03 PWS:

Lab ID: 30323517003 Site ID:

Collected: 08/28/19 09:42 Sample Type:

Received: 09/06/19 09:00 Matrix: Water

Radium-226

Radium-228

Method EPA 903.1

EPA 904.0

Act ± Unc (MDC) Carr Trac 0.254 ± 0.457 (0.805) C:NA T:105%

0.387 ± 0.323

C:77% T:92%

Units pCi/L

CAS No. Analyzed 09/20/19 13:13 13982-63-3

09/27/19 10:22 15262-20-1

Qual

Sample: 9086366-04

Site ID:

Lab ID: 30323517004

Collected: 08/28/19 10:29 Sample Type:

(0.647)

Received: 09/06/19 09:00

Matrix: Water

Qual

Radium-226

PWS:

Method EPA 903.1

Method

Act ± Unc (MDC) Carr Trac 0.267 ± 0.455 (0.802)

Units

pCi/L

Units

pCi/L

pCi/L

pCi/L

Analyzed

CAS No. 09/20/19 13:13 13982-63-3

Radium-228

EPA 904.0

C:79% T:84%

C:NA T:84% 0.225 ± 0.339 (0.732)

pCi/L

09/27/19 10:22 15262-20-1

09/27/19 10:22 15262-20-1

Sample: 9086366-05 PWS:

Lab ID: 30323517005 Site ID:

Collected: 08/28/19 11:53 Sample Type:

Received: 09/06/19 09:00 Matrix: Water

Radium-226

EPA 903.1 EPA 904.0 Radium-228

0.161 ± 0.279 (0.498) C:NA T:96% 0.760 ± 0.413 (0.748) C:77% T:84%

Act ± Unc (MDC) Carr Trac

Analyzed 09/20/19 13:13 13982-63-3

CAS No. Qual

REPORT OF LABORATORY ANALYSIS



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project:

9086366

Pace Project No.:

Sample: 9086366-06

30323517

Lab ID: 30323517006 Site ID:

Received: 09/06/19 09:00 Collected: 08/28/19 00:00

Sample Type:

Method **Parameters** Radium-226

Act ± Unc (MDC) Carr Trac 0.387 ± 0.422 (0.664)

Analyzed Units

CAS No. Qual

PWS:

EPA 903.1 EPA 904.0

C:NA T:95% 0.330 ± 0.322 (0.662)

pCi/L pCi/L

09/27/19 10:22 15262-20-1

09/20/19 13:13 13982-63-3

Radium-228

C:78% T:89%

Matrix: Water

Sample: 9086366-07

Lab ID: 30323517007

Collected: 08/28/19 00:00

Received: 09/06/19 09:00 Matrix: Water

PWS:

Site ID:

Sample Type:

CAS No. Analyzed

Qual

Radium-226

Method

EPA 903.1

Act ± Unc (MDC) Carr Trac

0.000 ± 0.291 (0.631) C:NA T:94%

pCi/L

Radium-228

Parameters

EPA 904.0

0.821 ± 0.391 (0.672) C:78% T:95%

pCi/L

Units

09/27/19 10:38 15262-20-1

09/20/19 13:24 13982-63-3





QUALITY CONTROL - RADIOCHEMISTRY

Project: Pace Project No.:

9086366 30323517

QC Batch:

360664

Analysis Method:

EPA 903.1

QC Batch Method:

EPA 903.1

Analysis Description:

903.1 Radium-226

Associated Lab Samples:

30323517001, 30323517002, 30323517003, 30323517004, 30323517005, 30323517006, 30323517007

METHOD BLANK: 1750513

Matrix: Water

Associated Lab Samples:

Parameter

Act ± Unc (MDC) Carr Trac

Units pCi/L

Analyzed

Qualifiers

Radium-226

-0.0861 ± 0.197 (0.463) C:NA T:101%

09/19/19 13:15

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





QUALITY CONTROL - RADIOCHEMISTRY

Project: Pace Project No.: 9086366

30323517

QC Batch:

360665

Analysis Method:

EPA 904.0

QC Batch Method:

EPA 904.0

Analysis Description:

Matrix: Water

Associated Lab Samples:

30323517001, 30323517002, 30323517003, 30323517004, 30323517005, 30323517006, 30323517007

904.0 Radium 228

METHOD BLANK: 1750515

Associated Lab Samples:

30323517001, 30323517002, 30323517003, 30323517004, 30323517005, 30323517006, 30323517007

Parameter

Act ± Unc (MDC) Carr Trac

Units

Analyzed

Qualifiers

Radium-228

0.560 ± 0.373 (0.710) C:74% T:89%

pCi/L

09/27/19 10:20

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





QUALIFIERS

Project: 9086366
Pace Project No.: 30323517

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

Date: 09/30/2019 01:25 PM

PASI-PA Pace Analytical Services - Greensburg

SUBCONTRACT ORDER **Transfer Chain of Custod**

PDC Laboratories, Inc. 9086366



SENDING LABORATORY

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

RECEIVING LABORATORY

PACE Analytical - Greensburg 1638 Roseytown Road - Suites 2.3.4 Greensburg, PA 15601 (724) 850-5600

Sample: 9086366-01

Name: MW-3

Sampled: 08/28/19 07:28

Matrix: Ground Water Preservative: HNO3, pH <2

Analysis Due **Expires** Comments

01-Radium 226/228

09/11/19 16:00

02/24/20 07:28

Sample: 9086366-02

Name: MW-6

Sampled: 08/28/19 08:10

Matrix: Ground Water

Preservative: HNO3, pH <2

Comments Analysis Due **Expires**

01-Radium 226/228

09/11/19 16:00

02/24/20 08:10

Sample: 9086366-03

Name: MW-5

Sampled: 08/28/19 09:42

Matrix: Ground Water () () 3

Preservative: HNO3, pH <2

Analysis Due **Expires** Comments

01-Radium 226/228

09/11/19 16:00

02/24/20 09:42

Sample: 9086366-04

Name: MW-8

Sampled: 08/28/19 10:29

Matrix: Ground Water

Preservative: HNO3, pH <2

Analysis Due **Expires** Comments

01-Radium 226/228

09/11/19 16:00

02/24/20 10:29

Sample: 9086366-05

Name: MW-4

Sampled: 08/28/19 11:53

Matrix: Ground Water

Preservative: HNO3, pH <2

Comments Due **Expires Analysis**

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

SUBCONTRACT ORDER Transfer Chain of Custody

PDC Laboratories, Inc.

30323517

9086366

SENDING LABORATORY

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

RECEIVING LABORATORY

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

Sample: 9086366-06

Name: FIELD DUPLICATE

Sampled: 08/28/19 00:00

Matrix: Ground Water

Preservative: HNO3, pH <2

006

Analysis

Due

Expires

Comments

01-Radium 226/228

09/11/19 16:00

02/24/20 00:00

Sample: 9086366-07

Name: FIELD BLANK

Sampled: 08/28/19 00:00

Matrix: Ground Water

Preservative: HNO3, pH <2

007

Analysis

Due

Expires

Comments

01-Radium 226/228

09/11/19 16:00

02/24/20 00:00

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

	gin (State): <u>TL</u> PO#: <u>L97026</u> Results Needed:
Turn-Around Time Requested M NORMAL RUSH Date R	
	Sample Temperature Upon Receipt°C
(lla). Hong 47916:20 Sh 2 9/6/19 090	Sample(s) Received on ice
Relinquished By Date/Time Received By Date/Time	Proper Bottles Received in Good Condition (2) or N
	Bottles Filled with Adequate Volume
	Samples Received Within Hold Time Yor N
Relinquished By Date/Time Received By Date/Time	Date/Time Taken From Sample Bottle Y or N

Page Analytical*	Client Name:	PC) <u>C</u>	Lab	# 3 0 3 2 3 5 1 7 5 Project #
Courler: Fed Ex	UPS □USPS □Client	П	ommer	cial	Pace Other Label 5
Tracking #: 7761				Ordi	LIMS Login 3 P
Custody Seal on Cools		⊘ n	ر 0	Seals	Intact: Uyas no
Thermometer Used	n/h				Blue (None)
Cooler Temperature	Observed Temp		• C		ection Factor: C Final Temp: C
Temp should be above free			•		
					pH paper Lottle Date and initials of person examining contents: 5 1/6/6
Comments:		Yes	No	N/A	10D358 \ contents: 5F -1/6/15
Chain of Custody Preser	nt:	1			1.
Chain of Custody Filled (Out:	//			2.
Chain of Custody Reling	ulshed:				3.
Sampler Name & Signat	ure on COC;				4.
Sample Labels match Co		<u>L</u>		L	5.
-Includes date/time/ID	O Matrix:	VI	_		
Samples Arrived within F	lold Time:	/	/		6.
Short Hold Time Analys	sis (<72hr remaining):		1		7.
Rush Turn Around Time	e Requested:		/		8.
Sufficient Volume:		/			9,
Correct Containers Used	j:				10.
-Pace Containers Use	ed:				
Containers Intact:		/			11.
Orthophosphate field filte	ered			\perp	12,
Hex Cr Aqueous sample	field filtered			<u></u>	13.
Organic Samples ched	cked for dechlorination:			4	14.
Fittered volume received				_	15.
All containers have been ch	-				16. 0HL2
Non-aqueous matrix	лтя, ТОС, O&G, Phenolics, I	Radon,			phra
All containers meet meth requirements.	nod preservation	/			Initial when S P Date/time of preservation
					Lot# of added preservative
Headspace in VOA Vials	s (>6mm):				17.
Trip Blank Present:	THE STATE OF THE PROPERTY OF THE PARTY OF TH		-/-		18.
Trip Blank Custody Seals					
Rad Samples Screened	1 < 0.5 mrem/hr				Initial when completed: SP Date: 9/6/19
Client Notification/ Res					
Person-Contacted				-Date/	Firme: Contacted By:
Comments/ Resolution					
A shook in this	how indicates that addit	lonal	la-form	naflor	n has been stand in exercise

Pittsburgh Lab Sample Condition Upon Receipt

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

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





DATA PACKAGE

CLIENT; Sikeston BMU

PROJECT: Sikeston Power Station

PDC LAB WORKORDER: 9086366

DATE ISSUED: October 2, 2019

CASE NARRATIVE -

PDC Work Order 9086366

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

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

QC Summary:

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

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

Certification Signature:	Just Step	Name:	Kurt Stepping
Date:	October 2, 2019	Title:	Senior Project Manager

PDC LABORATORIES, INC. WWW.PDCLAB.COM

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

CHAIN OF CUSTODY RECORD STATE WHERE SAMPLE COLLECTED MO

			5 P 11 P1 RE 00													
ceston flower statio		Bottom A	h APP II		PURCHASE	ORDER #	0) AHAL	YSIS RE	QUESTI	ED	(FOR LAB USE ONLY)				
w wakefield	PHO	NE MUNISIER	EMA	L.	DATE S	MPPED			55			LOGM # 708 6566- +				
18100, MO 63801	SAMPLER (PLEASE PE Des 4) e	•	ghow		MAYREX	LIR ATTEN	1234	3	3			CLIENT:PROJECT:				
· Man/Ken Ewen	SAMPLERY SIGNATURE	a. a.	11.		MARCHEN ASSESSION OF COLUMN AIR BOLID	446	5,66,	H977			PROJ. MGR.: CUSTODY SEAL #:					
SAMPLE DESCRIPTION DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	COLLECTE	THE	GRAS COM	MATRIX TYPE	COUNT	PRES COOR CURT PROVING	R40	K	מיל			REMARKS				
MW 3	8-28-1	90728	×	GW	3		X	××	人							
MW 6	8-28-1	90810	×	GW	3		×	スト	X							
MW 5	8-28-19	0942	メ	GW	3		×	XX	7							
MM &	8-28-1		>	GW	3		X	K X	×							
nw 4	9-28-19		X	GW	3		X	XX	×							
eld D'uplicate	8-28-19		X	GW	3		X	XX	不							
eld Blank	8-28-19	7	X	DI	3		χ	XX	*							
									-							
											-					
											\top					
SERVATION CODES; 1-HCL 2-H2804	3-HNO3 4-N			NEW SERVICE	7-OTHER											
HTAT IS SUBJECT TO PDC LASE APPROVAL AND SURGHARS! H RESULTS VIA (PLEASE CIRCLE) EMARL PHONE			NEEDED	0	i understand ti not meet all sa Policy and the	het by initial Imple confer date will be	ing this mance qualifie	bax i giv ruguirum f. Qualifi	t the inb onls as d of data :	permiss lettred i usy <u>NO</u> T	olon to pa in the rec De acce	roceed with analysis, even though it may salving facility's Sample Acceptance ptable to report to all regulatory authorities.				
T PROM ABOVE: PHONE 8 IF OUTERENT FROM A HEED BY: (BIGNATURE) DATE		near each	BY: (BIGNATURE)		PROCEED WI		S AND	QUALIFY	RESULT							
1 Park	-29-19 07 <i>0</i> 0	REGENE	ST: (SKINATURE)			TIME			•		MMENTS	: (FOR LAB USE ONLY)				
D SHATURE) DATE		REGENTER	EY: (SIGNATURE)			DATE			Sample	TEMPE	RATURE	E UPON RECEIPT				
N O PATURE) DATI		RECEIVED	TEY: HOIGHATURE			27	50/1	9	Sample Sample	L PROCESS STARTED PRIOR TO RECEIPT OR N PLE(S) RECEIVED ON ICE PLE ACCEPTANCE MONCONFORMANT						
<u> </u>		(19A			THE	1000		DATE AND TIME TAKEN FROM SAMPLE BOTTLE							

Appendix 4

Groundwater Quality Data Base

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

			Field Parameters Appendix III Monitoring Constituents (Detection)) Appendix IV Monitoring Constituents (Assessment)													
Well	Date	Monitoring Purpose	Spec. Cond.	Temp.	ORP	D.O.	Turbidity	рН	Chloride	Fluoride	Sulfate	TDS	Boron		Antimony	Arsenic	Barium	Beryllium	Cadmium		Cobalt		Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226 and 228 (Combined)
ID		T diposo	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	7.1	2.3	0.438	26	160	18	24	<3.0	1.5	96	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.668
	1/24/2017	Background	226.4	16.52	-8.4	0.39	4.46	6.9	2.0	0.261	30	130	12	21	<3.0	1.2	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.677(ND)
	2/22/2017	Background	226.6	16.47	9.7	0.36	3.56	6.9	1.9	0.290	26	120	33	22	<3.0	1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.460(ND)
	3/20/2017	Background	212.1	17.07	33.7	0.43	6.61	6.7	1.8	0.286	21	170	22	19	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.277(ND)
	4/27/2017	Background	223.2	15.35	9.2	0.57	2.69	6.7	2.0	0.257	28 "Q4"	140	54	20	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	9.9	<1.0	<1.0	-0.030(ND)
	5/17/2017	Background	224.9	17.68	26.8	0.45	12.59	6.6	1.5	<0.250	21	130	19	17	<3.0	<1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	0.40	<1.0	<1.0	<1.0	0.844(ND)
	6/8/2017	Background	217.9	16.73	18.2	0.49	2.61	6.7	1.7	0.276	22	160	20	19	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	-0.469(ND)
	7/13/2017	Background	243.8	19.02	5.5	0.39	4.79	6.7	2.2	0.256	19	160	18	20	<3.0	<1.0	100	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.715(ND)
	10/31/2017	Detection	246.2	16.74	12.4	0.65	7.47	6.6	2.0	0.331	20	140	27	19	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection	194.2	17.19	42.3	0.42	7.57	6.6	1.3	0.291	17	130	23	20	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Detection	194.9	15.05	49.8	0.47	2.23	6.5	1.5	0.301/0.316	18	100	23	17	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	5/28/2019	Detection	218.4	16.42	32.2	0.82	9.69	6.4	1.3	<0.250	20	-	51	17	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/23/2019	Detection	203.0	16.58	71.0	0.88	4.96	-	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	8/28/2019	Detection	207.4	16.97	75.6	0.89	4.02	6.4	1.1	<0.250	18	140	35	15	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-4 (DG)	11/30/2016	Background	575.6	17.51	-108.3	0.48	0.61	7.5	18	0.259	140	390	1400	89	<3.0	<1.0	41	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.572(ND)
	1/24/2017	Background	543.7	17.00	-105.2	0.50	0.48	7.5	15	<0.250	120	290	880	79	<3.0	<1.0	46	<2.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.7031(ND)
	2/22/2017	Background	554.0	17.95	-115.3	0.51	1.19	7.5	13	<0.250	97	320	1500	78	<3.0	<1.0	51	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.550(ND)
	3/20/2017	Background	562.8	18.58	-108.8	0.69	1.70	7.4	12	<0.250	94	350	1400	72	<3.0	<1.0	53	<1.0	<1.0	<4.0	<2.0	<1.0	<10	1.3	<1.0	<1.0	<1.0	1.036
	4/27/2017	Background	536.9	17.25	-129.6	0.91	2.38	7.4	14	<0.250	99	300	1300	74	<3.0	<1.0	50	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.210(ND)
	5/17/2017	Background	554.9	17.90	-115.5	0.63	3.02	7.4	14	<0.250	96	320	1200	71	<3.0	<1.0	66	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.774(ND)
	6/8/2017	Background	509.7	18.24	-122.9	0.86	0.84	7.4	12	<0.250	86	340	1100	61	<3.0	<1.0	45	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.464(ND)
	7/13/2017	Background	575.5	19.46	-115.2	0.52	1.43	7.4	13	<0.250	88	300	1200	79	<3.0	<1.0	52	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.086(ND)
	10/31/2017	Detection	525.8	18.35	-118.1	0.63	1.07	7.3	17	<0.250	83	290	1400	67	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection	511.5	18.92	-120.7	0.44	18.50	7.3	14	<0.250	86	290	1200	80	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Detection	468.0	16.07	-101.8	0.53	1.01	7.4	8.8	<0.250	54	260	1100	64	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	5/28/2019	Detection	581.7	18.65	-108.5	0.37	3.30	7.3	11	<0.250	75	-	980	70	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/23/2019	Detection	615.2	18.88	-105.2	0.43	0.36	_	-	-	-	340	-	-	-	_	-	-	-	-	_	-	-	-	-	-	-	-
	8/28/2019	Detection	645.4	19.60	-101.7	0.40	2.31	7.2	18	<0.250	110	300	1100	83	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	10/23/2019	Re-sample	620.0	18.90	-110.6	0.55	1.93	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Prepared by: KAE Checked by: MCC

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

			Field Parameters Appendix III Monitoring Constituents (Detection)												Appendix IV Monitoring Constituents (Assessment)													
Well ID	Date	Monitoring Purpose	Spec. Cond.	Temp.	ORP mV	D.O.	Turbidity NTU	pH S.U.	Chloride mg/L	Fluoride mg/L	Sulfate mg/L	TDS mg/L	Boron ug/L	Calcium mg/L	Antimony ug/L	Arsenic ug/L	Barium ug/L	Beryllium ug/L	Cadmium ug/L	Chromium ug/L	Cobalt ug/L	Lead	Lithium ug/L	Mercury ug/L	Molybdenum ug/L	Selenium ug/L	Thallium ug/L	Radium 226 and 228 (Combined) pCi/L
MW-5 (DG)	11/30/2016	Background	808.3	16.20	-48.7	0.50	1.24	7.0	16	0.255	230	560	470	96	<3.0	<1.0	84	<1.0	<1.0	<4.0	4.3	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.844
` ,	1/24/2017	Background	745.3	16.24	-37.6	0.58	0.72	6.9	15	<0.250	270	470	480	120	<3.0	<1.0	91	<1.0	<1.0	<4.0	5.2	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.827(ND)
	2/22/2017	Background	717.8	17.75	-50.5	0.36	3.43	7.0	11	<0.250	170	420	470	100	<3.0	<1.0	83	<1.0	<1.0	<4.0	3.6	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.130(ND)
	3/20/2017	Background	737.9	17.78	-36.5	0.72	2.16	6.9	11	<0.250	170	480	320	99	<3.0	<1.0	76	<1.0	<1.0	<4.0	4.4	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.538(ND)
	4/27/2017	Background	777.3	16.07	-58.8	0.69	5.20	6.8	12	<0.250	460	480	490	120	<3.0	<1.0	87	<1.0	<1.0	<4.0	4.8	<1.0	<10	<0.20	3.0	<1.0	<1.0	1.676
	5/17/2017	Background	760.1	17.81	-56.0	0.46	5.35	6.8	11	<0.250	200	440	5700	240	<3.0	1.8	180	<1.0	<1.0	16	5.3	6.3	<10	0.24	<1.0	<1.0	<1.0	1.739
	6/8/2017	Background	678.3	17.72	-58.6	0.69	1.89	6.8	11	<0.250	180	480	360	97	<3.0	<1.0	77	<1.0	<1.0	<4.0	3.9	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.869(ND)
	7/13/2017	Background	799.0	19.19	-82.0	1.08	17.49	7.0	10	<0.250	190	430	320	110	<3.0	<1.0	81	<1.0	<1.0	<4.0	3.8	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.767(ND)
	10/31/2017	Detection	591.8	17.45	-77.6	0.85	3.17	6.9	18	<0.250	88	310	280	72	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection	756.4	18.28	-55.6	0.84	1.91	6.8	11	<0.250	240	480	370	130	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Detection	836.4	14.90	-27.0	0.51	0.38	6.7	17	<0.250	230	520	420	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	5/28/2019	Detection	861.1	18.31	-59.1	0.60	3.71	6.9	10	<0.250	190	-	280	110	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/23/2019	Detection	806.9	18.66	-44.9	0.81	1.34	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/28/2019	Detection	848.4	18.49	-42.2	0.64	0.82	6.8	16	<0.250	190	480	410	110	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-6 (UG)	11/30/2016	Background	369.0	16.39	-49.4	0.85	0.84	6.9	2.8	0.331	36	200	36	45	<3.0	4.3	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.532
	1/24/2017	Background	358.9	16.29	-44.8	0.66	0.26	6.9	2.4	<0.250	43	200	27	41	<3.0	5.7	220	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.948(ND)
	2/22/2017	Background	352.5	17.20	-42.2	0.81	15.27	6.9	2.1	0.269	32	160	59	40	<3.0	6.4	210	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.685(ND)
	3/20/2017	Background	360.8	16.90	24.9	0.36	9.70	6.7	2.1	<0.250	31	240	37	39	<3.0	5	160	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.577(ND)
	4/27/2017	Background	331.5	15.71	-50.9	0.39	8.35	6.7	2.3	<0.250	34	170	36	38	<3.0	3.2	180	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.243(ND)
	5/17/2017	Background	323.2	17.65	-71.5	0.45	7.13	6.8	1.8	<0.250	30	170	35	30	<3.0	4.9	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.173(ND)
	6/8/2017	Background	326.7	17.50	-53.0	0.33	3.86	6.7	1.7	<0.250	29	180	38	36	<3.0	4.6	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.893(ND)
	7/13/2017	Background	396.8	19.68	-84.0	0.72	2.17	7.0	1.6	<0.250	28	180	31	40	<3.0	5.8	200	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.575(ND)
	10/31/2017	Detection	359.6	17.57	-57.9	0.71	1.48	6.7	1.7	0.303	29	170	41	38	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection	345.4	17.59	-44.0	0.40	13.24	6.7	2.3	<0.250	32	160	43	41	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Detection	375.3	15.04	-37.6	1.07	1.66	6.7	1.5	0.313/0.290	29	180	46	36	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	5/28/2019	Detection	418.2	16.93	-48.2	0.34	7.15	6.7	2.5	<0.250	30	-	52	40	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/23/2019	Detection	419.3	17.64	-59.8	0.51	2.03	-	-	-	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/28/2019	Detection	442.2	17.67	-65.4	0.66	1.15	6.7	1.0	<0.250	24	200	54	44	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
											<u> </u>							<u> </u>	<u> </u>	<u> </u>			<u> </u>					

Prepared by: KAE Checked by: MCC

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

				Field F	Paramet	ers			Appendix III Monitoring Constituents (Detection)							Appendix IV Monitoring Constituents (Assessment)													
Well	Date	Monitoring Purpose	Spec. Cond.	Temp.	ORP mV	D.O.	Turbidity NTU	pH S.U.	Chloride mg/L	Fluoride mg/L	Sulfate mg/L	TDS mg/L	Boron ua/L	Calcium mg/L	Antimony ua/L	Arsenic ug/L	Barium ug/L	Beryllium ug/L	Cadmium ug/L	Chromium ug/L	Cobalt	Lead ug/L	Lithium ua/L	Mercury ug/L	Molybdenum ug/L	Selenium ug/L	Thallium ug/L	Radium 226 and 228 (Combined) pCi/L	
MW-8 (DG)	5/18/2017	Background	662.5	17.58	-89.4	0.29	2.39	7.2	46	<0.250	100	340	400	74	<3.0	<1.0	86	<1.0	<1.0	<4.0	<2.0	<1.0	J.	<0.20	<1.0	<1.0	<1.0	1.067	
(20)	6/9/2017	Background	678.2	17.90	-108.5	1	0.47	7.2	43	<0.250	110	380	520	92	<3.0	<1.0	86	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.839(ND)	
	7/13/2017	Background	661.5	18.57	-107.1	0.23	1.20	7.3	36	<0.250	89	320	430	87	<3.0	<1.0	74	<1.0	<1.0	<4.0	<2.0	<1.0		<0.20	<1.0	<1.0	<1.0	1.034(ND)	
	8/3/2017	Background	665.7	19.06	-108.4	0.24	0.98	7.2	37	<0.250	89	330	490	80	<3.0	<1.0	74	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.681(ND)	
	8/15/2017	Background	594.9	18.56	-88.7	0.38	0.99	7.2	36	<0.250	83	320	530	75	<3.0	<1.0	68	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.906(ND)	
	8/30/2017	Background	644.2	18.62	-91.3	0.29	1.18	7.2	41	<0.250	96	290	510	88	<3.0	<1.0	75	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.805(ND)	
	9/14/2017	Background	707.9	18.52	-90.1	0.48	0.67	7.1	53	<0.250 H	110	370	510	86	<3.0	<1.0	77	<1.0	<1.0	<4.0	<2.0	<1.0	12	<0.20	<1.0	<1.0	<1.0	0.314(ND)	
	9/27/2017	Background	764.0	19.11	-89.6	0.30	0.58	7.1	50	<0.250	120	420	480	92	<3.0	<1.0	80	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.594(ND)	
	10/31/2017	Detection	698.1	17.99	-96.3	0.38	0.94	7.1	45	<0.250	110	380	540	86	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
	6/13/2018	Detection	788.8	18.34	-99.1	0.23	4.80	7.1	65	<0.250	150	430	520	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
	7/10/2018	Re-sample	899.4	18.52	-94.2	0.35	2.69	7.1	68	(NA)	140	(NA)	(NA)	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
		Re-sample/DUP	899.4	18.52	-94.2	0.35	2.69	7.1	71	(NA)	150	(NA)	(NA)	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
	11/26/2018	Detection	662.1	15.08	-77.6	0.35	2.88	7.2	45	<0.250	100	320	500	94	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
	5/28/2019	Detection	836.6	18.25	-90.6	0.29	4.89	7.1	53	<0.250	130	-	540	100	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
	7/23/2019	Detection	819.5	19.34	-90.7	0.30	1.39	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	7/23/2019	Re-sample	819.5	19.34	-90.7	0.30	1.39	-	-	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	8/28/2019	Detection	769.1	19.38	-90.0	0.25	1.25	7.1	55	<0.250	110	360	460	93	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	

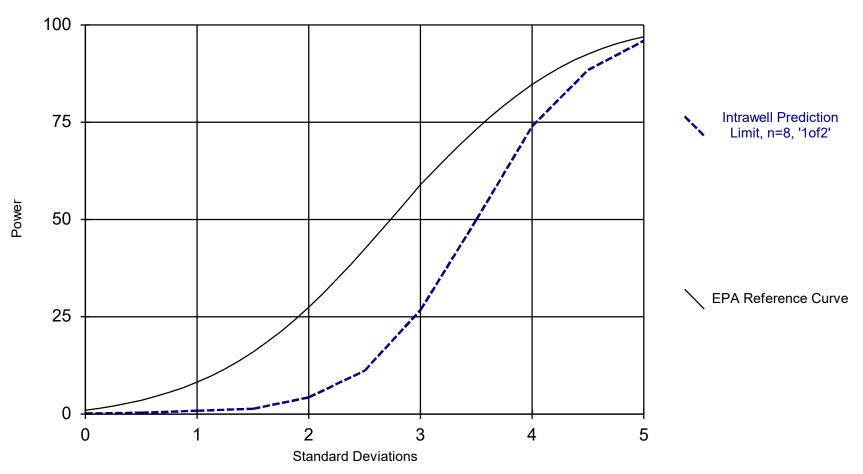
Notes:

- 1. All data transcribed from analytical lab data sheets or field notes.
- 2. Less than (<) symbol denotes concentration not detected at or above reportable limits.
- 3. (ND) denotes Radium 226 and 228 (combined) concentration not detected above minimum detectable concentration.
- 4. (NA) denotes analysis not conducted, or not available at time of report.
- 5. Background monitoring per USEPA 40 CFR 257.93.
- 6. Detection monitoring per USEPA 40 CFR 257.94.
- 7. Assessment monitoring per USEPA 40 CFR 257.95.
- 8. Federal MCL = Maximum Contaminant Level per CFR 40 Subchapter D Part 141 subpart G Section 141.62 & 141.66, or Part 257 subpart D Section 257.95(h)(2).
- 9. Additional background sampling currently being conducted based on recommendations in Alternate Source Demonstration dated September 26, 2018 (see Gredell Engineering, 2019).

Appendix 5

Statistical Power Curve

Power Curve MW-3 through MW-8



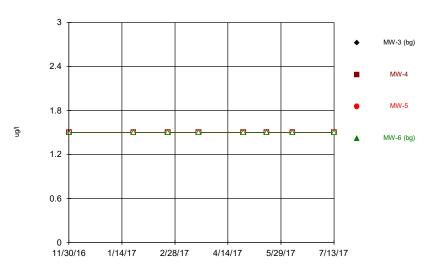
Kappa = 3.403, based on 3 compliance wells and 35 constituents, evaluated semi-annually (this report reflects annual total).

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

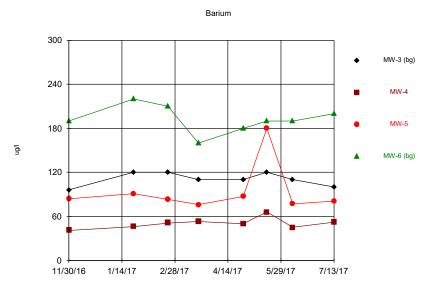
Appendix 6

Time Series Plots



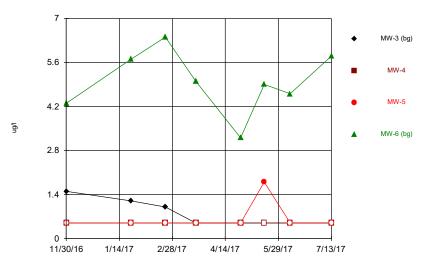


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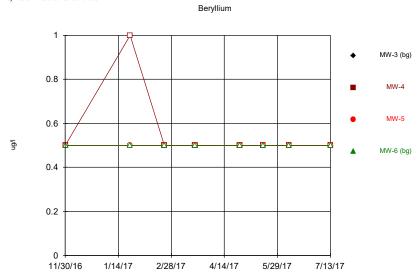
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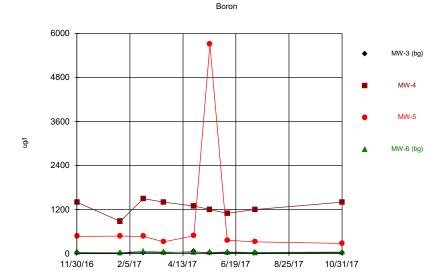


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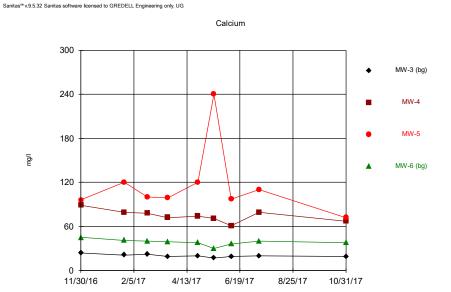
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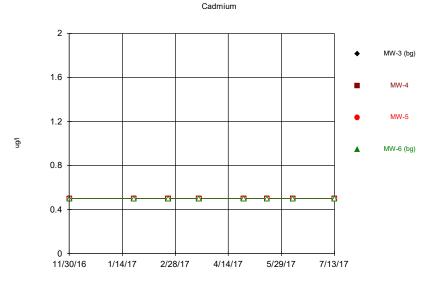
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

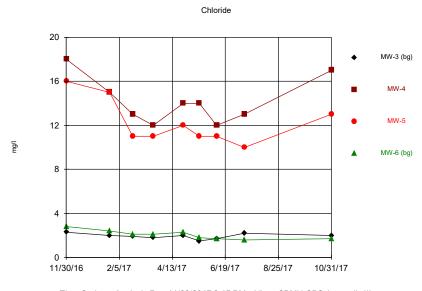


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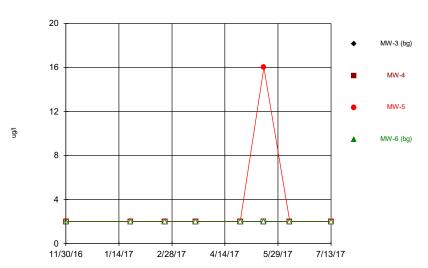


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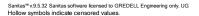


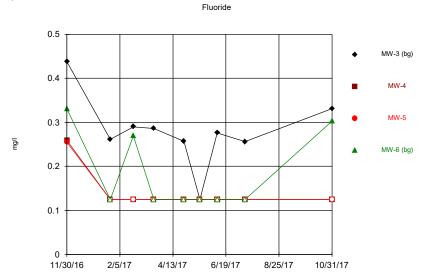


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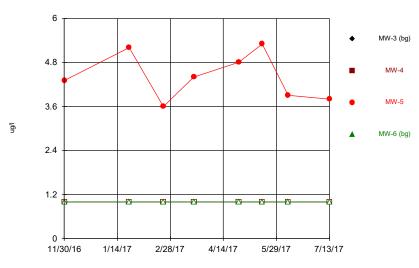
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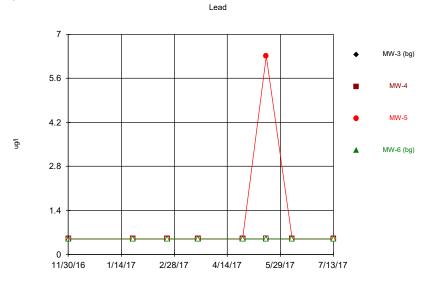
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





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

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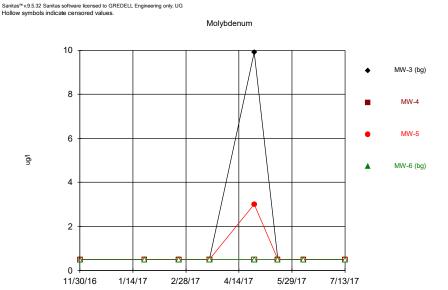


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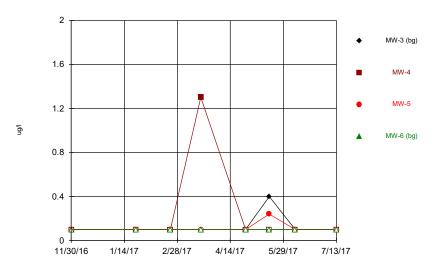
Sanitas $^{\text{™}}$ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



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



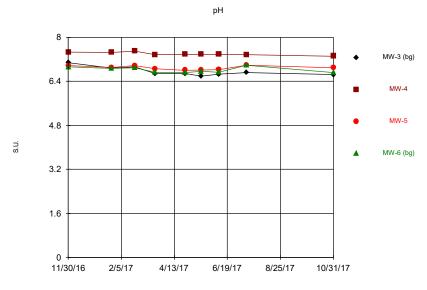
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Mercury

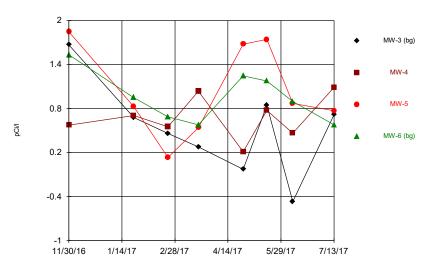
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



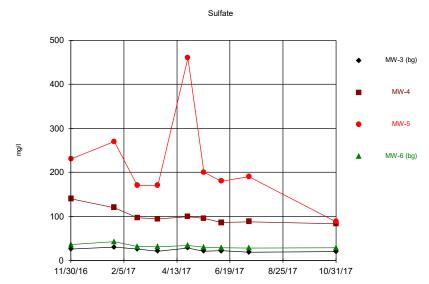


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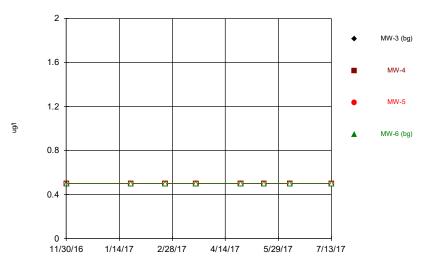


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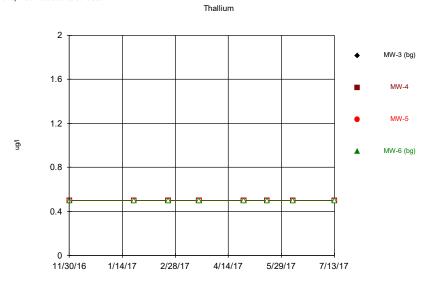
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Selenium



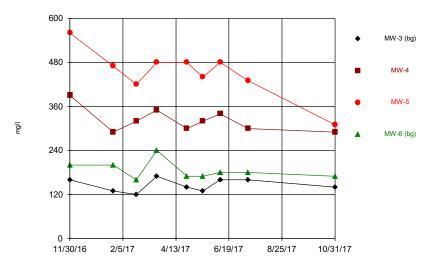
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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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

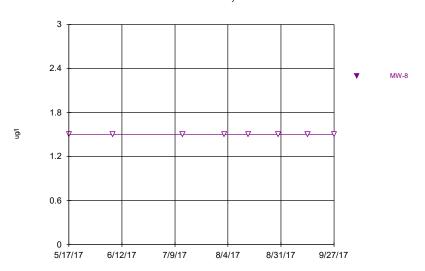
Total Dissolved Solids



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

36

18



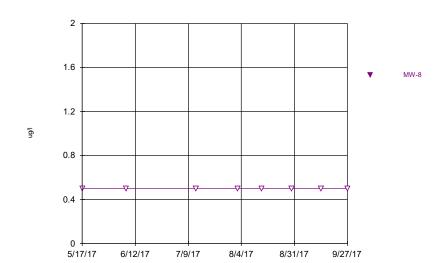
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Barium

MW-8

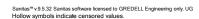
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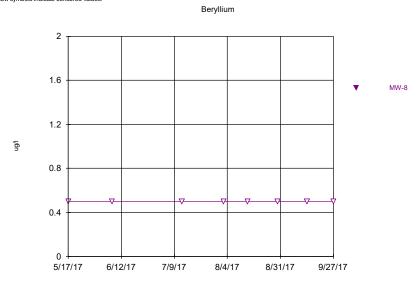




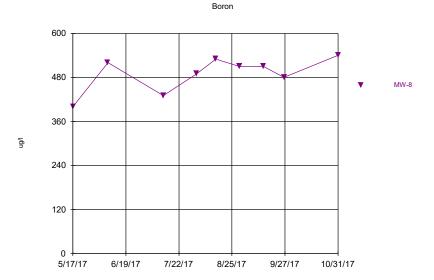
Arsenic

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



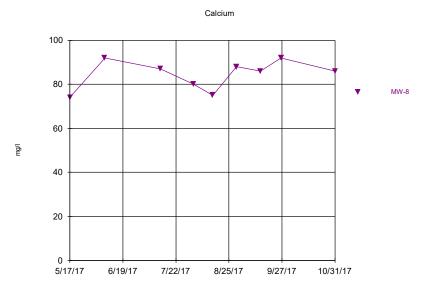


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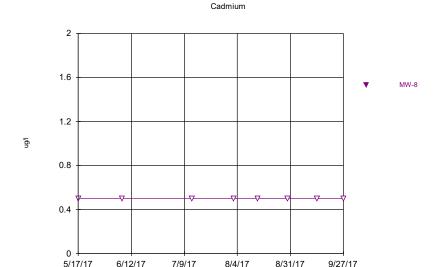


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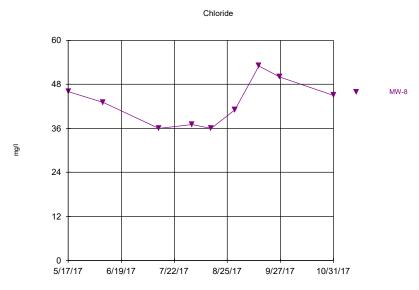




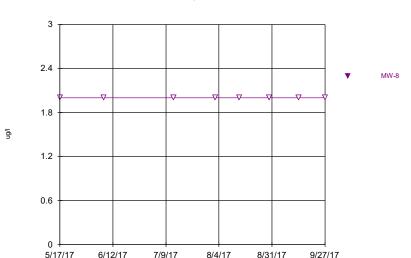
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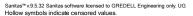
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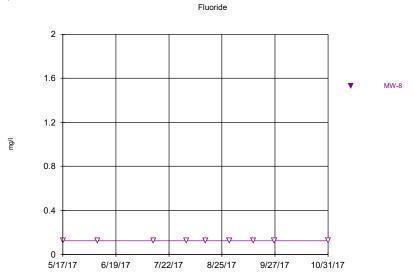


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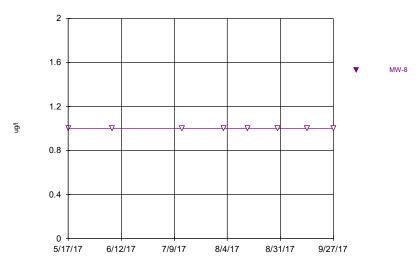
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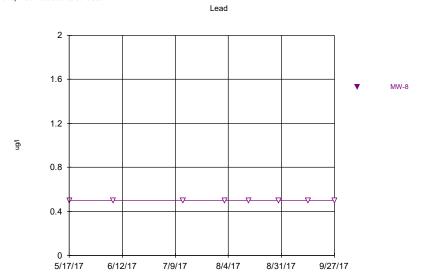
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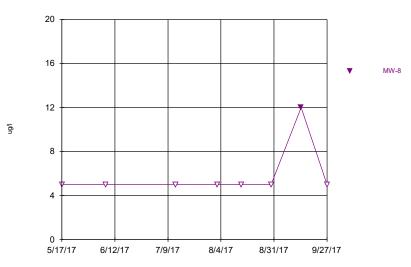
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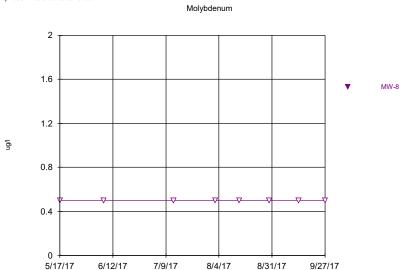
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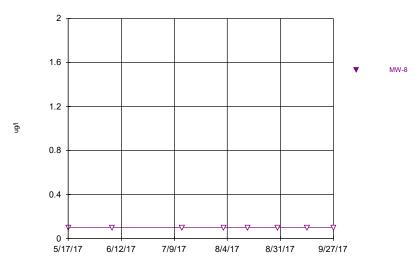
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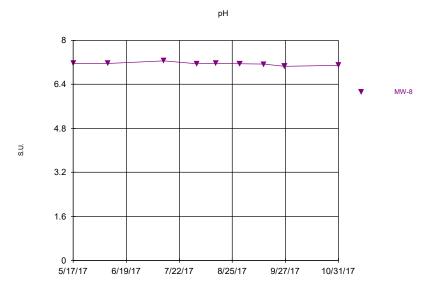


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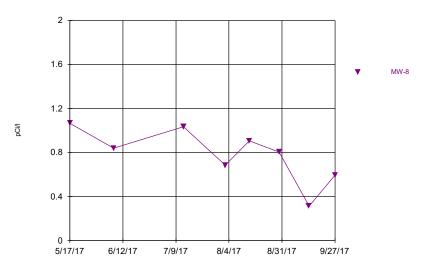


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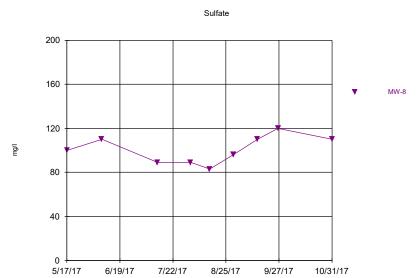


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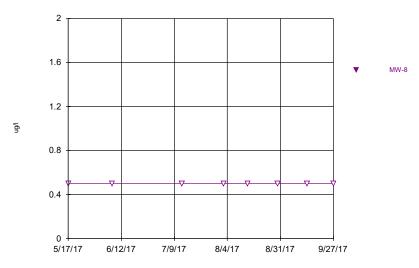


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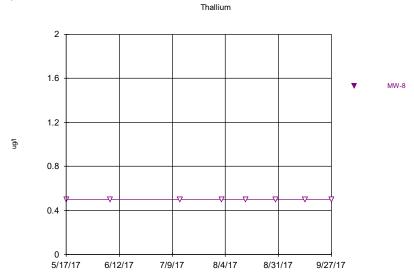
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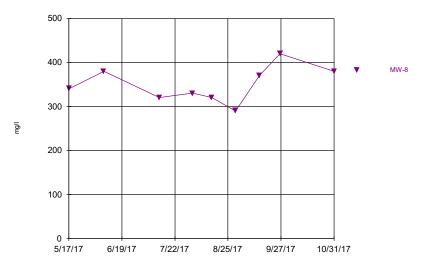
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Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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

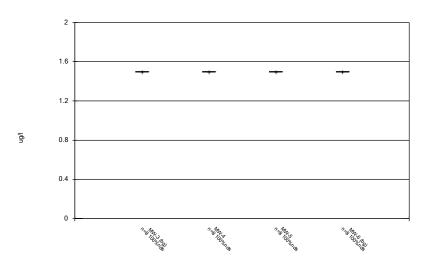
Box & Whiskers Plot MW-3 through MW-6

	SBMU-Sikeston Power Station	Client: GRED	ELL Engineering	Data: SBMU	-SPS EDD File 09-	28-17 Printed 11	/29/2017, 3:18 P	М	
Constituent	Well	<u>N</u>	<u>Mean</u>	<u>Median</u>	Lower Q.	Upper Q.	Min.	<u>Max.</u>	%NDs
Antimony (ug/I)	MW-3 (bg)	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Antimony (ug/l)	MW-4	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Antimony (ug/l)	MW-5	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Antimony (ug/l)	MW-6 (bg)	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Arsenic (ug/I)	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	12	18	0
Chloride (mg/l)	MW-5	9	12.22	11	11	14	10	16	0
Chloride (mg/l)	MW-6 (bg)	9	2.056	2.1	1.7	2.35	1.6	2.8	0
Chromium (ug/l)	MW-3 (bg)	8	2	2	2	2	2	2	100
Chromium (ug/l)	MW-4	8	2	2	2	2	2	2	100
Chromium (ug/l)	MW-5	8	3.75	2	2	2	2	16	87.5
Chromium (ug/l)	MW-6 (bg)	8	2	2	2	2	2	2	100
Cobalt (ug/l)	MW-3 (bg)	8	1	1	1	1	1	1	100
Cobalt (ug/l)	MW-4	8	1	1	1	1	1	1	100
Cobalt (ug/l)	MW-5	8	4.413	4.35	3.85	5	3.6	5.3	0
Cobalt (ug/l)	MW-6 (bg)	8	1	1	1	1	1	1	100
Fluoride (mg/l)	MW-3 (bg)	9	0.28	0.276	0.2565	0.3105	0.125	0.438	11.11
Fluoride (mg/l)	MW-4	9	0.1399	0.125	0.125	0.125	0.125	0.259	88.89
Fluoride (mg/l)	MW-5	9	0.1394	0.125	0.125	0.125	0.125	0.255	88.89
Fluoride (mg/l)	MW-6 (bg)	9	0.1837	0.125	0.125	0.286	0.125	0.233	66.67
Lead (ug/l)	MW-3 (bg)	8	0.1657	0.123	0.123	0.5	0.123	0.55	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) 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)		5	5	5	5	5	5	100
Lithium (ug/l) Lithium (ug/l)	MW-4	8 8	5 5	5 5	5 5	5 5	5	5 5	100
Liunaiii (ug/i)	IVIVV	0	5	3	J	3	3	3	100

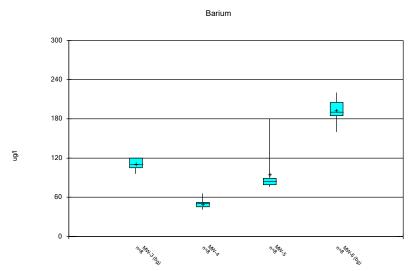
Box & Whiskers Plot MW-3 through MW-6

	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>	<u>Median</u>	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



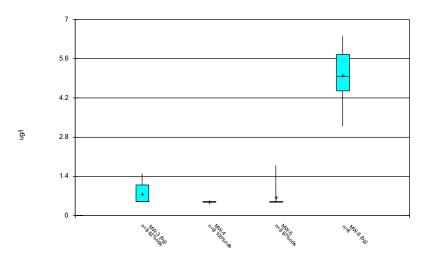


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

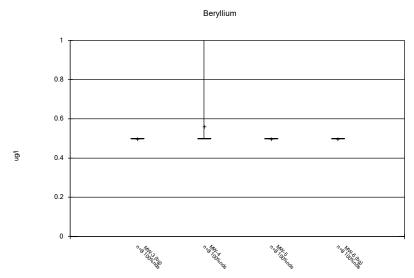


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Arsenic

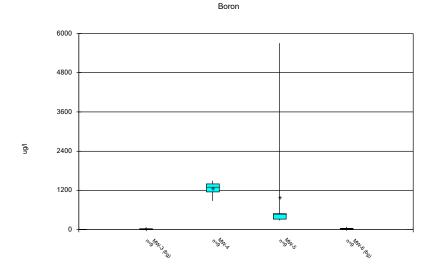


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

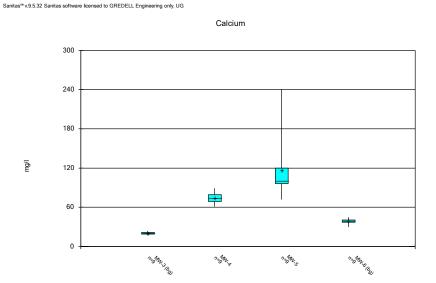


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III

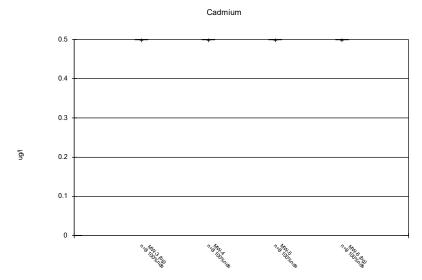
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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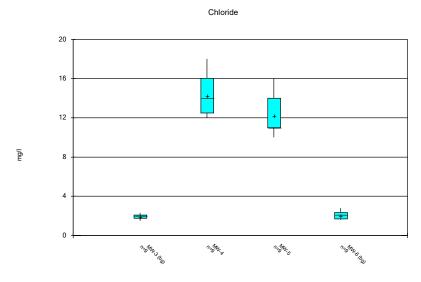


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

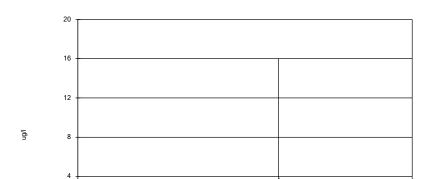


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17





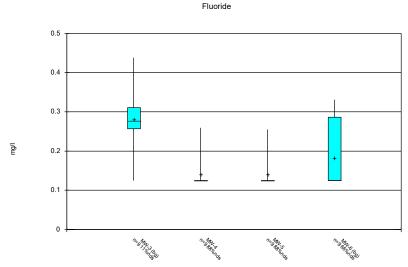
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Chromium

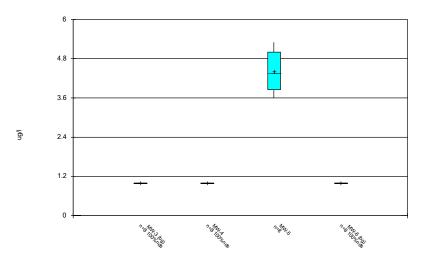
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



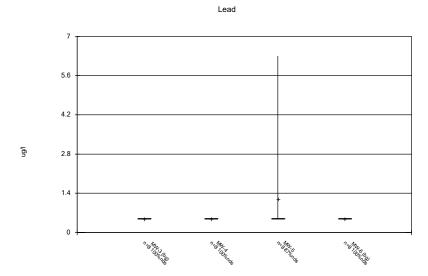


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

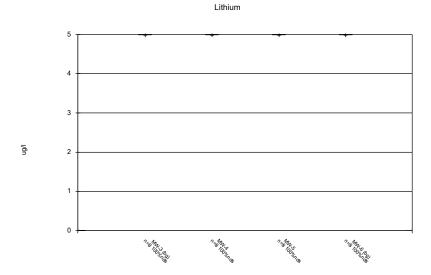




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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

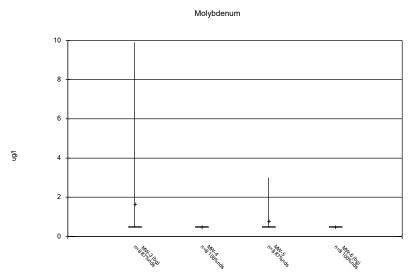


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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

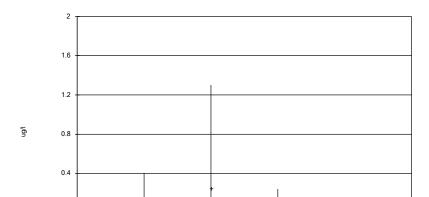


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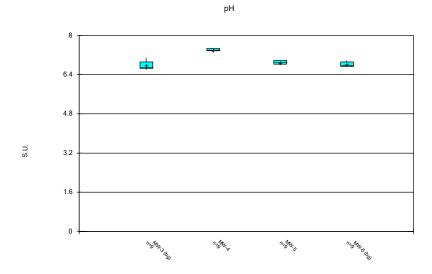


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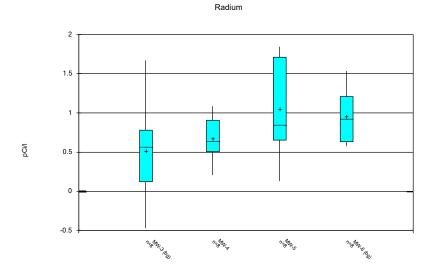


Mercury

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



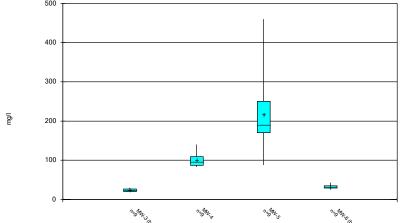
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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



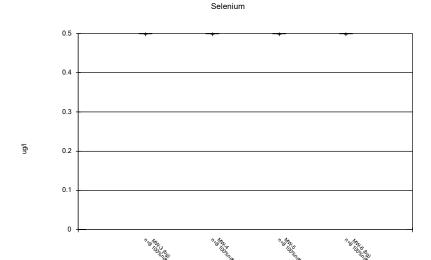
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Sulfate

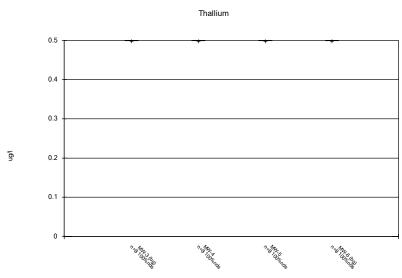




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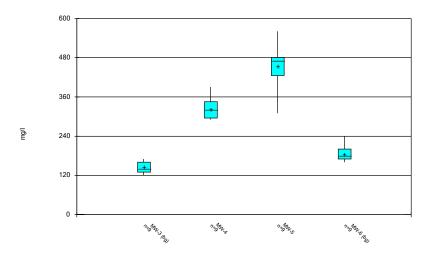


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III



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

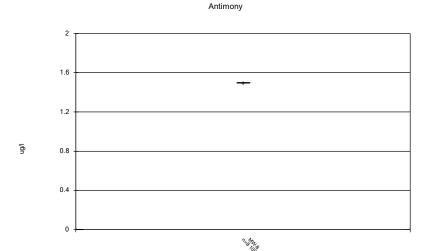
Total Dissolved Solids



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

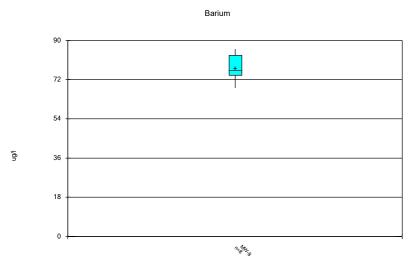
Box & Whiskers Plot MW-8

	SBMU-Sikeston Power Station	Client: GRED	ELL Engineering	Data: SBMU	Data: SBMU-SPS EDD File 09-28-17 Printed 11/29/2017, 9:37 AM				
Constituent	<u>Well</u>	<u>N</u>	<u>Mean</u>	<u>Median</u>	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/l)	MW-8	8	0.7804	0.822	0.639	0.97	0.314	1.067	0
Selenium (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Sulfate (mg/l)	MW-8	9	100.8	100	89	110	83	120	0
Thallium (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Total Dissolved Solids (mg/l)	MW-8	9	350	340	320	380	290	420	0

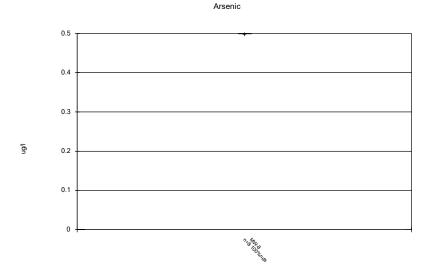


Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

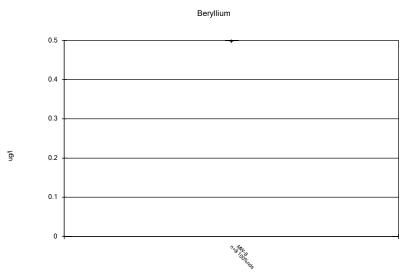




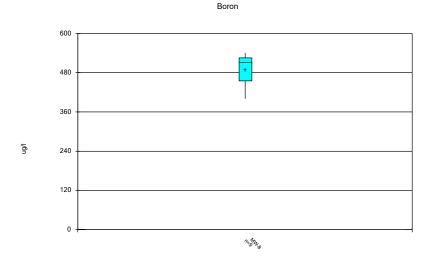
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



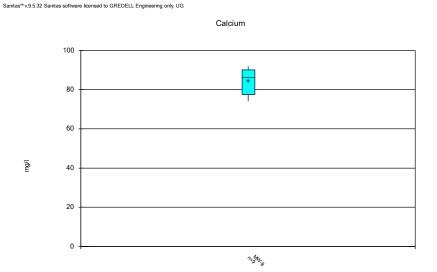
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



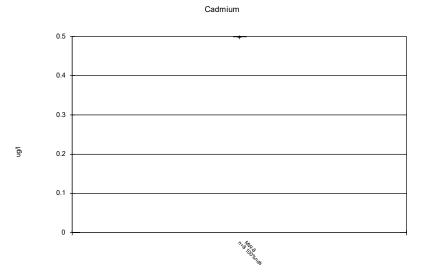
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

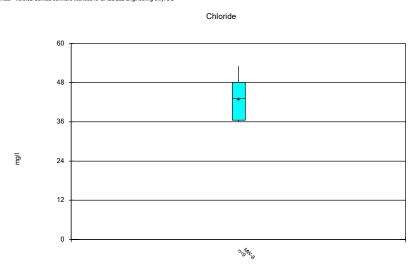


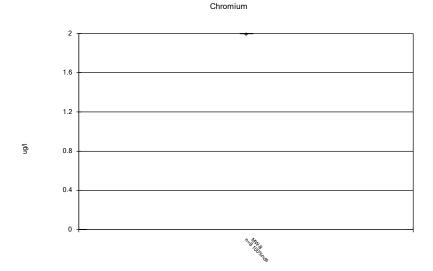
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

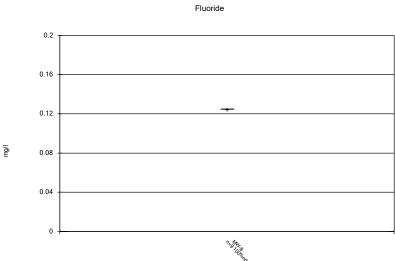




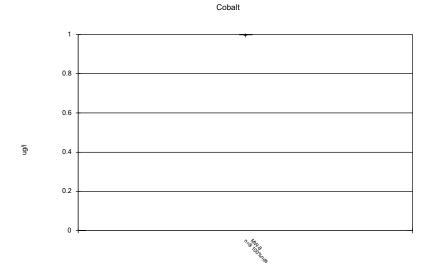


Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

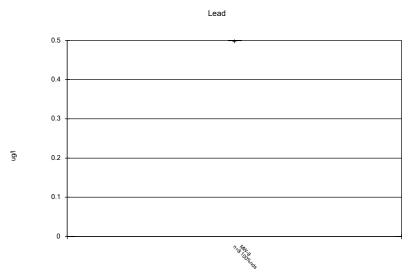




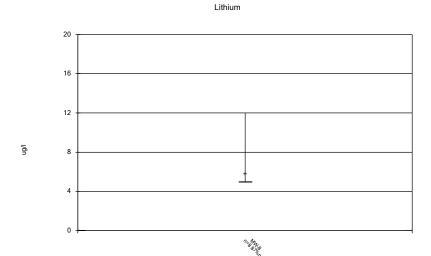
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



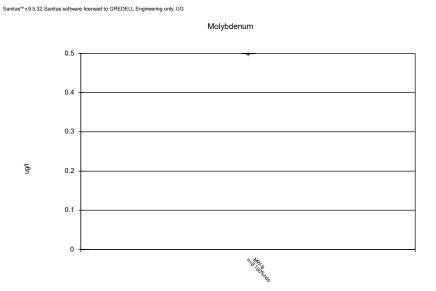
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



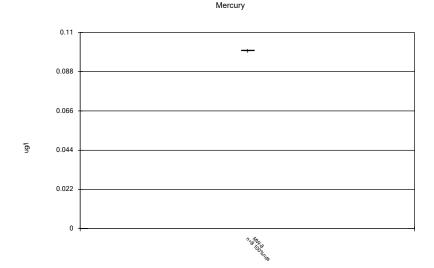
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

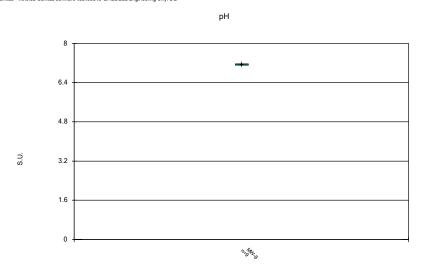


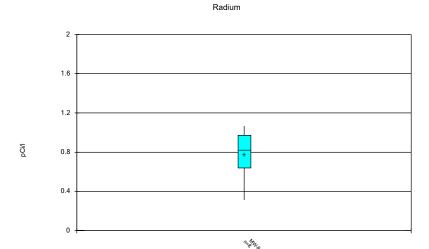
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

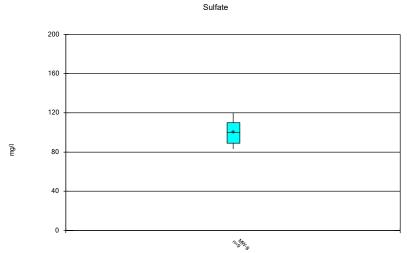




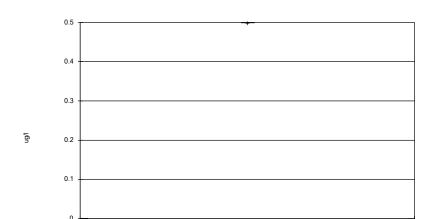


Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



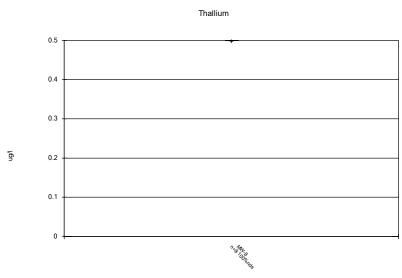


Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Selenium

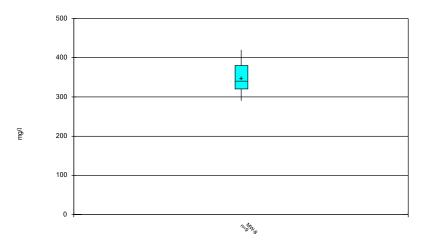
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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-Si	keston Power Sta	tion Client: GF	REDELL Engine	ering Data	: SBMU	-SPS E	DD File 09	-28-17 Printed 1/	7/2020, 8:55 AM	
<u>Constituent</u>	<u>Well</u>	Upper Lim.	Lower Lim.	<u>Date</u>	Observ.	Sig.	Bg N	%NDs	<u>Transform</u>	<u>Alpha</u>	Method
Boron (ug/l)	MW-3	57.21	n/a	5/28/2019	51	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-4	1734	n/a	5/28/2019	980	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-5	5700	n/a	5/28/2019	280	No	8	0	n/a	0.02144	NP Intra (normality)
Boron (ug/l)	MW-6	60.62	n/a	5/28/2019	52	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-8	596.7	n/a	5/28/2019	540	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-3	25.46	n/a	5/28/2019	17	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-4	95.25	n/a	5/28/2019	70	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-5	240	n/a	5/28/2019	110	No	8	0	n/a	0.02144	NP Intra (normality)
Calcium (mg/l)	MW-6	49.29	n/a	5/28/2019	40	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-8	101.7	n/a	5/28/2019	100	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-3	2.565	n/a	5/28/2019	1.3	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-4	18.69	n/a	5/28/2019	11	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-5	17.45	n/a	5/28/2019	10	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-6	3.083	n/a	5/28/2019	2.5	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-8	58.72	n/a	5/28/2019	53	No	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-3	0.4819	n/a	5/28/2019	0.125ND	No	8	12.5	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-4	0.259	n/a	5/28/2019	0.125ND	No	8	87.5	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-5	0.255	n/a	5/28/2019	0.125ND	No	8	87.5	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-6	0.331	n/a	5/28/2019	0.125ND	No	8	75	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-8	0.25	n/a	5/28/2019	0.125ND	No	8	100	n/a	0.02144	NP Intra (NDs) 1 of 2
pH (S.U.)	MW-3	7.189	6.363	5/28/2019	6.4	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-4	7.529	7.291	5/28/2019	7.3	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-5	7.078	6.697	5/28/2019	6.9	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-6	7.075	6.575	5/28/2019	6.7	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-8	7.285	7.018	5/28/2019	7.1	No	8	0	No	0.001253	Param Intra 1 of 2
Sulfate (mg/l)	MW-3	33.73	n/a	5/28/2019	20	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-4	147.6	n/a	5/28/2019	75	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-5	484.6	n/a	5/28/2019	190	No	8	0	sqrt(x)	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-6	44.8	n/a	5/28/2019	30	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-8	131.1	n/a	5/28/2019	130	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-3	191.6	n/a	7/23/2019	140	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-4	407.2	n/a	7/23/2019	340	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-5	577.5	n/a	7/23/2019	480	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-6	250.2	n/a	7/23/2019	180	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-8	448	n/a	7/23/2019	420	No	8	0	No	0.002505	Param Intra 1 of 2

Within Limit Boron

Intrawell Parametric



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

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

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Within Limit

Boron
Intrawell Non-parametric

MW-5 background

4800

4800

Amulia = 5700

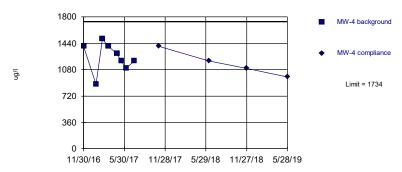
11/30/16 5/30/17 11/28/17 5/29/18 11/27/18 5/28/19

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.

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Within Limit Boron

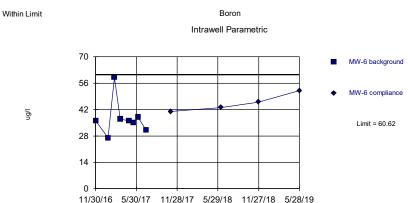
Intrawell Parametric



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

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

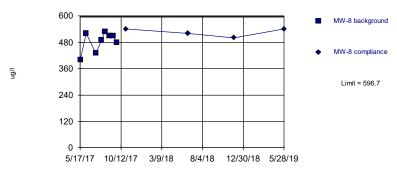
Sanitas™ v.9.6.24 Sanitas software licensed to GREDELL Engineering only. UG



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 = 0.0052055.



Intrawell Parametric

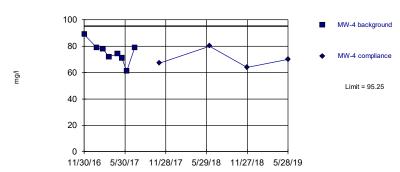


Background Data Summary: Mean=483.8, Std. Dev.=45.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8712, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0052055.

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

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Within Limit Calcium
Intrawell Parametric

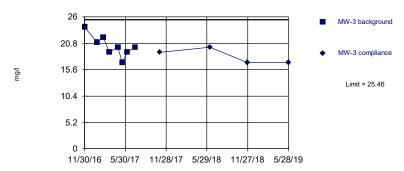


Background Data Summary: Mean=75.38, Std. Dev=8.088, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9559, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limit Calcium

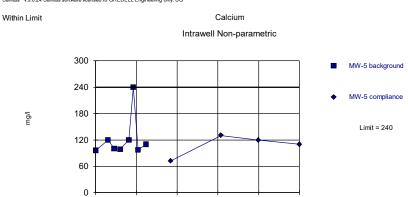




Background Data Summary: Mean=20.25, Std. Dev=2.121, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9723, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005505.

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

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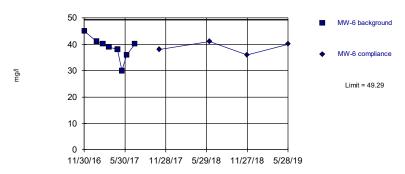


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient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

11/30/16 5/30/17 11/28/17 5/29/18 11/27/18 5/28/19



Intrawell Parametric

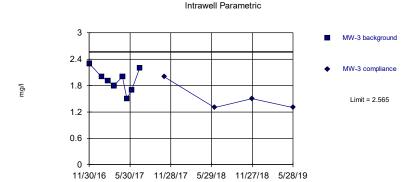


Background Data Summary: Mean=38.63, Std. Dev.=4,34, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9284, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

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Within Limit Chloride

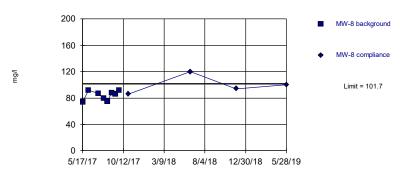


Background Data Summary: Mean=1.925, Std. Dev.=0.2605, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9816, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limit Calcium

Intrawell Parametric

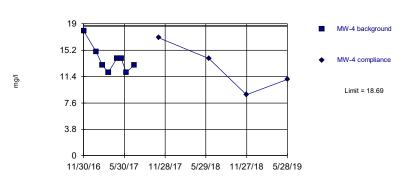


Background Data Summary: Mean=84.25, Std. Dev=7.106, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8885, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005505.

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

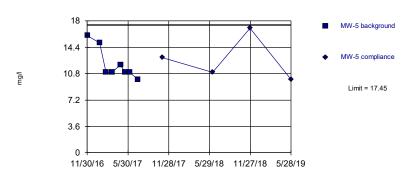
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Background Data Summary: Mean=13.88, Std. Dev.=1.959, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8612, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0052055.



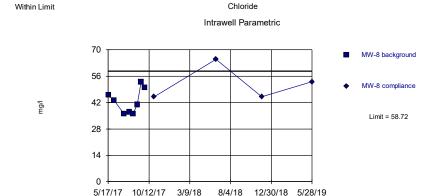


Intrawell Parametric

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

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

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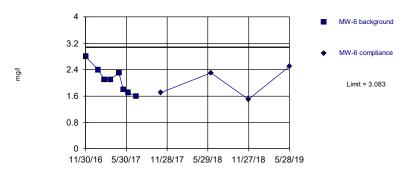


Background Data Summary: Mean-42.75, Std. Dev.=6.497, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9101, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Intrawell Parametric



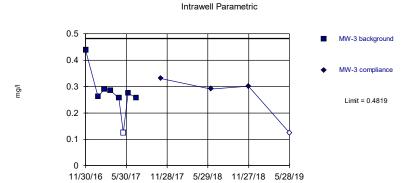
Background Data Summary: Mean=2.1, Std. Dev=0.4, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III

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

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Within Limit Fluoride

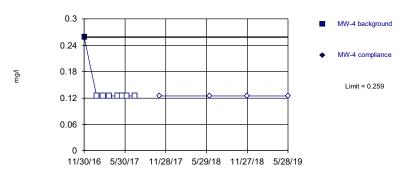


Background Data Summary: Mean=0.2736, Std. Dev.=0.08475, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8446, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha =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

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Within Limit Fluoride





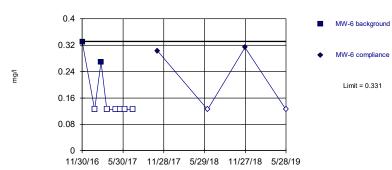
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not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

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

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Hollow symbols indicate censored values.

Within Limit Fluoride
Intrawell Non-parametric



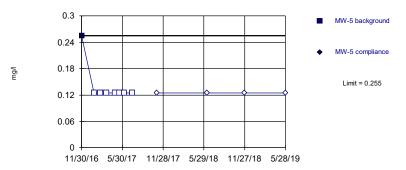
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality; data were not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

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Hollow symbols indicate censored values.

Within Limit Fluoride

Intrawell Non-parametric

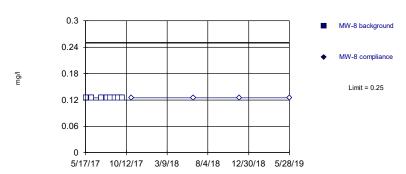


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not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

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

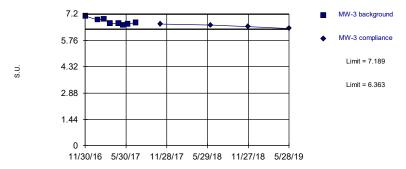
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Within Limit Fluoride
Intrawell Non-parametric



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.

Intrawell Parametric



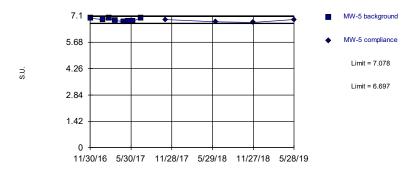
Background Data Summary: Mean=6.776, Std. Dev.=0.1681, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8856, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

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Within Limits pH

Intrawell Parametric

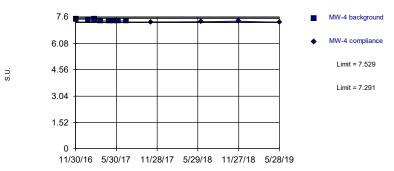


Background Data Summary: Mean=6.888, Std. Dev=0.07741, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8471, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limits pH



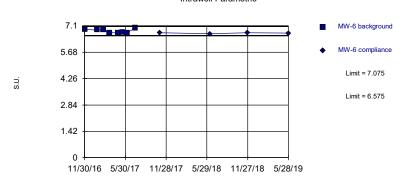


Background Data Summary: Mean=7.41, Std. Dev.=0.0484, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7828, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005505.

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

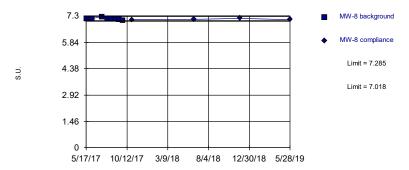
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Within Limits pH
Intrawell Parametric



Background Data Summary: Mean=6.825, Std. Dev.=0.1018, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8714, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0052055.

Intrawell Parametric



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

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

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Within Limit

Sulfate

Intrawell Parametric

MW-4 background

MW-4 compliance

Limit = 147.6

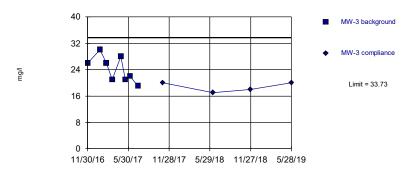
11/30/16 5/30/17 11/28/17 5/29/18 11/27/18 5/28/19

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 (e=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limit Sulfate

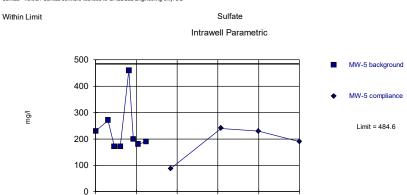
Intrawell Parametric



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 = 0.005505.

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

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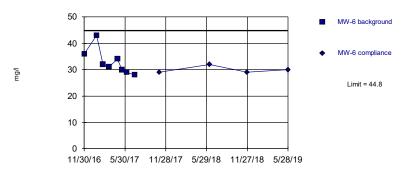


Background Data Summary (based on square root transformation): Mean=15.06, Std. Dev.=2.829, n=8. Insufficient data to test for seasonality: data were not deseasonalityd: Abapiro Wilk @alpha = 0.01, calculated = 0.7511, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report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

11/30/16 5/30/17 11/28/17 5/29/18 11/27/18 5/28/19

Within Limit Sulfate

Intrawell Parametric

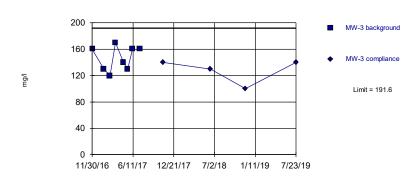


Background Data Summary: Mean=32.88, Std. Dev=4.853, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.801, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0052055.

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

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Within Limit Total Dissolved Solids
Intrawell Parametric

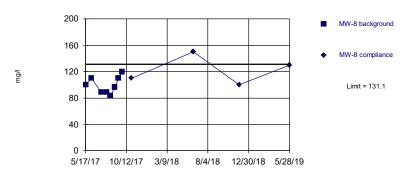


Background Data Summary: Mean=146.3, Std. Dev_=18.47, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8903, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limit Sulfate

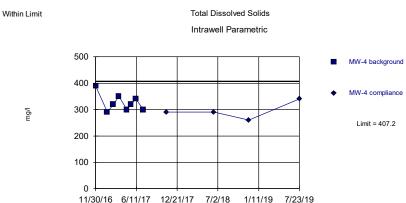
Intrawell Parametric



Background Data Summary: Mean=99.63, Std. Dev=12.79, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9458, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005505.

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

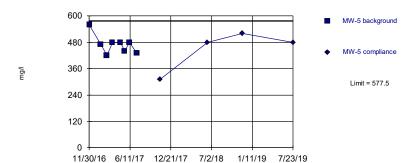
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Background Data Summary: Mean=326.3, Std. Dev.=32.92, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9148, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005055.

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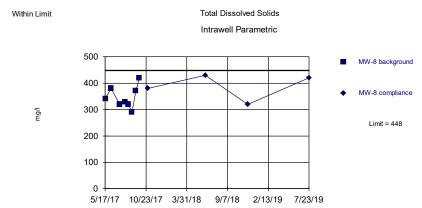




Background Data Summary, Mean=470, Std. Dev.=43.75, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8718, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

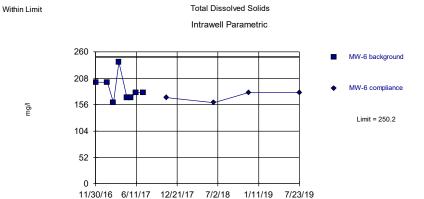
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Background Data Summary: Mean=346.3, Std. Dev.=41.38, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9539, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

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

Prediction Limit Analysis Run 1/7/2020 8:54 AM View: SBMU-SPS Appendix III

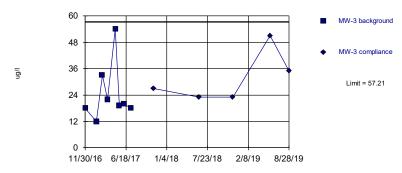
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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

	SBMU-Si	keston Power Sta	tion Client: GF	GREDELL Engineering Data: SBMU-SPS EDD File 09-28				DD File 09	-28-17 Printed 1/	7/2020, 8:57 AM	
<u>Constituent</u>	<u>Well</u>	Upper Lim.	Lower Lim.	<u>Date</u>	Observ.	Sig.	Bg N	%NDs	<u>Transform</u>	<u>Alpha</u>	Method
Boron (ug/l)	MW-3	57.21	n/a	8/28/2019	35	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-4	1734	n/a	8/28/2019	1100	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-5	5700	n/a	8/28/2019	410	No	8	0	n/a	0.02144	NP Intra (normality)
Boron (ug/l)	MW-6	60.62	n/a	8/28/2019	54	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-8	596.7	n/a	8/28/2019	460	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-3	25.46	n/a	8/28/2019	15	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-4	95.25	n/a	8/28/2019	83	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-5	240	n/a	8/28/2019	110	No	8	0	n/a	0.02144	NP Intra (normality)
Calcium (mg/l)	MW-6	49.29	n/a	8/28/2019	44	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-8	101.7	n/a	8/28/2019	93	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-3	2.565	n/a	8/28/2019	1.1	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-4	18.69	n/a	8/28/2019	18	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-5	17.45	n/a	8/28/2019	16	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-6	3.083	n/a	8/28/2019	1	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-8	58.72	n/a	8/28/2019	55	No	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-3	0.4819	n/a	8/28/2019	0.125ND	No	8	12.5	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-4	0.259	n/a	8/28/2019	0.125ND	No	8	87.5	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-5	0.255	n/a	8/28/2019	0.125ND	No	8	87.5	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-6	0.331	n/a	8/28/2019	0.125ND	No	8	75	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-8	0.25	n/a	8/28/2019	0.125ND	No	8	100	n/a	0.02144	NP Intra (NDs) 1 of 2
pH (S.U.)	MW-3	7.189	6.363	8/28/2019	6.4	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-4	7.529	7.291	10/23/2019	7.3	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-5	7.078	6.697	8/28/2019	6.8	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-6	7.075	6.575	8/28/2019	6.7	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-8	7.285	7.018	8/28/2019	7.1	No	8	0	No	0.001253	Param Intra 1 of 2
Sulfate (mg/l)	MW-3	33.73	n/a	8/28/2019	18	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-4	147.6	n/a	8/28/2019	110	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-5	484.6	n/a	8/28/2019	190	No	8	0	sqrt(x)	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-6	44.8	n/a	8/28/2019	24	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-8	131.1	n/a	8/28/2019	110	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-3	191.6	n/a	8/28/2019	140	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-4	407.2	n/a	8/28/2019	300	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-5	577.5	n/a	8/28/2019	480	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-6	250.2	n/a	8/28/2019	200	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-8	448	n/a	8/28/2019	360	No	8	0	No	0.002505	Param Intra 1 of 2

Within Limit Boron

Intrawell Parametric



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

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

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11/30/16 6/18/17

Within Limit

Boron
Intrawell Non-parametric

MW-5 background

4800

4800

MW-5 compliance

Limit = 5700

1/4/18

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.

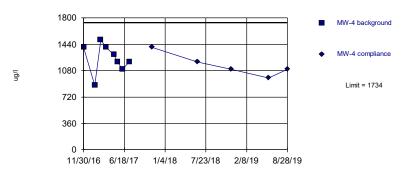
7/23/18 2/8/19

8/28/19

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Within Limit Boron

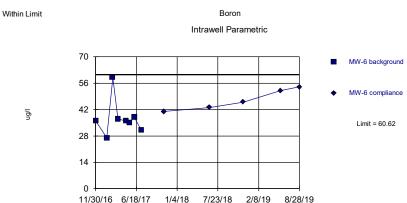
Intrawell Parametric



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

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

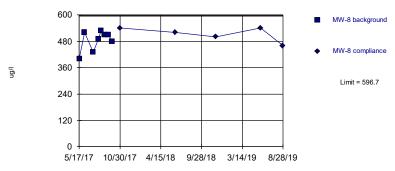
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Background Data Summary: Mean=37.38, Std. Dev.=9.456, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7684, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005055.



Intrawell Parametric

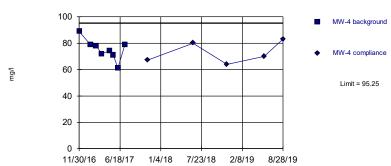


Background Data Summary: Mean=483.8, Std. Dev.=45.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8712, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0052055.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
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Within Limit Calcium
Intrawell Parametric

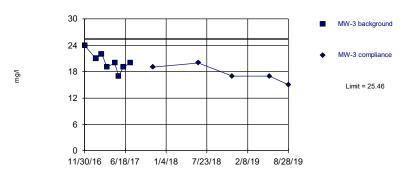


Background Data Summary: Mean=75.38, Std. Dev.=8.088, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9559, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limit Calcium





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 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
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Within Limit

Calcium

Intrawell Non-parametric

MW-5 background

MW-5 compliance

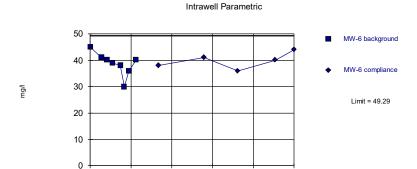
Limit = 240

11/30/16 6/18/17 1/4/18 7/23/18 2/8/19 8/28/19

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.



11/30/16 6/18/17



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.

7/23/18

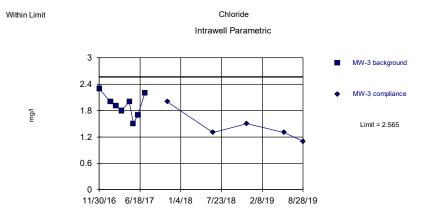
2/8/19

8/28/19

1/4/18

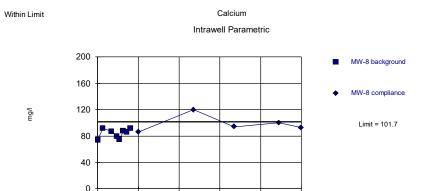
Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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

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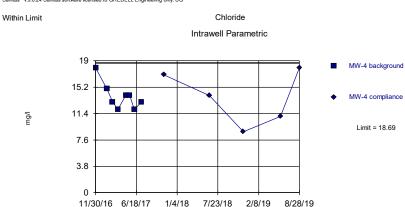
Background Data Summary: Mean=84.25, Std. Dev=7.106, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8885, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005505.

5/17/17 10/30/17 4/15/18 9/28/18 3/14/19 8/28/19

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III

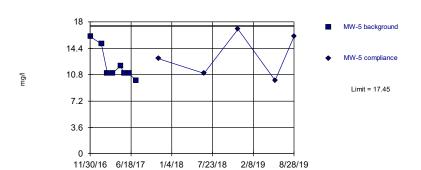
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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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 = 0.0052055.



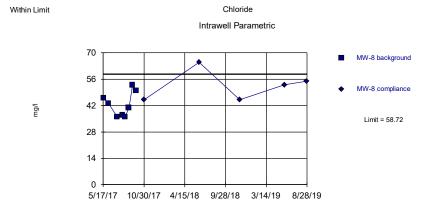


Intrawell Parametric

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

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

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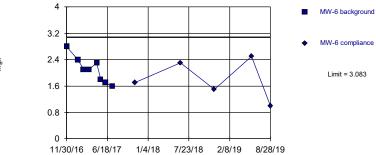


Background Data Summary: Mean=42.75, Std. Dev=6.497, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9101, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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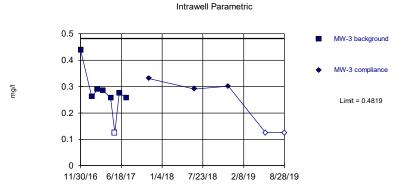


Background Data Summary: Mean=2.1, Std. Dev=0.4, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

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Within Limit Fluoride

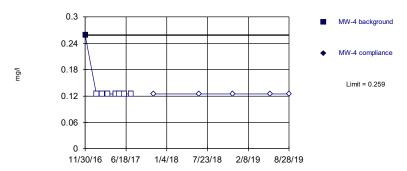


Background Data Summary: Mean=0.2736, Std. Dev.=0.08475, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8446, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha =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

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Within Limit Fluoride





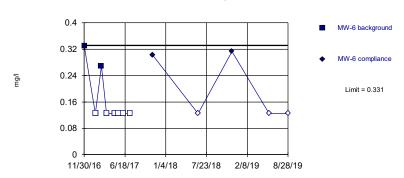
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not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

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

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Hollow symbols indicate censored values

Fluoride Within Limit Intrawell Non-parametric

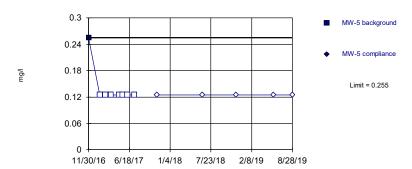


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not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

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Within Limit

Fluoride Intrawell Non-parametric

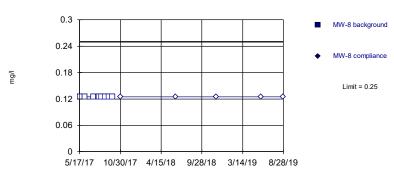


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not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

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

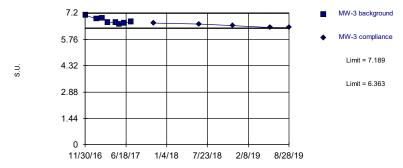
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Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.04242. Individual comparison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

Intrawell Parametric



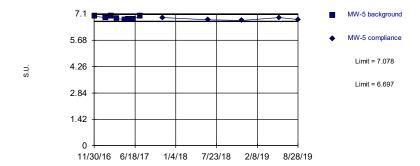
Background Data Summary: Mean=6.776, Std. Dev.=0.1681, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8856, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

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Within Limits pH

Intrawell Parametric

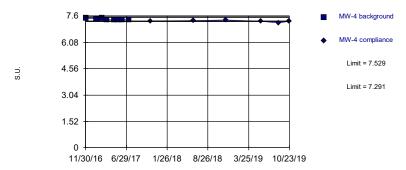


Background Data Summary: Mean=6.888, Std. Dev.=0.07741, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8471, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limits pH

Intrawell Parametric



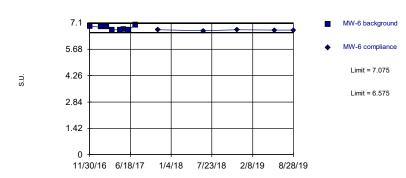
Background Data Summary: Mean=7.41, Std. Dev.=0.0484, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7828, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 1/7/2020 8:56 AM View: SBMU-SPS Appendix III

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

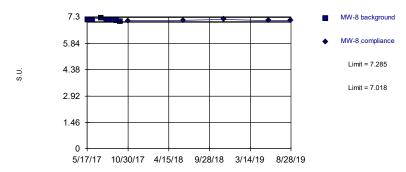
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Within Limits pH
Intrawell Parametric



Background Data Summary: Mean=6.825, Std. Dev=0.1018, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8714, critical = 0.749. Kappa = 2.458 (e=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0052055.





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

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

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Within Limit

Sulfate
Intrawell Parametric

MW-4 background

MW-4 compliance

Limit = 147.6

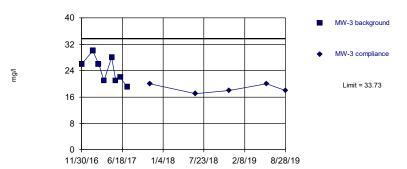
11/30/16 6/18/17 1/4/18 7/23/18 2/8/19

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.

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Within Limit Sulfate

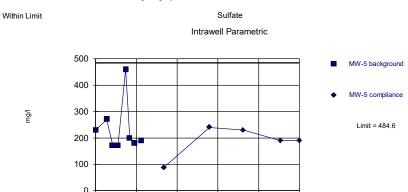
Intrawell Parametric



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 = 0.005505.

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

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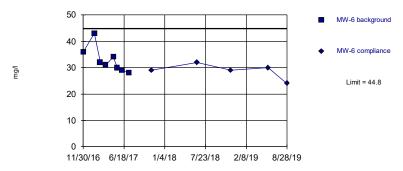
Background Data Summary (based on square root transformation): Mean=15.06, Std. Dev=2.829, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.7511, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

8/28/19

11/30/16 6/18/17 1/4/18 7/23/18 2/8/19

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 = 0.801, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0052055.

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

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Within Limit Total Dissolved Solids
Intrawell Parametric

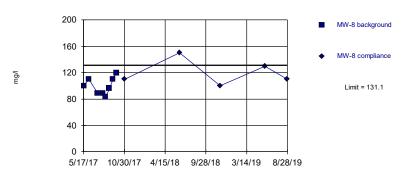


Background Data Summary: Mean=146.3, Std. Dev_=18.47, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8903, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limit Sulfate

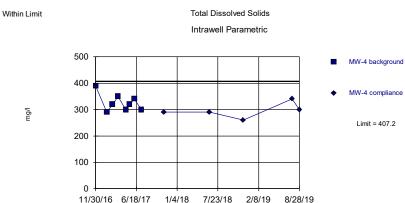
Intrawell Parametric



Background Data Summary: Mean=99.63, Std. Dev=12.79, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9458, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005505.

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

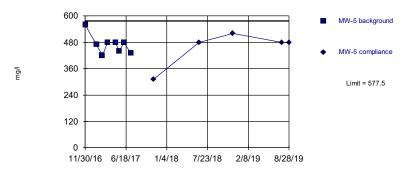
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Background Data Summany: Mean=326.3, Std. Dev=32.92, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9148, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event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

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

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

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Within Limit Total Dissolved Solids
Intrawell Parametric

MW-8 background

MW-8 compliance

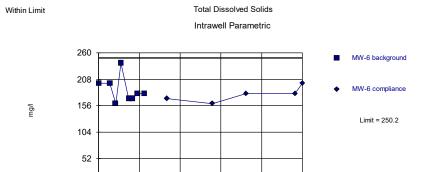
Limit = 448

Background Data Summary: Mean=346.3, Std. Dev.=41.38, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9539, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

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11/30/16 6/18/17 1/4/18



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.

2/8/19

8/28/19

7/23/18

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