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GREDELL Engineering Resources, Inc.

Sikeston Power Station 2020 Annual Groundwater Monitoring Report for

Bottom Ash Pond For Compliance with USEPA 40 CFR 257.90(e)



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d of Municipal Litilities



January 29, 2021

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<u>Prepared for:</u> Sikeston Board of Municipal Utilities 1551 West Wakefield Avenue Sikeston, Missouri 63801

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Table of Contents

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

List of Tables

- Table 1 Groundwater Monitoring Network Summary
- Table 2 Historical Groundwater Level Summary
- Table 3 Water Level and Field Parameter Summary
- Table 4 Groundwater Monitoring Constituents
- Table 5 Relative Percent Difference Summary
- Table 6 Intra-Well Prediction Limit Summary

List of Figures

- Figure 1 Groundwater Contour Map February 18, 2020
- Figure 2 Groundwater Contour Map July 21, 2020

List of Appendices

- Appendix 1 Field Sampling Notes
- Appendix 2 Laboratory Analytical Results
- Appendix 3 Laboratory Quality Assurance/Quality Control Data
- Appendix 4 Groundwater Quality Data Base
- Appendix 5 Statistical Power Curve
- Appendix 6 Time Series Plots
- Appendix 7 Box and Whiskers Plots
- Appendix 8 Prediction Limit Charts

1.0 INTRODUCTION

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

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

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

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

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

2.0 GROUNDWATER MONITORING SYSTEM

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

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

3.0 FIELD SAMPLING SUMMARY

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

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

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

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

3.1 Field Quality Assurance/Quality Control

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

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

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

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

4.0 ANALYTICAL SUMMARY

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

4.1 Laboratory Quality Control

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

4.2 **Precision and Accuracy**

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

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

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

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

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

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

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

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

4.3 Representativeness

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

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

4.4 Comparability

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

4.5 Completeness

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

5.0 STATISTICAL ANALYSIS

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

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

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

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

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

5.1 Statistical Results

February 18, 2020 Sampling Event

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

July 21, 2020 Sampling Event

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

6.0 SUMMARY

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

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

7.0 LIMITATIONS

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

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

8.0 **REFERENCES**

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

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

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

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

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

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

TABLES

Table 1Groundwater 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.

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	293.20
06/13/18	297.33	294.93	295.60	296.47	295.02
11/26/18	295.63	293.76	294.27	294.91	293.88
12/26/18	296.04	294.19	294.64	295.36	294.31
01/08/19	296.38	294.62	295.17	295.77	294.73
02/05/19	296.73	294.99	295.46	296.06	295.07
02/22/19	298.35	296.58	297.33	297.94	296.79
03/27/19	298.51	296.05	296.72	297.69	296.15
04/16/19	298.93	296.58	297.31	298.22	296.67
05/14/19	299.25	296.36	297.10	298.21	296.45
05/28/19	298.95	296.01	296.80	297.91	296.16
06/12/19	298.82	296.00	296.71	297.82	296.10
07/17/19	298.38	295.84	296.46	297.44	295.97
07/24/19	298.41	295.97	296.66	297.57	296.13
08/14/19	297.80	295.03	295.70	296.76	295.12
08/28/19	297.55	294.81	295.47	296.51	294.91
09/16/19	297.22	294.51	295.20	296.20	294.63
10/10/19	296.84	294.29	294.89	295.85	294.36
10/22/19	296.80	294.40	295.00	295.88	294.50
11/04/19	297.34	295.24	295.80	296.57	295.32
02/18/20	299.00	296.50	297.28	298.22	296.66
03/30/20	300.09	297.66	298.48	299.40	297.81
07/21/20	298.35	295.16	295.98	297.19	295.32

NOTES:

1. Refer to Figures 1 and 2 for monitoring well locations.

2. Refer to Sikeston Power Station On-Site Operating Record for well construction diagrams.

3. NM - Not Measured.

4. Maximum and minimum groundwater elevations are shaded.

Table 3Water Level and Field Parameter SummaryFebruary 18, 2020

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	9.55	9.55	300	4,860	6.4
MW-4	Downgradient	9.11	9.11	300	2,680	7.4
MW-5	Downgradient	8.63	8.63	300	2,300	6.8
MW-6	Upgradient	9.50	9.50	300	5,860	6.7
MW-8	Downgradient	8.11	8.11	300	3,360	7.2

Water Level and Field Parameter Summary July 21, 2020

Monitoring Well I.D.	Hydraulic Position	Initial Water Level (ft, BTOC 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	10.20	10.20	300	4,020	6.5
MW-4	Downgradient	10.45	10.45	300	3,400	7.4
MW-5	Downgradient	9.93	9.93	300	4,860	6.8
MW-6	Upgradient	10.53	10.53	300	3,740	6.7
MW-8	Downgradient	9.45	9.45	300	3,000	7.1

NOTES:

1. Sequence of sampling is MW-3, MW-6, MW-5, MW-8, MW-4.

2. BTOC: Below Top of Casing

3. Purge calculations based on 1/4" ID tubing and complete evacuation of single tubing volume.

4. ml: milliliter

5. S.U.: Standard Unit. Data shown for pH at MW-4 on July 21 is from August 4, 2020 re-sample event.

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 5Relative Percent Difference Summary -February 18, 2020

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

Relative Percent Difference Summary -July 21, 2020

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

NOTES:

- 1. S.U. = 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:

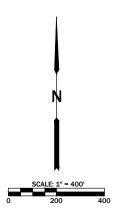
1. Prediction limits for MW-3 through MW-6 calculated using background data set spanning November 2016 to

July 2017. Prediction limits for MW-8 calculated using background data set spanning May 2017 to September 2017.

FIGURES



P



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

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

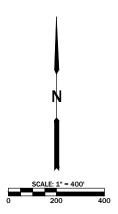
ID	GROUNDWATER ELEVATION	CASING ELEVATION	NORTHING	EASTING
3	299.00	308.55	381130.00	1079946.62
ŀ	296.50	305.61	380804.62	1077766.95
5	297.28	305.91	379858.94	1078477.85
6	298.22	307.72	379874.77	1079384.36
3	296.66	304.77	380311.20	1077940.08

THE GEOLOGIST WHO REVIEWED AND APPROVED THIS REPORT ASSUMES RESPONSIBILITY ONLY FOR GEOLOGIC NITERPRETATIONS OF DATA APPEANIG ON THE PAGE AND DISCLAIMS PURSUANT TO SECTION 256.456 RSMO ANY RESPONSIBILITY FOR ALL OTHER DAMS, SPECIFICATIONS, ESTIMATES, REPORTS OR OTHER DOCUMENTS OR INSTRUMENTS NOT PREPARED UNDER THE SUPERVISION OF THE GEOLOGIST RELATING	TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS FIGURE REFERS.
AP	SHEET # 1 OF 1
FIGURE 1 GROUNDWATER CONTOUR MAP FEBRUARY 18, 2020	CHECKED APPROVED DATE SCALE PROJECT NAME THE AME TALENAME 242/2020 DATE SCALE STRETT AME TALENAME TALENAME TALENAME 242/2020 1 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1
FIG GROUNDWATI FEBRUAI	PROJECT NAME SIKESTON/GWMAP/BAP
	SCALE AS NOTED
SIKESTON POWER STATION BOTTOM ASH POND 2020 ANNUAL GROUNDWATER MONITORING & REPORT	L2/2020
SIKESTON POWER STATION BOTTOM ASH POND 020 ANNUAL GROUNDWATE MONITORING & REPORT	CHECKED APPROVED DATE KE MCC 12/2020
POWE M ASH JAL GR RING 8	
ESTON BOTTO ANNU NITOI	CP
SIKE 2020 MC	URVEYED DESIGNED DRAWN NA NA CP
	SURVEYE NA
GREDELL Engineering Resources, Inc. ENVIRONMENTAL ENGINEERING LAND - AIR - WATER 1505 East High Street Telephone: (573) 659-9078	Veering License



Σ

WELL ID MW-3 MW-4 MW-5 MW-6 MW-8



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

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

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

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IAP	SHEET # 1 OF 1
FIGURE 2 GROUNDWATER CONTOUR MAP JULY 21, 2020	FILE NAME GWCONT BAP 07-2020
FIC GROUNDWATI JULY	4EXED DATE SCALE FROLECT NAME RLE NAME RLE NAME SHET # KE MCC 12/2020 AS NOTED SIKESTON/GWMAP/BAP GWCONT BAP 07/2020 1.0F.1.
	SCALE S NOTED
SIKESTON POWER STATION BOTTOM ASH POND 2019 ANNUAL GROUNDWATER MONITORING & REPORT	CHECKED APPROVED DATE SCALE KE MCC 12/2020 AS NOTED SIK
SIKESTON POWER STATION BOTTOM ASH POND 019 ANNUAL GROUNDWATE MONITORING & REPORT	MCC 1
POWE M ASH AL GR(RING &	CHECKED /
STON SOTTO ANNU, NITOF	CP
SIKE E 2019 , MO	URVEYED DESIGNED DRAWN NA NA CP
	SURVEYED NA
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Appendix 1

Field Sampling Notes

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

	Field Instrumentation Calibration Log																						
	Facility: SBMU SPS CCR Groundwater Sampling Calibrated by: ASAish Rottel																						
1	Field Instruments: In-Situ smarTROLL Field Meter					HF scientific, inc. Micro TPI Field Portable Turbidimeter																	
	s/N #: 474247					S/N #: 201607366																	
	Date Time pH pH Measure- Standards ments (µS/cm)		e	Specific Conductance Mossurement Standard (mV)		Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)		ygen	Turbidity Standards (NTU) (NTU)		Measurements											
>			4.00	=	4-0		113 =	148.4	Temperature (°C)	=	21.28		229.7	Temperature (°C)	=	20.40	0.02	п	0.02				
of Day	22-18		7.00	=	7.6				Standard (mV) =			1		Tap Water Source	=	Sikesso	10.0	#	10.0				
Beginning of Day Calibration	-3052	0742	10.00	=	b.0	1413				= 2.	229.	=		Barometric Pressure (mm/Hg)	=	1005.6	1000	H	1000.0				
B										~.0								Measurement	=	(00.0			
×			4.00	=	4.0				Temperature (°C)	=	18.35			Temperature (°C)	_	13.49	0.02	=	0.04				
Chec	69-18	1454	7.00	=	7.0									Tap Water Source	=	City	10.0	=	9.94				
End of Day Check	-2023	•*54	10.00	=	9.9	1413	=	1415.5	Standard (mV)	30	229.0	:=	२२९.५	Barometric Pressure (mm/Hg)		1012.4	1000	=	972.8				
						(-)									Measurement	=	1037			Te ves			

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

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

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

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

 Date:
 2-18-2082

 By:
 ASAR ALT

Monitoring Well Field Inspection

Facility: <u>SBMU SPS - CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW3</u> Name (Field Staff): <u>A Patel D Dillingham</u>
Date: 02-18-2020
Access: Accessibility: Good / Fair Poor
Well clear of weeds and/or debris?: Yes 🗾 No
Well identification clearly visible?: Yes 🗾 No
Remarks:
Concrete Pad: Good <u>I</u> Inadequate
Depressions or standing water around well?: Yes No
Remarks:
<u>Protective Outer Casing</u> : Material = $4^{"} \times 4^{"}$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good _/ Damaged
Condition of Locking Cap: Good Line Damaged
Condition of Lock: Good <u>C</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 = <u>1/4</u> " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes No
Remarks:
Field Certification Ashish Part Lab Tech 02-18-2020 Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

Field Sampling Log

Monitor	ing Well ID:	Mw	<u>3</u> Fac	ility: SBML	J Sikeston P	ower Static	on - Groundw	ater Monitor	ing		
Initial Wate	r Level (feet	btoc):	9.55	1		Date: 0	2-18-:	2020			
Initial Grou	ndwater Elev	vation (NAVD	88):			Air Pressu	re in Well?	Y /			
PURGE IN	FORMATIO										
Date:	2-1.	8-202	0								
Name (San	nple Collecte	or):	0,11	ingha	.m						
Method of	Vell Purge:	Low Flow	Perstaltic F	Pump	Dec	dicated Tub	bing?	Y) / N			
Time Purgi	ng Initiated:	C	902		One	、 e (1) Well \	Volume (mL)		NA		
Beginning	Water Level	(feet btoc):	9.	55	Tot	al Volume	Purged (mL)		486	0	
1					We	I Puraed 1	Fo Dryness?		Y / (1)		
		btoc):		<u>.</u>		-	fter Sampling			āS	
							.e., pump is c	· · · · · · · · · · · · · · · · · · ·			
Casing Dia	meter (feet)	2" Sch 4	JPVC		Tim	ne Samplin	g Completed	l: ,	693	1	
PURGE S	TABILIZATIO	ON DATA					1				_
Time	Purge	Cumulative Volume	Temp	Specific Conductance	Dissolved Oxygen	pН	Oxidation Reduction	Turbidity	Water Level	Notes (e.g., opacity	,
ų	Rate (mL/min)	(mL)	(°C)	(µS/cm)	(mg/L)	(S.U.)	Potential (mV)	(NTU)	(feet btoc)	color, odor)	
0904		360	14.95	202.33	210	7.7	71.8	31.84		Red FLAKE, S	dor
6906	290	943	14.42	203.21	1.89	7.1	69.4	19.78	9.55	N N	/3 1)
0908	280	1500	RI.31	203.50	1.74	6.8	67.3	14.64	9.55		1/
010	285	2070	1430	203.95	1.60	6.7	65.4	11.55	9.55		17
0912	275	2620	14.27	203.44	1.52	6.5	63.4	10.48		"	
0914	270	3160	14. 23	204.45	1.40	6.5	61.8	9.53	9.55		0 1)
0916	280	3720	1422	204.78	1.35	6.4	60.5	6.83	9.55	1.	
09 18	300	4320	14.19	205.68	1:27	6.4		5.94	9.55		
0920		4860	14.17	207.56	1.22	6.4	58.6	6.34	9.55	1	1)
											_
							-				
				ļ							
			11	<u> </u>							

Field Sampling Log

Facility:	SBMU Sikeston F	Monitoring We		NW3					
Sampling Informa	tion:								
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N		
Water Level @ Sa	mpling (feet btoc)	9.55							
Monitoring Event:	Annual ()	Semi-Annual	() Quarte	rly() M	lonthly ()	Other			
Final Purge Stabliz	ation Sampling D	ata:					r		
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)		
02-17-202	270	14.17	207.56	. ৯২	6.4	587.6	6.34		
See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, ii	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:			1.0.1.1.1					
Weather Condition	ns @ time of sam	pling: <u>C((</u>	over, m	VINGY					
Sample Character	istics:	lorless,	cleur, J	dorless					
Sample Collection		Per SAP		-	83				
oumpre concentration						2.0			
Comments and Ol	bservations:			1118 - 1940) - 42	59 × ≈	<u>87</u>			
Data for	- APP II		3 (M)	Ť.					
			3.e						
			i șt		-				
7				0					
a <u></u>									

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

Date: 2-18-2020By: AST.32 Porel Title: Las Tech

Page 2 of 2

Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Groundwater Monitoring	
Monitoring Well ID: <u>MW6</u> Name (Field Staff): <u>A Patel</u> D Dillingh	â
Name (Field Starr): $n + a + e + b + b + b + b + b + b + b + b + b$	
Access: Accessibility: Good <u>Fair</u>	Poor
Well clear of weeds and/or debris?: Yes 🗠 No	-
Well identification clearly visible?: Yes <u></u> No	_
Remarks:	
Concrete Pad: Condition of Concrete Pad: Good L	Inadequate
Depressions or standing water around well?: Yes	No
Remarks:	
<u>Protective Outer Casing</u> : Material = $4^{"} \times 4^{"}$ Steel Hinged Casing	ng with Hasp
,	
Condition of Locking Cap: Good Damag	led
Condition of Lock: Good 🗠 Damag	led
Condition of Weep Hole: Good L Damag	jed
Remarks:	
Well Riser: Material = <u>2" Diameter, Schedule 40 PVC, Flush Threa</u>	ded
Condition of Riser: Good 🖌 Damag	jed
Condition of Riser Cap: Good 👉 Damag	ed
Measurement Reference Point: Yes No	_
Remarks:	
Dedicated Purging/Sampling Device: Type = <u>1/4</u> " ID Semi-Rigid Poly Silicone Tubing	vethylene & 0.170" ID Flexible
Condition: Good V Damaged Missing	9
Remarks:	
Monitoring Well Locked/Secured Post Sampling?: Yes	No
Remarks:	
Field Certification Ashish Pudel Las Tech	02-18-2020
Signed Title	Date

Prepared by: GREDELL Engineering Resources, Inc.

Field Sampling Log

Monitori	ng Well ID:	Mh	16 Facil	lity: SBMU	Sikeston Po	ower Statio	n - Groundw	ater Monitor	ing	
Initial Water	Level (feet	btoc):	9.50	38		Date: 0	2-18-	2020		5
Initial Grour	idwater Elev	vation (NAVD	88):			Air Pressur	e in Well?	Y / 🕤		
PURGE INF]
Date:	02-18	-2020								
Name (Sam	ple Collecto	or):	pilli	ngha	M					
Method of V	Vell Purge:	Low Flow	Perstaltic P	ump	Dec	licated Tub	oing?	Y) / N		
Time Purgir	ng Initiated:	1	003		One	e (1) Well \	/olume (mL):		NA	
Beginning V	Vater Level	(feet btoc):	9.0	50	Tota	al Volume	Purged (mL)	:	586	0
Beginning	Groundwate	r Elevation (N	IAVD88):		We	II Purged T	o Dryness?		YIN	
		otoc):	_				fter Sampling		9.5	2
0.0		2" Sch 40				(i.	e., pump is c	off)	1	_ /
Casing Dia					Tim	e Samplin	g Completed	:	10	34
PURGE ST	ABILIZATIO	ON DATA					Oxidation		14/-4	Notes
Time	Purge Rate	Cumulative Volume	Temp	Specific Conductance	Dissolved Oxygen	рН (S.U.)	Reduction Potential	Turbidity (NTU)	Water Level	(e.g., opacity,
	(mL/min)	(mL)	(°C)	(µS/cm)	(mg/L)		(mV)		(feet btoc)	color, odor)
1005		380	12.16	443.31		8.6	-59.9	35.58		Olear, nodoz
1007	270	9 20	13.72	422.60	1.11	6.6	-61.1	31,49	9.50	11 21
1000	270	1460	14.24	367.54	1.17	6.7	-51.9	21.75	9.50	11 M
(DLI	280	2020	14.35	372.79	1.10	6.7	-52.0	17.11	9.50	N. V
1013	210	2560	14.40	375.28	1.36	6.7	C.52~	9.08	9.50	
1015	270	3100	14.41	377.48	1.10	6.7	- \$3.0	9.25	9.50	4
	280	3662	14.46		0.95	6.7	-54.6	3.42	9.50	· · · · · ·
1019	280	4220	14.49	384.55	0.97	6.7	- 53.7		1.35	11 h
1021	270	4762	14.50	383.27	0.93	6.7	-54.0	6.26	9.55	
1023		5320	14.49	368.08	0.91	6.7	-54.2		9.50	u n
1025	270	5860	and the second diversion of th	390.27		6.7	-54.5	5.79	9.53	LL IT
							1.6			

Facility:	SBMU Sikeston	Power Station - (CCR Groundwa	iter Monitoring	Monitoring We		~ 6
Sampling Informa	ition:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	9.5	C				
Monitoring Event:	Annual ()	Semi-Annual	I() 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)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
02-18-2220 1025	270	14.54	392.27	0.81	6.7	-54.5	5.79
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	libration log of da roll Multi-Probe Fi	ield Meter (Temp	erature, Specifi	ing instruments: ic Conductance, Dissolv	red Oxygen, pH	, Oxidation Redu	uction Potentia
General Informati	ion:			,			
Weather Condition	ns @ time of sam	pling: <u>Clc</u>	hy h	vindy			
Sample Character	istics:	ear, col	orless,	o. torless			i
Sample Collection		Per SAP	/				
Comments and Ot	bservations:					1	
		4		<u>^</u>		<u>e</u> .	
I certify that samp	ling procedures w	vere in accordance	ce with applicat	le EPA and State proto	cols.		

Date:02-18-2020 By: ABLICL Publi

Title: Lab Tech

Page 2 of 2

Prepared by: GREDELL Engineering Resources, Inc.

Facility: <u>SBMU SPS - CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW 5</u> Name (Field Staff): <u>A Patel D Dilling ham</u> Date: 02-18-2020
Accessibility: Good V Fair Poor Well clear of weeds and/or debris?: Yes V No Well identification clearly visible?: Yes V No
Remarks:
Concrete Pad: Good ∠ Inadequate Condition of Concrete Pad: Good ∠ Inadequate Depressions or standing water around well?: Yes No ∠ Remarks: No ∠ No ∠
Protective Outer Casing: Material = <u>4" x 4" Steel Hinged Casing with Hasp</u>
Condition of Protective Casing: Good V Damaged
Condition of Locking Cap: Good V Damaged
Condition of Lock: Good <u>V</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 = <u>1/4</u> " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good 📈 Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes Mo
Remarks:
Field Certification Ashish Rel Las Tech OR -18 - 2020 Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

Monito	ring Well ID:	MW	5 Fac	ility: SBMU	J Sikeston Po	ower Statio	on - Groundw	ater Monitor	ing	
Initial Wate	er Level (feet	btoc):	8.63	ў. ,	- · · · ·	Date: 0	2-18-	2020		
Initial Grou	Indwater Elev	vation (NAVD	88):	75 S		Air Pressu	re in Well?	Y /N		
PURGE IN	IFORMATIO									
Date:		8-2022		5 R	8					
Name (Sa	mple Collect	or):	Dill	ingha	Μ					
Method of	Well Purge:	Low Flow	Perstaltic F	Pump	Dec	licated Tub	oing?	Y) I N		
Time Purging Initiated: 1129 One (1) Well Volume (mL): NA										
Beginning	Water Level	(feet btoc):	8.1	53	Tota	al Volume	Purged (mL)	;	230	00
Beginning	Groundwate	r Elevation (N	IAVD88):		We	II Purged T	o Dryness?	2	Y / N	
Well Total	Depth (feet	btoc): 2	7.16		Wa		fter Sampling e., pump is c		8.6	3
Casing Di	ameter (feet)	: 2" Sch 40) PVC		Tim	,	g Completed		120	/
	TABILIZATI						3			
PURGES	Purge	Cumulative	_	Specific	Dissolved		Oxidation	Turbidibe	Water	Notes
Time	Rate (mL/min)	Volume (mL)	Temp (°C)	Conductance (µS/cm)	Oxygen (mg/L)	рН (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Level (feet btoc)	(e.g., opacity, color, odor)
1131		400	11.34	915.82	1.45	6.8	-46.7	2.56	8.63	clear, no odor
1133		860	13.26	872.82	1.05	6.8	-39.8	1.82	8.63	1 C
1135		1340	13.72	862.98	0.98	6.8	-40.6	1.47	8.63	K 4
1137	243	1820	13.84	864.65	0.94	6.8	-43.1	1.02	8.63	11 1/
1139	240	2300	12.05	871.67	2.81	6.8	-45.2	0.88	8.65	1 y
					~					
				<u> </u>						
11										

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	II ID:M	WS		
Sampling Informa	tion:			×					
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N		
Water Level @ Sai	mpling (feet btoc)	8.63							
Monitoring Event:	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)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)		
02-18-2020	२५०	14.05	871.67	0,81	6.8	-45.2	0,83		
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, ir	ibration log of da oll Multi-Probe Fi	eld Meter (Temp	erature, Specifi	ing instruments: ic Conductance, Dissolv	ved Oxygen, pH	, Oxidation Red	uction Potentia		
	General Information: Weather Conditions @ time of sampling: <u>ClOvery</u> , WiNex								
Sample Character	istics:	RAF, Cold	Mess, O	Lorress					
Sample Collection	Order:	Per SAP	19						
Comments and Ot	and ations:					. A			
Collec		Carte	For Al	op III and	APP IV				
		(04/0	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>						
8									
I certify that samp	ling procedures v	vere in accordan	ce with applicat	ble EPA and State proto	cols.				
Date: 02-18-				Title:		Zech			

Page 2 of 2

Prepared by: GREDELL Engineering Resources, Inc.

Facility: <u>SBMU SPS - CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW 8</u> Name (Field Staff): <u>A Parel D Dillingham</u> Date: <u>D2-18-2000</u>
Access: Accessibility: Good Well clear of weeds and/or debris?: Yes Well identification clearly visible?: Yes No Remerked
Remarks: Concrete Pad: Good Inadequate Depressions or standing water around well?: Yes No Remarks: Remarks: No
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: No
Nemarks. Dedicated Purging/Sampling Device: Type = ½ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing Silicone Tubing Condition: Good Damaged Missing Remarks: Monitoring Well Locked/Secured Post Sampling?: Yes No
Remarks: Field Certification Ashish Paper Lab Zoch OR-18-2000 Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitor	ing Well ID:	Mh	Fac	ility: SBML	Sikeston Po	ower Statio	n - Groundw	ater Monitor	ing		
Initial Wate	r Level (feet	btoc):	8.11			Date: 0	2-18	- 262	0		
Initial Grour	ndwater Elev	vation (NAVD	88):			Air Pressure in Well? Y					
PURGE INI	FORMATIO	N									
Date: _C	12-18	- 2020	>	· · ·							
Name (San	nple Collecto	or):D	Di	Iling	hum	r					
Method of \	Nell Purge:	Low Flow	Perstaltic I	Pump	Dec	licated Tub	oing?	Y) / N			
Time Purgi	ng Initiated:	10	222		One	e (1) Well V	/olume (mL)	:	NA		
1				11	Tota	Total Volume Purged (mL): 3360					
		r Elevation (N				Well Purged To Dryness? Y /					
Well Total	Depth (feet	btoc):	37.0	5	Wa				8.1	l	
		: 2" Sch 40					e., pump is c		1010	7	
					Tim	ie Sampling	g Completed	1: 1	124	8	
PURGE ST	TABILIZATIO	ON DATA					Oxidation				
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)	
1224		380	10.92	793.2	0.70	7.1	-68.3	1.25	8.11	clear, no dor	
1226	250	880	12.48	765.42	1	7.1	-73.0	1.17	8.11	ii 11	
1228	250	1380	13.53	747.40	0.39	7.1	-74.4	3.05	8.11	N 1/	
1230	250	1880	13.40	748.06	0.36	7.1	-75.0	3.41	8.11	gellow Flance	
1232	250	2380	13.42	746.24	3.33	7.1	-75.0	0.74	8.11	CLEAR, NO OLOY	
1234	240	2860	13.45	746.73	2.31	7.2	-75.2	0.89	8-11		
1235	250	3360	13.49	747.89	0.29	7.2	-75.7	0.69	8.11		
		±.									

Facility:	SBMU Sikeston	Power Station - (CCR Groundwa	ter Monitoring	Monitoring We	II ID:M	w 8
Sampling Informa	ition:						
Method of Samplin	ig: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	8.11					
Monitoring Event:	Annual ()	Semi-Annual	() Quarte	rly() Mo	onthly ()	Other ()	
Final Purge Stabliz	zation Sampling D)ata:					1
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
02-18-2020	250	13.49	747.89	0.29	7.2	- 75.7	0,69
Instrument Calibo See instrument ca 1 - In-Situ SmarT 2 - HF scientific, i General Informat Weather Condition	libration log of da roll Multi-Probe Fi nc. Micro TPI Fiel .ion:	ield Meter (Temp Id Portable Turbi	erature, Specif	ic Conductance, Dissolv	ved Oxygen, pH	, Oxidation Red	uction Potentia
Sample Character	ristics: Cle	ar, Colo	Mess, C	storless			V 9
Sample Collection	A.5	Per SAP		e		546	
Comments and O	0.2.1			of III and	APP ID		1.0 1 1. 1. 1.
		t et p		d	27	2	(42)

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

Date: 02-18-2020 By: AShish Pater Title: Las Tech

Page 2 of 2

Facility: SBMU SPS - CCR Groundwater Monitoring
Monitoring Well ID: <u>A PUJEI D Dilling ham</u>
Date: 02-18-2020
Access:
Accessibility: Good Fair Poor Poor
Well clear of weeds and/or debris?: Yes <u>V</u> No
Well identification clearly visible?: Yes <u>Ves</u> No
Remarks:
Concrete Pad: Good Inadequate
Depressions or standing water around well?: Yes No 🗹
Remarks:
<u>Protective Outer Casing</u> : Material = $\frac{4^{\circ} \times 4^{\circ}}{5}$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good Damaged
Condition of Locking Cap: Good Damaged
Condition of Lock: Good L Damaged
Condition of Weep Hole: Good <u>U</u> Damaged
Remarks:
Well Riser: Material = <u>2" Diameter, Schedule 40 PVC, Flush Threaded</u>
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 J Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes 1 No
Remarks:
Field Certification 1/22 Revel 1/23 Toch 2-18-2020
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitor	ing Well ID:	MW	4 Faci	lity: SBMU	Sikeston P	ower Statio	n - Groundw	ater Monitor	ing		
Initial Wate	r Level (feet	btoc):	9.11			Date: 2	-18.2	1027			
Initial Grour	ndwater Eler	vation (NAVD	88):			Air Pressur	re in Well?	YIN			
PURGE INI											
Date:	2-18	-2020									
Name (Sam	nple Collect	or):	nilli	nyhai	m						
Method of \	Nell Purge:	Low Flow	Perstaltic F	ump	Dec	dicated Tub	oing?	Y) / N			
Time Purging Initiated: 14 0/						e (1) Well V	/olume (mL)	:	NA		
Beginning \	Water Level	(feet btoc):	9.1	1	Tot	Total Volume Purged (mL):					
Beginning	Groundwate	r Elevation (N	AVD88)		We	Well Purged To Dryness? Y / Ň					
Well Total	Depth (feet	btoc):	37.2	6	Wa			g (feet btoc);	9,1		
Casing Dia	meter (feet)	: 2" Sch 40	PVC			(1.0	e., pump is c	אר)	1110	~	
					Tim	te Sampling	g Completed	:	142	5	
PURGE ST	ABILIZATI	ON DATA					Ovidation				
Time	Purge	Cumulative Volume	Temp	Specific Conductance	Dissolved Oxygen	рН	Oxidation Reduction	Turbidity	Water Level	Notes (e.g., opac	- 1
4	Rate (mL/min)	(mL)	(°C)	(µS/cm)	(mg/L)	(S.U.)	Potential (mV)	(NTU)	(feet btoc)	color, ode	
1403		300	10.67	561.79	1.35	7.5	-80.2	1.22	9.11	clear, n	201
1405	230	760	13.12	540.07	0.94	7.4	-85.3	3.63	9.11	clear, no	000
1407	230	1220	14.04	534.48	0.83	7.4	-87.4	1.67	9.11	~	"
1409	240	1700	14.33	532.93	0.74	7.4	-89.7	1.25	9.11	1	<i>ħ</i>
1411	255	2200	14.53	524.22	2.67	7.4	-89.4	1.36	9.11	II.	<i>y</i>
1413	240	2680	14.49	526.86	0.63	7.4	- 87.6	1.60	9.11	"	4
				-							
·											

Facility:	SBMU Sikeston F	Power Station - (CCR Groundwa	ter Monitoring	Monitoring We	II ID:M	WY
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	() 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)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
02-18-2020 1413	240	14.49	521.36	0.63	7.4	- 87.6	1.60
2 - HF scientific, in General Informat Weather Condition	ion: ns @ time of samp	bling: CIC	NGY, V	VINZY Deleness			
			. 1			(*)	1 P. 1
Sample Collection	Order:	Per SAP		in a second			
Comments and O	bservations:						
63			*	A 5 11		1 m	
	1.	* e n	. 8				

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

Date: 2-18-202) By: ABLish PCIQL Title: LAS TRCH

Page 2 of 2

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

Facility: SBMU SPS CCR Groundwater Sampling

G4eL Calibrated by: Ahrsh

4-'n

			-Situ sh	In-Situ smarTROLL Field Meter	ald Meter		HF sci	entific, inc	c. Micro TPI Fie	HF scientific, inc. Micro TPI Field Portable Turbidimeter	oldimeter			
	S/N	S/N #: L	17	THRHTH	7		SIN#: 2	910	SIN#: 201607366					
Date		Time	pH Standards	pH Measure- ments	Specific Conductance Standard (µS/cm)	Specific Conductance Measurement (µS/cm)	Specific Conductance Oxidation Reduction Potential Measurement (mV) (µS/cm)		Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)	Oxygen	Turbidity Standards (NTU)	Me	Turbidity Measurements (NTU)
			4.00	= 4.0			Temperature = $2/.69$	8		Temperature (°C)	- الم جهار، مكله	0.02	"	= 0.02
uo	03/30-	1	7.00				1			Tap Water Source	= Srifeston	10.0	u	0.01
prinning Salibrat	4050 06 40			4	1413	14/2.0	Standard = 229.0	.0	طح م. م	Barometric Pressure (mm/Hg)	= 1012.2	1000	=	0,000/
		_	 00.02	Q'01 -						ant	= 100.17			
,			4.00	= 4.0			Temperature = 21.35	5		Temperature (°C)	= 20.53	0.02	"	0.02
	02/20		7.00	= 7.0						Tap Water Source	= Silveston	10.0		10.17
of Day	255 (335 20		0		1413	138	Standard = 224.0		= 228.1	Barometric Pressure (mm/Hg)	= 1009.9	1000	"	9a, v
pu∃			00.01	1.1-		4				Measurement = 94.94	+6.99=			0

Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L. The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.

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

Notes:

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

By: 101.82 Date 03/30/2020

Prepared by: GREDELL Engineering Resources, Inc.

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: M/W/3
Name (Field Staff): <u>A Patel D Dillingham</u>
Date: 3-30-2020
Access:
Accessibility: Good / Fair Poor
Well clear of weeds and/or debris?: Yes No
Well identification clearly visible?: Yes No
Remarks:
Concrete Pad: Good Inadequate
Depressions or standing water around well?: Yes No
Remarks:
<u>Protective Outer Casing</u> : Material = $4^{\circ} \times 4^{\circ}$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good Condition
Condition of Locking Cap: Good Z Damaged
Condition of Lock: Good <u>V</u> Damaged
Condition of Weep Hole: Good Damaged
Remarks:
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good Good Damaged
Condition of Riser Cap: Good L Damaged
Measurement Reference Point: Yes No
Remarks:
Dedicated Purging/Sampling Device: Type = <u>1/4</u> " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good V Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes Mo
Remarks:
Field Certification Actist Parel 104 Tech 3-30-2020
Field Certification Ashish Catel Lab lech 3-30 2020 Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

. .

January 2017

Monitor	ring Well ID:	MW	<u> </u>	ility: SBMU	J Sikeston P	ower Statio	n - Groundw	ater Monitori	ing		
Initial Wate	er Level (feet	t btoc):	8.46	1		Date:	3-30-	2020	>		
		vation (NAVD				Air Pressu	re in Well?	Y /			
	FORMATIO						uno 19 marente				
Date:	3-30-	2020									
Name (San	nple Collect	or):	Dillin	yhan	∩						-
Method of	Well Purge:	Low Flow	v Perstaltic I	Pump	Dec	dicated Tub	ping?	Y) / N			
Time Purgi	ng Initiated:	08	203		On	e (1) Well \	/olume (mL):	: 4	NA		
Beginning	Water Level	(feet btoc):	8.0	46	Tot	al Volume _.	Purged (mL)	: 4	704)	
Beginning	Groundwate	r Elevation (N	NAVD88):			•	o Dryness?		Y / 🛈	3	
Well Total	Depth (feet	btoc):	36.99	î	Wa	iter Level a	fter Sampling e., pump is c	g (feet btoc):	8.4	6	_
Casing Dia	imeter (feet)	: 2" Sch 40	0 PVC		Tin		g Completed		083.	2	
	TABILIZATI	ΟΝ ΠΑΤΑ					3				
FORGES	Purge	Cumulative		Specific	Dissolved		Oxidation	Truck differ	Water	Not	tes
Time	Rate (mL/min)	Volume (mL)	Temp (°C)	Conductance (µS/cm)	Öxygen (mg/L)	рН (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Level (feet btoc)	(e.g., o color,	odor)
0805		380	16.00	197.18	2.42	8.6	97.3	32.26	8.46	Red Fla	KP, als
0207	280	940	15.04	198.64		7.9	90.5	21.67	8.46	4	
0809	273	1480	14.79	198.6		7.4	85.5	19.32	8.46	Clear,	bear
11.80	280	2040	14.73	198.63		7.1	81.2	13.54	8.46	"	
0813		2580	14.72			6.9	77.7	12.08	8.46	N	4
0215		3120	14.76	197.44	1.68	6.7	74.4	11-26	8.46	*1	•
0817	290	3700	14.78	19708	1.58	6.6	71.9	10.83	8.46	- 15	"
0819		4300	14.81	197.85	.1.47	6.5	69.9	10.09	8.46	4	''
0821	293	4880	14.85	199.5		6.5	67.3	8.67	8.46	1.	91
0823	280	5440		199.14		6.5	64.8	8.21	8.46	1	4
0725	260	5960	14.85	199.35	1.26	6.4	63.2	5.26	8.46	IX.	"
0827		6500	14.86	201.56	1.20	6.4	61.7	6.12	8.46	ti.	1,
0829	and the second s	7040	14.87	199.31	1.23	6.4	61.2	6.01	8.41	"	"
							9)				
			9								
						- 					

btoc - below top of casing

Facility:	SBMU Sikestor	n Power Station	- CCR Groundwa	ter Monitoring	Monitoring We	ell ID: M	W3_
Sampling Informa	ation:						
Method of Samplin	ig: Low Flow	- Perstaltic Pu	mp & Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet bto	c): <u> </u>	16				
Monitoring Event:	Annual () Semi-Ann	ual () Quarte	erly() M	onthly ()	Other (4)	
Final Purge Stabliz	ation Sampling	Data:				l o thr	
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
3-30-2020	270	14.87	199.31	1.20	6.4	61.2	6.01
2 - HF scientific, in General Information	nc. Micro TPI Fi ion:	eld Portable Tu		ic Conductance, Disso	ived Oxygen, pł	H, Oxidation Rec	luction Potentia
46°F							- 2
Sample Character	istics: <u>C1</u>	ear, (c	ploness, c	Deorless	-151-1	<u></u>	
Sample Collection	Order:	Per SAP	а.	×	S. 134		
	<i>1</i> .			()#138 T)			
Comments and O	bservations:	2	3	4 J			
			1. L.				1
P				9			
			- gr #				
	di di di	а	रेक का				
		· · · · · · · · · · · · · · · · · · ·					
			2				

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

By: Ashish Batel ______Title: Lab Tech Date: 3-30-2020

Facility: <u>SBMU SPS – CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW G</u> Name (Field Staff): <u>A Pares D DIII:ngham</u>
Date: 3-30-2020
Access: Accessibility: Good Fair Poor Poor
Well clear of weeds and/or debris?: Yes 📂 No
Well identification clearly visible?: Yes 🗠 No
Remarks:
Concrete Pad: Good / Inadequate
Depressions or standing water around well?: Yes No
Remarks:
<u>Protective Outer Casing</u> : Material = $4^{"} \times 4^{"}$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good <i>L</i> Damaged
Condition of Locking Cap: Good L Damaged
Condition of Lock: Good L Damaged
Condition of Weep Hole: Good L Damaged
Remarks:
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good Lo Damaged
Condition of Riser Cap: Good Condition of Riser Cap: Good Condition
Measurement Reference Point: Yes Mo
Remarks:
Dedicated Purging/Sampling Device: Type = <u>1/4</u> " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good L Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes No
Remarks:
Field Certification Ashish Parel 145 Tech 3-30-2020 Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

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Monitor	ing Well ID:	Mu	G Fac	ility: SBMU	Sikeston P	ower Statio	n - Groundw	ater Monitor	ing	
Initial Wate	r Level (feel	t btoc):	8-3:	2		Date: 3	-30.	2020		
Initial Grou	ndwater Ele	vation (NAVD	088):			Air Pressur	e in Well?	Y 🔞		
PURGE IN	FORMATIO	N								and the second
		-2020		:						
Name (San	nple Collect	or):D	Dil	lingha	M					
Method of \			/ Perstaltic F			licated Tub	ing?	Y) / N		
Time Purgi	na Initiated:	D	858		On	e (1) Well V	/olume (mL):		NA	
-	-		~	. 32			Purged (mL)		558	70
									Y /	
		er Elevation (N	_			-	o Dryness?			2
Well Total	Depth (feet	btoc): <u>3</u>	1.15		Wa		fter Sampling e., pump is c		8.3	2
Casing Dia	meter (feet)	: 2" Sch 40	0 PVC		Tim	ne Samplin	g Completed	: .	0927	3
						ie earripiin.	5			
PURGE ST	Purge	Cumulative		Specific	Dissolved		Oxidation	T 4114	Water	Notes
Time	Rate (mL/min)	Volume (mL)	Temp (°C)	Conductance (µS/cm)	Oxygen (mg/L)	рН (S.U.)	Reduction Potential	Turbidity (NTU)	Level (feet btoc)	(e.g., opacity, color, odor)
	(((1)))	360	15.01	432.42		6.6	(mV) -57.8	12.25		clear, oday
0900	260	280		434.73	0.77	6.7		22,26	8.32	u 11
0904		1400	15.08		-	6.7		15.38		u <i>v</i>
0906	250	1902		381.60		6.7		10.97	8.32	10) <i>j</i>
0908		2425		383.08		6.7	-52.0	7.89	8.32	(i /)
0910	270	2960	15.12	393.64		6.7	-54.4	10.64	the second se	u 1,
0912	260	3480	15.12	390.32	0.71	6.7	-533	5.96	8.32	
0914	270	4020	15.12	381.36	0.69	6.7		5.62	8.32	(1 b) (1 c)
0916	26	4543	15.13	393.75	2.66	6.7	-53.4	4.27	8.32	SF 0
0918	250	5040	15.14	390.53	0.66	6.7	-53.8	4.13	8.32	N (
0920	210	5580	15.17	390.95	0.67	6.7	-53.6	3.49	8.32	
		-								
						2				

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring V	Vell ID:M	w 6
Sampling Informa	ation:						
Method of Samplin	ig: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	8.3	2				
Monitoring Event:	Annual ()	Semi-Annua	I() Quarte	rly ()	Monthly ()	Other (L)	
Final Purge Stabliz	ation Sampling D)ata:	9 				
<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)
3-32-2022	270	15.17	390.95	0.67	6.7	-53.6	3.99
Instrument Calibu See instrument ca 1 - In-Situ SmarTu 2 - HF scientific, in	libration log of da roll Multi-Probe Fi	eld Meter (Temp	perature, Specif	ing instruments: īc Conductance, Di	ssolved Oxygen,	pH, Oxidation Red	luction Potentia
General Informat	ion:	~	6.727				Sector
Weather Condition	ns @ time of sam	pling: \underline{Sv}	nny				
54°F				1 1-00			
Sample Character	istics: (1e	ar, Colo	rless, O	dorless	-		
Sample Collection	Order:	Per SAP		14			
Comments and O	bservations:	8	• ••	9 9 9	2		
					x 90 X		
<u>t</u>		30	4		2		2
		5 5	a			and the second	
		- 1					
2							
)							
I certify that samp	ling procedures v	vere in accordar	nce with applica	ble EPA and State	protocols.		

BBish Patel Page 2 of 2

By:

Date: 3-30-2020

Title: Lab Tech

Facility: <u>SBMU SPS - CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW 5</u> Name (Field Staff): <u>A Pate I D Dillingham</u> Date: <u>3-30-202</u>
Access: Accessibility: Good Fair Poor Poor
Well clear of weeds and/or debris?: Yes 🗾 No
Well identification clearly visible?: Yes 🖉 No
Remarks:
Concrete Pad: Good Management Inadequate
Depressions or standing water around well?: Yes No
Remarks:
<u>Protective Outer Casing</u> : Material = $4" \times 4"$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good Lamaged
Condition of Locking Cap: Good // Damaged
Condition of Lock: Good <u>Condition</u> Damaged
Condition of Weep Hole: Good Condition 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 = <u>1/4</u> " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good / Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes Mo
Remarks:
Field Certification Ah, Sh. Patel Jab Tech 3-30-2020
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

Monitor	ing Well ID	MW	5_Fac	ility: SBMU	Sikeston Po	ower Statio	n - Groundw	ater Monitor	ing	
Initial Wate	r Level (feel	t btoc):	7.43			Date: 0	3-30-	2020		
Initial Groundwater Elevation (NAVD88):						Air Pressu	re in Well?	Y / 🕅		
PURGE IN	FORMATIO	N								
Date: d	03-30	-2020	>							
Name (San	nple Collect	or): 0 _	Dillin	g ham						
Method of V	Well Purge:	Low Flow	Perstaltic F	Pump	Dec	dicated Tub	oing? (Y) / N		
Time Purgi	ng Initiated:	10.	23		One	e (1) Well \	/olume (mL)	:	NA	
Beginning	Water Level	(feet btoc):	7.	43	Tot	al Volume	Purged (mL)	:	3100	
Beginning	Groundwate	er Elevation (N	AVD88):			•	o Dryness?		Y / 🕅	
Well Total	Depth (feet	btoc): <u>3</u>	7.16		Wa	iter Level a (i.	fter Samplin e., pump is o	g (feet btoc): off)	7.43	
Casing Dia	meter (feet)	: 2" Sch 40) PVC				g Completed		1039	1
PURGE ST	ABILIZATIO	ON DATA								
Time	Purge	Cumulative	Temp	Specific	Dissolved	pН	Oxidation Reduction	Turbidity	Water Level	Notes (e.g., opacity,
	Rate (mL/min)	Volume (mL)	(°C)	Conductance (µS/cm)	Oxygen (mg/L)	(S.U.)	Potential (mV)	(NTU)	(feet btoc)	color, odor)
1025		400	16.16	713.72		6.8	-35.7	2.68	7.43	clear ng or
1027	260	920		718.38		6.8	-38.5	11.43	7.43	FIGKR, DLOY
1029	270	1460		722.35		6.8	-40.0	5.57	7.43	
1031	280	2023		727.70		6.8	-42.5	2.89	7.43	
1033	260	2540		738.70		6.8	-46.2	3.30	7.43	u //
1035	280	3100	15.84	750.41	0.62	6.8	-49.7	2.90	7.43	
										×
										1
									-	
A										

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Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	11D: MV	√5
Sampling Informa	ition:	2					
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	7.43					
Monitoring Event:	Annual ()	Semi-Annua	I() Quarte	nly() 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)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
3 <u>-30-2020</u> 1035	280	15.84	750.41	0.62	6.8	-49.7	२ .१७
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	libration log of da oll Multi-Probe Fi	eld Meter (Temp	perature, Specifi	ng instruments: c Conductance, Dissolv	ved Oxygen, pH	, Oxidation Red	uction Potentia
General Informati	ion:	6					
Weather Condition	ns @ time of sam	pling: <u>S</u>	γην				
Sample Character	istics: Yel	Iow Flat	KR, COION	less storle	28		
Sample Collection	Order:	* Per SAP			4 EU	• #A	
0	•		(8) E	· · · · ·		a o	
Comments and Ol	0 1	cute.		*	3		
<u>Uneer</u>					а. С	9) 19	
-							
<u>}</u>							
I certify that samp	ling procedures w	vere in accordan	ce with applicat	ble EPA and State proto	ocols.		
Date: <u>3.30-</u>			-	Title	1 - 1	TREH	
				e 2 of 2			

1.40

Facility: <u>SBMU SPS - CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW 8</u> Name (Field Staff): <u>A Pater D Oilling ham</u> Date: <u>3-3ン・2020</u>
Access: Accessibility: Good Fair Poor Poor Well clear of weeds and/or debris?: Yes 1/2 No
Well identification clearly visible?: Yes <u></u> No Remarks:
Concrete Pad: Good L Inadequate Depressions or standing water around well?: Yes No L
Remarks: Protective Outer Casing: Material = <u>4" x 4" Steel Hinged Casing with Hasp</u>
Condition of Protective Casing: Good Damaged Condition of Locking Cap: Good Damaged
Condition of Lock: Good L Damaged
Condition of Weep Hole: Good Damaged Remarks:
Well Riser: Material = <u>2" Diameter, Schedule 40 PVC, Flush Threaded</u>
Condition of Riser: Good Damaged Condition of Riser Cap: Good Damaged
Measurement Reference Point: Yes No Remarks:
Dedicated Purging/Sampling Device: Type = <u>1/4</u> " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good Damaged Missing Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes V No
Field Certification MSLISL Pajel Lab Tech 3-30-2020 Signed Title Date

Monitor	ing Well ID:	MW	8 Faci	lity: SBMU	Sikeston Po	ower Statio	n - Groundw	ater Monitorii	ng	
Initial Wate	r Level (feet	btoc):	6.96			Date: 0	3-30-:	2020		
Initial Grou	ndwater Elev	vation (NAVD	88):			Air Pressur	e in Well?	Y/N		
	FORMATIO	N								
·	03-30									
			oilli	nghai	n					
				0		licated Tub	aina?	Ω/N		
Method of	Well Purge:		Perstaltic F	ump						
Time Purgi	ng Initiated:	_ [[]	7		One	e (1) Well \	/olume (mL):	-	NA	
Beginning	Water Level	(feet btoc):	6.9	6	Tot	al Volume	Purged (mL)	:	8820	
Beginning	Groundwate	r Elevation (N	AVD88):		We	II Purged T	o Dryness?		Y / 🔃	
		btoc): <u>3</u>			Wa	ter Level a	fter Samplin	g (feet btoc):	6.96	
							e., pump is c			
Casing Dia	imeter (feet)	: <u>2" Sch 40</u>) PVC		Tim	ne Samplin	g Completed	: >	1154	
PURGE S	TABILIZATIO Purge	Cumulative		Specific	Dissolved		Oxidation	Tuchidih	Water	Notes
Time	Rate	Volume	Temp (°C)	Conductance	Oxygen	рН (S.U.)	Reduction Potential	Turbidity (NTU)	Level (feet btoc)	(e.g., opacity, color, odor)
<u>]</u>	(mL/min)	(mL)		(µS/cm)	(mg/L)	11	(mV)	110 115		Vellow ng
1119		360	16.92		0.54	7.1	-82.1	49.45	6.96	Flake, odor
1121	260	880	15.86	783.34	0.41	7.1	0.0	161.13	100 Sec. 100	u ir
1(23	260	1400	15.62			7.1	-85.1		6.96	u 11
1125	260	1920	15.57			7.1	-	101.43		N (1
1127	270	2460	15.56	792.81		7.1	the second se	57.31	6.46	W H
1129	270	3000	15.55	794.75		7.1		305.00	2011 BULLY -	N //
1131	260	3520	15.57	806.31	0.24	7.1	-83.8	47.57	6.96	N 11
1133	260	4040	15.59	810.18	0.23	7.1		192.80	6.46	11 11
1135	280	4600	(5.61	820.13		7.1	- 85.2	30.51	6.96	
1137	270	5140	15.62	818.73		7.1	-85.6	20.87	6 6 8	
1139	270		15.62	823.13		7.1	- 85.0	14.95	6.96	clear, odor
1141	260	6200	15.62			7.(-83.9	11.58	6.96	u 11
1143	210	6620	15.62			7.1	- 83.9		6.96	u e
1145	270	7160	15.64			7.1	- 83.9			
		7720	15.66	817.99		7.1	-84.2	8.17	6.96	u li
1147	280		15.71	830.71		7.1	- 83.3	7.88	6.96	9L 1.
1149	290	8820	15.71			7.1	- 82.4	7.48	6.96	u 1)
1151	260	0000	13.11	840101	Uni					
L										
		1				A				

btoc - below top of casing

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Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	IID:	N 8
Sampling Informa	ition:	a. at					
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated;	(Y) / N
Water Level @ Sa	mpling (feet btoc)	6.96	• 7		2		
Monitoring Event:	Annual ()	Semi-Annua	I() Quarte	rly() M	onthly ()	Other (1)	
Final Purge Stabliz	ation Sampling D	Data:	- 3				
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
3-30-2020	265	15.71	840.01	0.20	7.1	- 8ચ.પ	7.48
See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, ir General Informati	oll Multi-Probe Finc. Micro TPI Fiel	ield Meter (Temp Id Portable Turbi	perature, Specifi dimeter	ng instruments: c Conductance, Dissol	lved Oxygen, pH	, Oxidation Red	uction Potentia
Weather Condition			nny			14	
Sample Characteri	stics: Clea	ar, color	125,02	orless	· 2316		* ¥(
Sample Collection	Order:	Per SAP			<u> </u>		1
à la ch		(10)	50 10	1185 4	a.	- 2	
Comments and Ob	servations:	94 = 12		¥	* .		(*.)*)
	<u></u>	9 9 9 9			л із	96	2
		·. ·					
· · · · · ·						an di	
	00 85 81	1.		5 X	é	9 8	
			2				1
	<u> </u>						
1.05					<u></u>		
¥							*
I certify that sampl	ing procedures w	vere in accordan	ce with applicat	ble EPA and State prot	ocols.		

Date: 3-30-2020 By: Ashish Parel Title: Las Tech

Page 2 of 2

Facility: <u>SBMU SPS - CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW U</u> Name (Field Staff): <u>A Patel D Dillingham</u>
Date: 3-30-2020
Access: Accessibility: Good / Fair Poor
Well clear of weeds and/or debris?: Yes Mo
Well identification clearly visible?: Yes 🖵 No
Remarks:
Concrete Pad: Good // Inadequate
Depressions or standing water around well?: Yes No
Remarks:
<u>Protective Outer Casing</u> : Material = $4^{\circ} \times 4^{\circ}$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good 📈 Damaged
Condition of Locking Cap: Good Condition
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 Condition of Riser: Good Condition
Condition of Riser Cap: Good L Damaged
Measurement Reference Point: Yes V No
Remarks:
<u>Dedicated Purging/Sampling Device</u> : Type = <u>14</u> " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good 🛵 Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes Mo
Remarks:
Field Certification Ashish Parel, Lab Tech 03-30-2020 Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

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181

Monito	ring Well ID	MW	H Fac	ility: SBMU	J Sikeston P	ower Statio	n - Groundw	ater Monitor	ing		
Initial Wate	er Level (fee	t btoc):	7.95			Date: D3	3-30-	2020			
Initial Grou	Indwater Ele	vation (NAVE	088):			Air Pressur	re in Well?	Y / 🕅			
PURGE IN	FORMATIC)N									
		-2020									
	nple Collect			ngho	M						
				~		1:		Y) / N			
Method of	Well Purge:	Low Flow	Perstaltic F	Pump	Dec	dicated Tub	mg?	T)/ N			
Time Purgi	ing Initiated:	_ (à	221		On	e (1) Well V	/olume (mL)	: ,	NA		
Beginning	Water Leve	l (feet btoc):	7.	95	Tot	al Volume I	Purged (mL)	: .	7800	>	
		er Elevation (N			We	I Puraed T	o Dryness?		Y / N		
						•		- (fact btoo):	7.9	5	
Well Total	Depth (feet	btoc):3	57.00		vva	iter Level a: (i.e	e., pump is c	off)			
Casing Dia	ameter (feet)	: <u>2" Sch 40</u>	0 PVC		Tim	ne Samoline	g Completed	I -	1251		
						ie odinpini	g completed				
PURGE S					Disselved		Oxidation		Motor	Notes	
Time	Purge Rate	Cumulative Volume	Temp	Specific Conductance	Dissolved Oxygen	pH	Reduction	Turbidity	Water Level	(e.g., opaci	
	(mL/min)	(mL)	(°C)	(µS/cm)	(mg/L)	(S.U.)	Potential (mV)	(NTU)	(feet btoc)	color, odor	
1223		420	17.80	505.29	0.73	7.2	-77.4	123.10	7.95	Yellow R Flake, Q	300
1225	290	1000	16.73	510.36		7.3	-80.4	208.40	1.1	u.	۲۲ زغ
1227	300	1600	16.50			7.3	-85.7	101.50			
1229	290	2180	16.43	520.49		7.3	-90.0	71.19	7.95	41	25
1231	280	2743		519.49		7.3	-90.4	60.79		u	U
1233	293	3320		520.48		7.3	-91.9	36.88			h
1235	293	3900	16.45	520.08		7.3	- 92.4	49.06	7.95	re	h
1237	280	4460		517.65		7.3		22.46		u	6
1239	270 290	5000		521.05		7.4	-	12.24			e
1243	270	6120		519.42		7.4		11.17	7.95	e ^t	4
1245	290	6700		519.40		7.4		19.88	7.95	(L	4
1247	270	7240		518.57		7.4	-91.1	19.58	7.95	er.	8
1249	280	7800		520.60		7.4	-91.1	19.51	7.95	u	1

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station - (CCR Groundwa	ter Monitoring	Monitoring We	M 1	w 4
Sampling Informa	ition:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	: 7.95					
Monitoring Event:	Annual ()	Semi-Annual	() Quarte	rly() Mo	onthly ()	Other (
Final Purge Stabliz	ation Sampling D	Data:					
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
03-30-2020	2 80	16.45	520.60	0.35	7.4	- 91.9	19.51
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	ibration log of da oll Multi-Probe Fi	ield Meter (Temp	erature, Specifi	ing instruments: c Conductance, Dissolv	ved Oxygen, p⊦	I, Oxidation Red	uction Potentia
General Information Weather Condition			nd y				
Sample Characteri	istics: Yel	low FL	ake, Co	ioness, od	orless		
Sample Collection	Order:	Per SAP					
Comments and Ot		Blank					
l certify that sampl	ing procedures w	vere in accordan	ce with applicat	ble EPA and State proto	ocols.		
Date: 03 - 30 -	2523 By:	BLish	Auter	Title:	Las T	rech	
5			Pag	e 2 of 2			

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

Facility: SBMU SPS CCR Groundwater Sampling

aser Calibrated by: ASA

	Field Instruments:	uments:	In-Situ sn	In-Situ smarTROLL Field Meter	eld Meter	-	1	HF scientific, i	nc. Micro TPI Fie	HF scientific, inc. Micro TPI Field Portable Turbidimeter	neter			
		S/N #:	5	LHBHLF	17		S/N	sin#: 22/607366	607366					
	Date	Time	pH Standards	pH Measure- ments	Specific Conductance Standard (µS/cm)	Specific Conductance Measurement (µS/cm)	Oxidation Red Standa	Oxidation Reduction Potential Standard (mV)	Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)	uəɓ	Turbidity Standards (NTU)	×	Turbidity Measurements (NTU)
٨			4.00 =	0.7			Temperature =	= 22.(2		Temperature = +	٩ (. 73	0.02	- 11	0.03
uoij	Sec. 10		7.00 =	7.0	1						Silvesho	10.0	-05	0.01
ginning BrdilsO	2020	0632	10.00	c.0/=	1413	1412.0	Standard (mV)	= 220,0 =	229.3	Barometric Pressure = 9 (mm/Hg)	= 9 95.03	1000	n	0:001
98										Measurement = /	= 120.06			
Я			4.00	= 4.0			Temperature =	= 25.05		Temperature = (°C)	27.37	0.02	H	0,03
	-80-2-		7.00	= 6.9	1					Tap Water = 5 Source	Sitcesto, CIt.	10.0	ü	9.84
vî Day	2020	azer	0001	0	1413	13892	Standard (mV)	= کریز و.ی	227.7	Barometric Pressure = ((mm/Hg)	PP3.99	1000	n	998.20
pu∃										Measurement =	= 98.42			

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

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

Notes:

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

I certify that the aforementioned meters were calibrated within the manufacturers specifications. Date: $\frac{1 - \delta^2 - 3.0}{\text{Date:}} B_{V}$; $M > \lambda = \lambda$ BY: Br. Brah

January 2017

Prepared by: GREDELL Engineering Resources, Inc.

Facility: <u>SBMU SPS - CCR Groundwater Monitoring</u> Monitoring Well ID: <u>NW8</u> Name (Field Staff): <u>A Pater D Dillingham</u> Date: <u>04-08-2025</u>
Access: Accessibility: Good Fair Poor Poor Well clear of weeds and/or debris?: Yes Mo Well identification clearly visible?: Yes Mo
Remarks: Concrete Pad: Good // Inadequate Depressions or standing water around well?: Yes No // Remarks: Remarks: No //
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 Veep Hole: Good // Damaged Remarks:
Condition of Riser Cap: Good / Damaged Measurement Reference Point: Yes / No Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes No Remarks:

Prepared by: GREDELL Engineering Resources, Inc.

Field	Sam	oling	Log
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Monito	ring Well ID	MW	8 Fac	ility: SBML	J Sikeston P	ower Statio	n - Groundw	ater Monitor	ing	
Initial Wate	er Level (fee	t btoc):	7.64	1		Date: d	24-08	.202)	
Initial Grou	ndwater Ele	vation (NAVE	088):			Air Pressu	re in Well?	Y / 🕥		
	FORMATIO									
Date:	04-07	8-2023	כ							
Name (Sar	nple Collect	or):	Oilli	nghun	n					
Method of	Well Purge:	Low Flow	v Perstaltic I	Pump	Dec	dicated Tub	oing?	Y) / N		
Time Purgi	ng Initiated:		1033		On	e (1) Well \	/olume (mL):		NA	
Beginning	Water Level	I (feet btoc):	7.	64	Tot	al Volume	Purged (mL)	:	568	5
Beginning	Groundwate	er Elevation (N	NAVD88):		We	Il Purged T	o Dryness?		Y / 🕥	
Well Total	Depth (feet	btoc):	37.0	>6	Wa		fter Sampling e., pump is o		7.(<u>íy</u>
Casing Dia	imeter (feet)	: 2" Sch 40	0 PVC		Tim		g Completed		120	3
					101	ie oampin	g completed			
PURGE 5	Purge	Cumulative		Specific	Dissolved		Oxidation		Water	Notes
Time	Rate (mL/min)	Volume (mL)	Temp (°C)	Conductance (µS/cm)	Oxygen (mg/L)	рН (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Level (feet btoc)	(e.g., opacity, color, odor)
1035		380	18.93	725.59	0.55	7.1		13.58	7.64	Yellow No Flake, odor
1037	260	900	17.01	749.85	J.39	7.1	-86.6	17.84	7.64	W 4
1039	260	1420	16.68	757.74	0.34	7.1	- 87.6	13.55	7.64	clear, no odat
1041	260	1940	16.69	759.29	D.29	7.1	-88.4	9.45	7.64	1 1
1043	275	2490	16.69	761.01	2.25	7.0	-88.6	8.16	7.64	
1045	260	3000	16.55	768.85	0.23	7.1	- 89.6	59.21	7.64	Yellow no Flake, Odor
1047	270	3540	16.65	774.83	0.22	7.1	-89.0	9.36	7.64	-
1049	250	4040	16.75	776.04	0.23	7.1		12.36		Chear, no odor
1051	285	4600	16.88	778.75		7.1	- 88.9		7.64	
1053	270	5140	16.64	785.45		7.1	-89.7	7.69	7.64	2
1055	the second s	5682	16.56	784.03	0.21	7.1	- 39.4	8.33	7.64	u 11
				····						
L										
	1	1	1	1	1	1		1	1	

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	ell ID: M	w 8
Sampling Informa	ition:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	7.64					
Monitoring Event:	Annual ()	Semi-Annua	I() Quarte	rly (L) Ma	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)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
04.01.2220 1055	270	16.56	784.03	0.21	7.1	-89.4	8.33
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in General Informati Weather Condition	ibration log of da oll Multi-Probe Fi nc. Micro TPI Fiel on:	ield Meter (Temp Id Portable Turbi	perature, Specifi	c Conductance, Dissol	ved Oxygen, p	H, Oxidation Red	uction Potentia
73°F						-1	
Sample Character	istics:	leur, (210Ness,	odoness		27 	. ä.
Sample Collection	Order:	Per SAP			4		
Comments and OL	oservations:	cute th	s (m	$O(F_s)$	80 ³⁸ 21 - 2		
				* ² 2	a te	21	а. — Ж
4		19 s				8 ¹¹	
		÷.					
29		• • • •	z ^{1.90} (9):			14	
I certify that samp	ling procedures v	vere in accordar	ice with applicat	ble EPA and State proto	ocols.		
Date (111-17-0	しつつ BV	amis2	Ph Joi	Title	les	1006	

Page 2 of 2

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

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: AShi32 Paper

			-	-	120101					-		
		Turbidity Measurements (NTU)	0,00	10.0	0000)	1010	9.95	998.1			
		_	н	н	Ĥ		11	H	0			
		Turbldity Standards (NTU)	0.02	10.0	1000		0.02	10.0	1000			
dimeter		xygen	= 20.42	= City	Sec/ =	= 99.99	58.200 =		= 1003.4	= 98.31		
d Portable Turbi		Dissolved Oxygen (%)	Temperature	Tap Water Source	0	Measurement	Temperature (°C)	Tap Water Source	υ "	Measurement		
HF scientific, inc. Micro TPI Field Portable Turbidimeter	sin #: 201 607366	Oxidation Reduction Potentiat Measurement (mV)			229.1				827.9			
.E	~	5			E1				11			
HF scientifi	#: 20	on Reduction Potenti Standard (mV)	= 21.13		0.956 =		= 21.47		= 229.0			
1	S/N	Oxidation Reduction Potential Standard (mV)	Temperature		Standard (mV)		Temperature		Standard (mV)			
		Specific Conductance Measurement (JJS/cm)			اط اي م			1409.3				
1					11			11				
ld Meter	2	Specific Conductance Standard (µS/cm)			1413				1413			
In-Situ smarTROLL Field Meter	474247	pH Measure- ments	4.0	7.0	((2	0. N	10		-		
ST		ards	n	u	1		11	н				
In-Situ	4	pH Standards	4.00	7.00	0000	2	4.00	7.00				
Iments:	S/N #:	Time			0615				Dalo Has			
Field Instruments:		Date		- 10	2020			140	Are an	1		
					gninnig Calibrati		>	pəyə	of Day	pug		

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

1

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

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

I certify that the aforementioned meters were calibrated within the manufacturers specifications. Date 07/21/2023 By: $B_{V:}$ $B_{V:}$ $A_{V:S}A$ $A_{C}AC$

Facility: <u>SBMU SPS – CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW 3</u> Name (Field Staff): <u>A feate 1</u> Date: <u>D7 - 21 - 202</u>
Access: Accessibility: Good <u>Fair</u> Poor Well clear of weeds and/or debris?: Yes <u>No</u>
Well identification clearly visible?: Yes Mo Remarks:
Concrete Pad: Good Inadequate Condition of Concrete Pad: Good Inadequate Depressions or standing water around well?: Yes No Remarks: No
Remarks. Protective Outer Casing: Material = $\underline{4^* \times 4^*}$ Steel Hinged Casing with Hasp Condition of Protective Casing: Good Damaged Damaged Condition of Locking Cap: Good Damaged
Condition of Weep Hole: Good L Damaged Remarks:
Well Riser: Material = <u>2" Diameter, Schedule 40 PVC, Flush Threaded</u> Condition of Riser: Good Damaged Condition of Riser Cap: Good Damaged Measurement Reference Point: Yes No Remarks: Remarks: No
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 BALIAL Color Date Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitor	ring Well ID:	MW	<u> </u>	ility: SBMU	Sikeston Po	ower Statio	n - Groundw	ater Monitor	ing	
Initial Wate	er Level (fee	t btoc):	0.20			Date:	67-21	-2020		
Initial Grou	ndwater Ele	vation (NAVD	88):			Air Pressur	e in Well?	Y /N		
PURGE IN	FORMATIO	N								
Date:	07.2	11-202	0							
Name (Sar	nple Collect	or):	3 pi	lling	19m					
Method of	Well Purge:	Low Flow	Perstaltic F	oump	Dec	licated Tub	ing?	Y) / N		
Time Purgi	ng Initiated;	0	705		One	e (1) Well \	/olume (mL):		NA	
Beginning	Water Level	(feet btoc):	IC	1.20	Tot	al Volume	Purged (mL)	:	402	20
		er Elevation (N			We	II Purged T	• o Dryness?		YIN	
8		btoc):			 Wa	ter Level a	fter Sampling	• q (feet btoc):	10.	20
							e., pump is c			
Casing Dia	imeter (teet)	2" Sch 40	JEVC		Tim	ie Samplin	g Completed	:	080	2
PURGE S	TABILIZATI	ON DATA					lo itatian l			
Time	Purge	Cumulative Volume	Temp	Specific Conductance	Dissolved Oxygen	pН	Oxidation Reduction	Turbidity	Water Level	Notes (e.g., opacity,
II.	Rate (mL/min)	(mL)	(°C)	(µS/cm)	(mg/L)	(S.U.)	Potential (mV)	(NTU)	(feet btoc)	color, odor)
0707		360	18.76	199.67	16.88	7.8	-12.2	13.73	10.20	Red FIGUR 13
0709	250	860	17.50	199.76	13.84	7.3	-18.7	9.46	10.20	N #
0711	260	1380	17.10	201.08	12.68	6.9	-21.6	8.91	10.20	
0713	260	1400	16.96	202.91	12.04	6.7	-25.2	8.16	10.23	11 12
0715		2460	16.90	199-16	10.71	6.6	-31.6	4.61	10.20	Clear, no orby
0717		3000		196.80	9.53	6.5	-35.8	3.37	12.20	u lj
2710	262	2600	11 92	106 25	9.03	6.5	-38.9	3.74	12.20	is le
0721	260	4020	16.87	197.75	8.42	6.5	-4a.11	3-43	10.20	11 6
				a).						
				•						
							*			
									•	

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring We	ell ID:/	1~3
Sampling Informa	ation:						
Method of Samplin	ig: Low Flow	- Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc	10.20)				
Monitoring Event:	Annual ()	Semi-Annua	I() Quarte	riy() Mo	onthly()	Other (
Final Purge Stabliz	ation Sampling [Data:				1	
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	, Dissolved Oxygen (mg/L)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
07-21-2020 0721	260	16.87	197.75	8.42	6.5	- 40:4	3.43
Instrument Calibu See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in	libration log of da oll Multi-Probe F	ield Meter (Temp	perature, Specifi	ing instruments: ic Conductance, Dissolv	ved Oxygen, p⊦	I, Oxidation Red	uction Potentia
General Informat	ion:	~					
Weather Condition $72^{\circ}F$			nny				
Sample Character	istics: <u>CL</u>	ear, co	onless,	odorless			· · · · ·
Sample Collection	Order:	Per SAP			×	·	¥1
	3	· · _ ·		9 . X	е 20 ж		157
Comments and Ol BOHON		TPP II	and IV	Sameles		4	2
		×					÷
1.1.17 (A)	11	* * *	an ^a ac				
	-			· · · · · · · · · · · · · · · · · · ·		5	

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

Title: Les Treh Date: 07-21-2020 By: 184 82 rafy

Monitoring Well Field Inspection

Facility: <u>SBMU SPS – CCR Groundwater Monitoring</u> Monitoring Well ID: MWG
Name (Field Staff): A Puter D Dillingham
Date: 07-21-2020
Accessibility: Good Fair Poor
Well clear of weeds and/or debris?: Yes Ves No
Well identification clearly visible?: Yes <u>Ves</u> No
Remarks:
Concrete Pad: Good Legislation of Concrete Pad: Good Legislation of Concrete Pad: Legislation of Concre
Depressions or standing water around well?: Yes No
Remarks:
<u>Protective Outer Casing</u> : Material = $4^{\circ} \times 4^{\circ}$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good Damaged
Condition of Locking Cap: Good Damaged
Condition of Lock: Good L Damaged
Condition of Weep Hole: Good L Damaged
Remarks:
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good Damaged
Condition of Riser Cap: Good L Damaged
Measurement Reference Point: Yes <u>V</u> 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 Mo
Remarks:
Field Certification March 12 Jech 07-2)-2020 Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitor	ing Well ID:	MW	G Faci	ility: SBMU	Sikeston Po	ower Statio	n - Groundw	ater Monitori	ng	
Initial Wate	r Level (feet	btoc):	10.53	, 1 ⁶ s.		Date:	57-2	1-202	2	
		vation (NAVD		÷		air Pressu	re in Well?	Y /N		
	FORMATIO	12.00 (10.00 (10.00 (10.00 (10.00 (10.00 (10.00 (10.00 (10.00 (10.00 (10.00 (10.00 (10.00 (10.00 (10.00 (10.00	and the statement							
1	and the second states of the s	21-20	22			-				
Name (San	nple Collecto	or): 0	Di	lingh	um					
	Well Purge:		Perstaltic F			licated Tub	oing?	Y) / N		
		())	820		 	ر الم/۱۱ (1) م	/olume (mL):		NA	
1	ng Initiated:			Ca					3740)
Beginning	Water Level	(feet btoc):	_1	0.63			Purged (mL)	:	0.10	1
Beginning	Groundwate	r Elevation (N	AVD88):		We	II Purged 1	o Dryness?		Y /(N)	
Well Total	Depth (feet	btoc):	37.76)	Wa		fter Sampling e., pump is c		10.	53
Casing Dia	meter (feet)	2" Sch 40	0 PVC						0914	1
		27			Tim	ne Samplin	g Completed		0.01	
PURGE S	TABILIZATIO	ON DATA					Oxidation		10/0400	Notes
Time	Purge Rate	Cumulative Volume	Temp	Specific Conductance	Dissolved Oxygen	pH	Reduction Potential	Turbidity (NTU)	Water Level	(e.g., opacity,
ļ	(mL/min)	(mL)	(°C)	(µS/cm)	(mg/L)	(S.U.)	(mV)		(feet btoc)	color, odor)
0822		400	19.75	417.90	10.25	6.6	-100.4	3.30		clear, odor
0824	280	460	18.18	426.22	6.45	6.7	-102.8	3.00	10.53	K 4
0826	270	1500	17.86	428.01		6.7	-102.7	2.35	10.53	ss 11
08 28	280	2060	17.72	418.20	5.02	6.7	-102.2	3.56	10.53	ss 0
0830	290	2640		419.79		6.7	-102.2	3.23	10.53	w 11
0832	210	3180	17.64	415.13	4.54	6.7	-100.2	3.48	10.53	<i>a</i> 11
0834	280	5140					10-10			
					94					
							8			
						1				

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	ell ID:	IW 6
Sampling Informa	ition:						
Method of Samplin	g: Low Flow -	Perstaltic Pump	o & Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	(0.5	3				
Monitoring Event:	Annual ()	Semi-Annua	I() Quarte	rly() M	onthly ()	Other (
Final Purge Stabliz		Data:	s sgil				
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
07-21-2020	280	17.64	415.10	4.54	6.7	-100,2	3.48
2 - HF scientific, in General Information Weather Condition	ibration log of da oll Multi-Probe Fi nc. Micro TPI Fiel i on:	ield Meter (Temp Id Portable Turb	perature, Specifi	ng instruments: c Conductance, Dissol	ved Oxygen, pl	H, Oxidation Red	uction Potentia
<u>75°</u> F Sample Character	istics:	lear,	Colones	s, oderles	\$		
Sample Collection	Order:	. Per SAP		9 			N
200			8 I I I		- 		3 1 0
Comments and Ob	oservations:	018 1 - 1 				م	
					2 ¹ X		
× *							
·							
<u>.</u>							
I certify that sampl	ing procedures w	vere in accordan	ice with applicat	ole EPA and State proto	ocols.	-	

Date: 07-21-2020 By: Mohisz Riser Title: Las Tich

Page 2 of 2

Monitoring Well Field Inspection

Facility: <u>SBMU SPS - CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW 5</u> Name (Field Staff): <u>A Pate 1 O D: ITingh4M</u> Date: <u>D7-21-2323</u>
Access: Accessibility: Good Fair Poor Poor
Well clear of weeds and/or debris?: Yes 🗠 No
Well identification clearly visible?: Yes Ves No
Remarks:
Concrete Pad: Condition of Concrete Pad: Good I Inadequate
Depressions or standing water around well?: Yes No \swarrow
Remarks:
<u>Protective Outer Casing</u> : Material = $\frac{4^{\circ} \times 4^{\circ}}{5}$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good
Condition of Locking Cap: Good <u>//</u> Damaged
Condition of Lock: Good <u>C</u> Damaged
Condition of Weep Hole: Good L Damaged
Remarks:
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good V Damaged
Condition of Riser Cap: Good 🗹 Damaged
Measurement Reference Point: Yes No
Remarks:
Dedicated Purging/Sampling Device: Type = <u>14</u> " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good 🗹 Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes V No
Remarks:
Field Certification ALISL Paser Lab Tech 07-21-2000 Signed Title Date

January 2017

Monitor	ing Well ID:	MW	5 Fac	ility: SBML	Sikeston P	ower Statio	n - Groundw	ater Monitor	ing	
Initial Wate	r Level (feel	t btoc):	1.93			Date:	07-21	- 2020)	Ω.
		vation (NAVD				Air Pressu	re in Well?	Y / 🕅		
PURGE IN	FORMATIO	N								
Date:	57-2	11-202	0	· · · ·						
Name (Sar	nple Collect	or):0	0	illing	ham					
Method of	Well Purge:	Low Flow	Perstaltic F	Pump	Dec	dicated Tub	oing?	Y) / N		
Time Purgi	ng Initiated:	0	934		On	ି e (1) Well \	/olume (mL)		NA	
	-			1.93	Tot	al Volume	Purged (mL)	:	486	0
							o Dryness?		Y/D	
		r Elevation (N				-	fter Samplin		0	93
Well Total	Depth (feet	btoc):	31.11	6	Vva		e., pump is o			<u> </u>
Casing Dia	meter (feet)	: 2" Sch 4	0 PVC		Tin	ne Samplin	g Completed	l:	103	3
	FABILIZATI									
	Purge	Cumulative	Tamp	Specific	Dissolved	рН	Oxidation Reduction	Turbidity	Water	Notes
Time	Rate (mL/min)	Volume (mL)	Temp (°C)	Conductance (µS/cm)	Oxygen (mg/L)	(S.U.)	Potential	(NTU)	Level (feet btoc)	(e.g., opacity, color, odor)
0936	((()))	500	18.96	55.84	20.26	6.6	(mV) - 47.3	10.53	9.93	Ysnow Mary
0938	280	1060	18.16	42.33	16.11	6.6	-47.6	9.98	9.93	N D
0940		1620	17.95	68.70	14.10	6.6	-50.7	6.84	9.93	chear, no dor
0942		2200	18.44	811.97	4.53	67	-108.5	3.42	9.93	11 9
0944		2600	18.17	820.16		6.7	-104.1	4.54	9.93	n 1
6945		3160	18.15	812,76	4.28	6.7	-103.3	5.83	9.93	NN 11
09 47		3720	18.02	818.47	4.33	6.7	-105.0	6.00	9.93	e, 9
0949				812.34	1	6.8	-103.0	5.34	1.45	N 1)
0951	280	4860		816.50		6.8	-102.9	5.36	9.93	ų ij
									4	
4								1		

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	'ell ID:	W 5
Sampling Informa	ition:						
Method of Samplin	g: Low Flow -	Perstaltic Pum	p & Tubing			Dedicated:	(Y) / N
Water Level @ Sa	mpling (feet btoc)	9.93					
Monitoring Event:	Annual ()	Semi-Annua	al () Quarte	rly() Mo	onthly()	Other (
Final Purge Stabliz	ation Sampling D	ata:	27 				
<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)
07-21-200	280	18.35	816.50	4.37	6.8	-102.9	5.36
Instrument Calibr See instrument cal 1 - In-Situ SmarTr 2 - HF scientific, in General Information Weather Condition	libration log of da oll Multi-Probe Fi nc. Micro TPI Fiel i on:	eld Meter (Tem d Portable Turb	perature, Specifi	ng instruments: c Conductance, Dissolv	ved Oxygen, p	H, Oxidation Rec	luction Potentia
	Clo	az, (ola	Mess, C	Mass		i a ti	
Sample Characteri Sample Collection Comments and Ot	Order:	PerSAP		oftom cish	APPI	TT Ghd T	t evon-
Contes	FICIO	DIANN	<u>, , , , , , , , , , , , , , , , , , , </u>				
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			0	ble EPA and State proto		Teoh	

Page 2 of 2

Monitoring Well Field Inspection

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and the second

Facility: <u>SBMU SPS - CCR Groundwater Monitoring</u> Monitoring Well ID: <u>MW 8</u> Name (Field Staff): <u>A Pake</u> D Oillingham
Name (Field Staff): $\underline{++Par}$ D UT ((1) $\underline{++Par}$) Date: $\underline{07 - 21 - 2020}$
Access: Accessibility: Good Fair Poor
Well clear of weeds and/or debris?: Yes No
Well identification clearly visible?: Yes 🔽 No
Remarks:
Concrete Pad: Good /_ Inadequate
Depressions or standing water around well?: Yes No
Remarks:
<u>Protective Outer Casing</u> : Material = $4^{\circ} \times 4^{\circ}$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good <i>L</i> Damaged
Condition of Locking Cap: Good <u>C</u> Damaged
Condition of Lock: Good <u>Condition</u> Damaged
Condition of Weep Hole: Good Damaged
Remarks:
Well Riser: Material = <u>2" Diameter, Schedule 40 PVC, Flush Threaded</u>
Condition of Riser: Good 🚣 Damaged
Condition of Riser Cap: Good 🖉 Damaged
Measurement Reference Point: Yes No
Remarks:
Dedicated Purging/Sampling Device: Type = <u>1/4</u> " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good 1/ Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes 1 No
Remarks:
Field Certification Non In las Tech 07-21-2020
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

. . .

January 2017

Monitor	ing Well ID;	MW	8 Fac	ility: SBMU	J Sikeston Po	ower Static	on - Groundw	ater Monitor	ing	
Initial Wate	r Level (feel	t btoc):	9.45	. e -		Date <u>:</u> 7	1-21-	2020		
Initial Grou	ndwater Ele	vation (NAVD	88):			Air Pressu	re in Well?	Y / 🕅		
PURGE IN	FORMATIO	N								
Date: 1	07-21	-2020								
Name (San	nple Collect	or):	Dilli	nghan	1					
Method of V	Well Purge:	Low Flow	Perstaltic F	^o ump	Dec	icated Tub	oing?	Y) / N		
Time Purgi	ng Initiated:	1	107		One	e (1) Well \	Volume (mL)	: 3	NA	
Beginning	Water Level	(feet btoc):	9.	45	Tot	al Volume	Purged (mL)	:	3000	
Beginning	Groundwate	r Elevation (N	AVD88):		We	II Purged 1	To Dryness?		Y / 🕅	
Well Total	Depth (feet	btoc):	87.04	4	Wa		ifter Sampling		9.	45
Casing Dia	meter (feet)	: <u>2" Sch 40</u>) PVC		Tim		g Completed		121	7
PURGE ST	ABILIZATI	ON DATA					Ovidation			
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1109		400	2347	622.09	7.16	7.0	-129.5	7.23	9.45	clear, no dor
1111	250	920	20.46		4.14	7.0	-131.4		9.45	u p
1113	250	1400	19.72	665.79	3.41	7.0	-132.2	3.36	9.45	11 4
1115	250	1900	19.55	667.03	3.06	7.1	133.4	3.75	9.45	ч <i>ц</i>
1117	250	2400	19.24	675.43	2.93	7-1	-131.6	3.84	9.45	K 4
1119	305	3000	19.33	673.71	2:91	7.1	-130.8	3.56	9.45	u 4
					1					
				5 * 3						
1	1									

btoc - below top of casing

.....

Sampling Information: Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: Y Water Level @ Sampling (feet btoc): 9.45 Vater Level () Monthly () Other () Monitoring Event: Annual () Semi-Annual () Quarterly () Monthly () Other ()
Water Level @ Sampling (feet btoc): 9.45 Monitoring Event: Annual () Semi-Annual () Quarterly ()
Monitoring Event: Annual () Semi-Annual () Quarterly () Monthly () Other
Monitoring Event: Annual () Semi-Annual () Quarterly () Monthly () Other
Final Purge Stablization Sampling Data:
Date Sample TimeSample Rate (mL/min)Temp (°C)Specific Conductance (µS/cm)Dissolved Oxygen (mg/L)pH (S.U.)Oxidation Reduction (S.U.)Oxidation (mV)
07-21-2020 300 19.33 673.71 2.91 7.1 7130.8 3.5
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 Pc 2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter
General Information:
Weather Conditions @ time of sampling: SUNNY
Sample Characteristics: Jear, Coloness, Johnson
Sample Collection Order: Per SAP
Comments and Observations: Collect Field DUPLICAR AT BOTTOMASH APP ITT ME TE
Correct Fierr Overretter in portorion and a
I certify that sampling procedures were in accordance with applicable EPA and State protocols.
Date 07-21-2020 By: Ashish Paren Title: Lab Tech
Page 2 of 2

Constraint of

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW4
Name (Field Staff): <u>A Pater D Dillingham</u>
Date: 07-21-2020
Access: Accessibility: Good 🖌 Fair Poor
Well clear of weeds and/or debris?: Yes Mo
Well identification clearly visible?: Yes Mo
Remarks:
Concrete Pad: Good Marcele Condition of Concre
Depressions or standing water around well? Yes No
Remarks:
Protective Outer Casing: Material = $4^{\circ} \times 4^{\circ}$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good <u>Managed</u> Damaged
Condition of Locking Cap: Good // Damaged
Condition of Lock: Good L
Condition of Weep Hole: Good <u>C</u> Damaged
Remarks: •
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good L Damaged
Condition of Riser Cap: Good U Damaged
Measurement Reference Point: Yes V No
Remarks:
Dedicated Purging/Sampling Device: Type = 1/4 " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good Condition: Damaged Missing
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes No
Remarks:
Field Certification Ashish Parel Lab Tech 07-21-2020
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monito	ring Well ID	MW	Ч Fac	cility: SBMU	J Sikeston P	ower Statio	n - Groundw	ater Monitor	ing	
Initial Wate	er Level (fee	t btoc):	10.1	15		Date: (57-21	-2020		
Initial Grou	indwater Ele	vation (NAVE	088):			Air Pressur	e in Well?	Y / 😥		
PURGE IN	FORMATIO	N								
Date: (37-21	-2020)		14					
Name (Sar	mple Collect	tor):	Dilli	nghan	1	1 ×.				
	Well Purge:		v Perstaltic			dicated Tub	ing?	Y) / N		
Time Purgi	ing Initiated:	1	304		On	e (1) Well V	/olume (mL)	:	NA	
Beginning	Water Leve	l (feet btoc):	10	<u>.</u> 45	Tot	al Volume I	Purged (mL)	:	3400)
		er Elevation (I			We	ell Purged T	o Dryness?		Y / 🕲	
		btoc):		5	 Wa	iter Level a	fter Samplin	g (feet btoc)	13.4	IS
): 2" Sch 4					e., pump is o		140	
Casing Dia					Tin	ne Sampling	g Completed	l:	1410	
PURGE S	TABILIZATI	ON DATA			·····		Oxidation			
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1306		260	24.10	525.14	8.03	7.3	-143.8	1.17	10.45	clear, no dor
1308	250	860	21.31	543.85	6.95	7.3	-142.7	7.99	10.45	ts #
1310	260	1380		550.08	6.48	7.2	-143.5	9.84	10.45	u 1)
1312	240	1860	22.12	550.63	6.15	7.2	-1440	5.67	10.45	14 II
1314	270	2400	19.95	550.91	5.46	7.2	-145.1		10.45	
1316	250	2900	19.81	550.96	5.18	7.2	-145.5		10.45	
1318	250	3400	19.75	550.69	5.06	7.2	-145.6	6.49	10-45	<i>a n</i>
									·	
			2							
ŧ							-		t.	

btoc - below top of casing

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Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring V	Vell ID:/	W4
Sampling Informa	tion:	Ξ.					
Method of Sampling	g: Low Flow -	Perstaltic Pump	& Tubing			Dedicated;	(Y) / N
Water Level @ Sar	npling (feet btoc)	10.4	5				
Monitoring Event:	Annual ()	Semi-Annua	I() Quarte	rly ()	Monthly ()	Other (
Final Purge Stabliz	ation Sampling D	Data:	s 3a				
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxyg (mg/L)	en pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1318	250	19.75	553.69	5.06	7.2	-145.6	6.49
See instrument cali 1 - In-Situ SmarTro 2 - HF scientific, in General Informatio	oll Multi-Probe Fi c. Micro TPI Fiel	ield Meter (Temp	perature, Specifi		issolved Oxygen,	pH, Oxidation Rec	luction Potent
Weather Condition	s @ time of sam		nny				
Sample Characteri	stics: Cle	ar (010)	12851 Gd	oviess		· · · · · · · · · · · · · · · · · · ·	
Sample Collection	Order:	Per SAP				2545	
	a a a a		. ° 10.	14040 G41	100 100 100 100 100 100 100 100 100 100	`@	
Comments and Ob	servations:	. *	- a s	a	a di An	. (a) a	
		x	× • •	see a se	242 <u>1</u> . 24	* n - 0,	
	* * *	1		s		×	12
I certify that sampli	,		معيدية المعادمة		protopolo		

Date: 07-21-2023 By: Alan Pasa Title: Las Tech

Page 2 of 2

3

Field Sampling Notes – August 4, 2020 (Second 2020 Semi-Annual Event – pH Resample) Field Instrumentation Calibration Log calibrated by: A.S. P. C. A.e.

Facility: SBMU SPS CCR Groundwater Sampling

Field Instruments: In-Situ smarTROLL Field Meter

HF scientific, inc. Micro TPI Field Portable Turbidimeter

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	Turbidity Measurements (NTU)	= 0.02	lo. 0	< 000/ =	0.000	= 0.01	= 10.08	= 1012	2
ŀ		u	n			ņ		n	
	Turbidity Standards (NTU)	0.02				0.02	10.0		
	xygen	= 21.15	Si Hester	= 10 3. 4	= 99.84	= 24.17	Sitestan Crity	= 1005.8	98:38
	o pə/ (%)	16					п		
9	Dissolved Oxygen (%)	Temperature (°C)	Tap Water Source	Barometric Pressure (mm/Hg)	Measurement	Temperature (°C)	Tap Water Source	Barometric Pressure (mm/Hg)	Measurement = ??:38
sin #: 201607366	Oxidation Reduction Potential Measurement (mV)			229.2				228. J	
-	tial			11				н	
0.2 #2	on Reduction Poten Standard (mV)	\$2.10 =		a.925 =		11.15=		ال فريديد ا	
S/I	Oxidatio	Temperature (°C)		Standard (mV)		Temperature (°C)		Standard (mV)	
	Specific Conductance Measurement (µS/cm)			1412S				1376.4	
2				U.				11	
ţŻ	Specific Conductance Standard (µS/cm)			1413				1413	
th which	pH Measure- ments	= CI.D. =	"7.6	• • •	2	= 4.1 -	2.0	2	ר, די
47	pH Standards	4,00 =	7.00 =	1000		4.00 =	7.00 =		2
:# N/S	Time			0150				22	
	Date		- no- 20	2020			0X-111	1210	
T				gninnig Calibrat		к		of Day	pug

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.

Notes:

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

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

Date 03-04-2020

BY: BLAR

January 2017

Prepared by: GREDELL Engineering Resources, Inc.

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 4
Name (Field Staff): A fatel D Dillingham
Date: 08-04-2020
Access:
Accessibility: Good 2 Fair Poor
Well clear of weeds and/or debris?: Yes <u>No</u> No
Well identification clearly visible?: Yes <u>V</u> No
Remarks:
Concrete Pad: Good Inadequate
Depressions or standing water around well?: Yes No
Remarks:
<u>Protective Outer Casing</u> : Material = $4^{\circ} \times 4^{\circ}$ Steel Hinged Casing with Hasp
Condition of Protective Casing: Good L Damaged
Condition of Locking Cap: Good Condition
Condition of Lock: Good <u>C</u> Damaged
Condition of Weep Hole: Good <u>Damaged</u>
Remarks:
Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good V Damaged
Condition of Riser Cap: Good Damaged
Measurement Reference Point: Yes No
Remarks:
Dedicated Purging/Sampling Device: Type = <u>1/4</u> " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good <u> </u>
Remarks:
Monitoring Well Locked/Secured Post Sampling?: Yes Ver No
Remarks:
Field Certification Ashish Caser Las Teeh 08-04-2020
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc.

.....

January 2017

Monitori	ing Well ID:	MW	4 Faci	lity: SBMU	Sikeston Po	ower Statio	n - Groundw	ater Monitor	ing	
Initial Water	r Level (feet	btoc):	10.4	10		Date: 2	18-04	-2020		
Initial Grour	ndwater Elev	vation (NAVD	88):	*		Air Pressur	e in Well?	Y (N)		
PURGE INF	ORMATIO	N								
Date: 2	10-50	1-2020	>							
Name (Sam	nple Collecto	or):	Dill	ingha	M					
Method of V	Well Purge:	Low Flow	Perstaltic F	Pump	Dec	licated Tub	bing?	Y) / N		
Time Purgi	ng Initiated:		022		One	e (1) Well \	/olume (mL):	:	NA	
Beginning \	Nater Level	(feet btoc):	10.	40	Tota	al Volume	Purged (mL)	:	350	2C
Beginning	Groundwate	r Elevation (N	IAVD88):		We	II Purged T	o Dryness?		Y / 🕅	
Well Total	Depth (feet l	btoc):	37.25		Wa		fter Sampling		10.4	10
Casing Dia	meter (feet)	: 2" Sch 40) PVC				e., pump is c		1120	<
					l im	ie Samplin	g Completed	l: }		5
PURGE ST	ABILIZATI	ON DATA					Oxidation		Makes	Notes
Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	(e.g., opacity, color, odor)
1024		365	21.96	542.78	9.19	7.4	-119.6	11.30	10.45	Yellow MS Flake, orby
1025	260	880	19.71	562.55	7.09	7.4	-115.1	11.24	13.43	N 9
1028	20	1:400	19.12	566.39	6.23	7.4	-117.8	4.38	10.40	11 11
1030	260	1920		565,48	-	7.4	-1164	5.70	10.40	K 0
1032	215	2460		569.64		7.4	-117.5	7.65	10.40	N #
1034	260	2980	18.81	568.26		7.4	-115.9	7.38	12.40	1) U
1036	260	3500	18.81		4.87	7.4	-117.8	7.19	10.40	Clean odor
					5					
	-									
4										

btoc - below top of casing

Facility:	SBMU Sikeston	Power Station -	CCR Groundwa	ter Monitoring	Monitoring W	/ell ID:	1w 4_
Sampling Informat	ion:	in a si			88		
Method of Sampling	: Low Flow -	Perstaltic Pump	& Tubing			Dedicated:	(Y) / N
Water Level @ San	npling (feet btoc)	. (0.4	2				
Monitoring Event:	Annual ()	Semi-Annua	I () Quarter	rly (L)	Monthly ()	Other ()	
Final Purge Stabliza	ation Sampling D	Data:				Oxidation	
<u>Date</u> Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxyge (mg/L)	en pH (S.U.)	Reduction Potential (mV)	Turbidity (NTU)
08.04-2020	260	18.81	567.81	4.87	7.4	-117.8	7.19
2 - HF scientific, in General Information Weather Conditions 73°F Sample Characteris	c. Micro TPI Fie on: s @ time of sam	ld Portable Turbi pling: Sor	dimeter	c Conductance, Dis		£ _ 5	
Sample Collection	Order:	Per SAP	3.3		÷	V	
Comments and Ob	aru 3			1 00 10 10 10 10 10 10 10 10 10 10 10 10		2. ²⁵ .00 2.10	
			a ⁰⁰ 8 6 - 18			÷	
					4		V7.4

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

Date 08-04-2020 By: AST. IL Gasel Title: Las Tea

Page 2 of 2

Appendix 2

Laboratory Analytical Results

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



PROFESSIONAL • DEPENDABLE • COMMITTED

March 16, 2020

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

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

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

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

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

Sincerely,

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







Sample: 0023536-01 Name: MW-3 Matrix: Ground Wate	er - Grab						Sampled: 02/18/2 Received: 02/20/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytic	cal - Greens	burg							
Radium 226 - subcontracted	-0.0667	pCi/L			1	0.875			904.0 903.1
Radium 228 - subcontracted	0.341	pCi/L			1	0.571			904.0 903.1
Sample: 0023536-02 Name: MW-6 Matrix: Ground Wate	er - Grab						Sampled: 02/18/2 Received: 02/20/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytic	cal - Greens	burg							
Radium 226 - subcontracted	0,523	pCi/L			1	0.539			904.0 903.1
Radium 228 - subcontracted	0.736	pCi/L			1	0.638			904.0 903.1
Sample: 0023536-03 Name: MW-5 Matrix: Ground Wate	er - Grab						Sampled: 02/18/2 Received: 02/20/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytic	cal - Greens	burg							
Radium 226 - subcontracted	0,373	pCi/L			1	0.669			904,0 903,1
Radium 228 - subcontracted	0.576	pCi/L			1	0.701			904.0 903.1
Sample: 0023536-04 Name: MW-8 Matrix: Ground Wate	er - Grab						Sampled: 02/18/2 Received: 02/20/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytic	cal - Greens	burg							
Radium 226 - subcontracted	0.188	pCi/L			1	0,581			904.0 903.1



Sample: 0023536-05 Name: MW-4 Matrix: Ground Wa							Sampled: 02/18 Received: 02/20 PO #: 23573	/20 10:10	
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyt	<u>ical - Greens</u>	burg							
Radium 226 - subcontracted	0.071	pCi/L			1	0.52			904.0 903.1
Radium 228 - subcontracted	1 .05	pCi/L			1	0.709			904.0 903.1
Sample: 0023536-06 Name: FIELD DUPL Matrix: Ground Wa		plicate					Sampled: 02/18 Received: 02/20 PO #: 23573	/20 10:10	
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyt	ical - Greens	burg							
Dealizer 000 automatent d	0.291	pCi/L			1	0.541			904.0 903.1
Radium 226 - subcontracted									
	0.936	pCi/L			1	0.696			904.0 903.1
Radium 226 - subcontracted Radium 228 - subcontracted Sample: 0023536-07 Name: FIELD BLANI Matrix: Ground Wa		_			1	0.696	Sampled: 02/18 Received: 02/20 PO #: 2357	/20 10:10	904.0 903.1
Radium 228 - subcontracted Sample: 0023536-07 Name: FIELD BLAN	ĸ	_	Qualifier	Prepared	1 Dilution	0.696	Received: 02/20	/20 10:10	904.0 903.1 Method
Radium 228 - subcontracted Sample: 0023536-07 Name: FIELD BLAN Matrix: Ground Wa	K ter - Field Bla Result	unk Unit	Qualifier	Prepared			Received: 02/20 PO#: 23573	/20 10:10 3	
Radium 228 - subcontracted Sample: 0023536-07 Name: FIELD BLAN Matrix: Ground Wa Parameter	K ter - Field Bla Result	unk Unit	Qualifier	Prepared			Received: 02/20 PO#: 23573	/20 10:10 3	



Name: MW-3												
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method			
Anions - PIA												
Chloride	1.3	mg/L		02/28/20 08:26	1	1.0	02/28/20 08:26	LAM	EPA 300.0 REV 2.1			
Fluoride	< 0.250	mg/L	Q1	02/21/20 13:41	1	0.250	02/21/20 13:41	n.a.	EPA 300.0 REV 2.1			
Sulfate	21	mg/L		02/28/20 08:44	5	5.0	02/28/20 08:44	LAM	EPA 300.0 REV 2.1			
<u> General Chemistry - PIA</u>												
Solids - total dissolved solids (TDS)	140	mg/L	Н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C			
<u> Total Metals - PIA</u>												
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:36	JMW	EPA 6020A			
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A			
Barium	110	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A			
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A			
Boron	27	ug/L		03/11/20 10:06	5	10	03/12/20 08:56	JMW	EPA 6020A			
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A			
Calcium	16000	ug/L		03/03/20 12:27	5	100	03/04/20 08:36	WML	EPA 6020A			
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:36	JMW	EPA 6020A			
Cobalt	< 2,0	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:36	JMW	EPA 6020A			
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A			
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:36	JMW	EPA 6020A			
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A			
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A			
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A			
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:09	ZSA	EPA 6010B*			



Sample: 0023536-0 Name: MVV-6 Matrix: Ground Wa								20 10:25 20 10:10	
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	1.7	mg/L		02/28/20 09:02	1	1.0	02/28/20 09:02	LAM	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L	Q3	02/21/20 14:36	1	0.250	02/21/20 14:36	n.a,	EPA 300.0 REV 2.1
Sulfate	24	mg/L		02/28/20 09:21	5	5.0	02/28/20 09:21	LAM	EPA 300.0 REV 2.1
<u> General Chemistry - PIA</u>									
Solids - total dissolved solids (TDS)	170	mg/L	н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C
<u> Total Metals - PIA</u>									
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:40	JMW	EPA 6020A
Arsenic	2,4	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A
Barium	180	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A
Boron	40	ug/L		03/11/20 10:06	5	10	03/12/20 09:00	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A
Calcium	41000	ug/L		03/03/20 12:27	5	100	03/04/20 08:40	JMW	EPA 6020A
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:40	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:40	JMW	EPA 6020A
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:40	JMW	EPA 6020A
Molybdenum	≲1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:11	ZSA	EPA 6010B*



Sample: 0023536-03 Sampled: 02/18/20 11:39 Name: MW-5 Received: 02/20/20 10:10 Matrix: Ground Water - Grab PO #: 23573											
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method		
Anions - PIA											
Chloride	15	mg/L		02/28/20 09:39	5	5.0	02/28/20 09:39	LAM	EPA 300.0 REV 2.1		
Fluoride	< 0.250	mg/L		02/21/20 16:07	1	0.250	02/21/20 16:07	n.a.	EPA 300.0 REV 2.1		
Sulfate	210	mg/L		02/28/20 09:57	25	25	02/28/20 09:57	LAM	EPA 300.0 REV 2.1		
<u>General Chemistry - PIA</u>											
Solids - total dissolved solids (TDS)	520	mg/L	Н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C		
<u> Total Metals - PIA</u>											
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:44	JMW	EPA 6020A		
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A		
Barium	82	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A		
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A		
Boron	400	ug/L		03/11/20 10:06	5	10	03/12/20 09:03	JMW	EPA 6020A		
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A		
Calcium	110000	ug/L		03/03/20 12:27	5	100	03/04/20 08:44	JMW	EPA 6020A		
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:44	JMW	EPA 6020A		
Cobalt	4.3	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:44	JMW	EPA 6020A		
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A		
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:44	JMW	EPA 6020A		
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A		
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A		
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A		
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:12	ZSA	EPA 6010B*		



Sample: 0023536-I Name: MW-8 Matrix: Ground V	04 Vater - Grab						Sampled: 02/18/2 Received: 02/20/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	53	mg/L		02/28/20 10:33	25	25	02/28/20 10:33	LAM	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		02/21/20 17:02	1	0.250	02/21/20 17:02	n.a.	EPA 300.0 REV 2.1
Sulfate	110	mg/L		02/28/20 10:33	25	25	02/28/20 10:33	LAM	EPA 300.0 REV 2.1
<u>General Chemistry - PIA</u>									
Solids - total dissolved solids (TDS)	420	mg/L	н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C
<u> Total Metals - PIA</u>									
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:47	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Barium	77	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Boron	480	ug/L		03/11/20 10:06	5	10	03/12/20 09:21	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Calcium	93000	ug/L		03/03/20 12:27	5	100	03/04/20 08:47	JMW	EPA 6020A
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:47	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:47	JMW	EPA 6020A
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:47	JMW	EPA 6020A
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:14	ZSA	EPA 6010B*



Sample: 0023536-05 Sampled: 02/18/20 14:13 Name: MW-4 Received: 02/20/20 10:10 Matrix: Ground Water - Grab PO #: 23573									
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	11	mg/L		02/28/20 10:51	5	5.0	02/28/20 10:51	LAM	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		02/21/20 17:20	1	0.250	02/21/20 17:20	n.a,	EPA 300.0 REV 2.1
Sulfate	66	mg/L		02/28/20 11:09	25	25	02/28/20 11:09	LAM	EPA 300.0 REV 2.1
<u> General Chemistry - PIA</u>									
Solids - total dissolved solids (TDS)	290	m g/L	Н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C
<u> Total Metals - PIA</u>									
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:51	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Barium	72	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Boron	930	ug/L		03/03/20 12:27	5	10	03/04/20 08:51	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Calcium	67000	ug/L		03/03/20 12:27	5	100	03/04/20 08:51	JMW	EPA 6020A
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:51	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:51	JMW	EPA 6020A
_ead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:51	JMW	EPA 6020A
Molybdenum	5.1	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
_ithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:16	ZSA	EPA 6010B*



Sample: 0023536-06 Sampled: 02/18/20 00:00 Name: FIELD DUPLICATE Received: 02/20/20 10:10 Matrix: Ground Water - Field Duplicate PO #: 23573										
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method	
Anions - PIA										
Chloride	15	mg/L		02/28/20 12:04	5	5.0	02/28/20 12:04	LAM	EPA 300.0 REV 2.1	
Fluoride	< 0.250	mg/L		02/21/20 17:39	1	0.250	02/21/20 17:39	n.a.	EPA 300.0 REV 2.1	
Sulfate	220	mg/L		02/28/20 12:22	25	25	02/28/20 12:22	LAM	EPA 300.0 REV 2.1	
<u> General Chemistry - PIA</u>										
Solids - total dissolved solids (TDS)	420	mg/L	н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C	
Total Metals - PIA										
Antimony	< 3,0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:54	JMW	EPA 6020A	
Arsenic	< 1.0	ug/iL		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A	
Barium	85	ug/Ł		03/03/20 12:27	5	1,0	03/04/20 08:54	JMW	EPA 6020A	
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A	
Boron	410	ug/L		03/11/20 10:06	5	10	03/12/20 09:24	JMW	EPA 6020A	
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A	
Calcium	120000	ug/L.		03/03/20 12:27	5	100	03/04/20 08:54	JMW	EPA 6020A	
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:54	JMW	EPA 6020A	
Cobalt	3.9	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:54	JMW	EPA 6020A	
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A	
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:54	JMW	EPA 6020A	
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A	
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A	
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A	
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:21	ZSA	EPA 6010B*	



Sample: 0023536-07 Sampled: 02/18/20 00:00 Name: FIELD BLANK Received: 02/20/20 10:10 Matrix: Ground Water - Field Blank PO #: 23573										
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Anaiyst	Method	
Anions - PIA										
Chloride	< 1.0	mg/L		02/28/20 14:29	1	1.0	02/28/20 14:29	LAM	EPA 300.0 REV 2.1	
Fluoride	< 0.250	mg/L		02/21/20 17:57	1	0.250	02/21/20 17:57	n.a.	EPA 300.0 REV 2.1	
Sulfate	< 1.0	mg/L		02/28/20 14:29	1	1.0	02/28/20 14:29	LAM	EPA 300.0 REV 2.1	
<u> General Chemistry - PIA</u>										
Solids - total dissolved solids (TDS)	< 17	mg/L	н	02/27/20 08:59	1	17	02/27/20 09:26	срс	SM 2540C	
<u> Total Metals - PIA</u>										
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:58	JMW	EPA 6020A	
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMVV	EPA 6020A	
Barium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A	
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A	
Boron	< 10	ug/L		03/11/20 10:06	5	10	03/12/20 09:28	JMW	EPA 6020A	
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A	
Calcium	< 100	ug/L		03/03/20 12:27	5	100	03/04/20 08:58	JMW	EPA 6020A	
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:58	JMW	EPA 6020A	
Cobalt	< 2.0	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:58	JMW	EPA 6020A	
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A	
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:58	JMW	EPA 6020A	
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A	
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A	
Thallium	< 1,0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A	
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:23	ZSA	EPA 6010B*	

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



April 07, 2020

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

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

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

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

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

Sincerely,

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





Sample: 0040090-01 Name: MW-3 Matrix: Ground Water	- Grab						Sampled: 03/30/2 Received: 04/01/2 PO #: 23573			
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method	
<u> General Chemistry - PIA</u>										
olids - total dissolved olids (TDS)	180	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C	
Sample: 0040090-02							Sampled: 03/30/2	20 12:49		
Name: MW-4							Received: 04/01/2			
Matrix: Ground Water	- Grab						PO #: 23573			
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method	
<u> General Chemistry - PIA</u>										
Solids - total dissolved solids (TDS)	300	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C	
Sample: 0040090-03							Sampled: 03/30/2	20 10:35		
Name: MW-5						Received: 04/01/20 11:00				
Matrix: Ground Water	- Grab						PO #: 23573			
arameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method	
General Chemistry - PIA										
Solids - total dissolved solids (TDS)	450	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C	
Sample: 0040090-04							Sampled: 03/30/2	0 09:20		
Name: MW-6							Received: 04/01/2	0 11:00		
Matrix: Ground Water	- Grab						PO #: 23573			
'arameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method	
<u> Beneral Chemistry - PIA</u>										
Solids - total dissolved olids (TDS)	230	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C	



Sample: 0040090-05 Name: MVV-8 Matrix: Ground Wa							Sampled: 03/30/2 Received: 04/01/2 PO #: 23573	20 11:00	
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u> General Chemistry - PIA</u>									
Solids - total dissolved solids (TDS)	480	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C
Sample: 0040090-06 Name: FIELD DUPL Matrix: Ground Wa	ICATE						Sampled: 03/30/2 Received: 04/01/2 PO #: 23573	20 11:00	
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	460	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C
Sample: 0040090-07 Name: FIELD BLAN Matrix: Ground Wa	к						Sampled: 03/30/2 Received: 04/01/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		04/02/20 11:06	1	17	04/02/20 11:06	CPC	SM 2540C

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



May 14, 2020

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

RE: Sikeston NPDES Groundwater

Dear Luke St Mary:

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

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

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

Sincerely,

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





Sample: 0042173-08 Name: MW-8 Matrix: Ground Wat	er - Regular	Sample					Sampled: 04/08/2 Received: 04/10/2 PO #: 23575		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u> General Chemistry - PIA</u>						·			
Solids - total dissolved solids (TDS)	430	mg/L		04/13/20 13:25	1	26	04/13/20 14:25	CPC	SM 2540C
Sample: 0042175-01							Sampled: 04/08/2	20 10:55	
Name: MW-8							Received: 04/10/2	20 10:00	
Matrix: Ground Wat	er - Regular	Sample					PO #: 23573		
arameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u> General Chemistry - PIA</u>									
Solids - total dissolved solids (TDS)	480	mg/L		04/13/20 13:25	1	26	04/13/20 14:25	CPC	SM 2540C
Sample: 0042175-02							Sampled: 04/08/2	20 00:00	
Name: FIELD DUPLI							Received: 04/10/2	20 10:00	
Matrix: Ground Wat	er - Regular	Sample					PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	330	mg/L		04/13/20 13:25	1	26	04/13/20 14:25	CPC	SM 2540C
Sample: 0042175-03							Sampled: 04/07/2	20 00:00	
Name: FIELD BLANK		-					Received: 04/10/2	20 10:00	
Matrix: Ground Wat	er - Regular	Sample					PO #: 23573		
arameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u> General Chemistry - PIA</u>									
olids - totał dissolved olids (TDS)	< 17	mg/L		04/13/20 13:25	1	17	04/13/20 14:25	CPC	SM 2540C

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



August 24, 2020

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

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

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

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

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

Sincerely,

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









SAMPLE RECEIPT CHECK LIST

Work Order 0074963

YES	Samples received within temperature compliance
YES	COC present
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YE\$	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Samples are free from signs of damage & contamination
NO	No headspace >6 mm present in VOA vials or TOX bottles
NO	He headspace - o him problem in + or that of + or betted
NO	Sulfide bottle(s) completely filled if required
NO	Sulfide bottle(s) completely filled if required
NO NO	Sulfide bottle(s) completely filled if required Trip blank(s) received if required
NO NO NO	Sulfide bottle(s) completely filled if required Trip blank(s) received if required Custody seals used
NO NO NO NO	Sulfide bottle(s) completely filled if required Trip blank(s) received if required Custody seals used Custody seals intact
NO NO NO NO YES	Sulfide bottle(s) completely filled if required Trip blank(s) received if required Custody seals used Custody seals intact All analyses received within holding times
NO NO NO YES NO	Sulfide bottle(s) completely filled if required Trip blank(s) received if required Custody seals used Custody seals intact All analyses received within holding times Short hold time analysis requested
NO NO NO YES NO NO	Sulfide bottle(s) completely filled if required Trip blank(s) received if required Custody seals used Custody seals intact All analyses received within holding times Short hold time analysis requested RUSH TAT requested



Sample: 0074963-01 Name: MW-3 Matrix: Ground Wate	er - Grab						Sampled: 07/21/20 Received: 07/23/20 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytic	<u>cal - Greens</u>	burg							
Radium 226 - subcontracted	0.0564	pCi/L			1	0.524			904,0 903,1
Radium 228 - subcontracted	0.801	pCi/L			31	0.776			904.0 903.1
Sample: 0074963-02 Name: MW-4 Matrix: Ground Wate	er - Grab						Sampled: 07/21/20 Received: 07/23/20 PO#: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyti	<u>cal - Greens</u>	burg							
Radium 226 - subcontracted	0.456	pCi/L			4	0.48			904.0 903.1
Radium 228 - subcontracted	1.15	pCi/L			3	0.981			904,0 903,1
Sample: 0074963-03 Name: MW-5 Matrix: Ground Wat	er - Grab						Sampled: 07/21/20 Received: 07/23/20 PO#: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u> Miscellaneous - PACE Analyti</u>	cal - Greens	burg							
Radium 226 - subcontracted	-0.26	pCi/L			1	1.03			904.0 903.1
Radium 228 - subcontracted	0.963	pCi/L			1	0.976			904.0 903.1
Sample: 0074963-04 Name: MW-6 Matrix: Ground Wat	er - Grab						Sampled: 07/21/2 Received: 07/23/2 PO#: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyti	cal - Greens	burg							
Radium 226 - subcontracted	0.261	pCi/L			1	0.626			904.0 903.1



Sample: 0074963-05 Name: MW-8 Matrix: Ground Wat							Sampled: 07/2 Received: 07/2 PO #: 2357	3/20 10:15	
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyti	ical - Greens	burg							
Radium 226 - subcontracted	0.0545	pCi/L			1	0.401			904.0 903.1
Radium 228 - subcontracted	1.24	pCi/L			1	0.923			904.0 903.1
Sample: 0074963-06 Name: FIELD DUPLI Matrix: Ground Wat		plicate					Sampled: 07/2 Received: 07/2 PO #: 2355	3/20 10:15	
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyti	<u>ical - Greens</u>	burg							
	<u>ical - Greens</u> 0,313	<u>burq</u> pCi/L			1	0.461			904.0 903.1
Radium 226 - subcontracted					1 1	0.461 0.867			
Miscellaneous - PACE Analyti Radium 226 - subcontracted Radium 228 - subcontracted Sample: 0074963-07 Name: FIELD BLANI Matrix: Ground Wat	0,313 2.09 K	pCi/L pCi/L					Sampled: 07/2 Received: 07/2 PO #: 235	3/20 10:15	
Radium 226 - subcontracted Radium 228 - subcontracted Sample: 0074963-07 Name: FIELD BLANI	0,313 2.09 K	pCi/L pCi/L	Qualifier	Prepared			Received: 07/2	3/20 10:15	904.0 903.1 904.0 903.1
Radium 226 - subcontracted Radium 228 - subcontracted Sample: 0074963-07 Name: FIELD BLANI Matrix: Ground Wat	0.313 2.09 K ter - Field Bla Result	pCi/L pCi/L ank Unit	Qualifier	Prepared	1	0.867	Received: 07/2 PO #: 235	3/20 10:15 73	904.0 903.1
Radium 226 - subcontracted Radium 228 - subcontracted Sample: 0074963-07 Name: FIELD BLANI Matrix: Ground Wat	0.313 2.09 K ter - Field Bla Result	pCi/L pCi/L ank Unit	Qualifier	Prepared	1	0.867	Received: 07/2 PO #: 235	3/20 10:15 73	904.0 903.1



Sample: 0074963- Name: MW-3 Matrix: Ground V	01 Vater - Grab						20 07:21 20 10:15	
Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA								
Chloride	1.0	mg/L	07/28/20 22:04	1	1.0	07/28/20 22:04	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L	07/30/20 16:50	1	0.250	07/30/20 16:50	MGU	EPA 300.0 REV 2.1
Sulfate	15	mg/L	07/28/20 22:22	5	5.0	07/28/20 22:22	CRD	EPA 300,0 REV 2.1
<u> General Chemistry - PIA</u>								
Solids - total dissolved solids (TDS)	140	mg/L	07/24/20 08:07	1	26	07/24/20 10:00	DMR / BMS	SM 2540C
<u>Total Metals - PIA</u>								
Antimony	< 3.0	ug/L	07/28/20 09:15	5	3.0	07/29/20 12:47	JMW	EPA 6020A
Arsenic	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:47	JMW	EPA 6020A
Barium	85	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:47	JMW	EPA 6020A
Beryllium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:47	JMW	EPA 6020A
Boron	21	ug/L	07/28/20 09:15	5	10	07/29/20 12:47	JMW	EPA 6020A
Cadmium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:47	JMW	EPA 6020A
Calcium	18000	ug/L	07/28/20 09:15	5	200	07/29/20 12:47	JMW	EPA 6020A
Chromium	< 4.0	ug/L	07/28/20 09:15	5	4.0	07/29/20 12:47	JMW	EPA 6020A
Cobalt	< 2.0	ug/L	07/28/20 09:15	5	2.0	07/29/20 12:47	JMW	EPA 6020A
Lead	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:47	JMW	EPA 6020A
Mercury	< 0.20	ug/L	07/28/20 09:15	5	0.20	07/29/20 12:47	JMW	EPA 6020A
Molybdenum	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:47	JMW	EPA 6020A
Selenium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:47	JMW	EPA 6020A
Thallium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:47	JMW	EPA 6020A
Lithium	< 0.020	mg/L	07/28/20 09:15	1	0.020	07/30/20 09:57	ZSA	EPA 6010B*



Sample: 0074963-03 Name: MW-4 Matrix: Ground Wa						Sampled: 07/21/2 Received: 07/23/2 PO #: 23573	20 13:18 20 10:15	
Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA								
Chloride	14	mg/L	07/28/20 23:35	5	5.0	07/28/20 23:35	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L	07/30/20 17:08	1	0.250	07/30/20 17:08	MGU	EPA 300.0 REV 2.1
Sulfate	86	mg/L	07/28/20 23:53	25	25	07/28/20 23:53	CRD	EPA 300.0 REV 2.1
<u> General Chemistry - PIA</u>								
Solids - total dissolved solids (TDS)	290	mg/L	07/24/20 08:07	1	26	07/24/20 10:00	DMR / BMS	SM 2540C
<u> Total Metals - PIA</u>								
Antimony	< 3.0	ug/L	07/28/20 09:15	5	3.0	07/29/20 12:50	JMW	EPA 6020A
Arsenic	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:50	JMW	EPA 6020A
Barium	81	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:50	JMW	EPA 6020A
Beryllium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:50	JMW	EPA 6020A
Boron	920	ug/L	07/28/20 09:15	5	10	07/29/20 12:50	JMW	EPA 6020A
Cadmium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:50	JMW	EPA 6020A
Calcium	76000	ug/L	07/28/20 09:15	5	200	07/29/20 12:50	JMW	EPA 6020A
Chromium	< 4.0	ug/L	07/28/20 09:15	5	4.0	07/29/20 12:50	JMW	EPA 6020A
Cobalt	< 2.0	ug/L	07/28/20 09:15	5	2.0	07/29/20 12:50	JMW	EPA 6020A
Lead	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:50	JMW	EPA 6020A
Mercury	< 0.20	ug/L	07/28/20 09:15	5	0.20	07/29/20 12:50	JMW	EPA 6020A
Molybdenum	7.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:50	JMW	EPA 6020A
Selenium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:50	JMW	EPA 6020A
Thallium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:50	JMW	EPA 6020A
Lithium	< 0.020	mg/L	07/28/20 09:15	1	0.020	07/30/20 09:58	ZSA	EPA 6010B*



Parameter Result Anions - PIA 1 Chloride 1 Fluoride < 0.25 Sulfate 21 General Chemistry - PIA Solids - total dissolved 47 solids (TDS) 47 Total Metals - PIA Antimony < 3. Arsenic < 1. Barium 7	t Unit						
Chloride 1 Fluoride < 0.25 Sulfate 21 General Chemistry - PIA Solids - total dissolved solids (TDS) Total Metals - PIA Antimony < 3. Arsenic < 1.		Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method
Fluoride < 0.25							
Sulfate 21 General Chemistry - PIA Solids - total dissolved solids (TDS) Total Metals - PIA Antimony < 3.	4 mg/L	07/29/20 00:30	5	5.0	07/29/20 00:30	CRD	EPA 300.0 REV 2.1
General Chemistry - PIASolids - total dissolved solids (TDS)47Total Metals - PIA47Antimony< 3.	0 mg/L	07/30/20 17:26	1	0.250	07/30/20 17:26	MGU	EPA 300.0 REV 2.1
Solids - total dissolved 47 solids (TDS) Total Metals - PIA Antimony < 3.) mg/L	07/29/20 00:48	25	25	07/29/20 00:48	CRD	EPA 300.0 REV 2.1
solids (TDS) <u>Total Metals - PIA</u> Antimony < 3. Arsenic < 1.							
Antimony < 3. Arsenic < 1.) mg/L	07/24/20 08:07	1	26	07/24/20 10:00	DMR / BMS	SM 2540C
Arsenic <1.							
	0 ug/L	07/28/20 09:15	5	3.0	07/29/20 12:54	JMW	EPA 6020A
Barium 7	0 ug/L	07/28/20 09:15	5	1.0	07/29/20 12:54	JMW	EPA 6020A
	9 ug/L	07/28/20 09:15	5	1.0	07/29/20 12:54	JMW	EPA 6020A
Beryllium < 1.	0 ug/L	07/28/20 09:15	5	1.0	07/29/20 12:54	JMW	EPA 6020A
Boron 33	0 ug/L	07/28/20 09:15	5	10	07/29/20 12:54	JMW	EPA 6020A
Cadmium < 1.	0 ug/L	07/28/20 09:15	5	1.0	07/29/20 12:54	JMW	EPA 6020A
Calcium 11000	0 ug/L	07/28/20 09:15	5	200	07/29/20 12:54	JMW	EPA 6020A
Chromium < 4.	0 ug/L	07/28/20 09:15	5	4.0	07/29/20 12:54	JMW	EPA 6020A
Cobalt 2.	9 ug/L	07/28/20 09:15	5	2.0	07/29/20 12:54	JMW	EPA 6020A
Lead < 1.	0 ug/L	07/28/20 09:15	5	1.0	07/29/20 12:54	JMW	EPA 6020A
Mercury < 0.2	0 ug/L	07/28/20 09:15	5	0.20	07/29/20 12:54	JMW	EPA 6020A
Molybdenum < 1.	0 ug/L	07/28/20 09:15	5	1.0	07/29/20 12:54	JMW	EPA 6020A
Selenium < 1.	0 ug/L	07/28/20 09:15	5	1.0	07/29/20 12:54	JMW	EPA 6020A
Thallium < 1.	0 ug/L	07/28/20 09:15	5	1.0	07/29/20 12:54	JMW	EPA 6020A
Lithium < 0.02	0 mg/L	07/28/20 09:15	1	0,020	07/30/20 10:00	ZSA	EPA 6010B*



Sample: 0074963-(Name: MW-6 Matrix: Ground W)4 /ater - Grab					-				
Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method		
Anions - PIA										
Chloride	< 1.0	mg/L	07/29/20 01:06	1	1.0	07/29/20 01:06	CRD	EPA 300.0 REV 2.1		
Fluoride	< 0.250	mg/L	07/30/20 17:44	1	0.250	07/30/20 17:44	MGU	EPA 300.0 REV 2.1		
Sulfate	22	mg/L	07/29/20 01:24	5	5.0	07/29/20 01:24	CRD	EPA 300.0 REV 2.1		
<u> General Chemistry - PIA</u>										
Solids - total dissolved solids (TDS)	220	mg/L	07/24/20 08:07	1	26	07/24/20 10:00	DMR / BMS	SM 2540C		
<u> Total Metals - PIA</u>										
Antimony	< 3.0	ug/L	07/28/20 09:15	5	3.0	07/29/20 12:58	JMW	EPA 6020A		
Arsenic	3,1	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:58	JMW	EPA 6020A		
Barium	190	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:58	JMW	EPA 6020A		
Beryllium	< 1.0	ug/L	07/28/20 09:15	·5	1.0	07/29/20 12:58	JMW	EPA 6020A		
Boron	46	ug/L	07/28/20 09:15	5	10	07/29/20 12:58	JMW	EPA 6020A		
Cadmium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:58	JMW	EPA 6020A		
Calcium	43000	ug/L	07/28/20 09:15	5	200	07/29/20 12:58	JMW	EPA 6020A		
Chromium	< 4.0	ug/L	07/28/20 09:15	5	4.0	07/29/20 12:58	JMW	EPA 6020A		
Cobalt	< 2.0	ug/L	07/28/20 09:15	5	2.0	07/29/20 12:58	JMW	EPA 6020A		
Lead	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:58	JMW	EPA 6020A		
Mercury	< 0.20	ug/L	07/28/20 09:15	5	0.20	07/29/20 12:58	-WML	EPA 6020A		
Molybdenum	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:58	JMW	EPA 6020A		
Selenium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:58	JMW	EPA 6020A		
Thallium	< 1.0	ug/L	07/28/20 09:15	5	1.0	07/29/20 12:58	JMW	EPA 6020A		
Lithium	< 0.020	mg/L	07/28/20 09:15	1	0.020	07/30/20 10:02	ZSA	EPA 6010B*		



Name: MW-8	Matrix: Ground Water - Grab PO #: 23573											
Parameter	Result	Unit	Qualifier Prepared	Dilution	MRL	Analyzed	Analyst	Method				
Anions - PIA												
Chloride	50	mg/L	07/29/20 02:01	25	25	07/29/20 02:01	CRD	EPA 300.0 REV 2.1				
Fluoride	< 0.250	mg/L	07/30/20 18:02	1	0.250	07/30/20 18:02	MGU	EPA 300.0 REV 2.1				
Sulfate	100	mg/L	07/29/20 02:01	25	25	07/29/20 02:01	CRD	EPA 300.0 REV 2.1				
<u> General Chemistry - PIA</u>												
Solids - total dissolved solids (TDS)	420	mg/L	07/24/20 08:07	1	26	07/24/20 10:00	DMR / BMS	SM 2540C				
Total Metals - PIA												
Antimony	< 3.0	ug/L	07/28/20 11:11	5	3.0	07/29/20 13:55	JMW	EPA 6020A				
Arsenic	< 1.0	ug/L	07/28/20 11:11	5	1.0	07/29/20 13:55	JMW	EPA 6020A				
Barium	69	ug/L	07/28/20 11:11	5	1.0	07/29/20 13:55	JMW	EPA 6020A				
Beryllium	< 1.0	ug/L	07/28/20 11:11	5	1.0	07/29/20 13:55	JMW	EPA 6020A				
Boron	470	ug/L	07/28/20 11:11	5	10	07/29/20 13:55	JMW	EPA 6020A				
Cadmium	< 1.0	ug/L	07/28/20 11:11	5	1.0	07/29/20 13:55	JMW	EPA 6020A				
Calcium	89000	ug/L	07/28/20 11:11	5	200	07/29/20 13:55	JMW	EPA 6020A				
Chromium	< 4.0	ug/L	07/28/20 11:11	5	4.0	07/29/20 13:55	JMW	EPA 6020A				
Cobalt	< 2.0	ug/L	07/28/20 11:11	5	2.0	07/29/20 13:55	JMW	EPA 6020A				
Lead	< 1.0	ug/L	07/28/20 11:11	5	1.0	07/29/20 13:55	JMW	EPA 6020A				
Mercury	< 0.20	ug/L	07/28/20 11:11	5	0.20	08/03/20 09:05	JMW	EPA 6020A				
Molybdenum	< 1.0	ug/L	07/28/20 11:11	5	1.0	07/29/20 13:55	JMW	EPA 6020A				
Selenium	< 1.0	ug/L	07/28/20 11:11	5	1.0	07/29/20 13:55	JMW	EPA 6020A				
Thallium	< 1.0	ug/L	07/28/20 11:11	5	1.0	07/29/20 13:55	JMW	EPA 6020A				
Lithium	< 0.020	mg/L	07/28/20 11:11	1	0.020	07/30/20 10:12	ZSA	EPA 6010B*				



Sample: 0074963-0 Name: FIELD DUP Matrix: Ground W		plicate					Sampled: 07/21/2 Received: 07/23/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	51	mg/L		07/29/20 03:32	25	25	07/29/20 03:32	CRD	EPA 300.0 REV 2.1
Fluoride	< 0,250	mg/L		07/29/20 02:56	1	0.250	07/29/20 02:56	CRD	EPA 300.0 REV 2.1
Sulfate	110	mg/L		07/29/20 03:32	25	25	07/29/20 03:32	CRD	EPA 300.0 REV 2.1
<u> General Chemistry - PIA</u>									
Solids - total dissolved solids (TDS)	400	mg/L	м	07/24/20 08:07	1	26	07/24/20 10:00	DMR / BMS	SM 2540C
<u> Total Metals - PIA</u>									
Antimony	< 3.0	ug/L		07/28/20 11:11	5	3.0	07/29/20 14:03	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 14:03	JMW	EPA 6020A
Barium	69	ug/L		07/28/20 11:11	5	1.0	07/29/20 14:03	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 14:03	JMW	EPA 6020A
Boron	480	ug/L		07/28/20 11:11	5	10	07/29/20 14:03	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 14:03	JMW	EPA 6020A
Calcium	91000	ug/L		07/28/20 11:11	5	200	07/29/20 14:03	JMW	EPA 6020A
Chromium	< 4.0	ug/L		07/28/20 11:11	5	4.0	07/29/20 14:03	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		07/28/20 11:11	5	2.0	07/29/20 14:03	JMW	EPA 6020A
_ead	< 1.0	ug/L		07/28/20 11:11	5	1,0	07/29/20 14:03	JMW	EPA 6020A
Mercury	< 0.20	ug/L		07/28/20 11:11	5	0.20	07/29/20 14:03	JMW	EPA 6020A
Molybdenum	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 14:03	JMW	EPA 6020A
Selenium	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 14:03	JMW	EPA 6020A
Thallium	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 14:03	JMW	EPA 6020A
Lithium	< 0.020	mg/L		07/28/20 11:11	1	0,020	07/30/20 10:16	ZSA	EPA 6010B*



Sample: 0074963-07 Sampled: 07/21/20 00:00 Name: FIELD BLANK Received: 07/23/20 10:15 Matrix: Ground Water - Field Blank PO #: 23573										
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method	
Anions - PIA										
Chloride	< 1.0	mg/L		07/29/20 03:50	1	1.0	07/29/20 03:50	CRD	EPA 300.0 REV 2.1	
Fluoride	< 0.250	mg/L		07/29/20 03:50	1	0.250	07/29/20 03:50	CRD	EPA 300.0 REV 2.1	
Sulfate	< 1.0	mg/L		07/29/20 03:50	1	1.0	07/29/20 03:50	CRD	EPA 300.0 REV 2.1	
<u> General Chemistry - PIA</u>										
Solids - total dissolved solids (TDS)	< 17	mg/L		07/24/20 08:07	1	17	07/24/20 10:00	DMR / BMS	SM 2540C	
<u> Total Metals - PIA</u>										
Antimony	< 3.0	ug/L		07/28/20 11:11	5	3.0	07/29/20 13:59	JMW	EPA 6020A	
Arsenic	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 13:59	JMW	EPA 6020A	
Barium	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 13:59	JMW	EPA 6020A	
Beryllium	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 13:59	JMW	EPA 6020A	
Boron	< 10	ug/L		07/28/20 11:11	5	10	07/29/20 13:59	JMW	EPA 6020A	
Cadmium	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 13:59	JMW	EPA 6020A	
Calcium	980	ug/L	в	07/28/20 11:11	5	200	07/29/20 13:59	JMW	EPA 6020A	
Chromium	< 4.0	ug/L		07/28/20 11:11	5	4.0	07/29/20 13:59	JMW	EPA 6020A	
Cobalt	< 2.0	ug/L		07/28/20 11:11	5	2.0	07/29/20 13:59	JMW	EPA 6020A	
Lead	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 13:59	JMW	EPA 6020A	
Mercury	< 0.20	ug/L		07/28/20 11:11	5	0,20	08/03/20 09:08	JMW	EPA 6020A	
Molybdenum	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 13:59	JMW	EPA 6020A	
Selenium	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 13:59	JMW	EPA 6020A	
Thallium	< 1.0	ug/L		07/28/20 11:11	5	1.0	07/29/20 13:59	JMW	EPA 6020A	
Lithium	< 0.020	mg/L		07/28/20 11:11	1	0.020	07/30/20 10:14	ZSA	EPA 6010B*	

Appendix 3

Laboratory Quality Assurance/Quality Control Data

Laboratory Quality Assurance/Quality Control Data – February 18, 2020

(First 2020 Semi-annual Event)



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B004627 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B004627-CCB1)				Prepared &	Analyzed: 02/	21/20			
Fluoride	0,00	mg/L							
Calibration Check (B004627-CCV1)				Prepared &	Analyzed: 02/	21/20			
Fluoride	4.89	mg/L		5.000	-	98	90-110		
Matrix Spike (B004627-MS1)	Sample: 002353	6-01		Prepared &	Analyzed: 02/	21/20			
Fluoride	1.40	mg/L	Q1	1.500	0.210	79	80-120		
Matrix Spike (B004627-MS2)	Sample: 002353	6-02		Prepared &	Analyzed: 02/	21/20			
Fluoride	1.12	mg/L	Q1	1.500	ND	75	80-120		
Matrix Spike (B004627-MS3)	Sample: 002353	6-03		Prepared &	Analyzed: 02/	21/20			
Fluoride	1.45	mg/L		1.500	ND	97	80-120		
Matrix Spike Dup (B004627-MSD1)	Sample: 002353	6-01		Prepared &	Analyzed: 02/	21/20			
Fluoride	1.43	mg/L		1.500	0.210	81	80-120	2	20
Matrix Spike Dup (B004627-MSD2)	Sample: 002353	6-02		Prepared &	Analyzed: 02/	21/20			
Fluoride	1.14	mg/L	Q2	1.500	ND	76	80-120	1	20
Matrix Spike Dup (B004627-MSD3)	Sample: 002353	6-03		Prepared &	Analyzed: 02/	21/20			
Fluoride	1.46	mg/L		1.500	ND	97	80-120	0.8	20
Batch B004955 - No Prep - SM 2540C									
Blank (B004955-BLK1)				Prepared &	Analyzed: 02/	27/20			
Solids - total dissolved solids (TDS)	< 17	mg/L		-					
LCS (B004955-BS1)				Prepared &	Analyzed: 02/	27/20			
Solids - total dissolved solids (TDS)	967	mg/L		1000		97	67.9-132		
Duplicate (B004955-DUP1)	Sample: 002431	5-01		Prepared &	Analyzed: 02/	27/20			
Solids - total dissolved solids (TDS)	473	mg/L	М		540			13	5
<u> Batch B005170 - IC No Prep - EPA 300.0 REV 2.1</u>									
Calibration Blank (B005170-CCB1)				Prepared &	Analyzed: 02/	28/20			
Sulfate	0.00	mg/L			-				
Chloride	0,578	mg/L							
Calibration Check (B005170-CCV1)				Prepared &	Analyzed: 02/	28/20			
Sulfate	5,19	mg/L		5,000		104	90-110		
Chloride	5.07	mg/L		5.000		101	90-110		
Batch B005306 - SW 3015 - EPA 6020A									
Blank (B005306-BLK1)				Prepared: 0	3/03/20 Analy	/zed: 03/04/2	D		
Antimony	< 3.0	ug/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Beryllium	< 1.0	ug/L							
Boron	77,4	ug/L	В						
Cadmium	< 1,0	ug/L							
Calcium	< 100	ug/L							
Chromium Cobalt	< 4.0 < 2.0	ug/L							



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPC Limi
Batch B005306 - SW 3015 - EPA 6020A									
Blank (B005306-BLK1)				Dranaradi (2/02/00 6				
Lead	< 1.0	ug/L		Prepared. C	03/03/20 Analy	/zea: 03/04/20	J		
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							
Selenium	< 1.0	ug/L							
Thallium	< 1.0	ug/L							
Lithium	< 0.020	mg/L							
LCS (B005306-BS1)	0.020	mgvr		Prenared: 0	3/03/20 Analy	and: 02/04/20	`		
Antimony	535	ug/L		555.6	SIUSIZU Analy	96	80-120		
Arsenic	569	ug/L		555.6		102	80-120		
Barium	531	ug/L		555.6		96	80-120		
Beryllium	527	ug/L		555.6		95	80-120		
Boron	605	ug/L		555.6		95 109	80-120		
Cadmium	526	ug/L		555.6		95	80-120 80-120		
Calcium	5580	ug/L		5556		95 100	80-120		
Chromium	555	ug/L		555.6		100	80-120		
Cobalt	560	ug/L		555.6		100	80-120 80-120		
Lead	562	ug/L		555.6		101	80-120		
Mercury	51.6	ug/L		55.56		93	80-120		
Molybdenum	545	ug/L		555.6		98	80-120		
Selenium	581	ug/L		555.6		105	80-120		
Thallium	533	ug/L		555,6		96	80-120		
Lithium	0.558	mg/L		0.5556		90 100	80-120		
Matrix Spike (B005306-MS1)	Sample: 002363	-			3/03/20 Analy				
Antimony	543	ug/L		555.6	ND	98	75-125	_	
Arsenic	574	ug/L		555.6	ND	103	75-125		
Barium	539	ug/L		555.6	10.5	95	75-125		
Beryllium	514	ug/L		555.6	ND	93	75-125		
Boron	851	ug/L		555,6	315	96	75-125		
Cadmium	512	ug/L		555.6	ND	92	75-125		
Calcium	292000	ug/L		5556	288000	77	75-125		
Chromium	536	ug/L		555.6	4.97	96	75-125		
Cobalt	531	ug/L		555.6	ND	96	75-125		
_ead	533	ug/L		555.6	ND	96	75-125		
Mercury	56.0	ug/L		55.56	ND	101	75-125		
Molybdenum	557	ug/L		555.6	0.783	100	75-125		
Selenium	581	ug/L		555.6	ND	105	75-125		
Thallium	509	ug/L		555.6	ND	92	75-125		
Matrix Spike Dup (B005306-MSD1)	Sample: 002367				3/03/20 Analy				
Antimony	539	ug/L		555.6	ND	97	75-125	0.6	20
Arsenic	579	ug/L		555.6	ND	104	75-125	1	20
Barium	544	ug/L		555.6	10.5	96	75-125	0.8	20
Beryllium	520	ug/L		555.6	ND	94	75-125	1	20
Boron	865	ug/L		555.6	315	99	75-125	2	20
							10 120	~	20

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B005306 - SW 3015 - EPA 6020A									
Matrix Spike Dup (B005306-MSD1)	Sample: 002367	'2-06		Prepared: 0	3/03/20 Anal	yzed: 03/05/2	0		
Calcium	293000	ug/L		5556	288000	97	75-125	0.4	20
Chromium	544	ug/L		555,6	4.97	97	75-125	2	20
Cobait	530	ug/L		555.6	ND	95	75-125	0.01	20
Lead	529	ug/L		555.6	ND	95	75-125	0.7	20
Mercury	53.1	ug/L		55.56	ND	96	75-125	5	20
Molybdenum	561	ug/L		555,6	0.783	101	75-125	0.7	20
Selenium	592	ug/L		555.6	ND	107	75-125	2	20
Thallium	508	ug/L		555.6	ND	91	75-125	0.2	20
<u> Batch B006011 - SW 3015 - EPA 6020A</u>									
Blank (B006011-BLK1)				Prepared: 0	3/11/20 Analy	/zed: 03/12/20)		
Boron	< 10	ug/L							
LCS (B006011-BS1)				Prepared: 0	3/11/20 Analy	/zed: 03/12/20)		
Boron	499	ug/L		555.6		90	80-120		



NOTES

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

* Not a TNI accredited analyte

Certifications

- CHI McHenry, IL 4314-A W. Crystal Lake Road, McHenry, IL 60050 TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556
- PIA Peoria, IL 2231 W. Altorfer Drive, Peoria, IL 61615

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

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

- SPIL Springfield, IL 1210 Capitol Airport Drive, Springfield, IL 62707 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17592
- SPMO Springfield, MO 1805 W Sunset Street, Springfield, MO 65807 USEPA DMR-QA Program
- STL Hazelwood, MO 944 Anglum Rd, Hazelwood, MO 63042

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

Qualifiers

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



Certified by: Kurt Stepping, Senior Project Manager



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

March 11, 2020

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

RE: Project: 0023536 Pace Project No.: 30351798

Dear Ms. Clutters:

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

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

Sincerely,

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

Enclosures

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



REPORT OF LABORATORY ANALYSIS



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

CERTIFICATIONS

Project: 0023536 Pace Project No.: 30351798

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601 ANAB DOD-ELAP Rad Accreditation #: L2417 Alabama Certification #: 41590 Arizona Certification #: AZ0734 Arkansas Certification California Certification #: 04222CA Colorado Certification #: PA01547 Connecticut Certification #: PH-0694 **Delaware Certification** EPA Region 4 DW Rad Florida/TNI Certification #: E87683 Georgia Certification #: C040 Florida: Cert E871149 SEKS WET Guam Certification Hawaii Certification Idaho Certification Illinois Certification Indiana Certification Iowa Certification #: 391 Kansas/TNI Certification #: E-10358 Kentucky Certification #: KY90133 KY WW Permit #: KY0098221 KY WW Permit #: KY0000221 Louisiana DHH/TNI Certification #: LA180012 Louisiana DEQ/TNI Certification #: 4086 Maine Certification #: 2017020 Maryland Certification #: 308 Massachusetts Certification #: M-PA1457 Michigan/PADEP Certification #: 9991

Missouri Certification #: 235 Montana Certification #: Cert0082 Nebraska Certification #: NE-OS-29-14 Nevada Certification #: PA014572018-1 New Hampshire/TNI Certification #: 297617 New Jersey/TNI Certification #: PA051 New Mexico Certification #: PA01457 New York/TNI Certification #: 10888 North Carolina Certification #: 42706 North Dakota Certification #: R-190 Ohio EPA Rad Approval: #41249 Oregon/TNI Certification #: PA200002-010 Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282 South Dakota Certification Tennessee Certification #: 02867 Texas/TNI Certification #: T104704188-17-3 Utah/TNI Certification #: PA014572017-9 USDA Soil Permit #: P330-17-00091 Vermont Dept. of Health: ID# VT-0282 Virgin Island/PADEP Certification Virginia/VELAP Certification #: 9526 Washington Certification #: C868 West Virginia DEP Certification #: 143 West Virginia DHHR Certification #: 9964C Wisconsin Approve List for Rad Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS



SAMPLE SUMMARY

0023536 Pace Project No .: 30351798

Project:

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30351798001	0023536-01	Water	02/18/20 09:20	02/25/20 09:20
30351798002	0023536-02	Water	02/18/20 10:25	02/25/20 09:20
30351 7980 03	0023536-03	Water	02/18/20 11:39	02/25/20 09:20
30351798004	0023536-04	Water	02/18/20 12:36	02/25/20 09:20
30351798005	0023536-05	Water	02/18/20 14:13	02/25/20 09:20
30351798006	0023536-06	Water	02/18/20 00:00	02/25/20 09:20
30351 798007	0023536-07	Water	02/18/20 00:00	02/25/20 09:20

REPORT OF LABORATORY ANALYSIS



SAMPLE ANALYTE COUNT

 Project:
 0023536

 Pace Project No.:
 30351798

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30351798001	0023536-01	EPA 903.1	 MK1	Ť.	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30351798002	0023536-02	EPA 903.1	MK 1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30351798003	0023536-03	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30351798004	0023536-04	EPA 903.1	MK 1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30351798005	0023536-05	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30351798006	0023536-06	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30351798007	0023536-07	EPA 903.1	МК1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

REPORT OF LABORATORY ANALYSIS



PROJECT NARRATIVE

 Project:
 0023536

 Pace Project No.:
 30351798

Method:EPA 903.1Description:903.1 Radium 226Client:PDC Laboratories IncDate:March 11, 2020

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:



PROJECT NARRATIVE

 Project:
 0023536

 Pace Project No.:
 30351798

Method:EPA 904.0Description:904.0 Radium 228Client:PDC Laboratories IncDate:March 11, 2020

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

	201	10.6		15
Pag	e	20	of	30



PROJECT NARRATIVE

 Project:
 0023536

 Pace Project No.:
 30351798

Method:Total Radium CalculationDescription:Total Radium 228+226Client:PDC Laboratories IncDate:March 11, 2020

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 0023536 Pace Project No.: 30351798						
Sample: 0023536-01 PWS:	Lab ID: 303517 Site ID:	798001 Collected: 02/18/20 09:20 Sample Type:	Received:	02/25/20 09:20 N	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.0667 ± 0.392 (0.875)	pCi/L	03/09/20 11:52	13982-63-3	
Radium-228	EPA 904.0	C:NA T:78% 0.341 ± 0.289 (0.571) C:79% T:92%	pCi/L	03/10/20 14:47	15262-20-1	
Total Radium	Total Radium Calculation	0.341 ± 0.681 (1.45)	pCi/L	03/11/20 12:13	7440-14-4	
Sample: 0023536-02	Lab ID: 303517	798002 Collected: 02/18/20 10:25	Received:	02/25/20 09:20 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	0.523 ± 0.415 (0.539)	pCi/L	03/09/20 12:14	13982-63-3	
Radium-228	EPA 904.0	C:NA T:93% 0.736 ± 0.373 (0.638) C:76% T:92%	pCi/L	03/10/20 14:47	15262-20-1	
Total Radium	Total Radium Calculation	1.26 ± 0.788 (1.18)	pCi/L	03/11/20 12:13	7440-14-4	
Sample: 0023536-03 PWS:	Lab ID: 303517 Site ID:	798003 Collected: 02/18/20 11:39 Sample Type:	Received:	02/25/20 09:20 N	Vatrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.373 ± 0.424 (0.669)	pCi/L	03/09/20 12:14	13982-63-3	
Radium-228	EPA 904.0	C:NA T:90% 0.576 ± 0.372 (0.701) C:76% T:92%	pCi/L	03/10/20 14:47	15262-20-1	
Total Radium	Total Radium Calculation	0.949 ± 0.796 (1.37)	pCi/L	03/11/20 12:13	7440-14-4	
Sample: 0023536-04 PWS:	Lab ID: 303517 Site ID:	798004 Collected: 02/18/20 12:36 Sample Type:	Received:	02/25/20 09:20 N	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.188 ± 0.325 (0.581)	pCi/L	03/09/20 12:14	13982-63-3	
Radium-228	EPA 904.0	C:NA T:88% 0.814 ± 0.431 (0.762) C:78% T:84%	pCi/L	03/10/20 14:47	15262-20-1	
Total Radium	Total Radium Calculation	1.00 ± 0.756 (1.34)	pCi/L	03/11/20 12:13	7440-14-4	
Sample: 0023536-05 PWS:	Lab ID: 303517 Site ID:	798005 Collected: 02/18/20 14:13 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0706 ± 0.322 (0.520) C:NA T:83%	pCi/L	03/09/20 12:14	13982-63-3	
Radium-228	EPA 904.0	1.05 ± 0.449 (0.709) C:74% T:88%	pCi/L	03/10/20 14:47	15262-20-1	

REPORT OF LABORATORY ANALYSIS



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 0023536

	Pace	Project	No.:	30351798
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Sample: 0023536-05 PWS:	Lab ID: 30351 Site ID:	1798005 Collected: 02/18/20 14:13 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	1.12 ± 0.771 (1.23)	pCi/L	03/11/20 12:13	7440-14-4	
Sample: 0023536-06 PWS:	Lab ID: 3035 Site ID:	798006 Collected: 02/18/20 00:00 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.291 ± 0.344 (0.541)	pCi/L	03/09/20 12:14	13982-63-3	
Radium-228	EPA 904.0	C:NA T:87% 0.936 ± 0.425 (0.696) C:76% T:87%	pCi/L	03/10/20 14:47	15262-20-1	
Total Radium	Total Radium Calculation	1.23 ± 0.769 (1.24)	pCi/L	03/11/20 12:13	7440-14-4	
Sample: 0023536-07 PWS:	Lab ID: 30351 Site ID:	1798007 Collected: 02/18/20 00:00 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.115 ± 0.357 (0.691) C:NA T:96%	pCi/L	03/09/20 12:14	13982-63-3	
Radium-228	EPA 904.0	0.693 ± 0.369 (0.626) C:74% T:86%	pCi/L	03/10/20 14:48	15262-20-1	
Total Radium	Total Radium Calculation	0.808 ± 0.726 (1.32)	pCi/L	03/11/20 12:13	7440-14-4	



Radium-226

QUALITY CONTROL - RADIOCHEMISTRY

Project:	0023536					
Pace Project No .:	30351798					
QC Batch:	385636	Analysis Method:	EPA 903.1			
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-2	26		
Associated Lab Sar	mples: 30351798001	I, 30351798002, 30351798003, 3035179800	04, <mark>303</mark> 51798005, 3	0351798006, 30351	798007	
METHOD BLANK:	1868384	Matrix: Water	· · · ·			
Associated Lab Sar	mples: 30351798001	, 30351798002, 30351798003, 3035179800	04, 30351798005, 3	0351798006, 30351	798007	
Para	neter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers	

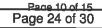
pCi/L

03/09/20 11:39

-0.0938 ± 0.260 (0.615) C:NA T:92%

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

REPORT OF LABORATORY ANALYSIS





Radium-228

QUALITY CONTROL - RADIOCHEMISTRY

Project: Pace Project No.:	0023536 30351798					
QC Batch:	385656	Analysis Method:	EPA 904.0			
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228	ł		
Associated Lab Sar	mples: 30351798001,	30351798002, 30351798003, 3035179800	4, 30351798005, 30	351 <mark>798006,</mark> 3035 ⁻	1798007	
METHOD BLANK:	1868407	Matrix: Water				
Associated Lab Sar	mples: 30351798001,	30351798002, 30351798003, 3035179800	4, 30351 798005, 3 0	351798006, 3035	1798007	
Para	neter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers	

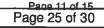
pCi/L

03/10/20 14:46

0.540 ± 0.354 (0.663) C:79% T:88%

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

REPORT OF LABORATORY ANALYSIS





Page 26 of 30

QUALIFIERS

Project:	0023536
Pace Project No.:	30351798

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

ب بر		ONTRACT ORDER or Chain of Custody		30351798	-
, n	PDC	Laboratories, Inc. 0023536	30351798		
SENDING LABORATORY		RECEIVING t	ABORATORY	Ĺ	
PDC Laboratories, Inc. 2231 W Altorfer Dr Peoria, IL 61615 (800) 752-6651					
Sample: 0023536-01 Name: MW-3	<u></u>			02/18/20 09:20 Ground Water HNO3, pH <2	60
Analysis	Due	Expires	Comme	ents	· · · · · · · · · · · · · · · · · · ·
01-Radium 226/228	03/02/20 16:00	08/16/20 09:20			•
Sample: 0023536-02 Name: MW-6			Matrix:	02/18/20 10:25 Ground Water HNO3, pH <2	002
Analysis	Due	Expires	Comm	ents	
01-Radium 226/228	03/02/20 16:00	08/16/20 10:25			
Sample: 0023536-03 Name: MW-5	<u> </u>		Matrix:	02/18/20 11:39 Ground Water HNO3, pH <2	003
Analysis	Due	Expires	Comm	ents	
01-Radium 226/228	03/02/20 16:00	08/16/20 11:39			
Sample: 0023536-04 Name: MW-8			Matrix:	02/18/20 12:36 Ground Water HNO3, pH <2	004
Analysis	Due	Expires	Comm	ients	
01-Radium 226/228	03/02/20 16:00	08/16/20 12:36			
Sample: 0023536-05 Name: MW-4			Matrix	02/18/20 14:13 Ground Water HNO3, pH <2	005
Analysis	Due	Expires	Comm	nents	

SUBCONTRACT ORDER Transfer Chain of Custody

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Page 28 of 30

PDC Laboratories, Inc.

0023536

RECEIVING LABORATORY SENDING LABORATORY PACE Analytical - Greensburg PDC Laboratories, Inc. 1638 Roseytown Road - Suites 2,3,4 2231 W Altorfer Dr Greensburg, PA 15601 Peoria, IL 61615 (724) 850-5600 (800) 752-6651 Sampled: 02/18/20 00:00 Sample: 0023536-06 Matrix: Ground Water Name: FIELD DUPLICATE Preservative: HNO3, pH <2 006 Comments Expires Due Analysis 08/16/20 00:00 03/02/20 16:00 01-Radjum 226/228 Sampled: 02/18/20 00:00 Sample: 0023536-07 Matrix: Ground Water Name: FIELD BLANK Preservative: HNO3, pH <2 Comments Expires Analysis Due 08/16/20 00:00 03/02/20 16:00 01-Radium 226/228

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

Date Shipped: 2-2/-20 1	otal # of Containers:	Sample Origin ((State): <u>TL</u> PO #: <u>L4/026</u>
Turn-Around Time Requested	NORMAL 🗌 RUSH	Date Resi	uits Needed:
Relinquished By Date/Time	A		Sample Temperature Upon Receipt
Relinquished By Date/Time	e Received By	Date/Time	Bare 14 of 15

Pittsburgh Lab Sample Condition	י Up	on R	ece	ipt # 30351798
~		DC		
Page Analytical' Client Name:	<u> </u>		LU	
1	_			Label
Courier: Fed Ex UUPS UUSPS Client		mercia	ւլ	Pace Other
Tracking # 1718 2911 853		•	•	
Custody Seal on Cooler/Box Present: Ves	01		eals ìn	
Thermometer Used	-	ice:		Biue (None °C
Cooler Temperature Observed Temp		C C	OTTEC	tion Factor: G Final Temp:
Temp should be above treasing to 8°C			ब	H peper Lots Date and Initials of parents at initials
r	Yes	No	N/A	1002191 contents pro-
Comments:	7			
Chain of Custody Present:	1			
Chain of Custody Filled Out		+		······································
Chain of Custody Relinquished:	\leftarrow	-7		4.
Sampler Name & Signature on COC:	-7			5.
Sample Labels match COC:	14	d -	`	a.
-includes data/time/ID Matrix		1		
Samples Arrived within Hold Time:				6.
Short Hold Time Analysis (<72hr remaining):		\leq		7
Rush Turn Around Time Requested:				8
Sufficient Volume:				θ
Correct Containers Used:				10.
-Pace Containers Used:				
Containers Intact:	\leq			11
Orthophosphate field filtered				12
Hex Cr Aqueous sample field filtered		┼━-		13.
Organic Samples checked for dechlorination:	_−-	_−		14. 23
minered welcome received for Dissolved tests	 			
All containers have been checked for preservation.		1		$16. \qquad \Lambda H (2)$
exceptions: VOA, coliform, TOC, O&G, Phenolics,	Rader	ե		P
Non-equeous matrix All containers meet method preservation	\square	T	T	Initial when Date/lime of preservation
requirements.	Ĺ			complated / /// preservation
				preservative
Headspace in VOA Vials (>6mm):	T	/	1	17.
Trip Blank Present:		-		18.
Trip Blank Custody Seals Present				ALALINAAA
Rad Samplas Screened < 0.5 mrem/hr	17	1	T	Initial when Date: A A A A
		_		
Client Notification/ Resolution:			Date	e/Time: Gentacted By:
Comments/ Resolution:				
Comments/ Resolution.				
A check in this box indicates that ad	dition	ai Infi	mat	on has been stored in ereports.
	Carolin	ia come	ilance a	samples, a copy of this form will be sent to the North Carolina DEHNR

Note: Whenever there is a discrepancy affacting North Carolina compliance samples, a copy Certification Office (Le. out of hold, incorrect preservative, out of temp, incorrect containers) "PN 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 Workcrifer Edit Screen.

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	SIAIE WHENE SAME LE COLLECT LUI			TOGIN#(7/7 2) 0.	LodgeD BY:	PROJECT:	PROJ. MGR.:	CUSTODY SEAL #	S	C C		X	×××	X	××	×	X				l understand that by inibaling this box I give the lab permission to proceed with analysis, even though it may not need its ample conformate requirements as defined in the receiving facility's Sample Acceptance concernent the state with the mealified format way MOT be acceptable to report to all regulatory authorities.	PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS)	COMMENTS: (FOR LAB USE ONLY)		SAMPLE TEMPERATURE UPON RECEIPT	CHILL PROCESS STARTED PRIOR TO RECEIPT	SAMPLE ACCEPTANCE NONCONFORMANT Y OR T	DATE AND TIME TAKEN FROM SAMPLE BOTTLE	Page of
			TNNN (C)	-	<u>م</u> ن ') دم در	99 77	'251 '280	'S 0	1'3 47	XX	¥ X	х Х	× Y	× ¥	x x x	K X				aiing this tox I g formance require	ISIS AND QUALI	ļu	I W	ш	3	02/02/	110	910
A	K IND/COMM	REAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)	PURCHASE ORDER #	DATE SHIPPED		MATRIX TYPES: W-WARTPRATER	M- SHOUND WATER Will- ALUDDE M- NON ADURDUS BOLD	LCHFI-LEACHATE ONL-ONL SCI-SOLE SCI-SOLE		COUNT CODE	3	3	~	~	3	~	η			7 – OTHER	understand that by Initi ot meet all sample cont the set and set all will be	PROCEED WITH ANALY	DATE	TIME	DATE	TINE	12		11
RCRA	TACO: RES OR IND/COMM	PLETED BY CLI	VION			31	1011	5084		TYPE	3	GW	30	4	GW	3	IG			6 – UNPRESERVED				_		_	-	L	
		HUST BE COM	PROJECT LOCATION	A E-MAIL	ALO H		inghe		1420	area Contr	×	×	×	×	×	X	x	 -	 		DATE RESULTS NEEDED			anu masasi 116	RECEIVED BY: (SIGNATURE)		BY (SIGNATURE)		0
MORBCA	ccbb			Į	13 × C		0 × 11 × 0	(9	COLLECTED	092	1025	1139	1236	1413					4 5-NA25203				MEGENEG	RECEIVED		RECEIVED BY		
NOF	8	ALL HIGH	PROJECT NUMBER	PHONE NUM	HE ADD HE	SAMPLER SAMPLER	Daniel	SHOWTUME	14	COLLECTED	2-(8-2)	1 64-81-5	2-16-23	ι	24.22	12-61-5	07-81-5			HOAN - 4 - NAOH	AL RUSH	,		07-6	200				
PUC LABORATORICA, "			CLIENT COLOR SHAND	Walay Long And	rsci west wakereid		168576N, MJ 63821	TPERSON		2 (UMIQUE DESCRIPTION AS IT WILL APPEAR ON THE AUALYTICAL REPORT)	ANW 3		2	2	5	ricate	-12 ALGAN			CHEMICAL PRESERVATION CODES: 1-HCL 2-H2SO4 3-HNO3	LESTED IN LASE CRICLE DC LABS APPROVAL AND SU	RUSH REGULTS VIA (PLEASE CIRCLE) EMAIL PHONE	PHONE OF ORFERENCE	TIME DATE BY: (BIGNATURE) DATE -19-20	21		0 LINQUISHED BY: (SIGNATURE)	30 of	00 Qualitrax 1D #3219

RCRA

PDC LABORATORIES, INC. WWW.PDCLAB.COM

Laboratory Quality Assurance/Quality Control Data – March 30, 2020

(First 2020 Semi-annual Event - TDS)



Parameter	Result	Unit	Quai	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B007813 - No Prep - SM 2540C							· .		
Blank (B007813-BLK1)				Prepared &	Analyzed: 04/	/02/20			
Solids - total dissolved solids (TDS)	< 17	mg/L	_		-				
LCS (B007813-BS1)				Prepared &	Analyzed: 04/	/02/20			
Solids - total dissolved solids (TDS)	1010	mg/L		1000		101	67.9-132		
Duplicate (B007813-DUP1)	Sample: 003500	0-05		Prepared &	Analyzed: 04/	02/20			
Solids - total dissolved solids (TDS)	370	mg/L	М		340			8	5
Duplicate (B007813-DUP2)	Sample: 003500	0-06		Prepared &	Analyzed: 04/	02/20			
Solids - total dissolved solids (TDS)	350	mg/L	M		320			9	5

NOTES

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

* Not a TNI accredited analyte

Certifications

- CHI McHenry, IL 4314-A W. Crystal Lake Road, McHenry, IL 60050 TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556
- PIA Peoria, IL 2231 W. Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553

Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870) Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338) Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

- SPIL Springfield, IL 1210 Capitol Airport Drive, Springfield, IL 62707 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17592
- SPMO Springfield, MO 1805 W Sunset Street, Springfield, MO 65807 USEPA DMR-QA Program
- STL Hazelwood, MO 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389 TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050 Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

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



Certified by: Kurt Stepping, Senior Project Manager



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PDC Laboratories, Inc. P.O. Box 9071 = Peoria, IL 61612-9471 (309) 692-9695 * (800) 752-6651 * FAX (303: 692-9685 *



DATA PACKAGE

CLIENT; Sikeston BMU PROJECT: Sikeston Power Station PDC LAB WORKORDER: 0040090 DATE ISSUED: April 7, 2020

Page 6 of 8

CASE NARRATIVE –

PDC Work Order 0040090

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

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

QC Summary:

All items met acceptance criteria with the following noted exceptions:

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

Certification

Signature:

Yut S

Name: Kurt Stepping

Date:

April 7, 2020

Title: Senior Project Manager

CHAIN OF CUSTODY RECORD		STATE WHERE SAMPLE COLLECTED MO					CUENT: UNACTOR DATE	PROL MGR. KURT	CUSTOOY SEAL #:	REMARKS								-			i understand thet by initiality this box! give the fait parentasion to precend with analysis, even though it may not meet west at semicle contributions requirements as defined in the modeling decidy's demograph Acceptance.	f dete may <u>AIOT</u> be acceptable to report to all reprintory authorities.	PROCEED WITH ANALYSIS AND CUALIFY RESULTS: (NITIALS)	s comments: (POR LAB USE CALY)		SAMPLE TEMPERATURE UPON RECEIPT	CHILL PROCESS STARTED PRIOR TO RECEIPT CYOR N SAMPLERS) PROCEPTED ON INCE	ц		Page 1 of 1 Page 8 of 8
				0	-					SQT	×	×	×	×	×	×	×		 		ing this box / give	qualified. Qualified						82		
			EASE PRWT)	E ORDER #	DATE SHIPPED		NATINX TIPES														d ther by initial remote conto		WITH ANALYS	DATE		DATE		7		
NPDES	RCRA	TACO: RES or IND/COMM	CLIENT (PL	23573	DATE		NATTAN VATTAN			BOTTLE COUNT	-	-	-	1	-	1	-			7-OTHER	l undertiter not meet et	Policy and 1	PROCIERD							
		TACO: REI	Neas angt af completed by client (please point)	PROJECT LOCATION BOTTOM ASH TDS ONLY	4	LSTMARY@SBMU.NET		2	hard		GW	GW	GW	GW	GW	GW	ð			6 - UNPREBERVED	\odot)	_			Ē				
ane:)			NUST BE CO	TTOM ASH	E-MAR	TIMARY@		Ilingha m			×	×	×	X	X	X	×	 			DATE REQUATS NEEDED			Received 9% (NGNATURE)		RECEVED BY: (SIGNATURE)			× 11 V	\sum
OGRAM (Check one:)	MORBCA				Í.	-		Didi	P		0829	1249	1035	09-23	151					1				RECEIVED S		RECEIVED B)	1
REGULATORY PROGRAM	ROM	6000	ALL MONERON	PROJECT NUI	PHONE MUMI	573.475.313	EVAPLER FINIT	Deniel		815	3-5-20	3-33-22 1		3-1-12 0	1 2.3.2.5	cr- cr-8	3-30-20			Ľ.	IONINAL TRUSH			2023	2					
PDC LABORATORIES, INC.	● @ / WWW.PDCLAB.COM			SIKESTON BMU POWER STATION	AND	1551 W WAKEFIELD		STON, MO 63801			MW-3			WW-6	MW-8	DUPLICATE WELL	FIELD BLANK 3			CHEMICAL PRESERVATION CODES: 1-HCL 2-H2504 3-HN03			Indal In Defendent Frich Above. Friche Sir Different Frich Above:		BUN Far	RELINQUIGHED BY: (SIGNATURE)		TARUINQUASHED BY: (SIGNATURE)		Qualtrax ID #3219

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

(First 2020 Semi-Annual Event – TDS Resample)

Parameter	Result	Unit	Quai	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u> Batch B008700 - No Prep - SM 2540C</u>				_					
Blank (B008700-BLK1)				Prepared &	Analyzed: 04	/13/20			
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B008700-BS1)				Prepared &	Analyzed: 04	/13/20			
Solids - total dissolved solids (TDS)	980	mg/L		1000		98	67.9-132		
Duplicate (B008700-DUP1)	Sample: 004183	78-04		Prepared &	Analyzed: 04	/13/20			
Solids - total dissolved solids (TDS)	410	mg/L			430			5	5
Duplicate (B008700-DUP2)	Sample: 004187	78-06		Prepared &	Analyzed: 04/	13/20			
Solids - total dissolved solids (TDS)	800	mg/L	_		820			2	5

NOTES

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

* Not a TNI accredited analyte

<u>Memos</u>

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

TDS Lab duplicate from seperate login group added.

Certifications

- CHI McHenry, IL 4314-A W. Crystal Lake Road, McHenry, IL 60050 TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556
- PIA Peoria, IL 2231 W. Altorfer Drive, Peoria, IL 61615

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

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

- SPMO Springfield, MO 1805 W Sunset Street, Springfield, MO 65807 USEPA DMR-QA Program
- STL Hazelwood, MO 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389 TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050 Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050



Certified by: Kurt Stepping, Senior Project Manager



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PDC Laboratories, Inc. P.O. Box 9071 • Peoria, IL 61612-9071 309) 552 9588 • (800) 752-6651 • PAX (2013) 692-31551



DATA PACKAGE

CLIENT; Sikeston BMU PROJECT: Sikeston Power Station PDC LAB WORKORDER: 0042175 DATE ISSUED: May 13, 2020

CASE NARRATIVE -

PDC Work Order 0042175

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

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

QC Summary:

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

No exceptions for this report.

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

Certification

Signature:

Yut 2

Name: Kurt Stepping

Date:

May 13, 2020

Title: Senior Project Manager

PDC LABORATORIES, INC.	REGULATORY PROGRAM (Check one:)	OGRAM (Ch	eck one:)		NPDES			CHAIN	CHAIN OF CUSTODY RECORD	CORD
WWW.PDCLAB.COM	MOL	MORBCA			RCRA					
	8	ccbD		TACO: R	TACO: RES OR IND/COMM			STATE WHER	STATE WHERE SAMPLE COLLECTED MO	D MO
	IHOUH TTV	IGHTED ARE	AS MUST BE	ALL HIGHLIGHTED AREAS <u>MUST</u> BE COMPLETED BY CLIENT (PLEASE PRINT)	Y CLIENT (PLI	ASE PRINT)				
CO SIKESTON BMU POWER STATION		WBER	BOTTOM A	PROJECT LOCATION BOTTOM ASH TDS ONLY	Y 23573	E ORDER #	••• ••	ANAL YOR REQUESTED		
1551 W WAKEFIELD	рноке мижеел 573.475.31	.3131	LSTMARY	E-MAIL LSTMARY@SBMU.NET	4-6	DATE SIRPPED 1-2020	8			
SIKESTON, MO 63801	anners (PLEASE PROFIT) Daniel Diilingham	ngham			MATRIX TYPES WWW. WASTEWATER DW- DREMAIN WATER DW- DREMAIN WATER	TYPES: The writer writer			CLENT: SIKES I ON BMU PROJECT: BOTTOM ASH TDS ONLY	MU TDS ONLY
CONTACT FUERON LUKE ST MARY		ß			NAME OF ALLEGATE NAME OF ALLEGATE OLAL OLAL BOLAR BOLAR				CUSTODY SEAL #	
		COLLINE			BOTTLE	Same Sector	SQT	· · · · · · · · · · · · · · · · · · ·	REMARKS	
MW-8	4/8/2020	1055	×	GW	+		X			
DUPLICATE WELL	4/8/2020		×	GW	1		×			
FIELD BLANK	4/7/2020		\times	ß	-		×			
							_			
			_							
							-			
							-			
CHEMICAL PRESERVATION CODES: 1-HCL 2-H2804 3	H.	6 - NA28203		6 - UNPRESERVED	7-OTHER					
]	DATE RESULTS NEEDED	\odot	i understand nat meet al Palicy and th	I thet by initial sample confo a deta will be	ing this box I ; mance requir quelified. Que	ive the lab permission to ments as defined in the r Med date may <u>NOT</u> be acc	l understand that by initialing this box! give the linb permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified data may INOT be acceptable to report to all requisitory subjoyties	ih it may nce authorities.
enca. If deferent from above:	ove:				PROCEED	MTH ANALYB	S AND QUAL	PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) _		
CARLINGUENE EN 1800MTURES 44-9-2020	020 CC	RECEIVE	ceved BY: (Signature)	URE)		DATE		COMMENT	COMMENTS: (FOR LAB USE ONLY)	
(TURE)		RECEIVE	RECEIVED BY: (SIGNATURE)	URE)		DATE		SAMPLE TEMPERATURE UPON RECEIPT		\$ \$
TIME REJNQUISHED BY: (SKONATURE) DATE		RECEIVED	CEVED BY: (SIGNATURE)	URE)	_		11	CHILL PROCESS STAR SAMPLE(S) RECEIVED SAMPLE ACCEPTANCI	CHILL PROCESS STARTED PRICK TO RECEIPT SAMPLE(S) RECEIVED ON ICE SAMPLE ACCEPTANCE NONCONFORMANT	CAOR N DR N
TIME	J.	\neg	\bigcirc	\sum	9			REPORT IS NEEDED DATE AND TIME TAKE	REPORT IS NEEDED Date and time taken from sample bottle	V OK W
Qualtrax ID #3219									Page 1 of 1 Pa	Page 7 of 7

Laboratory Quality Assurance/Quality Control Data – July 21, 2020

(Second 2020 Semi-Annual Event)

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPC Limi
Batch B018017 - No Prep - SM 2540C									
Blank (B018017-BLK1)				Prepared &	Analyzed: 07/	24/20			
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B018017-BS1)				Prepared &	Analyzed: 07/	24/20			
Solids - total dissolved solids (TDS)	907	mg/L		1000		91	84.9-109		
Duplicate (B018017-DUP1)	Sample: 007496	63-04		Prepared &	Analyzed: 07/	24/20			
Solids - total dissolved solids (TDS)	220	mg/L			220			0	5
Duplicate (B018017-DUP2)	Sample: 007496	63-06		Prepared &	Analyzed: 07/	24/20			
Solids - total dissolved solids (TDS)	480	mg/L	М		400			18	5
Batch B018335 - SW 3015 - EPA 6020A									
Blank (B018335-BLK1)				Prepared: 0	7/28/20 Analy	/zed: 07/29/2	D		
Antimony	< 3.0	ug/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Beryllium	< 1.0	ug/L							
Boron	< 10	ug/L							
Cadmium	< 1.0	ug/L							
Calcium	< 200	ug/L							
Chromium	< 4.0	ug/L							
Cobalt	< 2.0	ug/L							
Lead	< 1.0	ug/L							
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							
Selenium	< 1.0	ug/L							
Thallium	< 1.0	ug/L							
Lithium	< 0.020	mg/L							
LCS (B018335-BS1)				Prepared: 0	7/28/20 Analy	zed: 07/29/2	C		
Antimony	539	ug/L		555.6		97	80-120		
Arsenic	520	ug/L		555.6		94	80-120		
Barium	515	ug/L		555.6		93	80-120		
Beryllium	540	ug/L		555.6		97	80-120		
Boron	536	ug/L		555.6		97	80-120		
Cadmium	523	ug/L		555.6		94	80-120		
Calcium	5780	ug/L		5556		104	80-120		
Chromium	543	ug/L		555.6		98	80-120		
Cobalt	563	ug/L		555.6		101	80-120		
Lead	514	ug/L		555.6		93	80-120		
Mercury	52.8	ug/L		55.56		95	80-120		
Molybdenum	501	ug/L		555.6		90	80-120		
Selenium	532	ug/L		555.6		96	80-120		
Thallium	511	ug/L		555.6		92	80-120		
Lithium	0.614	mg/L		0.5556		111	80-120		
Matrix Spike (B018335-MS1)	Sample: 007310	2-01RE1		Prepared: 0	7/28/20 Analy				
Antimony	547	ug/L		555,6	0.494	98	75-125		

				Spike	Source		%REC		RPD
Parameter	Result	Unit	Qual	Level	Result	%REC	Limits	RPD	Limi
Batch B018335 - SW 3015 - EPA 6020A									
Matrix Spike (B018335-MS1)	Sample: 007310	2-01RE1		Prepared: 0	7/28/20 Anal	yzed: 07/29/20)		
Arsenic	536	ug/L		555.6	8.91	95	75-125		
Barium	584	ug/L		555.6	64.5	93	75-125		
Beryllium	547	ug/L		555.6	ND	98	75-125		
Boron	625	ug/L		555.6	79.1	98	75-125		
Cadmium	525	ug/L		555.6	ND	94	75 -12 5		
Calcium	30500	ug/L		5556	24700	105	75-125		
Chromium	540	ug/L		555,6	0.561	97	75-125		
Cobalt	566	ug/L		555.6	6.66	101	75-125		
Lead	510	ug/L		555.6		92	75-125		
Mercury	54.7	ug/L		55.56	ND	98	75-125		
Molybdenum	510	ug/L		555,6	5.03	91	75-125		
Selenium	530	ug/L		555.6	ND	95	75-125		
Thallium	506	ug/L		555.6	0.861	91	75-125		
Matrix Spike Dup (B018335-MSD1)	Sample: 007310	2-01RE1		Prepared: 0	7/28/20 Analy	/zed: 07/29/20)		
Antimony	553	ug/L		555.6	0.494	99	75-125	1	20
Arsenic	532	ug/L		555.6	8.91	94	75-125	0.7	20
Barium	577	ug/L		555. 6	64.5	92	75-125	1	20
Beryllium	539	ug/L		555.6	ND	97	75-125	1	20
Boron	629	ug/L		555.6	79.1	99	75-1 2 5	0.5	20
Cadmium	521	ug/L		555.6	ND	94	75-125	0.7	20
Calcium	30100	ug/L		5556	24700	98	75-125	1	20
Chromium	532	ug/L		555,6	0.561	96	75-125	1	20
Cobalt	558	ug/L		555.6	6.66	99	75-125	1	20
Lead	503	ug/L		555.6		91	75-125	1	20
Mercury	54,8	ug/L		55.56	ND	99	75-125	0.2	20
Molybdenum	509	ug/L		555.6	5.03	91	75-125	0.3	20
Selenium	529	ug/L		555.6	ND	95	75-125	0.3	20
Thallium	504	ug/L		555.6	0.861	90	75-125	0,5	20

Batch B018353 - SW 3015 - EPA 6020A

< 3.0	ug/L
< 1.0	ug/L
< 1.0	ug/L
< 1.0	ug/L
< 10	ug/L
< 1.0	ug/L
880	ug/L
< 4.0	ug/L
< 2.0	ug/L
< 1.0	ug/L
0.20	ug/L
< 1.0	ug/L
	< 1.0

Prepared: 07/28/20 Analyzed: 07/29/20

8

P (Spike	Source		%REC		RPD
Parameter	Result	Unit	Qual	Level	Result	%REC	Limits	RPD	Lim
Batch B018353 - SW 3015 - EPA 6020A									
Blank (B018353-BLK1)				Prepared: 0)7/28/20 Analy	/zed: 07/29/20)		
Selenium	< 1.0	ug/L							
Thallium	< 1.0	ug/L							
Lithium	< 0.020	mg/L							
LCS (B018353-BS1)				Prepared: 0	7/28/20 Analy	/zed: 07/29/20)		
Antimony	537	ug/L		555.6		97	80-120		
Arsenic	523	ug/L		555.6		94	80-120		
Barium	509	ug/L		555. 6		92	80-120		
Beryllium	516	ug/L		555.6		93	80-120		
Boron	503	ug/L		555.6		90	80-120		
Cadmium	527	ug/L		555.6		95	80-120		
Calcium	6010	ug/L		5556		108	80-120		
Chromium	544	ug/L		555. 6		98	80-120		
Cobalt	562	ug/L		555.6		101	80-120		
Lead	542	ug/L		555.6		97	80-120		
Mercury	52.4	ug/L		55.56		94	80-120		
Molybdenum	504	ug/L		555.6		91	80-120		
Selenium	526	ug/L		555.6		95	80-120		
Thallium	533	ug/L		555.6		96	80-120		
Lithium	0.602	mg/L		0.5556		108	80-120		
Matrix Spike (B018353-MS1)	Sample: 007369	98-03		Prepared: 0	7/28/20 Analy	/zed: 07/29/20)		
Antimony	523	ug/L		555.6	ND	94	75-125		
Arsenic	517	ug/L		555,6	2.31	93	75-125		
Barium	615	ug/L		555.6	126	88	7 5-12 5		
Beryllium	510	ug/L		555.6	ND	92	75-125		
Boron	632	ug/L		555.6	130	90	75-125		
Cadmium	519	ug/L		555.6	1.35	93	75-125		
Calcium	92200	ug/L		5556	87400	87	75-125		
Chromium	528	ug/L		555.6	0.839	95	75-125		
Cobalt	511	ug/L		555.6	0.733	92	75-125		
Lead	512	ug/L		555.6	0.294	92	75 -12 5		
Mercury	52.4	ug/L		55.56	ND	94	75-125		
Molybdenum	504	ug/L		555.6	1.38	90	75-125		
Selenium	515	ug/L		555.6	ND	93	75-125		
Thallium	512	ug/L		555.6	ND	92	75-125		
Matrix Spike Dup (B018353-MSD1)	Sample: 007369			Prepared: 0	7/28/20 Analy				
Antimony	537	ug/L		555.6	ND	97	75-125	3	20
Arsenic	533	ug/L		555.6	2.31	95	75-125	3	20
Barium	630	ug/L		555.6	126	91	75-125	2	20
Beryllium	533	ug/L		555.6	ND	96	75-125	4	20
Boron	658	ug/L		555.6	130	95	75-125	4	20
Cadmium	536	ug/L		555.6	1.35	96	75-125	3	20
Calcium	93100	ug/L		5556	87400	102	75-125	0.9	20
Chromium	551	ug/L		555.6	0.839	99	75-125	4	20
Cobalt	527	ug/L		555.6	0.733	95	75-125	3	20



. .			-	Spike	Source		%REC		RPD
Parameter	Result	Unit	Qual	Level	Result	%REC	Limits	RPD	Limi
<u> Batch B018353 - SW 3015 - EPA 6020A</u>									
Matrix Spike Dup (B018353-MSD1)	Sample: 007369	8-03		Prepared: 0	7/28/20 Analy	/zed: 07/29/20	0		
Lead	536	ug/L		555.6	0.294	96	75-125	5	20
Mercury	53.9	ug/L		55.56	ND	97	75-125	3	20
Molybdenum	520	ug/L		555.6	1.38	93	75 -12 5	3	20
Selenium	532	ug/L		555.6	ND	96	75-125	3	20
Thallium	533	ug/L		555.6	ND	96	75-125	4	20
<u> Batch B018438 - No Prep - EPA 300.0 REV 2.1</u>									
Calibration Blank (B018438-CCB1)				Prepared &	Analyzed: 07/	28/20			
Sulfate	0.00	mg/L							
Chloride	0.391	mg/L							
Fluoride	0.00	mg/L							
Calibration Check (B018438-CCV1)				Prepared &	Analyzed: 07/	28/20			
Chloride	4.68	mg/L		5,000		94	90-110		
Fluoride	4.37	mg/L		5.000		87	90-110		
Sulfate	4.79	mg/L		5.000		96	90-110		
<u> Batch B018720 - No Prep - EPA 300.0 REV 2.1</u>									
Calibration Blank (B018720-CCB1)				Prepared &	Analyzed: 07/	30/20			
Fluoride	0.00	mg/L							
Calibration Check (B018720-CCV1)				Prepared &	Analyzed: 07/	30/20			
Fluoride	4.80	mg/L		5,000		96	90-110		



NOTES

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

* Not a TNI accredited analyte

Certifications

- CHI McHenry, IL 4314-A W. Crystal Lake Road, McHenry, IL 60050 TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556
- PIA Peoria, IL 2231 W. Altorfer Drive, Peoria, IL 61615

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

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

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

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

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389 TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050 Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

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



Certified by: Kurt Stepping, Senior Project Manager



August 24, 2020

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

RE: Project: 0074963 Pace Project No.: 30375182

Dear Mr. Stepping:

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

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

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

Sincerely,

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

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 0074963 Pace Project No.: 30375182

Pace Analytical Services Pennsylvania

1638 Rosevtown 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 Marvland Certification #: 308 Massachusetts Certification #: M-PA1457 Michigan/PADEP Certification #: 9991

Missouri Certification #: 235 Montana Certification #: Cert0082 Nebraska Certification #: NE-OS-29-14 Nevada Certification #: PA014572018-1 New Hampshire/TNI Certification #: 297617 New Jersey/TNI Certification #: PA051 New Mexico Certification #: PA01457 New York/TNI Certification #: 10888 North Carolina Certification #: 42706 North Dakota Certification #: R-190 Ohio EPA Rad Approval: #41249 Oregon/TNI Certification #: PA200002-010 Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282 South Dakota Certification Tennessee Certification #: 02867 Texas/TNI Certification #: T104704188-17-3 Utah/TNI Certification #: PA014572017-9 USDA Soil Permit #: P330-17-00091 Vermont Dept. of Health: ID# VT-0282 Virgin Island/PADEP Certification Virginia/VELAP Certification #: 9526 Washington Certification #: C868 West Virginia DEP Certification #: 143 West Virginia DHHR Certification #: 9964C Wisconsin Approve List for Rad Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Pace Project No.: 30375182

0074963

Project:

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

REPORT OF LABORATORY ANALYSIS

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Page 3 of 15 Page 19 of 34



SAMPLE ANALYTE COUNT

 Project:
 0074963

 Pace Project No.:
 30375182

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

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 0074963 Pace Project No.: 30375182

Method:EPA 903.1Description:903.1 Radium 226Client:PDC Laboratories IncDate:August 24, 2020

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

22	ae_	-0115	_
Page	21	of 34	



PROJECT NARRATIVE

 Project:
 0074963

 Pace Project No.:
 30375182

Method:EPA 904.0Description:904.0 Radium 228Client:PDC Laboratories IncDate:August 24, 2020

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 0074963 Pace Project No.: 30375182						
Sample: 0074963-01 PWS:	Lab ID: 3037518 Site ID:	2001 Collected: 07/21/20 07:21 Sample Type:	Received:	07/31/20 10:10 M	latrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Ser	vices - Greensburg				
Radium-226	EPA 903.1	0.0564 ± 0.257 (0.524) C:NA T:94%	pCi/L	08/14/20 16:35	13982-63-3	
	Pace Analytical Ser					
Radium-228	EPA 904.0	0.801 ± 0.437 (0.776) C:65% T:90%	pCi/L	08/13/20 14:30	15262-20-1	
Sample: 0074963-02 PWS:	Lab ID: 3037518 Site ID:	Collected: 07/21/20 13:18 Sample Type:	Received:	07/31/20 10:10 N	latrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Ser	rvices - Greensburg				
Radium-226	EPA 903.1	0.456 ± 0.387 (0.480) C:NA T:85%	pCi/L	08/14/20 16:35	13982-63-3	
	Pace Analytical Se	rvices - Greensburg				
Radium-228	EPA 904.0	1.15 ± 0.556 (0.981) C:65% T:89%	pCi/L	08/13/20 14:34	15262-20-1	
Sample: 0074963-03	Lab ID: 3037518	32003 Collected: 07/21/20 09:51	Received:	07/31/20 10:10 N	Aatrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Se	rvices - Greensburg				
Radium-226	EPA 903.1	-0.260 ± 0.442 (1.03) C:NA T:87%	pCi/L	08/14/20 16:51	13982-63-3	
	Pace Analytical Se	rvices - Greensburg				
Radium-228	EPA 904.0	0.963 ± 0.535 (0.976) C:65% T:84%	pCi/L	08/13/20 14:34	15262-20-1	
Sample: 0074963-04	Lab ID: 3037518 Site ID:	82004 Collected: 07/21/20 08:34 Sample Type:	Received:	07/31/20 10:10 M	Matrix: Water	
PWS:		-		Annaharan		Qual
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	-	ervices - Greensburg	0.1	00/44/00 40.05	40000 00 0	
Radium-226	EPA 903.1	0.261 ± 0.369 (0.626) C:NA T:97%	pCi/L	08/14/20 16:35	13902-03-3	
	Pace Analytical Se	ervices - Greensburg				
Radium-228	EPA 904.0	1.20 ± 0.588 (1.04) C:58% T:92%	pCi/L	08/13/20 14:34	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 0074963						
Pace Project No.: 30375182						
Sample: 0074963-05 PWS:	Lab ID: 30375 Site ID:	182005 Collected: 07/21/20 11:19 Sample Type:	Received:	07/31/20 10:10 I	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical S	ervices - Greensburg				
Radium-226	EPA 903.1	0.0545 ± 0.249 (0.401) C:NA T:97%	pCi/L	08/14/20 16:51	13982-63-3	
	Pace Analytical S	ervices - Greensburg				
Radium-228	EPA 904.0	1.24 ± 0.555 (0.923) C:66% T:82%	pCi/L	08/13/20 14:34	15262-20-1	
Sample: 0074963-06	Lab ID: 30375		Received:	07/31/20 10:10	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical S	ervices - Greensburg				
Radium-226	EPA 903.1	0.313 ± 0.327 (0.461) C:NA T:94%	pCi/L	08/14/20 16:51	13982-63-3	
	Pace Analytical S	ervices - Greensburg				
Radium-228	EPA 904.0	2.09 ± 0.658 (0.867) C:69% T:87%	pCi/L	08/13/20 14:34	15262-20-1	
Sample: 0074963-07 PWS:	Lab ID: 30375 Site ID:	182007 Collected: 07/21/20 00:00 Sample Type:	Received:	07/31/20 10:10	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical S	ervices - Greensburg				
Radium-226	EPA 903.1	0.724 ± 1.13 (1.68) C:NA T:93%	pCi/L	08/24/20 11:54	13982-63-3	
	Pace Analytical S	Services - Greensburg				
Radium-228	EPA 904.0	0.979 ± 0.603 (1.15) C:60% T:87%	pCi/L	08/13/20 14:34	4 15262-20-1	

REPORT OF LABORATORY ANALYSIS

20	00.1	1.01	15	_
Page	24	of	34	



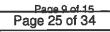
QUALITY CONTROL - RADIOCHEMISTRY

Project:	0074963				
Pace Project No.:	30375182				
QC Batch:	407762	Analysis Method:	EPA 904.0		··
QC Batch Method: EPA 904.0		Analysis Description:	n: 904.0 Radium 228		
		Laboratory:	Pace Analytical	Services - Greensbu	urg
Associated Lab Sar	nples: 303751	32001, 30375182002, 30375182003, 303751820	04, 30375182005,	30375182006, 3037	5182007
	nples: 303751 1973071	22001, 30375182002, 30375182003, 303751820 Matrix: Water	04, 30375182005,	30375182006, 3037	5182007
	1973071				
Associated Lab Sar METHOD BLANK: Associated Lab Sar Parar	1973071 nples: 303751	Matrix: Water			

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 00	74963					
Pace Project No.: 30	375182					
QC Batch: 4	108736	Analysis N	lethod:	EPA 903.1		
QC Batch Method: E	EPA 903.1	Analysis D	escription:	903.1 Radium-226		
		Laboratory	/:	Pace Analytical	Services - Greensbu	g
Associated Lab Sample	es: 30375182	2007				
METHOD BLANK: 19	78047	Matr	ix: Water			
Associated Lab Sample	es: 30375182	2007				
		Act ± Unc (MDC) Carr	Trac	Units	Analyzed	Qualifiers
Paramete	er	ACLE OTIC (MIDC) Call	1140	Ofina	Analyzeo	Qualmens

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project:	0074963						
Pace Project No.:	30375182						
QC Batch:	407763	Analysis Method:	EPA 903.1				
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-22	26			
		Laboratory:	Pace Analytical S	Services - Greensbu	urg		
Associated Lab Sar	nples: 30375182001	, 30375182002, 30375182003, 3037518200	4, 30375182005, 3	0375182006			
METHOD BLANK:	1973072	Matrix: Water					
Associated Lab Samples: 30375182001, 30375182002, 30375182003, 30375182004, 30375182005, 30375182006							
Para	neter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers		

Radium-226 0.0868 ± 0.269 (0.521) C:NA T:90% pCi/L 08/14/20 15:55

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.

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QUALIFIERS

Project:	0074963	
Pace Project No.:	30375182	

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

SUBCUNINAUI UNDER **Transfer Chain of Custody**

PDC Laboratories, Inc.

0074963



SENDING LABORATORY

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

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RECEIVING LABORATORY

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

Sample: 0074963-01 Name: MW-3			Matrix:	07/21/20 07:21 Ground Water HNO3, pH <2	001
Analysis	Due	Expires	Comm	ents	
01-Radium 226/228	08/03/20 16:00	01/17/21 07:21			
Sample: 0074963-02 Name: MW-4			Matrix:	07/21/20 13:18 Ground Water HNO3, pH <2	002_
Analysis	Due	Expires	Comm	ents	
01-Radium 226/228	08/03/20 16:00	01/17/21 13:18			
Sample: 0074963-03 Name: MW-5			Matrix:	07/21/20 09:51 Ground Water HNO3, pH <2	003
Analysis	Due	Expires	Comm	ents	<u> </u>
01-Radium 226/228	08/03/20 16:00	01/17/21 09:51			
Sample: 0074963-04 Name: MW-6		<u> </u>	Matrix:	07/21/20 08:34 Ground Water HNO3, pH <2	004
Analysis	Due	Expires	Comm	ents	
01-Radium 226/228	08/03/20 16:00	01/17/21 08:34			
Sample: 0074963-05 Name: MW-8			Matrix:	07/21/20 11:19 Ground Water HNO3, pH <2	005
Analysis	Due	Expires	Comm	ents	·····
01-Radium 226/228	08/03/20 16:00	01/17/21 11:19			

JUDGUNINAGI UNDEN Transfer Chain of Custody

#_3U3/318Z

PDC Laboratories, Inc.

0074963

SENDING LABORATORY

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

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RECEIVING LABORATORY

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

Sample: 0074963-06 Name: FIELD DUPLICATE	<u> </u>			07/21/20 00:00 Ground Water HNO3, pH <2	006
Analysis	Due	Expires	Comm	ents	
01-Radlum 226/228	08/03/20 16:00	01/17/21 00:00			
Sample: 0074963-07 Name: FIELD BLANK		·····	•	07/21/20 00:00 Ground Water HNO3, pH <2	007
Analysis	Due	Expires	Comm	ents	
01-Radium 226/228	08/03/20 16:00	01/17/21 00:00			

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

Date Shipped: 7-29-20 Total # of Containers: 7	Sample Origin	(State): <u>1</u> PO #: <u>5886</u>
Turn-Around Time Requested 🗗 NORMAL 📋 RUSH	Date Res	ults Needed:
Relinquished By Date/Time Received By	RUND Pate/Time 1/31/2020 1010	Sample Temperature Upon Receipt N/A •c Sample(s) Received on Ice Y or N Proper Bottles Received in Good Condition Y or N Bottles Filled with Adequate Volume Y or N Samples Received Within Hold Time Y or N
Relinquished By Date/Time Received By	Date/Time	Date/Time Taken From Sample Bottle

Pittsburgh Lab Sample Cond	lition l	Jpor	n Re	ceipt	
Pace Analytical Client Name:		P	D	Project # # 3 0 3 7 5 1	8 2
Courler: Fed Ex DUPS DUSPS DClie Tracking #:	nt⊡c >	- -	rcial	Deace Other Label BVM LIMS Login BVM	
Custody Seal on Cooler/Box Present: Uyes		0	Seals	s intact: 🛄 yes 📋 no	
Thermometer Used	Туре	of Ice:	Wei	Blue None	
Cooler Temperature Observed Temp Temp should be above freezing to 6°C		- ° ¢	Corre	ection Factor: °C Final Temp: °C	
Comments:	Yes	No	N/A	Date and initials of person elemining DD5)91 Date and initials of person elemining contents: NMR 1/31/2000	
Chain of Custody Present:				1.	
Chain of Custody Filled Out:				2.	
Chain of Custody Relinquished:		1		3.	
Sampler Name & Signature on COC:				4.	
Sample Labels match COC:		Γ		5.	
-Includes date/time/ID Matrix	NT.				
Samples Arrived within Hold Time:				6.	
Short Hold Time Analysis (<72hr remaining):				7	
Rush Turn Around Time Requested:				8.	
Sufficient Volume:				9.	
Correct Containers Used:				10.	
-Pace Containers Used:			1		
Containers Intact:				11.	
Orthophosphate field filtered				12.	
Hex Cr Aqueous sample field filtered	_			13.	
Organic Samples checked for dechlorination:				14.	
Filtered volume received for Dissolved tests All containers have been checked for preservation,			-	15. 16. OLL 7	
exceptions: VOA, colliform, TOC, O&G, Phenolics Non-equeous matrix	s, Radon,		I		
All containers meet method preservation requirements.	\leq			Initial when NMR Date/time of preservation	
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):				17.	
Trip Blank Present:				18,	
Trip Blank Custody Seeis Present					
Rad Samples Screened < 0.5 mrem/hr				completed MR Date: 7/31/2020	
Client Notification/ Resolution:					
Person-Contacted:		-	Date/	Pime: Contacted By:	
Comments/ Resolution:					
A check in this box indicates that add	litional	inform	nation	n has been stored in ereports.	

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

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

J:QAQCWasterDocument Management/Sample Mgt/Sample Condition Upon Receipt Pitteburgh (C056-9 5April2019)







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CLIENT: Sikeston BMU PROJECT: Sikeston Power Station PDC LAB WORKORDER: 0074963 DATE ISSUED: August 24, 2020

CASE NARRATIVE -

PDC Work Order 0074963

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

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

QC Summary:

All items met acceptance criteria with the following noted exceptions:

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

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

Certification

Signature:

Yunt .

Name: Kurt Stepping

Date:

August 24, 2020

Title: Senior Project Manager

CHAIN OF CUSTODY RECORD	STATE WHERE SAMPLE COLLECTED MO			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		чо' ь ср' с	1' N E' (226/2 3A, BI 1G, L 226/2	CB, I AS, E	XXXX	XXXX		XXXX	XXXX	XXXX	XXX					i understend thet by initialing this box's give the led permastan to proceed wat analyzes, aven through a may not meet all anticide combinations equivaments as defined in the reaching factoriby's Samta Accorptance survivor and the discontant is maintimat. I combined that musu NDT has accordship in another for all factoribations	PROCEED WITH AMALYSIS AND QUALIFY RESULTS: (INTITALS)	COMMENTS: (FOR LAS USE ONLY)		SAMPLE TEMPERATURE UPON RECEIPT	CHILL PROCESS STARTED PRIOR TO RECEIPT	SAMPLEION DA	DATE AND TIME TAKEN FROM SAMPLE BOTTLE	Page 1 of 1
			\sim					١	B' C/	Ŷ	∧ ×	X	∧ X	Ŷ	Ŷ	Â					nin pox i gl ce requirin	ND QUALIF					170	ļ	
		RINT)		-		SO		'OS ':		\mathbf{X}	X	\times	×	X	×	×	-				Conformun Conformun Mill An muni-	NALYSIS A	DATE	TIME	DATE	TIME	Selate	10 KS	
		PLEASE P	ABE ORDE 73	DATE SHIPPED	:	MATRUX TYPES: MATRIX TYPES: MATERIA	an- ground waffie man- nucor wa-hon Adugous Naud	HATE									_					ED WITH A					1		
NPDES	RCKA	CLIENT (PURCHAR	DAT		TANK PART			MUTO COUNT	3	9	3	3	3	3	. ന			7-OTHER		Fundary Ref men	PROCE							
	TACO: RES OR IND/COMM	ted areas <u>must</u> be completed by client (please prwt)	PROJECT LOCATION BOTTOM ASH APP II AND IV		NU.NET				MATTAN	SV SV	GW	GW	GW	GW	GW	GW			6 - UNPRESERVED	(•								
		BE COMP	JECT LOCA	E-MAIL	LSTMARY@SBMU.NET		•												HUND - 9	0.178			NATURE)		NATURE)	/	(SIGNATURE)		
AM (Check one:)		TRUNST	BOTTOM		LSTMA	- - -	ng haw			×	×	X	×	×	×	×			8203	DATE REBULTS	NEEDE		RECEIVED BY: (SIGNATURE)		NECEVED BY: (SIGNATUNE)	$\overline{\mathcal{O}}$		\geq	
	MORBCA CCDD	HLIGHTED ARE	NUMBER		5.3131		D: II : M		COLLICTED	0721	1318	1990	0834	الام					H 1 5 - NA28203	- H6			RECENE		RECEIVE	1	RECEIVE		0
REGULATORY PROGR	2	HOTHOM TTV	PROJECT	FICKE MARKE	573.475.31	(LINNA BANALL)	Dericl			221-23	07-18-1	721-25	1-12-1	cr-11-6	CL-12-2	7-21-20			NO3 4-NAOH				1000-						
			TION																01 2 - HNO3	×		NOM ABOVE:	C VELO		DATE	TIME	DATE	TIME	
PDC LABORATORIES, INC.	WWW.PDCLAB.COM)	SIKESTON BMU POWER STATION		1551 W WAKEFIELD	WILL CILECTON MO 63801		CONTACT PERSON LUKE ST MARY	2 JUNGULE DESCRIPTION AS IT VILL APPLIE OUR CONTREMALYTICAL REPORTS	MW-3	MW-4	MW-5	MW-6	MW-8	DUPLICATE WELL	FIELD BLANK			CHEMPERT PRESERVATION CODES: 1-HCL 2-H2004	UESTED (PLEABE O		ROUT FLOWER ABOVE: PHONE & PROVE ABOVE:	MATURE	U BL31 Parer -	RELINQUIBHED BY: (SIGNATURE)		RELINQUISHED BY: (SHONATURE)		Qualtrax ID #3219

CHAIN OF CUSTODY RECORD

NPDES REGULATORY PROGRAM (Check one:)

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)																		
													-						-									Radium 226
Well	Date	Monitoring	Spec. Cond.	Temp.	ORP	D.O.	Turbidity	рH	Chloride	Fluoride	Sulfate	TDS	Boron	Calcium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	and 228 (Combined)
	Date	Purpose	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	10	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	1.2	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	120	22	19	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.277(ND)
	4/27/2017	Background	223.2	15.35	9.2	0.57	2.69	6.7	2.0	0.257	28	140	54	20	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	9.9	<1.0	<1.0	-0.030(ND)
	5/17/2017	Background	224.9	17.68	26.8	0.45	12.59	6.6	1.5	<0.250	21	130	19	17	<3.0	<1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	0.40	<1.0	<1.0	<1.0	0.844(ND)
	6/8/2017	Background	217.9	16.73	18.2	0.49	2.61	6.7	1.7	0.276	22	160	20	19	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	-0.469(ND)
	7/13/2017	Background	243.8	19.02	5.5	0.39	4.79	6.7	2.2	0.256	19	160	18	20	<3.0	<1.0	100	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.715(ND)
	10/31/2017	Detection 1	246.2	16.74	12.4	0.65	7.47	6.6	2.0	0.331	20	140	27	19	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection 2	194.2	17.19	42.3	0.42	7.57	6.6	1.3	0.291	17	130	23	20	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Detection 3	194.9	15.05	49.8	0.47	2.23	6.5	1.5	0.301	18	100	23	17	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/5/2019	Note 8	205.0	14.49	46.9	0.49	1.92	6.5	1.5	0.342	20	160	22	17	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	5/28/2019	-	218.4	16.42	32.2	-	9.69	6.4	1.3	<0.250	20	(NA)	51	17	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	7/23/2019	Detection 4	203.0	16.58	71.0	0.88	4.96	(NA)	(NA)	(NA)	(NA)	140	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/28/2019	Detection 5	207.4	16.97	75.6	0.89	4.02	6.4	1.1	<0.250	18	140	35	15	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	· · /	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	11/4/2019	Note 8	202.3	16.60	63.2	0.70	4.22	6.4	1.4	<0.250	18	130	37	15	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/18/2020		207.6	14.17	58.6	1.22	6.34	6.4	1.3	<0.250	21	140H	27	16	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	3/30/2020	Detection 6	199.3	14.87	61.2	1.20	6.01	6.4	(NA)	(NA)	(NA)	180	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/21/2020	Detection 7	197.8	16.87	-40.4	8.42	3.43	6.5	1.0	<0.250	15	140	21	18	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
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MW-4 (DG)	11/30/2016	Background	575.6	17.51	-108.3	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	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	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	3 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	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	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	2 0.52	1.43	7.4	13	<0.250	88	300	1200	79	<3.0	<1.0	52	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.086(ND)
	10/31/2017	Detection 1	525.8	18.35	-118.1	0.63	1.07	7.3	17	<0.250	83	290	1400	67	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection 2	511.5	18.92	-120.7	0.44	18.50	7.3	14	<0.250	86	290	1200	80	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Detection 3	468.0	16.07	-101.8	0.53	1.01	7.4	8.8	<0.250	54	260	1100	64	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/5/2019	Note 8	761.0	15.62	-97.5	0.52	2.58	7.3	33	<0.250	140	420	1100	100	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	5/28/2019	Detection 4	581.7	18.65	-108.5	5 0.37	3.30	7.3	11	<0.250	75	(NA)	980	70	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	7/23/2019	Delection 4	615.2	18.88	-105.2	2 0.43	0.36	(NA)	(NA)	(NA)	(NA)	340	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/28/2019	Detection 5	645.4	19.60	-101.7	0.40	2.31	7.2	18	<0.250	110	300	1100	83	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	11/4/2019	Note 8	657.7	18.52	-104.2	2 0.50	0.96	7.2	2.1	<0.250	120	400	1200	89	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/18/2020	Detection 6	526.9	14.49		1	1.60	7.4	11	<0.250	66	290H	930	67	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	3/30/2020	Detection 6	520.6	16.45			19.51	7.4	(NA)	(NA)	(NA)	300	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/21/2020	Dotoction 7	550.7	19.75	-145.6	5.06	6.49	7.2	14	<0.250	86	290	920	76	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8		Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	8/3/2020	Detection 7	567.8	18.81	-117.8	4.87	7.19	7.4	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
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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. °C	ORI mV		Turbidity	рН	Chloride	Fluoride	Sulfate	TDS	Boron	Calcium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt		Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226 and 228 (Combined)
	44/00/0040	D. J. W. J.	µmhos/cm			J.	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-5 (DG)	11/30/2016	Background	808.3	16.20	-48.		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 2/22/2017	Background	745.3 717.8	16.24 17.75	-37. -50.		0.72 3.43	6.9 7.0	15 11	<0.250 <0.250	270 170	470 420	480 470	120 100	<3.0	<1.0 <1.0	91 83	<1.0 <1.0	<1.0 <1.0	<4.0 <4.0	5.2 3.6	<1.0 <1.0	<10 <10	<0.20 <0.20	<1.0 <1.0	<1.0	<1.0 <1.0	0.827(ND) 0.130(ND)
	3/20/2017	Background Background	737.9	17.78	-36.		2.16	6.9	11	<0.250	170	420	320	99	<3.0 <3.0	<1.0	76	<1.0	<1.0	<4.0	4.4	<1.0	<10	<0.20	<1.0	<1.0 <1.0	<1.0	0.130(ND) 0.538(ND)
	4/27/2017	Background	777.3	16.07	-58.		5.20	6.8	12	<0.250	460	480	490	120	<3.0	<1.0	87	<1.0	<1.0	<4.0	4.4	<1.0	<10	<0.20	3.0	<1.0	<1.0	1.676
	5/17/2017	Background	760.1	17.81	-56.		5.35	6.8	12	<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.		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	<0.24	<1.0	<1.0	<1.0	0.869(ND)
	7/13/2017	Background	799.0	19.19	-82.		17.49	7.0	10	<0.250	190	430	320	110	<3.0	<1.0	81	<1.0	<1.0	<4.0	3.8	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.767(ND)
	10/31/2017	Detection 1	591.8	17.45	-77.		3.17	6.9	13	<0.250	88	310	280	72	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection 2	756.4	18.28	-55.		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 3	836.4	14.90	-27.		0.38	6.7	17	<0.250	230	520	420	120	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	· · /	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/5/2019	Note 8	845.6	15.22	-23.		0.71	6.7	15	0.272	200	480	450	120	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8		Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	5/28/2019		861.1	18.31	-59.		3.71	6.9	10	<0.250	190	(NA)	280	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8		Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	7/23/2019	Detection 4	806.9	18.66	-44.	.9 0.81	1.34	(NA)	(NA)	(NA)	(NA)	480	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/28/2019	Detection 5	848.4	18.49	-42.	.2 0.64	0.82	6.8	16	<0.250	190	480	410	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	11/4/2019	Note 8	729.9	18.03	-55.	.8 0.77	2.65	6.8	3.2	<0.250	15	440	420	99	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/18/2020	Detection 6	871.7	14.05	-45.	.2 0.81	0.88	6.8	15.0	<0.250	210	520H	400	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	3/30/2020	Delection	750.4	15.84	-49.	.7 0.62	2.90	6.8	(NA)	(NA)	(NA)	450	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/21/2020	Detection 7	816.5	18.35	-102	.9 4.37	5.36	6.8	14	<0.250	210	470	330	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
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	9 0.36	9.70	6.7	2.1	<0.250	31	240	37	39	<3.0	5	160	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.577(ND)
	4/27/2017	Background	331.5	15.71	-50.	.9 0.39	8.35	6.7	2.3	<0.250	34	170	36	38	<3.0	3.2	180	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.243(ND)
	5/17/2017	Background	323.2	17.65	-71.	.5 0.45	7.13	6.8	1.8	<0.250	30	170	35	30	<3.0	4.9	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.173(ND)
	6/8/2017	Background	326.7	17.50	-53.	.0 0.33	3.86	6.7	1.7	<0.250	29	180	38	36	<3.0	4.6	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.893(ND)
	7/13/2017	Background	396.8	19.68	-84.	.0 0.72	2.17	7.0	1.6	<0.250	28	180	31	40	<3.0	5.8	200	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.575(ND)
	10/31/2017	Detection 1	359.6	17.57	-57.	.9 0.71	1.48	6.7	1.7	0.303	29	170	41	38	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection 2	345.4	17.59	-44.		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 3	375.3	15.04	-37.		1.66	6.7	1.5	0.313	29	180	46	36	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	1	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/5/2019	Note 8				.9 0.56		6.7	1.6	0.338	27	160	44							Note 8	1			1		Note 8		Note 8
	5/28/2019	Detection 4	418.2	16.93		.2 0.34	7.15	6.7	2.5	<0.250	30	(NA)	52	40	Note 8			Note 8	Note 8					Note 8	Note 8	Note 8	Note 8	Note 8
	7/23/2019		419.3	17.64	-	.8 0.51	2.03	(NA)	(NA)	(NA)	(NA)	180	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	· · · ·	(NA)		(NA)	(NA)	(NA)	(NA)	(NA)
	8/28/2019	Detection 5	442.2	1	-	4 0.66	1.15	6.7	1.0	<0.250	24	200	54	44	Note 8	Note 8			Note 8				Note 8		Note 8	Note 8	Note 8	Note 8
	11/4/2019	Note 8	388.3	17.62		.1 0.38	1.68	6.7	1.4	0.319	22	210	47	43	Note 8		Note 8		Note 8		1		Note 8	1	Note 8	Note 8	Note 8	Note 8
	2/18/2020	Detection 6	390.3	14.54		.5 0.81	5.79	6.7	1.7	<0.250	24	170H	40	41	Note 8		Note 8		Note 8			Note 8			Note 8	Note 8	Note 8	Note 8
	3/30/2020	Detection 7	391.0	15.17		.6 0.67	3.99	6.7	(NA)	(NA)	(NA)	230	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)		(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/21/2020	Detection 7	415.1	17.64	-100	.2 4.54	3.48	6.7	<1.0	<0.250	22	220	46	43	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
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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)											Ĩ		
Well	Date	Monitoring Purpose	Spec. Cond. µmhos/cm	Temp. °C	ORP mV	D.O.	Turbidity	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 uq/L	Beryllium uq/L	Cadmium ua/L	Chromium ug/L	Cobalt ug/L	Lead ug/L	Lithium ug/L	Mercury ug/L	Molybdenum uq/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	<10	<0.20	<1.0	<1.0	<1.0	1.067
	6/9/2017	Background	678.2	17.90	-09.4	0.29	0.47	7.2	40	<0.250	110	340	400 520	92	<3.0	<1.0	86	<1.0	<1.0	<4.0 <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	-108.5	0.23	1.20	7.3	43 36	<0.250	89	320	430	92 87	<3.0	<1.0	74	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.034(ND)
	8/3/2017	Background	665.7	19.06	-107.1	0.23	0.98	7.3	30	<0.250	89 89	320	430	80	<3.0	<1.0	74	<1.0	<1.0	<4.0 <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	0.24	0.98	7.2	36	<0.250	83	320	490 530	75	<3.0	<1.0	68	<1.0	<1.0	<4.0 <4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.881(ND) 0.906(ND)
	8/30/2017	Background	644.2	18.62	-91.3	0.38	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	-91.3	0.29	0.67	7.1	53	<0.250 H	110	370	510	86	<3.0	<1.0	75	<1.0	<1.0	<4.0	<2.0	<1.0	12	<0.20	<1.0	<1.0	<1.0	0.805(ND) 0.314(ND)
	9/14/2017	Background	764.0	19.11	-89.6	0.40	0.58	7.1	50	<0.250 H	120	420	480	92	<3.0	<1.0	80	<1.0	<1.0	<4.0 <4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.594(ND)
	10/31/2017	Detection 1	698.1	17.99	-96.3	0.38	0.94	7.1	45	<0.250	110	380	540	86	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Detection 2	788.8	18.34	-99.1	0.23	4.80	7.1	65	<0.250	150	430	520	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/10/2018	Re-sample	899.4	18.52	-94.2	0.35	2.69	7.1	68	(NA)	140	(NA)	(NA)	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/10/2018	Re-sample/DUP	899.4	18.52	-94.2	0.35	2.69	7.1	71	(NA)	150	(NA)	(NA)	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Detection 3	662.1	15.08	-77.6	0.35	2.88	7.2	45	<0.250	100	320	500	94	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/5/2019	Note 8	839.7	14.72	-76.0	0.30	2.66	7.1	71	0.26	140	390	550	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	_	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	5/28/2019		836.6	18.25	-90.6	0.29	4.89	7.1	53	<0.250	130	(NA)	540	100	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	7/23/2019	Detection 4	819.5	19.34	-90.7	0.30	1.39	(NA)	(NA)	(NA)	(NA)	480	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/23/2019	Re-sample	819.5	19.34	-90.7	0.30	1.39	(NA)	(NA)	(NA)	(NA)	420	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/28/2019	Detection 5	769.1	19.38	-90.0	0.25	1.25	7.1	55	<0.250	110	360	460	93	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	11/4/2019	Note 8	729.8	18.39	-80.0	0.29	0.86	7.1	2.0	<0.250	4.5	400	480	98	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/18/2020	Detection 6	747.9	13.49	-75.7	0.29	0.69	7.2	53	<0.250	110	420H	480	93	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	3/30/2020	Detection 6	840.0	15.71	-82.4	0.20	7.48	7.1	(NA)	(NA)	(NA)	480	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/8/2020	Re-sample/Dup	784.0	16.56	-89.4	0.21	8.33	7.1	(NA)	(NA)	(NA)	480/330	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/21/2020	Detection 7	673.7	19.33	-130.8	2.91	3.56	7.1	50	<0.250	100	420	470	89	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8

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. 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

100 **Intrawell Prediction** 75 Limit, n=8, '1of2' Power 50 EPA Reference Curve 25 0 2 3 4 5 0 Standard Deviations

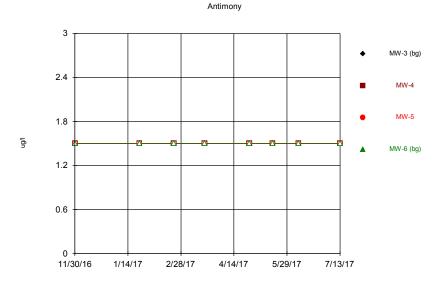
Power Curve MW-3 through MW-8

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

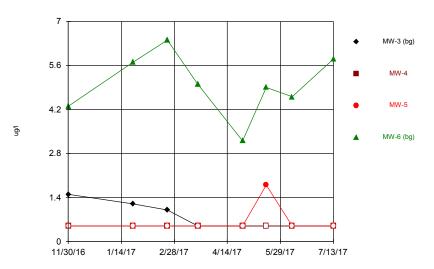
Appendix 6

Time Series Plots

Sanitas¹¹ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



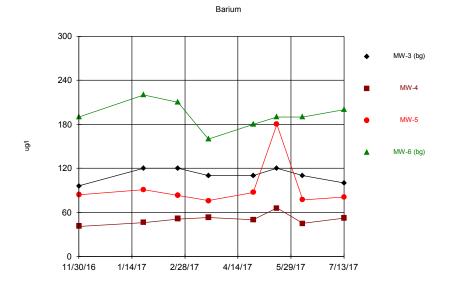
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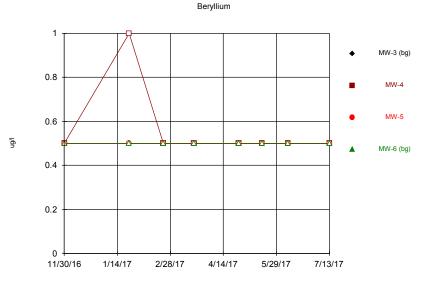
Arsenic

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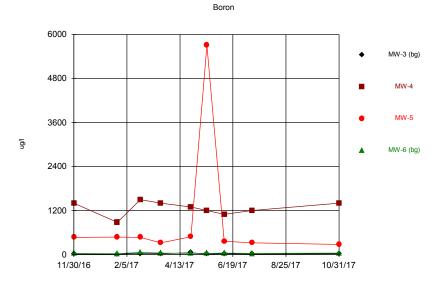
Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas[™] v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



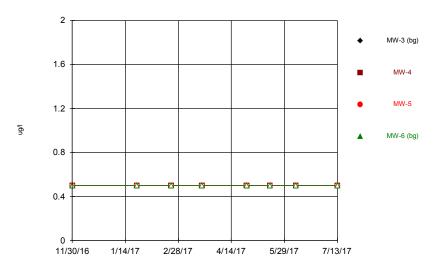
Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



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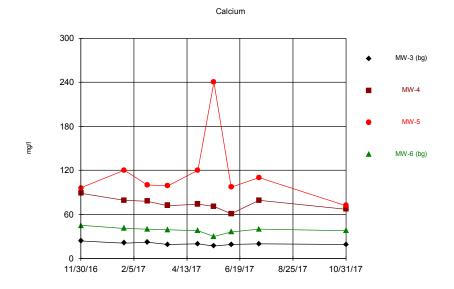
Sanitas $^{\rm w}$ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



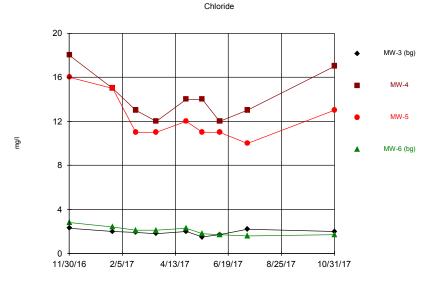


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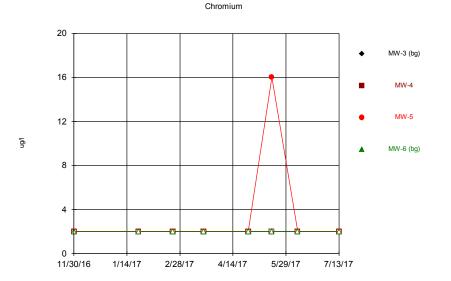
Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



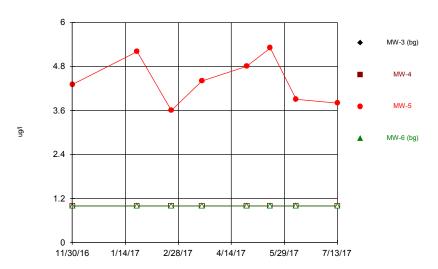
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Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas $^{\rm vs}$ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.

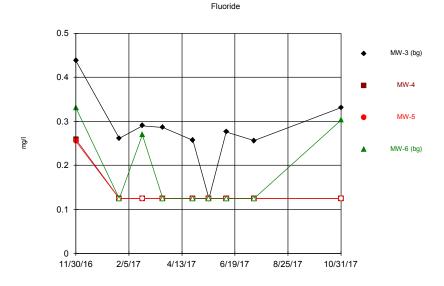


Cobalt

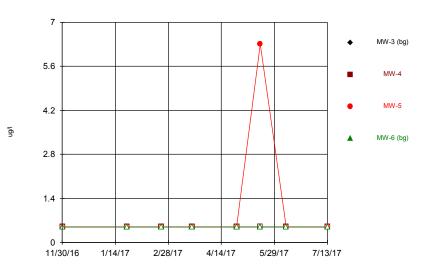
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Lead

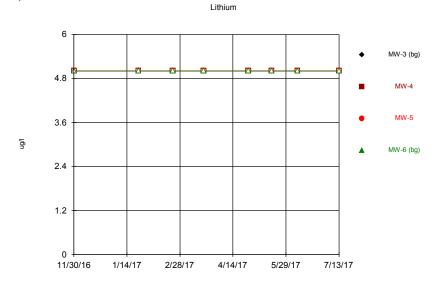
Sanitas[™] v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



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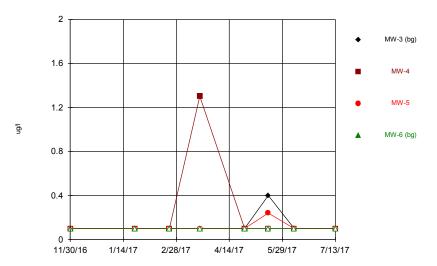


Sanitas¹⁰ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



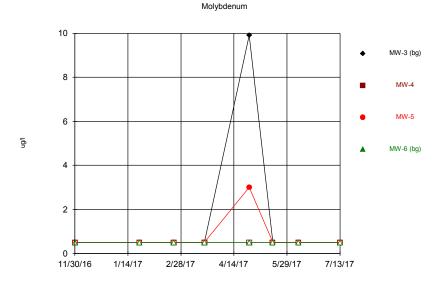
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Mercury

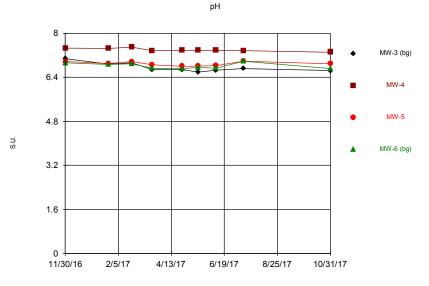


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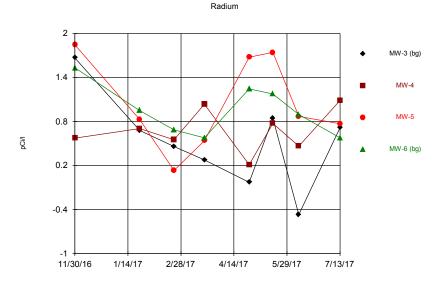
Sanitas[™] v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



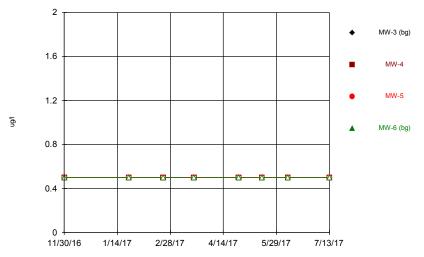
Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



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

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

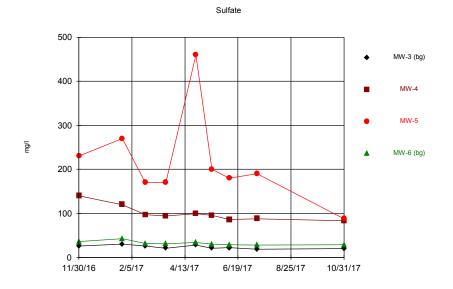
Selenium



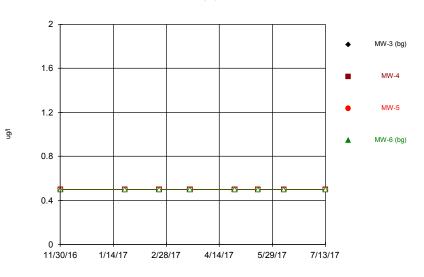
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Thallium

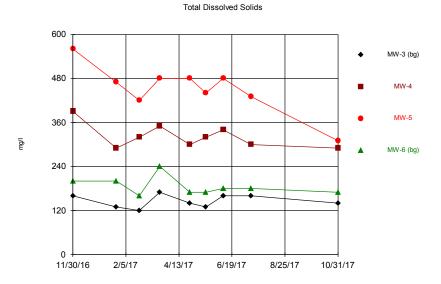
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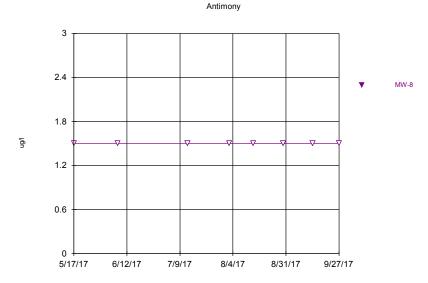
Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas[™] v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



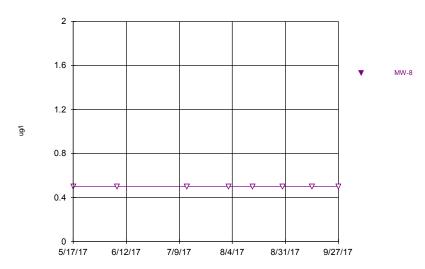
Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



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



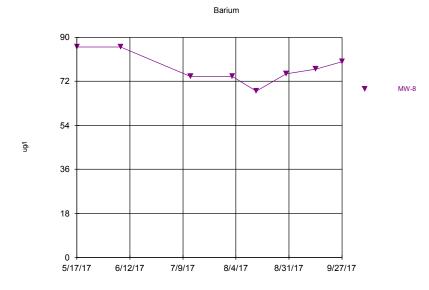
Arsenic

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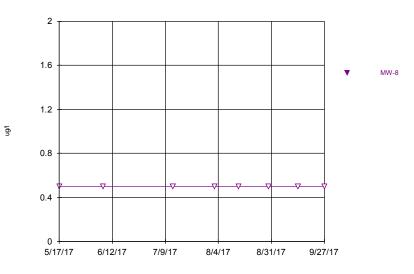
 SBMU-Sikeston Power Station
 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

Beryllium

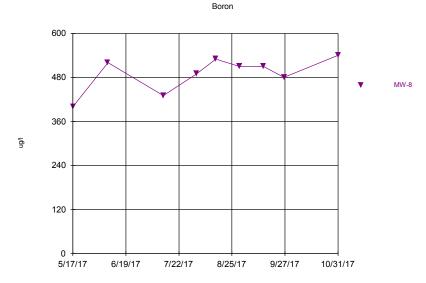
Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas[™] v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.

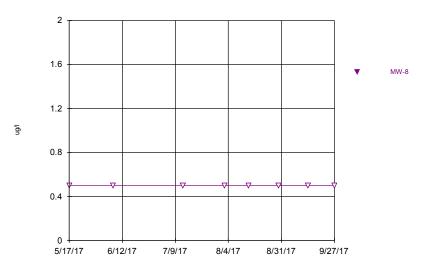


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Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas $^{\rm vv}$ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.

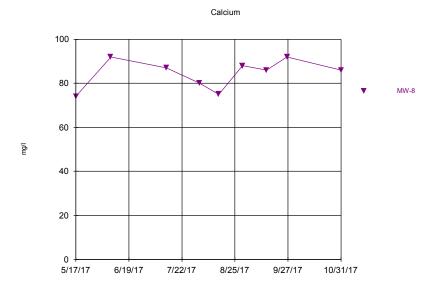
Cadmium



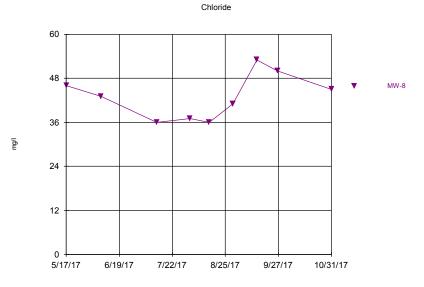
 Time Series
 Analysis Run 11/29/2017 9:30 AM
 View: SBMU-SPS Appendix III

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

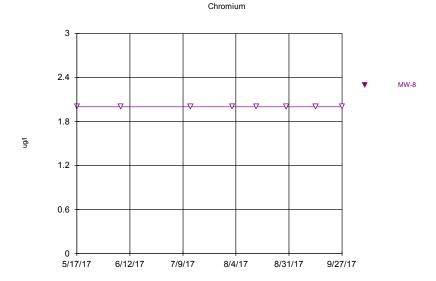
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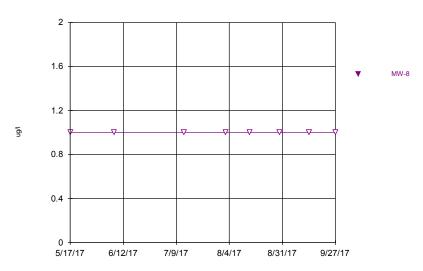
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Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas $^{\rm w}$ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



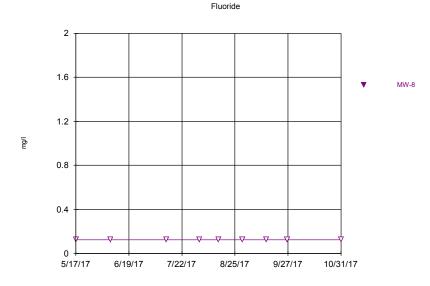
Cobalt

 Time Series
 Analysis Run 11/29/2017 9:30 AM
 View: SBMU-SPS Appendix III

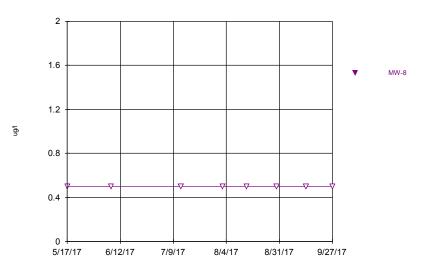
 SBMU-Sikeston Power Station
 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

Lead

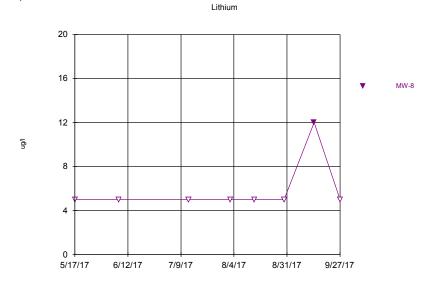
Sanitas¹¹ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas[™] v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.

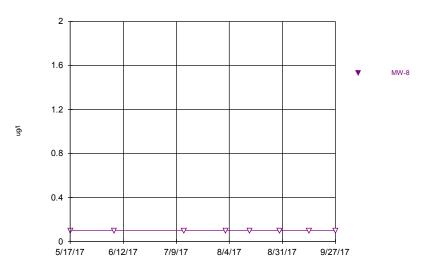


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Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas $^{\rm w}$ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.

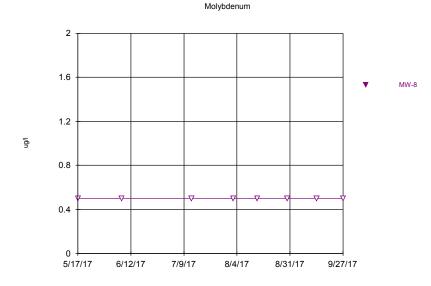
Mercury



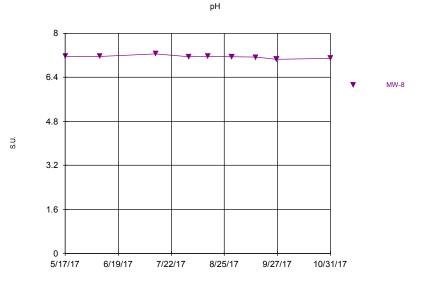
 Time Series
 Analysis Run 11/29/2017 9:30 AM
 View: SBMU-SPS Appendix III

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

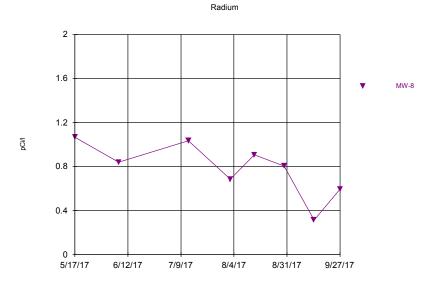
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Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG

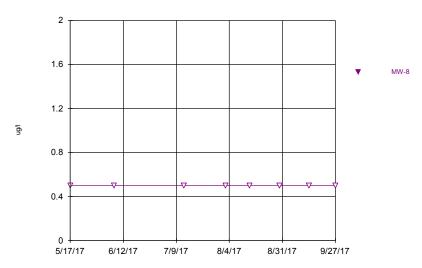


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Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas $^{\rm vw}$ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.

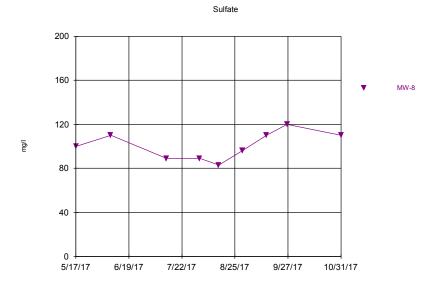
Selenium



 Time Series
 Analysis Run 11/29/2017 9:30 AM
 View: SBMU-SPS Appendix III

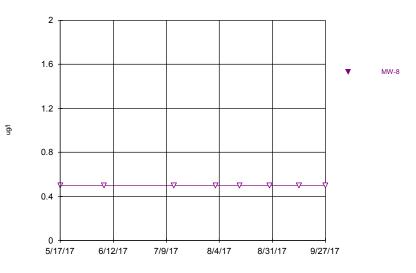
 SBMU-Sikeston Power Station
 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

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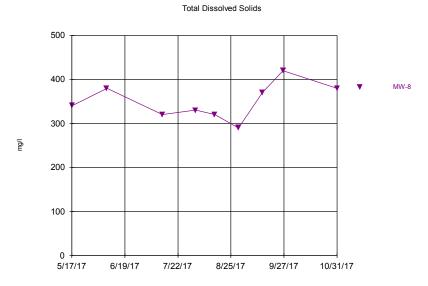


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas[™] v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.





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Appendix 7

Box and Whiskers Plots

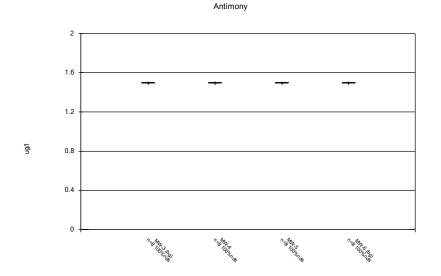
Box & Whiskers Plot MW-3 through MW-6

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 11/29/2017, 3:18 PM Constituent Well N Median Upper Q. %NDs Mean Lower Q. <u>Min.</u> Max. 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 Antimony (ug/l) 1.5 1.5 1.5 1.5 1.5 1.5 100 8 Antimony (ug/l) MW-6 (bg) 1.5 1.5 1.5 1.5 1.5 1.5 100 Arsenic (ug/l) MW-3 (bg) 8 0.775 0.5 0.5 1.1 0.5 1.5 62.5 Arsenic (ug/l) MW-4 8 0.5 0.5 0.5 0.5 0.5 0.5 100 Arsenic (ug/l) MW-5 8 0.6625 0.5 0.5 0.5 0.5 1.8 87.5 Arsenic (ug/I) MW-6 (bg) 8 4.988 4.95 4.45 5.75 6.4 0 3.2 Barium (ug/l) MW-3 (bg) 8 110.8 110 105 120 96 120 0 MW-4 8 52.5 41 66 Barium (ug/l) 50.5 50.5 45.5 0 Barium (ug/l) MW-5 8 94.88 83.5 79 89 76 180 0 8 205 220 Barium (ug/l) MW-6 (bg) 192.5 190 185 160 0 Beryllium (ug/l) MW-3 (bg) 8 0.5 0.5 0.5 0.5 0.5 0.5 100 MW-4 8 0.5625 0.5 0.5 100 Beryllium (ug/l) 0.5 0.5 1 Beryllium (ug/l) MW-5 8 0.5 0.5 0.5 0.5 0.5 0.5 100 0.5 8 0.5 Beryllium (ug/l) MW-6 (bg) 0.5 0.5 0.5 0.5 100 9 30 12 54 Boron (ug/l) MW-3 (bg) 24.78 20 18 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 0.5 100 0.5 0.5 Cadmium (ug/l) MW-4 8 0.5 0.5 0.5 0.5 0.5 0.5 100 MW-5 8 0.5 100 Cadmium (ug/l) 0.5 0.5 0.5 0.5 0.5 Cadmium (ug/l) MW-6 (bg) 8 0.5 0.5 0.5 0.5 0.5 0.5 100 9 19 17 24 0 Calcium (mg/l) MW-3 (bg) 20.11 20 21.5 Calcium (mg/l) MW-4 9 74.44 74 69 79 61 89 0 MW-5 9 117.1 100 96.5 120 72 240 Calcium (mg/l) 0 Calcium (mg/l) MW-6 (bg) 9 38.56 39 37 40.5 30 45 0 9 2 2.3 Chloride (mg/l) MW-3 (bg) 1.933 1.75 2.1 1.5 0 MW-4 9 14.22 14 12.5 12 18 Chloride (mg/l) 16 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 MW-3 (bg) 8 2 2 2 2 2 2 100 Chromium (ug/l) 2 Chromium (ug/l) MW-4 8 2 2 2 2 2 100 2 2 2 Chromium (ug/l) MW-5 8 3.75 2 16 87.5 8 2 2 2 2 2 2 100 Chromium (ug/l) MW-6 (bg) Cobalt (ug/l) MW-3 (bg) 8 1 1 1 1 1 1 100 Cobalt (ug/l) MW-4 8 1 1 1 1 1 100 1 Cobalt (ug/l) MW-5 8 4.413 4.35 3.85 5 3.6 5.3 0 8 1 1 100 Cobalt (ug/l) MW-6 (bg) 1 1 1 1 0.2565 Fluoride (mg/l) MW-3 (bg) 9 0.28 0.276 0.3105 0.125 0.438 11.11 MW-4 9 0.1399 0.125 0.125 0.125 0.125 0.259 88.89 Fluoride (mg/l) Fluoride (mg/l) MW-5 9 0.1394 0.125 0.255 0.125 0.125 0.125 88.89 Fluoride (mg/l) MW-6 (bg) 9 0.1837 0.125 0.125 0.286 0.125 0.331 66.67 Lead (ug/l) MW-3 (bg) 8 0.5 0.5 0.5 0.5 0.5 0.5 100 MW-4 8 0.5 0.5 0.5 0.5 0.5 100 Lead (ug/l) 0.5 MW-5 8 1.225 0.5 0.5 6.3 Lead (ug/l) 0.5 0.5 87.5 MW-6 (bg) Lead (ug/l) 8 0.5 0.5 0.5 0.5 0.5 0.5 100 5 Lithium (ug/l) MW-3 (bg) 8 5 5 5 5 5 100 Lithium (ug/l) MW-4 8 5 5 5 5 5 5 100

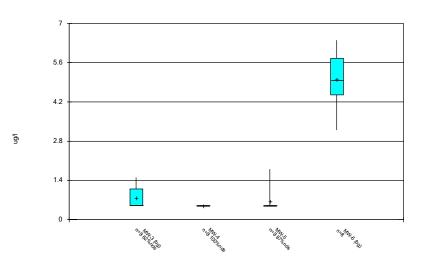
Box & Whiskers Plot MW-3 through MW-6

	SBMU-Sikeston Power Station	Client: GRED	ELL Engineering	Data: SBMU-SPS EDD File 09-28-17 Printed 11/29/2017, 3:18 PM							
Constituent	Well	<u>N</u>	Mean	Median	Lower Q.	Upper Q.	<u>Min.</u>	Max.	<u>%NDs</u>		
Lithium (ug/l)	MW-5	8	5	5	5	5	5	5	100		
Lithium (ug/l)	MW-6 (bg)	8	5	5	5	5	5	5	100		
Mercury (ug/I)	MW-3 (bg)	8	0.1375	0.1	0.1	0.1	0.1	0.4	87.5		
Mercury (ug/I)	MW-4	8	0.25	0.1	0.1	0.1	0.1	1.3	87.5		
Mercury (ug/I)	MW-5	8	0.1175	0.1	0.1	0.1	0.1	0.24	87.5		
Mercury (ug/I)	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/I)	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		

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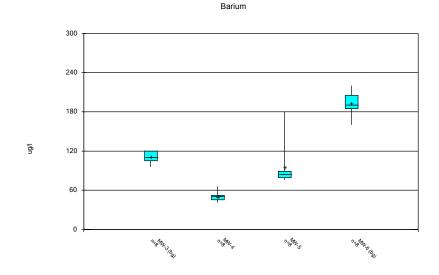
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

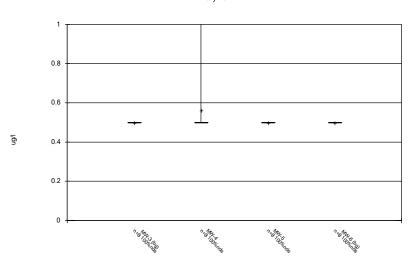
 SBMU-Sikeston Power Station
 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

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

Beryllium

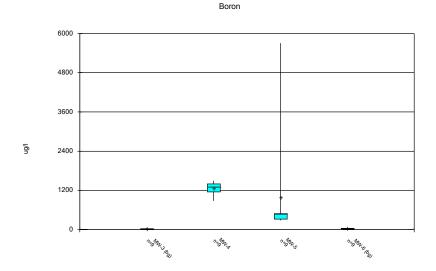


 Box & Whiskers Plot
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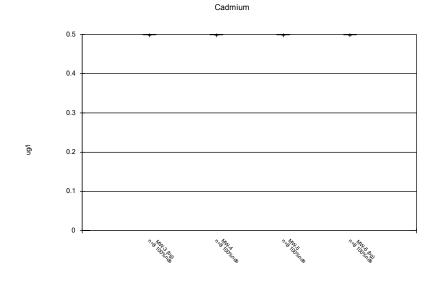
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 Data: SBMU-SPS EDD File 09-28-17

Arsenic

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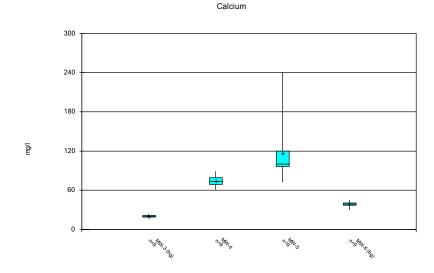
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 Box & Whiskers Plot
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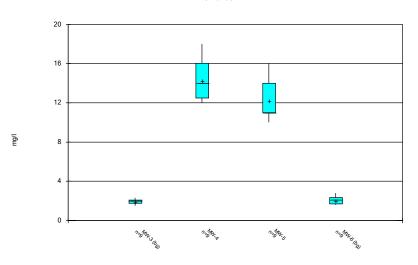
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Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG

Chloride

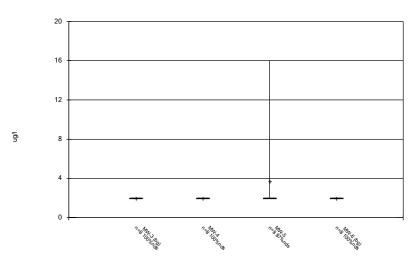


 Box & Whiskers Plot
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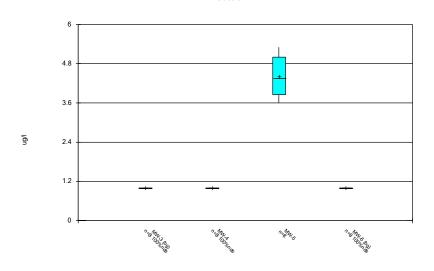
 SBMU-Sikeston Power Station
 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

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Chromium



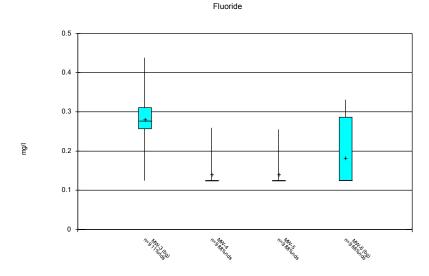
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



 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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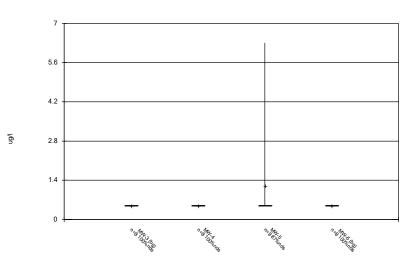


 Box & Whiskers Plot
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 SBMU-Sikeston Power Station
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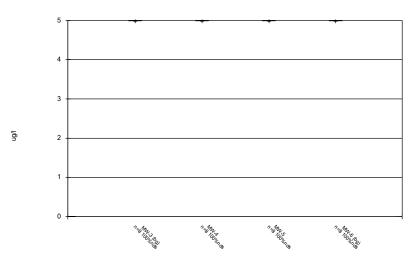
Lead



 Box & Whiskers Plot
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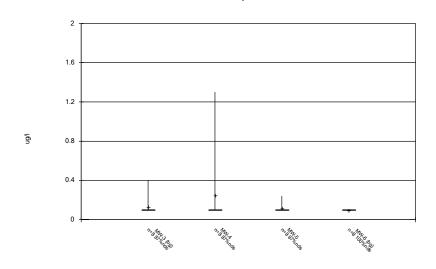
 SBMU-Sikeston Power Station
 Client: GREDELL Engineering
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Cobalt



Lithium

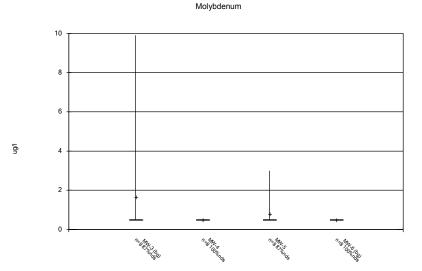
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 Box & Whiskers Plot
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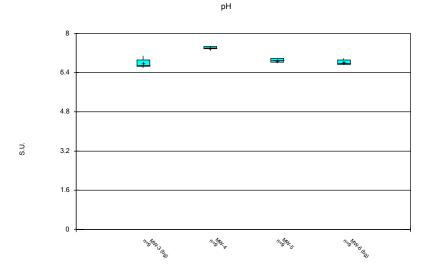
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 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

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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





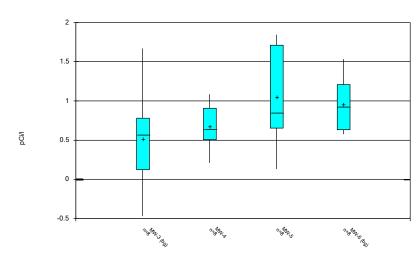
 Box & Whiskers Plot
 Analysis Run 11/29/2017 3:17 PM
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 SBMU-Sikeston Power Station
 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

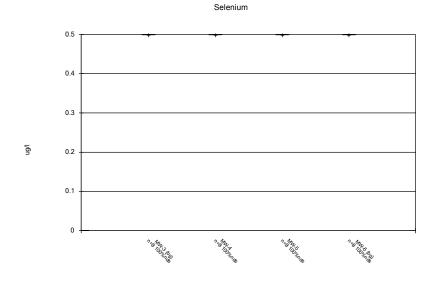
Mercury

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Radium



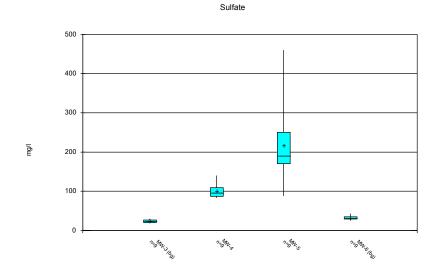
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

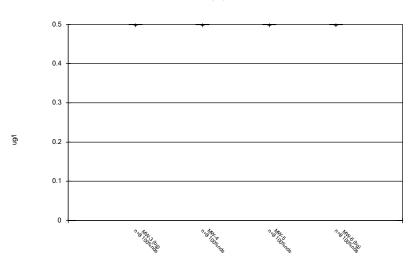
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 Client: GREDELL Engineering
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Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG

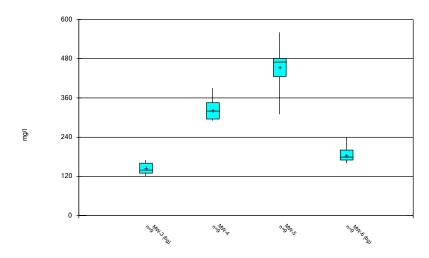
Thallium



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

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

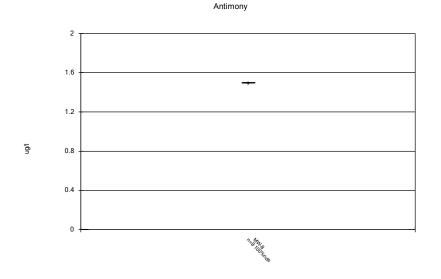




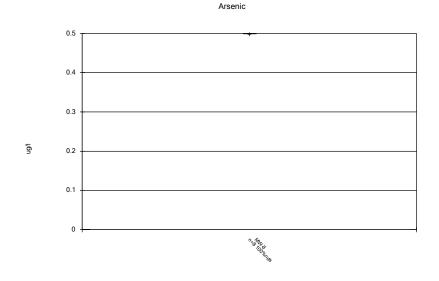
Box & Whiskers Plot MW-8

	SBMU-Sikeston Power Station	Client: GREDI	ELL Engineering	Data: SBMU	-SPS EDD File 09-	28-17 Printed 11	/29/2017, 9:37 A	M	
Constituent	Well	<u>N</u>	Mean	Median	Lower Q.	Upper Q.	<u>Min.</u>	Max.	<u>%NDs</u>
Antimony (ug/I)	MW-8	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Arsenic (ug/I)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Barium (ug/l)	MVV-8	8	77.5	76	74	83	68	86	0
Beryllium (ug/l)	MVV-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/I)	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/I)	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/I)	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

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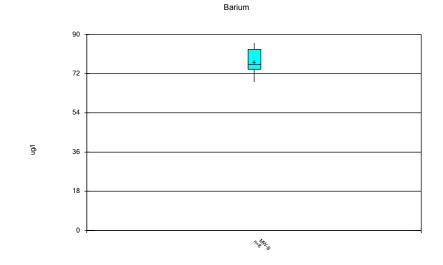
Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



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

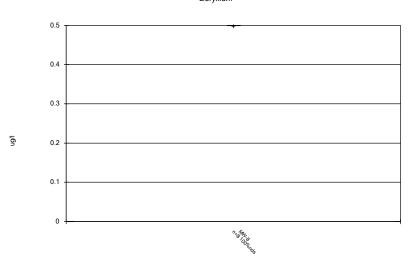
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 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

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Beryllium



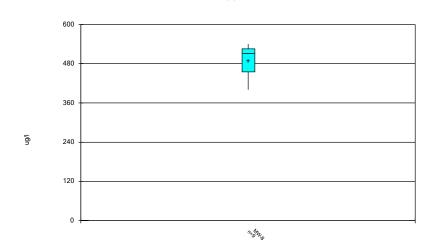
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 SBMU-Sikeston Power Station
 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

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

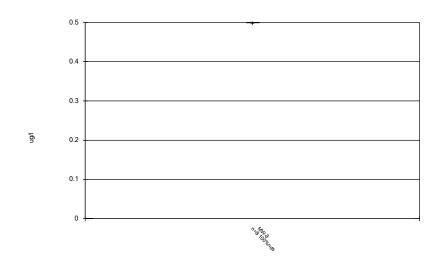
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 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

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Boron

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

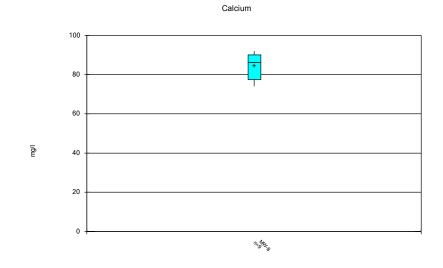


Cadmium

 Box & Whiskers Plot
 Analysis Run 11/29/2017 9:36 AM
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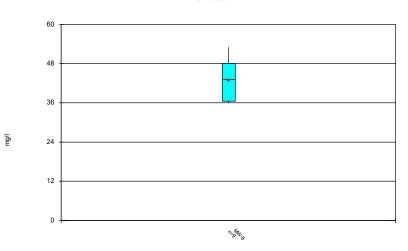
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 Client: GREDELL Engineering
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Chloride

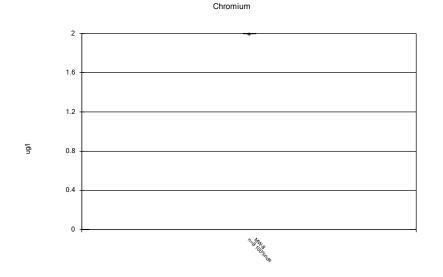


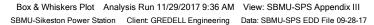
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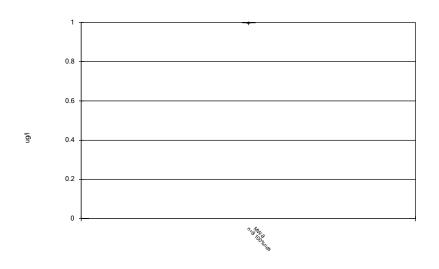
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 View: SBMU-SPS Appendix III

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

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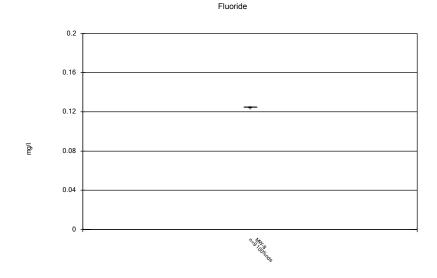


Cobalt

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

 SBMU-Sikeston Power Station
 Client: GREDELL Engineering
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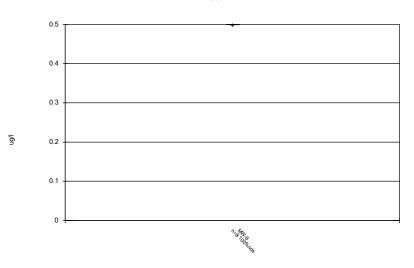


 Box & Whiskers Plot
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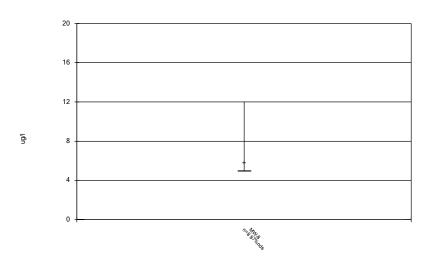
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 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

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Lead

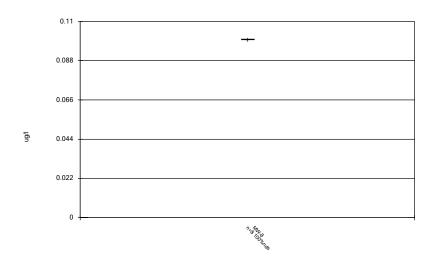


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Lithium

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

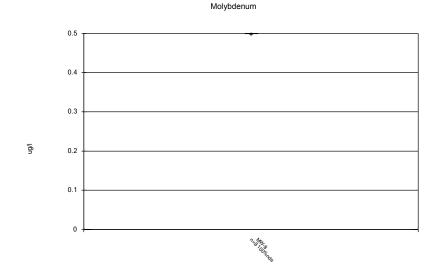


Mercury

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

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

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 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

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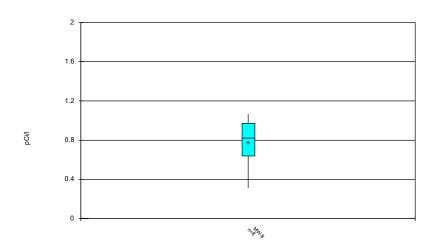
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 Box & Whiskers Plot
 Analysis Run 11/29/2017 9:36 AM
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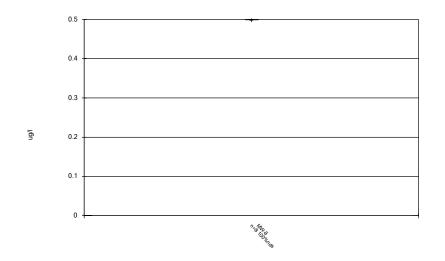
 SBMU-Sikeston Power Station
 Client: GREDELL Engineering
 Data: SBMU-SPS EDD File 09-28-17

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Radium

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

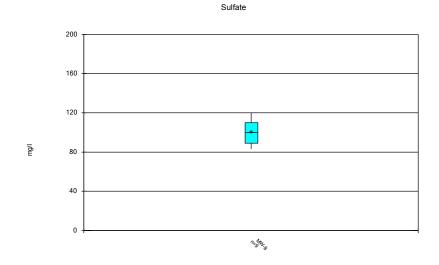


Selenium

 Box & Whiskers Plot
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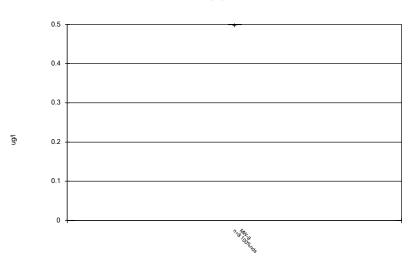
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 Client: GREDELL Engineering
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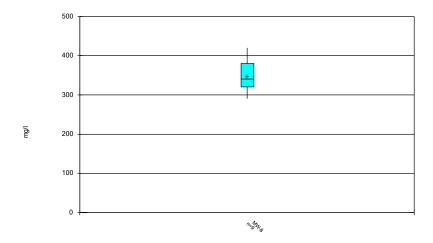
Thallium



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

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





Appendix 8

Prediction Limit Charts

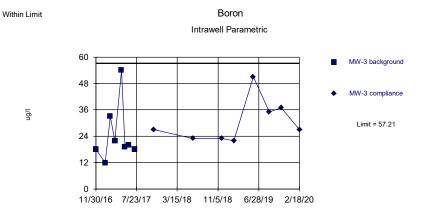
Prediction Limit

	SBMU-Sikes	ton Power Station	Client: GREDE	Client: GREDELL Engineering			EDD Fil	e 09-28-17	Printed 12/21/202		
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	Transform	<u>Alpha</u>	Method
Total Dissolved Solids (mg/l)	MW-8	448	n/a	3/30/2020	480	Yes	8	0	No	0.002505	Param Intra 1 of 2

Prediction Limit

	SBMU-Sikes	ton Power Station	Client: GRED	ELL Engineering	Data: SBM	IU-SPS	EDD Fi	e 09-28-17	Printed 12/21/202	0, 8:18 AM	
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	Transform	<u>Alpha</u>	Method
Boron (ug/l)	MW-3	57.21	n/a	2/18/2020	27	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-4	1734	n/a	2/18/2020	930	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-5	5700	n/a	2/18/2020	400	No	8	0	n/a	0.02144	NP Intra (normality)
Boron (ug/l)	MW-6	60.62	n/a	2/18/2020	40	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-8	596.7	n/a	2/18/2020	480	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-3	25.46	n/a	2/18/2020	16	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-4	95.25	n/a	2/18/2020	67	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-5	240	n/a	2/18/2020	110	No	8	0	n/a	0.02144	NP Intra (normality)
Calcium (mg/l)	MW-6	49.29	n/a	2/18/2020	41	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-8	101.7	n/a	2/18/2020	93	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-3	2.565	n/a	2/18/2020	1.3	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-4	18.69	n/a	2/18/2020	11	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-5	17.45	n/a	2/18/2020	15	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-6	3.083	n/a	2/18/2020	1.7	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-8	58.72	n/a	2/18/2020	53	No	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-3	0.4819	n/a	2/18/2020	0.125ND	No	8	12.5	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-4	0.259	n/a	2/18/2020	0.125ND	No	8	87.5	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-5	0.255	n/a	2/18/2020	0.125ND	No	8	87.5	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-6	0.331	n/a	2/18/2020	0.125ND	No	8	75	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-8	0.25	n/a	2/18/2020	0.125ND	No	8	100	n/a	0.02144	NP Intra (NDs) 1 of 2
pH (S.U.)	MW-3	7.189	6.363	2/18/2020	6.4	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-4	7.529	7.291	2/18/2020	7.4	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-5	7.078	6.697	2/18/2020	6.8	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-6	7.075	6.575	2/18/2020	6.7	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-8	7.285	7.018	2/18/2020	7.2	No	8	0	No	0.001253	Param Intra 1 of 2
Sulfate (mg/l)	MW-3	33.73	n/a	2/18/2020	21	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-4	147.6	n/a	2/18/2020	66	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-5	484.6	n/a	2/18/2020	210	No	8	0	sqrt(x)	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-6	44.8	n/a	2/18/2020	24	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-8	131.1	n/a	2/18/2020	110	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-3	191.6	n/a	3/30/2020	180	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-4	407.2	n/a	3/30/2020	300	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-5	577.5	n/a	3/30/2020	450	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-6	250.2	n/a	3/30/2020	230	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-8	448	n/a	3/30/2020	480	Yes	8	0	No	0.002505	Param Intra 1 of 2

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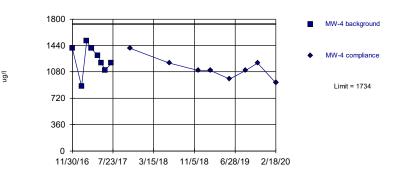


Background Data Summary: Mean=24.5, Std. Dev.=13.31, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7709, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limit

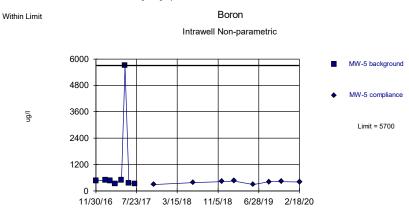
Boron Intrawell Parametric



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

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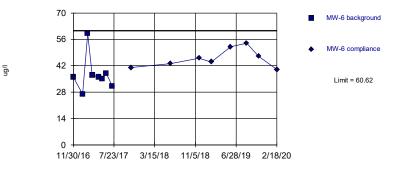
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient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

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Within Limit

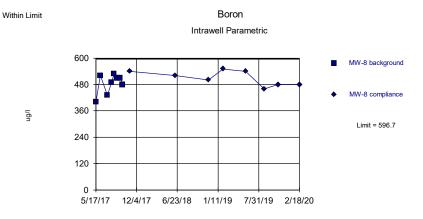






Background Data Summary: Mean=37.38, Std. Dev=9.456, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7684, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.00205.

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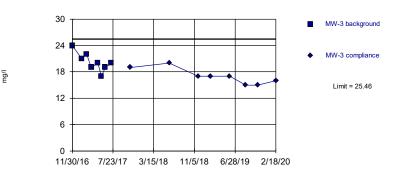


Background Data Summary: Mean=483.8, Std. Dev=45.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.08712, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.00505.

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Within Limit

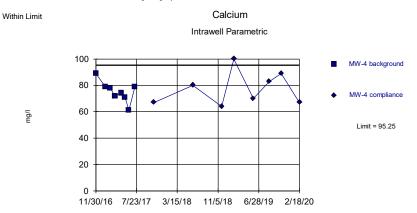
Calcium Intrawell Parametric



Background Data Summary: Mean=20.25, Std. Dev=2.121, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9723, critical = 0.749. Kappa = .448 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

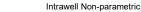
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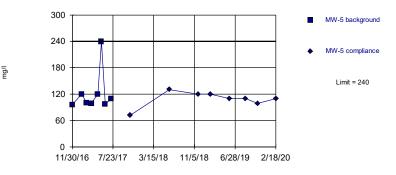


Background Data Summary: Mean=75.38, Std. Dev=8.088, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9559, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Sanitas[™] v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

Within Limit

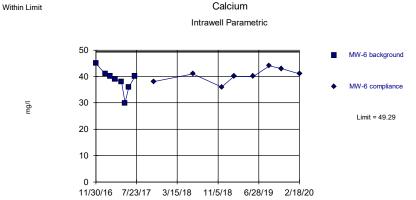
Calcium





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

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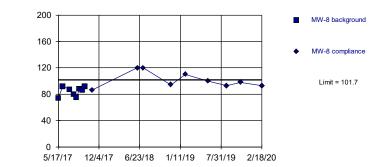
Background Data Summary: Mean=38.63, Std. Dev.=4.34, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9284, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.



Within Limit

l/gr

Calcium Intrawell Parametric

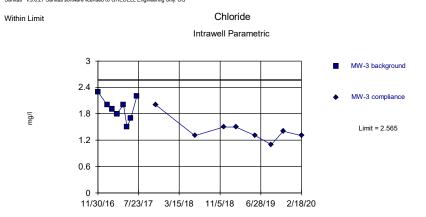


Background Data Summary: Mean=84.25, Std. Dev.=7.106, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8885, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

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

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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.

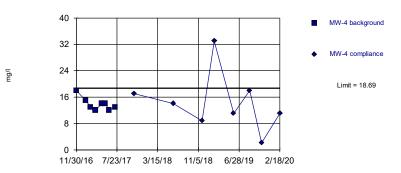
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Within Limit

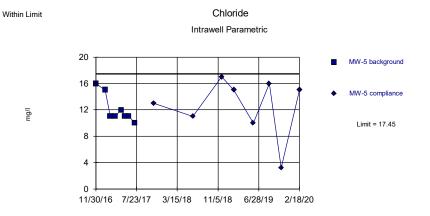






Background Data Summary: Mean=13.88, Std. Dev.=1.959, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8612, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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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. Sanitas[™] v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

Within Limit

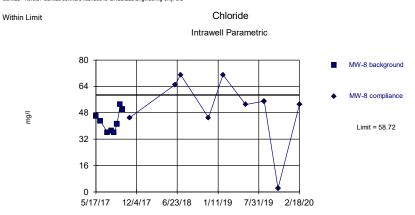
Chloride Intrawell Parametric



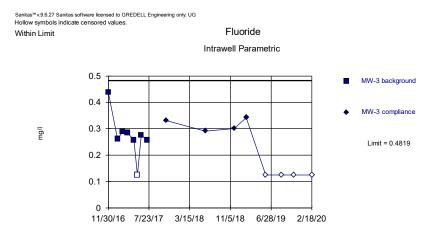
Background Data Summary: Mean=2.1, Std. Dev=04, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

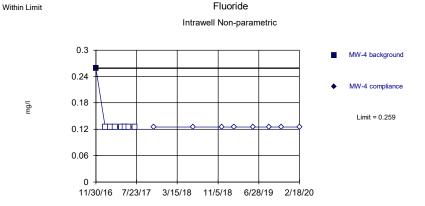
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Background Data Summary: Mean=42.75, Std. Dev=6.497, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9101, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event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

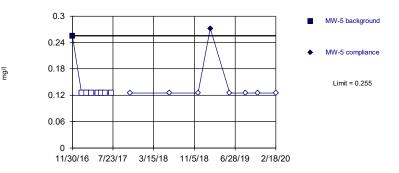


Background Data Summary: Mean=0.2736, Std. Dev.=0.08475, n=8, 12.55% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8446, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Sanitas[™] v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



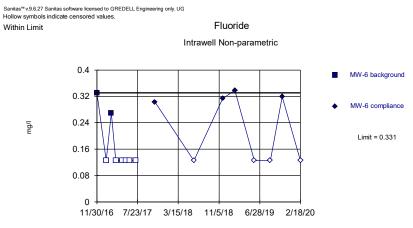
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized. Sanitas^w v.9.627 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values. Within Limit Fluoride

Intrawell Non-parametric

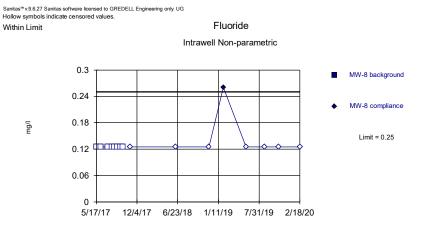


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not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

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

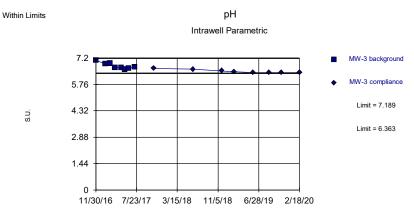


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not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



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.

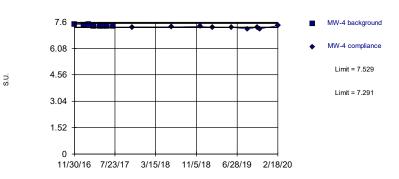
Sanitas™ v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG



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 = 0.08866, 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



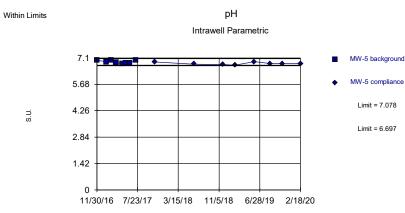
pН

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 = 0.02505.

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

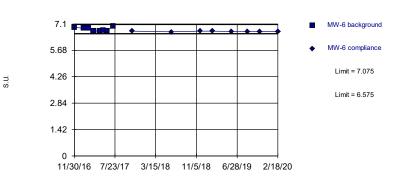
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Background Data Summary: Mean=6.888, Std. Dev.=0.07741, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.08471, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.02505.

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Within Limits

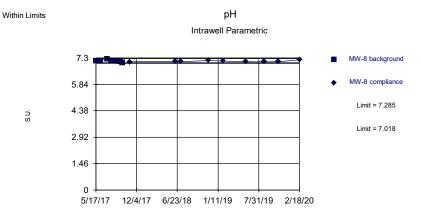


pН

Intrawell Parametric

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

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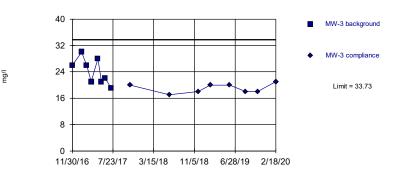


Background Data Summary: Mean=7.151, Std. Dev-0.05436, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8529, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.00520505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas[™] v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

Within Limit

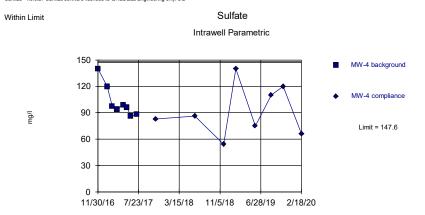
Sulfate Intrawell Parametric



Background Data Summary: Mean=24.13, Std. Dev=3.907, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.09297, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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

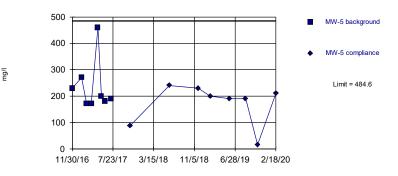
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Background Data Summary: Mean=102.5, Std. Dev=18.33, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8132, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Sanitas™ v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

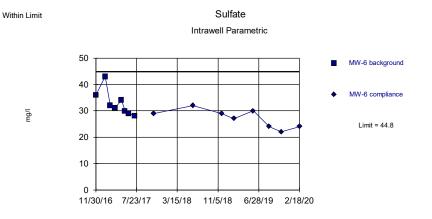
Within Limit

Sulfate Intrawell Parametric



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

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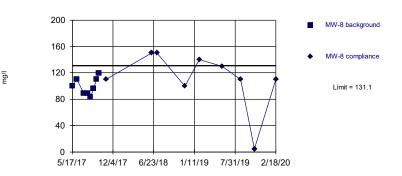


Background Data Summary: Mean=32.88, Std. Dev.=4.853, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.0801, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.02505.

Prediction Limit Analysis Run 12/21/2020 8:18 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas[™] v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

Within Limit

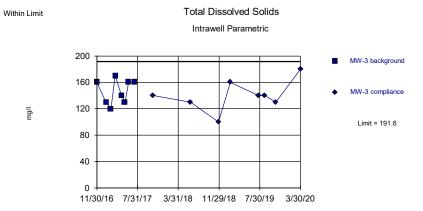
Sulfate Intrawell Parametric



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

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

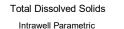
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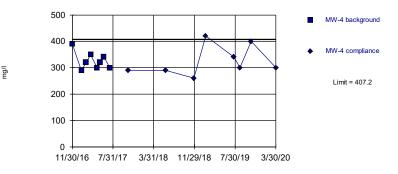


Background Data Summary: Mean=146.3, Std. Dev=18.47, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.08903, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005205.

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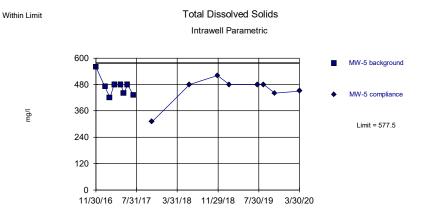






Background Data Summary: Mean=326.3, Std. Dev=32.92, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9148, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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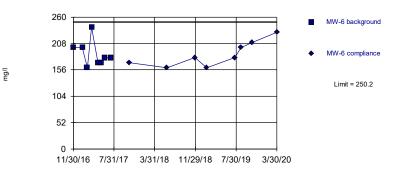


Background Data Summary: Mean=470, Std. Dev.=43.75, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8718, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limit

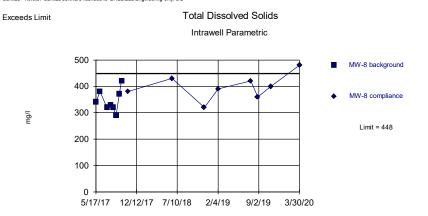
Total Dissolved Solids Intrawell Parametric



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

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

Sanitas™v9627 Sanitas software licensed to GREDELL Engineering only UG

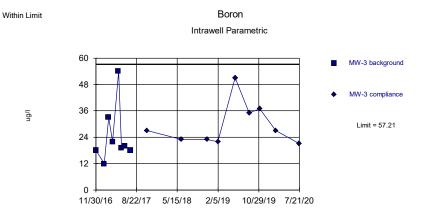


Background Data Summary: Mean=346.3, Std. Dev=41.38, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9539, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.005205.

Prediction Limit

Constituent Well Upper Lim. Lower Lim. Date Observ. Sig. Bg N %NDs Transform Alpha Method Boron (ug/l) MW-3 57.21 n/a 7/21/2020 21 No 8 0 No 0.002505 Param Int	
Boron (ug/l) MW-3 57.21 n/a 7/21/2020 21 No 8 0 No 0.002505 Param Int	
	ra 1 of 2
Boron (ug/l) MW-4 1734 n/a 7/21/2020 920 No 8 0 No 0.002505 Param Int	14 1 01 2
Boron (ug/l) MW-5 5700 n/a 7/21/2020 330 No 8 0 n/a 0.02144 NP Intra (normality)
Boron (ug/l) MW-6 60.62 n/a 7/21/2020 46 No 8 0 No 0.002505 Param Int	ra 1 of 2
Boron (ug/l) MW-8 596.7 n/a 7/21/2020 470 No 8 0 No 0.002505 Param Int	ra 1 of 2
Calcium (mg/l) MW-3 25.46 n/a 7/21/2020 18 No 8 0 No 0.002505 Param Int	ra 1 of 2
Calcium (mg/l) MW-4 95.25 n/a 7/21/2020 76 No 8 0 No 0.002505 Param Int	ra 1 of 2
Calcium (mg/l) MW-5 240 n/a 7/21/2020 110 No 8 0 n/a 0.02144 NP Intra (normality)
Calcium (mg/l) MW-6 49.29 n/a 7/21/2020 43 No 8 0 No 0.002505 Param Int	ra 1 of 2
Calcium (mg/l) MW-8 101.7 n/a 7/21/2020 89 No 8 0 No 0.002505 Param Int	ra 1 of 2
Chloride (mg/l) MW-3 2.565 n/a 7/21/2020 1 No 8 0 No 0.002505 Param Int	ra 1 of 2
Chloride (mg/l) MW-4 18.69 n/a 7/21/2020 14 No 8 0 No 0.002505 Param Int	ra 1 of 2
Chloride (mg/l) MW-5 17.45 n/a 7/21/2020 14 No 8 0 No 0.002505 Param Int	ra 1 of 2
Chloride (mg/l) MW-6 3.083 n/a 7/21/2020 0.5ND No 8 0 No 0.002505 Param Int	ra 1 of 2
Chloride (mg/l) MW-8 58.72 n/a 7/21/2020 50 No 8 0 No 0.002505 Param Int	ra 1 of 2
Fluoride (mg/l) MW-3 0.4819 n/a 7/21/2020 0.125ND No 8 12.5 No 0.002505 Param Int	ra 1 of 2
Fluoride (mg/l) MW-4 0.259 n/a 7/21/2020 0.125ND No 8 87.5 n/a 0.02144 NP Intra	(NDs) 1 of 2
Fluoride (mg/l) MW-5 0.255 n/a 7/21/2020 0.125ND No 8 87.5 n/a 0.02144 NP Intra	(NDs) 1 of 2
Fluoride (mg/l) MW-6 0.331 n/a 7/21/2020 0.125ND No 8 75 n/a 0.02144 NP Intra	(NDs) 1 of 2
Fluoride (mg/l) MW-8 0.25 n/a 7/21/2020 0.125ND No 8 100 n/a 0.02144 NP Intra	(NDs) 1 of 2
pH (S.U.) MW-3 7.189 6.363 7/21/2020 6.5 No 8 0 No 0.001253 Param Int	ra 1 of 2
pH (S.U.) MW-4 7.529 7.291 8/4/2020 7.4 No 8 0 No 0.001253 Param Int	ra 1 of 2
pH (S.U.) MW-5 7.078 6.697 7/21/2020 6.8 No 8 0 No 0.001253 Param Int	ra 1 of 2
pH (S.U.) MW-6 7.075 6.575 7/21/2020 6.7 No 8 0 No 0.001253 Param Int	ra 1 of 2
pH (S.U.) MW-8 7.285 7.018 7/21/2020 7.1 No 8 0 No 0.001253 Param Int	ra 1 of 2
Sulfate (mg/l) MW-3 33.73 n/a 7/21/2020 15 No 8 0 No 0.002505 Param Int	ra 1 of 2
Sulfate (mg/l) MW-4 147.6 n/a 7/21/2020 86 No 8 0 No 0.002505 Param Int	ra 1 of 2
Sulfate (mg/l) MW-5 484.6 n/a 7/21/2020 210 No 8 0 sqrt(x) 0.002505 Param Int	ra 1 of 2
Sulfate (mg/l) MW-6 44.8 n/a 7/21/2020 22 No 8 0 No 0.002505 Param Int	ra 1 of 2
Sulfate (mg/l) MW-8 131.1 n/a 7/21/2020 100 No 8 0 No 0.002505 Param Int	ra 1 of 2
Total Dissolved Solids (mg/l) MW-3 191.6 n/a 7/21/2020 140 No 8 0 No 0.002505 Param Int	ra 1 of 2
Total Dissolved Solids (mg/l) MW-4 407.2 n/a 7/21/2020 290 No 8 0 No 0.002505 Param Int	ra 1 of 2
Total Dissolved Solids (mg/l) MW-5 577.5 n/a 7/21/2020 470 No 8 0 No 0.002505 Param Int	ra 1 of 2
Total Dissolved Solids (mg/l) MW-6 250.2 n/a 7/21/2020 220 No 8 0 0.002505 Param Int	ra 1 of 2
Total Dissolved Solids (mg/l) MW-8 448 n/a 7/21/2020 420 No 8 0 0.002505 Param Int	ra 1 of 2

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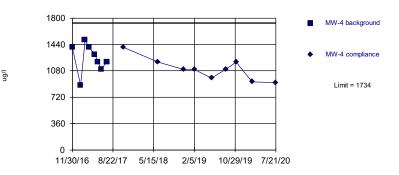


Background Data Summary: Mean=24.5, Std. Dev.=13.31, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7709, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limit

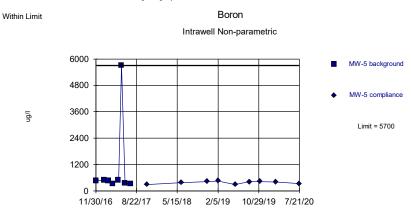
Boron Intrawell Parametric



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 12/21/2020 8:15 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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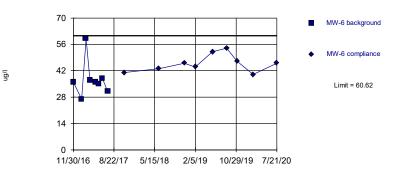


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient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

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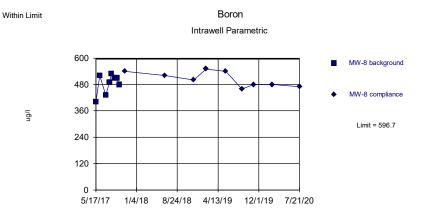
Within Limit





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

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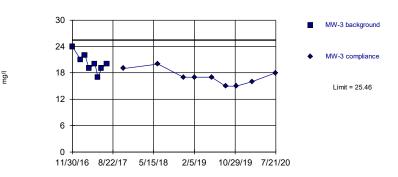


Background Data Summary: Mean=483.8, Std. Dev=45.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.08712, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.00505.

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Within Limit

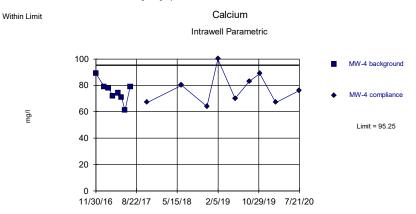
Calcium Intrawell Parametric



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

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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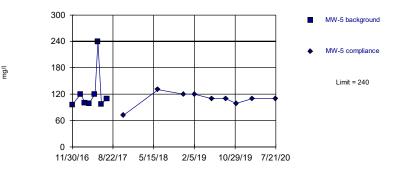


Background Data Summary: Mean=75.38, Std. Dev=8.088, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9559, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Sanitas™ v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

Within Limit

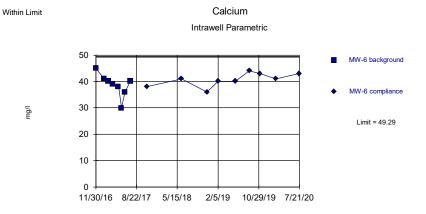
Calcium



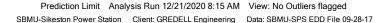


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 8 background values. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient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

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





Within Limit

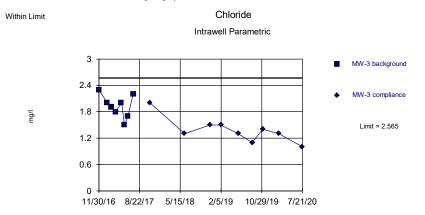
Calcium Intrawell Parametric



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

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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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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Within Limit

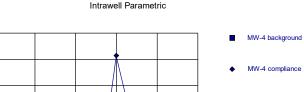
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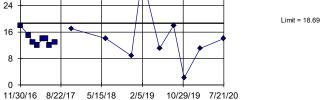
Chloride



40

32

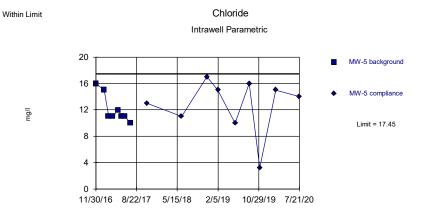




MW-4 compliance

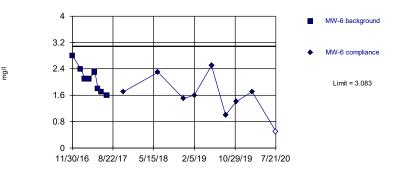
Background Data Summary: Mean=13.88, Std. Dev.=1.959, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8612, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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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. Sanitas" v.9.627 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values. Within Limit Chloride

Intrawell Parametric

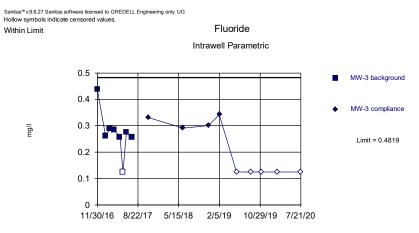


Background Data Summary: Mean=2.1, Std. Dev=04, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Prediction Limit Analysis Run 12/21/2020 8:15 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

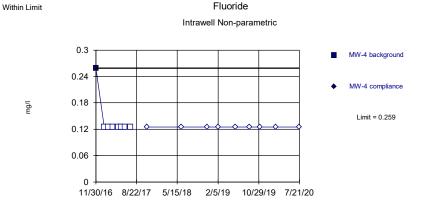
Sanitas™ v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

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.



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

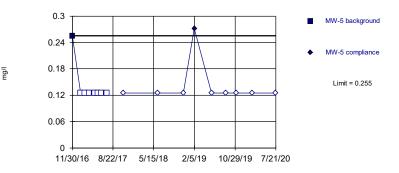
Sanitas[™] v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values.



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.

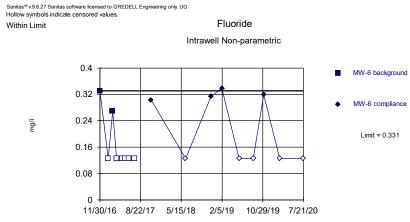
Sanitas^w v.9.627 Sanitas software licensed to GREDELL Engineering only. UG Hollow symbols indicate censored values. Within Limit Fluoride

Intrawell Non-parametric

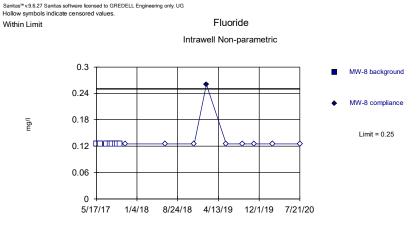


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not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

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

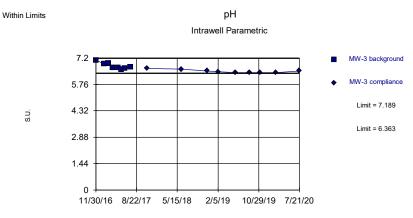


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not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



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.

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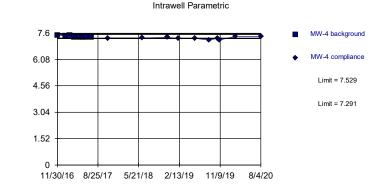


Background Data Summary: Mean=6.776, Std. Dev.=0.1681, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.08866, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limits

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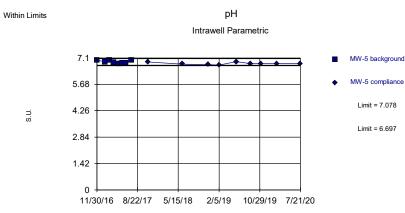
Background Data Summary: Mean=7.41, Std. Dev.=0.0484, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7828, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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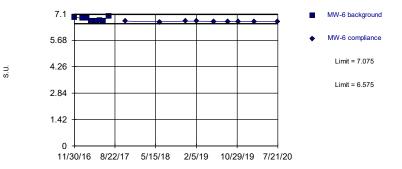
Intrawell Parametric

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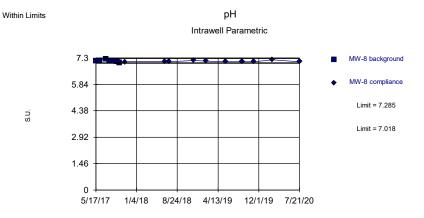
Background Data Summary: Mean=6.888, Std. Dev.=0.07741, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8471, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Sanitas™ v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

Within Limits



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

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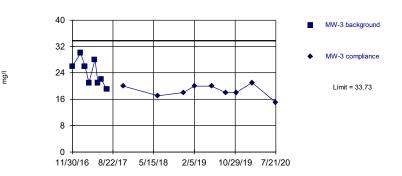


Background Data Summary: Mean=7.151, Std. Dev-0.05436, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8529, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.00520505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas[™] v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

Within Limit

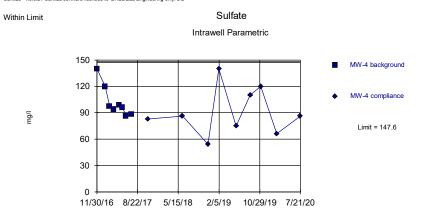
Sulfate Intrawell Parametric



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

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

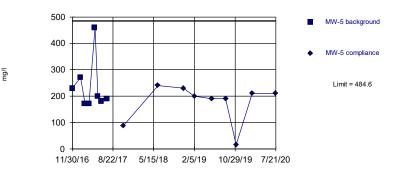
Sanitas™v9627 Sanitas software licensed to GREDELL Engineering only UG



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. Sanitas™ v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

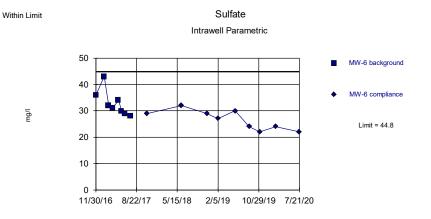
Within Limit

Sulfate Intrawell Parametric



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

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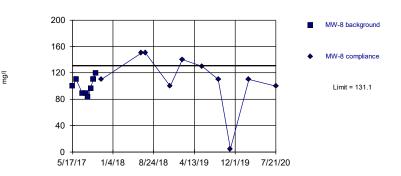


Background Data Summary: Mean=32.88, Std. Dev.=4.853, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8801, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Sanitas™ v.9.6.27 Sanitas software licensed to GREDELL Engineering only. UG

Within Limit

Sulfate Intrawell Parametric



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

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v 9.6.27 Sanitas software licensed to GREDELL Engineering only UG

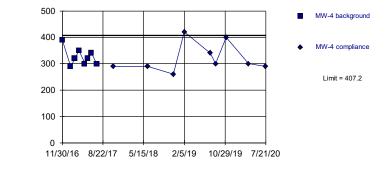
Total Dissolved Solids Within Limit Intrawell Parametric 200 MW-3 background 160 MW-3 compliance 120 l/gu Limit = 191.6 80 40 Ω 11/30/16 8/22/17 5/15/18 2/5/19 10/29/19 7/21/20

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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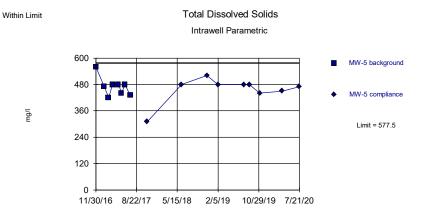




Intrawell Parametric

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

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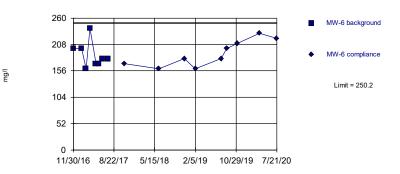


Background Data Summary: Mean=470, Std. Dev.=43.75, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8718, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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Within Limit

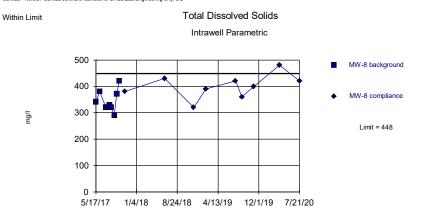
Total Dissolved Solids Intrawell Parametric



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

Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Prediction Limit Analysis Run 12/21/2020 8:16 AM View: No Outliers flagged SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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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 = 0.02505.

Appendix 9

August 6, 2020 Alternate Source Demonstration

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

GREDELL Engineering Resources, Inc.

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



Sikeston Power Station 1551 West Wakefield Avenue Sikeston, MO 63801





August 2020

PROFESSIONAL ENGINEER'S CERTIFICATION

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

I, Thomas R. Gredell, P.E., a professional engineer licensed in the State of Missouri, hereby certify in accordance with 40 CFR 257.94(e)(2) to the accuracy of the alternate source demonstration described in the following report for the Sikeston Board of Municipal Utilities, Sikeston Power Station, Bottom Ash Pond CCR unit. The report demonstrates that the statistically significant increase of total dissolved solids in MW-8 resulted from an analytical false positive and is attributable to an alternate source and not evidence of a release from the Bottom Ash Pond. This demonstration successfully meets the requirements of 40 CFR 257.94(e) as found in federal regulation 40 CFR 257, Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments. In addition, the demonstration was made using EPA Unified Guidance (Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance: EPA 530/R-09-007) and generally accepted methods.

Name:	Thomas R.	Gredell,	P.E.,	
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Sikeston Board of Municipal Utilities Sikeston Power Station Detection Monitoring Program for Bottom Ash Pond - Total Dissolved Solids in MW-8 Alternate Source Demonstration

August 2020

Table of Contents

1.0	INTRODUCTION	.1
2.0	OBSERVATIONS AND DATA COLLECTION	.2
3.0	SUMMARY OF DATA ANALYSIS AND FINDINGS	.5
4.0	CONCLUSIONS AND RECOMMENDATIONS	.8
5.0	REFERENCES	.9

List of Figures

Figure 1 – Site Map and Sampling Locations

List of Tables

 Table 1 – TDS and Relative Percent Difference Results – 2020

List of Appendices

Appendix 1 – Laboratory Analytical Results and Quality Control Reports - February 2020 Appendix 2 – Laboratory Analytical Results and Quality Control Reports - March 2020 Appendix 3 – Laboratory Analytical Results and Quality Control Reports - April 2020

1.0 INTRODUCTION

This Alternate Source Demonstration Report has been prepared to address the results of the semi-annual sampling event initiated on February 18, 2020 at the Sikeston Board of Municipal Utilities (SBMU) Sikeston Power Station's (SPS) Bottom Ash Pond, a coal combustion residual (CCR) surface impoundment. Following receipt of final analytical data, it was apparent that an error resulted in delayed analysis for Total Dissolved Solids (TDS) and hold time exceedance. As a consequence, resampling of TDS in all five monitoring wells was conducted on March 30, 2020. Following receipt of final analytical data from that event, statistical analysis was performed by GREDELL Engineering Resources, Inc. (Gredell Engineering) for the parameters listed in Appendix III to Part 257 – Constituents for Detection Monitoring. The results of the statistical evaluation suggested one apparent statistically significant increase (SSI) for TDS in monitoring well MW-8. In response, resampling was conducted at MW-8 on April 8, 2020. This sampling event including collection of a duplicate, and replicate analysis of the primary sample by the analytical laboratory. Results from this event were ambiguous. As a consequence, SBMU-SPS requested that Gredell Engineering conduct a critical evaluation of the analytical results and develop an alternate source demonstration if warranted.

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

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

2.0 OBSERVATIONS AND DATA COLLECTION

The Bottom Ash Pond groundwater monitoring well system consists of five wells, designated MW-3, MW-4, MW-5, MW-6, and MW-8 (Figure 1). Monitoring wells MW-3, MW-4, MW-5, and MW-6 were installed in April 2016, and sampled on an approximate monthly basis beginning in November 2016 and ending in July 2017 to establish a background data base. Monitoring well MW-8 was installed in April 2017, and was sampled at an increased frequency beginning in May 2017 and ending in September 2017. Additional information regarding these wells is available in the Bottom Ash Pond monitoring well design, installation, and development report (Gredell Engineering, 2017a).

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

The SPS conducted its semiannual detection groundwater sampling event for the Bottom Ash Pond on February 18, 2020. The contracted laboratory received the samples on February 20, 2020, but did not prepare and analyze the samples for TDS until February 27, 2020. The analytical method used for TDS (Standard Method (SM) 2540C) has a seven day hold time. Accordingly, the TDS results were qualified with an "H" flag because analysis was conducted nine days after sample collection. Due to the qualified data, the Bottom Ash Pond monitoring system was re-sampled for TDS on March 30, 2020. Final TDS results were received on April 7, 2020. However, the TDS result for the sample collected at MW-8 appeared elevated with respect to the prediction limit. Consequently, MW-8 was re-sampled on April 8, 2020 and both field duplicate and laboratory replicate analyses were performed by the analytical laboratory. Final results for the April 8, 2020 event were received on May 14, 2020.

The following table summarizes the primary and duplicate sample TDS results for the February, March, and April sampling events. Relative Percent Differences (RPDs) between results are also listed where applicable.

Sampling Date	Sample Location	TDS (mg/L)	Dup (mg/L)	RPD (%)
2/18/2020	MW-8	420 H	N/A	N/A
	MW-5	520 H	420 H	21.3
3/30/2020	MW-8	480	N/A	N/A
4/8/2020	MW-8	480	330	37.0
	MW-8 Lab Replicate	430	N/A	N/A

Table 1 – TDS and Relative Percent	Difference Results - 2020
------------------------------------	---------------------------

N/A = Not Prepared or Analyzed

H = Sample Analyzed After Hold Time Exceeded

MW-8 Prediction Limit = 448 mg/L

The table indicates that the original TDS result in MW-8, while qualified due to hold time exceedance, did not exceed the 448 mg/L prediction limit. However, due to the hold time exceedance, it was considered necessary to re-sample MW-8 and obtain TDS results within the method-specified hold time of seven days. This subsequent result was reported at 480 mg/L or 32 mg/L (7%) above the predicted limit value of 448 mg/L. Review of Laboratory Quality Control Report documents associated with these samples show that matrix spike duplicates (MSDs) for TDS were 8% to 9% higher than the source concentrations. These elevated MSD concentrations are more than sufficient to demonstrate that the reported value of 480 mg/L is within the range of laboratory variability and that the result is a false positive relative to the predicted limit value.

The initial result for the April 8, 2020 sampling was also reported as 480 mg/L, but the TDS concentration in the sample duplicate was reported as 330 mg/L, which is a 37% difference in the reproducibility in results. Moreover, the lab replicate prepared by the analytical laboratory by drawing a second aliquot from the initial sample collected on April 8th had a reported TDS concentration of 430 mg/L. Both the sample duplicate and lab replicate results are below the predicted limit value of 448 mg/L, again providing evidence that the initial sample result is a false-positive.

Inherent variability in the analytical method used for TDS (SM 2540C) is also evidenced by the following observations:

- <u>February 18, 2020</u>: A comparison of the field duplicate to the original sample collected at MW-5 results in an RPD of 21.3% (Table 1). Additionally, the RPD for the laboratory prepared MSD for TDS was reported as 13% (Appendix 1; Page 11). Both reported levels of variability exceed the percentage required (7%) to trigger a false positive for TDS in MW-8.
- March 30, 2020: The RPDs for the laboratory prepared MSDs (DUP1 and DUP2) for TDS were reported as 8% and 9% higher than their respective sources (Appendix 2; Page 4). These percentages are greater than the variability necessary to trigger a false positive for TDS in MW-8 (7%).

<u>April 8, 2020:</u> The lab replicate result (430 mg/L) documents 11% variability in laboratory analysis method (Table 1) and suggests that the 480 mg/L value for the primary sample is a false positive for TDS in MW-8. The RPD for TDS between the primary MW-8 sample and the field duplicate (Table 1) suggests 37% variability between two samples collected consecutively from the effluent stream. While 11% of the 37% may be accounted for with laboratory variability, the remaining 26% it attributed to variability in well performance (yellow "flakes" discussed below). Collectively, this 37% variability is over five times the amount (7%) required to trigger a false positive for TDS in MW-8.

Following review of the field sampling notes, it was also noted that a well performance issue is apparent each time MW-8 was purged. This was recorded in the field sampling logs as the intermittent appearance of yellow "flakes" entrained in the purge water. These flakes are consistent with bacterial fouling that periodically dislodges from the well casing and migrates into the effluent or sample during purging or sampling, respectively. Identical observations were previously noted in MW-8 during the June 2018 sampling event and resulted in elevated analytical results (Gredell Engineering, 2019). The previous bacterial fouling was rectified by well redevelopment conducted consistent with Groundwater Monitoring Sampling and Analysis Plan (Gredell Engineering, 2018b).

3.0 SUMMARY OF DATA ANALYSIS AND FINDINGS

The U.S. Environmental Protection Agency (USEPA) provides Unified Guidance for statistical analysis of groundwater monitoring data (USEPA, 2009). This Unified Guidance document was reviewed to assess the validity of the apparent SSIs. Chapter 4 of the Unified Guidance discusses groundwater monitoring programs and statistical analysis of the associated data. A key component of statistical analysis is *"to determine whether or not the increase is actually due to a contaminant release"*. Several of these considerations are pertinent to the data associated with the Bottom Ash Pond groundwater monitoring well system and for that reason are listed below.

- 1. Chapter 4, page 4-8: Is the result a false positive? That is, were the data tested simply an unusual sample of the underlying population triggering an SSI? Generally, this can be evaluated with repeat sampling.
- 2. Chapter 4, page 4-9: Have there been changes in well performance over time?
- 3. Chapter 4, page 4-11: Were there calibration problems, e.g., drift in instrumentation?
- 4. Chapter 4, page 4-11: Were there "spikes" or unusually high values on certain sampling events (either for one constituent among many wells or related analytical constituents) that would suggest laboratory error?

Each of these considerations were used to evaluate the background data and the validity of the apparent SSI for TDS in MW-8. The results of this evaluation are discussed below.

Unified Guidance Consideration 1

The suspicion that the March 30, 2020 results are a false positive was considered and, as suggested by Unified Guidance, was evaluated with repeat sampling. In this case a primary sample and a duplicate were collected from MW-8 on April 8, 2020. The primary sample was also replicated by the analytical laboratory by independently analyzing two aliquots for TDS. These results are presented in Table 1 and indicate substantial variability relative to the magnitude of prediction limit exceedance (32 mg/L) by the 480 mg/L result

Unified Guidance Consideration 2

Each time MW-8 was sampled (February, March, and April, 2020), yellow flakes were observed in the effluent intermittently during purging. These observations suggest a well performance issue in the form of bacterial fouling being released during pumping. Similar observations were noted in June 2018 and were associated with elevated levels of Calcium, Chloride, and Sulfate. As a consequence of these observations, MW-8 was redeveloped, which successfully mitigated the well fouling and associated elevated constituent concentrations until the February 2020 sampling event.

The recurrence of bacterial fouling in MW-8 and the intermittent release of yellow flakes during purging and sampling provides additional explanation for the variability in TDS results. Not all samples would contain consistent proportions of the suspended yellow flakes. Consequently, variable amounts of this

material may pass through the 1.5 micron filter used during preparation of the samples for laboratory analysis. Further, differing proportions of yellow flake remaining after filtration may explain the difference in TDS results between the primary sample collected on April 8, 2020 and the laboratory replicate (Table 1). It may also explain the higher degree of variability between the primary sample and the sample duplicate in MW-8 (37.0% RPD), where well performance issues were apparent, relative to the RPD between the primary sample and sample duplicate from MW-5 (21.3%), where well performance issues were not apparent.

Unified Guidance Consideration 3

Analytical Laboratory Quality Control documentation was reviewed to assess if instrument drift occurred that could account for the reported TDS results. The Matrix Spike Duplicate RPDs suggest that, during the analysis of the March samples, the laboratory instruments were reporting concentrations 8% to 9% higher than the source concentrations. However, the reported TDS concentration in MW-8 in March (480 mg/L) exceeded the prediction limit (448 mg/L) by only 7%.

Additionally, SM 2540C procedures were reviewed relative to the TNI/NELAP Proficiency Testing acceptance limits for laboratory accreditation to assess acceptable error ranges using this method of analysis. The laboratory senior project manager was contacted and provided documentation for Proficiency Testing, which involves analysis of a (blind) standard. In order to secure TNI/NELAP accreditation for TDS analysis, the analytical result reported by the laboratory using the (blind) standard must be within +/-45 mg/L of the assigned value to be considered within acceptance limits. This range in results necessary to achieve accreditation is more than adequate to demonstrate that apparent SSI for TDS in MW-8 is a false positive.

Unified Guidance Consideration 4

The initial result for TDS in MW-8 (February 2020), while analyzed outside hold time, was below the prediction limit and was consistent with historical results collected between May 2017 and November 2019. However, the March 2020 sampling results yielded an unusually high TDS value for this well that was above the prediction limit. In response, the possibility of sampling and/or laboratory error was then evaluated by sampling the well again in April 2020. A primary sample and sample duplicate were collected. In addition, a lab replicate of the primary sample was analyzed to assess inherent variability in the analysis of TDS for this well. Reported results from these three samples varied from 330 mg/L to 480 mg/L

The results described above suggest a degree of variability that could be related to a false positive "spike" in values. While a false positive stemming from laboratory analysis is referred to as a "laboratory error" the connotation is misleading if the variability that resulted in the false positive is within the required acceptance limits for national accreditation. Similarly, although a false positive stemming from sample collection is referred to as "sampling error", it should not be viewed as a reflection on the field technician if the proper sampling procedures are followed. In these

cases, the false positive for TDS during the March 2020 sampling exceeded the prediction limit by 32 mg/L, which is within the acceptable tolerances for the laboratory method SM 2540C accreditation (+/-45 mg/L), and the variation apparent in the three analyses completed for the April 2020 sampling event was 150 mg/L.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Gredell Engineering concludes that the apparent SSI of TDS in MW-8 is a false positive and is attributable to an alternate source and not evidence of a release from the Bottom Ash Pond. The following supports this conclusion:

- Analytical results for TDS in MW-8 during the February, March, and April sampling are highly variable, with three of the results below the prediction limit and two of the results above the prediction limit. Groundwater sample analytical results for TDS demonstrated that considerable variability is inherent in the field sampling method and the laboratory analytical method used.
- Laboratory prepared MSDs for TDS are 8% to 9% higher than their respective sources and are greater than the variability necessary to trigger a false positive for TDS in MW-8 (7%).
- TNI/NELAP Proficiency Testing acceptance limits for laboratory accreditation using SM 2540C are +/- 45 mg/L for TDS. This nationally accepted range in tolerance limits is greater than the range in values between the prediction limit and reported values.
- A recurrence of bacterial fouling in MW-8 is evidenced by the observation of yellow flakes intermittently appearing in the effluent during purging and sampling. Variable proportions of this material in samples collected during the February, March, and April 2020 sampling can cause interferences during analysis and result in excessive drift or variability in reported TDS values.

Based on these conclusions, Gredell Engineering recommends the following:

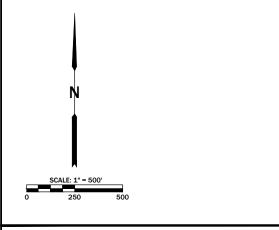
- Continue with semi-annual detection monitoring in accordance with §257.94;
- Re-develop MW-8 to improve well performance.

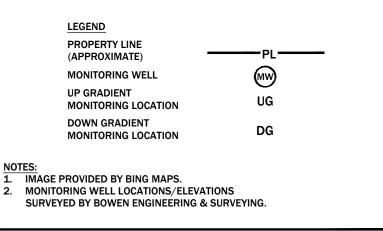
5.0 **REFERENCES**

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FIGURES







	GREDELL Engineering Resources, Inc.						
FIGURE 1	ENVIRONMENTAL ENGINEERING LAND - AIR - WATER						
SIKESTON POWER STATION	15	05 East High Str	reet Tele	Telephone: (573) 659-9078			
	Jef	ferson City, Miss	souri Fac	Facsimile: (573) 659-9079			
	MO CORP. ENGINEERING LICENSE NO. E-2001001669-D						
DOTTOM ACU DOND ODOUNDWATED	DATE	SCALE		ECT NAME	REVISION		
BOTTOM ASH POND GROUNDWATER	6/2020	AS NOTED	SIK	ESTON			
MONITORING WELL SYSTEM	DRAWN	APPROVED	FILE	E NAME	SHEET #		
	CP	MCC	BA	P ASD	1 OF 1		

1.

2.



Appendix 1

Laboratory Analytical Results and Quality Control Reports – February 2020



March 16, 2020

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

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

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

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

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

Sincerely,

Vin 1

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





Sample: 0023536-01 Name: MW-3 Matrix: Ground Wat	ter - Grab						Sampled: 02/18/2 Received: 02/20/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyt	ical - Greens	burg							
Radium 226 - subcontracted	-0.0667	pCi/L			1	0.875			904.0 903.1
Radium 228 - subcontracted	0.341	pCi/L			1	0.571			904.0 903.1
Sample: 0023536-02 Name: MW-6 Matrix: Ground Wat							Sampled: 02/18/2 Received: 02/20/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyt	ical - Greens	burg							
Radium 226 - subcontracted	0.523	pCi/L			1	0.539			904.0 903.1
Radium 228 - subcontracted	0.736	pCi/L			1	0.638			904.0 903.1
Sample: 0023536-03 Name: MW-5 Matrix: Ground Wat							Sampled:02/18/20 11:39Received:02/20/20 10:10PO #:23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyt	ical - Greens	burg							
Radium 226 - subcontracted	0.373	pCi/L			1	0.669			904.0 903.1
Radium 228 - subcontracted	0.576	pCi/L			1	0.701			904.0 903.1
Sample: 0023536-04 Name: MW-8 Matrix: Ground Wat							Sampled:02/18/20 12:36Received:02/20/20 10:10PO #:23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyt	ical - Greens	burg							
Radium 226 - subcontracted	0.188	pCi/L			1	0.581			904.0 903.1
Radium 228 - subcontracted	0.814	pCi/L			1	0.762			904.0 903.1



Sample: 0023536-05 Name: MW-4 Matrix: Ground Wat				Sampled:02/18/20 14:13Received:02/20/20 10:10PO #:23573					
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyt	ical - Greens	burg							
Radium 226 - subcontracted	0.071	pCi/L			1	0.52			904.0 903.1
Radium 228 - subcontracted	1.05	pCi/L			1	0.709			904.0 903.1
Sample: 0023536-06 Name: FIELD DUPLI Matrix: Ground Wat		plicate					Sampled: 02/2 Received: 02/2 PO #: 235	20/20 10:10	
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analyt	ical - Greens	burg							
	ical - Greens 0.291	<u>burg</u> pCi/L			1	0.541			904.0 903.1
Radium 226 - subcontracted					1 1	0.541 0.696			
Radium 226 - subcontracted	0.291 0.936	pCi/L pCi/L					Sampled: 02/ ⁷ Received: 02/2 PO #: 235	20/20 10:10	904.0 903.1 904.0 903.1
Radium 226 - subcontracted Radium 228 - subcontracted Sample: 0023536-07 Name: FIELD BLAN Matrix: Ground Wat	0.291 0.936	pCi/L pCi/L	Qualifier	Prepared			Received: 02/2	20/20 10:10	
Name: FIELD BLAN	0.291 0.936 K ter - Field Bla Result	pCi/L pCi/L ank Unit	Qualifier	Prepared	1	0.696	Received: 02/2 PO #: 235	20/20 10:10 73	904.0 903.1
Radium 226 - subcontracted Radium 228 - subcontracted Sample: 0023536-07 Name: FIELD BLANH Matrix: Ground Wat Parameter	0.291 0.936 K ter - Field Bla Result	pCi/L pCi/L ank Unit	Qualifier	Prepared	1	0.696	Received: 02/2 PO #: 235	20/20 10:10 73	904.0 903.1



Sample: 0023536-01 Sampled: 02/18/20 09:20 Name: MW-3 Received: 02/20/20 10:10 Matrix: Ground Water - Grab PO #: 23573										
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method	
Anions - PIA										
Chloride	1.3	mg/L		02/28/20 08:26	1	1.0	02/28/20 08:26	LAM	EPA 300.0 REV 2.1	
Fluoride	< 0.250	mg/L	Q1	02/21/20 13:41	1	0.250	02/21/20 13:41	n.a.	EPA 300.0 REV 2.1	
Sulfate	21	mg/L		02/28/20 08:44	5	5.0	02/28/20 08:44	LAM	EPA 300.0 REV 2.1	
General Chemistry - PIA										
Solids - total dissolved solids (TDS)	140	mg/L	н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C	
Total Metals - PIA										
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:36	JMW	EPA 6020A	
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A	
Barium	110	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A	
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A	
Boron	27	ug/L		03/11/20 10:06	5	10	03/12/20 08:56	JMW	EPA 6020A	
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A	
Calcium	16000	ug/L		03/03/20 12:27	5	100	03/04/20 08:36	JMW	EPA 6020A	
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:36	JMW	EPA 6020A	
Cobalt	< 2.0	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:36	JMW	EPA 6020A	
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A	
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:36	JMW	EPA 6020A	
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A	
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A	
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:36	JMW	EPA 6020A	
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:09	ZSA	EPA 6010B*	



Sample: 0023536-02 Sampled: 02/18/20 10:25 Name: MW-6 Received: 02/20/20 10:10 Matrix: Ground Water - Grab PO #: 23573										
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method	
Anions - PIA										
Chloride	1.7	mg/L		02/28/20 09:02	1	1.0	02/28/20 09:02	LAM	EPA 300.0 REV 2.1	
Fluoride	< 0.250	mg/L	Q3	02/21/20 14:36	1	0.250	02/21/20 14:36	n.a.	EPA 300.0 REV 2.1	
Sulfate	24	mg/L		02/28/20 09:21	5	5.0	02/28/20 09:21	LAM	EPA 300.0 REV 2.1	
<u>General Chemistry - PIA</u>										
Solids - total dissolved solids (TDS)	170	mg/L	н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C	
Total Metals - PIA										
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:40	JMW	EPA 6020A	
Arsenic	2.4	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A	
Barium	180	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A	
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A	
Boron	40	ug/L		03/11/20 10:06	5	10	03/12/20 09:00	JMW	EPA 6020A	
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A	
Calcium	41000	ug/L		03/03/20 12:27	5	100	03/04/20 08:40	JMW	EPA 6020A	
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:40	JMW	EPA 6020A	
Cobalt	< 2.0	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:40	JMW	EPA 6020A	
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A	
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:40	JMW	EPA 6020A	
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A	
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A	
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:40	JMW	EPA 6020A	
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:11	ZSA	EPA 6010B*	



Sample: 0023536-03 Sampled: 02/18/20 11:39 Name: MW-5 Received: 02/20/20 10:10 Matrix: Ground Water - Grab PO #: 23573										
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method	
Anions - PIA										
Chloride	15	mg/L		02/28/20 09:39	5	5.0	02/28/20 09:39	LAM	EPA 300.0 REV 2.1	
Fluoride	< 0.250	mg/L		02/21/20 16:07	1	0.250	02/21/20 16:07	n.a.	EPA 300.0 REV 2.1	
Sulfate	210	mg/L		02/28/20 09:57	25	25	02/28/20 09:57	LAM	EPA 300.0 REV 2.1	
<u>General Chemistry - PIA</u>										
Solids - total dissolved solids (TDS)	520	mg/L	Н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C	
Total Metals - PIA										
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:44	JMW	EPA 6020A	
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A	
Barium	82	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A	
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A	
Boron	400	ug/L		03/11/20 10:06	5	10	03/12/20 09:03	JMW	EPA 6020A	
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A	
Calcium	110000	ug/L		03/03/20 12:27	5	100	03/04/20 08:44	JMW	EPA 6020A	
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:44	JMW	EPA 6020A	
Cobalt	4.3	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:44	JMW	EPA 6020A	
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A	
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:44	JMW	EPA 6020A	
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A	
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A	
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:44	JMW	EPA 6020A	
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:12	ZSA	EPA 6010B*	



Sample: 0023536- Name: MW-8 Matrix: Ground V	04 Vater - Grab							20 12:36 20 10:10	
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	53	mg/L		02/28/20 10:33	25	25	02/28/20 10:33	LAM	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		02/21/20 17:02	1	0.250	02/21/20 17:02	n.a.	EPA 300.0 REV 2.1
Sulfate	110	mg/L		02/28/20 10:33	25	25	02/28/20 10:33	LAM	EPA 300.0 REV 2.1
<u>General Chemistry - PIA</u>									
Solids - total dissolved solids (TDS)	420	mg/L	Н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C
<u>Total Metals - PIA</u>									
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:47	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Barium	77	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Boron	480	ug/L		03/11/20 10:06	5	10	03/12/20 09:21	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Calcium	93000	ug/L		03/03/20 12:27	5	100	03/04/20 08:47	JMW	EPA 6020A
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:47	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:47	JMW	EPA 6020A
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:47	JMW	EPA 6020A
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:47	JMW	EPA 6020A
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:14	ZSA	EPA 6010B*



Sample: 0023536-0 Name: MW-4 Matrix: Ground W	05 Vater - Grab							20 14:13 20 10:10	
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	11	mg/L		02/28/20 10:51	5	5.0	02/28/20 10:51	LAM	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		02/21/20 17:20	1	0.250	02/21/20 17:20	n.a.	EPA 300.0 REV 2.1
Sulfate	66	mg/L		02/28/20 11:09	25	25	02/28/20 11:09	LAM	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	290	mg/L	Н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C
<u>Total Metals - PIA</u>									
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:51	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Barium	72	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Boron	930	ug/L		03/03/20 12:27	5	10	03/04/20 08:51	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Calcium	67000	ug/L		03/03/20 12:27	5	100	03/04/20 08:51	JMW	EPA 6020A
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:51	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:51	JMW	EPA 6020A
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:51	JMW	EPA 6020A
Molybdenum	5.1	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:51	JMW	EPA 6020A
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:16	ZSA	EPA 6010B*



Sample: 0023536-06 Sampled: 02/18/20 00:00 Name: FIELD DUPLICATE Received: 02/20/20 10:10 Matrix: Ground Water - Field Duplicate PO #: 23573											
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method		
Anions - PIA											
Chloride	15	mg/L		02/28/20 12:04	5	5.0	02/28/20 12:04	LAM	EPA 300.0 REV 2.1		
Fluoride	< 0.250	mg/L		02/21/20 17:39	1	0.250	02/21/20 17:39	n.a.	EPA 300.0 REV 2.1		
Sulfate	220	mg/L		02/28/20 12:22	25	25	02/28/20 12:22	LAM	EPA 300.0 REV 2.1		
General Chemistry - PIA											
Solids - total dissolved solids (TDS)	420	mg/L	Н	02/27/20 08:59	1	26	02/27/20 09:26	срс	SM 2540C		
<u>Total Metals - PIA</u>											
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:54	JMW	EPA 6020A		
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A		
Barium	85	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A		
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A		
Boron	410	ug/L		03/11/20 10:06	5	10	03/12/20 09:24	JMW	EPA 6020A		
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A		
Calcium	120000	ug/L		03/03/20 12:27	5	100	03/04/20 08:54	JMW	EPA 6020A		
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:54	JMW	EPA 6020A		
Cobalt	3.9	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:54	JMW	EPA 6020A		
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A		
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:54	JMW	EPA 6020A		
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A		
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A		
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:54	JMW	EPA 6020A		
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:21	ZSA	EPA 6010B*		



Sample: 0023536-07 Sampled: 02/18/20 00:00 Name: FIELD BLANK Received: 02/20/20 10:10 Matrix: Ground Water - Field Blank PO #: 23573											
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method		
Anions - PIA											
Chloride	< 1.0	mg/L		02/28/20 14:29	1	1.0	02/28/20 14:29	LAM	EPA 300.0 REV 2.1		
Fluoride	< 0.250	mg/L		02/21/20 17:57	1	0.250	02/21/20 17:57	n.a.	EPA 300.0 REV 2.1		
Sulfate	< 1.0	mg/L		02/28/20 14:29	1	1.0	02/28/20 14:29	LAM	EPA 300.0 REV 2.1		
<u> General Chemistry - PIA</u>											
Solids - total dissolved solids (TDS)	< 17	mg/L	Н	02/27/20 08:59	1	17	02/27/20 09:26	срс	SM 2540C		
<u> Total Metals - PIA</u>											
Antimony	< 3.0	ug/L		03/03/20 12:27	5	3.0	03/04/20 08:58	JMW	EPA 6020A		
Arsenic	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A		
Barium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A		
Beryllium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A		
Boron	< 10	ug/L		03/11/20 10:06	5	10	03/12/20 09:28	JMW	EPA 6020A		
Cadmium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A		
Calcium	< 100	ug/L		03/03/20 12:27	5	100	03/04/20 08:58	JMW	EPA 6020A		
Chromium	< 4.0	ug/L		03/03/20 12:27	5	4.0	03/04/20 08:58	JMW	EPA 6020A		
Cobalt	< 2.0	ug/L		03/03/20 12:27	5	2.0	03/04/20 08:58	JMW	EPA 6020A		
Lead	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A		
Mercury	< 0.20	ug/L		03/03/20 12:27	5	0.20	03/04/20 08:58	JMW	EPA 6020A		
Molybdenum	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A		
Selenium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A		
Thallium	< 1.0	ug/L		03/03/20 12:27	5	1.0	03/04/20 08:58	JMW	EPA 6020A		
Lithium	< 0.020	mg/L		03/03/20 12:27	1	0.020	03/04/20 10:23	ZSA	EPA 6010B*		

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B004627 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B004627-CCB1)				Prepared &	Analyzed: 02/	21/20			
Fluoride	0.00	mg/L							
Calibration Check (B004627-CCV1)		0		Prepared &	Analyzed: 02/	21/20			
Fluoride	4.89	mg/L		5.000		98	90-110		
Matrix Spike (B004627-MS1)	Sample: 002353	86-01		Prepared &	Analyzed: 02/	21/20			
Fluoride	1.40	mg/L	Q1	1.500	0.210	79	80-120		
Matrix Spike (B004627-MS2)	Sample: 002353	86-02		Prepared &	Analyzed: 02/	21/20			
Fluoride	1.12	mg/L	Q1	1.500	ND	75	80-120		
Matrix Spike (B004627-MS3)	Sample: 002353	° °			Analyzed: 02/	21/20			
Fluoride	1.45	mg/L		1.500	ND	97	80-120		
Matrix Spike Dup (B004627-MSD1)	Sample: 002353	•			Analyzed: 02/		00.20		
Fluoride	1.43	mg/L		1.500	0.210	81	80-120	2	20
	Sample: 002353	•			Analyzed: 02/		00-120	2	20
Matrix Spike Dup (B004627-MSD2) Fluoride	1.14		Q2	1.500	ND	76	80-120	1	20
		mg/L	QZ				80-120	I	20
Matrix Spike Dup (B004627-MSD3) Fluoride	Sample: 002353			•	Analyzed: 02/	97	80.120	0.0	20
Fluonde	1.46	mg/L		1.500	ND	97	80-120	0.8	20
<u> Batch B004955 - No Prep - SM 2540C</u>									
Blank (B004955-BLK1)				Prepared &	Analyzed: 02/	27/20			
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B004955-BS1)				Prepared &	Analyzed: 02/	27/20			
Solids - total dissolved solids (TDS)	967	mg/L		1000		97	67.9-132		
Duplicate (B004955-DUP1)	Sample: 002431	5-01		Prepared &	Analyzed: 02/	27/20			
Solids - total dissolved solids (TDS)	473	mg/L	М		540			13	5
Batch B005170 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B005170-CCB1)				Prepared &	Analyzed: 02/	28/20			
Sulfate	0.00	mg/L							
Chloride	0.578	mg/L							
Calibration Check (B005170-CCV1)				Prepared &	Analyzed: 02/	28/20			
Sulfate	5.19	mg/L		5.000		104	90-110		
Chloride	5.07	mg/L		5.000		101	90-110		
Batch B005306 - SW 3015 - EPA 6020A									
				Prepared: 0	3/03/20 Analy	/zed: 03/04/2	0		
Blank (B005306-BLK1)									
· · · · ·	< 3.0	ug/L							
Antimony	< 3.0 < 1.0	ug/L ug/L							
· · · · · ·		-							
Antimony Arsenic	< 1.0	ug/L							
Antimony Arsenic Barium	< 1.0 < 1.0	ug/L ug/L ug/L	В						
Antimony Arsenic Barium Beryllium	< 1.0 < 1.0 < 1.0	ug/L ug/L ug/L ug/L	В						
Antimony Arsenic Barium Beryllium Boron Cadmium	< 1.0 < 1.0 < 1.0 77.4 < 1.0	ug/L ug/L ug/L ug/L ug/L	В						
Antimony Arsenic Barium Beryllium Boron	< 1.0 < 1.0 < 1.0 77.4	ug/L ug/L ug/L ug/L	В						



Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B005306 - SW 3015 - EPA 6020A									
Blank (B005306-BLK1)				Prepared: (03/03/20 Analy	/zed: 03/04/20)		
Lead	< 1.0	ug/L							
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							
Selenium	< 1.0	ug/L							
Thallium	< 1.0	ug/L							
Lithium	< 0.020	mg/L							
LCS (B005306-BS1)				Prepared: (03/03/20 Analy	zed: 03/04/20)		
Antimony	535	ug/L		555.6		96	80-120		
Arsenic	569	ug/L		555.6		102	80-120		
Barium	531	ug/L		555.6		96	80-120		
Beryllium	527	ug/L		555.6		95	80-120		
Boron	605	ug/L		555.6		109	80-120		
Cadmium	526	ug/L		555.6		95	80-120		
Calcium	5580	ug/L		5556		100	80-120		
Chromium	555	ug/L		555.6		100	80-120		
Cobalt	560	ug/L		555.6		101	80-120		
Lead	562	ug/L		555.6		101	80-120		
Mercury	51.6	ug/L		55.56		93	80-120		
Molybdenum	545	ug/L		555.6		98	80-120		
Selenium	581	ug/L		555.6		105	80-120		
Thallium	533	ug/L		555.6		96	80-120		
Lithium	0.558	mg/L		0.5556		100	80-120		
Matrix Spike (B005306-MS1)	Sample: 00236	-		Prepared: (03/03/20 Analy	zed: 03/04/20			
Antimony	543	ug/L		555.6	ND	98	75-125		
Arsenic	574	ug/L		555.6	ND	103	75-125		
Barium	539	ug/L		555.6	10.5	95	75-125		
Beryllium	514	ug/L		555.6	ND	93	75-125		
Boron	851	ug/L		555.6	315	96	75-125		
Cadmium	512	ug/L		555.6	ND	92	75-125		
Calcium	292000	ug/L		5556	288000	77	75-125		
Chromium	536	ug/L		555.6	4.97	96	75-125		
Cobalt	531	ug/L		555.6	ND	96	75-125		
Lead	533	ug/L		555.6	ND	96	75-125		
Mercury	56.0	ug/L		55.56	ND	101	75-125		
Molybdenum	557	ug/L		555.6	0.783	100	75-125		
Selenium	581	ug/L		555.6	ND	105	75-125		
Thallium	509	ug/L		555.6	ND	92	75-125		
Matrix Spike Dup (B005306-MSD1)	Sample: 00236	-			03/03/20 Analy				
Antimony	539	ug/L		555.6	ND	97	75-125	0.6	20
Arsenic	579	ug/L		555.6	ND	104	75-125	1	20
Barium	544	ug/L		555.6	10.5	96	75-125	0.8	20
Beryllium	520	ug/L		555.6	ND	94	75-125	1	20
Boron	865	ug/L		555.6	315	99	75-125	2	20
									20
Cadmium	516	ug/L		555.6	ND	93	75-125	0.8	

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B005306 - SW 3015 - EPA 6020A									
Matrix Spike Dup (B005306-MSD1)	Sample: 002367	2-06		Prepared: 0	3/03/20 Analy	yzed: 03/05/2	D		
Calcium	293000	ug/L		5556	288000	97	75-125	0.4	20
Chromium	544	ug/L		555.6	4.97	97	75-125	2	20
Cobalt	530	ug/L		555.6	ND	95	75-125	0.01	20
Lead	529	ug/L		555.6	ND	95	75-125	0.7	20
Mercury	53.1	ug/L		55.56	ND	96	75-125	5	20
Molybdenum	561	ug/L		555.6	0.783	101	75-125	0.7	20
Selenium	592	ug/L		555.6	ND	107	75-125	2	20
Thallium	508	ug/L		555.6	ND	91	75-125	0.2	20
Batch B006011 - SW 3015 - EPA 6020A									
Blank (B006011-BLK1)				Prepared: 0	3/11/20 Analy	/zed: 03/12/20)		
Boron	< 10	ug/L							
LCS (B006011-BS1)				Prepared: 0	3/11/20 Analy	/zed: 03/12/20)		
Boron	499	ug/L		555.6		90	80-120		



NOTES

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

* Not a TNI accredited analyte

Certifications

- CHI McHenry, IL 4314-A W. Crystal Lake Road, McHenry, IL 60050 TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556
- PIA Peoria, IL 2231 W. Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553

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

- SPIL Springfield, IL 1210 Capitol Airport Drive, Springfield, IL 62707 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17592
- SPMO Springfield, MO 1805 W Sunset Street, Springfield, MO 65807 USEPA DMR-QA Program
- STL Hazelwood, MO 944 Anglum Rd, Hazelwood, MO 63042

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

Qualifiers

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



Certified by: Kurt Stepping, Senior Project Manager



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

March 11, 2020

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

RE: Project: 0023536 Pace Project No.: 30351798

Dear Ms. Clutters:

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

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

Sincerely,

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

Enclosures

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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

 Project:
 0023536

 Pace Project No.:
 30351798

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601 ANAB DOD-ELAP Rad Accreditation #: L2417 Alabama Certification #: 41590 Arizona Certification #: AZ0734 Arkansas Certification California Certification #: 04222CA Colorado Certification #: PA01547 Connecticut Certification #: PH-0694 **Delaware Certification** EPA Region 4 DW Rad Florida/TNI Certification #: E87683 Georgia Certification #: C040 Florida: Cert E871149 SEKS WET **Guam Certification** Hawaii Certification Idaho Certification **Illinois Certification** Indiana Certification Iowa Certification #: 391 Kansas/TNI Certification #: E-10358 Kentucky Certification #: KY90133 KY WW Permit #: KY0098221 KY WW Permit #: KY0000221 Louisiana DHH/TNI Certification #: LA180012 Louisiana DEQ/TNI Certification #: 4086 Maine Certification #: 2017020 Maryland Certification #: 308 Massachusetts Certification #: M-PA1457 Michigan/PADEP Certification #: 9991

Missouri Certification #: 235 Montana Certification #: Cert0082 Nebraska Certification #: NE-OS-29-14 Nevada Certification #: PA014572018-1 New Hampshire/TNI Certification #: 297617 New Jersey/TNI Certification #: PA051 New Mexico Certification #: PA01457 New York/TNI Certification #: 10888 North Carolina Certification #: 42706 North Dakota Certification #: R-190 Ohio EPA Rad Approval: #41249 Oregon/TNI Certification #: PA200002-010 Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282 South Dakota Certification Tennessee Certification #: 02867 Texas/TNI Certification #: T104704188-17-3 Utah/TNI Certification #: PA014572017-9 USDA Soil Permit #: P330-17-00091 Vermont Dept. of Health: ID# VT-0282 Virgin Island/PADEP Certification Virginia/VELAP Certification #: 9526 Washington Certification #: C868 West Virginia DEP Certification #: 143 West Virginia DHHR Certification #: 9964C Wisconsin Approve List for Rad Wyoming Certification #: 8TMS-L

Pa	ae '	2 of	15
Page			



SAMPLE SUMMARY

 Project:
 0023536

 Pace Project No.:
 30351798

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

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

 Project:
 0023536

 Pace Project No.:
 30351798

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

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

 Project:
 0023536

 Pace Project No.:
 30351798

Method:EPA 903.1Description:903.1 Radium 226Client:PDC Laboratories IncDate:March 11, 2020

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:



PROJECT NARRATIVE

 Project:
 0023536

 Pace Project No.:
 30351798

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

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:



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

PROJECT NARRATIVE

 Project:
 0023536

 Pace Project No.:
 30351798

Method: Total Radium Calculation Description: Total Radium 228+226

Client:PDC Laboratories IncDate:March 11, 2020

General Information:

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

Hold Time:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 0023536

Pace Project No.: 30351798

Sample: 0023536-01 PWS:	Lab ID: 303517 Site ID:	798001 Collected: 02/18/20 09:20 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
			Lipito	Applyzed	CAS No.	Qual
Parameters Radium-226	Method EPA 903.1	Act ± Unc (MDC) Carr Trac -0.0667 ± 0.392 (0.875)	Units pCi/L	Analyzed 03/09/20 11:52		Qual
Radium-220		C:NA T:78%	pCI/L	03/09/20 11:52	13962-03-3	
Radium-228	EPA 904.0	0.341 ± 0.289 (0.571) C:79% T:92%	pCi/L	03/10/20 14:47	7 15262-20-1	
Total Radium	Total Radium Calculation	0.341 ± 0.681 (1.45)	pCi/L	03/11/20 12:13	3 7440-14-4	
Sample: 0023536-02	Lab ID: 303517		Received:	02/25/20 09:20	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.523 ± 0.415 (0.539) C:NA T:93%	pCi/L	03/09/20 12:14	13982-63-3	
Radium-228	EPA 904.0	0.736 ± 0.373 (0.638)	pCi/L	03/10/20 14:47	7 15262-20-1	
Total Radium	Total Radium Calculation	C:76% T:92% 1.26 ± 0.788 (1.18)	pCi/L	03/11/20 12:13	3 7440-14-4	
Sample: 0023536-03 PWS:	Lab ID: 303517 Site ID:	798003 Collected: 02/18/20 11:39 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.373 ± 0.424 (0.669)	pCi/L	03/09/20 12:14	13982-63-3	
Radium-228	EPA 904.0	C:NA T:90% 0.576 ± 0.372 (0.701)	pCi/L	03/10/20 14:47	7 15262-20-1	
Total Radium	Total Radium Calculation	C:76% T:92% 0.949 ± 0.796 (1.37)	pCi/L	03/11/20 12:13	3 7440-14-4	
Sample: 0023536-04 PWS:	Lab ID: 303517 Site ID:	798004 Collected: 02/18/20 12:36 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.188 ± 0.325 (0.581)	pCi/L	03/09/20 12:14		
Radium-228	EPA 904.0	C:NA T:88% 0.814 ± 0.431 (0.762)	pCi/L	03/10/20 14:47	7 15262-20-1	
Total Radium	Total Radium Calculation	C:78% T:84% ` 1.00 ± 0.756 (1.34)	pCi/L	03/11/20 12:13		
Sample: 0023536-05	Lab ID: 303517 Site ID:	798005 Collected: 02/18/20 14:13 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
			11-1-1-	A		0
Parameters	Method	$\frac{\text{Act } \pm \text{ Unc (MDC) Carr Trac}}{0.0706 \pm 0.322}$	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0706 ± 0.322 (0.520) C:NA T:83%	pCi/L	03/09/20 12:14		
Radium-228	EPA 904.0	1.05 ± 0.449 (0.709) C:74% T:88%	pCi/L	03/10/20 14:47	7 15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 0023536

Pace Project No.:	30351798
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Sample: 0023536-05 PWS:	Lab ID: 303517 Site ID:	98005 Collected: 02/18/20 14:13 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	1.12 ± 0.771 (1.23)	pCi/L	03/11/20 12:13	3 7440-14-4	
Sample: 0023536-06 PWS:	Lab ID: 303517 Site ID:	98006 Collected: 02/18/20 00:00 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.291 ± 0.344 (0.541) C:NA T:87%	pCi/L	03/09/20 12:14	13982-63-3	
Radium-228	EPA 904.0	0.936 ± 0.425 (0.696) C:76% T:87%	pCi/L	03/10/20 14:47	7 15262-20-1	
Total Radium	Total Radium Calculation	1.23 ± 0.769 (1.24)	pCi/L	03/11/20 12:13	3 7440-14-4	
Sample: 0023536-07 PWS:	Lab ID: 303517 Site ID:	98007 Collected: 02/18/20 00:00 Sample Type:	Received:	02/25/20 09:20	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1		pCi/L	03/09/20 12:14	13982-63-3	
Radium-228	EPA 904.0	0.693 ± 0.369 (0.626) C:74% T:86%	pCi/L	03/10/20 14:48	3 15262-20-1	
Total Radium	Total Radium Calculation	0.808 ± 0.726 (1.32)	pCi/L	03/11/20 12:13	3 7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project:	0023536				
Pace Project No.:	30351798				
QC Batch:	385636	Analysis Method:	EPA 903.1		
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-2	26	
Associated Lab Sa	mples: 30351798	001, 30351798002, 30351798003, 3035179800	4, 30351798005, 3	30351798006, 303517	798007
METHOD BLANK:	1868384	Matrix: Water			
	1000001				
Associated Lab Sa		001, 30351798002, 30351798003, 3035179800	4, 30351798005, 3	30351798006, 303517	798007
		001, 30351798002, 30351798003, 3035179800 Act ± Unc (MDC) Carr Trac	4, 30351798005, 3 Units	30351798006, 303517 Analyzed	798007 Qualifiers

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project:	0023536				
Pace Project No.:	30351798				
QC Batch:	385656	Analysis Method:	EPA 904.0		
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 2	28	
Associated Lab Sa	mples: 30351798	001, 30351798002, 30351798003, 3035179800	4, 30351798005, 3	30351798006, 303517	798007
METHOD BLANK:	1868407	Matrix: Water			
METHOD BLANK: Associated Lab Sa		Matrix: Water 001, 30351798002, 30351798003, 3035179800	4, 30351798005, 3	30351798006, 303517	798007
Associated Lab Sa			4, 30351798005, 3 Units	30351798006, 303517 Analyzed	798007 Qualifiers

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.

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QUALIFIERS

 Project:
 0023536

 Pace Project No.:
 30351798

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

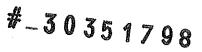
LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

×		NTRACT ORDER		30351798	,
	PDC I	Laboratories, Inc. 0023536	30351798		
SENDING LABORATORY		RECEIVING	LABORATORY		
PDC Laboratories, Inc. 2231 W Altorfer Dr Peoria, IL 61615 (800) 752-6651					
Sample: 0023536-01 Name: MW-3			Sampled: Matrix: Preservative:	02/18/20 09:20 Ground Water HNO3, pH <2	60
Analysis	Due	Expires	Comme	ents	
01-Radium 226/228	03/02/20 16:00	08/16/20 09:20			`
Sample: 0023536-02 Name: MW-6			Sampled: Matrix: Preservative:	02/18/20 10:25 Ground Water HNO3, pH <2	002
Analysis	Due	Expires	Comm	ents	· · · · · · · · · · · · · · · · · · ·
01-Radium 226/228	03/02/20 16:00	08/16/20 10:25			
Sample: 0023536-03 Name: MW-5			Matrix:	02/18/20 11:39 Ground Water HNO3, pH <2	003
Analysis	Due	Expires	Comm	ents	
01-Radium 226/228	03/02/20 16:00	08/16/20 11:39			
Sample: 0023536-04 Name: MW-8			Matrix:	02/18/20 12:36 Ground Water HNO3, pH <2	OPU
Analysis	Due	Expires	Comm	ients	
01-Radium 226/228	03/02/20 16:00	08/16/20 12:36			
Sample: 0023536-05 Name: MW-4			Matrix:	02/18/20 14:13 Ground Water HNO3, pH <2	005
Analysis	Due	Expires	Comm	nents	
01-Radium 226/228	03/02/20 16:00	08/16/20 14:13			

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SUBCONTRACT ORDER Transfer Chain of Custody



Page 28 of 30

PDC Laboratories, Inc.

0023536

SENDING LABORATORY

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

s,

RECEIVING LABORATORY

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

Sample: 0023536-06 Name: FIELD DUPLICATE	Ξ		Matrix:	02/18/20 00:00 Ground Water HNO3, pH <2	006
Analysis	Due	Expires	Comm	ents	
01-Radium 226/228	03/02/20 16:00	08/16/20 00:00			
Sample: 0023536-07 Name: FIELD BLANK			Matrix:	02/18/20 00:00 Ground Water HNO3, pH <2	007
Analysis	Due	Expires	Comm	nents	
01-Radium 226/228	03/02/20 16:00	08/16/20 00:00			

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

Date Shipped: 2-2/-2-0 Total # of Containers: Z Sample Origin Turn-Around Time Requested V NORMAL RUSH Date Res	(State): <u></u> PO #: <u>4/026</u> ults Needed:
	Sample Temperature Upon Receipt C Sample(s) Received on Ice Y or N Proper Bottles Received in Good Condition Y or N Bottles Filled with Adequate Volume Or N Samples Received Within Hold Time Or N Date/Time Taken From Sample Bottle Y or N
Relinquished By Date/Time Received By Date/Time	Page 14 of 15

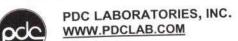
Pittsburgh Lab Sample Condition	n Up	ion F	Rece	eipt # 3035179	98
Page Analytical' Client Name:	ρ	DC	La	105 Project #	- •
Courier: A Fed Ex DUPS DUSPS DClient Tracking #: <u>7778 2971 855</u>	70		•	Deace Other Label	
Custody Seal on Cooler/Box Present: Ves	L_ no		eals ir		
Thermometer Used	ype of			Blue None C Final Temp: C	
Cooler Temperature Observed Temp		°C (Correc	ction Factor: C Final Temp	
Temp should be above freezing to 6°C			Ē	pH paper Lot# Date and Initials opperating and the contents:	
F	Veal	No	N/A	111)2191 contents: 1110 070-07	
Comments:	Yes	140		1.	
Chain of Custody Present:				2.	
Chain of Custody Filled Out:				3.	
Chain of Custody Relinquished:	$ \rightarrow $				
Sampler Name & Signature on COC:		\square		4.	
Sample Labels match COC:		1		5.	
-includes date/time/ID Matrix	- 1		<u> </u>		
Samples Arrived within Hold Time:				6.	
Short Hold Time Analysis (<72hr remaining):	<u> </u>	\leq		7	
Rush Turn Around Time Requested:	<u> </u>		┣───	8	
Sufficient Volume:]		9	
Correct Containers Used;		1	<u> </u>	10.	
-Pace Containers Used:	<u> </u>	$ \leq$	┼──		
Containers Intact:	\vdash		<u> </u>	11.	
Orthophosphate field filtered	ļ		\vdash	12.	
Hex Cr Aqueous sample field filtered	<u> </u>		\vdash	13	
Organic Samples checked for dechlorination:			\mid	14.	
minute and universe received for Dissolved tests		<u> </u>	\downarrow	15.	
All containers have been checked for preservation.		1		-16. $M(2)$	
exceptions: VOA, collform, TOC, O&G, Phenolics,	, Rado	n,		p / C	
Non-aqueous matrix	\Box	7		Initial when Date/time of	
All containers meet method preservation requirements.				completed / W/ Ipresel valuer	
				Lot # of added preservative	
	Т		7	17	
Headspace in VOA Vials (>6mm):		+-	-	18.	
Trip Blank Present:		1		- ALALIATA	
Trip Blank Custody Seals Present Rad Samples Screened < 0.5 mrem/hr	+	\uparrow	-	Initial when completed: Date: Date:	
				Completion 1	
Client Notification/ Resolution:			Daf	te/Fime:Contacted By:	<u>,</u>
Person Contacted:				· · · · · · · · · · · · · · · · · · ·	
Comments/ Resolution:					
		······			
A check in this box indicates that ad		al int	omat	tion has been stored in ereports.	
A check in this box indicates that ab				is a convert this form will be sent to the North Carolina DEHNR	•

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be s 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.

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-9 5April2019) Page 29 of 30

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

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED MO

CLIENT	ALL HIG	HLIGHTED ARE	AS <u>MUST</u> PRO	BE COMP	LETED BY C	PURCHASI	ASE PRINT E ORDER #)) AN	ALYSI	REQUES	TED	(FOR LAB USE O	NLY)	
Usikeston Power station	Boffo M	umber Ash ci	cR	R E-MAIL			HIPPED		C	69			LOGIN # 2073536-7		
(551 west wakefield	APP	III and	A	PIK			TYPEC						CLIENT:	1	
CITY STATE ZIP SIKRSTON, MJ 6380/	SAMPLER (PLEASE PRINT Denie SAMPLER'S SIGNATURE		<u>111 m</u>	<u>94 a</u>		MATRIX WW- WASTEWA DW- DRINKING V GW- GROUND W WWSL- SLUDGE NAS- NON AQUE LCHT-LEACHAT OIL-OIL SOL-SOLID	TER VATER ATER	226/245	Ba, Be, Cd,	UN, Li, MU	4 Ti		PROJECT: PROJ. MGR.: CUSTODY SEAL #:		
Ken Ewes/Luke St. Mary SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPL GRAB	E TY	MATRIX	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	RAD.	F, AS,	J, T	51.5		REMARKS		
MW 3	2-18-20	0920	×		Gw	3	PROVIDED	x	X	x	x				
MW 6	2-18-23	1025	X		GW	3		X	x	x	x				
mw 5	2-18-20		×		GW	3		X	x	x	x				
MW 8	2-18-20	1236	X		GW	3		x	x	x	×				
mw 4	2-18-20		×		GW	3		x	x	ĸ	×				
Field Ourlicate	2-18-23		×		Gw	3		X	x	x,	x				
Field Blank	2-18-20		×		DI	3		K	x	ĸ	x				
										_					
								_	-						
								_	-	-	-				
OUTMICAL PRESERVATION CODES: 1-HCL 2-H2SO4 3	- HNO3 4- NA	OH 5-NA	25203	6 – UNF	RESERVED	7 – OTHE	R		1	1					
	MAL RUSH		DATE RE NEED			l understa	nd that by ini	tialing ti	his box	l give	the lab p	ermission to	proceed with analysis, even th	ough it may	
5 RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE			HEED		6								eceiving facility's Sample According to the second se		
EMAIL IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FROM ABO	DVE:					PROCEED	WITH ANAL		ND QU	ALIFY	RESULTS				
RELINQUISHED BY: (SIGNATURE)	-19-20	RECEIV	ED BY: (SI	GNATURE)			DA			_(8	COMMEN	TS: (FOR LAB USE ONLY)		
TIME	830						TIN				\bigcirc			12	
LINQUISHED BY: (SIGNATURE) DATE		RECEIV	/ED BY: (S	GNATURE)			DA						IRE UPON RECEIPT	LIT °c	
D TIME C LINQUISHED BY: (SIGNATURE) DATE				3	1		TIM		,	-	SAMPLE(S) RECEIVED	RTED PRIOR TO RECEIPT	BOR N BOR N	
C LINQUISHED BY: (SIGNATURE) DATE		RECEIV	VED BY (S	IGNATURE)	1		Z	TE/20	120	_	REPORT	S NEEDED	E NONCONFORMANT	YORN	
30 of 30			(>	\mathcal{T}	T			117	0		DATE AN	D TIME TAKE	EN FROM SAMPLE BOTTLE		
Qualtrax ID #3219				/			/	1010		, Pass			Page of		

Appendix 2

Laboratory Analytical Results and Quality Control Reports – March 2020



April 07, 2020

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

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

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

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

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

Sincerely,

Vin 1

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





Sample: 0040090-01 Name: MW-3 Matrix: Ground Water	r - Grab						Sampled: 03/30/2 Received: 04/01/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	180	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C
Sample: 0040090-02 Name: MW-4 Matrix: Ground Water	r - Grab						Sampled: 03/30/2 Received: 04/01/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
olids - total dissolved olids (TDS)	300	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C
Sample: 0040090-03 Name: MW-5 Matrix: Ground Water	r - Grab						Sampled: 03/30/2 Received: 04/01/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
olids - total dissolved olids (TDS)	450	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C
Sample: 0040090-04 Name: MW-6 Matrix: Ground Water	r - Grab						Sampled: 03/30/2 Received: 04/01/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
olids - total dissolved olids (TDS)	230	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C



Sample: 0040090-05 Name: MW-8 Matrix: Ground Wat	er - Grab						Sampled: 03/30/2 Received: 04/01/2 PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u> General Chemistry - PIA</u>									
Solids - total dissolved solids (TDS)	480	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C
Sample: 0040090-06							Sampled: 03/30/2		
Name: FIELD DUPLI							Received: 04/01/2	20 11:00	
Matrix: Ground Wat	er - Grab						PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	460	mg/L		04/02/20 11:06	1	26	04/02/20 11:06	CPC	SM 2540C
Sample: 0040090-07							Sampled: 03/30/2	20 00:00	
Name: FIELD BLANK	<						Received: 04/01/2	20 11:00	
Matrix: Ground Wat	er - Grab						PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		04/02/20 11:06	1	17	04/02/20 11:06	CPC	SM 2540C



Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B007813 - No Prep - SM 2540C									
Blank (B007813-BLK1)				Prepared &	Analyzed: 04/	02/20			
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B007813-BS1)				Prepared &	Analyzed: 04/	/02/20			
Solids - total dissolved solids (TDS)	1010	mg/L		1000		101	67.9-132		
Duplicate (B007813-DUP1)	Sample: 003500	0-05		Prepared &	Analyzed: 04/	/02/20			
Solids - total dissolved solids (TDS)	370	mg/L	М		340			8	5
Duplicate (B007813-DUP2)	Sample: 003500	0-06		Prepared &	Analyzed: 04/	02/20			
Solids - total dissolved solids (TDS)	350	mg/L	М		320			9	5



NOTES

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

* Not a TNI accredited analyte

Certifications

- CHI McHenry, IL 4314-A W. Crystal Lake Road, McHenry, IL 60050 TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556
- PIA Peoria, IL 2231 W. Altorfer Drive, Peoria, IL 61615

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

- Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
- SPIL Springfield, IL 1210 Capitol Airport Drive, Springfield, IL 62707 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17592
- SPMO Springfield, MO 1805 W Sunset Street, Springfield, MO 65807 USEPA DMR-QA Program
- STL Hazelwood, MO 944 Anglum Rd, Hazelwood, MO 63042 TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389 TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
 - Missouri Department of Natural Resources Certificate of Approval for Microbiological Laboratory Service No. 1050

Qualifiers

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



Certified by: Kurt Stepping, Senior Project Manager



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PDC Laboratories, Inc. P.O. Box 9071 • Peoria, IL 61612-9071 (309) 692-9688 • (800) 752-6651 • FAX (309) 692-9689



DATA PACKAGE

CLIENT; Sikeston BMU PROJECT: Sikeston Power Station PDC LAB WORKORDER: 0040090 DATE ISSUED: April 7, 2020

CASE NARRATIVE –

PDC Work Order 0040090

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

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

QC Summary:

All items met acceptance criteria with the following noted exceptions:

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

Certification

Signature:

Just

Name: Kurt Stepping

Date:

April 7, 2020

Title: Senior Project Manager



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

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED_MO____

		GHLIGHTED AR		BE COMP		PURCHASE	ASE PRINT)						(FOR LAB USE ONLY)	
SIKESTON BMU POWER STAT		NUMBER			DS ONLY	23573		3	ANAL	YSIS RE	QUEBTE	D	Omimora	
ADDRESS		NUMBER	E-MAIL			DATE S	HIPPED							
1551 W WAKEFIELD		5.3131												
SIKESTON, MO 63801	BAMPLER (PLEASE PRIN Dog so : e	-	1:	MATRIX TYPES: WW- WASTEWATER DW- DRIVING WATER DW- DRIVING WATER WYSL- SLUDGE NAB- NON AQUEOUS SOLID LCAT-LEACHATE									PROJECT: BOTTOM ASH TDS ONLY PROJ. MGR.: KURT	
CONTACT PERSON	SAMPLER'S SIGNATURE				NAS-NON AQUE	ous solid i						CUSTODY SEAL #:		
LUKE ST MARY	W and) a.	o ili	lich	en	OIL-OIL SO-SOIL SOL-SOLID								
2 (UNQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	COLLECTED	COLLECTED	GRAB	COMP	MATRIX	COUNT	PRES CODE CLIENT PROVIDED	TDS					REMARKS	
MW-3	3-30-20		X		GW	1		X						
MW-4	3-30-23	1249	X		GW	1		X		_				
MW-5	3-32-23	1035	X		GW	1		X	_					
MW-6	3-30-20		X		GW	1		X						
MW-8	3-30-20	1151	X		GW	1		X						
DUPLICATE WELL	3-30-20		X		GW	1		X						
FIELD BLANK	3-30-20		X		GW	1		X						
CHEMICAL PRESERVATION CODES: 1-HCL 2-H2804	3-HNO3 4-NA		25203	6 - UNP	RESERVED	7 - OTHER								
CHEMICAL PRESERVATION CODES: 1-HCL 2-H2SO4		RUSH	DATE RE	SULTS			1	allas thi	. hou I a	iun the la	h comi	ection to	proceed with analysis, even though it may	
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHAI	RGE)		NEED	ED	\bigcirc	and mant all	comple cont	formane.	a rorunna	monte at	: dofined	in the n	celving facility's Sample Acceptance ceptable to report to all regulatory authorities.	
EMAIL IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FROM						PROCEED	WITH ANALY	ISIS AND	QUALIF	Y RESU				
RELINQUISHED BY: (SIGNATURE)	ATE 31-2023	RECEN	ED BY: (SK	GNATURE)			DAT			8) c	OMMEN	'S: (FOR LAB USE ONLY)	
Ashon Fall	0730						TIME				_		12	
RELINGUINED DT. (CICINITOTIC)	ATE	RECEIVED BY: (SIGNATURE)					DAT	SAMPLE TEMPERAT						
	ATE	RECEN	ED BY! (SI							SAMP	LE(S) R	ECEIVED	TED PRIOR TO RECEIPT COR N	
REDROUGHED BI. (BIGHATORE)		RECEN	A	XI				- 1-		REPO	RT IS N	EEDED	YORN	
	IME		10	MV			/	100		DATE	AND TH	ME TAKE	N FROM SAMPLE BOTTLE	
Qualtrax ID #3219			0	/							-		Page 1 of 1 Page 8 of 8	

Appendix 3

Laboratory Analytical Results and Quality Control Reports – April 2020



May 14, 2020

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

RE: Sikeston NPDES Groundwater

Dear Luke St Mary:

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

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

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

Sincerely,

Yert

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



ANALYTICAL RESULTS



ANALYTICAL RESULTS

Sample: 0042173-08 Name: MW-8 Matrix: Ground Wat	er - Regular	Sample					Sampled: 04/08/2 Received: 04/10/2 PO #: 23575		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	430	mg/L		04/13/20 13:25	1	26	04/13/20 14:25	CPC	SM 2540C
Sample: 0042175-01							Sampled: 04/08/2	20 10:55	
Name: MW-8							Received: 04/10/2	20 10:00	
Matrix: Ground Wat	er - Regular	Sample					PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	480	mg/L		04/13/20 13:25	1	26	04/13/20 14:25	CPC	SM 2540C
Sample: 0042175-02							Sampled: 04/08/2	20 00:00	
Name: FIELD DUPLI	CATE						Received: 04/10/2	20 10:00	
Matrix: Ground Wat	er - Regular	Sample					PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	330	mg/L		04/13/20 13:25	1	26	04/13/20 14:25	CPC	SM 2540C
Sample: 0042175-03							Sampled: 04/07/2	20 00:00	
Name: FIELD BLANK	K						Received: 04/10/2	20 10:00	
Matrix: Ground Wat	er - Regular	Sample					PO #: 23573		
Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
olids - total dissolved olids (TDS)	< 17	mg/L		04/13/20 13:25	1	17	04/13/20 14:25	CPC	SM 2540C



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B008700 - No Prep - SM 2540C									
Blank (B008700-BLK1)				Prepared &	Analyzed: 04/	13/20			
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B008700-BS1)				Prepared &	Analyzed: 04/	13/20			
Solids - total dissolved solids (TDS)	980	mg/L		1000		98	67.9-132		
Duplicate (B008700-DUP1)	Sample: 004187	8-04		Prepared &					
Solids - total dissolved solids (TDS)	410	mg/L			5	5			
Duplicate (B008700-DUP2)	Sample: 004187	8-06							
Solids - total dissolved solids (TDS)	800	mg/L			820			2	5



NOTES

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

* Not a TNI accredited analyte

<u>Memos</u>

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

TDS Lab duplicate from seperate login group added.

Certifications

- CHI McHenry, IL 4314-A W. Crystal Lake Road, McHenry, IL 60050 TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556
- PIA Peoria, IL 2231 W. Altorfer Drive, Peoria, IL 61615

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

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

- SPMO Springfield, MO 1805 W Sunset Street, Springfield, MO 65807 USEPA DMR-QA Program
- STL Hazelwood, MO 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389 TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080 Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050 Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050



Certified by: Kurt Stepping, Senior Project Manager



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PDC Laboratories, Inc. P.O. Box 9071 • Peoria, IL 61612-9071 (309) 692-9688 • (800) 752-6651 • FAX (309) 692-9689



DATA PACKAGE

CLIENT; Sikeston BMU PROJECT: Sikeston Power Station PDC LAB WORKORDER: 0042175 DATE ISSUED: May 13, 2020

CASE NARRATIVE -

PDC Work Order 0042175

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

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

QC Summary:

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

No exceptions for this report.

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

Certification

Signature:

Yunt 2

Name: Kurt Stepping

Date:

May 13, 2020

Title: Senior Project Manager



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

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED MO

		L HIGHLIGHTED AR	State of the local division of the local div	the second s	of the second)					
SIKESTON BMU POWER STAT	ION	JECT NUMBER				PURCHASI		3	ANAL	YSIS REQUES	TED	(FOR LAB USE ONLY)	
1551 W WAKEFIELD		one number 475.3131	LSTMAF	E-MAIL RY@SBI	MU.NET	J.NET 4-9-2020							
SIKESTON, MO 63801	SAMPLER (PLEASE Danie	PRINT) I Dillingham				MATRIX WW- WASTEWAT DW- DRINKING W GW- GROUND W, WWSL- SLUDGE	TER IATER ATER					PROJECT: BOTTOM ASH TDS ONLY PROJ. MGR.: KURT	
LUKE ST MARY	SAMPLER SIGNATUI	PA	eller	har		NAS- NON AQUE LCHT-LEACHATE OIL-OIL SO-SOIL SOL-SOLID	ous solid !					CUSTODY SEAL #:	
2 (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	COLLECT		GRAB	COMP	MATRIX TYPE	BOTTLE	PRES CODE CLIENT PROVIDED	TDS				REMARKS	
MW-8	4/8/20	20 1055	\times		GW	1		\times					
DUPLICATE WELL	4/8/20	20	X		GW	1		X					
FIELD BLANK	4/7/20	20	\times		GW	1		X				2000 - 100 -	
												3	
CHEMICAL PRESERVATION CODES: 1-HCL 2-H2SO4		- NAOH 5 - NA	28203	6 – UNPR	ESERVED	7-OTHER		.U					
5 TURNAROUND TIME REQUESTED (PLEASE CHECK) (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHAR RUSH RESULTS VIA (PLEASE CIRCLE) 6 RUSH RESULTS VIA (PLEASE CIRCLE)		RUSH	DATE RESU NEEDED		6	not meet all	sample confe	ormance	requiren	nents as defin	ed in the rece	oceed with analysis, even though it may eiving facility's Sample Acceptance otable to report to all regulatory authorities.	
EMAIL IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FROM	MABOVE:				_	PROCEED	WITH ANALY	SIS AND	QUALIF	Y RESULTS: (I	INITIALS)		
() Alas Riles 4-	ATE								: (FOR LAB USE ONLY)				
	ATE	RECEIVE	D BY: (SIGN	ATURE)			DATE			-			
-	IME	-					TIME	1 1		CHILL PROD	ESS STARTE	ED PRIOR TO RECEIPT	
RELINQUISHED BY: (SIGNATURE)		RECEIVE	D BY: (SIGN	ATURE)			DATE	ph	D	SAMPLE (S) RECEIVED ON ICE (YOR N SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED YOR N			
п	IME (h	<u> </u>	\mathcal{N}	\bigcirc	01	тиме	00	2			FROM SAMPLE BOTTLE	

Page 1 of 1 Page 7 of 7