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

Prepared for:



**Sikeston Power Station
1551 West Wakefield Avenue
Sikeston, Missouri 63801**



August 1, 2019

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

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

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1.0 INTRODUCTION

The Sikeston Power Station (SPS), owned and operated by the Sikeston Board of Municipal Utilities (SBMU), is an electric power producer and distributor located within the western city limits of Sikeston, in southern Scott County, Missouri. The SBMU-SPS began operation in 1981 and produces approximately 235 megawatts of electricity. Coal combustion residuals (approximately 10,000 tons per annum) are currently sold or placed in the facility's two coal ash surface impoundments located immediately east of the power station. Both impoundments are on properties owned and controlled by SBMU. One coal ash impoundment measuring approximately 61 acres in size is actively used for bottom ash disposal. The second coal ash impoundment measuring approximately 30 acres in size is primarily used for fly ash disposal. It is subject to the alternate compliance schedule specified by the United States Environmental Protection Agency (USEPA) under 40 CFR Part 257.100(e)(5)(ii) due to its initial inactive status and the Response to Partial Vacatur (the Direct Final Rule). This report pertains specifically to the Fly 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 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). Analytical data also are subjected to statistical analysis in accordance with §257.93(f), with the results included in an Annual Groundwater Monitoring Report in accordance with §257.90(e). If results suggest that a statistically significant increase (SSI) in one or more constituents for detection monitoring listed in Appendix III of §257 has occurred, a written demonstration is required to determine if the SSI is attributable to alternate causative factors. If a successful demonstration is not made, an assessment monitoring program must be initiated as required under §257.95.

This report describes the results of the first semi-annual detection groundwater sampling event conducted at the SPS Fly Ash Pond on March 27, 2019. Included is a description of the sampling event, groundwater elevations, water table surface, field activities summary, analytical results, and statistical analysis results. Field sampling and reporting activities were conducted in accordance with the site-specific GMSAP (Gredell Engineering, 2018). Statistical analysis was performed in accordance with §257.93(f) using the statistical analysis method as filed in the SBMU-SPS operating record on April 15, 2019.

2.0 GROUNDWATER MONITORING SYSTEM

The groundwater monitoring system for the Fly Ash Pond consists of five wells. Well locations are depicted on Figure 1. The wells are identified as MW-1, MW-2, MW-3, MW-7, and MW-9. MW-2 and MW-3 are located hydraulically upgradient of the Fly Ash Pond, whereas MW-1, MW-7, and MW-9 are hydraulically downgradient of the Fly Ash Pond. Monitoring wells MW-1, MW-2, and MW-3 were installed on April 26 and 27, 2016 by Smith & Company of Poplar Bluff, Missouri during characterization of the site (Gredell Engineering, 2017). Monitoring wells MW-7 and MW-9 were installed on April 18, 2017 and November 13, 2017, respectively, by Bulldog Drilling, Inc. of Dupon, Illinois to serve as an additional downgradient monitoring wells. Well construction activities were performed under the direction of a Registered Geologist in the State of Missouri. Well design and installation techniques were completed in accordance with 10 CSR 23-4, which is consistent with the standards summarized in 40 CFR 257.91(e). Well depths are between 30 and 35.5 feet below ground surface. All five wells monitor uppermost groundwater, which is within the alluvial aquifer at the Fly Ash Pond site. Each well yields sufficient quantities of water for the purposes of sampling and analysis.

Table 1 presents a construction summary of the wells comprising the Fly Ash Pond groundwater monitoring system. Figure 1 depicts well locations and a groundwater contour map of the uppermost aquifer for the March 2019 semi-annual sampling event. This map confirms 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 for the Fly Ash Pond. The Fly Ash Pond groundwater monitoring system is described in more detail in the site-specific GMSAP for this facility (Gredell Engineering, 2018).

3.0 FIELD SAMPLING SUMMARY

SPS environmental staff performed groundwater sampling on March 27, 2019. This sampling event was the first semi-annual detection groundwater sampling events conducted at the SPS Fly Ash Pond, and was conducted in the manner described in the following paragraphs and the GMSAP for this facility (Gredell Engineering, 2018).

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 TM 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 volume of groundwater for full analysis.

During the 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 the field measurement of pH was recorded. 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 stability prior to groundwater sample collection.

Field notes documenting the sampling events and a copy of the chain-of-custody forms are presented in Appendix 1. Field sampling notes are summarized in Table 3, including initial and final water level measurements, purge volumes, and pH. Raw analytical laboratory data sheets for each sample, including the field blank and sample replicate, are included in Appendix 2. Quality Assurance/Quality Control (QA/QC) documentation 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 the sampling event included the collection of one field blank and one field replicate sample. The replicate was collected from MW-2 (identified as DUP in Table 5). Rinsate blanks were not collected because dedicated sampling equipment was used. Samples were immediately shipped to PDC Laboratories' primary facility located in Peoria, Illinois using standard chain-of-custody documentation/procedures.

Samples were received by the primary facility on March 29, 2019 and subsequently analyzed for the six detection monitoring constituents listed in §257 Appendix III and required under §257.94(b) (Table 4). Final hard copy analytical results were received from PDC Laboratories on April 9, 2019.

4.0 ANALYTICAL SUMMARY

Hard copy analytical data for each monitoring well sampled during the March 2019 detection monitoring event is provided in Appendix 2. The data pertain to water quality results from the uppermost aquifer in the area bordering the Fly Ash Pond, along with sample replicate and field blank results.

4.1 Laboratory Quality Control

Laboratory analysis of the March 2019 groundwater samples was completed by PDC Laboratories, Inc., of Peoria, Illinois. The results 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 for detection monitoring samples were performed within appropriate hold times and both initial and continuing calibrations met acceptance criteria for all analyses. Similarly, method blanks and LCS analyses met acceptance criteria. The case narrative indicates that all quality controls met acceptance criteria.

Additional QA/QC comments include the following:

- *Field Replicates:* Analyses of replicate samples are used to define the total variability of the sampling/analytical system as a whole. One field replicate from MW-2 was collected during the detection monitoring event. The RPD was calculated for all detected chemical parameters. Accordingly, RPDs were calculated for all parameters during the detection sampling event except Fluoride, which was not reported in a concentration above the detection limit. A summary table showing the results of the RPD calculations is included as Table 5. Using a tolerance level of ± 20 percent, all calculated RPDs were within acceptable ranges for each parameter except Boron.
- *Field Blank:* One field blank was incorporated into the data set for the detection sampling event. Results for the field blank showed that it contained no reportable concentrations of any Appendix III constituent.

- *Laboratory Blanks:* Method blanks, artificial, and matrix-less samples are analyzed to monitor the laboratory system for interferences and contamination from glassware, reagents, etc. Method blanks are taken throughout the entire sample preparation process. They are included with each batch of extractions or digestions prepared, or with each 20 samples, whichever was more frequent. Reference to Appendix 3 should be made for comments related to these and other laboratory control samples.

4.3 Representativeness

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

Approved sampling procedures are described in the GMSAP (Gredell Engineering, 2018). Procedures specified in that plan have been followed. Approved sampling procedures should be reviewed annually. Groundwater monitoring data are 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 method used to evaluate groundwater within the uppermost aquifer for the Fly Ash Pond groundwater monitoring system at SBMU-SPS consists of intra-well analysis using prediction limits. The analysis is conducted separately for each constituent in each of the five monitoring wells for each sampling event in accordance with §257.93(f)(3). This statistical method complies with the accepted performance standards listed in §257.93(g).

A complete background data set has been obtained for groundwater, representing the uppermost aquifer, moving below the Fly Ash Pond at the SPS. The background data used to evaluate current groundwater quality is based on eight rounds of groundwater sampling of the five wells spanning March 2018 to December 2018. The background data set may be updated every two years but 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 9.6.14; 2019). Intra-well prediction intervals were compared at the 99 percent confidence level for each Appendix III constituent. The groundwater analytical results from the March 2019 detection monitoring event were compared to the prediction limits (Table 6) to determine SSIs if over background exist in the data set.

If the number of reportable concentrations of a given constituent in a background data set for 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 Fly Ash Pond groundwater monitoring system data. Prediction intervals are based on the background monitoring data sets (Appendix 4), including results reported as less than 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 March 2019 sampling event 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

The statistical analysis for the Fly Ash Pond groundwater monitoring system do not identify SSIs in the March 27, 2019 data set. Therefore, detection monitoring in accordance with §257.94 should continue on a semi-annual basis as specified in §257.94(b).

6.0 SUMMARY

The statistical analysis results for samples obtained during the first semi-annual groundwater detection monitoring event conducted on March 27, 2019, do not identify SSIs associated with the Fly Ash Pond groundwater monitoring system. Therefore, it is recommended that detection monitoring of the Fly Ash Pond continue on a semi-annual basis in accordance with §257.94(b).

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. No other warranties, expressed or implied, are provided.

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. The report is applicable only to this specific project and known site conditions as they existed at the time of report preparation.

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. The use of this report and interpretations of data or conclusions developed by others are the sole responsibility of those firms or individuals.

8.0 REFERENCES

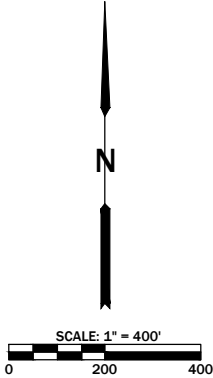
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Sanitas Statistical Software, © 1992-2019 SANITAS TECHNOLOGIES, Alamosa Colorado 81101-0012.

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FIGURES



LEGEND	
PROPERTY LINE	— PL —
GROUNDWATER CONTOUR	— 298 —
MONITORING WELL	⊙ MW
UP GRADIENT MONITORING LOCATION	UG
DOWN GRADIENT MONITORING LOCATION	DG
GENERAL FLOW DIRECTION	→

- NOTES:
1. IMAGE PROVIDED BY BING MAPS.
 2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.
 3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON MARCH 27, 2019.
 4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
 5. RANGE OF GROUNDWATER FLOW GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0001 FT./FT. TO 0.001 FT./FT.

MONITORING WELL ID	GROUNDWATER ELEVATION (FEET)	CASING ELEVATION (FEET)	NORTHING	EASTING
MW-1	297.69	312.77	383119.51	1078467.90
MW-2	298.93	308.01	383207.42	1079751.30
MW-3	298.51	308.55	381130.00	1079946.62
MW-7	297.58	315.03	381584.50	1078847.00
MW-9	297.93	314.68	382429.94	1078825.60

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

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	NA	FL	KE	MCC	8/2019	AS NOTED	SIKESTON/GWMAP/FAP	GWCONT FAP 2019	1 OF 1

**FIGURE 1
GROUNDWATER CONTOUR MAP
MARCH 27, 2019**

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

TABLES

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

**Table 1
Groundwater Monitoring Well Summary - Fly Ash Pond**

Monitoring Well ID^{1,2}	Northing Location^{3,4}	Easting Location^{3,4}	Ground Surface Elevation^{3,4} (feet)	Top of Riser Elevation^{3,4} (feet)	Well Depth⁵ (feet)	Base of Well Elevation⁶ (feet)	Screen Length⁷ (feet)	Top of Screen Elevation (feet)
MW-1	383119.51	1078467.90	310.41	312.77	37.84	274.93	10	285.1
MW-2	383207.42	1079751.30	305.53	308.01	37.42	270.59	10	280.8
MW-3	381130.00	1079946.62	306.11	308.55	37.21	271.34	10	281.5
MW-7	381584.50	1078847.00	312.70	315.03	37.37	277.66	10	287.9
MW-9	382429.94	1078825.60	311.85	314.68	37.28	277.40	10	287.6

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.

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**Table 2
Historical Groundwater Level Summary**

Well ID	MW-1	MW-2	MW-3	MW-7	MW-9
Date	Groundwater Elevation (feet MSL)				
05/12/16	297.50	298.66	298.13	NM	NM
06/28/16	296.60	298.01	297.58	NM	NM
07/15/16	296.57	297.86	297.37	NM	NM
08/08/16	295.62	297.06	297.05	NM	NM
09/08/16	296.06	297.27	296.76	NM	NM
10/05/16	295.86	296.96	296.40	NM	NM
11/01/16	295.47	296.66	296.10	NM	NM
11/30/16	295.45	296.60	296.03	NM	NM
01/24/17	NM	NM	296.35	NM	NM
01/26/17	295.77	296.76	296.35	NM	NM
02/22/17	NM	NM	296.00	NM	NM
02/24/17	295.47	296.40	296.00	NM	NM
03/20/17	296.11	296.96	296.45	NM	NM
04/19/17	296.04	296.86	296.35	NM	NM
04/27/17	NM	NM	296.72	NM	NM
05/17/17	NM	NM	297.81	NM	NM
06/08/17	NM	NM	297.81	NM	NM
07/13/17	NM	NM	296.98	NM	NM
10/31/17	NM	NM	295.22	NM	NM
03/21/18	295.92	296.96	296.65	295.83	296.13
04/15/18	297.07	297.86	297.60	296.95	297.18
05/23/18	296.78	298.01	297.62	296.66	296.98
06/13/18	NM	NM	297.33	NM	NM
06/27/18	296.37	297.61	297.21	296.26	296.56
08/01/18	295.22	296.60	296.15	295.08	295.48
09/05/18	294.79	296.11	295.68	294.71	295.01
11/06/18	295.01	296.21	295.74	294.85	295.17
11/26/18	NM	NM	295.63	NM	NM
12/12/18	295.12	296.21	295.79	295.06	295.36
01/08/19	295.66	296.72	296.38	295.53	295.80
02/05/19	NM	NM	296.73	NM	NM
03/27/19	297.69	298.93	298.51	297.58	297.93

NOTES:

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

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**Table 3
Water Levels and Field Parameter Summary
March 27, 2019**

Monitoring Well I.D.	Hydraulic Position	Initial Water Level (ft, BTOC²)	Final Water Level (ft, BTOC²)	Minimum³ Purge Vol. (ml⁴)	Actual Purge Vol. (ml⁴)	pH (S.U.⁵)
MW-1	Downgradient	15.08	15.08	300	4,760	7.1
MW-2	Upgradient	9.08	9.08	300	2,440	6.3
MW-3	Upgradient	10.04	10.04	300	6,400	6.4
MW-7	Downgradient	17.45	17.45	300	4,420	7.3
MW-9	Downgradient	16.75	16.75	300	1,880	7.4

NOTES:

1. Sequence of sampling is MW-3, MW-2, MW-1, MW-7, then MW-9.
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.

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**Table 4
Groundwater Monitoring Constituents**

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

NOTES:

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

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**Table 5
Relative Percent Differences Summary -
March 27, 2019**

Chemical Parameter	Units	MW-2	DUP	Relative Percent Difference
pH	S.U.	6.3	6.3	0.00
Boron	µg/L	31	49	45.00
Calcium	mg/L	17	16	6.06
Chloride	mg/L	3.3	3.4	2.99
Fluoride	mg/L	<0.250	<0.250	N/A
Sulfate	mg/L	20	19	5.13
Total Dissolved Solids	mg/L	130	120	8.00

NOTES:

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

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

Chemical Parameter	Units	MW-1	MW-2	MW-3	MW-7	MW-9
40 CFR 257 Appendix III Constituents for Detection Monitoring						
pH Upper	S.U.	7.5	6.5	6.6	7.4	7.4
pH Lower	S.U.	6.9	5.9	6.4	7.2	7.3
Boron	µg/L	544.6	60.53	32.7	2385	6236
Calcium	mg/L	45.18	25.29	19.49	152.9	95.09
Chloride	mg/L	12.2	8.15	1.598	15.22	23.28
Fluoride	mg/L	0.313	0.335	0.4083	0.8677	1.14
Sulfate	mg/L	31.57	22.33	21.97	259.2	301.1
Total Dissolved Solids	mg/L	223.2	169.4	177.8	617.2	630.8

NOTES:

1. Prediction limits based on eight rounds of background data spanning March 2018 to December 2018.

APPENDICES

Appendix 1

Field Sampling Notes

Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Groundwater Monitoring

Monitoring Well ID: MW 1

Name (Field Staff): A Patel D Dillingham

Date: 3-27-19

Access:

Accessibility: Good ☒ Fair ☐ Poor ☐

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

Well identification clearly visible?: Yes ☒ No ☐

Remarks:

Concrete Pad:

Condition of Concrete Pad: Good ☒ Inadequate ☐

Depressions or standing water around well?: Yes ☐ No ☒

Remarks:

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

Condition of Protective Casing: Good ☒ Damaged ☐

Condition of Locking Cap: Good ☒ Damaged ☐

Condition of Lock: Good ☒ Damaged ☐

Condition of Weep Hole: Good ☒ Damaged ☐

Remarks:

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

Condition of Riser: Good ☒ Damaged ☐

Condition of Riser Cap: Good ☒ Damaged ☐

Measurement Reference Point: Yes ☒ No ☐

Remarks:

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

Condition: Good ☒ Damaged ☐ Missing ☐

Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ☒ No ☐

Remarks:

Field Certification

Signed

Title

Date

Field Sampling Log

Monitoring Well ID: MW 1 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): <u>15.08</u>	Date: <u>3-27-19</u>
Initial Groundwater Elevation (NAVD88): _____	Air Pressure in Well? <u>Y</u> / <u>N</u>

PURGE INFORMATION

Date: <u>3-27-19</u>	
Name (Sample Collector): <u>D Dillingham</u>	
Method of Well Purge: <u>Low Flow Peristaltic Pump</u>	Dedicated Tubing? <u>Y</u> / N
Time Purging Initiated: <u>1058</u>	One (1) Well Volume (mL): <u>NA</u>
Beginning Water Level (feet btoc): <u>15.08</u>	Total Volume Purged (mL): <u>4760</u>
Beginning Groundwater Elevation (NAVD88): _____	Well Purged To Dryness? <u>Y</u> / <u>N</u>
Well Total Depth (feet btoc): <u>37.62</u>	Water Level after Sampling (feet btoc): <u>15.08</u> (i.e., pump is off)
Casing Diameter (feet): <u>2" Sch 40 PVC</u>	Time Sampling Completed: <u>1125</u>

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1100		540	16.75	362.6	0.74	6.74	-102.9	99.09	15.08	Yellow Flakes, odor
1102	240	1020	16.53	362.1	0.71	6.88	-103.8	79.28	15.08	" "
1104	240	1500	16.51	361.1	0.62	6.92	-106.2	127.20	15.08	" "
1106	240	1980	16.56	361.1	0.48	7.04	-106.5	100.90	15.08	" "
1108	220	2420	16.59	360.4	0.43	7.08	-105.3	73.26	15.08	" "
1110	250	2920	16.56	359.6	0.40	7.11	-105.7	101.10	15.08	" "
1112	240	3400	16.24	362.2	0.40	7.13	-97.7	65.12	15.08	" "
1114	230	3860	16.51	359.8	0.37	7.14	-103.8	58.76	15.08	" "
1116	220	4300	16.57	354.8	0.34	7.14	-101.1	53.54	15.08	" "
1118	230	4760	16.60	361.2	0.36	7.13	-101.9	53.91	15.08	" "
AP 1120										

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Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 1

Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated: ☒ Y / ☐ N

Water Level @ Sampling (feet btoc): 15.08

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

Final Purge Stabilization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
3-27-19 1118	230	16.60	361.2	0.36	7.13	-101.9	53.91

Instrument Calibration Data:

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

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

General Information:

Weather Conditions @ time of sampling: SUNNY

53°F

Sample Characteristics: yellow flake, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

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

Date: 3-27-19 By: [Signature] Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Groundwater Monitoring

Monitoring Well ID: MW 2

Name (Field Staff): A Patel D Dillingham

Date: 3-27-19

Access:

Accessibility: Good ☒ Fair ☐ Poor ☐

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

Well identification clearly visible?: Yes ☒ No ☐

Remarks:

Concrete Pad:

Condition of Concrete Pad: Good ☒ Inadequate ☐

Depressions or standing water around well?: Yes ☐ No ☒

Remarks:

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

Condition of Protective Casing: Good ☒ Damaged ☐

Condition of Locking Cap: Good ☒ Damaged ☐

Condition of Lock: Good ☒ Damaged ☐

Condition of Weep Hole: Good ☒ Damaged ☐

Remarks:

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

Condition of Riser: Good ☒ Damaged ☐

Condition of Riser Cap: Good ☒ Damaged ☐

Measurement Reference Point: Yes ☒ No ☐

Remarks:

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

Condition: Good ☒ Damaged ☐ Missing ☐

Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ☒ No ☐

Remarks:

Field Certification

Asst Patel
Signed

Asst Patel
Title

3-27-19
Date

Field Sampling Log

Monitoring Well ID: MW 2 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 9.08 Date: 3-27-19
Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 3-27-19

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Peristaltic Pump

Time Purging Initiated: 0949

Beginning Water Level (feet btoc): 9.08

Beginning Groundwater Elevation (NAVD88): _____

Well Total Depth (feet btoc): 37.16

Casing Diameter (feet): 2" Sch 40 PVC

Dedicated Tubing? (Y) / N

One (1) Well Volume (mL): NA

Total Volume Purged (mL): 2440

Well Purged To Dryness? Y / (N)

Water Level after Sampling (feet btoc): 9.08
(i.e., pump is off)

Time Sampling Completed: 1009

PURGE STABILIZATION DATA

[illegible]

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Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW2

Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated: ☒ Y / ☐ N

Water Level @ Sampling (feet btoc): 9.08

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

Final Purge Stabilization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
<u>3-27-19</u> <u>0959</u>	<u>250</u>	<u>15.87</u>	<u>165.4</u>	<u>2.72</u>	<u>6.25</u>	<u>73.4</u>	<u>2.60</u>

Instrument Calibration Data:

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

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

General Information:

Weather Conditions @ time of sampling: Sunny

44°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect Duplicate

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

Date: 3-27-19 By: ASHLEY PATEL Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS - CCR Groundwater Monitoring

Monitoring Well ID: MW 3

Name (Field Staff): A Patel D Oillingham

Date: 03-27-19

Access:

Accessibility: Good ☒ Fair ☐ Poor ☐

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

Well identification clearly visible?: Yes ☒ No ☐

Remarks:

Concrete Pad:

Condition of Concrete Pad: Good ☒ Inadequate ☐

Depressions or standing water around well?: Yes ☐ No ☒

Remarks:

Protective Outer Casing:

Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing: Good ☒ Damaged ☐

Condition of Locking Cap: Good ☒ Damaged ☐

Condition of Lock: Good ☒ Damaged ☐

Condition of Weep Hole: Good ☒ Damaged ☐

Remarks:

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

Condition of Riser: Good ☒ Damaged ☐

Condition of Riser Cap: Good ☒ Damaged ☐

Measurement Reference Point: Yes ☒ No ☐

Remarks:

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

Condition: Good ☒ Damaged ☐ Missing ☐

Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ☒ No ☐

Remarks:

Field Certification

Signed

Title

Date

Field Sampling Log

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

Initial Water Level (feet btoc): 10.04 Date: 3-27-19
Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / N

PURGE INFORMATION

Date: 3-27-19
Name (Sample Collector): D Dillingham
Method of Well Purge: Low Flow Peristaltic Pump Dedicated Tubing? (Y) / N
Time Purging Initiated: 0851 One (1) Well Volume (mL): NA
Beginning Water Level (feet btoc): 10.04 Total Volume Purged (mL): 6400
Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / N
Well Total Depth (feet btoc): 36.99 Water Level after Sampling (feet btoc): 10.04
(i.e., pump is off)
Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0923

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0853		340	15.70	191.3	1.90	6.55	89.7	41.51	10.04	Red Flakes, odor
0855	240	820	14.67	196.1	1.67	6.40	79.6	44.64	10.04	" "
0857	240	1300	14.40	197.2	1.53	6.32	73.7	37.54	10.04	" "
0859	260	1820	14.31	198.1	1.42	6.30	70.7	36.27	10.04	" "
0901	260	2340	14.35	198.1	1.31	6.30	66.2	35.05	10.04	" "
0903	250	2840	14.36	196.2	1.21	6.30	61.6	31.31	10.04	" "
0905	260	3360	14.45	196.7	1.14	6.31	61.0	16.17	10.04	" "
0907	280	3860	14.58	196.0	1.07	6.34	56.0	14.25	10.04	" "
0909	250	4360	14.93	195.1	0.96	6.37	55.0	16.14	10.04	" "
0911	250	4860	14.94	194.9	0.95	6.37	53.8	21.39	10.04	" "
0913	260	5380	15.03	195.6	0.91	6.37	52.6	12.42	10.04	" "
0915	260	5900	15.04	195.2	0.89	6.38	52.1	11.98	10.04	" "
0917	250	6400	15.07	196.0	0.84	6.36	52.2	12.50	10.04	" "

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Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW3

Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated: ☒ Y / ☐ N

Water Level @ Sampling (feet btoc): 10.04

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

Final Purge Stabilization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
03-27-14 0917	250	15.07	196.0	0.84	6.36	52.2	12.50

Instrument Calibration Data:

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

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

General Information:

Weather Conditions @ time of sampling: Sunny

41°F

Sample Characteristics: Red Flake, odorless, colorless

Sample Collection Order: Per SAP

Comments and Observations:

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

Date: 3-27-14 By: Wah. Sh Patel Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 7

Name (Field Staff): A Patel D Pillingham

Date: 3-27-19

Access:

Accessibility: Good ☒ Fair ☐ Poor ☐

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

Well identification clearly visible?: Yes ☒ No ☐

Remarks:

Concrete Pad:

Condition of Concrete Pad: Good ☒ Inadequate ☐

Depressions or standing water around well?: Yes ☐ No ☒

Remarks:

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

Condition of Protective Casing: Good ☒ Damaged ☐

Condition of Locking Cap: Good ☒ Damaged ☐

Condition of Lock: Good ☒ Damaged ☐

Condition of Weep Hole: Good ☒ Damaged ☐

Remarks:

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

Condition of Riser: Good ☒ Damaged ☐

Condition of Riser Cap: Good ☒ Damaged ☐

Measurement Reference Point: Yes ☒ No ☐

Remarks:

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

Condition: Good ☒ Damaged ☐ Missing ☐

Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ☒ No ☐

Remarks:

Field Certification

Ashish Patel
Signed

Lab Tech
Title

3-27-19
Date

Field Sampling Log

Monitoring Well ID: MW-7 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 17.45 Date: 3-27-19

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 3-27-19

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Peristaltic Pump

Dedicated Tubing? Y / N

Time Purging Initiated: 1144

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 17.45

Total Volume Purged (mL): 4425

Beginning Groundwater Elevation (NAVD88):

Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.21

Water Level after Sampling (feet btoc): 17.5
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 1209

PURGE STABILIZATION DATA

[illegible]

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Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: Mw 7

Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated: ☒ Y / ☐ N

Water Level @ Sampling (feet btoc): 17.45

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

Final Purge Stabilization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
<u>3-27-19</u> <u>1202</u>	<u>270</u>	<u>16.39</u>	<u>797.4</u>	<u>0.32</u>	<u>7.25</u>	<u>52.6</u>	<u>2.37</u>

Instrument Calibration Data:

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

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

General Information:

Weather Conditions @ time of sampling: Sunny

56°F

Sample Characteristics: Red Fluke, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect Field Blank

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

Date: 3-27-19 By: ASHL PC #1 Title: LES 7201

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring

Monitoring Well ID: MW 9

Name (Field Staff): A Patel D Dillingham

Date: 3-27-19

Access:

Accessibility: Good ☒ Fair ☐ Poor ☐

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

Well identification clearly visible?: Yes ☒ No ☐

Remarks:

Concrete Pad:

Condition of Concrete Pad: Good ☒ Inadequate ☐

Depressions or standing water around well?: Yes ☐ No ☒

Remarks:

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

Condition of Protective Casing: Good ☒ Damaged ☐

Condition of Locking Cap: Good ☒ Damaged ☐

Condition of Lock: Good ☒ Damaged ☐

Condition of Weep Hole: Good ☒ Damaged ☐

Remarks:

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

Condition of Riser: Good ☒ Damaged ☐

Condition of Riser Cap: Good ☒ Damaged ☐

Measurement Reference Point: Yes ☒ No ☐

Remarks:

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

Condition: Good ☒ Damaged ☐ Missing ☐

Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ☒ No ☐

Remarks:

Field Certification

Ashish Patel
Signed

Cal Tech
Title

3-27-19
Date

Field Sampling Log

Monitoring Well ID: MW 9 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 16.75

Date: 3-27-19

Initial Groundwater Elevation (NAVD88):

Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 3-27-19

Name (Sample Collector): D. Dillingham

Method of Well Purge: Low Flow Peristaltic Pump

Dedicated Tubing? (Y) / N

Time Purging Initiated: 256

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 16.75

Total Volume Purged (mL): 1880

Beginning Groundwater Elevation (NAVD88): _____

Well Purged To Dryness? Y / **N**

Well Total Depth (feet btoc): 37.09

Water Level after Sampling (feet btoc): 16.75
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 1310

PURGE STABILIZATION DATA

[illegible]

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Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 9

Sampling Information:

Method of Sampling: Low Flow - Peristaltic Pump & Tubing

Dedicated: ☒ Y / ☐ N

Water Level @ Sampling (feet btoc): 16.75

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

Final Purge Stabilization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
<u>3-27-19</u> <u>1304</u>	<u>260</u>	<u>16.74</u>	<u>6732</u>	<u>0.51</u>	<u>7.40</u>	<u>22.1</u>	<u>0.96</u>

Instrument Calibration Data:

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

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

General Information:

Weather Conditions @ time of sampling: SUNNY

59°F

Sample Characteristics: Clear, odorless, colorless

Sample Collection Order: Per SAP

Comments and Observations:

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

Date: 3-27-19 By: Ashish Patel Title: Lab Tech

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: Ashish Patel

Field Instruments: In-Situ smartROLL Field Meter

HF scientific, inc. Micro TPI Field Portable Turbidimeter

S/N #: 474247

S/N #: 201607366

	Date	Time	pH Standards		pH Measurements	Specific Conductance Standard (µS/cm)	Specific Conductance Measurement (µS/cm)	Oxidation Reduction Potential Standard (mV)			Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)		Turbidity Standards (NTU)	Turbidity Measurements (NTU)		
Beginning of Day Calibration	03-27-2019	0752	4.00	=	4.00	1413	1412.4	Temperature (°C)	=	22.31	229.2	Temperature (°C)	=	21.64	0.02	=	0.02
			7.00	=	7.00			Tap Water Source	=	Sikeston city		10.0	=	10.0			
			10.00	=	10.00			Standard (mV)	=	229		Barometric Pressure (mm/Hg)	=	1015	1000	=	1000.0
								Measurement	=	99.1							
End of Day Check	03-27-2019	1451	4.00	=	4.0	1413	1533.1	Temperature (°C)	=	24.42	223.9	Temperature (°C)	=	24.15	0.02	=	0.01
			7.00	=	7.05			Tap Water Source	=	Sikeston city		10.0	=	10.05			
			10.00	=	9.93			Standard (mV)	=	229		Barometric Pressure (mm/Hg)	=	1011.8	1000	=	1002.0
								Measurement	=	97.4							

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

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

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

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

Date: 3-27-19

By: Ashish Patel

Appendix 2

Laboratory Analytical Results



PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

April 09, 2019

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

Dear Luke St Mary:

Please find enclosed the analytical results for the sample(s) the laboratory received on **3/29/19 9:15 am** and logged in under work order **9034665**. All testing is performed according to our current TNI certifications unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

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

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant with any feedback you have about your experience with our laboratory.

Sincerely,

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





ANALYTICAL RESULTS

Sample: 9034665-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 03/27/19 09:17
Received: 03/29/19 09:15
PO #: 20927

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	1.5	mg/L		04/04/19 00:11	04/04/19 00:11	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		04/04/19 00:11	04/04/19 00:11	LAM	EPA 300.0
Sulfate	19	mg/L		04/04/19 00:29	04/04/19 00:29	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	140	mg/L		04/01/19 07:52	04/01/19 09:29	TMS	SM 2540C
Total Metals - PIA							
Boron	22	ug/L		04/03/19 12:37	04/08/19 08:57	JMW	SW 6020
Calcium	16000	ug/L		04/03/19 12:37	04/08/19 08:57	JMW	SW 6020

Sample: 9034665-02
Name: MW-2
Matrix: Ground Water - Grab

Sampled: 03/27/19 09:59
Received: 03/29/19 09:15
PO #: 20927

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	3.3	mg/L		04/04/19 01:24	04/04/19 01:24	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		04/04/19 01:24	04/04/19 01:24	LAM	EPA 300.0
Sulfate	20	mg/L		04/04/19 01:42	04/04/19 01:42	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	130	mg/L		04/01/19 07:52	04/01/19 09:29	TMS	SM 2540C
Total Metals - PIA							
Boron	31	ug/L		04/03/19 12:37	04/08/19 09:01	JMW	SW 6020
Calcium	17000	ug/L		04/03/19 12:37	04/08/19 09:01	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 9034665-03
Name: MVV-1
Matrix: Ground Water - Grab

Sampled: 03/27/19 11:18
Received: 03/29/19 09:15
PO #: 20927

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	7.9	mg/L		04/04/19 02:00	04/04/19 02:00	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		04/04/19 02:00	04/04/19 02:00	LAM	EPA 300.0
Sulfate	27	mg/L		04/04/19 02:18	04/04/19 02:18	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	210	mg/L		04/01/19 07:52	04/01/19 09:29	TMS	SM 2540C
Total Metals - PIA							
Boron	440	ug/L		04/03/19 12:37	04/08/19 09:05	JMW	SW 6020
Calcium	41000	ug/L		04/03/19 12:37	04/08/19 09:05	JMW	SW 6020

Sample: 9034665-04
Name: MVV-7
Matrix: Ground Water - Grab

Sampled: 03/27/19 12:02
Received: 03/29/19 09:15
PO #: 20927

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	6.6	mg/L		04/04/19 12:14	04/04/19 12:14	LAM	EPA 300.0
Fluoride	0.670	mg/L		04/04/19 02:37	04/04/19 02:37	LAM	EPA 300.0
Sulfate	170	mg/L		04/04/19 02:55	04/04/19 02:55	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	480	mg/L		04/01/19 07:52	04/01/19 09:29	TMS	SM 2540C
Total Metals - PIA							
Boron	1800	ug/L		04/03/19 12:37	04/08/19 09:10	JMW	SW 6020
Calcium	110000	ug/L		04/03/19 12:37	04/08/19 09:10	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 9034665-05
Name: MVV-9
Matrix: Ground Water - Grab

Sampled: 03/27/19 13:04
Received: 03/29/19 09:15
PO #: 20927

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	11	mg/L		04/04/19 03:31	04/04/19 03:31	LAM	EPA 300.0
Fluoride	0.827	mg/L		04/04/19 03:13	04/04/19 03:13	LAM	EPA 300.0
Sulfate	120	mg/L		04/04/19 03:50	04/04/19 03:50	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	440	mg/L		04/01/19 07:52	04/01/19 09:29	TMS	SM 2540C
Total Metals - PIA							
Boron	3100	ug/L		04/03/19 12:37	04/08/19 09:14	JMW	SW 6020
Calcium	70000	ug/L		04/03/19 12:37	04/08/19 09:14	JMW	SW 6020

Sample: 9034665-06
Name: DUPLICATE WELL
Matrix: Ground Water - Grab

Sampled: 03/27/19 00:00
Received: 03/29/19 09:15
PO #: 20927

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	3.4	mg/L		04/04/19 04:08	04/04/19 04:08	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		04/04/19 04:08	04/04/19 04:08	LAM	EPA 300.0
Sulfate	19	mg/L		04/04/19 05:03	04/04/19 05:03	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	120	mg/L		04/01/19 07:52	04/01/19 09:29	TMS	SM 2540C
Total Metals - PIA							
Boron	49	ug/L		04/03/19 12:37	04/08/19 09:18	JMW	SW 6020
Calcium	16000	ug/L		04/03/19 12:37	04/08/19 09:18	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 9034665-07
Name: FIELD BLANK
Matrix: DI Water - Grab

Sampled: 03/27/19 00:00
Received: 03/29/19 09:15
PO #: 20927

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	< 1.0	mg/L		04/04/19 15:53	04/04/19 15:53	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		04/04/19 15:53	04/04/19 15:53	LAM	EPA 300.0
Sulfate	< 1.0	mg/L		04/04/19 15:53	04/04/19 15:53	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	< 17	mg/L		04/01/19 07:52	04/01/19 09:29	TMS	SM 2540C
Total Metals - PIA							
Boron	< 10	ug/L		04/03/19 12:37	04/08/19 09:42	JMW	SW 6020
Calcium	< 100	ug/L		04/03/19 12:37	04/08/19 09:42	JMW	SW 6020

Appendix 3

Laboratory Quality Assurance/Quality Control Data



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B906436 - No Prep - SM 2540C</u>									
Blank (B906436-BLK1)				Prepared & Analyzed: 04/01/19					
Solids - total dissolved solids (TDS)	< 17	mg/L							
Duplicate (B906436-DUP1)				Sample: 9034665-03 Prepared & Analyzed: 04/01/19					
Solids - total dissolved solids (TDS)	205	mg/L			210			2	5
<u>Batch B906745 - SW 3015 - SW 6020</u>									
Blank (B906745-BLK1)				Prepared: 04/03/19 Analyzed: 04/08/19					
Boron	< 10	ug/L							
Calcium	< 100	ug/L							
LCS (B906745-BS1)				Prepared: 04/03/19 Analyzed: 04/08/19					
Boron	530	ug/L		555.6		95	80-120		
Calcium	5230	ug/L		5556		94	80-120		
Matrix Spike (B906745-MS1)				Sample: 9034305-01 Prepared: 04/03/19 Analyzed: 04/08/19					
Boron	548	ug/L		555.6	16.8	96	75-125		
Calcium	27700	ug/L		5556	22600	91	75-125		
Matrix Spike Dup (B906745-MSD1)				Sample: 9034305-01 Prepared: 04/03/19 Analyzed: 04/08/19					
Boron	564	ug/L		555.6	16.8	98	75-125	3	20
Calcium	27700	ug/L		5556	22600	93	75-125	0.3	20
<u>Batch B906828 - IC No Prep - EPA 300.0</u>									
Calibration Blank (B906828-CCB1)				Prepared & Analyzed: 04/03/19					
Chloride	0.413	mg/L							
Fluoride	0.00	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B906828-CCV1)				Prepared & Analyzed: 04/03/19					
Fluoride	4.98	mg/L		5.000		100	90-110		
Sulfate	5.01	mg/L		5.000		100	90-110		
Chloride	4.83	mg/L		5.000		97	90-110		
<u>Batch B906965 - IC No Prep - EPA 300.0</u>									
Calibration Blank (B906965-CCB1)				Prepared & Analyzed: 04/04/19					
Chloride	0.441	mg/L							
Fluoride	0.00	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B906965-CCV1)				Prepared & Analyzed: 04/04/19					
Sulfate	4.77	mg/L		5.000		95	90-110		
Chloride	4.63	mg/L		5.000		93	90-110		
Fluoride	4.85	mg/L		5.000		97	90-110		



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

NOTES

Specific method revisions used for analysis are available upon request.

Certifications

CHI - McHenry, IL

TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100279
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL

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

SPIL - Springfield, IL

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

SPMO - Springfield, MO

USEPA DMR-QA Program

STL - St. Louis, MO

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389
Accreditation of Laboratories for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
Drinking Water Certifications: Missouri (1050)
Missouri Department of Natural Resources

* Not a TNI accredited analyte

Certified by: Kurt Stepping, Senior Project Manager





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DATA PACKAGE

CLIENT; Sikeston BMU

PROJECT: Sikeston Power Station

PDC LAB WORKORDER: 9034665

DATE ISSUED: April 9, 2019

CASE NARRATIVE –

PDC Work Order 9034665

PDC Laboratories, Inc. received 7 water samples on March 29, 2019 in good condition at our Peoria, IL facility. This sample set was designated as work order 9034665.

Sample ID's		Date	
Field	Lab ID	Collected	Received
MW-3	9034665-01	3/27/19	3/29/19
MW-2	9034665-02	3/27/19	3/29/19
MW-1	9034665-03	3/27/19	3/29/19
MW-7	9034665-04	3/27/19	3/29/19
MW-9	9034665-05	3/27/19	3/29/19
Duplicate One	9034665-06	3/27/19	3/29/19
Field Blank	9034665-07	3/27/19	3/29/19

QC Summary:

All items met acceptance criteria with the following noted exceptions:

No exceptions for this sample group.

Certification

Signature:



Name: Kurt Stepping

Date: April 9, 2019

Title: Senior Project Manager

PDC LABORATORIES, INC.

2231 WEST ALTORFER DRIVE

PHONE # 800-752-6651

PEORIA, IL 61615

State where samples collected

MC

CHAIN OF CUSTODY RECORD

[illegible]

Yellow copy to be retained by the client.

Copies: white should accompany samples to PDC Labs.

PAGE _____ OF _____

Appendix 4

Fly Ash Pond Groundwater Quality Data Base

Sikeston Board of Municipal Utilities
Sikeston Power Station
Scott County, Missouri

Fly Ash Pond Groundwater Quality Data Base

		Field Parameters							Appendix III Monitoring Constituents (Detection)						Appendix IV Monitoring Constituents (Assessment)													
Well ID	Date	Monitoring Purpose	Spec. Cond.	pH	Temp.	ORP	D.O.	Turbidity	Chloride	Fluoride	Sulfate	TDS	Boron	Calcium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226/228 (Combined)
			µmhos/cm	S.U.	°C	mV	mg/L	NTU	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-1 (DG)	3/21/2018	Background	249.6	7.3	16.33	-108.8	0.32	28.35	3.0	<0.250	22	150	360	21	<3.0	<1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.353 (ND)
	4/15/2018	Background	233.8	7.4	15.17	-122.7	0.60	14.46	2.8	0.316	22	120	450	29	<3.0	<1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.478 (ND)
	5/23/2018	Background	220.0	7.4	18.42	-133.3	0.54	12.11	3.3	<0.250	20	140	420	25	<3.0	<1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.378 (ND)
	6/27/2018	Background	227.4	7.3	18.59	-149.3	0.30	11.07	6.9	<0.250	20	120	470	28	<3.0	<1.0	140	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.065 (ND)
	8/1/2018	Background	264.3	7.2	18.26	-138.0	0.56	7.52	5.6	<0.250	23	190	440	30	<3.0	<1.0	140	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.893(ND)
	9/5/2018	Background	281.3	7.1	18.70	-132.1	0.41	3.20	7.0	0.252	24	140	490	34	<3.0	<1.0	150	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.100
	11/6/2018	Background	311.8	7.1	17.86	-128.8	1.00	1.30	9.0	0.262	26	200	480	38	<3.0	<1.0	170	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.282
	12/12/2018	Background	317.5	7.1	16.30	-96.3	0.45	2.27	9.1	0.256	30	140	440	38	<3.0	<1.0	180	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.423 (ND)
	3/27/2019	Detection	361.2	7.1	16.60	-101.9	0.36	53.91	7.9	<0.250	27	210	440	41	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-2 (UG)	3/21/2018	Background	157.8	6.4	15.86	65.3	2.72	3.41	3.4	<0.250	16	110	28	16	<3.0	<1.0	130	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.896 (ND)
	4/15/2018	Background	159.8	6.4	14.04	64.7	0.87	4.05	2.3	0.335	18	63	23	14	<3.0	<1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.483 (ND)
	5/23/2018	Background	175.3	6.2	17.40	121.7	0.58	1.72	4.2	<0.250	20	100	36	18	<3.0	<1.0	170	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.199 (ND)
	6/27/2018	Background	172.1	6.2	18.38	243.8	0.27	5.30	4.7	<0.250	18	87	42	19	<3.0	<1.0	180	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	1.4	<1.0	1.006 (ND)
	8/1/2018	Background	184.2	6.1	18.48	80.7	0.75	2.61	5.9	<0.250	19	140	43	20	<3.0	<1.0	200	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	2.0	<1.0	0.751(ND)
	9/5/2018	Background	187.9	6.1	19.26	83.8	0.68	2.58	6.8	<0.250	18	110	46	22	<3.0	<1.0	220	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	2.2	<1.0	1.734
	11/6/2018	Background	174.3	6.2	17.77	79.7	0.60	1.19	4.2	0.272	19	100	43	20	<3.0	<1.0	170	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.583
	12/12/2018	Background	186.3	6.1	16.78	82.3	0.67	5.78	5.5	0.254	21	140	48	21	<3.0	<1.0	210	<1.0	<1.0	<4.0	2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.18 (ND)
	3/27/2019	Detection	165.9	6.3	15.87	70.4	0.72	2.60	3.3	<0.250	20	130	31	17	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-3 (UG)	3/21/2018	Background	220.7	6.6	15.22	40.7	0.38	14.88	1.4	0.274	18	120	17	19	<3.0	<1.0	96	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.240 (ND)
	4/15/2018	Background	224.7	6.5	14.05	39.2	0.45	10.81	1.5	0.386	20	120	25	18	<3.0	<1.0	100	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.475 (ND)
	5/23/2018	Background	221.3	6.5	17.77	43.2	0.39	13.39	1.4	<0.250	20	100	20	18	<3.0	<1.0	100	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.994 (ND)
	6/27/2018	Background	198.7	6.5	17.81	123.8	0.45	17.03	1.2	<0.250	17	110	27	18	<3.0	<1.0	100	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.214 (ND)
	8/1/2018	Background	209.2	6.6	16.74	41.4	0.43	10.96	1.3	<0.250	17	150	21	18	<3.0	<1.0	91	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.315(ND)
	9/5/2018	Background	196.8	6.5	17.62	56.8	0.46	6.21	1.2	0.308	15	100	22	17	<3.0	<1.0	98	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.860(ND)
	11/6/2018	Background	206.7	6.5	16.84	63.3	0.49	2.37	1.3	0.313	16	130	26	17	<3.0	<1.0	100	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.339
	12/12/2018	Background	195.6	6.5	15.39	48.7	0.40	3.10	1.4	0.334	18	160	28	17	<3.0	<1.0	99	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.8 (ND)
	3/27/2019	Detection	196.0	6.4	15.07	52.2	0.84	12.50	1.5	<0.250	19	140	22	16	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-7 (DG)	3/21/2018	Background	901.8	7.3	14.85	41.8	0.58	1.61	12	0.752	190	440	1900	110	<3.0	<1.0	41	<1.0	<1.0	<4.0	<2.0	<1.0	25	<0.20	160	5.4	<1.0	0.883 (ND)
	4/15/2018	Background	936.4	7.2	14.04	40.0	0.51	0.96	12	0.794	210	420	1900	110	<3.0	<1.0	43	<1.0	<1.0	<4.0	2.0	<1.0	19	<0.20	170	2.3	<1.0	0.0619 (ND)
	5/23/2018	Background	899.1	7.3	18.05	46.5	0.38	0.25	11	0.650	220	480	1800	120	<3.0	<1.0	44	<1.0	<1.0	<4.0	<2.0	<1.0	22	<0.20	170	28	<1.0	0.896 (ND)
	6/27/2018	Background	891.4	7.2	17.91	66.4	0.22	5.84	11	0.592	220	500	2000	140	<3.0	<1.0	48	<1.0	<1.0	<4.0	2.1	<1.0	26	<0.20	160	53	<1.0	1.153 (ND)
	8/1/2018	Background	958.3	7.2	18.03	53.0	0.28	1.77	9.1	0.608	230	590	2300	140	<3.0	<1.0	47	<1.0	<1.0	<4.0	2.2	<1.0	30	<0.20	160	54	<1.0	0.884(ND)
	9/5/2018	Background	873.3	7.3	19.46	69.3	0.28	2.29	10	0.700	220	520	2100	130	<3.0	<1.0	47	<1.0	<1.0	<4.0	2.0	<1.0	27	<0.20	150	42	<1.0	0.652(ND)
	11/6/2018	Background	787.9	7.4	18.12	344.4	0.44	0.44	6.3	0.693	170	450	2000	120	<3.0	<1.0	43	<1.0	<1.0	<4.0	2.0	<1.0	26	<0.20	150	15	<1.0	1.478
	12/12/2018	Background	784.8	7.3	17.26	51.6	1.05	0.41	6.8	0.746	180	440	1800	120	<3.0	<1.0	44	<1.0	<1.0	<4.0	2.1	<1.0	26	<0.20	150	11	<1.0	0.975 (ND)
	3/27/2019	Detection	797.4	7.3	16.39	52.6	0.32	2.37	6.6	0.670	170	480	1800	110	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

Sikeston Board of Municipal Utilities
Sikeston Power Station
Scott County, Missouri

Fly Ash Pond Groundwater Quality Data Base

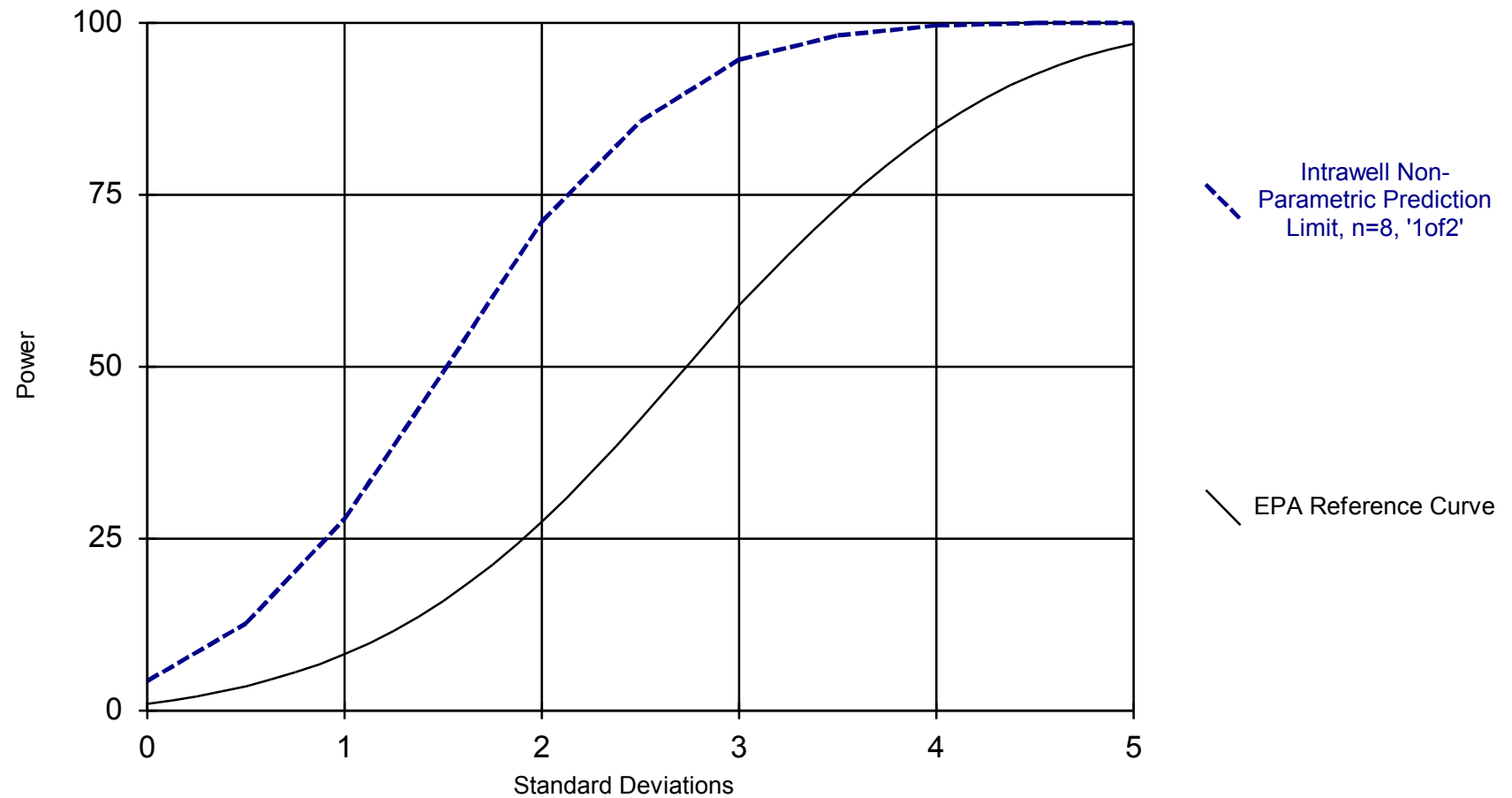
Well ID	Date	Monitoring Purpose	Spec. Cond.	pH	Temp.	ORP	D.O.	Turbidity	Chloride	Fluoride	Sulfate	TDS	Boron	Calcium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226/228 (Combined)
			µmhos/cm	S.U.	°C	mV	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-9 (DG)	3/21/2018	Background	979.8	7.4	14.98	25.1	0.52	1.60	17	0.929	230	480	4700	65	<3.0	<1.0	49	<1.0	<1.0	<4.0	<2.0	<1.0	19	<0.20	630	<1.0	<1.0	0.491 (ND)
	4/15/2018	Background	972.7	7.4	14.63	24.9	1.73	2.32	21	1.09	240	460	5100	57	<3.0	1.2	49	<1.0	<1.0	<4.0	<2.0	<1.0	11	<0.20	680	<1.0	<1.0	0.982 (ND)
	5/23/2018	Background	1020.5	7.3	18.70	25.9	0.48	0.64	17	1.05	240	520	5800	55	<3.0	<1.0	45	<1.0	<1.0	8.1	<2.0	<1.0	15	<0.20	840	<1.0	<1.0	0.359 (ND)
	6/27/2018	Background	902.9	7.3	19.33	25.2	0.42	4.97	15	0.910	220	520	4600	73	<3.0	<1.0	47	<1.0	<1.0	<4.0	<2.0	<1.0	15	<0.20	560	<1.0	<1.0	0.327 (ND)
	8/1/2018	Background	942.6	7.3	19.10	20.7	0.47	2.03	16	0.916	220	560	4500	76	<3.0	<1.0	47	<1.0	<1.0	<4.0	<2.0	<1.0	18	<0.20	500	<1.0	<1.0	0.418(ND)
	9/5/2018	Background	829.2	7.3	19.85	20.9	0.45	2.68	16	0.957	180	420	4400	80	<3.0	<1.0	48	<1.0	<1.0	<4.0	<2.0	<1.0	17	<0.20	460	<1.0	<1.0	0.707(ND)
	11/6/2018	Background	732.8	7.3	18.19	428.8	0.60	0.45	11	0.885	130	410	3800	79	<3.0	<1.0	47	<1.0	<1.0	<4.0	<2.0	<1.0	13	<0.20	420	<1.0	<1.0	1.473(ND)
	12/12/2018	Background	742.9	7.3	16.95	36.5	0.48	0.63	12	0.972	170	360	3700	78	<3.0	<1.0	53	<1.0	<1.0	<4.0	<2.0	<1.0	17	<0.20	420	<1.0	<1.0	1.232 (ND)
	3/27/2019	Detection	673.2	7.4	16.74	22.1	0.51	0.96	11	0.827	120	440	3100	70	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

- Notes:
1. All data transcribed from analytical lab data sheets or field notes.
 2. Less than (<) symbol denotes concentration below 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.

Appendix 5

Statistical Power Curve

Power Curve MW-1, 2, 3, 7 & 9



This report reflects annual total based on two evaluations per year.

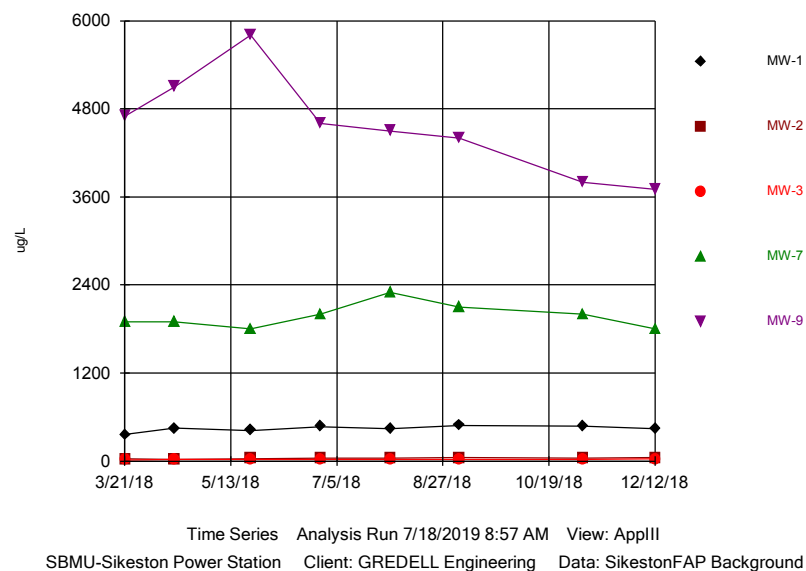
Analysis Run 5/31/2019 2:59 PM

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

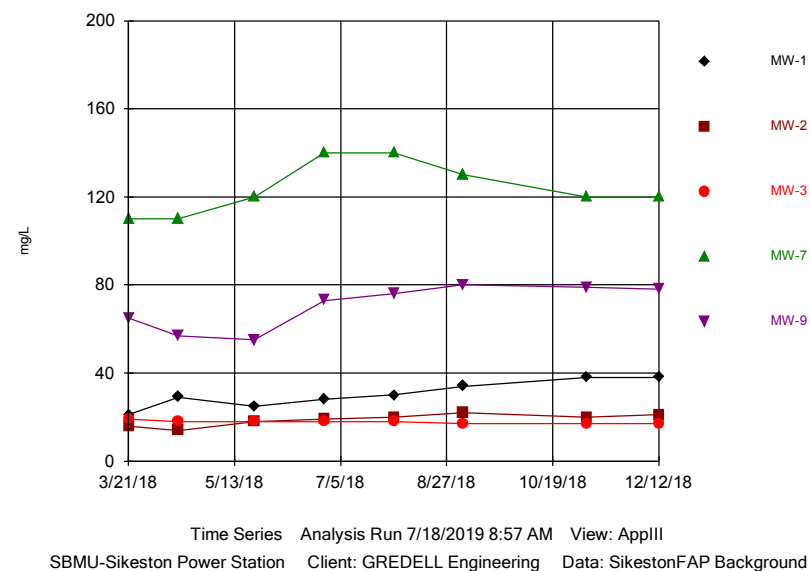
Appendix 6

Time Series Plots

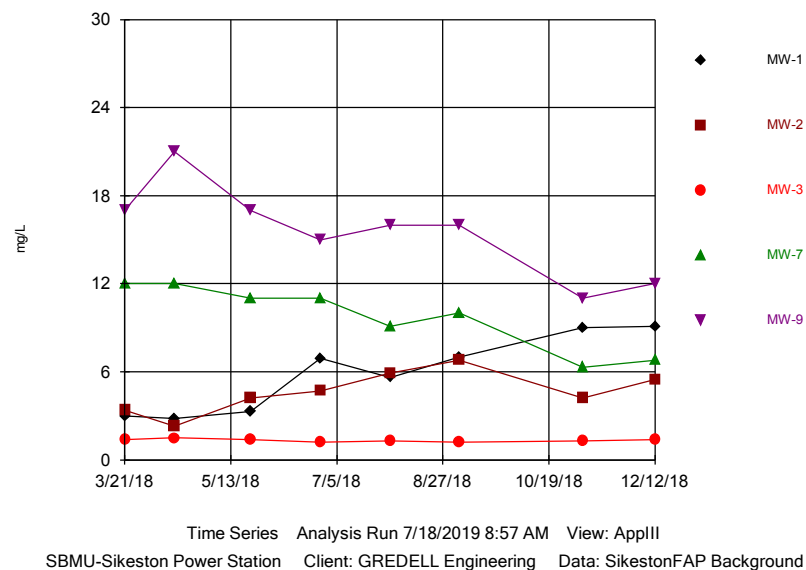
Boron



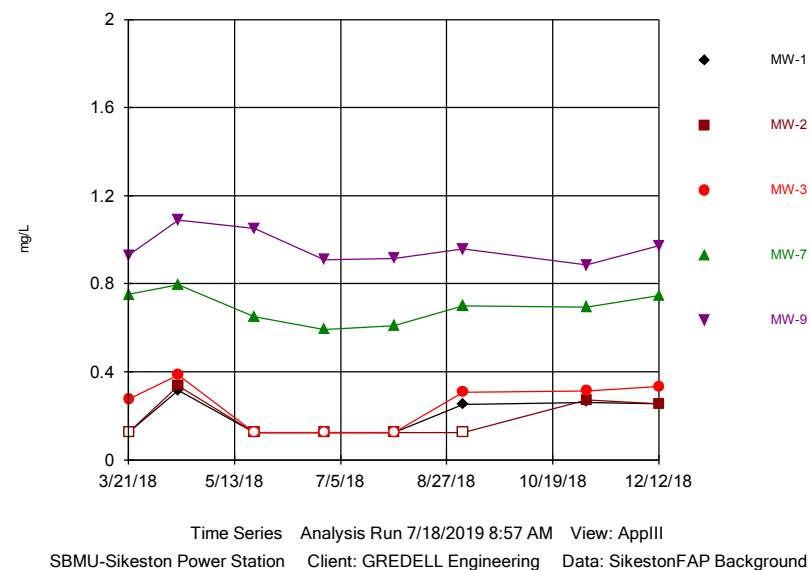
Calcium

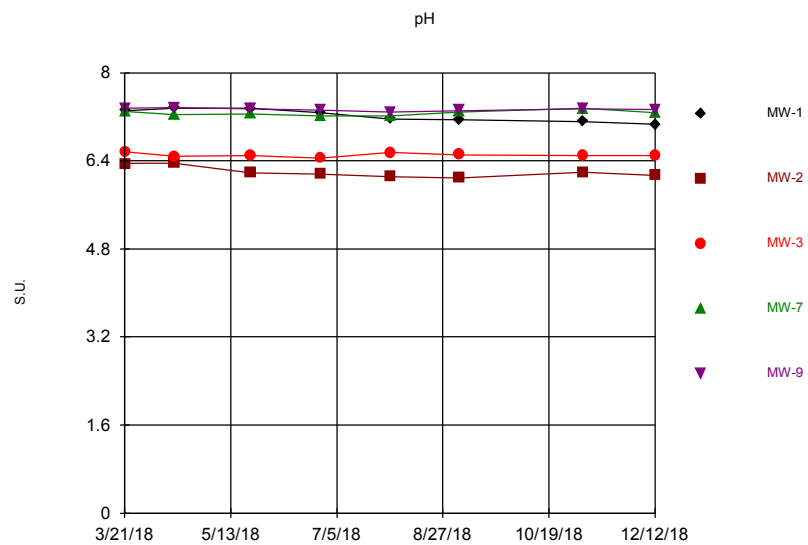


Chloride

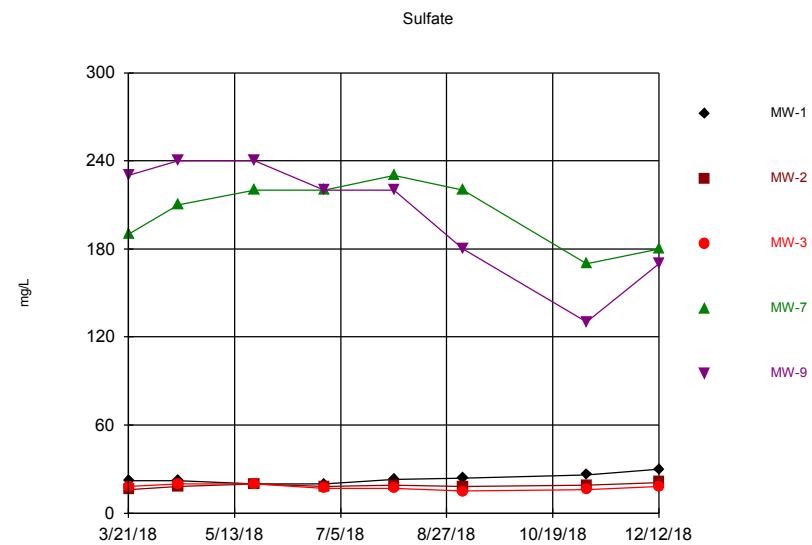


Fluoride

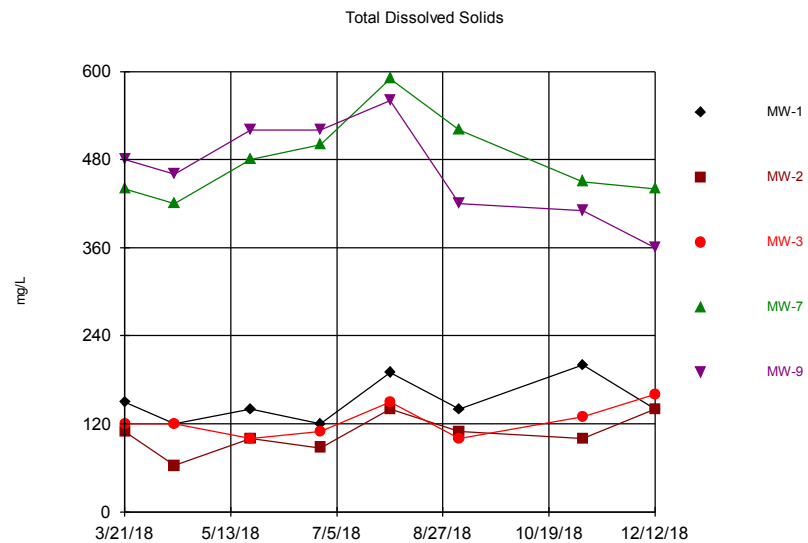




Time Series Analysis Run 7/18/2019 8:57 AM View: ApplIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



Time Series Analysis Run 7/18/2019 8:57 AM View: ApplIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



Time Series Analysis Run 7/18/2019 8:57 AM View: ApplIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Appendix 7

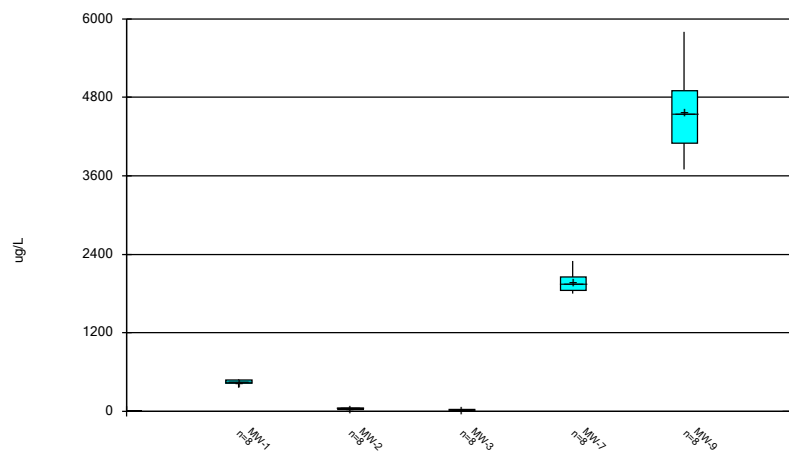
Box and Whiskers Plots

Box & Whiskers Plot (MW-1, 2, 3, 7, & 9)

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background Printed 7/18/2019, 9:02 AM

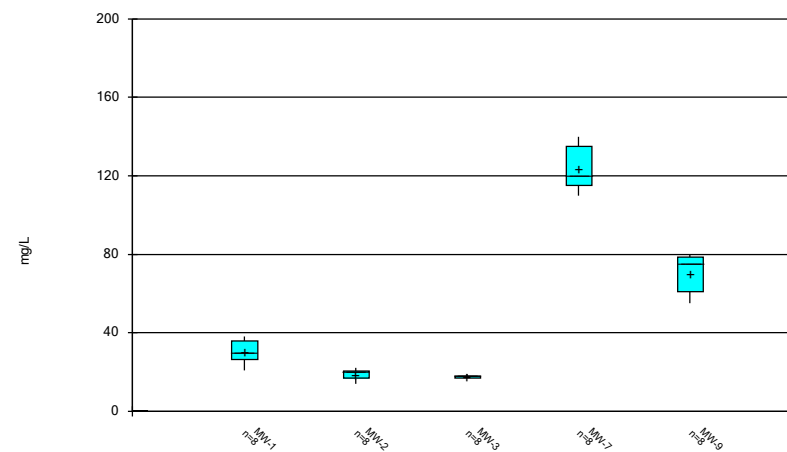
<u>Constituent</u>	<u>Well</u>	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>Lower Q.</u>	<u>Upper Q.</u>	<u>Min.</u>	<u>Max.</u>	<u>%NDs</u>
Boron (ug/L)	MW-1	8	443.8	445	430	475	360	490	0
Boron (ug/L)	MW-2	8	38.63	42.5	32	44.5	23	48	0
Boron (ug/L)	MW-3	8	23.25	23.5	20.5	26.5	17	28	0
Boron (ug/L)	MW-7	8	1975	1950	1850	2050	1800	2300	0
Boron (ug/L)	MW-9	8	4575	4550	4100	4900	3700	5800	0
Calcium (mg/L)	MW-1	8	30.38	29.5	26.5	36	21	38	0
Calcium (mg/L)	MW-2	8	18.75	19.5	17	20.5	14	22	0
Calcium (mg/L)	MW-3	8	17.75	18	17	18	17	19	0
Calcium (mg/L)	MW-7	8	123.8	120	115	135	110	140	0
Calcium (mg/L)	MW-9	8	70.38	74.5	61	78.5	55	80	0
Chloride (mg/L)	MW-1	8	5.838	6.25	3.15	8	2.8	9.1	0
Chloride (mg/L)	MW-2	8	4.625	4.45	3.8	5.7	2.3	6.8	0
Chloride (mg/L)	MW-3	8	1.338	1.35	1.25	1.4	1.2	1.5	0
Chloride (mg/L)	MW-7	8	9.775	10.5	7.95	11.5	6.3	12	0
Chloride (mg/L)	MW-9	8	15.63	16	13.5	17	11	21	0
Fluoride (mg/L)	MW-1	8	0.1983	0.1885	0.125	0.259	0.125	0.316	50
Fluoride (mg/L)	MW-2	8	0.1858	0.125	0.125	0.263	0.125	0.335	62.5
Fluoride (mg/L)	MW-3	8	0.2488	0.291	0.125	0.3235	0.125	0.386	37.5
Fluoride (mg/L)	MW-7	8	0.6919	0.6965	0.629	0.749	0.592	0.794	0
Fluoride (mg/L)	MW-9	8	0.9636	0.943	0.913	1.011	0.885	1.09	0
pH (S.U.)	MW-1	8	7.22	7.215	7.125	7.33	7.06	7.36	0
pH (S.U.)	MW-2	8	6.196	6.17	6.12	6.27	6.09	6.36	0
pH (S.U.)	MW-3	8	6.505	6.495	6.485	6.53	6.45	6.57	0
pH (S.U.)	MW-7	8	7.268	7.26	7.23	7.295	7.22	7.35	0
pH (S.U.)	MW-9	8	7.33	7.335	7.315	7.345	7.28	7.37	0
Sulfate (mg/L)	MW-1	8	23.38	22.5	21	25	20	30	0
Sulfate (mg/L)	MW-2	8	18.63	18.5	18	19.5	16	21	0
Sulfate (mg/L)	MW-3	8	17.63	17.5	16.5	19	15	20	0
Sulfate (mg/L)	MW-7	8	205	215	185	220	170	230	0
Sulfate (mg/L)	MW-9	8	203.8	220	175	235	130	240	0
Total Dissolved Solids (mg/L)	MW-1	8	150	140	130	170	120	200	0
Total Dissolved Solids (mg/L)	MW-2	8	106.3	105	93.5	125	63	140	0
Total Dissolved Solids (mg/L)	MW-3	8	123.8	120	105	140	100	160	0
Total Dissolved Solids (mg/L)	MW-7	8	480	465	440	510	420	590	0
Total Dissolved Solids (mg/L)	MW-9	8	466.3	470	415	520	360	560	0

Boron



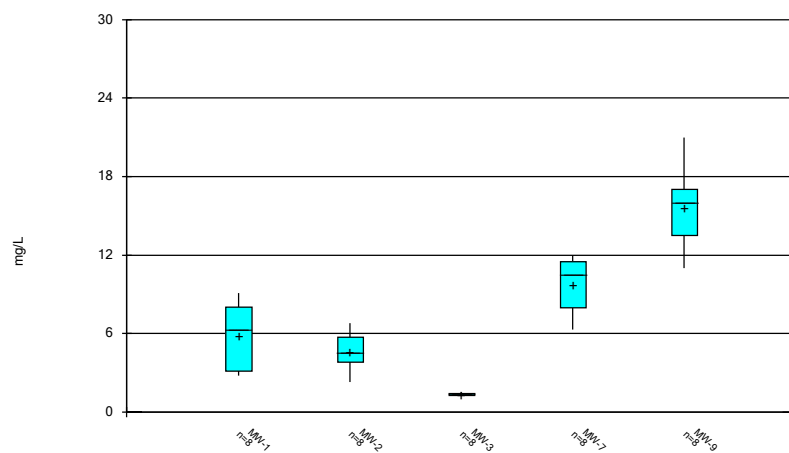
Box & Whiskers Plot Analysis Run 7/18/2019 9:00 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Calcium



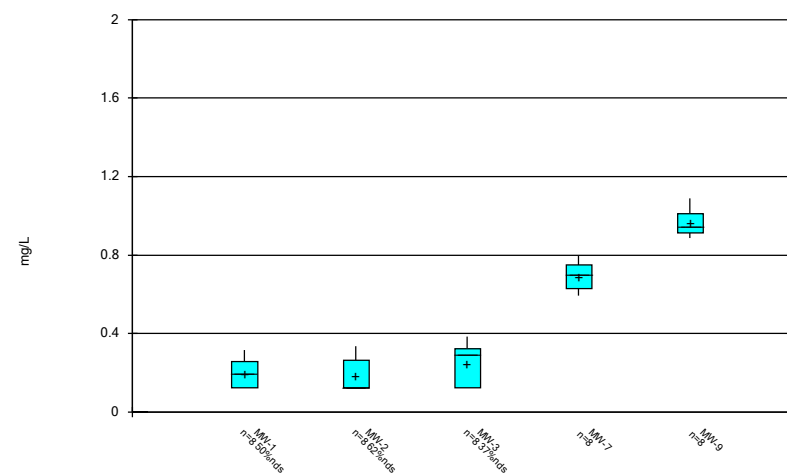
Box & Whiskers Plot Analysis Run 7/18/2019 9:00 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Chloride

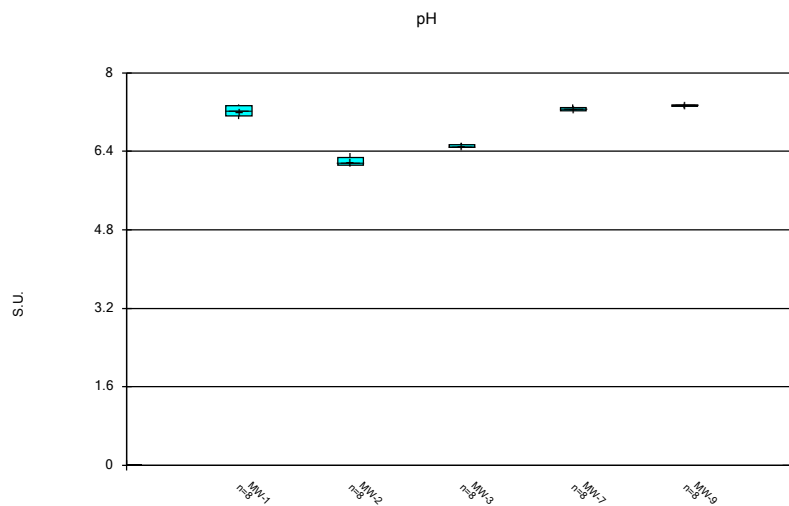


Box & Whiskers Plot Analysis Run 7/18/2019 9:00 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

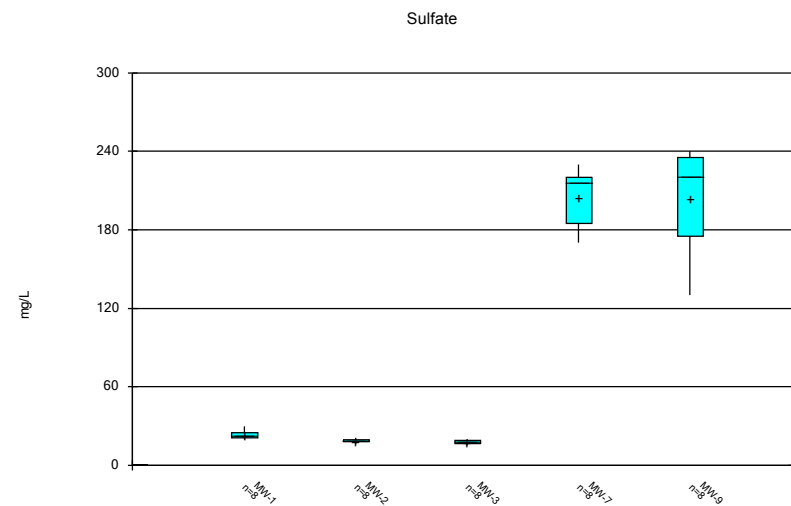
Fluoride



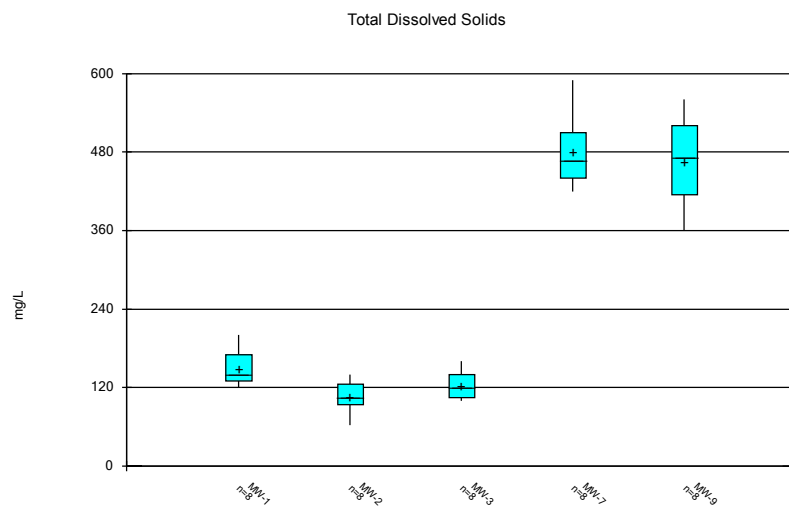
Box & Whiskers Plot Analysis Run 7/18/2019 9:00 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



Box & Whiskers Plot Analysis Run 7/18/2019 9:00 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



Box & Whiskers Plot Analysis Run 7/18/2019 9:00 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



Box & Whiskers Plot Analysis Run 7/18/2019 9:00 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Appendix 8

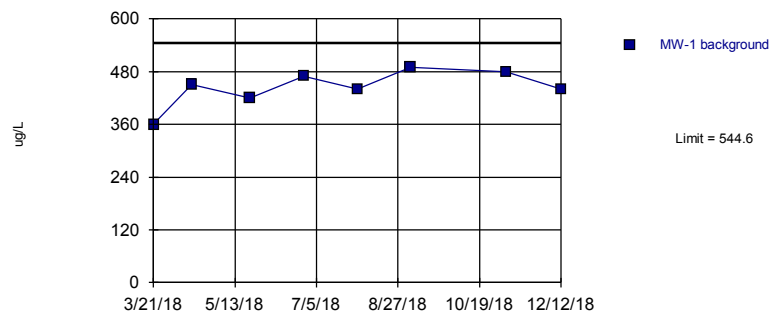
Prediction Limit Charts

Prediction Limits - (MW-1, 2, 3, 7, & 9)

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background Printed 7/18/2019, 9:05 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Boron (ug/L)	MW-1	544.6	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-2	60.53	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-3	32.7	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-7	2385	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-9	6236	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-1	45.18	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-2	25.29	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-3	19.49	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-7	152.9	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-9	95.09	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-1	12.2	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-2	8.15	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-3	1.598	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-7	15.22	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-9	23.28	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	MW-1	0.313	n/a	n/a	1 future	n/a	8	50	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	MW-2	0.335	n/a	n/a	1 future	n/a	8	62.5	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-3	0.4083	n/a	n/a	1 future	n/a	8	37.5	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	MW-7	0.8677	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	MW-9	1.14	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
pH (S.U.)	MW-1	7.5	6.9	n/a	1 future	n/a	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-2	6.5	5.9	n/a	1 future	n/a	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-3	6.6	6.4	n/a	1 future	n/a	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-7	7.4	7.2	n/a	1 future	n/a	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-9	7.4	7.3	n/a	1 future	n/a	8	0	No	0.001253	Param Intra 1 of 2
Sulfate (mg/L)	MW-1	31.57	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-2	22.33	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-3	21.97	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-7	259.2	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-9	301.1	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1	223.2	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-2	169.4	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-3	177.8	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-7	617.2	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-9	630.8	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2

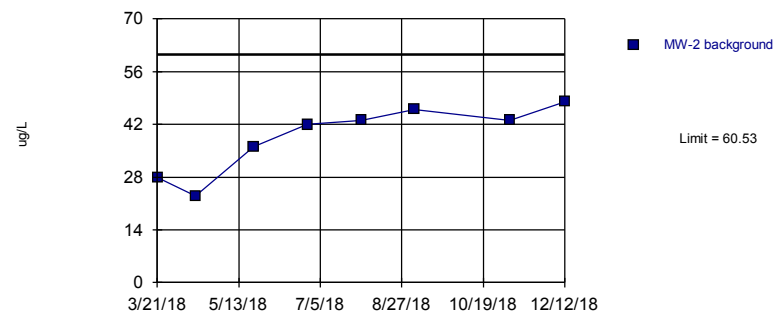
Boron
Intrawell Parametric, MW-1



Background Data Summary: Mean=443.8, Std. Dev.=41.04, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9079, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

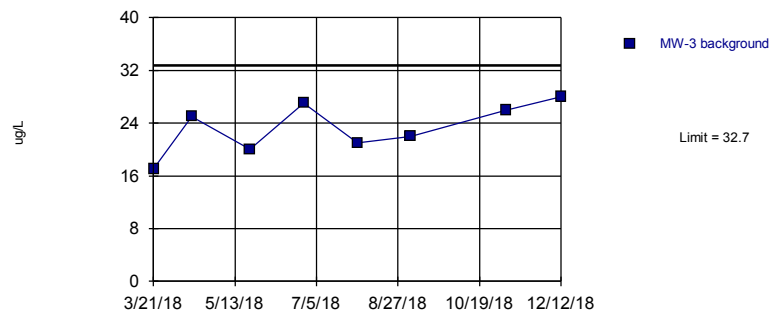
Boron
Intrawell Parametric, MW-2



Background Data Summary: Mean=38.63, Std. Dev.=8.911, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8787, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

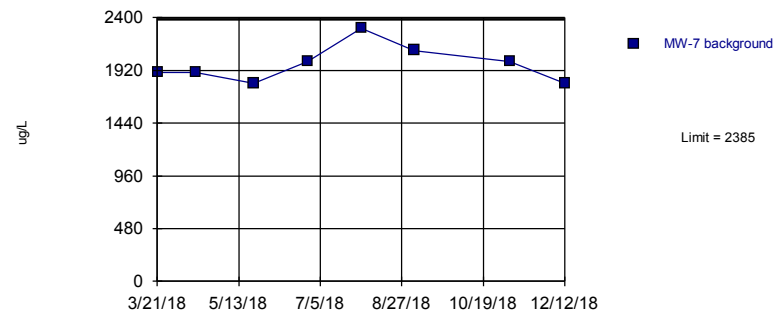
Boron
Intrawell Parametric, MW-3



Background Data Summary: Mean=23.25, Std. Dev.=3.845, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9492, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

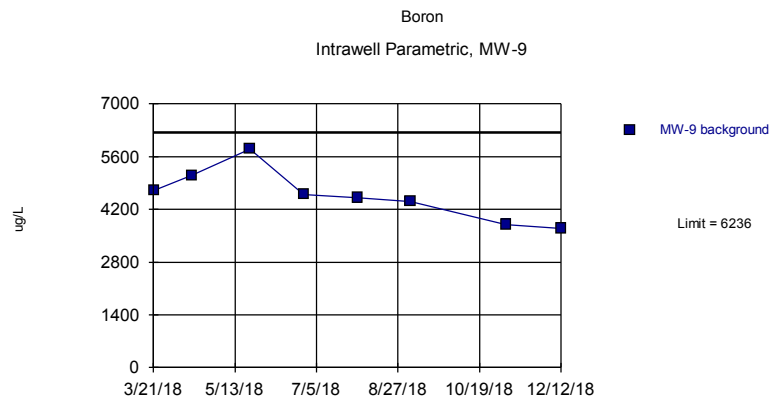
Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Boron
Intrawell Parametric, MW-7



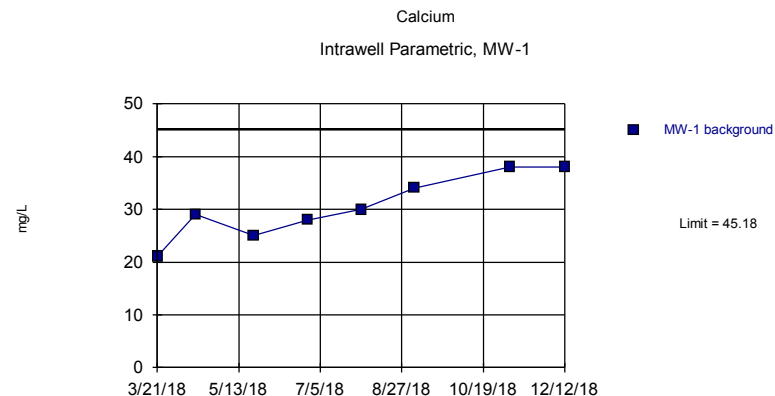
Background Data Summary: Mean=1975, Std. Dev.=166.9, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.907, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



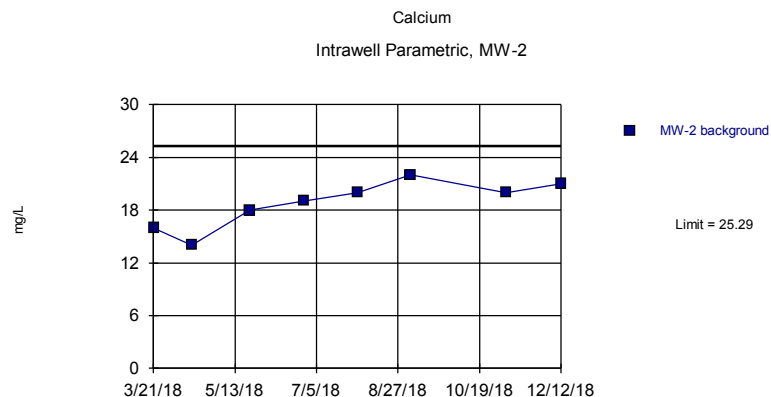
Background Data Summary: Mean=4575, Std. Dev.=675.6, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9478, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



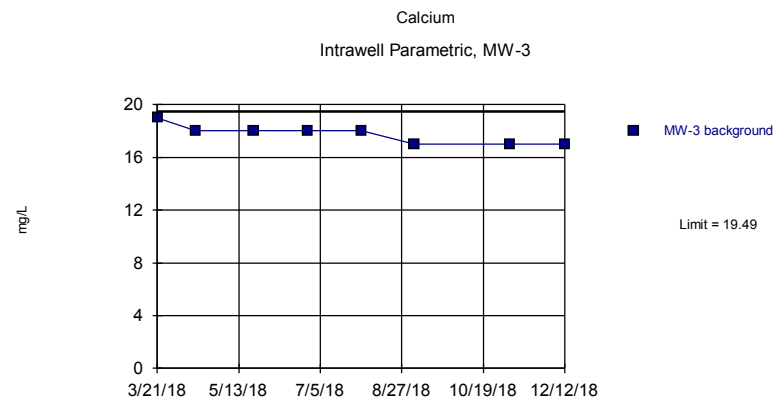
Background Data Summary: Mean=30.38, Std. Dev.=6.022, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9468, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



Background Data Summary: Mean=18.75, Std. Dev.=2.659, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9419, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

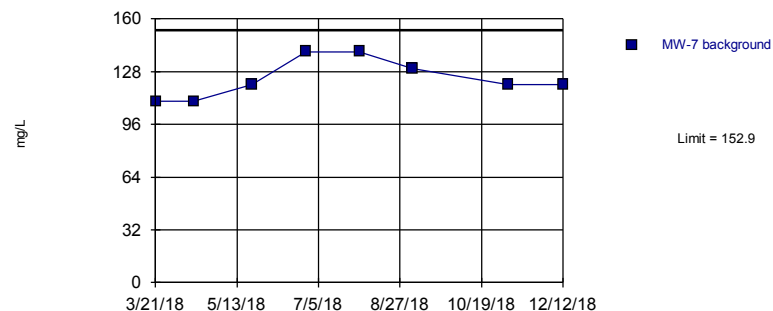
Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



Background Data Summary: Mean=17.75, Std. Dev.=0.7071, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8268, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

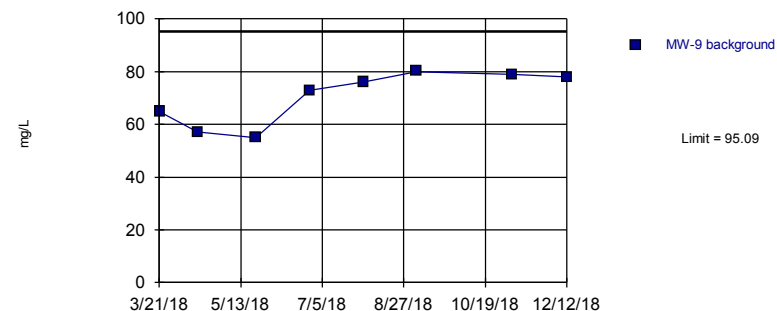
Calcium
Intrawell Parametric, MW-7



Background Data Summary: Mean=123.8, Std. Dev.=11.88, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8748, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

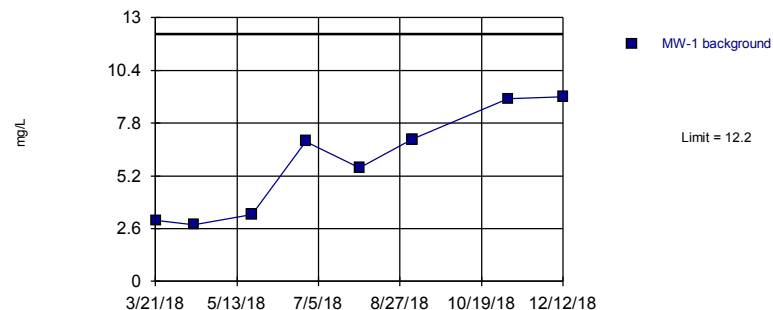
Calcium
Intrawell Parametric, MW-9



Background Data Summary: Mean=70.38, Std. Dev.=10.06, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8497, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

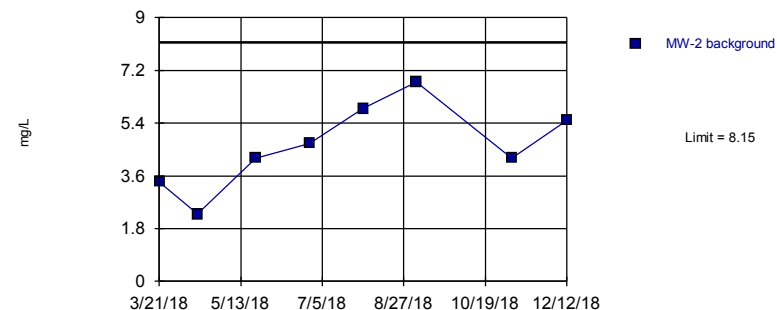
Chloride
Intrawell Parametric, MW-1



Background Data Summary: Mean=5.838, Std. Dev.=2.588, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8813, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

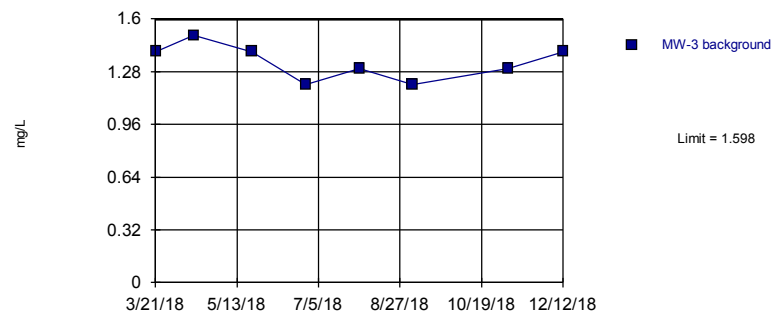
Chloride
Intrawell Parametric, MW-2



Background Data Summary: Mean=4.625, Std. Dev.=1.434, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9868, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

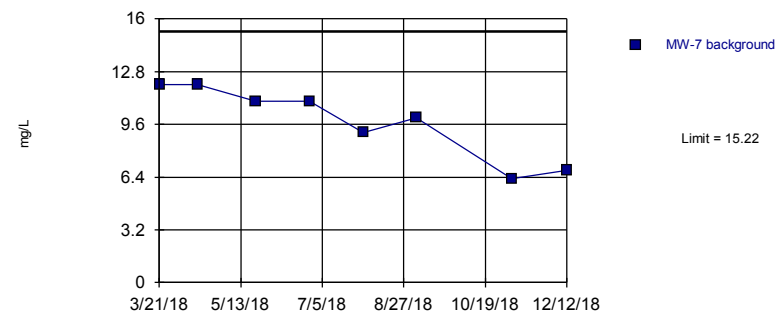
Chloride
Intrawell Parametric, MW-3



Background Data Summary: Mean=1.338, Std. Dev.=0.1061, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9112, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

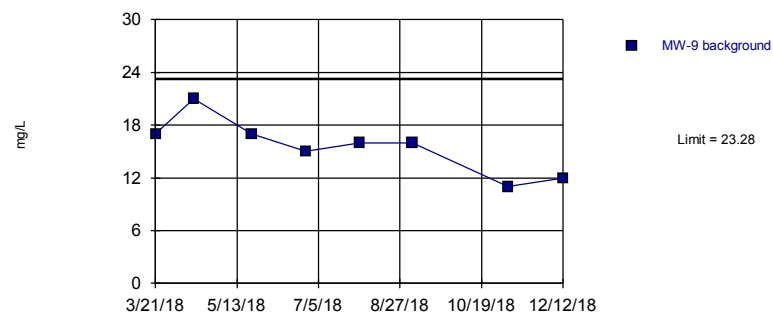
Chloride
Intrawell Parametric, MW-7



Background Data Summary: Mean=9.775, Std. Dev.=2.215, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8753, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

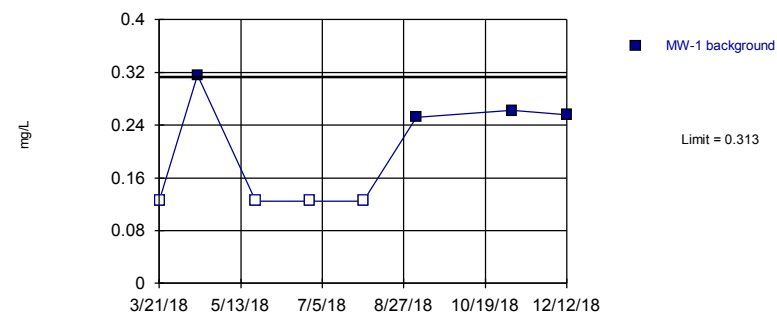
Chloride
Intrawell Parametric, MW-9



Background Data Summary: Mean=15.63, Std. Dev.=3.114, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9388, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

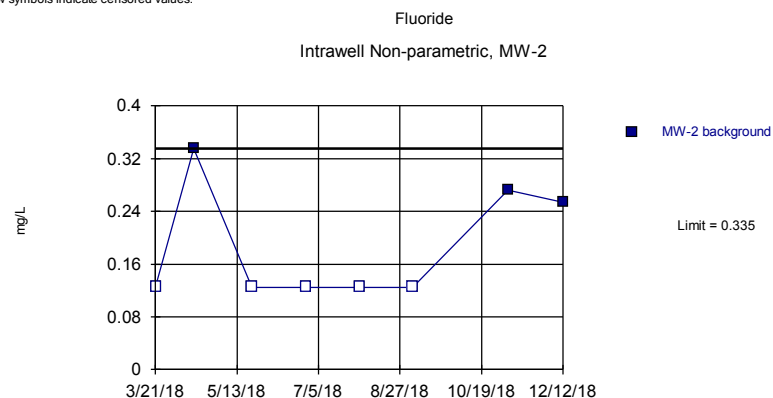
Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Fluoride
Intrawell Parametric, MW-1



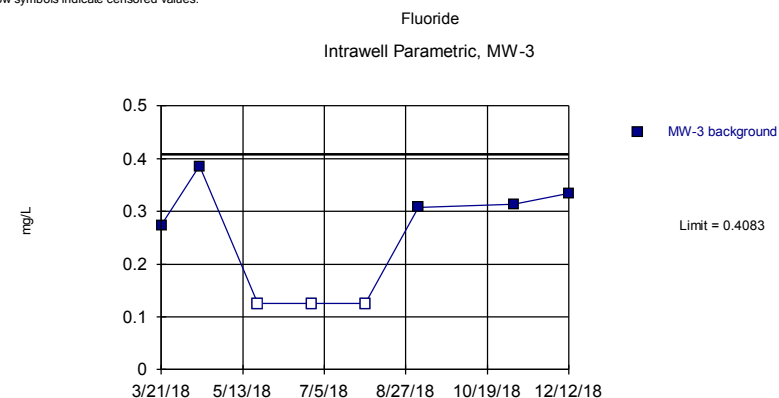
Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.2608, Std. Dev.=0.02126, n=8, 50% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7822, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



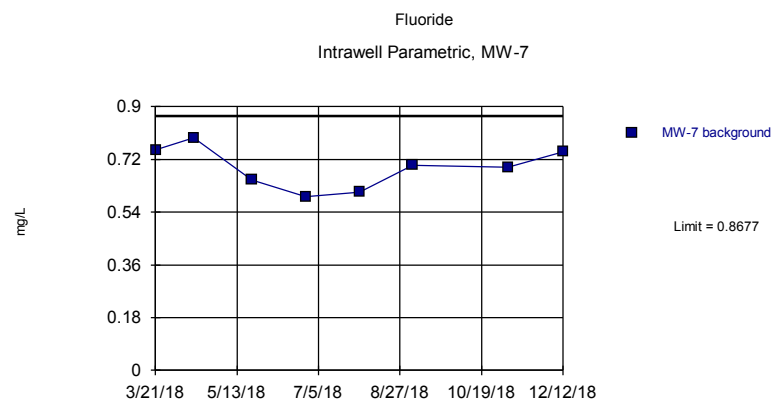
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 62.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Assumes 1 future value. Insufficient data to test for seasonality; data were not deseasonalized.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



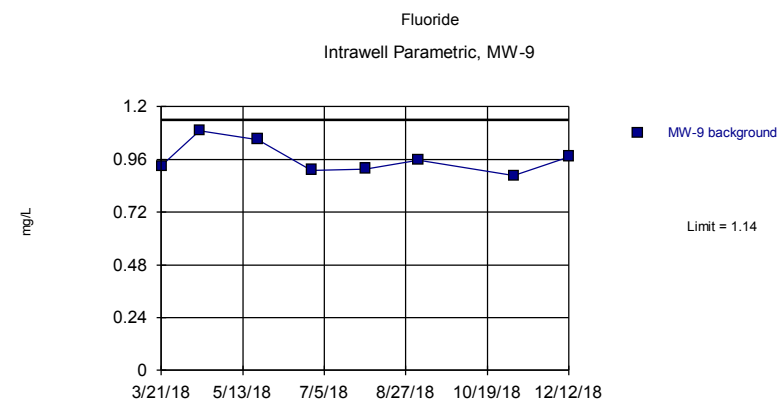
Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.2956, Std. Dev.=0.04584, n=8, 37.5% NDs. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8336, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



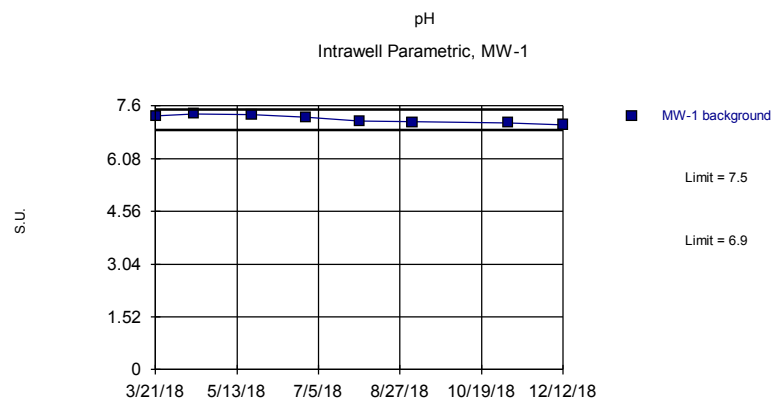
Background Data Summary: Mean=0.6919, Std. Dev.=0.07152, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9552, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



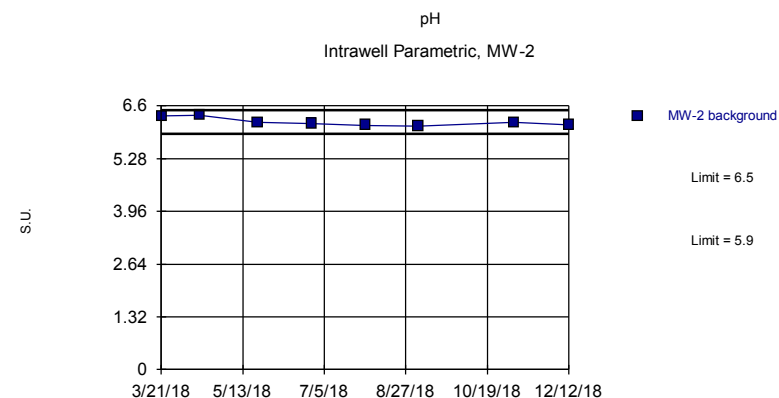
Background Data Summary: Mean=0.9636, Std. Dev.=0.07178, n=8. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8952, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



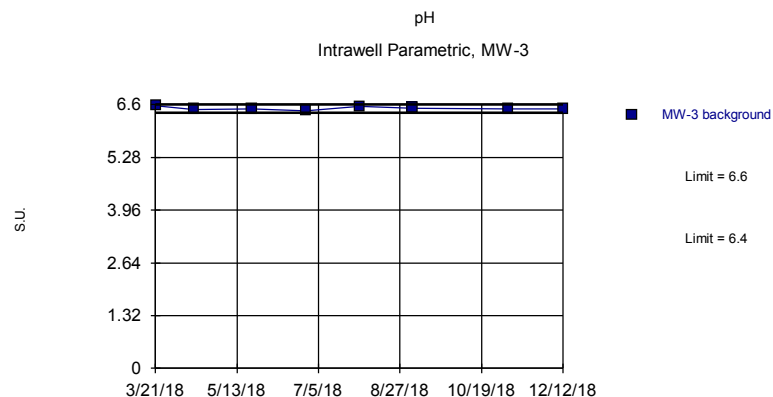
Background Data Summary: Mean=7.22, Std. Dev.=0.1164, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9074, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



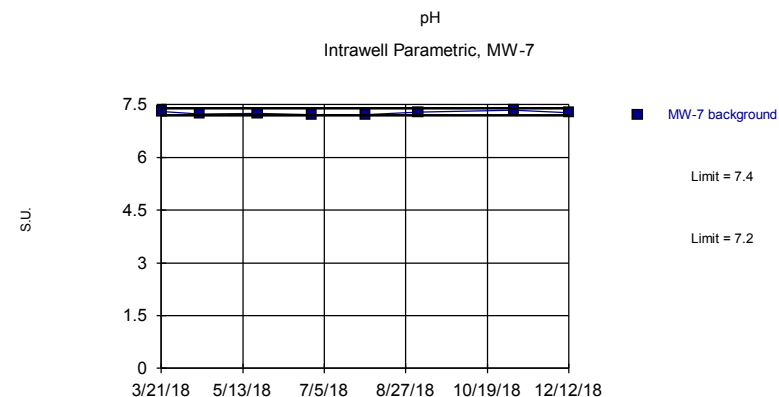
Background Data Summary: Mean=6.196, Std. Dev.=0.1036, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8374, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



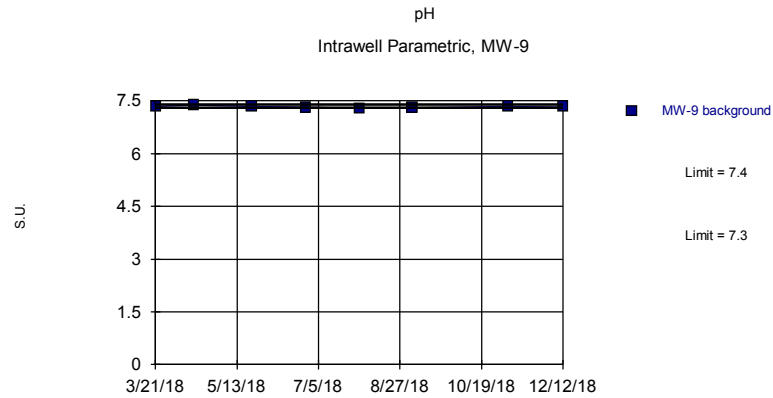
Background Data Summary: Mean=6.505, Std. Dev.=0.03854, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.939, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



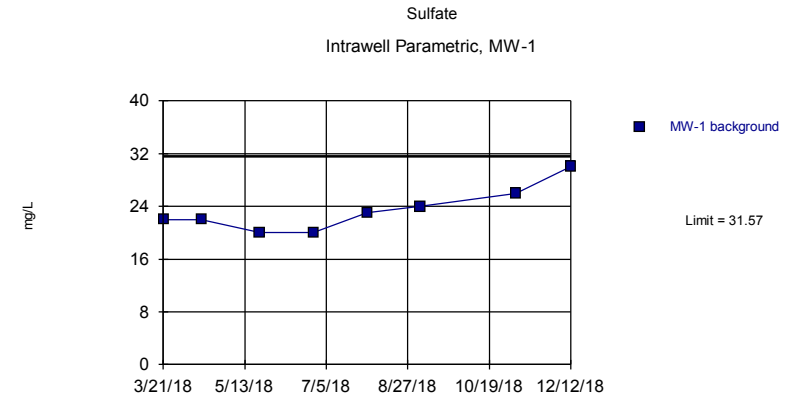
Background Data Summary: Mean=7.268, Std. Dev.=0.04464, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9288, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



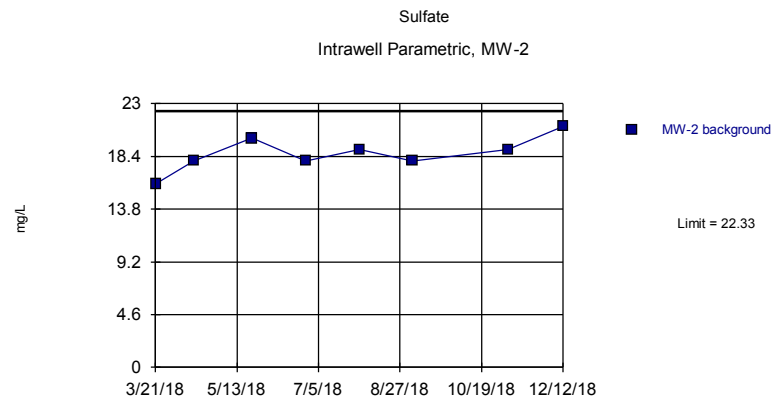
Background Data Summary: Mean=7.33, Std. Dev.=0.02726, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9741, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



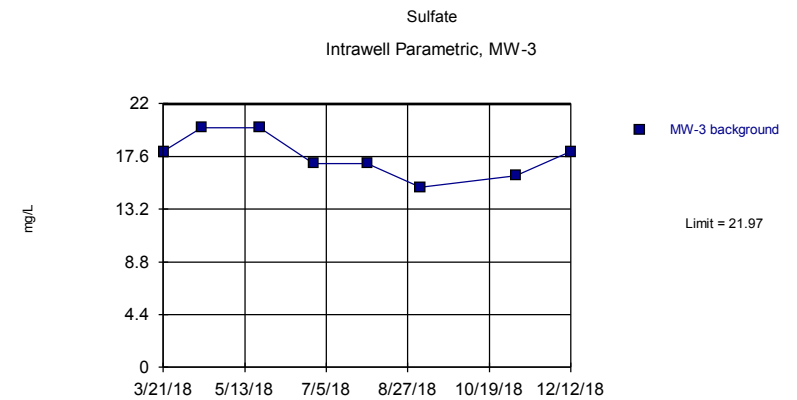
Background Data Summary: Mean=23.38, Std. Dev.=3.335, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8964, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



Background Data Summary: Mean=18.63, Std. Dev.=1.506, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9528, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

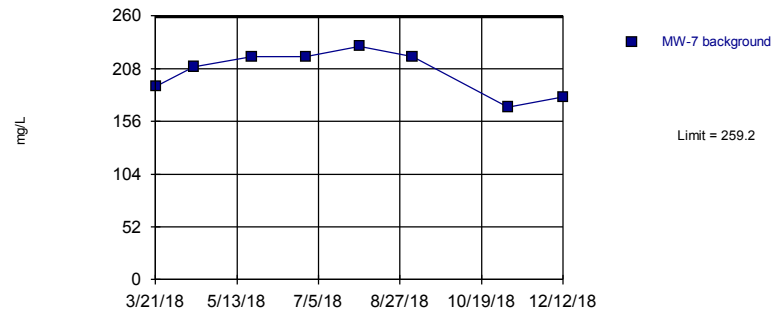
Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background



Background Data Summary: Mean=17.63, Std. Dev.=1.768, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9348, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

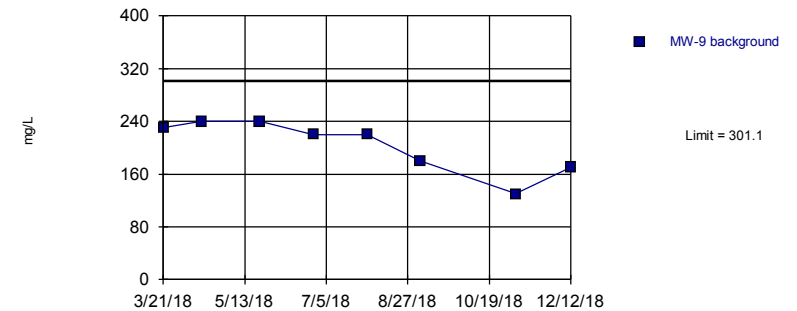
Sulfate
Intrawell Parametric, MW-7



Background Data Summary: Mean=205, Std. Dev.=22.04, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8819, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

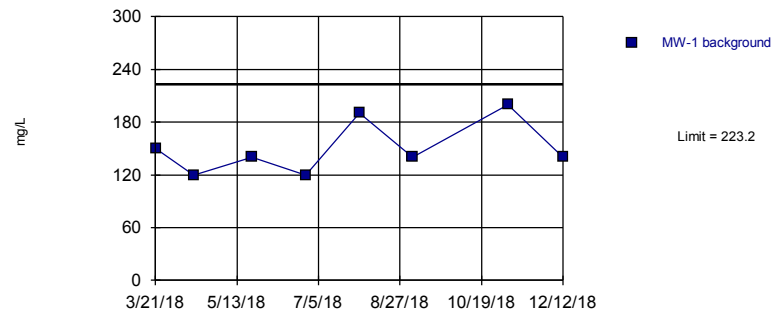
Sulfate
Intrawell Parametric, MW-9



Background Data Summary: Mean=203.8, Std. Dev.=39.62, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.864, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

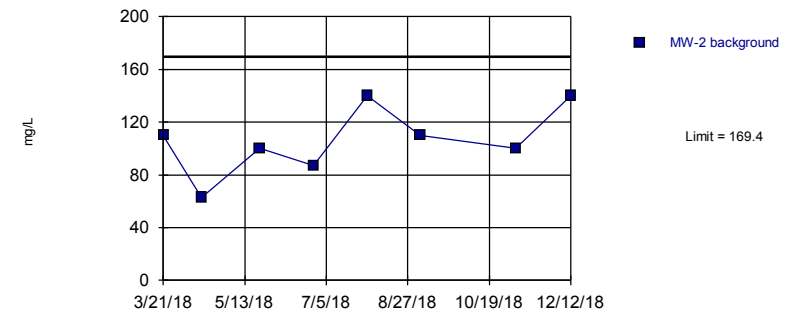
Total Dissolved Solids
Intrawell Parametric, MW-1



Background Data Summary: Mean=150, Std. Dev.=29.76, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8433, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

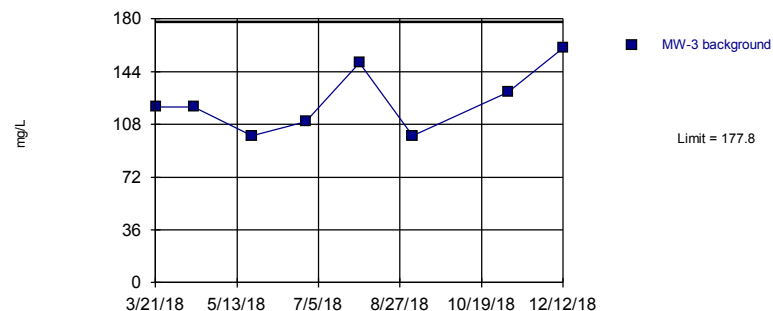
Total Dissolved Solids
Intrawell Parametric, MW-2



Background Data Summary: Mean=106.3, Std. Dev.=25.71, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9324, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApplI
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

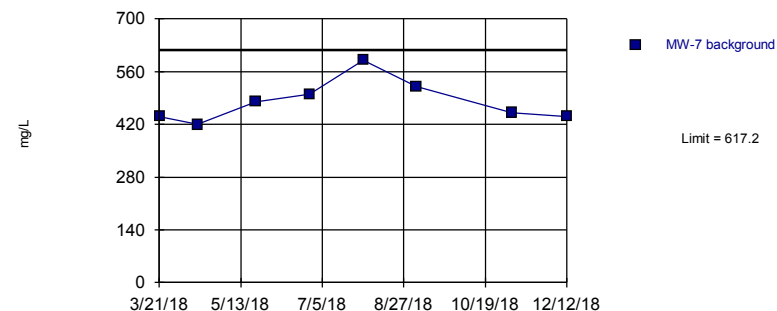
Total Dissolved Solids
Intrawell Parametric, MW-3



Background Data Summary: Mean=123.8, Std. Dev.=22, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9132, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

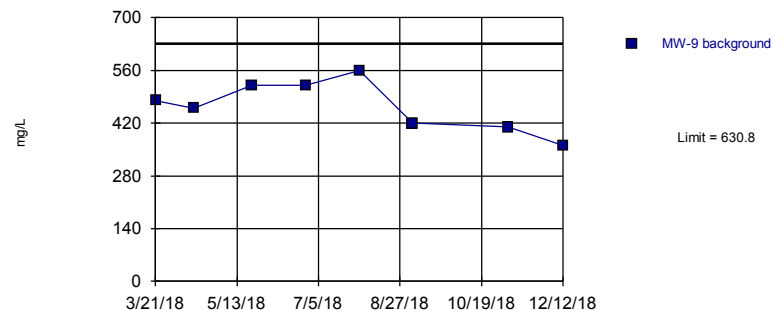
Total Dissolved Solids
Intrawell Parametric, MW-7



Background Data Summary: Mean=480, Std. Dev.=55.81, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9034, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Total Dissolved Solids
Intrawell Parametric, MW-9



Background Data Summary: Mean=466.3, Std. Dev.=66.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.969, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: ApIII
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background