

# **PLUM POINT ENERGY STATION**

# GROUNDWATER MONITORING AND CORRECTIVE ACTION 2019 ANNUAL REPORT

PREPARED IN COMPLIANCE WITH THE
EPA FINAL RULE FOR THE DISPOSAL OF
COAL COMBUSTION RESIDUALS
TITLE 40 OF THE CODE OF FEDERAL REGULATIONS, PART 257

# PLUM POINT ENERGY STATION

# GROUNDWATER MONITORING AND CORRECTIVE ACTION 2019 ANNUAL REPORT

# Prepared for

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#### **EXECUTIVE SUMMARY**

Plum Point Services Company, LLC (PPSC), operates a landfill for the disposal of coal combustion residuals (CCRs) at the Plum Point Energy Station located near Osceola, Arkansas. The landfill is regulated by the Environmental Protection Agency (EPA) Coal Combustion Residuals rule, promulgated at Title 40 of the Code of Federal Regulations (40 CFR), Part 257, and published on April 17, 2015. Landfills regulated by this rule are required to implement and maintain a groundwater monitoring program to determine if the CCR landfill is impacting groundwater quality at the facility's compliance boundary. For this purpose, semiannual groundwater detection monitoring is required. This report presents results from semiannual detection monitoring events performed during 2019 in accordance with 40 CFR Part 257.

The landfill's groundwater monitoring program uses a certified monitoring well network comprised of ten monitoring wells (FTN 2017a). Groundwater sample collection is performed in accordance with the landfill's groundwater sampling and analysis plan (FTN 2017b). Data collected from this program are evaluated in accordance with the landfill's certified statistical analysis plan (FTN 2017c).

FTN Associates, Ltd. (FTN), was contracted to sample groundwater and statistically evaluate the data from the 2019 semiannual monitoring events. Major conclusions from the evaluations include the following:

- 1. Detection monitoring was performed during May and October 2019 for the first and second half of 2019 monitoring periods, respectively.
- 2. The direction of groundwater flow varied between the first and second half monitoring events. Water levels gauged during May 2019 indicate groundwater flow was generally toward the south-southwest across the active landfill area. Water levels gauged during October 2019 indicate groundwater flow was generally toward the east-southeast.
- 3. Of the parameters evaluated, only fluoride has an EPA maximum contaminant level (MCL). None of the measured values in groundwater exceeded the MCL for fluoride.
- 4. Time-series plots and box-and-whiskers diagrams show variability across the well network for calcium, chloride, fluoride, sulfate, and TDS. Values for boron and pH are relatively similar across all wells, with measured levels of boron being

- below the laboratory reporting detection limit (RDL) for all wells except for upgradient well MW-108 for the period of record.
- 5. PPSC completed a successful alternate source demonstration (ASD) in accordance with §257.94(e)(2) in response to a confirmed statistically significant increase (SSI) for calcium at MW-116 during the second half of 2018 monitoring period. The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on January 29, 2019. Based on the successful ASD, PPSC continued with detection monitoring in accordance with §257.94.
- 6. Statistical evaluation of the first half of 2019 monitoring data identified confirmed statistically significant increases (SSIs) for calcium at MW-115 and MW-117 and for TDS at MW-117. PPSC completed a successful ASD in response to the SSIs in accordance with \$257.94(e)(2). The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on October 24, 2019. Based on the successful ASD, PPSC continued with detection monitoring in accordance with \$257.94.
- 7. Statistical evaluation of the second half of 2019 monitoring data identified one confirmed SSI for TDS at MW-117. The SSI for TDS at MW-117 was previously confirmed during the first half of 2019 monitoring period and, as noted above, a successful ASD was made. In response to the confirmed SSI during the second half of 2019 monitoring period, PPSC completed a successful ASD in accordance with \$257.94(e)(2). The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on December 18, 2019. Based on the successful ASD, PPSC will continue with detection monitoring in accordance with \$257.94.

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# 1.0 BACKGROUND

Plum Point Services Company, LLC (PPSC), operates a landfill for the disposal of coal combustion residuals (CCRs) at the Plum Point Energy Station in Mississippi County, Arkansas. The plant and landfill are located approximately 2 miles south of the city of Osceola, as shown on Figure 1.1. The landfill is regulated by the Environmental Protection Agency (EPA) Coal Combustion Residuals rule, promulgated at Title 40 of the Code of Federal Regulations (40 CFR), Part 257, and published on April 17, 2015. The regulation, referred to hereafter as the CCR rule, requires regulated landfills to implement and maintain a groundwater monitoring program to determine if the CCR landfill is impacting groundwater quality at the facility's compliance boundary. For this purpose, groundwater detection monitoring is required on a semiannual frequency. A groundwater sampling program that meets the requirements of the CCR rule was implemented by PPSC during 2015, and the first semiannual detection monitoring event was performed at the landfill during the second half of 2017.

FTN Associates, Ltd. (FTN), was contracted to sample groundwater and statistically evaluate the data from the semiannual monitoring events performed during 2019. This report presents the results of groundwater sampling and the associated statistical evaluations, and is intended to satisfy the reporting requirements of §257.90(e)(1) through (5). The following sections provide a brief description of the sampling area, operational history of the plant and landfill, regional and site-specific hydrogeological setting, and general regional and site groundwater quality.

# 1.1 Sampling Area

The landfill area encompasses approximately 245 acres located approximately 1 mile west of the Mississippi River and 2 miles south of Osceola, Arkansas. The landfill is bordered by Arkansas Highway 239 to the east, Arkansas Highway 198 to the south, and the BNSF rail line to the west. Beyond these features and immediately north of the landfill are agricultural fields, and topography is relatively flat. A vicinity map of Plum Point Energy Station and the landfill is provided as Figure 1.2.

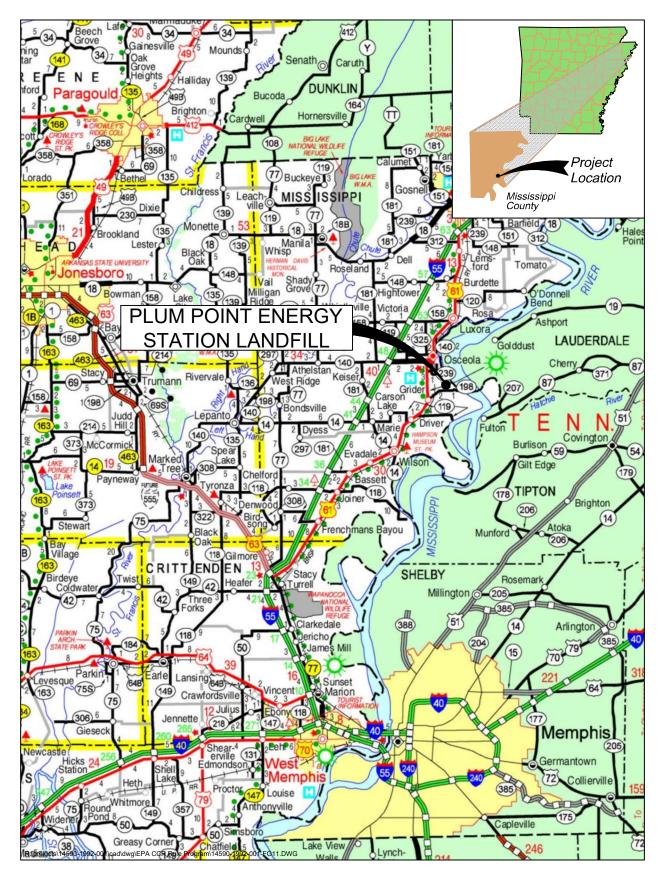


Figure 1.1. Location map.

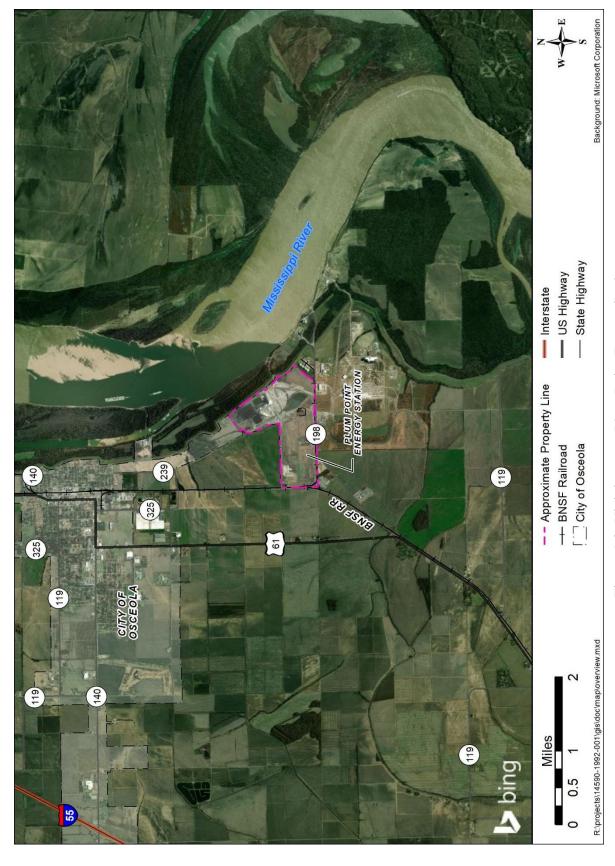


Figure 1.2. Vicinity map, Plum Point Energy Station.

# 1.2 Operational History

The plant has been in operation since 2010 and generates electricity through the combustion of coal. Approximately 500,000 tons of CCR material is produced and deposited in the landfill each year. The landfill is permitted by the Arkansas Department of Energy and Environment, Division of Environmental Quality (DEQ), under Permit No. 0303-S3N-R1 and became active during March 2010. The landfill currently has two active disposal cells, cells 1 and 3, which are shown on Figure 1.3. The combined area of the two active CCR disposal cells is approximately 30 acres.

Groundwater detection monitoring was initiated at the landfill in November 2007, in accordance with Arkansas Pollution Control and Ecology Commission (APCEC) Regulation No. 22 requirements. The landfill's groundwater monitoring system was expanded and designed to conform to the requirements of the CCR rule. The groundwater monitoring network was certified by FTN in October 2017 (FTN 2017a). Details regarding the certified groundwater monitoring network are provided in Section 2.0 and in the landfill network certification report (FTN 2017a).

# 1.3 Regional Hydrogeology

The landfill is located in the Mississippi Alluvial Plain physiographic region, as shown on Figure 1.4. The region was formed by the deposits of the Mississippi River and its tributaries and is generally flat-lying (Cushing, Boswell, and Hosman 1964). The uppermost aquifer in the region is the Mississippi River Valley alluvial aquifer (hereafter referred to as the alluvial aquifer). The alluvial aquifer is comprised of unconsolidated Quaternary-age alluvial and terrace deposit sands and gravels that generally grade upward to clays and silts, which form a semi-confining to confining layer over much of the aquifer. Regionally, the alluvium reaches depths of 100 ft to 200 ft below ground surface (bgs) (Ryling 1960; Cushing, Boswell, and Hosman 1964). Beneath the alluvial aquifer is the Tertiary-aged Jackson-Claiborne clay, which acts as a lower confining unit. The Jackson group is comprised of primarily dense clay with occasional lenses of fine-grained sand (Peterson, Broom, and Bush 1985). The regional direction of groundwater flow is toward the southwest (Schrader 2015).

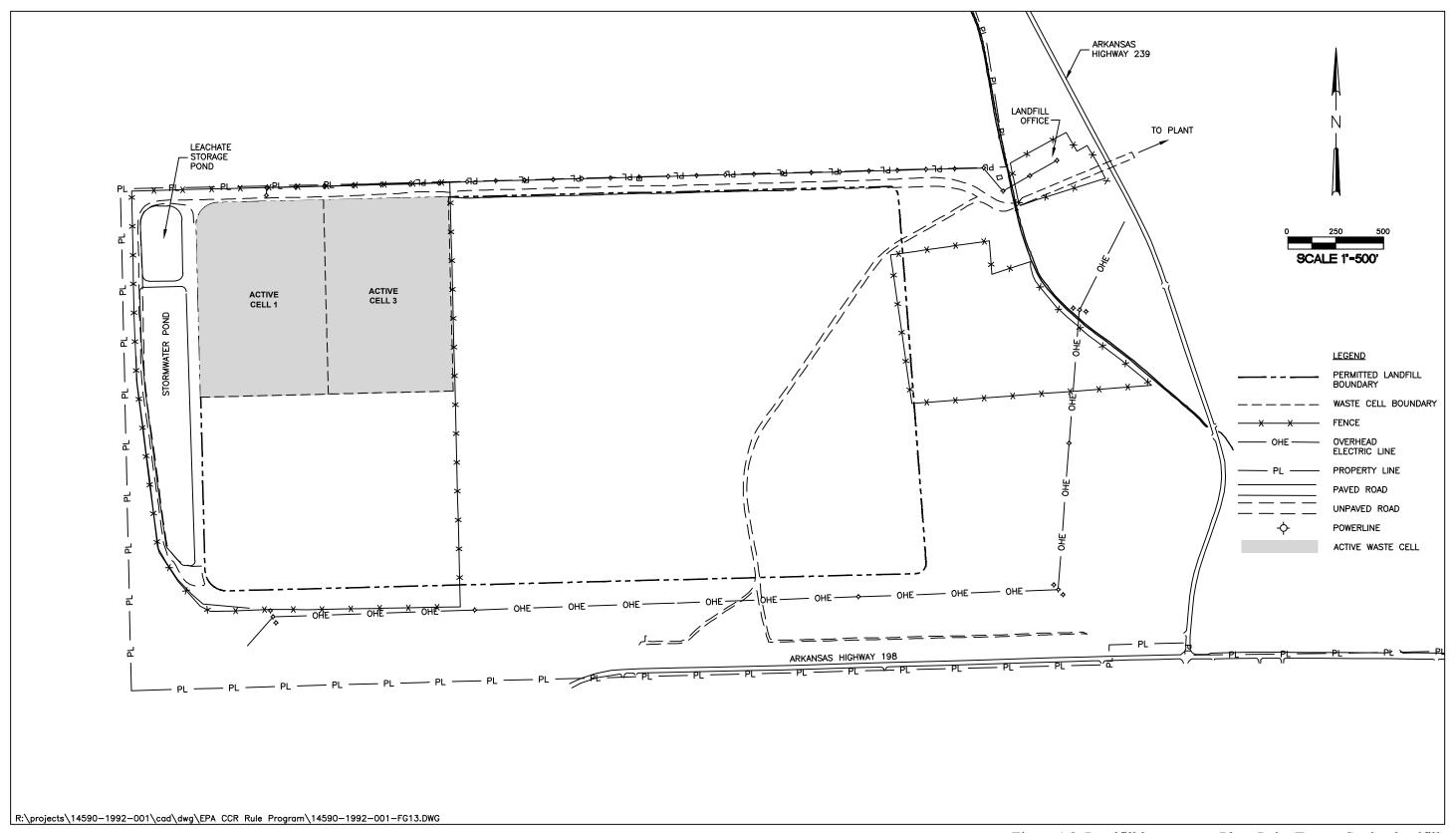


Figure 1.3. Landfill layout map, Plum Point Energy Station landfill.

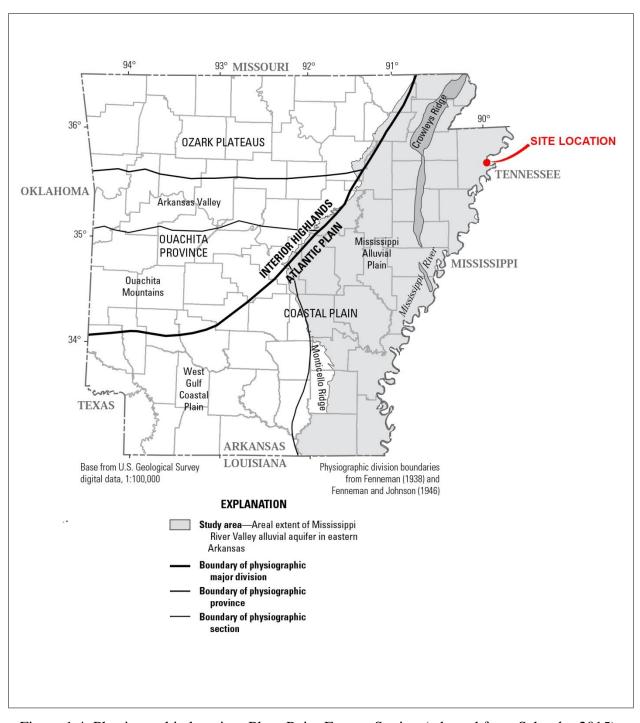


Figure 1.4. Physiographic location, Plum Point Energy Station (adapted from Schrader 2015).

# 1.4 Site Hydrogeology

A detailed site investigation was performed in 2001 as part of the DEQ permit application for the landfill. The findings from the investigation were submitted to DEQ by Genesis Environmental Consulting, Inc. (GEC), in a geotechnical and hydrogeological investigation (GHI) report (GEC 2001). Findings from the GHI indicated that the confining unit above the alluvial aquifer ranges from 0 ft to over 30 ft thick, with an average thickness of 15 ft at the site. Confining unit soils are comprised of brown to grey clay, silty clay, and sandy clays. Underlying the confining unit are fine- to coarse-grained sands of the alluvial aquifer, with fine- to coarse-grained gravel encountered at depth. Based on one deep boring, completed to a depth of 200 ft below ground surface (bgs), the coarse-grained aquifer materials reach a depth of 190 ft bgs in the vicinity of the landfill.

Laboratory geotechnical testing of confining unit soils indicate a vertical permeability ranging from  $6.7 \times 10^{-4}$  centimeters per second (cm/s) to  $3.7 \times 10^{-8}$  cm/s. Field results from one aquifer pumping test and multiple aquifer slug tests indicate that the uppermost alluvial aquifer has an average hydraulic conductivity of  $1.09 \times 10^{-2}$  cm/s (GEC 2001). The GHI reported an effective porosity for the aquifer of 27% (GEC 2001), which agrees with published values ranging from 10% to 30% for similar aquifer materials (EPA 1998, Yu et al. 2015).

The direction of groundwater flow at the landfill is variable and changes from eastward to westward on a seasonal basis (FTN 2017a). The direction of flow is influenced by the river stage of the adjacent Mississippi River (Kresse et al. 2014).

# 1.5 General Groundwater Quality

Regionally, groundwater in the alluvial aquifer is a calcium-bicarbonate water type with sodium, magnesium, chloride, sulfate, silica, and iron comprising the majority of the remaining dissolved ions (Kresse et al. 2014). Elevated concentrations of trace metals including iron, manganese, and arsenic are ubiquitous in the alluvial aquifer and thought to be elevated due to the presence of carbonaceous material within the aquifer that drives redox-sensitive parameters to dissolve in groundwater (Kresse and Fazio 2003, Gonthier 2003, Kresse and Clark 2008, Welch et al. 2009, Kresse et al. 2014). Concentrations of most parameters vary widely both

laterally and vertically in the aquifer (Kresse et al. 2014). Groundwater at the top of the aquifer is generally influenced by the quality of natural recharge (e.g., precipitation and surface waterbodies) and anthropogenic activity. Conversely, groundwater quality at the base of the aquifer is influenced heavily by the underlying confining formation (Kresse et al. 2014).

# 2.0 MONITORING NETWORK AND SCHEDULE

The following sections describe the certified monitoring well network, changes made to the network during 2019, sampling schedule, network maintenance, sampling methodology, and required laboratory analyses.

# 2.1 Monitoring Well Network

The certified groundwater monitoring network for the CCR rule includes the 10 monitoring wells shown on Figure 2.1. The wells are constructed of 2-inch, schedule 40 polyvinyl chloride (PVC) pipe, with 10-ft slotted well screens. A summary of well construction details is included in Table 2.1.

Table 2.1. Summary of well construction details.

Well	Well Installation	Ground Surface Elevation	Measuring Point Elevation <sup>(b)</sup>	Total Depth (ft below measuring	Screened Interval
Number	Date	(ft NAVD <sup>[a]</sup> )	(ft NAVD)	point)	(ft NAVD)
MW-101	4/9/2001	239.4	242.75	33.6	219.2-209.2
MW-102	4/9/2001	240.5	243.99	30.2	223.8-213.8
MW-103	9/26/2007	240.5	243.25	32.8	220.5-210.5
MW-108	4/11/2001	241.8	245.11	32.4	222.7-212.7
MW-113	4/07/2009	241.5	244.63	35.9	223.7-208.7
MW-115	9/25/2007	240.4	243.55	33.0	220.6-210.7
MW-116	6/23/2015	239.3	243.97	31.9	222.5-212.5
MW-117	6/24/2015	239.4	242.53	34.2	218.5-208.5
MW-118	6/24/2015	238.0	241.23	31.4	220.2-210.2
MW-119	10/6/2016	243.6	246.53	35.4	221.5-211.5

#### Notes:

a. North American Vertical Datum of 1988.

b. Measuring point is the surveyed and marked point on the top of casing (TOC) of each monitoring well.

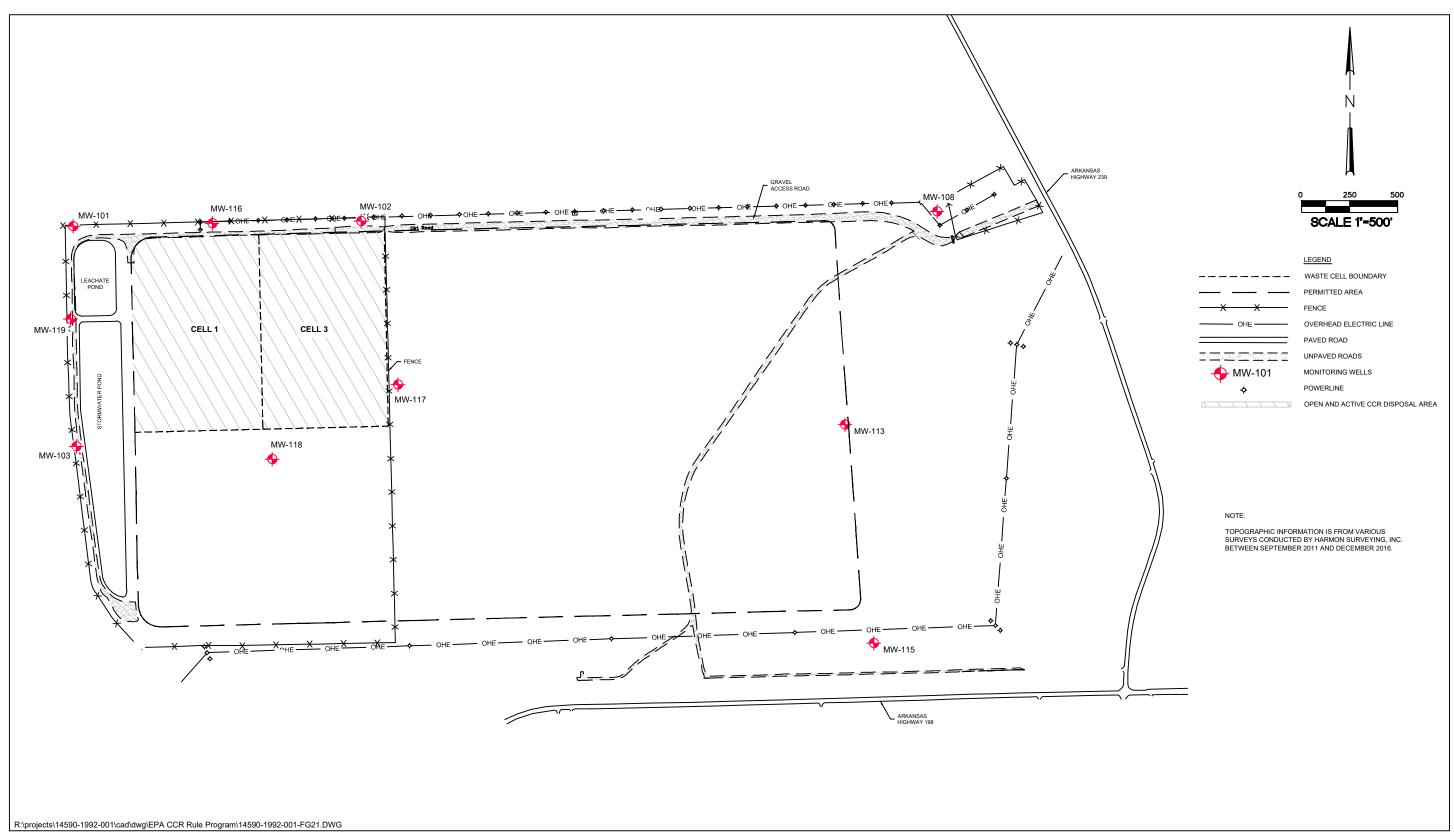


Figure 2.1. Monitoring well locations, Plum Point Energy Station.

Each monitoring well is screened in the alluvial aquifer, the uppermost aquifer in the vicinity of the landfill. The direction of groundwater flow beneath the site is seasonally variable. As a result, there is not a hydraulically upgradient location with respect to cell 1 and cell 3. As allowed by §257.91(a)(1), the groundwater program utilizes wells for background water quality that are not hydraulically upgradient of the CCR management area. Monitoring wells MW-108, MW-113, and MW-115 (Figure 2.1) are used for this purpose because they are positioned outside the potential zone of impact from cell 1 and cell 3. The rationale for this is based on the age of the landfill, the estimated maximum rate of groundwater flow, and the distance of MW-108, MW-113, and MW-115 from the CCR management area (FTN 2017a).

# 2.2 Network Improvements During 2019

All of the 10 monitoring wells in the certified network were installed prior to 2019. No new wells were installed and none of the existing wells were altered or abandoned during 2019.

# 2.3 Sampling Schedule

In accordance with the CCR rule and the landfill's groundwater sampling and analysis plan (GWSAP), detection monitoring is scheduled to occur semiannually. The first half 2019 detection monitoring event was conducted during May. Based on statistical evaluation of the data sets, verification sampling was performed during August, as discussed in Section 4.0. The second half 2019 detection monitoring event was conducted during October. Quarterly background sampling was conducted at MW-119 through the third quarter 2019 during the months of February, May, and August.

Detection monitoring for the 2020 monitoring year is tentatively scheduled for April and October.

# 2.4 Monitoring Well Operation and Maintenance

The integrity of each monitoring well was inspected prior to commencement of groundwater sampling activities. Well casing, concrete pads, and bollards were inspected for any

indications of damage and dedicated sampling equipment was assessed for visible damage. Noted damages and recommended repairs, if any, were communicated to PPSC.

# 2.5 Sampling Methodology

To ensure that monitoring results are an accurate representation of groundwater quality, sample collection follows the guidelines for sample collection, preservation, shipment, chain-of-custody (COC) control, and quality control outlined in the landfill's GWSAP (FTN 2017a). Groundwater sample collection during the 2019 monitoring periods was performed in accordance with the landfill's GWSAP and EPA guidelines (Puls and Barcelona 1996). Groundwater was sampled with a Geopump Peristaltic Series II Pump and linear low-density polyethylene tubing. Field parameters were measured during purging and sampling using a Hach 2100P or Geotech Geoturb portable turbidity meter and a handheld YSI 556 (MPS) or YSI ProPlus multiparameter instrument fitted with a flow-through cell. Field sampling forms for the 2019 monitoring events are provided in Appendix A.

# 2.6 Laboratory Analyses

Samples collected for each detection monitoring event are required to be analyzed for the 40 CFR Part 257 appendix III list of parameters provided in Table 2.2. Pace Analytical (Pace), of Mt. Juliet, Tennessee, provided laboratory services during the detection monitoring period. Samples were analyzed in accordance with EPA's *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* (SW-846) (EPA 1986b), or equivalent, and guidelines established by EPA. Laboratory reports from Pace are included in Appendix B.

Table 2.2. Appendix III parameters for groundwater detection monitoring.

Appendix III to Part 257 – Parameters for Detection Monitoring						
Boron	Sulfate					
Calcium	Total dissolved solids (TDS)					
Chloride	pH (field-measured)					
Fluoride						

#### 3.0 DATA PRESENTATION

This section presents the data collected during the 2019 monitoring events. Water level data are presented in Section 3.1, field-measured groundwater quality data are presented in Section 3.2, laboratory analytical data are presented in Section 3.3, and a review of quality assurance and quality control (QA/QC) measures is presented in Section 3.4.

#### 3.1 Water Level Data

This section presents groundwater level measurements and groundwater flow characteristics determined from these measurements.

# 3.1.1 Water Level Measurements and Hydrograph

Static water levels were measured in all 10 monitoring wells prior to conducting any sampling activities for the May and October detection monitoring events. Water levels were measured using a Solinst 101 water level meter on May 14, 2019, and a Geotech water level meter on October 21, 2019, for the first and second half 2019 monitoring periods, respectively. Depth to water was measured to the nearest 0.01 ft from the measuring point (MP) located on the top of casing (TOC) of each well and recorded on the field water level data sheets included in Appendix A. Field water level measurements are tabulated in Table 3.1.

May 14, 2019 October 21, 2019 Water Elevation Water Elevation MP Elevation Depth to Water Depth to Water Well ID (ft NAVD88) (ft below MP) (ft NAVD88) (ft below MP) (ft NAVD88) MW-101 242.75 5.15 237.60 16.43 226.32 MW-102 243.99 5.71 238.28 18.70 225.29 MW-103 243.25 6.08 237.17 17.73 225.52 MW-108 7.98 245.11 237.13 20.97 224.14 MW-113 244.63 238.03 20.68 223.95 6.60 MW-115 243.55 236.89 19.77 223.78 6.66 MW-116 243.97 6.21 237.76 18.89 225.08 MW-117 242.53 4.98 237.55 17.76 224.77 MW-118 241.23 4.15 237.08 16.25 224.98 MW-119 246.53 9.18 237.35 20.37 226.16

Table 3.1. Water level data.

Hydrographs depicting water level elevations over time are included in Appendix C. As shown on the hydrograph, within-well water levels fluctuated seasonally as much as  $\pm 21$  ft over the period of record for the CCR rule program.

#### 3.1.2 Direction of Groundwater Flow

Depth-to-water measurements were converted to feet NAVD88 and used to construct the potentiometric surface maps shown on Figures 3.1 and 3.2 (figures are included at the end of Section 3.0). As shown on Figure 3.1, groundwater flow beneath the active landfill was generally to the southwest during the May 2019 monitoring event. As shown on Figure 3.2, groundwater flow beneath the active landfill was generally to the southeast during the October 2019 monitoring event.

#### 3.1.3 Rate of Groundwater Flow

The rate of groundwater flow beneath the landfill is estimated based on Darcy's law, modified to account for the open space available for groundwater flow within the aquifer. The resulting equation used to estimate the average linear groundwater velocity, or rate of flow, is shown below (Kuo 1999):

$$V_x = K/n_e(dh/dl)$$

Where:  $V_x = linear velocity$ ,

K = hydraulic conductivity,  $n_e = effective porosity, and$ dh/dl = hydraulic gradient.

The hydraulic conductivity (K) and the effective porosity ( $n_e$ ) of the alluvial aquifer are  $1.09 \times 10^{-2}$  cm/sec and 27%, respectively, based on previous reports (GEC 2001). The hydraulic gradient (dh/dl) is calculated using water level elevations that most closely represent the flow line from upgradient to downgradient across cells 1 and 3. The hydraulic gradient was estimated to be  $9.1 \times 10^{-4}$  ft/ft during May 2019 and  $6.8 \times 10^{-4}$  ft/ft during October 2019 using the potentiometric surface maps shown on Figures 3.1 and 3.2, respectively. Based on these values,

 $V_x$  was calculated to be approximately 38 ft/year during May 2019 and 28 ft/year during October 2019. These values are consistent with historically observed flow rates at the site (FTN 2017a).

# 3.2 Field-Measured Water Quality Data

Groundwater sampling records for the current monitoring event are included in Appendix A. Field-measured water quality parameters from the 2019 monitoring events are summarized in Table 3.2. A review of the field quality control samples is provided in Section 3.4.

# 3.3 Laboratory Analytical Data

Laboratory reports for sampling performed during the 2019 monitoring periods are included in Appendix B. A review of the laboratory quality control information is provided in Section 3.4. Reported measured values along with field-measured pH are summarized in Tables 3.3 and 3.4 for the first and second half of 2019 monitoring periods, respectively. EPA-promulgated maximum contaminant levels (MCLs) are shown for comparison purposes. Of the appendix III parameters listed in Tables 3.3 and 3.4, fluoride is the only parameter with an established MCL. As shown in Tables 3.3 and 3.4, none of the measured levels for fluoride exceeded the fluoride MCL of 4 mg/L. Data from these monitoring events are compiled in the landfill's historical groundwater database for appendix III parameters, included as Appendix D.

Table 3.2. Field-measured water quality data.

		Conductivity	pН	Temperature	Turbidity
Well	Date	(µmhos/cm)	(su)	(C)	(NTU)
Quarterly B	ackground Samp	oling, February	2019		
MW-119	2/18/2019	450	6.6	16.4	1.8
First Half 20	019 Monitoring, I	May 2019			
MW-101	5/16/2019	565	6.6	18.9	3.1
MW-102	5/16/2019	642	6.6	21.7	1.0
MW-103	5/15/2019	598	6.6	18.7	2.4
MW-108	5/14/2019	844	6.8	20.6	3.7
MW-113	5/14/2019	567	6.7	17.6	2.8
MW-115	5/14/2019	663	6.6	17.1	3.2
MW-116	5/16/2019	506	6.6	21.1	1.0
MW-117	5/15/2019	528	6.5	17.9	3.0
MW-118	5/15/2019	435	6.0	18.2	3.7
MW-119	5/16/2019	695	6.4	18.9	1.7
Verification	Sampling and Q	uarterly Backg	round Samplin	g, August 2019	
MW-108	8/1/2019	936	7.1	21.0	2.1
MW-115	8/1/2019	712	7.1	20.9	1.5
MW-117	8/2/2019	506	6.3	19.3	1.2
MW-118	8/2/2019	NM*	6.1	NM*	NM*
MW-119	8/2/2019	502	6.4	19.6	1.9
<b>Second Half</b>	2019 Monitoring	g, October 2019			
MW-101	10/23/2019	618	7.0	13.9	< 0.02
MW-102	10/23/2019	665	6.7	18.0	< 0.02
MW-103	10/22/2019	634	6.7	18.7	< 0.02
MW-108	10/22/2019	862	6.7	15.3	< 0.02
MW-113	10/22/2019	509	6.7	18.2	< 0.02
MW-115	10/23/2019	643	6.9	17.7	< 0.02
MW-116	10/23/2019	618	6.7	17.4	< 0.02
MW-117	10/22/2019	530	6.5	19.1	< 0.02
MW-118	10/22/2019	548	6.4	18.1	< 0.02
MW-119	10/22/2019	725	6.7	18.9	< 0.02

<sup>\*</sup>NM= not measured.

Table 3.3. Summary of appendix III results, first half of 2019.

Well ID	Date Collected	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	pH (su)
Quarterly Ba	ckground Sa	mpling, Febru	ary 2019					
MW-119	2/18/2019	0.110 J	103	2.27	0.253	43.0	374	6.6
MW-119 DUP <sup>(a)</sup>	2/18/2019	0.102 J	101	2.25	0.252	43.8	378	
EB-1 <sup>(a)</sup>	2/18/2019	0.0387 J	<1.00	<1.00	< 0.100	< 5.00	11.0	
First Half 20	19 Monitorin	g, May 2019						
MW-101	5/16/2019	0.118 J	103	1.01	0.263 B	9.17	392	6.6
MW-102	5/16/2019	0.150 J	121	2.87	0.196 B	75.4	466	6.6
MW-103	5/15/2019	0.154 J	106	1.10	0.213 B	23.4	396	6.6
MW-108	5/14/2019	0.224 <sup>(b)</sup>	169	2.44	0.184 B	34.5	529	6.8
MW-113	5/14/2019	0.168 J	87.2	1.58	0.120 B	3.15 J	342	6.7
MW-115	5/14/2019	0.0751 J	128 <sup>(b)</sup>	0.598 J	0.184 B	5.63	440	6.6
MW-116	5/16/2019	0.144 J	93.2	1.66	0.189 B	27.0	349	6.6
MW-117	5/15/2019	0.133 J	98.3 <sup>(b)</sup>	1.25	0.147 B	6.66	341	6.5
MW-118	5/15/2019	0.125 J	76.4	1.44	0.185	16.5	286	6.0
MW-119	5/16/2019	0.109 J	135 <sup>(b)</sup>	2.86	0.252	47.4	487	6.4
MW-117 DUP <sup>(c)</sup>	5/15/2019	0.132 J	95.0	1.13	0.149	6.96	338	
EB-2 <sup>(c)</sup>	5/16/2019	0.0557 J	0.0664 BJ	<1.00	< 0.100	< 5.00	<10.0	
Verification S	Sampling, Au	igust 2019						
MW-108	8/1/2019	0.127 BJ						7.1
MW-115	8/1/2019		125					7.1
MW-117	8/2/2019		102				302	6.3
MW-118	8/2/2019							6.1
MW-119	8/2/2019		97.4					6.4
MW-117 DUP <sup>(d)</sup>	8/2/2019		102				339	
EPA EB-1 <sup>(d)</sup>	8/2/2019	0.0187 BJ	<1.00				<10.0	
EPA I	MCL				4			

#### Notes:

<sup>&</sup>quot;B" flag indicates that the analyte was detected in an associated quality control blank.

<sup>&</sup>quot;J" flag indicates that the analyte was detected at a level below the laboratory RDL; therefore the value is an estimate.

a. MW-119 DUP was a duplicate of MW-119 and EB-1 was a field equipment rinsate blank collected during the February sampling event.

b. Measurement shown represents result from a laboratory re-run of the groundwater sample for verification of initial laboratory results.

MW-117 DUP was a duplicate sample of MW-117 and EB-2 was a field equipment rinsate blank collected during the May sampling event.

d. MW-117 DUP was a duplicate sample of MW-117 and EPA EB-1 was a field equipment rinsate blank collected during the August sampling event.

Table 3.4. Summary of appendix III results, second half of 2019.

	Date	Boron	Calcium	Chloride	Fluoride	Sulfate	TDS	pН
Well ID	Collected	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(su)
MW-101	10/23/2019	0.0491 J	109	1.37	0.264	11.9	404	7.0
MW-102	10/23/2019	0.0602 J	117	3.62	0.201	85.6	461	6.7
MW-103	10/22/2019	0.0816 J	107	1.29	0.253	24.4	384	6.7
MW-108	10/22/2019	0.110 J	153	1.95	0.205	32.9	528	6.7
MW-113	10/22/2019	0.0881 J	75.9	1.73	0.110	4.88 J	307	6.7
MW-115	10/23/2019	0.0224 J	114	1.23	0.220	5.83	411	6.9
MW-116	10/23/2019	0.0829 J	109	2.75	0.216	63.1	417	6.7
MW-117	10/22/2019	0.0610 J	80.9 <sup>(a)</sup>	0.864 J	0.136	5.45	322	6.5
MW-118	10/22/2019	0.0459 J	91.6	1.45	0.162	17.5	335	6.4
MW-119	10/22/2019	0.0480 J	110 <sup>(a)</sup>	2.86	0.266	47.7	400	6.7
MW-117 DUP <sup>(b)</sup>	10/22/2019	0.132 J	88.4	0.871 J	0.129	5.38	296	
EB-1 <sup>(b)</sup>	10/23/2019	0.0557 J	<1.00	0.0645 J	< 0.100	< 5.00	<10.0	
EPA	MCL				4			

#### Notes:

<sup>&</sup>quot;B" flag indicates that the analyte was detected in an associated quality control blank.

<sup>&</sup>quot;J" flag indicates that the analyte was detected at a level below the laboratory RDL; therefore the value is an estimate.

a. Measurement shown represents result from a laboratory re-run of the groundwater sample for verification of initial laboratory results.

b. MW-117 DUP was a duplicate of MW-117 and EB-1 was a field equipment rinsate blank.

# 3.4 Quality Assurance and Quality Control

A review of laboratory and field QA/QC measures is presented below.

# 3.4.1 Review of Laboratory Quality Control Samples

Based on a review of the data quality documentation provided by Pace in Appendix B, samples were received by the laboratory in good condition, properly preserved, at the correct temperature, and were analyzed within holding times. The overall quality of the data relative to the contaminants of concern was acceptable and generally met method-specific requirements for precision and accuracy.

# 3.4.2 Review of Field Quality Control Samples

Field QA/QC samples include field duplicates and field equipment blanks. Field duplicates are two samples taken from the same well and collected as close to each other in time as practical. Data from the duplicate pair are compared to evaluate the level of precision associated with the sampling and analytical methods. Field equipment rinsate blanks are prepared by pouring deionized water over decontaminated sampling equipment. Equipment blank results are used to verify that proper protocols for equipment decontamination were followed in the field. In accordance with the landfill's GWSAP, a minimum of one duplicate sample and one equipment rinsate blank is to be collected per sampling event, or one per 20 groundwater samples collected.

In accordance with the GWSAP, field QA/QC samples were collected in conjunction with groundwater sampling activities for this monitoring period. All QA/QC samples were handled in the same manner as groundwater samples with respect to sample collection, packaging, shipping, preservation, and COC procedures. A review of the field QA/QC samples is performed upon receipt of the data from the laboratory. Field duplicate pairs are evaluated to verify that the duplicate pair showed reasonable precision for analyzed parameters by calculating the relative percent difference (RPD) for parameters where the detected level was at least five times the laboratory RDL and where neither result was qualified or suspected of contamination. Calculated RPDs were below the quality control limit of 20% for all duplicate pairs evaluated,

indicating that field methods produced samples with an acceptable level of reproducibility. Results for the equipment rinsate blanks were all below their respective laboratory RDLs, except as noted below, indicating field decontamination methods were effective. Deviations from the QA/QC program are noted below:

• TDS was detected above the RDL in the field equipment rinsate blank collected during the February sampling event.

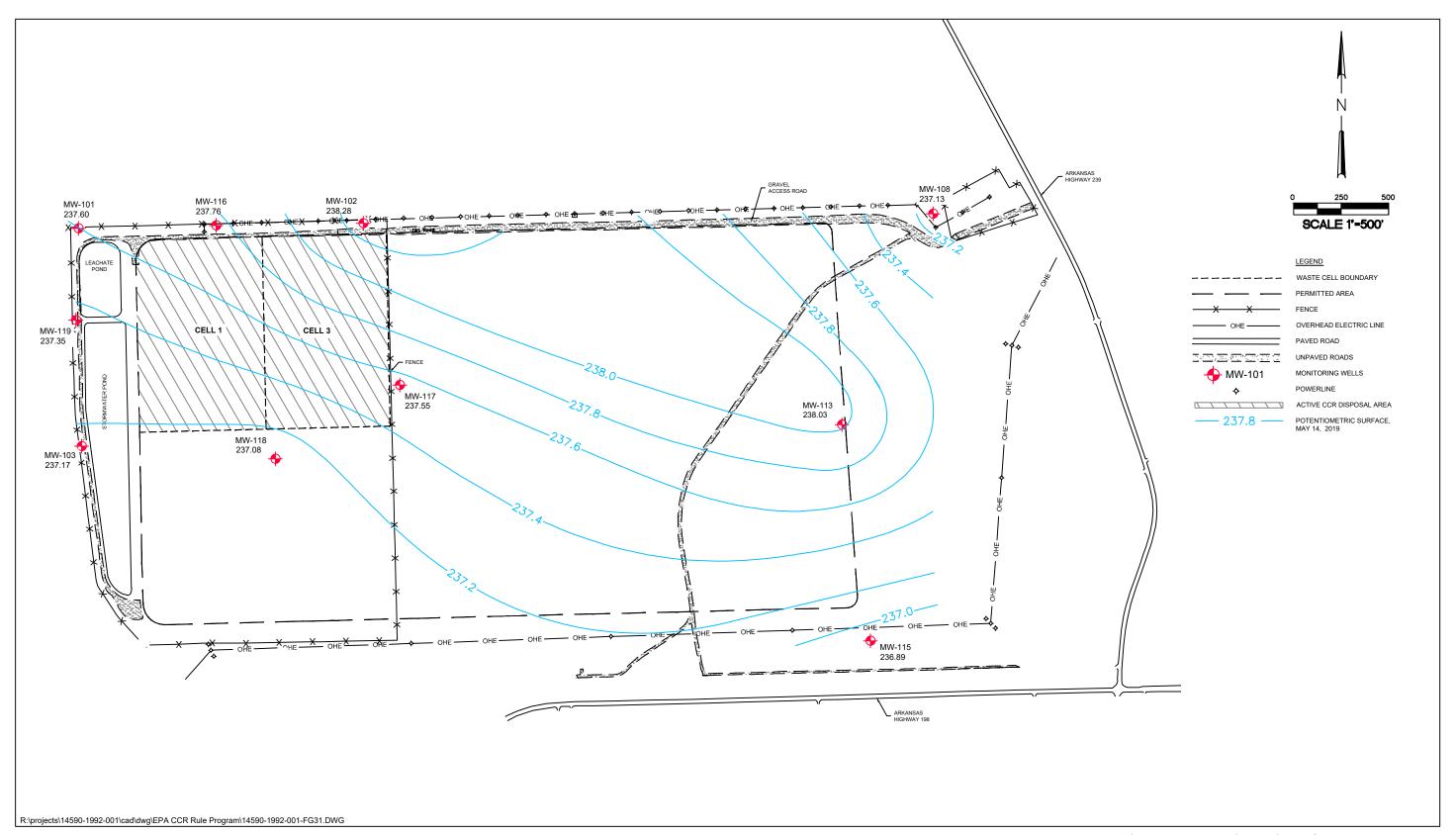


Figure 3.1. Potentiometric surface, May 14, 2019.

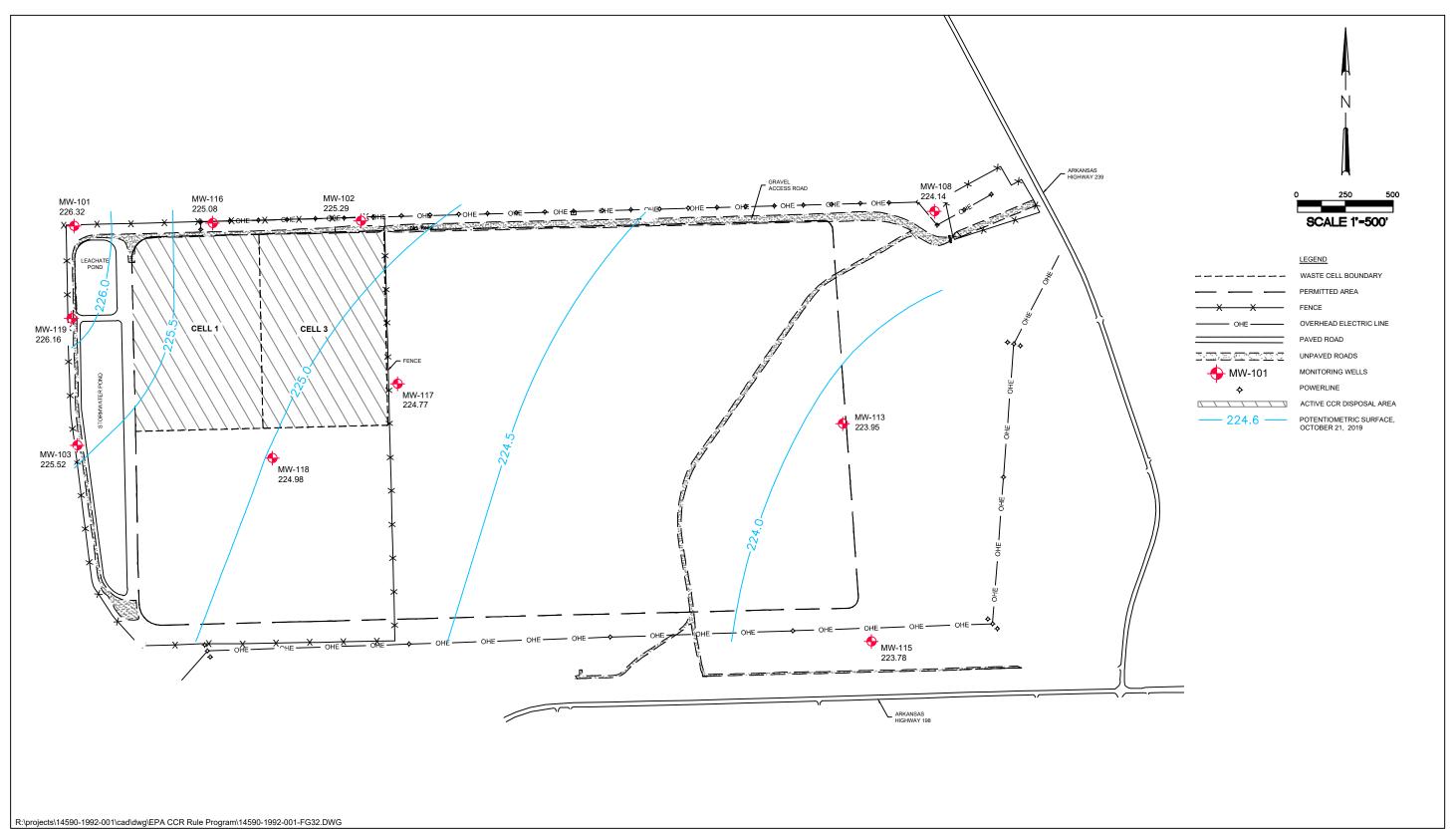


Figure 3.2. Potentiometric surface, October 21, 2019.

# 4.0 STATISTICAL EVALUATION

This section describes the statistical approach and evaluation of the detection monitoring data collected during 2019. Groundwater quality data were evaluated using the statistical software *Sanitas version 9.6*. Statistical analyses of the data were performed in accordance with the landfill's SAP.

# 4.1 Statistical Program Design

# 4.1.1 Statistical Approach

The statistical approach for groundwater monitoring at the landfill is described in the facility's SAP and adheres to recommendations in EPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*, released in March 2009 (Unified Guidance). Groundwater quality data collected for detection monitoring are evaluated with either an intrawell prediction limit combined with a "1 of 2" retesting strategy or with the Mann-Kendall/Sen's Slope test for trends. The technical basis for selecting these tests is discussed in the facility's SAP. Each test and its appropriate application is briefly discussed below.

A prediction limit tests for the likelihood that a new monitoring value (compliance value) comes from the same population as background data. Prediction limit analysis combined with retesting (verification sampling) is effective at reducing a monitoring program's site-wide false positive rate (SWFPR) and improving the statistical power of the monitoring program. The prediction limit test requires a minimum of 8 to 10 background values that are statistically independent and that exhibit stationarity. Retesting, or verification sampling, is performed if an initial sampling result exceeds a prediction limit. The "1 of 2" retesting strategy requires one verification sample be obtained within the same monitoring period as the initial exceedance. If the measured value in the verification sample also exceeds the prediction limit, then a statistically significant increase (SSI) (or statistically significant decrease [SSD] in the case of pH) is declared.

If data characteristics do not meet the requirements for a prediction limit test, the well-parameter pair is tested using the Mann-Kendall/Sen's Slope test for trends, as recommended by the Unified Guidance. If a statistically significant increasing trend (or statistically significant decreasing trend in the case of pH) is indicated, then this is evidence of possible deteriorating groundwater quality. While there is no explicit retesting strategy for the Mann-Kendall/Sen's Slope test (as there is for prediction limits), retesting can be applied (Cameron 2015).

Background data were evaluated in accordance with the landfill's SAP to determine the appropriate testing strategy for each well-parameter pair. Results of the evaluation are summarized in Appendix E. At this time, all statistically evaluated well-parameter pairs are tested using an intrawell prediction limit.

#### 4.1.2 Site-Wide False Positive Rate and Statistical Power

The Unified Guidance recommends that detection monitoring programs have adequate statistical power and an SWFPR (alpha) value of 10% over a one-year period of testing. As a result, the semiannual SWFPR is fixed at 5%. The magnitude of the per-test alpha will vary depending on how many statistical tests are required per semiannual evaluation. Input values used to determine the per-test alpha for intrawell prediction limit analyses, combined with a "1 of 2" retesting strategy are listed in Table 4.1.

Certified Well Network					
Statistical Test	Intrawell Prediction Limit				
Number of Compliance Wells (w)	7				
Minimum Background Sample Size (n)	8				
Number of Constituents (c)	6				
Resample Strategy	1 of 2				
Semiannual SWFPR	0.05				

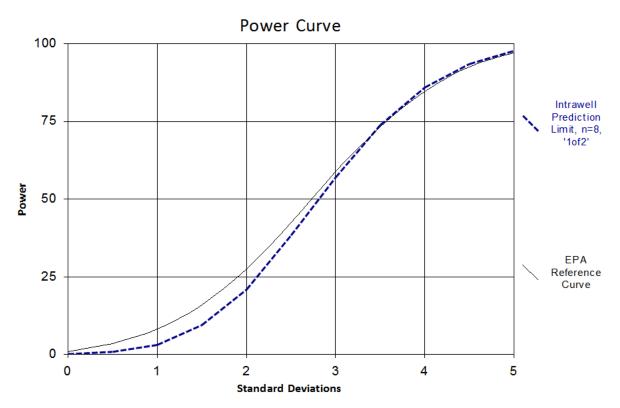
Table 4.1. Values used to determine test alpha and power curve.

Statistical power is inversely related to the SWFPR and is an estimate of the rate at which false negative results will occur. To gauge statistical power, the Unified Guidance recommends

the use of the EPA Reference Power Curve (ERPC) to estimate the ability of any individual test to identify an exceedance above background. Any single statistical test should have the ability to detect an exceedance 55% to 60% of the time at three standard deviations ( $3\sigma$ ) above background and 80% to 85% of the time at  $4\sigma$  above background. Input values for the detection monitoring program's power curve are listed in Table 4.1 and discussed below.

Figure 4.1 depicts the power curve for the well network plotted against the ERPC. This curve shows that any single test is expected to detect exceedances approximately 57% of the time at levels  $3\sigma$  above background and 87% of the time at levels  $4\sigma$  above background. Given this comparison, the statistical power of the landfill's detection monitoring program exceeds EPA recommendations.

Sanitas<sup>™</sup> v.9.6.23 Sanitas software licensed to FTN Associates. UG



kappa = 2.841, based on 7 compliance wells and 6 constituents, evaluated semi-annually (this report reflects annual total).

Figure 4.1. ERPC versus landfill power curve for detection monitoring.

# 4.2 Exploratory Data Analysis

Exploratory data analysis (EDA) includes viewing data graphically to identify apparent trends or excursions from normal ranges. To accomplish this, period-of-record data were screened using time-series plots, box-and-whiskers diagrams, and outlier tests. Time-series plots are used to visualize changes in data over time. Box-and-whiskers diagrams provide a graphic depiction of the mean, median, minimum, maximum, and interquartile range of a data set to assist with visualizing the variation in groundwater quality within and across wells. Outlier tests help identify values that are extremely different from other values in a given data set. Section 4.2.1 summarizes observations made from time-series and box-and-whiskers diagrams. Evaluation for the presence of outliers is discussed in Section 4.2.2. The graphical plots from the EDA evaluation are included in Appendix F.

# 4.2.1 Time-Series Plots and Box-and-Whiskers Diagrams

The following observations are based on a review of the time-series plots and box-and-whiskers diagrams (Appendix F):

- Boron values are below the laboratory RDL (represented as hollow values on the time-series plots) for all wells for the period of record, with the exception of one detection above the RDL at background well MW-108.
- Calcium, chloride, fluoride, sulfate, and TDS values are variable across the network.
- Measured pH is generally similar across the well network. As discussed in prior annual reports (FTN 2018, 2019), there is a noted deviation in the pH data collected during the July 2016 background sampling event that is thought to be the result of equipment malfunction. Due to the limited number of values in the background data sets available for statistical analysis, these data have not been excluded from the background data set. However, rejection of these values may be warranted as future measurements are collected and appended to background, where applicable.

#### 4.2.2 Identification of Outliers

Period-of-record data for statistically evaluated wells were evaluated to identify possible outliers in the May and October 2019 data sets (Appendix F). Dixon's outlier test was applied to

data sets with a normal distribution, or to populations that could be mathematically transformed so they have a normal distribution. For data sets that did not have a normal distribution, the non-parametric Tukey's outlier screening was applied. Statistically significant outlier results are included in Appendix F.

Five outliers were identified in the May 2019 data set, and no outliers were identified in the October 2019 data set. In the May 2019 data set, the following well-parameter pairs had measured values that were statistically elevated compared to their respective period-of-record data sets: boron at MW-108, calcium at MW-117, calcium at MW-119, and TDS at MW-117; the measured value for chloride at MW-116 was statistically low compared to its period-of-record data set. None of the outliers are suspected to be the result of field or laboratory error. It is suspected that the limited range of data available for evaluation may cause the test to be overly sensitive to identification of outliers. As such, no action was taken to flag these data as unrepresentative of groundwater quality.

#### 4.3 Statistical Evaluation Results

Groundwater quality data from the 2019 monitoring periods were statistically evaluated if detected at or above the laboratory RDL. Results detected below the RDL but above a method detection limit ("trace" values) are estimated values and therefore are not statistically evaluated. Trace values are flagged with a "J" in the laboratory reports provided in Appendix B and in the historical database included in Appendix D. Statistical analyses are not performed on non-detect data, which are flagged with a "U" in the laboratory reports (Appendix B) and represented in the historical database as less than (<) the RDL value for the method used (Appendix D).

# 4.3.1 Intrawell Prediction Limit Analysis, First Half of 2019

Intrawell prediction limit analyses were performed on all detected appendix III parameters, in accordance with 257.93(h), using the background data sets identified in Appendix E. Results from the first half of 2019 monitoring period are summarized in Table 4.2 and graphical plots of the evaluation are included in Appendix G. Six potential exceedances were identified in the May 2019 data set, as shown in Table 4.2. Measurements for all other

well-parameter pairs were below calculated intrawell prediction limits. In accordance with the facility's SAP and "1 of 2" retesting strategy, verification sampling was performed during August 2019 for these well-parameter pairs. As shown in Table 4.2, the measured values in the verification sample for calcium at MW-115 and MW-117 and for TDS in MW-117 exceeded their respective prediction limits, resulting in confirmed statistically significant increases (SSIs) for those well-parameter pairs. Measured values for boron at MW-108, calcium at MW-119, and pH at MW-118 disconfirmed the potential exceedances at these wells.

Table 4.2. Summary of statistically significant results, intrawell prediction limit analysis, first half of 2019.

Well	Parameter	Prediction Limit (mg/L)	May 2019 Observation (mg/L)	August 2019 Verification (mg/L)	SSI Confirmed?
MW-108	Boron	0.2034	$0.224^{(a,b)}$	0.127	No
MW-115	Calcium	122.1	128 <sup>(b)</sup>	125	Yes
MW-117	Calcium	87.44	98.3 <sup>(b)</sup>	102	Yes
MW-119	Calcium	115.6	135 <sup>(b)</sup>	97.4	No
MW-118	рН	6.1 <sup>(c)</sup>	6.0	6.1	No
MW-117	TDS	301	341	302	Yes

#### Notes:

In response to the confirmed SSIs for calcium at MW-115 and MW-117 and for TDS at MW-117 identified during the first half of 2019 detection monitoring period, PPSC completed a successful alternate source demonstration (ASD), in accordance with §257.94(e)(2). The ASD was certified by an Arkansas-registered professional engineer and posted to the facility's operating record on October 24, 2019. As required by §257.94(e)(2), a copy of the ASD is included in Appendix H. Based on the successful ASD, the facility continued with detection monitoring in accordance with §257.94.

a. Statistically high outlier (see Section 4.2.2).

b. Measurement shown represents result from a laboratory re-run of the groundwater sample for verification of initial laboratory results.

c. Lower prediction limit.

#### 4.3.2 Intrawell Prediction Limit Analysis, Second Half of 2019

Intrawell prediction limit analyses were performed on all detected appendix III parameters, in accordance with 257.93(h), using the background data sets identified in Appendix E. Results from the second half of 2019 monitoring period are summarized in Table 4.3 and graphical plots of the evaluation are included in Appendix G. No new potential exceedances were identified in the October 2019 data set; however, one previously confirmed SSI, TDS at MW-117, remained above the prediction limit. This well-parameter pair had a confirmed SSI during the first half of 2019 monitoring period, and as noted in Section 4.3.1, a successful ASD was made and is included in Appendix H. Because this SSI was confirmed during the first half of 2019, verification sampling was not performed. Measurements for all other well-parameter pairs during the second half of 2019 were below calculated intrawell prediction limits.

Table 4.3. Summary of statistically significant results, intrawell prediction limit analysis, second half of 2019.

		Prediction Limit	October 2019 Observation	SSI
Well	Parameter	(mg/L)	(mg/L)	Confirmed?
MW-117	TDS	301.8	322	Yes*

Notes:

The measured level of TDS at MW-117 during the second half of 2019 was similar to the level measured during the first half of 2019 when the SSI was first confirmed. As discussed in the ASD (Appendix H), measured TDS at this well is well within the range of values measured in onsite background wells and is also within published levels for the aquifer. In accordance with §257.94(e)(2), PPSC completed a successful ASD to address the reoccurrence of the SSI for TDS at MW-117. The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on December 18, 2019. Based on the successful ASD, PPSC will continue with detection monitoring in accordance with §257.94.

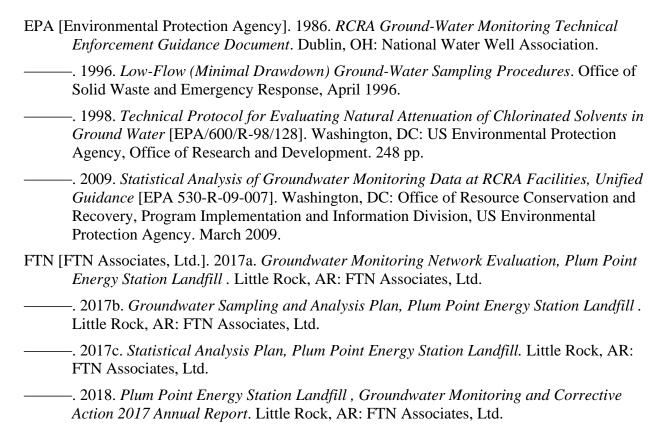
<sup>\*</sup>Verification sampling was not performed because SSI was previously confirmed.

#### 5.0 CONCLUSIONS AND RECOMMENDATIONS

The following recommendations and conclusions are based on a review of data for the landfill from the 2019 monitoring periods:

- 1. The direction of groundwater flow at the landfill is seasonally variable. During the monitoring events performed during the first and second half of 2019, flow was to the south-southwest and east-southeast, respectively, across the active landfill.
- 2. Of the parameters evaluated, only fluoride has an EPA MCL. None of the measured values in groundwater exceeded the MCL for fluoride.
- 3. Time-series plots and box-and-whiskers diagrams show variability across the well network for calcium, chloride, fluoride, sulfate, and TDS. Values for boron and pH are relatively similar across all wells, with measured levels of boron being below the laboratory RDL for all wells except upgradient well MW-108 for the period of record.
- 4. A comparison of the statistical power curve for the detection monitoring program to the EPA Reference Power Curve indicates that the detection rates for statistical exceedances meet EPA recommendations.
- 5. Intrawell prediction limit analysis of the first half of 2019 data set identified three confirmed SSIs: calcium at MW-115 and MW-117 and TDS at MW-117. A successful ASD was completed for the SSIs and posted to the facility's operating record on October 24, 2019. The facility continued with detection monitoring in accordance with §257.94.
- 6. Statistical evaluation of the second half of 2019 monitoring data identified one confirmed SSI for TDS at MW-117. The SSI for TDS at MW-117 was previously confirmed during the first half of 2019 monitoring period and, as noted above, a successful ASD was made. In response to the confirmed SSI during the second half of 2019 monitoring period, PPSC completed a successful ASD in accordance with §257.94(e)(2). The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on December 18, 2019. Based on the successful ASD, PPSC will continue with detection monitoring in accordance with §257.94.

#### **6.0 REFERENCES**

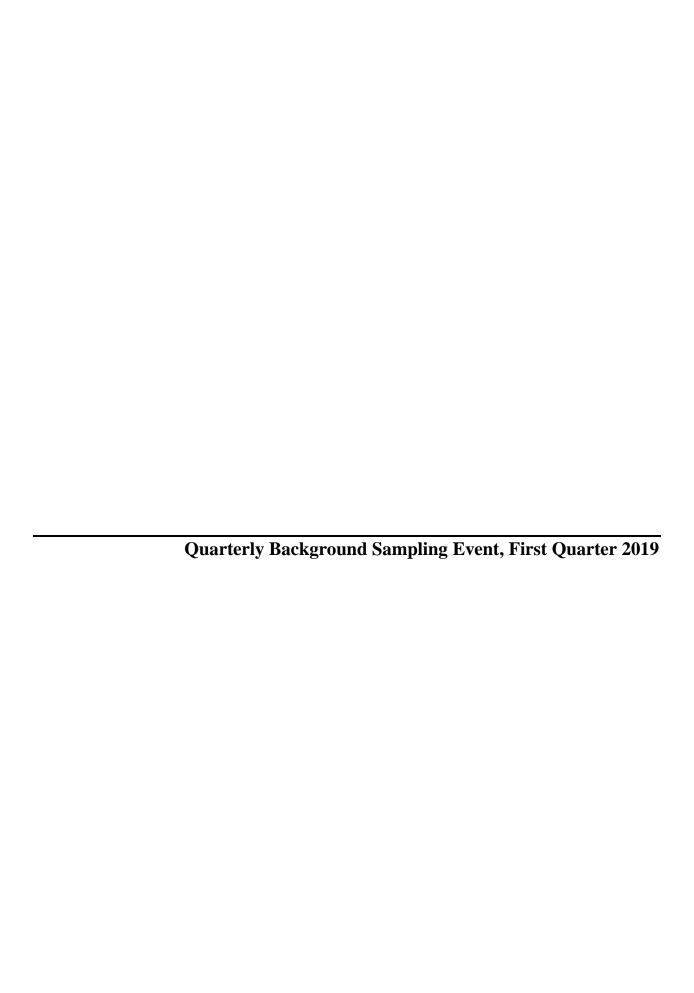


- GEC, Inc. 2001. Geotechnical and Hydrogeological Investigation, Plum Point Energy Station, July 2001 [DEQ DIN 14702]. Little Rock, AR: Genesis Environmental Consulting, Inc.
- Gibbons, Robert D. 1994. *Statistical Methods for Groundwater Monitoring*. New York: John Wiley & Sons, Inc.
- Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 2003 4202]. Jackson, MS: National Water-Quality Assessment Program, US Geological Survey.
- Intelligent Decision Technologies, Inc, an NIC Company. 2002. Sanitas for Groundwater Version 9.2 User's Guide. Longmont, CO: Intelligent Decision Technologies, Inc., an NIC Company.

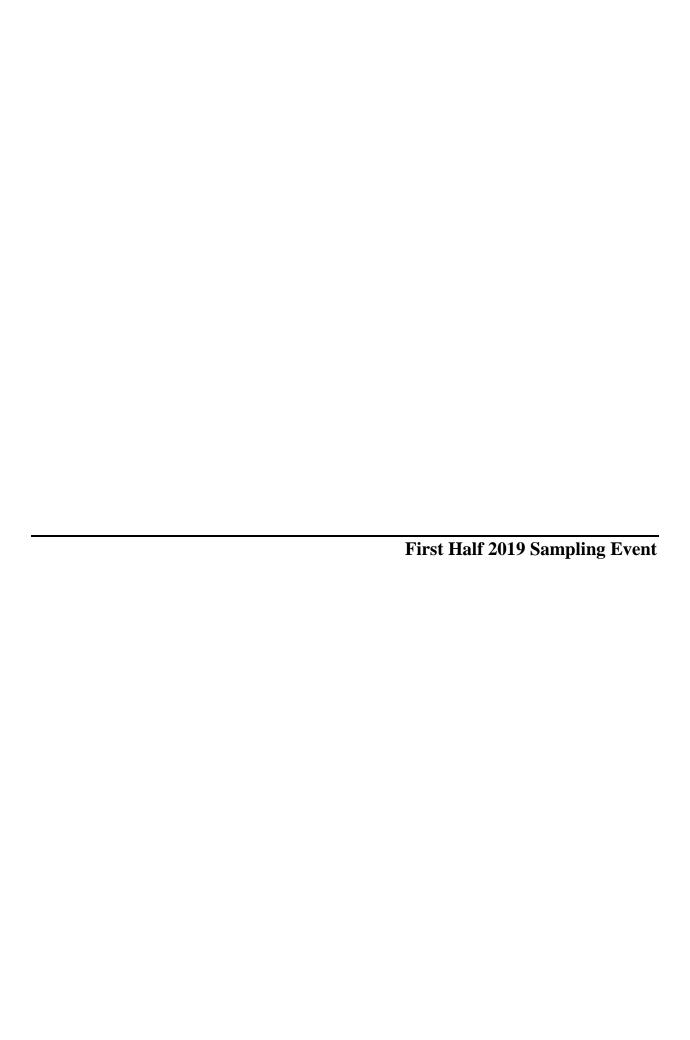
- Kresse, T.M., P.D. Hays, K.R. Merriman, J.A. Gillip, D.T. Fugitt, J.L. Spellman, A.M. Nottmeier, D.A. Westerman, J.M. Blackstock, and J.L. Battreal. 2014. *Aquifers of Arkansas—Protection, Management, and Hydrologic and Geochemical Characteristics of Groundwater Resources in Arkansas* [Scientific Investigations Report 2014–5149]. Prepared in cooperation with the Arkansas Natural Resources Commission. Reston, VA: US Geological Survey. 334 pp. doi: http://dx.doi.org/10.3133/sir20145149.
- Kuo, J. 2009. *Practical Design Calculations for Groundwater and Soil Remediation*. Boca Raton, FL: Lewis Publishers.
- Peterson, J.C., M.E. Broom, and W.V. Bush. 1985. *Geohydrologic Units of the Gulf Coastal Plain in Arkansas* [USGS Water Resources Investigations Report 85-4116]. Little Rock, AR: US Geological Survey in cooperation with the Arkansas Department of Pollution Control and Ecology and the Arkansas Geological Commission. 20 p.
- Pugh, A.L., P.W. Westerfield, and D.T. Poynter. 1997. *Thickness of the Quaternary Alluvial and Terrace Deposits Comprising the Mississippi River Valley Alluvial Aquifer in Eastern Arkansas* [USGS Water Resources Investigations Report 97-4049]. Little Rock, AR: US Geological Survey in cooperation with the Arkansas Geological Commission. 1 plate.
- Ryling, R.W. 1960. *Ground-water Potential of Mississippi County, Arkansas* [Water Resources Circular No. 7]. Little Rock, AR: Arkansas Geological and Conservation Commission in cooperation with the US Geological Survey. 87 p.
- Schrader, T.P. 2015. Water Levels and Water Quality in the Mississippi River Valley Alluvial Aquifer in Eastern Arkansas, 2012 [Scientific Investigations Report 2015-5059]. Prepared in cooperation with the Arkansas Natural Resources Commission and the Arkansas Geological Survey. Reston, VA: US Geological Survey.
- Welch, H.L., J.A. Kingsbury, W.T. Roland, and R.C. Seanor. 2009. *Quality of Shallow Groundwater and Drinking Water in the Mississippi Embayment-Texas Coastal Uplands Aquifer System and the Mississippi River Valley Alluvial Aquifer, South-Central United States, 1994-2004* [Scientific Investigations Report 2009-5091]. Reston, VA: National Water-Quality Assessment Program, US Geological Survey.
- Yu, C., S. Kamboj, C. Wang, and J. Cheng. 2015. *Data Collection Handbook to Support Modeling Impacts of Radioactive Material in Soil and Building Structures*[ANL/EVS/TM-14/4]. Argonne, IL: US Department of Energy, Argonne National Laboratory, Environmental Science Division.



Field Sampling Forms



Facility:	Dlum D	oint F	nergy Sta	ution		Site ID:	MX	W-119		San	npler:	1	Michael (	Clayton	
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Site type:		Clou	шу			ll casing					meter	norm-no	inches	2	Well
☑ Monitorin			xtraction	Well		PVC	materi	aı.							locked?
☐ Productio☐ Dewatering			orehole pring			Steel			Tota	al de	pth from	ТОС	feet		<b>∠</b> Yes
Other:	ig Weii		pring			Iron Other:			TOO	C bel	low/abov	e ground	feet		□No
Damages/rep	airs neede	ed:													1
Water Level 1	Data														
Measuring po		otion:		Wat	er level	l meter:						otech/Ked			
<ul><li>☑ Mark/notch</li><li>☑ North rim of</li></ul>				Dro	-purge	Dro	⊔ Hei purge	ron Dip	per– ring		□ Sol Purge	inst 101 Aft	Oth	er:	
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Depth to Wate	er fee	et		9	9.63	9.	.63	9	.63		9.63	9.6	53		
Product/Thick	iness LN	IAPL/I	NAPL fe	et											
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Field data met			_					escripti	on:				ailer desc		
☐ YSI ProPlu ☑ YSI MPS 5			☐ Hach 2 ☐ HF Scie				Perist		dodia	antad	d / □ port			ble polyet ble Teflor	
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Casing vol.	gallons		= [tota	l depth	(feet) –	depth to	water	(feet)]	× [in	ntern	al diamet	er of well	(inches)	$]^2 \times 0.040$	)8
Time	24-hour	1015		1025	1030		1040			050	1055			Rema	
Purge vol.	gallons														
Purge rate	mL/min	220	220	220	220	220	220	220	2	220	220				
pН	su	7.0	6.8	6.7	6.7	6.7	6.7	6.6	6	6.6	6.6				
Temp.	°C	14.0	_	15.1	15.5	16.0	16.2	16.0	_	6.2	16.4				
Conductivity	μS/cm	425	438	444	451	450	449	450		150	450				
DO	mg/L	5.8	2.0	1.6	1.3	1.34	1.2	1.2		1.1	1.0				
ORP	mV	141.6	_	127.7	115.7		101.9	_		6.7	93.0				
Turbidity	NTU	5.8	4.6	3.7	4.2	2.7	1.6	1.6		1.1	1.8				
Color/tint		clear		clear	clear		clear			lear	clear				
Odor		none	none	none	none	none	none	none	e no	one	none				
Sample Data				1					1						
	ole ID		Date		ime	# Conta	iners	# Filte	red			R	emarks		
MW-119			2/18/201		110	4		0							
MW-119 DUI	P		2/18/201		115	4		0							
EB-1			2/18/201	9 1	220	4		0							
Sampler's Na	me (print)	):		/lichael	Clayto	n		Sampl	er Si	gnati	ure:	tra	nscribed	bv HLF	





## **Groundwater Level Data Sheet**

Project Nan Plum Point I	<b>ne:</b> Energy Station		ject Number: 90-1992-001	Inve	estigator: MCa	Page of
Weather Co	onditions:		suring Device: SolinsT 101		,	
			,			
Well ID	Date	Time	Depth to Water (feet below TOC)		Damages/Repairs	
MW-1	5-14-19	1640	4,15	Damaged well pad/o Damaged bollards Damaged equipmen	Damaged lock	Lacks visibility Lacks access See gw sample record
MW-2		1052	5.7/	☐ Damaged well pad/d☐ Damaged bollards☐ Damaged equipmen	casing Damaged TOC Damaged lock Un-kept vegetation	Lacks visibility Lacks access See gw sample record
MW-3R		1030	6.08	Damaged well pad/o Damaged bollards Damaged equipmen	Damaged lock Un-kept vegetation	Lacks visibility Lacks access See gw sample record
MW-4R2		1017	4,49	Damaged well pad/o Damaged bollards Damaged equipmen	Damaged lock Un-kept vegetation	Lacks visibility Lacks access See gw sample record
MW-5		942	5.48	Damaged well pad/o Damaged bollards Damaged equipmen	Damaged lock Un-kept vegetation	Lacks visibility Lacks access See gw sample record
MW-6		951	5.41	Damaged well pad/c Damaged bollards Damaged equipmen	Damaged lock Un-kept vegetation	Lacks visibility Lacks access See gw sample record
MW-7		935	6.95	Damaged well pad/s Damaged bollards Damaged equipmen	Damaged lock Un-kept vegetation	Lacks visibility Lacks access See gw sample record
MW-8		930	7.98	Damaged well pad/ Damaged bollards Damaged equipmen	Damaged lock Un-kept vegetation	Lacks visibility Lacks access See gw sample record
MW-10R		95-6	3.7%	Damaged well pad/ Damaged bollards Damaged equipmen	Damaged lock Un-kept vegetation	Lacks visibility Lacks access See gw sample record
MW-11R		948	5,07	☐ Damaged well pad/☐ ☐ Damaged bollards ☐ Damaged equipmen	Damaged lock Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-13R		918	6,60	☐ Damaged well pad/☐ ☐ Damaged bollards ☐ Damaged equipmer	Damaged lock Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-15		910	6,66	☐ Damaged well pad/☐ Damaged bollards☐ Damaged equipmen	Damaged lock	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-16		1045	6.21	☐ Damaged well pad/☐ ☐ Damaged bollards ☐ Damaged equipmer	Damaged lock	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-17		1007	4,96	☐ Damaged well pad/☐ Damaged bollards☐ Damaged equipmer	Damaged lock	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-18		10dd	4.15	Damaged well pad/ Damaged bollards Damaged equipmer	casing Damaged TOC Damaged lock	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-19	<b>V</b>	1036	5.18	Damaged well pad/ Damaged bollards Damaged equipmen	casing Damaged TOC Damaged lock	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record

Facility:	Plum	Point E	nergy Sta	tion	S	ite ID:	M	W-101		San	npler:	Ŋ	Michael	Clayton	
Project Numb			1992-001			ate:		2019			npler Orga				s. Ltd.
Site Descripti		XI 1370	1772 001	(LITI)			3/10/	2019		Buil	inpier orga	mzuuon		100001410	,, <u>D</u> tu:
Weather:		cle	ar		Air '	Temp. (	°F):	79	Win	nd:		south	west at 6	mph	
Site type:			··-			l casing					meter	2 0 0 0 0 0 0 0 0	inches		Well
☑ Monitorin			xtraction	Well	₩CI ☑ F		materi	a1.	VV C1	ı uıa	inicici			2	locked?
Productio			orehole		$\square$ S			'	Tota	al de	pth from T	OC	feet		<b>∠</b> Yes
Dewatering Other:	ng Well	LS	pring			ron Other:			TOC	C bel	low/above	ground	feet		□No
Damages/rep	airs need	led:													
Water Level 1	Data														
Measuring po		intion:		Wat	er level	meter:	□ Ge	otech/K	eck	100'	' □ Geo	tech/Kec	k 200'		
☑ Mark/notch				' '	01 10 / 01	11101011		ron Dip			☑ Soliı		Otl	her:	
☐ North rim o	of TOC				-purge		purge	Dur	ing		Purge	Aft	er		
☐ Other:				_	nitial	_	mation	purg	ging		end	samp	ling	Rem	arks
Date	n	nm/dd/y	У	5/1	4/2019	5/16	/2019	5/16/	2019	9 :	5/16/2019	5/16/2	2019		
Time	2	4-hour		1	040	09	945	09	53		1023	103	31		
Depth to Water	er f	eet		4	4.15	5.	.22	5.2	22		5.26	5.2	27		
Product/Thick	iness L	NAPL/I	ONAPL fe	et											
Field Data															
Field data met		_						escriptio	n:					cription:	
☐ YSI ProPlu			Hach 2				Perist							able polye	
☑ YSI MPS 5 ☐ Other:	56	_	☐ HF Scie ☐ Other:	entific 'I	urbidin			ler [ ⊔ d ersible	ledic	cated	d / □ porta			able Teflo able PVC	
1	feet			dur.	dumina	purging			Νīο				Dispose	ioic i v C	
Purge depth										4	.1.12	C 11	C 1	12 0 04	00
Casing vol.	gallons	<del>-                                    </del>			T	T .			× [1n	itern	al diamete	r of well	(inches)		
Time	24-hour	-	0955	1000	1005	1010	1015	1020						Rema	arks
Purge vol.	gallons		1.60	1.60	110	110	110	110							
Purge rate	mL/mii	_	160	160	110	110	110	110							
pН	su	6.5	6.4	6.5	6.6	6.7	6.6	6.6							
Temp.	°C	19.1		19.2	19.3	19.7	18.9	18.9							
Conductivity	μS/cm	561	562	563	565	565	566	565							
DO	mg/L	1.5	0.8	0.5	0.4	0.4	0.4	0.4	-						
ORP	mV	102.9	_	104.0	101.5	98.2	96.0	97.5							
Turbidity	NTU	3.0	5.5	4.4	3.9	3.6	3.2	3.1							
Color/tint		clear		clear	clear	clear	clear	+							
Odor		none	none	none	none	none	none	none							
Sample Data															
	ole ID		Date			# Conta	iners	# Filter	ed			R	emarks		
MW-101			5/16/201	9 1	030	2		0							
Sampler's Na	me (prin	t):	N	Iichael	Claytor	1		Sample	r Sig	gnati	ure:	traı	nscribed	by HLF	

									1						
Facility:			nergy Sta			ite ID:		V-102			mpler:		Michael (		
Project Numb	per: R1	14590-	1992-001	(EPA)	Ι	Date:	5/16/	2019		Sar	mpler Orga	nization	: FTN A	ssociates,	, Ltd.
Site Descripti	on														
Weather:		clea	ır		Air	Temp. (	°F):	85	Wir	nd:	•	west-sou	thwest a	t 6 mph	
Site type:  Monitoring	wa Wall	ПБ	xtraction	Wall		l casing	materi	al:	Wel	l dia	ameter		inches	2	Well locked?
☐ Productio			orehole	Well		PVC Steel		•	Tota	al de	epth from T	OC	feet		
☐ Dewatering			pring					-						1	✓ Yes
☐ Other:						Other:			TOO	C be	low/above	ground	feet		□No
Damages/rep	airs neede	d:													
Water Level l	Data														
Measuring po		otion:		Wate	er level	meter:						ech/Kec			
<ul><li>✓ Mark/notch</li><li>✓ North rim of</li></ul>				Dro	-purge	Dro	⊔ He purge	ron Dip	per– ring	T	☑ Solir	ist 101 Aft	Oth	er:	
Other:	7 100				-purge nitial	confir	purge mation		ging		Purge end	samp		Rema	arks
Date	mr	n/dd/y	у	5/1	4/2019	5/16	/2019		/201		5/16/2019	5/16/2	_		
Time	24	-hour		1	052	11	55	12	207		1228	123	19		
Depth to Wate	er fee	et			5.71	5.	.70	5	.70		5.70	5.7	0		
Product/Thick	iness LN	IAPL/I	NAPL fe	et											
Field Data															
Field data met  ☐ YSI ProPlu  ☐ YSI MPS 5  ☐ Other:	S		Hach 2 HF Scie Other:			eter neter	l Perist l Bladd		dedio	cated	d / □ portal	ole]		ble polyet ble Teflor	
Purge depth	feet		Well g	oes dry	during	purging	: DY	es 🔽	No						
Casing vol.	gallons									ntern	nal diameter	of well	(inches)	$]^2 \times 0.040$	 )8
Time	24-hour	1200	1205	1210	1215	1220	1225							Rema	rks
Purge vol.	gallons														
Purge rate	mL/min	120	120	120	120	120	120								
pН	su	6.5	6.6	6.6	6.6	6.6	6.6								
Temp.	°C	21.9	22.3	22.1	21.7	21.5	21.7								
Conductivity	μS/cm	641	641	644	645	644	642								
DO	mg/L	1.4	1.0	0.8	0.7	0.7	0.6								
ORP	mV	107.8	3 101.7	100.5	96.0	96.4	97.8								
Turbidity	NTU	1.1	2.2	2.4	1.2	1.1	1.0								
Color/tint		clear	clear	clear	clear	clear	clear								
Odor		none	none	none	none	none	none								
Sample Data															
Samp	ole ID		Date	Т	ime	# Conta	iners	# Filte	red			Re	emarks		
MW-102			5/16/201	.9 1	235	2		0							
EB-2			5/16/201	.9 1	305	2		0							
Sampler's Na	me (print)	:	N	Michael	Clayto	n		Sampl	er Si	gnat	ture:	trar	nscribed	by HLF	

Facility:	Plum	Point F	Energy Sta	tion	S	ite ID:	MV	V-103		San	npler:	Ŋ	Michael	Clayton	<u> </u>
Project Numb			-1992-001			Date:		2019			npler Orga				
Site Description		1070	1992 00	(LITI)		· ucc.	3/13/	2017		Sui	inpier orga	mzuuon	. 1 11(1	15500140	
Weather:	011	clou	ıdv		Air	Temp. (	°F)·	80	Win	ıq.		SOII	th at 8 n	nh	
Site type:		CIOC	idy									304		Ì	Well
☑ Monitorin	g Well	$\Box$ F	Extraction	Well		l casing	materi	ar:	wei	I dia	meter		inches	2	locked?
☐ Production			Borehole			Steel			Tota	al de	pth from T	OC	feet		<b>∠</b> Yes
☐ Dewaterin	ng Well	$\square$ S	pring		□ I	ron			тос	71 1	1 / 1	1	<b>C</b> 4		
Other:						Other:			100	_ bei	low/above	grouna	feet		□No
Damages/rep	airs need	ded:													
Water Level I	Data														
Measuring po				Wat	er level	meter:						tech/Kec			
☑ Mark/notch		C						ron Dip		T	☑ Soliı	_	□ Ot	her:	
☐ North rim o	of TOC				-purge		purge	Dui			Purge	Aft		р.	
		/11/		-	nitial	_	mation	+ + '	_		end	samp		Re	marks
Date		nm/dd/y	/У	_	4/2019	_	/2019	5/15/		9 :	5/15/2019	5/15/2			
Time		4-hour		_	1030		110	14			1448	150			
Depth to Water		eet	DNIADL C.	_	6.08	0.	.05	6.	05		6.05	6.0	15		
Product/Thick	ness 1	LNAPL/I	DNAPL fe	et											
Field data met  ☐ YSI ProPlu	Purge depth feet Well goes dry during purging: ☐ Yes ☑ No												yethylene Flon C 0408		
Time	24-hou	r 1413	5 1420	1425	1430	1435	1440	1445						Rer	narks
Purge vol.	gallons														
Purge rate	mL/mii	n 170	170	170	170	170	170	170							
pН	su	6.5	6.6	6.6	6.7	6.7	6.6	6.6							
Temp.	°C	19.4		19.3	19.7	19.3	18.8	18.7							
Conductivity	μS/cm	598	_	597	598	601	600	598							
DO	mg/L	2.8	1.5	1.1	0.5	0.5	0.4	0.4							
ORP	mV	109.	8 108.7	105.5	103.4	102.2	105.1	106.7							
Turbidity	NTU	6.0	3.0	2.1	3.3	3.0	2.5	2.4							
Color/tint		clea	r clear	clear	clear	clear	clear	clear							
Odor		none	e none	none	none	none	none	none							
Sample Data															
Samp	le ID		Date	T	ime	# Conta	iners	# Filter	ed			R	emarks		
MW-103			5/15/201	9 1	455	2		0							
Sampler's Na	me (prin	nt):	N	Iichael	Claytoı	1		Sample	er Sig	gnati	ure:	traı	nscribed	by HLI	7

Facility:	Plum	Point E	nergy Sta	tion	S	ite ID:	MV	V-108		Sa	ımpler:		Michael	Clayton	
Project Numb			1992-001			ate:	5/14/				mpler Orga				Ltd
<u> </u>		X17370-	1772-001	(LIA)	D	atc.	3/14/	2017		Da	impier Orga	mzation	. 1 1117	1550014105	, Etd.
Weather:	on	partly c	loudy		Δir	Temp. (	ъЕ).	75	Wir	ıd.		outh so	utheast (	at 4 mph	
Site type:		partity C	loudy									soum-so		T .	Well
☑ Monitorin	ng Well	$\Box$ E	xtraction	Well	wei	l casing	materia	ai:	Wel	II di	ameter		inches	2	locked?
Productio			orehole						Tota	al de	epth from T	OC	feet		<b>∠</b> Yes
Dewatering Other:	ng Well	⊔s	pring			ron Other:			TOO	C be	elow/above	ground	feet		□No
Damages/rep	airs need	ded:													
Water Level I		• 4•		Was	1 1	meter:	ПС	a 4 a ala /Iv	7 a a1-	100	)' ☐ Geot	a ala /IV a a	1- 2002		
Measuring por  ☑ Mark/notch				wat	er ievei	meter:		otecn/k ron Dip			☐ Geot		k 200 □ Otl	her:	
□ North rim o				Pre	-purge	Pre-1	purge		ring	Ť	Purge	Aft			
☐ Other:					nitial		mation		ging		end	samp		Rem	arks
Date	n	nm/dd/y	у	5/1	4/2019	5/14/	/2019	5/14	/201	9	5/14/2019	5/14/2	2019		
Time	2	4-hour		(	930	14	105	14	421		1433	144	19		
Depth to Wate	er f	eet		,	7.98	7.	98	7	.96		7.96	7.9	6		
Product/Thick	iness L	NAPL/I	NAPL fe	et											
Field Data															
Field data met			_				ump de		on:					cription:	
☐ YSI ProPlu			Hach 2				Perista		1 1.		1/			able polye	
☑ YSI MPS 5 ☐ Other:	56	_	HF Scie Other:	entific I	urbidin		l Bladd ] Subm		dedic	cate	ed / 🗆 portal			able Teflo able PVC	n
Purge depth	feet		1	oes dry	during	purging:		es 🔽	No				2 ispost		
Casing vol.	gallons									nteri	nal diameter	of well	(inches	$1^{2} \times 0.04$	08
Time	24-hou	<del></del>		1420	1425	1430			T					Rema	
Purge vol.	gallons	_													
Purge rate	mL/mii		175	175	175	175									
pН	su	6.7	6.8	6.8	6.8	6.8									
Temp.	°C	21.1	20.6	20.5	20.6	20.6									
Conductivity	μS/cm	848	846	845	845	844									
DO	mg/L	4.6	1.3	0.9	0.7	0.7									
ORP	mV	125.4	127.5	125.7	124.2	123.8									
Turbidity	NTU	6.1	5.3	4.7	4.5	3.7									
Color/tint		clear	clear	clear	clear	clear									
Odor		none	none	none	none	none									
Sample Data		1							1						
Samp	ole ID		Date	Т	ime	# Conta	iners	# Filte	red			Re	emarks		
MW-108			5/14/201	9 1	440	2		0							
G 1 2 27		()	-	<i>f</i> : 1 ·	CI.		1	a .	<u> </u>				., .	1 177.5	
Sampler's Na	me (prın	t):	N	Iichael	Claytor	1		Sampl	er Si	gna	iture:	trai	nscribed	by HLF	

En a:11:4	Dl	Daint E	C4	4:	C	:4- ID:	M	V 112	<u> </u>	C 1 -		1	Cabaal (	710-40-	
Facility:			nergy Sta			ite ID:		V-113		Sample			Michael (		T + A
Project Numb		.14590-	1992-001	(EPA)	L	Date:	5/14/	2019		Sample	er Orga	nızatıon	FINA	ssociates	, Lta.
Site Description					Γ			[							
Weather:	1	partly c	loudy			Temp. (		76	Wind	d:		south	east at 7	mph	XX7 11
Site type:  Monitoring	ng Well	□F	extraction	Well	Wel ☑ I	1 casing	materi	al:	Well	diamet	er		inches	2	Well locked?
☐ Production	n Well	$\Box$ B	orehole						Total	depth	from T	OC	feet		<b>∠</b> Yes
☐ Dewaterir☐ Other:	ng Well		pring		□ I			Ī	TOC	below	above	ground	feet		□No
Damages/rep	airs need	ed:											I	1	l
Water Level I	Data														
Measuring po				Wat	er level	meter:						ech/Kec			
<ul><li>☑ Mark/notch</li><li>☑ North rim of</li></ul>				_				ron Dip	*	_	☑ Solir		Oth	er:	
Other:	or TOC				-purge nitial		purge mation		ring ging		irge end	Aft samp		Rema	arks
Date	m	m/dd/y	'V	_	4/2019		/2019	_	/2019	_	/2019	5/14/2		TOIN	
Time		4-hour	<u> </u>	_	918	-	250	+	301	_	334	135			
Depth to Wate	er fe	et		(	5.60	6.	.60	6.	.60	6	.60	6.6	0		
Product/Thick	iness L	NAPL/I	ONAPL fe	et											
Field Data															
Field data met  ☐ YSI ProPlu  ☐ YSI MPS 5  ☐ Other:	IS		Hach 2. HF Scie Other:			eter neter $\Box$	Perist	er [ 🗆		ated / 🗆	] portal	ole]		ble polye ble Teflo	
Purge depth	feet			•		purging									
Casing vol.	gallons	<u> </u>	T			T	1				iameter	of well	(inches)	$]^2 \times 0.040$	
Time	24-hour	1255	1300	1305	1310	1315	1320	1325	13.	30				Rema	rks
Purge vol.	gallons														
Purge rate	mL/min	_		150	150	150	150	150	_						
pН	su	6.5	6.6	6.7	6.7	6.5	6.7	6.7	6.						
Temp.	°C	17.2	_	18.0	18.0	17.9	17.7	17.6	_						
Conductivity	μS/cm	577		575 6.8	574	572 6.5	571	567	56 6.						
DO ORP	mg/L mV	8.5	7.0 5 123.0	121.2	6.6	117.0	6.6	6.4							
Turbidity	NTU	3.2	6.0	2.7	2.5	2.6	2.6	2.5	2.						
Color/tint		clear	-	clear	clear	clear	clear	clear	-						
Odor		none		none	none	none	none	none	_						
Sample Data	<u> </u>								- 1	<u> </u>	<u> </u>	I	I		
Sample Bata	ole ID		Date	Т	ime	# Conta	iners	# Filte	red			R	emarks		
MW-113			5/14/201		345	2		0							
Sampler's Na	me (print	_ <del></del>		Tichael	Claytor	1		Sample	er Sig	nature:		trai	nscribed	by HLF	

Facility:	Plum	Point F	nergy Sta	tion	S	ite ID:	MV	V-115		Sar	mpler:	N	Michael	Clayton	
Project Numb			-1992-001			ate:		2019			mpler Orga			•	Ltd
J		117370	-1772-001	(LI A)	l D	·atc.	3/14/	2017		Dai	inpier Orga	mzation	. 1 111 2	1550014105	, Ltd.
Site Description Weather:	ON	partly c	loudy		Air '	Temp. (	°F)·	76	Win	ıd.		south	east at 7	mnh	
Site type:		partiy	Today			l casing		-			ameter	South		Τ΄	Well
☑ Monitorin			Extraction	Well	₩ EI		materi	a1.	wei	I UI	ameter		inches	2	locked?
Productio			Borehole			Steel			Tota	ıl de	pth from T	OC	feet		<b>∠</b> Yes
☐ Dewaterin☐ Other:	ig Well		pring			ron Other:			TOC	C be	low/above	ground	feet		□No
Damages/rep	airs nee	ded:						1							
Water Level I	Data														
Water Level I Measuring poi		intion:		Wat	er level	meter:	□ Ge	otech/K	eck	100	' □ Geot	ech/Kec	k 200'		
✓ Mark/notch				l '' at	01 10 101	meter.		ron Dip			☑ Solin		Otl	her:	
☐ North rim o	of TOC				-purge		purge	Dui	ring		Purge	Aft	er		
Other:	ı			_	nitial	_	mation	<del></del>			end	samp		Rem	arks
Date	r	nm/dd/y	'y	5/1	4/2019	5/14	/2019	5/14/	2019	9	5/14/2019	5/14/2	2019		
Time	2	24-hour		(	)910	11	150	12	07		1227	124	13		
Depth to Wate	er f	eet		(	6.66	6.	.66	6.	67		6.67	6.6	7		
Product/Thick	ness I	NAPL/I	ONAPL fe	et											
Field Data															
Field data met		_	_					scriptio	n:					cription:	
☐ YSI ProPlu			Hach 2				Perist		1. 11.	4	1 / 🗆			able polye	
☑ YSI MPS 5 ☐ Other:	56	_	☐ HF Scie ☐ Other:	ntific I	urbidin		J Bladd ] Subm		ledic	cated	d / □ portal			able Teflo able PVC	n
Purge depth	feet		_	nes dry	during	purging			No				Dispose	ibie i ve	
Casing vol.	gallons									tern	ıal diameteı	of well	(inches)	$0.1^2 \times 0.04$	 N8
Time	24-hou	+		1210	1215	1220	1225	(ICCL)] /	\ [III	itti		Of Well	(IIICIICS)	Rema	
	gallons		1203	1210	1213	1220	1223							Kema	пкъ
Purge vol.	mL/mi		140	140	140	140	140								
Purge rate pH		6.3	6.5	6.5	6.5	6.6	6.6								
	su °C	16.9		17.3	17.2	17.2	17.1								
Temp. Conductivity	μS/cm	662		659	662	662	663	1	1						
DO	<u> </u>	6.8	6.4	5.6	6.1	5.4	5.2								
ORP	mg/L mV	100.9		97.6	92.8	95.3	95.7								
Turbidity		_	4.2	4.2		3.1	3.2								
Color/tint	NTU	3.3 clear		clear	4.0 clear	clear	3.2 clear								
Odor		none		none	none	none	none								
		HOH	none	110110	none	Hone	Hone	1	1		1				
Sample Data	ı. ID		Data		·	# Canta		# T:14	1			Д.			
MW-115	ole ID		Date 5/14/201	_	ime 235	# Conta 2	uners	# Filter	ea			R	emarks		
IVI W - 1 1 3		+	3/14/201	9   I	233			U							
		+							-						
Sampler's Na	me (prin	nt):	N	Iichael	Claytor	1		Sample	er Sig	gnat	ture:	traı	nscribed	by HLF	

Facility	Dl., pa	Daint E	narari Cta	tion	C	ite ID:	MV	V-116		Cor		1	Aigheal (	Tloriton	
Facility: Project Number			nergy Sta								mpler:		Michael (	•	T + A
<u> </u>		14590-	1992-001	(EPA)	L	ate:	5/16/	2019		Sai	mpler Orga	nızatıon	FINA	ssociates	, Lta.
Site Descripti	on				Γ										
Weather:		clea	ır			Temp. (		82	Wir			south	west at 7	Τ-	XX7-11
Site type:  Monitoring	o Well	□в	xtraction	Well	Wel	l casing	materi	al:	Wel	l dia	ameter		inches	2	Well locked?
☐ Productio			orehole	,, сп					Tota	al de	epth from T	OC	feet		✓ Yes
Dewaterin	ng Well	$\Box$ S	pring		□ I	ron			тос	7.1	1 / 1	1	C .		
☐ Other:						Other:			100	be	elow/above	ground	feet		□No
Damages/rep	airs neede	ed:													
Water Level 1	Data														
Measuring po		otion:		Wate	er level	meter:									
<ul><li>☑ Mark/notch</li><li>☑ North rim of</li></ul>				Dro	-purge	Dro	⊔ Hei purge	ron Dip	per– ring	-1	☑ Solir	ast 101 Aft	Oth	er:	
☐ Other:	77 100				-purge nitial		mation		ging		Purge end	samp		Rem	arks
Date	mı	m/dd/y	у	5/1	4/2019	5/16	/2019	5/16			5/16/2019	5/16/2			
Time	24	-hour	-	1	.045	10	)50	11	102		1121	114	10		
Depth to Wate	er fee	et		(	5.21	6.	.21	6.	.20		6.20	6.2	0		
Product/Thick	ness LN	NAPL/I	NAPL fe	et											
Field Data															
Field data met		<u>.</u>						scription	on:				iler desc		
☐ YSI ProPlu			Hach 2				Perist				1./□			ble polye	
☑ YSI MPS 5 □ Other:	56	_	] HF Scie ] Other:	entific I	urbidin		J Bladd ] Subm		dedic	cated	d / □ portal		Disposa Disposa	ble Teflo ble PVC	n
Purge depth	feet		Well g	oes dry	during	purging	: 🗆 Y	es 🔽	No				1		
Casing vol.	gallons									itern	nal diameter	of well	(inches)	$]^2 \times 0.040$	08
Time	24-hour	1055		1105	1110	1115	1120							Rema	
Purge vol.	gallons														
Purge rate	mL/min	100	100	100	100	100	100								
pН	su	6.4	6.5	6.6	6.6	6.6	6.6								
Temp.	°C	20.4	20.6	20.9	20.7	21.1	21.1								
Conductivity	μS/cm	506	207	509	506	505	506								
DO	mg/L	1.4	1.1	0.6	0.5	0.4	0.4								
ORP	mV	95.3	95.2	88.7	89.4	91.0	88.4								
Turbidity	NTU	1.9	1.3	1.2	1.0	1.0	1.0								
Color/tint		clear	clear	clear	clear	clear	clear								
Odor		none	none	none	none	none	none								
Sample Data							,								
Samp	ole ID		Date	T	ime	# Conta	iners	# Filte	red			Re	emarks		
MW-116			5/16/201	9 1	130	2		0							
							1								
Sampler's Na	me (print)	):	N	Iichael	Claytor	ı		Sample	er Si	gnat	ture:	trai	nscribed	by HLF	

					T _										
Facility:			nergy Sta			ite ID:		V-117			npler:			Clayton	
Project Numb	per: R1	14590-	1992-001	(EPA)	Г	ate:	5/15/	2019		Sar	npler Or	ganizatio	on: FTN	Associates	, Ltd.
Site Description	on														
Weather:		clou	dy		Air	Temp. (	°F):	84	Win	nd:		sou	thwest at	7 mph	
Site type:	~ XV-11		44:	XX7-11	Wel	l casing	materia	al:	Wel	ll dia	meter		inche	s 2	Well
✓ Monitorin			xtraction orehole	weii		PVC		=	Tota	al de	pth fron	TOC	feet		locked?
☐ Dewaterir			pring					-			Purron		1000		✓ Yes
☐ Other:						Other:			TOO	C be	low/abo	ve groun	d feet		□No
Damages/rep	airs neede	d:													
W-4III	D-4-														
Water Level I Measuring po		ntion:		Wate	ar laval	meter:	□ Gev	otech/K	ock.	100	. П <i>С</i>	eotech/K	eck 200'		
✓ Mark/notch		mon.		vv au	or icver	meter.		on Dip				olinst 101		ther:	
☐ North rim o	of TOC				-purge		purge	Du	ring		Purge		After		
Other:					nitial	_	mation	_	ging		end		npling	Rema	arks
Date		n/dd/y	у	_	4/2019	_	/2019	+	/201	9	5/15/201		5/2019		
Time		-hour			007		525	+	533		1617		632		
Depth to Wate				_	1.98	4.	94	4	.94		4.96		1.97		
Product/Thick	iness LN	IAPL/I	NAPL fe	et											
Field Data															
Field data met		Г.	arr t. o	100D T	1. 1. 11		ump de		on:				Bailer des		41. 1
☐ YSI ProPlu ☑ YSI MPS 5			Hach 2 HF Scie				l Perista l Bladd		dedia	cated	l / 🗆 poi			sable polye sable Teflor	
Other:			Other:				Subm				- / — po-			sable PVC	-
Purge depth	feet		Well g	oes dry	during	purging:	: 🗆 Y	es 🔽	No						
Casing vol.	gallons		= [tota	l depth (	(feet) –	depth to	water	(feet)]	× [ir	ntern	al diame	eter of we	ell (inche	$(s)]^2 \times 0.040$	08
Time	24-hour	1530	1535	1540	1545	1550	1555	1600	) 1	605	1610	1615		Rema	rks
Purge vol.	gallons														
Purge rate	mL/min	170	170	170	170	170	170	170	1	170	170	170			
pН	su	6.3	6.2	6.3	6.4	6.4	6.4	6.4	(	6.5	6.5	6.5			
Temp.	°C	17.6	18.0	17.9	18.0	17.9	17.9	18.0	1	8.1	17.9	17.9			
Conductivity	μS/cm	526	526	526	526	526	526	526	5	528	528	528			
DO	mg/L	4.2	3.6	3.4	3.3	3.2	3.1	3.0	2	2.8	2.8	2.7			
ORP	mV	130.4		132.4	128.4	128.9	129.4	-	_	25.1	123.8	123.5			
Turbidity	NTU	2.5	2.5	2.8	2.4	2.8	3.9	2.7	-	2.4	2.3	3.0			
Color/tint		clear	clear	clear	clear	clear	clear	clear	r c	lear	clear	clear			
Odor		none	none	none	none	none	none	none	e n	one	none	none			
Sample Data															
Samp	ole ID		Date	Т	ime	# Conta	iners	# Filte	red				Remarks		
MW-117			5/15/201	9 1	625	2		0							
MW-117 DUI	)		5/15/201	.9 1	630	2		0							
Sampler's Na	(: 1)			/lichael	C1 4			G 1	a.		nre:		.1	d by HLF	

									1						
Facility:			nergy Sta			ite ID:		V-118			mpler:		Aichael (		
Project Numb	per: R1	14590-	1992-001	(EPA)		ate:	5/15/	2019		Sar	mpler Orga	nization	: FTN A	ssociates,	, Ltd.
Site Descripti	on				-										
Weather:	p	artly c	oudy		Air	Temp. (	°F):	77	Wir	nd:		sou	th at 8 m	ph	
Site type:	~ XV-11		xtraction	XX7 - 11		1 casing	materi	al:	Wel	l dia	ameter		inches	2	Well locked?
✓ Monitorin			xtraction orehole	wen				•	Tota	al de	epth from T	OC	feet		
☐ Dewatering			oring					-							✓ Yes
☐ Other:						Other:			TOO	C be	low/above	ground	feet		□No
Damages/rep	airs neede	ed:													
Water Level 1	Data														
Measuring po		otion:		Wate	er level	meter:									
☑ Mark/notch ☐ North rim o								ron Dip	-	-T	☑ Solin		Oth	ier:	
Other:	or roc				-purge nitial		purge mation		ring ging		Purge end	Afte samp		Rema	arks
Date	mr	n/dd/y	y	_	4/2019	_	/2019	_	/201		5/15/2019	5/15/2			
Time		-hour	,	1	022	13	310	13	321		1342	135	58		
Depth to Wate	er fee	et		2	4.15	4.	.10	4	.10		4.10	4.1	0		
Product/Thick	ness LN	IAPL/D	NAPL fe	et											
Field Data															
Field data met  ☐ YSI ProPlu  ☐ YSI MPS 5  ☐ Other:	S		Hach 2 HF Scie Other:			eter neter $\Box$	l Perist l Bladd			cated	d / □ portal	ole]	Disposa	ription: ble polye ble Teflo ble PVC	
Purge depth	feet		Well g	oes dry	during	purging	: 🗆 Y	es 🔽	No				•		
Casing vol.	gallons		= [tota	depth (	(feet) –	depth to	water	(feet)]	× [in	itern	al diameter	of well	(inches)	$]^2 \times 0.040$	)8
Time	24-hour	1315	1320	1325	1330	1335	1340							Rema	rks
Purge vol.	gallons														
Purge rate	mL/min	110	110	110	110	110	110								
pН	su	6.1	6.1	6.1	6.1	6.1	6.0								
Temp.	°C	18.1	18.5	18.9	19.2	18.3	18.2								
Conductivity	μS/cm	435	433	435	436	435	435								
DO	mg/L	2.4	1.6	1.3	1.2	1.0	1.0								
ORP	mV	111.7	-	122.3	122.6	127.4	127.6								
Turbidity	NTU	5.9	2.8	2.9	5.4	2.8	3.8								
Color/tint		clear	clear	clear	clear	clear	clear								
Odor		none	none	none	none	none	none								
Sample Data															
Samp	ole ID		Date	Т	ime	# Conta	iners	# Filte	red			Re	emarks		
MW-118			5/15/201	9 1	350	2		0							
Sampler's Na	me (print)	:	N	Iichael	Claytoı	1		Sampl	er Si	gnat	ture:	trar	nscribed	by HLF	

Facility:	Plum 1	Point F	Energy Sta	ition	5	Site ID:	M	W-119		San	npler:	N	Michael	Clayton	
Project Numb			-1992-00			Date:		/2019			npler Orga				Ltd
Site Description		11 1370	1772 00	(LITI	, 1	- utc.	3/10/	2019		Sun	iipiei oigu	mzunon		issociates	, 210.
Weather:	011	cle	ar		Air	Temp. (	°F)·	71	Win	nd.		south	west at 5	mnh	
Site type:		CIC	uı .			ll casing					meter	South	inches		Well
☑ Monitorin			Extraction	Well		PVC	materi	iai.							locked?
Production			Borehole			Steel			Tota	al de	pth from T	OC	feet		<b>∠</b> Yes
☐ Dewaterin☐ Other:	ig Well		Spring			fron Other:			TOO	C bel	low/above	ground	feet		□No
Damages/repa	airs need	ed:												I	
Water Level I	Doto														
Measuring poi		ntion:		Wat	er level	meter:	□Ge	otech/k	Zeck	100'	¹ ∏ Geot	ech/Kec	k 200'		
✓ Mark/notch				***	ici icve	meter.		ron Dip			☑ Solii		Otl	ner:	
☐ North rim o	of TOC				e-purge		purge		iring		Purge	Aft	er		
Other:				_	nitial		mation	-	ging		end	samp		Rem	arks
Date	m	m/dd/y	уу		4/2019	5/16	/2019	5/16	5/201	9 :	5/16/2019	5/16/2	2019		
Time		4-hour		_	1036	_	320	08	831		0908	092			
Depth to Water					5.18	9.	.61	9	.61		9.63	9.6	55		
Product/Thick	ness Li	NAPL/1	DNAPL fe	et											
Field Data		<u>.</u>													
Field data met		Г	ZIII. 1. 0	100D T	4.14			escripti	on:				iler desc		41. 1
☐ YSI ProPlu ☑ YSI MPS 5			☑ Hach 2 ☑ HF Sci				Perist		dedia	cated	l / 🗆 portal			ible polye ible Teflo	
Other:	50	_	Other:	JIIIII	uroidii			ersible		catee	г т 🗀 рогия			ible PVC	11
Purge depth	feet		Well g	oes dry	during	purging	: DY	Yes 🔽	No			•			
Casing vol.	gallons		= [tota	l depth	(feet) –	depth to	water	(feet)]	× [ir	ntern	al diamete	r of well	(inches)	$(0.04)^2 \times 0.04$	08
Time	24-hour	0823		0835	0840	0845	0850			900	0905			Rema	
Purge vol.	gallons														
Purge rate	mL/min	170	170	170	170	170	170	170	1	170	170				
pН	su	6.3	6.4	6.3	6.3	6.3	6.4	6.4	(	6.4	6.4				
Temp.	°C	18.9	18.7	18.6	18.7	18.7	18.8	18.8	1	8.9	18.9				
Conductivity	μS/cm	717	716	711	703	703	69	696	6	595	695				
DO	mg/L	2.1	1.2	0.8	0.6	0.6	0.5	0.5	(	0.5	0.5				
ORP	mV	98.7	93.3	97.0	97.1	95.8	92.8	91.7	9	1.3	90.7				
Turbidity	NTU	2.6	1.8	2.2	1.9	1.4	1.3	1.9	2	2.2	1.7				
Color/tint		clea	r clear	clear	clear	clear	clear	clear	r c	lear	clear				
Odor		none	e none	none	none	none	none	none	e n	one	none				
Sample Data		Т		ı	ı				-						
Samp	le ID		Date	_	ime	# Conta	iners	# Filte					emarks		
MW-119			5/16/20		915	2		0			endix III pa				
MW-119			5/16/20	9 (	920	3		0		appe	endix IV pa	arameter	S		
Sampler's Nar	ma (print	٠)٠	1	/lighaal	Clayto	n		Sampl	er Ci	anat	ııre.	tros	nscribed	ьу Ш Б	





# Groundwater Level Data Sheet

Plum Point	<b>ne:</b> Energy Statio			0-1992-001			investiga		PCL		Page Z of Z
Weather Co	onditions:			suring Device:							
PK	870		Ć,	edica 100	/						
			0			***					
Well ID	Date	Tin	ne	Depth to Water (feet below TOC)				r	Damages/Repairs		
			-		Ti	Damaged we	ll pad/casing		Damaged TOC	П	Lacks visibility
MW-1	7/31/19	1324	,	10.00		Damaged wo Damaged bo Damaged eq	llards		Damaged lock Un-kept vegetation		Lacks access See gw sample record
MW-2		/34/	,	10,97		Damaged we Damaged bo Damaged eq			Damaged TOC Damaged lock Un-kept vegetation		Lacks visibility Lacks access See gw sample record
MW-3R		1300		11.03			ell pad/casing llards		Damaged TOC Damaged lock Un-kept vegetation		Lacks visibility Lacks access See gw sample record
MW-4R2		125					ell pad/casing llards		Damaged TOC Damaged lock Un-kept vegetation		Lacks visibility Lacks access See gw sample record
MW-5		115		8:96 AKS NES IN WUI G,41			ell pad/casing llards		Damaged TOC Damaged lock		Lacks visibility Lacks access See gw sample record
MW-6	17	12/7		9.65			ell pad/casing		Damaged TOC Damaged lock Un-kept vegetation		Lacks visibility Lacks access See gw sample record
MW-7		114		12.72		Damaged wo Damaged bo Damaged eq			Damaged TOC Damaged lock Un-kept vegetation		Lacks visibility Lacks access See gw sample record
MW-8		1/35		12,72		Damaged wo Damaged bo Damaged eq			Damaged lock Un-kept vegetation		Lacks visibility Lacks access See gw sample record
MW-10R		122		8,30		Damaged wo Damaged bo Damaged eq			Damaged lock		Lacks visibility Lacks access See gw sample record
MW-11R		1208	Ŀ	9,73			ell pad/casing bllards		_		Lacks visibility Lacks access See gw sample record
MW-13R		1/2.		11.97			ell pad/casing ollards				Lacks visibility Lacks access See gw sample record
MW-15		///7		12,29		Damaged wo Damaged bo Damaged ed			Damaged TOC Damaged lock		Lacks visibility Lacks access See gw sample record
MW-16		1330		11.42			ell pad/casing ollards		Damaged TOC Damaged lock		Lacks visibility Lacks access See gw sample record
MW-17		/23;		9.78			ell pad/casing ollards				Lacks visibility Lacks access See gw sample record
MW-18		1301		8.93			ell pad/casing ollards		Damaged TOC Damaged lock		Lacks visibility Lacks access See gw sample record
MW-19	1	13/8		14.05			ell pad/casing ollards		Damaged TOC Damaged lock		Lacks visibility Lacks access See gw sample record

# Groundwater Sampling Record PPES-EPA Sampling Program

Facility: Plu	ım Point		Site ID:	MIJ	10%	V 43075	Sam	pler: r	106						
Project Num				)1			3/11/					ganization	: FTN		
Site Descrip	otion														
	)/C				T.	Air Tem	p (°F):	84	W	ind:	VNE à	12			
Site type:					,	Well cas			_	ell dia			inches	12	Well
Monitor  Producti			extraction sorehole			<b>©</b> PVC □ Steel			Tot	tal det	oth from	TOC	feet		locked?
☐ Dewater			pring			☐ Iron							1		Yes
☐ Other:					11	Other	:		TO	C bel	ow/abov	e ground	feet		No
Damages/re	pairs nee	ded:											×		
L															
Water Leve				-											
Measuring p  Mark/note	oint desc ch on TO	ription: C		Water	level m	eter: 👨		ch/Kec Dippe			⊐ Geote ⊐ Solins	ch/Keck 2	:00' □ Other:		
☐ North rim		Č		Pre-p	urge	Pre-pu		Duri			Purge	Aft			1
Other:				init		confirm	ation	purgi	_		end	samp	ling	Kem	ıarks
Date		mm/dd/			1/19	8/11	7			+		<del>&gt;</del>			
Time		24-hour		1/3		1115		//3		_	1152	115			
Depth to Wa		feet LNAPL/	DNIADI	1217	2	13.6	27	13.	09	-	13.12	13,	13		
Product/ Thi	ckness I	feet	DNAPL												
Field Data															
Field data m  YSI ProP  YSI MPS  Other:	lus			Scientif		idimeter idimeter		Subme	ltic er (d	edicat	ed/porta	able)	ailer desc Disposa Disposa Disposa	ble polye ble Teflo	
Purge depth	feet		Well g	oes dry	during	purging:	Yes	No							
Casing vol.	gallons						_	1	< [in	ternal	diamete	er of well	(inches)]		
Time	24-hour	1/20	1125	1130	1135	1140	1145	1150						Rema	arks
Purge vol.	gallons							-	1						
Purge rate	mL/min	175	170	170	170	170	170	170	-						
рН	su	7.36	7,21	720		7.15			+						
Temp. Sp. Cond.	°C	22.14	2/16/			20.62			+						
D.O.	μS/cm mg/L	954	100	953		17	938	1	+						
ORP	mV	116.4	116.6	116.5	117,7		119,1	0,25							
Turbidity	NTU	5,69		4,04		3.04									
Color/tint		Chest.	1 1 1 1 1	1101	00.00	3,07	alli	5"							
Odor		More						>							
Sample Da	ta														
	ıple ID		Date		Time	# Cont	ainers	# Filte	red			R	emarks		
no	1 108		8/1//	9 /	155	Z		0	).	Z	x 29	Jul	Bon	ons	
								J		1	LAST				
Sampler's N	mpler's Name (print): MicHael Ch							Samp	er S	ignatı	ıre:	trel	af c	19	

Groundwater Sampling Record
PPES-EPA Sampling Program

						EPA			>							
Facility: Plu					- 1	Site ID:	MW	115			npler:					
Project Num	ber: R1	4590-1	1992-00	)1		Date: g	1119			San	npler O	ganizat	ion: F	ΓN		
Site Descrip	otion															
Weather:	2k					Air Tem			Win	nd: /	VE D	6				
Site type:	337-11		·	. 337-11		Well cas PVC	ing ma	terial:	Wel	l dia	meter		in	ches	d	Well locked?
Monitor ☐ Producti			Extraction Borehole	ı wen		■ PVC □ Steel			Tota	ıl de	pth fron	1 TOC	fe	et		_
☐ Dewater			pring			☐ Iron			_					-		l (Es)
☐ Other:					] [	Other:	•		TOO	C bel	low/abo	ve grou	nd fe	et		No
Damages/re	pairs nee	ded:														
Water Leve	el Data															
Measuring p				Water	level m	eter: 👨					☐ Geot					
Mark/note ☐ North rim		C		D				n Dipper		-	Solin		☐ O After	ther:		
Other:	01 100			Pre-p		Pre-pu confirm		Duri: purgi	_		Purge end		Aiter mpling		Ren	arks
Date		mm/dd/	уу		1/19	8/1/	-	FB.					<del>)</del>			
Time		24-hour			17	0820		08/33				0	1944			
Depth to Wa	iter	feet			,29	12.		12.4	~	0	9381		2.47			
Product/ Thi	ckness	LNAPL/ feet	'DNAPL	7.0	7.04			/ 18 . / .	-	1	938 <sup>K</sup> 2.47	A	D)			
Field data m  YSI ProP YSI MPS Other: Purge depth Casing vol. Time Purge vol. Purge rate pH Temp. Sp. Cond. D.O. ORP Turbidity Color/tint	lus	6.37 18.91 716 6.90 117.2 2.59 Clear	☐ HF ☐ Other  Well g = [tota  835  //0  /.09  /9.60  7/3  /.29  /42,6	Scientifier: oes dry depth \$40	during (feet) –  9,45	110 6.87 20,26 711 4.68 96.2	Yes water 905	910 110 2.01 3 20.68 710 9 4.89 86.8		edica eerna (5')	1 diame 920 110 207	110 210 20,94 711 4,33 86,5	☐ Dis☐ Dis☐ Dis☐ Dis☐ Dis☐ Dis☐ Dis☐ Dis	hes)] <sup>2</sup>   \$35 <sup>-</sup>   //0   7./2   20,4,7	le polye le Teflo le PVC × 0.040 Rem	)8
Odor	L	Mank									~			+->	-	
Sample Da																
San	nple ID		Date		Time	# Cont	ainers	# Filte	ered				Rema	arks		
MU	115		8/1/19	09	340	1		0		С	alcivr	7				
Sampler's N	lame (pri	nt):	:- Ha /	P	Man			Samp	ler Si	gnat	ure:	7. z Ha		-0	750	>

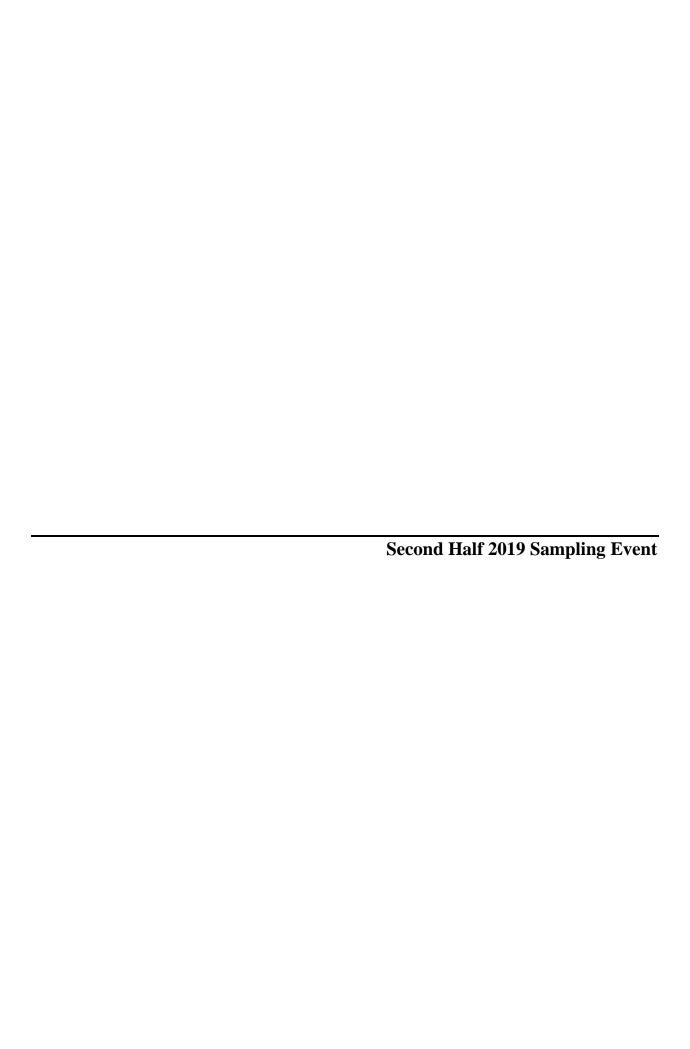
Facility:	Plum	Point F	nergy Sta	tion	S	Site ID:	MV	V-117		Sam	npler:	Ŋ	Michael (	Clayton	
Project Numb			-1992-001			Date:		2019			pler Orga			-	. Ltd.
Site Descripti		,	1,5,2 00.	(2111)			0,2,,	-019			- F				, —
Weather:		partly c	loudy		Air	Temp. (	°F):	85	Win	nd:		nor	th at 7 m	ph	
Site type:						ll casing		al:	Well	l diai	meter		inches	2	Well
Monitorin			Extraction	Well	<b>V</b> ]	PVC						30.0		_	locked?
Productio Dewaterin		_	Borehole pring			Steel		_	Tota	ıl dep	oth from T	.00	feet		✓Yes
Other:	15 ****		pring			fron Other:			TOC	C belo	ow/above	ground	feet		□No
Damages/rep	airs need	ed:													
Water Level 1	Doto														
Measuring po		ntion		Wate	er level	meter:	<b>√</b> Ge	otech/K	eck	100'	□Geo	tech/Kec	·k 200'		
Mark/notch				, vv at	or icve	illicici.		ron Dip				nst 101	⊼k 200 ∐Oth	er:	
☐North rim o	of TOC				-purge		purge		ring		Purge	Aft			
Other:				_	nitial	_	mation		ging		end	samp	_	Rem	arks
Date		ım/dd/y	y y	_	1/2019		2019	-	2019	) ;	8/2/2019	8/2/2			
Time		4-hour			237		130	-	141		1217	122			
Depth to Wate		eet		_	9.78	10	0.10	10	.10		10.10	10.	10		
Product/Thick	iness L	NAPL/I	ONAPL fe	et											
Field Data Field data meters: Pump description: Bailer description:													4. 1		
☐YSI ProPlu ☑YSI MPS 5 ☐Other:			Hach 2: HF Scie Other:			_			dedic	cated	/ porta		Disposa Disposa Disposa	ble Teflo	
Purge depth	feet		Well g	oes dry	during	purging	: <u> </u> }	es 🔽	No						
Casing vol.	gallons		= [total	depth (	(feet) –	depth to	water	(feet)]	× [in	terna	al diamete	r of well	(inches)	$]^2 \times 0.04$	08
Time	24-hour	1135	5 1140	1145	1150	1155	1200	1205	12	210	1215			Rema	rks
Purge vol.	gallons														
Purge rate	mL/min	170	170	170	170	150	150	150	1.	50	150				
pН	su	6.8	6.4	6.2	6.0	6.1	6.2	6.3	6	5.3	6.3				
Temp.	°C	19.0	19.2	18.9	19.1	19.4	19.5	19.2	19	9.2	19.3				
Conductivity	μS/cm	480	480	487	490	501	503	507	5	06	506				
DO	mg/L	3.9	3.7	3.8	3.7	3.5	3.5	3.4	3	3.3	3.3				
ORP	mV	116.	7 127.6	139.0	149.8	144.7	138.2	130.4	1 13	80.6	130.1				
Turbidity	NTU	2.0	1.9	1.8	1.9	1.6	1.4	1.4	1	.3	1.2				
Color/tint		clea	r clear	clear	clear	clear	clear	clear	cl	ear	clear				
Odor		none	none	none	none	none	none	none	no	one	none				
Sample Data															
Samp	ole ID		Date	Т	ime	# Conta	iners	# Filte	red			R	emarks		
MW-117			8/2/201	9 1	220	2		0			_				
MW-117 DUI	)		8/2/201	9 1	225	2		0							
EPA EB-1			8/2/201	9 1	240	2		0							
Sampler's Na	me (print	t):	N	1ichael	Clayto	n		Sample	er Sig	gnatu	ıre:	trai	nscribed 1	by HLF	

Groundwater Sampling Record PPES-EPA Sampling Program

B 99	ъ.	Б	74 4.			0'4 7-			7.7	~						
Facility: Pl				\1	$\rightarrow$	Site ID:		7 118				100				
Project Nun	nber: R	4590-1	992-00	)1		Date:	8/2	19		Saı	mpler Org	ganizat	ion:	FTN		
Site Descri	ption															
Weather:	P/C					Air Tem			Wi	nd:	NNE à	) 4				
Site type:			4. 4.	XX / 11		Well cas	sing m	aterial:	We	ll dia	ameter			inches	2	Well
Monitor ☐ Producti			xtraction orehole	n well		<ul><li>☑ PVC</li><li>☐ Steel</li></ul>			Tota	al de	epth from	TOC		feet		locked?
☐ Dewater			pring			☐ Iron			-		- Tom	100	+	1001		(Yes)
Other:						☐ Other	::		TO	C be	low/abov	e grou	nd	feet		No
Damages/re	pairs nee	ded:											-			-
Water Leve	el Data															
Measuring p	oint desc	ription:		Water	level n	neter: 🛭	Geot	ech/Kec	k 100	)'	☐ Geote	ch/Kec	k 200	),		
Mark/not ☐ North rin		C						n Dippe			☐ Solins			Other:		
Other:	101 100			Pre-p		Pre-pu confirm		Duri	_		Purge		After	- 1	Rem	arks
Date		mm/dd/y	/V		11/4	8/2		purgi	пg	+	end	Sa	mplir	IB		
Time		24-hour	J	130		94				+		-	_	-		
Depth to Wa	ater	feet		8.8		9.2				+				-		
		LNAPL/I	DNAPL	018		110				+						
Product/ Th	ickness	feet		<u></u>												
Field Data																
Field data m								ump des		ion:					ription:	
☐ YSI ProP						idimeter		Perista							ble polye	
☑ YSI MPS ☐ Other:	5556		☐ Oth		ic Turt	oidimeter		⊒ Bladde ∃ Subme			ated/porta	ble)			ble Teflo ble PVC	n
Purge depth	feet	1			durino	purging:		s (Ng	13101					risposa	DICT VC	
Casing vol.	gallons								< lint	erna	ıl diamete	r of w	ell (ir	ches)1	$^{2} \times 0.040$	18
Time	24-hour	950		1000		1010	_	1020	7	_	1030	1 01 111	(11	10.103/1	Rema	
Purge vol.	gallons	1950	150	1000	1005	7010	1013	1020	///0	2-5	1030	=			TOTAL	
Purge rate	mL/mir	160	160	11.15	160	160	160	160	16	n	160					
рН	su		100	601	010	5.84	200	1.07	, /	nC	1					
Temp.	°C	6177	(918)	6761	5168	3/8/	21/2	0107	10.0	7	bill					
Sp. Cond.	μS/cm									_						
D.O.	mg/L							1								
ORP	mV					1										
Turbidity	NTU															
Color/tint																
Odor																
Sample Da	ta			-				"			-					
	nple ID		Date	T	Time	# Cont	ainers	# Filte	red				Ren	narks		
Sampler's N	lame (nri	"	1 -			Sampl	er Si	onat	ure:		1	11	7	ت		

Groundwater Sampling Record
PPES-EPA Sampling Program

					PPES	-EPA	Samp	ning r	10	grai	11					
Facility: Plu	m Point	Energy	Station			Site ID:	MW	-119		San	npler: /	Mcc.				:
Project Num	ber: R1	4590-1	992-00	)1			8-9-			San		ganizat	ion: F	ΓN		
Site Descrip	tion											_				
Weather:	کار ا					Air Tem	p (°F):	73	Wir	nd:	NNE	25				
Site type:	747 11			*** 11		Well cas	ing ma	aterial:			meter		- 1	ches	2	Well locked?
<ul><li>Monitori</li><li>□ Production</li></ul>			extraction orehole	ı well		□ Steel			Tota	al de	pth fron	1 TOC	fe	et		_
☐ Dewateri			pring			☐ Iron		ŀ					-			Yøs
Other:						☐ Other	<b>:</b>		TOO	C bel	ow/abo	ve grou	nd fe	et		No
Damages/rep	pairs nee	ded:														
Water Leve																
Measuring po				Wate	r level r	neter:						ech/Kec		41		
☐ North rim		C		Pre-	purge	Pre-pu		n Dipper Durir		Т	□ Solin Purge		☐ O After	tner:		
☐ Other:					itial	confirm		purgi	_		end		mpling		Rem	arks
Date		mm/dd/	уу	71	3//19	8/2/	19 -			-						
Time		24-hour		/3	18	820		842		4	317	9	33			
Depth to Wa	ter	feet			05	14,40	6	14,4	7	1	4,47		147			
Product/ Thi	olongee I	LNAPL/ feet	DNAPL													
Field Data						-										
Field data m ☐ YSI ProP ■ YSI MPS ☐ Other:	lus			Scient		oidimeter bidimeter	r C	ump des Perista Bladde Subme	ltic er (de	edica	ted/port	able)	□ Dis	sposat sposat	ription: ole polye ole Teflo ole PVC	
Purge depth	feet					g purging										
Casing vol.	gallons		= [tota	l deptl	ı (feet) -	- depth to	water		< [int	$\overline{}$			ell (inc	hes)] <sup>2</sup>		
Time	24-hour	830	835	840	845	- 850	85-5	900	90	25	910	915		_	Rema	irks
Purge vol.	gallons													-		
Purge rate	mL/min	200	200	200	7		200	1000			200	200				
pН	su	6.62			5,84			6,24	1		6,35	6,37		-		
Temp.	°C		19.59			7 19,55	19.5		-		19.59			-	_	
Sp. Cond.	μS/cm	509	5/2	5/2		503	502			02	502			-	_	
D.O.	mg/L	2.51		1,32	-	0.81	0,70				0134					
ORP	mV	_	144.9								13412			-		
Turbidity	NTU	3,70		2.74	2.41	2.35	3.47	2.10	1/1	98	1.91	1.89		-		
Color/tint		Clean										7		+		
Odor		planle										7				
Sample Da		r				1		1					-			
Sam	ple ID		Date		Time	# Con	tainers	+					Rem		<del></del>	
MU.	1/9		8/2/10	5 0	920	3		0	_	Dra	SU ML	_2	XZL	77C }	Cadion	
Sampler's N	ama (nri	nt)·		/	Clay	( a		Sampl	ler Si	ignat	ure:		n.		A	2





# **Ground Water Level Elevation Data Sheet**

PlumPo			110	ject Number:	ATP		Page of
Weather C	ondit	ions:		asuring Device: HeronDipper			
Well ID	Da	ite	Time	Depth to Water (feet below TOC)		Comments	
MW-15	10/2	rilia	1343	19.77			
MW-IIR	Ì		1351	17.26			
MW-6			1355	17.77			
MW-IOR			1401	15.23			
MW-17			1408	17.76			
MW-5			14/4	18.55			
MW-13R			1423	20.64			
MW-6			1439	20.97			
MW-7			1443	21.21			
MW-L			1448	18.70			
MW-16			1452	18.49			
mw-			1456	16.43			
MW-19			1500	20:37			
1/W-3R			1506	17.73			
MW-14			1512	16.25			
MW-4R	2 1	V	1526	15.55			

Facility:	Plum	Point E	nergy Sta	tion	S	ite ID:	MV	V-101		Sample	er:		Andrev	w Pruitt	
Project Numb			1992-00			ate:	10/23							Associates	, Ltd.
Site Description	on				I										
Weather:		suni	ny		Air '	Temp. (	°F):	45	Wind	1:					
Site type:		_	<u> </u>			l casing		al:	Well	diamet	er		inches	S	Well
✓ Monitorin			Extraction Sorehole	Well	☐ P	VC		_				)C			locked?
Dewaterir		_	pring			steel ron		-	Total	deptin	from TO	<i></i>	feet		✓Yes
Other:	O		1 0			on Other:		,	TOC	below	/above g	ground	feet		□No
Damages/rep	airs need	ed:			_ I			L							
Water Level 1				1											
Measuring po				Wat	er level	meter:	_	otech/Ko ron Dipp		-	Geote	ech/Kec		ther:	
North rim				Pre	-purge	Pre-1	purge	Dur			urge	Aft		ilici.	
☐Other:					nitial		mation		_		end	samp		Rema	arks
Date	m	m/dd/y	'y	10/2	21/2019	10/23	3/2019	10/23	/2019	10/2	3/2019	10/23/	2019		
Time	24	1-hour		1	456	07	710	080	00	0	810	082	25		
Depth to Wate	er fe	et		1	6.43	16	.55	16.	62	10	5.62	16.6	52		
Product/Thick	ness L	NAPL/I	DNAPL fe	et											
Field Data															
Field data met			7					escriptio	n:					scription:	
YSI ProPlu YSI MPS 5		F	☐Hach 2☐HF Scie				Perista Bladd	altıc ler [  d	ledica	ated / [	Inortab			able polye able Teflo	
Other:	50	•	Other:			_		ersible	icuica	ited / L	_portao			able PVC	11
Purge depth	feet		Well g	oes dry	during	purging:	: <b>\</b> Y	es 🗸	No						
Casing vol.	gallons		= [tota	depth	(feet) –	depth to	water	(feet)] >	< [inte	ernal d	iameter	of well	(inches	$[s]^2 \times 0.040$	08
Time	24-hour	0758	0801	0804	0807	0810								Rema	rks
Purge vol.	gallons														
Purge rate	mL/min	225	225	225	225	225									
pН	su	7.0	7.0	7.0	7.0	7.0									
Temp.	°C	13.2		13.6	13.6	13.9									
Conductivity	μS/cm	620		619	620	618									
DO	mg/L	0.6	0.5	0.5	0.5	0.5									
ORP	mV	187.2		159.5	156.4	154.3									
Turbidity	NTU	< 0.02	_	< 0.02	< 0.02	< 0.02									
Color/tint		clear	_	clear	clear	clear									
Odor		yes	UNK	UNK	UNK	UNK									
Sample Data		ı			1		1		<u> </u>						
Samp	le ID		Date		-	# Conta	iners	# Filter	ed			Re	emarks		
MW-101			10/23/20	19 0	810	2		0							
									_						
Sampler's Na	me (print	):		Andrew	Pruitt			Sample	r Sigi	nature:		trar	nscribed	d by HLF	

Facility:	Plum	Point E	nergy Sta	tion	S	ite ID:	MW	V-102		Sample	er:		Andre	w Pruitt	
Project Numb			1992-001			ate:	10/23/							Associates	s, Ltd.
Site Description				,					<u>l</u>	1					<u> </u>
Weather:	<u> </u>	suni	1y		Air	Гетр. (°	F): :	51	Wind	1:		nor	th at 2	mph	
Site type:			<u>,                                      </u>			casing i		al:	Well	diame	er		inche	Ť	Well
Monitorin		_	xtraction	Well	☐ P	VC						20			locked?
Production Dewaterin			orehole pring		=	teel		_	I otal	depth	from TO	JC	feet		<b>✓</b> Yes
Other:	15 ,, 611		pring			ron Other:			TOC	below	/above g	ground	feet		□No
Damages/rep	airs need	ed:			1—										
Water Level I															
Measuring poi				Wat	er level		_	otech/Koron Dip			Geote Solin	ech/Kec		ther:	
North rim o		•		Pre	-purge	Pre-p		Dur			sonn	Aft		uner:	
Other:					nitial	confirm			_		end	samp		Rem	arks
Date	n	m/dd/y	У	10/2	1/2019	10/23/	/2019	10/23	/2019	10/2	3/2019	10/23/	2019		
Time	2	4-hour		1	448	09	19	09	31	0	934	095	56		
Depth to Water	er fe	eet		1	8.70	19.	00	19.	.69	1:	9.69	19.6	59		
Product/Thick	iness L	NAPL/I	ONAPL fe	et											
Field Data															
Field data met			_					scriptio	n:					scription:	
✓YSI ProPlu  YSI MPS 5		Ļ	☐Hach 2☐HF Scie				Perista		ladiaa	stad /F	portab			sable polye sable Teflo	
Other:	30	<u> </u>	Other:				Subme		ieurca	iieu / L	_ронав			sable PVC	)11
Purge depth	feet		Well g	oes dry	during	purging:	☐ Y	es 🔽	No				•		
Casing vol.	gallons		= [tota	depth	(feet) –	depth to	water	(feet)] >	× [inte	ernal d	iameter	of well	(inche	$(s)]^2 \times 0.04$	08
Time	24-hour	0925		0931	0934									Rema	
Purge vol.	gallons														
Purge rate	mL/min	175	175	175	175										
pН	su	6.7	6.7	6.7	6.7										
Temp.	°C	17.6		17.9	18.0										
Conductivity	μS/cm	665	665	665	665										
DO	mg/L	0.8	0.7	0.5	0.6										
ORP	mV	117.9		119.5	119.7										
Turbidity	NTU	< 0.02		< 0.02	< 0.02										
Color/tint		clear	_	clear	clear										
Odor		none	none	none	none										
Sample Data															
	le ID		Date			# Contai	ners	# Filter	ed			Re	emarks	1	
MW-102			10/23/20	19 0	934	2		0							
									_						
Sampler's Na	me (prin	t):		Andrew	Pruitt			Sample	r Sigi	nature:		trar	nscribe	d by HLF	

Facility:	Plun	n Point E	Energy Sta	tion	S	ite ID:	MV	V-103		San	npler:		Andrev	v Pruitt	
Project Numb	er:	R14590	-1992-00	(EPA)		Date:	10/22	/2019		San	npler Organ	nization	: FTN	Associates	, Ltd.
Site Description	on				•				•						
Weather:		sun	ny		Air	Temp. (	°F):	64	Win	ıd:		wes	t at 16 i	mph	
Site type:	337 11		· ·	XX 7 11		l casing	materi	al:	Well	l dia	meter		inches	3	Well
Monitorin			Extraction Borehole	Well		PVC Steel			Tota	ıl dei	pth from TO	OC .	feet		locked?
Dewaterir		_	Spring			ron		-							<b>✓</b> Yes
」Other:						Other:			TOC	) bel	low/above g	ground	feet		□No
Damages/rep	airs nee	eded:													
Water Level I	Data														
Measuring po		ription:		Wat	er level	meter:	ПGе	otech/K	eck 1	100'	Geote	ech/Kec	k 200'		
✓ Mark/notch	on TO							ron Dip		Т	Solin		Ot	her:	
☐North rim o☐Other:	of TOC				e-purge nitial		purge mation	Dur	_		Purge end	Aft		Rem	orke
Date		mm/dd/y	JV		111121 21/2019	+	2/2019	purg 10/22		9 1	0/22/2019	samp.		Kelli	arks
Time	+	24-hour	ı J		1506		138	15/22		/ 1	1506	152			
Depth to Water		feet			7.73	_	'.79	17.			17.89	17.9			
Product/Thick			DNAPL fe	+											
Field Data	<u> </u>			·				·					<u> </u>		
Field data met YSI ProPlu YSI MPS 5 Other: Purge depth	S	[		entific T Geotur oes dry	Turbidir b 17061 during	eter meter 366 purging	Perist Bladd Subm    \	ler [	ledic No		l∕∏portab	le] 🔲	Dispos Dispos Dispos	scription: able polye able Teflo able PVC	n
Casing vol.	gallon	S	= [tota	depth	(feet) –	depth to	water	(feet)]	× [in	terna	al diameter	of well	(inches	$[5]]^2 \times 0.040$	08
Time	24-hou	ır 144	3 1451	1454	1457	1500	1503	1506						Rema	rks
Purge vol.	gallon														
Purge rate	mL/m			150	150	150	150	150							
pН	su	6.6		6.6	6.7	6.7	6.7	6.7							
Temp.	°C	18.5		18.6 626	18.5 629	18.6	18.6 635	18.7							
Conductivity DO	μS/cm	0.8		0.5	0.4	0.4	0.4	0.4							
ORP	mg/L mV	161.	_	158.7	157.9	-	154.2								
Turbidity	NTU	<0.0	_	<0.02	<0.02	<0.02	<0.02		_						
Color/tint		clea		clear	clear	clear	clear								
Odor		none		none	none	none	none	none							
Sample Data		•	<u>'</u>		•	•	•	•	•		· <u> </u>		•		
Samp	le ID		Date	Т	ime	# Conta	iners	# Filter	ed			Re	emarks		
MW-103			10/22/20	19 1	500	2		0							
Sampler's Na	ampler's Name (print):  Andrew Pruitt  Sampler Signature: transcribed by HLF														

Facility:	Plum	Point E	nergy Sta	tion	S	ite ID:	MV	V-108		Sampl	ler:		Andrev	v Pruitt	
Project Numb			1992-001			ate:		/2019						Associates	, Ltd.
Site Description	on				I					-					
Weather:		clear	sky		Air '	Гетр. (°	°F):		Win	d:					
Site type:						casing		al:	Well	diame	eter		inches		Well
✓ Monitorin ☐ Production		_	xtraction orehole	Well	☐ F	VC		-				<b>C</b>			locked?
Dewaterin			pring			teel ron		-	Tota	i depu	from TO	<i></i>	feet		<b>✓</b> Yes
Other:	8		r <i>8</i>			on Other:			TOC	belov	v/above g	ground	feet		□No
Damages/repa	airs need	ed:			I								ı		<u> </u>
Water Level I															
Measuring poi				Wat	er level	meter:	_	otech/K ron Dip			☐Geote	ech/Kec		her:	
North rim o		,		Pre	-purge	Pre-1	purge		ring		urge	Aft		1101.	
Other:					nitial		mation		ging		end	samp		Rema	arks
Date	n	m/dd/y	У	10/2	1/2019	10/22	2/2019	10/22	2/2019	9 10/2	22/2019	10/22/	2019		
Time	2	4-hour		1	439	06	553	07	47	(	0800	082	20		
Depth to Water	er fe	eet		2	0.97	21	.00	21	.44	2	21.30	21.3	36		
Product/Thick	ness L	NAPL/I	ONAPL fe	et											
Field Data															
Field data met			_					escriptio	n:					cription:	
✓YSI ProPlu  YSI MPS 5		F	☐Hach 2☐HF Scie				Perist		ladia	otod /	portab			able polye able Teflo	
Other:	30	<u> </u>	Other:					ersible	ieuic	ateu / [	portab			able PVC	11
Purge depth	feet		Well g	oes dry	during	purging	<u>-</u> : □Y	es 🗸	No				1		
Casing vol.	gallons		= [tota	depth	(feet) –	depth to	water	(feet)]	× [int	ternal	diameter	of well	(inches	$[0.040]^2 \times 0.040$	)8
Time	24-hour	0747		0753	0756	0759								Rema	
Purge vol.	gallons														
Purge rate	mL/mir	250	250	250	250	250									
pН	su	6.7	6.7	6.7	6.7	6.7									
Temp.	°C	15.1	15.1	15.2	15.3	15.3									
Conductivity	μS/cm	878	877	874	870	862									
DO	mg/L	0.9	0.5	0.8	0.8	0.8									
ORP	mV	158.8	3 174.2	173.1	172.8	172.0									
Turbidity	NTU	< 0.02	2 < 0.02	< 0.02	< 0.02	< 0.02									
Color/tint		clear	clear	clear	clear	clear		1							
Odor		none	none	none	none	none									
Sample Data					,		•		-						
Samp	ole ID		Date		-	# Conta	iners	# Filter	red			Re	emarks		
MW-108			10/22/20	19 0	800	2		0							
Sampler's Nar	me (prin	t):		Andrew	Pruitt			Sample	er Sig	gnature	<b>:</b> :	trar	nscribed	by HLF	

Facility:	Plum	Point E	nergy Sta	tion	S	ite ID:	MV	V-113		Sampler: Andrew Pruitt							
Project Numb			1992-001		-	1						organization: FTN Associates, Ltd.					
Site Description	on								ı								
Weather:		suni	ıy		Air	Air Temp. (°F): 51 Wind: west-so								at 6 mph			
Site type:			<u></u>			l casing		al:	Well	diam			inche		Well		
✓ Monitorin ☐ Production		∐E □B	Well	☐ F	PVC					h from TO	<b>C</b>	feet		locked?			
Dewaterin			Steel ron			Tota	i depu	n iroin 10	<i></i>	reet	Ŭ Ye						
Other:	O	□s			Other:			TOC	belov	w/above g	ground	feet		□No			
Damages/repairs needed:																	
Water Level I				XX 7 .	1 1			1 /17	1 1	1002		1 /17	1 2002				
Measuring point description: Water level meter: ☐Geotech/Keck 100' ☐Geotech/Keck 200' ☐ Mark/notch on TOC ☐ Wheren Dipper—T ☐ Solinst 101 ☐ Other:																	
□North rim o				Pre	-purge	Pre-	purge				Purge	Aft					
Other:					nitial		mation		_		end	samp	ling	Rem	Remarks		
Date	n	nm/dd/y	y	10/2	21/2019	10/22	2/2019	10/22	/2019	9 10/	/22/2019	10/22/	2019				
Time	2	4-hour		_	423	08	0832		45		0854	091	0				
Depth to Water		eet		2	0.68	20	20.71		.72		20.72	20.7	72				
Product/Thick	ness L	NAPL/E	NAPL fe	et													
Field Data																	
Field data met		_	7					escriptio	n:					scription:			
✓YSI ProPlu  YSI MPS 5		F	Hach 2				Perist		ledic	ated /	portab			sable polye sable Teflo			
Other:	50	<u> </u>	Other:					ersible	icuic	atcu /	рогаа			sable PVC	11		
Purge depth	feet		Well g	oes dry	during	purging	: 🔲 Y	es 🔽									
Casing vol.	gallons		= [total	depth	(feet) –	depth to	water	(feet)]	× [int	ternal	diameter	of well	(inche	$(s)]^2 \times 0.04$	08		
Time	24-hour	0839		0845			0851 0854							Rema			
Purge vol.	gallons																
Purge rate	mL/min	200	200	200	00 200		200 200										
pН	su	6.8	6.8	6.7	6.7 6.7		6.7 6.7										
Temp.	°C	17.9	18.0	18.0	18.0	18.1	18.1 18.2										
Conductivity	μS/cm	518.3	511.6	510.1	500.1	507.5	508.8										
DO	mg/L	3.9	3.9	3.8	3.8	3.7	3.8										
ORP	mV	161.1		164.4	165.2	167.0	171.1										
Turbidity	NTU	< 0.02		< 0.02	< 0.02	< 0.02	< 0.02	-									
Color/tint		clear	clear	clear	clear	clear	clear										
Odor		none	none	none	none	none	none										
Sample Data		<u> </u>		<u> </u>	1		1		ı								
Samp	le ID		Date			# Containers		# Filtered		Remarks							
MW-113			10/22/20	19 0	854	2		0									
Sampler's Name (print):  Andrew Pruitt Sampler Signature: transcribed by HLF											e:	trar	nscribe	d by HLF			

Facility:	Plum	Point I	Energy	Statio	on	S	Site ID: MW-115					Sampler: Andrew Pruitt						
Project Numb		)-1992-			-	1						: FTN Associates, Ltd.						
Site Descripti	on									ı								
Weather:		sur	nny			Air	Temp. (	°F):		Wine	d:							
Site type:					Well casing material: Well diame							ter inches				Well		
✓ Monitorin	ell ell		PVC			Total	l den	oth from T	'OC	feet			locked?					
Dewaterin			Steel ron			1014	i dep	7.11 110111 1	Teet			<b>∠</b> Yes						
☐ Other:						Other:			TOC	belo	ow/above	ground	feet			□No		
Damages/repairs needed:																		
Water Level Date																		
Water Level Data  Measuring point description:  Water level meter: Geotech/Keck 100' Geotech/Keck 200'																		
Mark/notch					watt	er ievei	meter.	_	ron Dip						ther:			
North rim	of TOC					-purge		purge	Du	ring		Purge	Aft					
Other:					<b>†</b>	nitial	_	mation	_	ging		end	samp		]	Rema	ırks	
Date		nm/dd/			1	1/2019	_	3/2019		3/2019	9 10	0/23/2019		-				
Time		4-hour				343		007		032		1038	104					
Depth to Water		eet	DNIADI	C	1	9.77	19	19.79		9.79		19.79	19.	.79				
Product/Thick	iness L	NAPL/	DNAPL	reet									<u> </u>					
Field data met YSI ProPlu YSI MPS 5 Other: Purge depth Casing vol. Time Purge vol. Purge rate pH Temp. Conductivity DO	feet gallons 24-hour gallons mL/mir su °C  µS/cm mg/L	101 175 6.9 17.4 649 2.3	HF S Other Well = [to 4 101	Scient cr: C 1 goe otal d 7 1 1 5 5 9 3 4 9 9	ific T Geoturb s dry epth (020 175 6.8 17.1 643 1.8	175 6.9 17.2 644 1.7	eter meter 366	Perist Bladd Subm :	rer [	No   × [int   2   10     6.     6.     17   6.     1.     6.     1.     6.     1.     1.     1.     1.	75 .9 7.6 44	1038   175   6.9   17.7   643   1.4   121.2	ble ]	ailer de Dispos Dispos Dispos	sable probable Table Table Find $[sable Find Table Fin$	oolyet Feflor PVC	08	
ORP	mV	122.			20.6	120.3	120.3	119.4			0.0	121.3						
Turbidity	NTU	<0.0	_	-	0.02	< 0.02	< 0.02	< 0.02	-	_		<0.02						
Color/tint		clea			elear	clear	clear	clear	clear		ear	clear						
Odor		non	e nor	ie r	none	none	none	none	none	no	ne	none						
Sample Data					1	ı		1		<u> </u>								
	ole ID		Da		Time		# Containers		# Filte	red			R	emarks				
MW-115			10/23/		-	038	2		0									
EB-1			10/23/	2019	1	100	2		0									
Sampler's Na	me (prin	t).		A1	ndrew	Pruitt			Sampl	er Sig	natu	ıre:	fra	nscribe	d by H	LF		

Facility:	Plum	Point E	nergy Sta	tion	S	Site ID: MW-116				Sampler: Andrew Pruitt						
Project Numb			-1992-001			Date:		/2019		Sampler Organization: FTN Associates, Ltd.						
Site Description	on															
Weather:		sun	ny		Air	Air Temp. (°F): 45 Wind:							th at 2 i	mph		
Site type:						l casing		al:	Well	diame	ter		inches		Well	
✓ Monitorin			Well	1	PVC						)C	feet 1		locked?		
Dewaterir			Steel Iron			Total	depth	from TO	<i></i>	reet	✓ Y					
Other:	U		pring			Other:			TOC	below	/above g	ground	feet		□No	
Damages/repairs needed:																
Woton Level Date																
Water Level I		• .•		1337	1 1			1 /17	1 1	002		1 /17	1 2002			
Measuring point description: Water level meter: ☐Geotech/Keck 100' ☐Geotech/Keck 200' ☐ Mark/notch on TOC ☐ Heron Dipper—T ☐ Solinst 101 ☐ Other:																
□North rim o				Pre	e-purge	Pre-	purge	Dur			urge	Aft		tiloi.		
Other:					nitial		mation	purg	ging		end	samp	ling	Remarks		
Date		nm/dd/y	'y	10/	21/2019	10/23	3/2019	10/23	/2019	9 10/2	23/2019	10/23/	2019			
Time	2	4-hour		_	1452	_	331	08	47	(	)855	091	.0			
Depth to Water		eet			8.89	18	18.97		97	1	8.97	18.9	97			
Product/Thick	ness L	NAPL/I	ONAPL fe	et												
Field Data																
Field data met		_	¬					escriptio	n:					scription:		
✓YSI ProPlu  YSI MPS 5		Ļ	Hach 2:  HF Scie				Perist		ledics	ated /F	portab			sable polye sable Teflo		
Other:	30	<u>.</u>	Other:					ersible	cuica	ated / [				sable PVC	11	
Purge depth	feet		Well g	oes dry	dry during purging: ☐ Yes ☑ No											
Casing vol.	gallons		= [total	depth	(feet) –	depth to	water	(feet)] >	< [int	ernal c	liameter	of well	(inches	$(s)]^2 \times 0.040$	08	
Time	24-hour	0840		0846	0849	0852								Rema		
Purge vol.	gallons															
Purge rate	mL/mir	225	225	225	225	225	225									
рН	su	6.8	6.8	6.7	6.7	6.7	6.7 6.7									
Temp.	°C	17.3	17.3	17.3	17.4	17.3	17.3 17.4									
Conductivity	μS/cm	615	615	615	616	620	618									
DO	mg/L	0.7	0.6	0.6	0.5	0.5	0.5									
ORP	mV	142.		141.3	140.1	139.2	138.2									
Turbidity	NTU	0.02	0.02	0.02	0.02	0.02	0.02									
Color/tint		clear	r clear	clear	clear	clear	clear									
Odor		none	none	none	none	none	none									
Sample Data		1		-	1		1		1							
Samp	ole ID		Date	_	ime	# Conta	iners	# Filtered				Re	emarks			
MW-116			10/23/20	19 (	855	2		0								
Sampler's Name (print):  Andrew Pruitt  Sampler Signature: transcribed by HLF																

Facility:	MV	MW-117 Sampler: Andrew Pru							ruitt									
Project Numb	Ι	Date: 10/22/2019						Sampler Organization: FTN Associates, Ltd.										
Site Description			-1992-(		. ,	I						1						
Weather:		sur		Air	Temp. (	°F):	59 Wind:						west at 12 mph					
Site type:		Wei	ll casing	materi	al:	Wel	ll di	iameter			inches			Well				
Monitoring Well Extraction W							PVC			Т-4	.1.1	l 41	Т	<b>C</b>	feet	lock		
☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring							Steel		-	Total depth from TOC								<b>✓</b> Yes
Other:	28 // 022	<u>۔</u>			Iron Other:			TO	C b	elow/ab	ove g	ground	feet			□No		
Damages/repairs needed:																		
Water Level Data																		
Measuring po		ption:			Wate	er level	l meter:	ПGe	otech/K	eck	100	0, 🔲	Geote	ech/Kec	k 200'			
✓ Mark/notch	on TOC								ron Dip					st 101		thei	r:	
North rim o	of TOC					-purge		purge	During			Purg		Aft				_
Other:					+	nitial		mation	+ + -	ging		end		samp			Remarks	
Date		m/dd/			-	21/2019		2/2019	10/22		19	10/22/2		10/22/				
Time		4-hour			1	404		124		49		115		122				
Depth to Water		et			1	7.76	17	7.83	17	.84		17.8	4	17.8	84			
Product/Thick	iness L	NAPL/	DNAPL	feet														
YSI MPS 556 ☐ HF Scient   ☐ Other: ✓ Other:						Pump description:  Pump description:  Peristaltic  Bladder [ dedicated / portable ]  Submersible  Bailer description:  Disposable polyethylen  Disposable Teflon  Disposable PVC												
Casing vol.	gallons		= [to	tal d	lepth (	(feet) –	depth to	water	(feet)]	× [ir	ıter	nal diar	neter	of well	(inche	(s)] <sup>2</sup>	$\times 0.040$	)8
Time	24-hour	114	1 114	4 1	147 1150		1153	1156									Rema	rks
Purge vol.	gallons																	
Purge rate	mL/min	250	) 250	١	250	250	250	250										
pН	su	6.4	6.5		6.5	6.5		6.5 6.5										
Temp.	°C	18.	7 18.	3	19.0	19.1	19.0	19.1										
Conductivity	μS/cm	524	1 53		531	531	532	532 530										
DO	mg/L	3.3	4.0		3.8	3.6	3.6	3.6										
ORP	mV	151.	.6 157	0 1	58.2	163.0	164.2	164.5										
Turbidity	NTU	< 0.0	0.0	2 <	<0.02	< 0.02	< 0.02	< 0.02										
Color/tint		clea	ır clea	r	elear	clear	clear	clear										
Odor																		
Sample Data																		
Samp	le ID		Da	e	Т	ime	# Conta	niners	# Filter	red	l Remarks							
MW-117			10/22/	2019	1	156	2		0									
MW-117 DUI	)		10/22/	2019	1	200	2		0									
Sampler's Na	Sampler's Name (print): Andrew Pruitt Sampler Signature: transcribed by HLF																	

# Groundwater Sampling Record

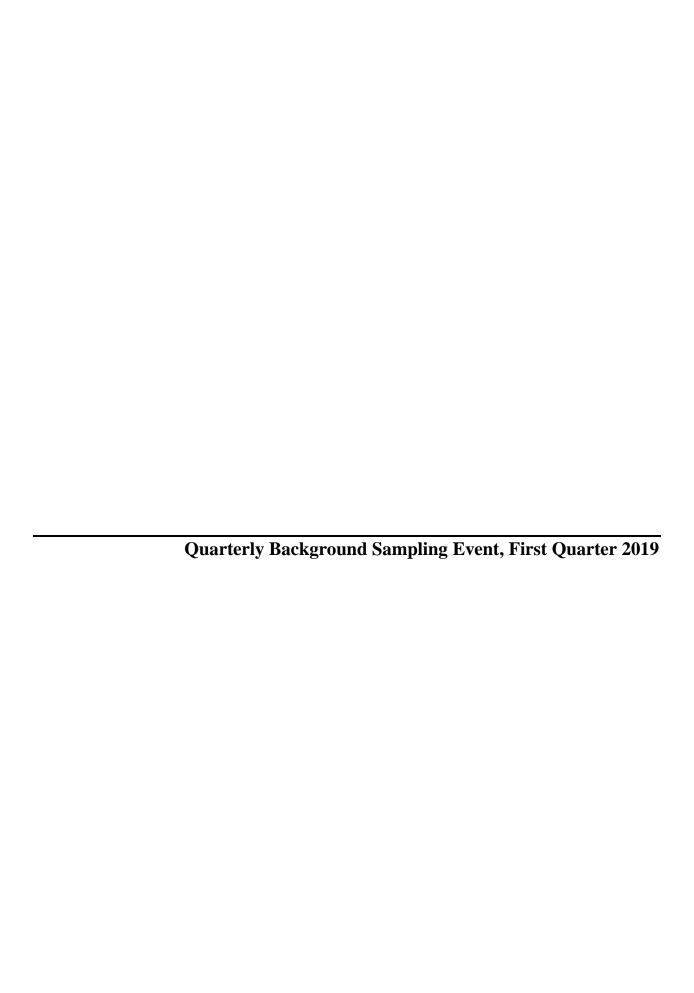
Facility:	Plum	Point E	nergy Sta	tion	S	ite ID:	MV	V-118		Sample	er:		Andre	w Pruitt	
Project Numb			1992-001			ate:		/2019				nization		Associates	, Ltd.
Site Description	on									-					
Weather:		suni	ny		Air	Temp. (	°F):	61	Wind	d:		wes	t at 15	mph	
Site type:					Wel	Well casing material: Well diameter					ter		inche	es	Well
Monitorin			xtraction	Well	☐ F	PVC		-			from To	)C	feet		locked?
_	☐ Production Well ☐ Borehole ☐ S ☐ Dewatering Well ☐ Spring ☐ Ir								Total	depin	HOIH I	<u> </u>	reet		✓Yes
Other:	8		r <i>8</i>			ron Other:			TOC	below	/above g	ground	feet		□No
Damages/repairs needed:															
Water Level I				-											
Measuring poi				Wat	er level	meter:	_	otech/Koron Dipp			Geote	ech/Kec		ther:	
North rim		•		Pre	-purge	Pre-	purge	Dur			sonn urge	Aft		difer.	
Other:					nitial		mation		_		end	samp		Rem	arks
Date	m	m/dd/y	у	10/2	21/2019	10/22	2/2019	10/22	/2019	9 10/2	2/2019	10/22/	2019		
Time	24	4-hour		1	512	13	340	13	57	1	400	142	20		
Depth to Water	er fe	et		1	6.25	16	5.30	16.	29	1	6.29	16.2	29		
Product/Thick	ness L	NAPL/I	NAPL fe	et											
Field Data															
Field data meters:  ✓ YSI ProPlus  ☐ Hach 2100P Turbidimeter ☐ YSI MPS 556 ☐ HF Scientific Turbidimeter ☐ Other:  ✓ Other: Geoturb 17061366  ☐ Pump description:  ✓ Peristaltic ☐ Disposable polyethylene ☐ Bladder [☐ dedicated / ☐ portable ] ☐ Disposable Teflon ☐ Submersible ☐ Disposable PVC															
Purge depth	feet					purging									
Casing vol.	gallons	<u> </u>	= [tota	depth	(feet) –	depth to	water	(feet)] >	< [int	ernal d	iameter	of well	(inche	$(s)]^2 \times 0.04$	08
Time	24-hour	1345	1348	1351	1354	1357	1400							Rema	arks
Purge vol.	gallons														
Purge rate	mL/min	-	150	150	150	150	150								
pН	su	6.9	6.4	6.3	6.5	6.4	6.4								
Temp.	°C	18.2	_	18.3	18.2	18.3	18.1								
Conductivity	μS/cm	552	551	550	547	547	548								
DO	mg/L	4.0	4.0	3.6	3.6	3.4	3.5								
ORP	mV	117.8		143.2	153.8	158.4	166.3	+							
Turbidity	NTU	< 0.02	+	<0.02	< 0.02	< 0.02	< 0.02	+							
Color/tint		clear	-	clear	clear	clear	clear								
Odor		none	none	none	none	none	none								
Sample Data															
Samp	le ID		Date	_		# Conta	iners	# Filter	ed			Re	emarks	1	
MW-118			10/22/20	19 1	400	2		0							
					+										
Sampler's Na	Sampler's Name (print):  Andrew Pruitt  Sampler Signature: transcribed by HLF														

# Groundwater Sampling Record

Facility:			nergy Sta			ite ID:		W-119		Sam				ew Pruitt	
Project Numb	per: R1	14590-	1992-001	(EPA	) [	ate:	10/22	2/2019		Sam	pler Organ	nization	: FTN	Associates	s, Ltd.
Site Description	on														
Weather:		sunn	y		Air	Temp. (	PF):	65	Win	d:	W	est-nort	hwest	at 16 mph	
Site type:	~ XV-11		_44:	XX7 - 11			casing material: Well diameter inches					es	Well		
✓ Monitorin ☐ Productio			xtraction orehole	weii		PVC Steel			Tota	l dep	th from TO	OC .	feet		locked?
Dewaterir		_	oring		=	ron									Yes
Other: TOC below/above ground feet											□No				
Damages/rep	airs neede	d:													
Water Level I	Data														
Measuring point description:  Water level meter: ☐Geotech/Keck 100' ☐Geotech/Keck 200'  Wheren Dipper-T ☐Solinst 101 ☐Other:															
North rim o				Pr	e-purge	Pre-1	purge	ron Dipj Dur		1	Purge	st 101 Aft		iner:	
Other:					nitial		mation		_		end	samp		Rem	arks
Date	mr	n/dd/y	y	10/	21/2019	10/22	2/2019	10/22	/201	9 10	0/22/2019	10/22/	2019		
Time	24	-hour			1500	15	545	15	59		1605	162	21		
Depth to Wate	er fee	et			20.37	20	.37	20.	38		20.38	20.3	38		
Product/Thick	ness LN	IAPL/D	NAPL fe	et											
Field Data															
✓YSI ProPlu	Field data meters:  ✓ YSI ProPlus  ☐ Hach 2100P Turbidimeter  ☐ YSI MPS 556  ☐ HF Scientific Turbidimeter  ☐ Bailer description:  ☐ Disposable polyethylene  ☐ Bladder [☐ dedicated / ☐ portable ]  ☐ Disposable Teflon											n			
Purge depth	feet		Well g	oes dry	during	purging:	: <u> </u>	les 🔽	No						
Casing vol.	gallons		= [tota	l depth	(feet) –	depth to	water	(feet)]	< [in	terna	l diameter	of well	(inche	$[es)]^2 \times 0.04$	08
Time	24-hour	1553	1556	1559	1602	1605								Rema	arks
Purge vol.	gallons														
Purge rate	mL/min	300	300	300	300	300									
pН	su	6.7	6.7	6.7	6.7	6.7									
Temp.	°C	18.8	18.9	18.8	18.8	18.9									
Conductivity	μS/cm	717	723	726	724	725									
DO	mg/L	0.3	0.3	0.2	0.2	0.2									
ORP	mV	124.2		99.4	92.4	89.3									
Turbidity	NTU	< 0.02	+	< 0.02		<0.02		-							
Color/tint		clear	clear	clear	clear	clear								liaht adam	
Odor		unk	unk	unk	unk	unk		<u> </u>	<u> </u>				S	light odor;	unknown
Sample Data															
Samp	ole ID		Date			# Conta	iners	# Filter	ed			Re	emarks	S	
MW-119			10/22/20	19	1605	2		0							
)															
Sampler's Na	me (print)	:		Andrev	v Pruitt			Sample	r Sig	gnatu	re:	traı	nscribe	ed by HLF	



**Laboratory Reports** 





# ANALYTICAL REPORT

February 26, 2019

# Plum Point Services Co., LLC

Sample Delivery Group: L1071521

Samples Received: 02/19/2019

Project Number: 14590-1992-001

Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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ONE	LAB.	NATIONWIDE.

			Collected by	Collected date/time	Received date/time
MW-119 L1071521-01 GW			Michael Clayton	02/18/19 11:10	02/19/19 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1240023	1	02/21/19 16:05	02/21/19 16:34	AEC
Wet Chemistry by Method 9056A	WG1239296	1	02/20/19 01:25	02/20/19 01:25	ELN
Mercury by Method 7470A	WG1239361	1	02/19/19 18:13	02/20/19 23:23	TCT
Metals (ICP) by Method 6010B	WG1240171	1	02/23/19 12:11	02/24/19 13:42	WBD
Metals (ICPMS) by Method 6020	WG1239305	1	02/19/19 20:07	02/21/19 12:37	JDG
			Collected by	Collected date/time	Received date/time
MW-119 DUP L1071521-02 GW			Michael Clayton	02/18/19 11:15	02/19/19 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1240023	1	02/21/19 16:05	02/21/19 16:34	AEC
Wet Chemistry by Method 9056A	WG1239296	1	02/20/19 01:40	02/20/19 01:40	ELN
Mercury by Method 7470A	WG1239361	1	02/19/19 18:13	02/20/19 23:26	TCT
Metals (ICP) by Method 6010B	WG1240171	1	02/23/19 12:11	02/24/19 13:45	WBD
Metals (ICPMS) by Method 6020	WG1240697	1	02/24/19 22:10	02/25/19 13:10	LD
Metals (ICPMS) by Method 6020	WG1240697	1	02/24/19 22:10	02/25/19 21:37	LD
			Collected by	Collected date/time	Received date/time
EB-1 L1071521-03 GW			Michael Clayton	02/18/19 12:20	02/19/19 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	

WG1240023

WG1239296

WG1239361

WG1240171

WG1240697

WG1240697

1

1

1

1

1

1

02/21/19 16:05

02/20/19 01:56

02/19/19 18:13

02/23/19 12:11

02/24/19 22:10

02/24/19 22:10

02/21/19 16:34

02/20/19 01:56

02/20/19 23:28

02/24/19 13:48

02/25/19 13:14

02/25/19 21:42

SAMPLE SUMMARY



















AEC

ELN

TCT

WBD LD

LD

Gravimetric Analysis by Method 2540 C-2011

Wet Chemistry by Method 9056A

Mercury by Method 7470A

Metals (ICP) by Method 6010B

Metals (ICPMS) by Method 6020

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



















Analyte

Mercury

# SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

Collected date/time: 02/18/19 11:10

#### Gravimetric Analysis by Method 2540 C-2011

Result

ug/l

U

Qualifier

MDL

ug/l

0.0490

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	374000		2820	10000	1	02/21/2019 16:34	WG1240023



# Ss





















# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2270		51.9	1000	1	02/20/2019 01:25	WG1239296
Fluoride	253		9.90	100	1	02/20/2019 01:25	WG1239296
Sulfate	43000		77.4	5000	1	02/20/2019 01:25	WG1239296

Dilution

Analysis

date / time

02/20/2019 23:23

Batch

WG1239361

RDL

ug/l

0.200

# Metals (ICP) by Method 6010B

Mercury by Method 7470A

	*						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	110	<u>J</u>	12.6	200	1	02/24/2019 13:42	WG1240171
Calcium	103000		46.3	1000	1	02/24/2019 13:42	WG1240171
Lithium	21.6		5.30	15.0	1	02/24/2019 13:42	WG1240171
Molybdenum	U		1.60	5.00	1	02/24/2019 13:42	WG1240171

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Antimony	U		0.754	2.00	1	02/21/2019 12:37	WG1239305
Arsenic	0.352	J	0.250	2.00	1	02/21/2019 12:37	WG1239305
Barium	154		0.360	5.00	1	02/21/2019 12:37	WG1239305
Beryllium	U		0.120	2.00	1	02/21/2019 12:37	WG1239305
Cadmium	0.194	J	0.160	1.00	1	02/21/2019 12:37	WG1239305
Chromium	U		0.540	2.00	1	02/21/2019 12:37	WG1239305
Cobalt	1.18	J	0.260	2.00	1	02/21/2019 12:37	WG1239305
Lead	U		0.240	2.00	1	02/21/2019 12:37	WG1239305
Selenium	0.592	<u>J J4 J5</u>	0.380	2.00	1	02/21/2019 12:37	WG1239305
Thallium	U		0.190	2.00	1	02/21/2019 12:37	WG1239305

ONE LAB. NATIONWIDE.

Collected date/time: 02/18/19 11:15

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	378000		2820	10000	1	02/21/2019 16:34	WG1240023

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2250		51.9	1000	1	02/20/2019 01:40	WG1239296
Fluoride	252		9.90	100	1	02/20/2019 01:40	WG1239296
Sulfate	43800		77.4	5000	1	02/20/2019 01:40	WG1239296



# Mercury by Method 7470A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.0490	0.200	1	02/20/2019 23:26	WG1239361



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### Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	102	J	12.6	200	1	02/24/2019 13:45	WG1240171
Calcium	101000		46.3	1000	1	02/24/2019 13:45	WG1240171
Lithium	22.8		5.30	15.0	1	02/24/2019 13:45	WG1240171
Molybdenum	U		1.60	5.00	1	02/24/2019 13:45	WG1240171



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Antimony	U	<u>J4</u>	0.754	2.00	1	02/25/2019 21:37	WG1240697
Arsenic	0.596	<u>J</u>	0.250	2.00	1	02/25/2019 13:10	WG1240697
Barium	142		0.360	5.00	1	02/25/2019 13:10	WG1240697
Beryllium	U		0.120	2.00	1	02/25/2019 13:10	WG1240697
Cadmium	U		0.160	1.00	1	02/25/2019 13:10	WG1240697
Chromium	U		0.540	2.00	1	02/25/2019 13:10	WG1240697
Cobalt	1.20	<u>J</u>	0.260	2.00	1	02/25/2019 13:10	WG1240697
Lead	U		0.240	2.00	1	02/25/2019 13:10	WG1240697
Selenium	0.524	<u>J</u>	0.380	2.00	1	02/25/2019 13:10	WG1240697
Thallium	U		0.190	2.00	1	02/25/2019 13:10	WG1240697

ONE LAB. NATIONWIDE.

Collected date/time: 02/18/19 12:20

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	11000		2820	10000	1	02/21/2019 16:34	WG1240023

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	U		51.9	1000	1	02/20/2019 01:56	WG1239296
Fluoride	U		9.90	100	1	02/20/2019 01:56	WG1239296
Sulfate	U		77.4	5000	1	02/20/2019 01:56	WG1239296



### Mercury by Method 7470A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.0490	0.200	1	02/20/2019 23:28	WG1239361



<sup>°</sup>Qc

Gl

### Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	38.7	J	12.6	200	1	02/24/2019 13:48	WG1240171
Calcium	U		46.3	1000	1	02/24/2019 13:48	WG1240171
Lithium	U		5.30	15.0	1	02/24/2019 13:48	WG1240171
Molybdenum	U		1.60	5.00	1	02/24/2019 13:48	WG1240171



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Antimony	U	<u>J4</u>	0.754	2.00	1	02/25/2019 21:42	WG1240697
Arsenic	U		0.250	2.00	1	02/25/2019 13:14	WG1240697
Barium	U		0.360	5.00	1	02/25/2019 13:14	WG1240697
Beryllium	U		0.120	2.00	1	02/25/2019 13:14	WG1240697
Cadmium	U		0.160	1.00	1	02/25/2019 13:14	WG1240697
Chromium	U		0.540	2.00	1	02/25/2019 13:14	WG1240697
Cobalt	U		0.260	2.00	1	02/25/2019 13:14	WG1240697
Lead	0.308	<u>J</u>	0.240	2.00	1	02/25/2019 13:14	WG1240697
Selenium	U		0.380	2.00	1	02/25/2019 13:14	WG1240697
Thallium	U		0.190	2.00	1	02/25/2019 13:14	WG1240697

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1071521-01,02,03

#### Method Blank (MB)

(MB) R3386324-1 02/21/19 16:34 MB Result MB MDL MB RDL MB Qualifier Analyte ug/l ug/l ug/l U Dissolved Solids 2820 10000









(LCS) R3386324-2 02/	21/19 16:34				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8620000	98.0	85.0-115	



<sup>†</sup>Cn











ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1071521-01,02,03

#### Method Blank (MB)

(MB) R3385219-1 02/19/19 11:20

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100
Sulfate	U		77 4	5000







### L1071367-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1071367-01 02/19/19 22:20 • (DUP) R3385219-3 02/19/19 22:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	2280	2260	1	1.00		15
Fluoride	254	253	1	0.276		15
Sulfate	43400	43300	1	0.244		15







### L1071521-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1071521-03 02/20/19 01:56 • (DUP) R3385219-6 02/20/19 02:11

(00) 2:07:02:00 02:20	, (20.)		02/20/10	02		
	Original Result	DUP Result	Dilution	DUP RPD	<b>DUP</b> Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	U	0.000	1	0.000		15
Fluoride	U	0.000	1	0.000		15
Sulfate	U	0.000	1	0.000		15

# Sc

### Laboratory Control Sample (LCS)

(I CS) P3385219-2 02/19/19 11:35

(LC3) K3303213-2 02/13/	13 11.33				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	39900	99.9	80.0-120	
Fluoride	8000	8210	103	80.0-120	
Sulfate	40000	40300	101	80 0-120	

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1071521-01,02,03

#### L1071367-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071367-01 02/19/19 22:20 • (MS) R3385219-4 02/19/19 22:51 • (MSD) R3385219-5 02/19/19 23:06

(00) 210 100 101 02 101 10 22 120 (110) 10 22 10 10 22 10 10 22 10 10 22 10 10 20 20 20 20 20 20 20 20 20 20 20 20 20												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	2280	51300	51400	98.1	98.1	1	80.0-120			0.0886	15
Fluoride	5000	254	5240	5250	99.7	99.9	1	80.0-120			0.219	15
Sulfate	50000	43400	89500	89500	92.2	92.2	1	80.0-120			0.00950	15







#### L1071521-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1071521-03 02/20/19 01:56 • (MS) R3385219-7 02/20/19 02:26

(00) 2:07:02:00 02/207	(110) 1102 110 02/20/10 01:00 (110) 110000210 / 02/20/10 02:20									
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier			
Analyte	ug/l	ug/l	ug/l	%		%				
Chloride	50000	U	49400	98.8	1	80.0-120				
Fluoride	5000	U	5050	101	1	80.0-120				
Sulfate	50000	U	49000	98.1	1	80.0-120				













ONE LAB. NATIONWIDE.

L1071521-01,02,03

#### Method Blank (MB)

Analyte

Mercury

Mercury by Method 7470A

(MB) R3385605-1 02/20/19 22:25











#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3385605-2 02/20/19 22:27 • (LCSD) R3385605-3 02/20/19 22:30

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Mercury	3.00	3.02	3.07	101	102	80.0-120			1.72	20	





# <sup>6</sup>Qc

### L1071482-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071482-01 02/20/19 22:32 • (MS) R3385605-4 02/20/19 22:35 • (MSD) R3385605-5 02/20/19 22:37

(03) E1071402-01 02/20/13 22.32 • (MS) K3303003-4 02/20/13 22.33 • (MSD) K3303003-3 02/20/13 22.37												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Mercury	3.00	U	3.09	3.22	103	107	1	75.0-125			4.00	20







#### L1071503-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071503-01 02/20/19 22:40 • (MS) R3385605-6 02/20/19 22:42 • (MSD) R3385605-7 02/20/19 22:44

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Mercury	3.00	U	3.04	3.31	101	110	1	75.0-125			8.59	20

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

#### L1071521-01,02,03

#### Method Blank (MB)

(MB) R3386526-1 02/24/19 12:52

( )				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000
Lithium	U		5.30	15.0
Molybdenum	U		1.60	5.00









#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3386526-2 02/24/19 12:55 • (LCSD) R3386526-3 02/24/19 12:57

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	995	1020	99.5	102	80.0-120			2.20	20
Calcium	10000	9990	10100	99.9	101	80.0-120			1.55	20
Lithium	1000	1020	1030	102	103	80.0-120			1.89	20
Molybdenum	1000	998	1030	99.8	103	80.0-120			2.67	20









### L1071868-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071868-01 02/24/19 13:00 • (MS) R3386526-5 02/24/19 13:05 • (MSD) R3386526-6 02/24/19 13:07

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	ND	1150	1160	99.9	101	1	75.0-125			0.947	20
Calcium	10000	2610	12600	12600	100	100	1	75.0-125			0.222	20
Lithium	1000	29.3	1110	1110	108	108	1	75.0-125			0.0911	20
Molybdenum	1000	8.54	1010	1010	100	99.8	1	75.0-125			0.450	20

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ONE LAB. NATIONWIDE.

Metals (ICPMS) by Method 6020

U

U

U

U

U

U

U

0.734

#### Method Blank (MB)

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium

Cobalt

Lead

Selenium

Thallium

(MB) R3385849-1	02/21/19 12:24			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ua/l		ua/l	un/l















# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

0.754

0.250

0.360

0.120

0.160

0.540

0.260

0.240

0.380

0.190

2.00

2.00

5.00

2.00

1.00

2.00

2.00

2.00

2.00

2.00

(LCS) R3385849-2 02/21/19 12:28 • (LCSD) F	R3385849-3 02/21/19 12:33
--	---------------------------

(LCS) R3385849-2	2 02/21/19 12:28 • (LCS	D) R3385849	-3 02/21/19 12:3	33							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Antimony	50.0	51.3	50.4	103	101	80.0-120			1.74	20	
Arsenic	50.0	52.8	52.4	106	105	80.0-120			0.725	20	
Barium	50.0	52.5	53.9	105	108	80.0-120			2.63	20	
Beryllium	50.0	47.7	46.3	95.4	92.5	80.0-120			3.03	20	
Cadmium	50.0	51.9	50.5	104	101	80.0-120			2.73	20	
Chromium	50.0	51.5	50.7	103	101	80.0-120			1.42	20	
Cobalt	50.0	52.2	50.5	104	101	80.0-120			3.21	20	
_ead	50.0	50.0	50.2	100	100	80.0-120			0.313	20	
Selenium	50.0	61.9	61.6	124	123	80.0-120	<u>J4</u>	<u>J4</u>	0.553	20	
Thallium	50.0	49.6	49.1	99.3	98.3	80.0-120			1.01	20	



# L1071521-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) I 1071521-01	1 02/21/19 12:37	<ul> <li>(MS) R3385849-5</li> </ul>	02/21/19 12:47 • (MSD) R3385849-6	02/21/19 12:51

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Antimony	50.0	U	52.1	59.2	104	118	1	75.0-125			12.6	20
Arsenic	50.0	0.352	51.3	57.0	102	113	1	75.0-125			10.6	20
Barium	50.0	154	205	209	103	110	1	75.0-125			1.74	20
Beryllium	50.0	U	46.8	51.4	93.6	103	1	75.0-125			9.33	20
Cadmium	50.0	0.194	52.0	57.6	104	115	1	75.0-125			10.1	20
Chromium	50.0	U	51.2	55.8	102	112	1	75.0-125			8.54	20
Cobalt	50.0	1.18	51.3	56.0	100	110	1	75.0-125			8.69	20

Metals (ICPMS) by Method 6020

### ONE LAB. NATIONWIDE.

### L1071521-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071521-01 02/21/19 12:37 • (MS) R3385849-5 02/21/19 12:47 • (MSD) R3385849-6 02/21/19 12:51

,	, ,		•	,								
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Lead	50.0	U	50.3	55.5	101	111	1	75.0-125			9.81	20
Selenium	50.0	0.592	64.8	69.6	128	138	1	75.0-125	<u>J5</u>	<u>J5</u>	7.13	20
Thallium	50.0	П	49.4	54 9	98.8	110	1	75 0-125			10.5	20





















ONE LAB. NATIONWIDE.

Metals (ICPMS) by Method 6020

L1071521-02,03

#### Method Blank (MB)

(MB) R3386680-1 C	)2/25/19 12:39				
	MB Result	MB Qualifier	MB MDL	MB RDL	
Analyte	ug/l		ug/l	ug/l	
rsenic	U		0.250	2.00	
rium	U		0.360	5.00	
eryllium	U		0.120	2.00	
admium	U		0.160	1.00	
nromium	U		0.540	2.00	
balt	U		0.260	2.00	
ead	U		0.240	2.00	
elenium	U		0.380	2.00	
hallium	U		0.190	2.00	

### Method Blank (MB)

(MB) R3386803-1 02	(MB) R3386803-1 02/25/19 21:04								
	MB Result	MB Qualifier	MB MDL	MB RDL					
Analyte	ug/l		ug/l	ug/l					
Antimony	U		0.754	2.00					

# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3386680-2 02/25	(LCS) R3386680-2 02/25/19 12:43 • (LCSD) R3386680-3 02/25/19 12:48									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Arsenic	50.0	49.7	48.4	99.5	96.8	80.0-120			2.74	20
Barium	50.0	47.3	46.9	94.6	93.8	80.0-120			0.928	20
Beryllium	50.0	48.4	47.5	96.9	95.0	80.0-120			2.00	20
Cadmium	50.0	47.4	49.0	94.9	98.1	80.0-120			3.35	20
Chromium	50.0	50.7	49.7	101	99.4	80.0-120			1.94	20
Cobalt	50.0	50.7	50.6	101	101	80.0-120			0.150	20
Lead	50.0	48.4	48.2	96.9	96.5	80.0-120			0.407	20
Selenium	50.0	48.0	48.3	96.0	96.6	80.0-120			0.618	20
Thallium	50.0	47.8	47.5	95.5	95.0	80.0-120			0.562	20

# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3386803-2 02/25/19 21:09 • (LCSD) R3386803-3 02/25/19 21:14											
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Antimony	50.0	61.9	61.2	124	122	80.0-120	<u>J4</u>	<u>J4</u>	1.12	20	

Cobalt

Lead

Selenium

Thallium

### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

20

20

20

20

0.617

1.40

5.63

1.37

Metals (ICPMS) by Method 6020

50.0

50.0

50.0

50.0

ND

ND

ND

ND

#### L1072263-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1072263-01 02/25/19 12:52 • (MS) R3386680-5 02/25/19 13:01 • (MSD) R3386680-6 02/25/19 13:05

(00) 2:07 2200 0: 02/20	()		2,20,10 10.01	(	000 0 02/20/	0 10.00						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Arsenic	50.0	15.8	62.5	63.7	93.3	95.8	1	75.0-125			1.97	20
Barium	50.0	ND	49.3	50.3	93.6	95.5	1	75.0-125			1.94	20
Beryllium	50.0	ND	48.5	47.3	97.0	94.6	1	75.0-125			2.48	20
Cadmium	50.0	ND	49.2	50.3	98.4	101	1	75.0-125			2.31	20
Chromium	50.0	6.84	54.9	55.2	96.1	96.7	1	75.0-125			0.566	20

75.0-125

75.0-125

75.0-125

75.0-125

96.5

95.7

97.1

93.6











Gl



48.0

47.2

51.4

47.4

48.3

47.9

48.6

46.8

95.9

94.4

103

94.9

(OS) L1072263-01 02/25/19 21:18 • (MS) R3386803-5 02/25/19 21:28 • (MSD) R3386803-6 02/25/19 21:32

(00) 1107 2200 01 0	Spike Amount	Original Result		MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Antimony	50.0	ND	64.8	62.7	130	125	1	75.0-125	<u>J5</u>		3.24	20







# **GLOSSARY OF TERMS**

#### ONE LAB. NATIONWIDE.

### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

#### Abbreviations and Definitions

, 10 0 1 0 1 1 d 1 1 0 d 1 1 0	
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

#### Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.









Ss













# **ACCREDITATIONS & LOCATIONS**





#### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky <sup>1 6</sup>	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

#### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

#### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















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Plum Point Services 2739 SCR 623 Osceola, AR 72370	Co., LLC		Accounts P.O. Box	Accounts Payable P.O. Box 567 Osceola, AR 72370			ζ2		22	<i>c</i> 2				-6	Pace A National Cer	Inalytical * ter for Testing & Innovation					
Report to:  Dana Derrington		- 1887					Email To: Christopher.Lussier@nrg.com, dld@ft assoc.com, hlf@ftn-assoc.com										Mount Ju Phone: 6	banon Rd Iliet, TN 371 15-758-585	45344		
Project Description: Plum Point Energy	y Station			City/State Collected:				Pres						Fax: 615-	00-767-5859 758-5859	回線指揮					
Phone: <b>870-815-1248</b> Fax:	Client Project # 14590-1992			Lab Project # NAESOAR-P	LUMPOINT		-HN03	250mlHDPE-NoPres	NO3	NO3					H24	1521					
Collected by (print):	Site/Facility ID	#		P.O.#			HDPE	JHIMO	H pp	Add HI				Acctnu	ım: NAE	SOAR					
Collected by (signature):		ab MUST Be		Quote #	Quote #			TDS 25(	1DPE-4	1L-HDPE-Add HNO3				Prelog	ate: <b>T14</b> 0	1216					
Immediately Packed on Ice N Y		5 Da		Date Res	ults Needed	दु क है CCR Metals 250mlHDPE-HNO3 Cl, F, SO4, TDS 250mlHDPE-No			SO4, T	26 1L-F	6 1L-H	RA-226 1L-HDPE-Add HNO3	504, II	504, TI 6 1L-H	28 1L-F				рв: 2	1/13	W. Beasley
Sample ID	Comp/Grab	Matrix *	Depth	Date Time			CCR	Cl, F,	RA-2	RA-228					ed Via: Fe	Sample # (lab only)					
MW-119	GNAS	GW	Thurs o	2-18-2019	2-18-2019 1110			Х	X	X						-01					
MW-119 DUP	4	GW		1	1115	4	Х	Х	X	X						02					
EB-1		GW		1	1220	4	X	Х	Х	X					al	03					
		GW				4	X	X	X	X											
190 m												Samuel Marie Control of the Control									
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay		**Log radi	ums to a se	parate SDG***			pH Temp						Sample Receipt Checklist COC Seal Present/Intact: NP Y N COC Signed/Accurate: YY N Bottles arrive intact: YY N								
WW - WasteWater DW - Drinking Water OT - Other	Samples retui	rned via:	ourier		57	5	509	1 2	Flow_ 2620		her	Suffic	ro Headena	e sent:	le y						
Relinquished by : (Signature)	9	Date:	2-18-19	Time: Received by: (Signati						Trip Blank	Received:	Yes (No) HCL / MeoH TBR	Preser	COREEN.	rect/Ch	eeked: ZY					
Relinquished by : (Signature)									Temp: 0.3-02	•	ottles Received:	If prese	rvation requi	red by Lo	gin: Date/Time						
Relinquished by : (Signature)		Date:		Time:	by: Gign	ature)	_		Date:						Condition: NCF / OK						

# **Andy Vann**

From:

Mark Beasley

Sent:

Wednesday, February 20, 2019 11:16 AM

To:

Loain

Subject:

L1071521 \*NAESOAR\*

Change MOG to MOICP per client please.

Thanks

Mark Beasley

National Account Manager

Pace Analytical National Center for Testing & Innovation 12065 Lebanon Road | Mt. Juliet, TN 37122 615.773.9672 | Cell 615.330.1602 mbeasley@pacenational.com | pacenational.com

ESC Lab Sciences is now Pace Analytical National Center for Testing & Innovation! Please make note of my new email address and website.



# ANALYTICAL REPORT

# Plum Point Services Co., LLC

Sample Delivery Group: L1071526 Samples Received: 02/19/2019

Project Number: 14590-1992-001

Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Olivia Studebaker Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MW-119 L1071526-01	5
MW-119 DUP L1071526-02	6
EB-1 L1071526-03	7
Qc: Quality Control Summary	8
Radiochemistry by Method 904	8
Radiochemistry by Method SM7500Ra B M	9
GI: Glossary of Terms	10
Al: Accreditations & Locations	11
Sc: Sample Chain of Custody	12























MW-119 L1071526-01 Non-Potable Water			Collected by Michael Clayton	Collected date/time 02/18/19 11:10	Received da: 02/19/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1245169	1	03/08/19 17:00	03/18/19 10:34	MK	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1240812	1	02/22/19 09:27	03/18/19 10:34	MK	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1240812	1	02/22/19 09:27	02/25/19 16:46	RGT	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-119 DUP L1071526-02 Non-Potable Water			Michael Clayton	02/18/19 11:15	02/19/19 08:4	45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1245169	1	03/08/19 17:00	03/18/19 10:34	MK	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1240812	1	02/22/19 09:27	03/18/19 10:34	MK	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1240812	1	02/22/19 09:27	02/25/19 16:46	RGT	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
EB-1 L1071526-03 Non-Potable Water			Michael Clayton	02/18/19 12:20	02/19/19 08:4	45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1245169	1	03/08/19 17:00	03/11/19 11:47	MK	Mt. Juliet, TN

WG1240812

02/22/19 09:27

02/25/19 16:46

RGT

Mt. Juliet, TN





















Radiochemistry by Method SM7500Ra B M

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ss









Olivia Studebaker Project Manager

ONE LAB. NATIONWIDE.

Collected date/time: 02/18/19 11:10

#### Radiochemistry by Method 904

	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
Analyte	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	0.519		0.379	0.638	03/18/2019 10:34	WG1245169
(T) Barium	107			62.0-143	03/18/2019 10:34	WG1245169
(T) Yttrium	104			79.0-136	03/18/2019 10:34	WG1245169







	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
Analyte	pCi/I		+ / -	pCi/I	date / time	
Combined Radium	0.705		0.575	0.882	03/18/2019 10:34	WG1240812





# Radiochemistry by Method SM7500Ra B M

	Result	Qualifier	Uncertainty	MDA	Analysis Date	<u>Batch</u>
Analyte	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.186		0.196	0.244	02/25/2019 16:46	WG1240812
(T) Barium-133	75.4			30.0-110	02/25/2019 16:46	WG1240812



СQс







ONE LAB. NATIONWIDE.

Collected date/time: 02/18/19 11:15

#### Radiochemistry by Method 904

	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
Analyte	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.08		0.351	0.609	03/18/2019 10:34	WG1245169
(T) Barium	107			62.0-143	03/18/2019 10:34	WG1245169
(T) Yttrium	99.5			79.0-136	03/18/2019 10:34	WG1245169





# Radiochemistry by Method Calculation

	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
Analyte	pCi/I		+ / -	pCi/l	date / time	
Combined Radium	1.15		0.495	0.873	03/18/2019 10:34	WG1240812





# Radiochemistry by Method SM7500Ra B M

	Result	Qualifier	Uncertainty	MDA	Analysis Date	<u>Batch</u>
Analyte	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0639		0.144	0.264	02/25/2019 16:46	WG1240812
(T) Barium-133	73.6			30.0-110	02/25/2019 16:46	WG1240812









ONE LAB. NATIONWIDE.

Collected date/time: 02/18/19 12:20

# Radiochemistry by Method 904

	Result	Qualifier	Uncertainty	MDA	Analysis Date	<u>Batch</u>
Analyte	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0757		0.391	0.551	03/11/2019 11:47	WG1245169
(T) Barium	107			62.0-143	03/11/2019 11:47	WG1245169
(T) Yttrium	102			79.0-136	03/11/2019 11:47	WG1245169

# Ср







	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
Analyte	pCi/I		+ / -	pCi/I	date / time	
Combined Radium	0.0991		0.700	1.07	03/11/2019 11:47	WG1240812





# Radiochemistry by Method SM7500Ra B M

	Result	Result Qualifier		MDA	Analysis Date	<u>Batch</u>
Analyte	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0991		0.309	0.52	02/25/2019 16:46	WG1240812
(T) Barium-133	68.5			30.0-110	02/25/2019 16:46	WG1240812









ONE LAB. NATIONWIDE.

Radiochemistry by Method 904

L1071526-01,02,03

#### Method Blank (MB)

(MB) R3390595-1 03/1	1/19 11:47		
	MB Result	MB Qualifier	MB MDA
Analyte	pCi/l		pCi/l
Radium-228	0.350		0.406
(T) Barium	108		
(T) Vttrium	107		







#### L1071255-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1071255-10 03/11/19 11:47 • (DUP) R3390595-5 03/11/19 11:47

	Original Result			DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
Analyte	pCi/I	pCi/l		%			%	
Radium-228	0.793	0.00858	1	196	1.29		20	3
(T) Barium	85.3	98.2						
(T) Yttrium	96.4	119						









### Laboratory Control Sample (LCS)

(LCS) R3390595-2 03/11/19 11:47 Spike Amount LCS Result LCS Rec. Rec. Limits LCS Qualifier % Analyte pCi/l pCi/l % Radium-228 5.00 5.07 101 80.0-120 (T) Barium 101 (T) Yttrium 95.2



### L1071526-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) I 1071526 03 03/11/19 11:47 . (MS) D3390595 3 03/11/19 11:47 . (MSD) D3390595 4 03/11/19 11:47

(OS) L107/1526-03 03/11/19 11:47 • (MS) R3390595-3 03/11/19 11:47 • (MSD) R3390595-4 03/11/19 11:47													
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/l	pCi/l	pCi/l	pCi/I	%	%		%			%		%
Radium-228	20.0	-0.0757	17.0	16.8	84.8	84.0	1	70.0-130			1.01		20
(T) Barium		107			99.4	98.8							
(T) Yttrium		102			105	111							

ONE LAB. NATIONWIDE.

Radiochemistry by Method SM7500Ra B M

L1071526-01,02,03

#### Method Blank (MB)

(MB) R3387198-6 02/26/19 16:47						
	MB Result	MB Qualifier	MB MDA			
Analyte	pCi/l		pCi/l			
Radium-226	0.0287		0.0303			
(T) Barium-133	83.5					





#### L1071526-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1071526-02 02/	:/25/19 16:46 • (DUP)	R3387198-5	02/25/19 16:46
----------------------	-----------------------	------------	----------------

(00) 2:07:020 02 02/2	07.0 .00 (20.	,	02,20,10					
	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
Analyte	pCi/l	pCi/l		%			%	
Radium-226	0.0639	0.122	1	62.4	0.277		20	3
(T) Barium-133	73.6	92.0						







### Laboratory Control Sample (LCS)

(LCS) R3387198-2 (	02/25/19 16:46
--------------------	----------------

(LCS) R330/196-2 U2/25/	/19 10.40				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.52	110	80.0-120	
(T) Barium-133			85.0		





# L1071526-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071526-01 02/25/19 16:46 • (MS) R3387198-3 02/25/19 16:46 • (MSD) R3387198-4 02/25/19 16:46

` '	, ,			,									
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.186	18.6	20.4	91.5	100	1	75.0-125			9.09		20
(T) Barium-133		75.4			95.7	90.6							

# **GLOSSARY OF TERMS**

#### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

#### Abbreviations and Definitions

Appreviations and	d Definitions
MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

#### Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.





















# **ACCREDITATIONS & LOCATIONS**





#### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky <sup>1 6</sup>	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

#### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

#### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

















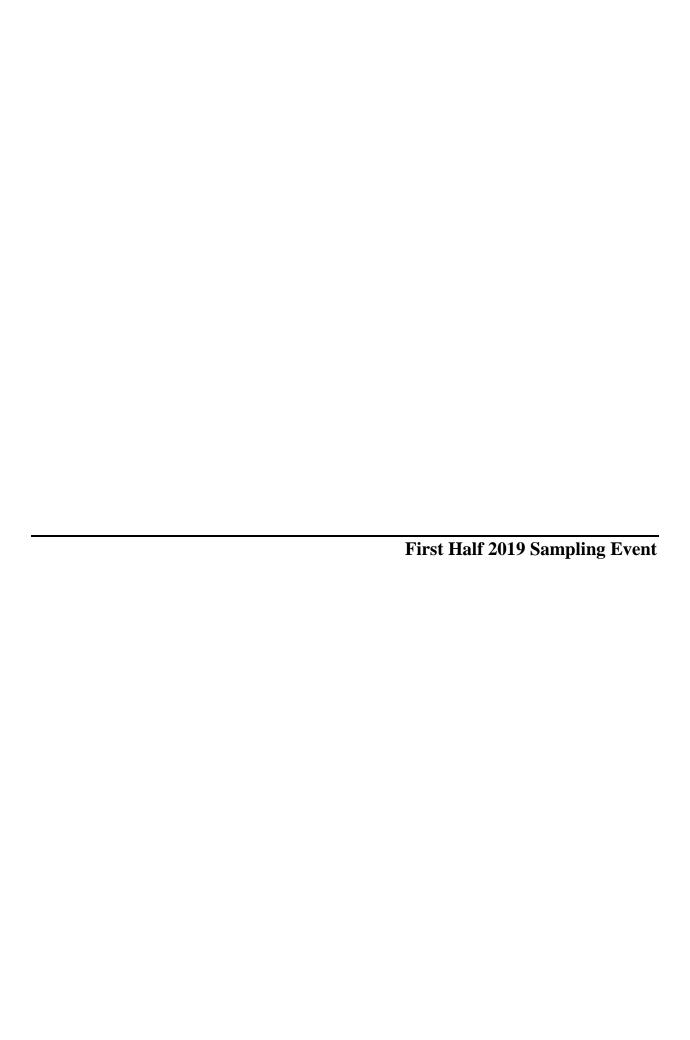


ACCOUNT: PROJECT: Plum Point Services Co., LLC 14590-1992-001

SDG: L1071526

DATE/TIME: 03/19/19 16:03

Plum Point Services Co., LLC			Billing Info	ormation:	T			- 1	Analysis /	/ Contai	ner / Pre	servative	:		7-04	Chain of Custody	Page		
		P.O. Box	ccounts Payable O. Box 567 sceola, AR 72370		Pres Chk			<b>∠2</b>								Pace National C	Analytical®		
Osceola, AR 72370			Usceoia	, AR 72370		/							14						
				Christopher.Lussier@nrg.com, dld@ftr n, hlf@ftn-assoc.com												12065 Lebanon Rd Mount Juliet, TN 37 Phone: 615-758-58	7122 100 30 14 33		
Project Description: <b>Plum Point Energy S</b>	Station			City/State Collected:			Pres									59			
Phone: <b>870-815-1248</b> Fax:	Client Project (14590-1992			Lab Project # NAESOAR-PLUMPOINT			250mlHDPE-HNO3	250mlHDPE-NoPres	HN03	HN03							H247		
Collected by (print):	Site/Facility ID	) #		P.O. #	P.O.#		НОРЕ	JHIMC	H ppv	H ppy							Acctnum: NAI	ESOAR	
Collected by (signature):		Lab MUST Be		Quote #	2.5		50m	\$ 250	PE-4	PE-7							Template: <b>T14</b>		
Immediately Packed on Ice N Y	Same Day Five Day S Day (Rad Only) Two Day 10 Day (Rad Only) Three Day			Date Results Needed		CCR Metals 25	SO4, TDS	िन	228 1L-HDPE-Add								k W. Beasley		
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	CCR	Cl, F,	RA-226	RA-22							Shipped Via: Fo	edEX Ground Sample # (lab only)	
MW-119	GNAS	GW	А	2-18-2019	1110	4	Х	Х	X	х								-01	
MW-119 DUP	4	GW		1	1115	4	х	Х	X	Х								02	
EB-1	to the second	GW		1	1220	4	Х	Х	Х	X							and the second	03	
	5.6	GW			4	4	х	Х	X	Х				0.87					
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* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay	Remarks:***	*Log radiur	ns to a sep			7		pH		Temp			COC Sig	gned/	le Receipt Ch esent/Intact: Accurate: ive intact:	necklist / NP / Y N / Y N / Y N / Y N / Y N / Y N / Y N			
WW - WasteWater DW - Drinking Water OT - Other	Samples return UPS VFec	rned via:	Tr	racking #475	5	091	7	Flow Other					Correct Suffici	ent t	tles used: volume sent: If Applicabl	/Y N			
Relinquished by : (Signature) Date:			Time: Received by: (Signatu			1				Trip Blank Received: Yes NO HCL / MeoH					Preservation correct/Cheeked: ZY N				
Relinquished by: (Signature) Date:				Time: Rec	eceived by: (Signat	ture)			Ţ	%					vation	tion required by Login: Date/Time			
Relinquished by : (Signature)	Date: Time		Time: Red	eceived for lab by:	Cignatu Fav			D	Date: Time: 2/19/19 0900					Hold:		Condition: NCF / 6K			





# ANALYTICAL REPORT

May 29, 2019



















# Plum Point Services Co., LLC

Sample Delivery Group: L1100588 Samples Received: 05/18/2019

Project Number: 14590-1992-001

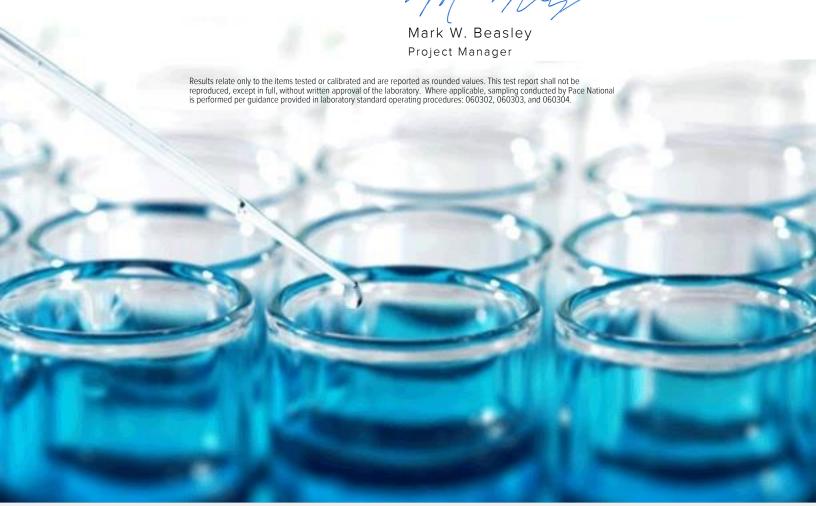
Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:





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Tc: Table of Contents	2				
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MW-108 L1100588-04	9				
MW-113 L1100588-05	10				
MW-115 L1100588-06	11				
MW-116 L1100588-07	12				
MW-117 L1100588-08	13				
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Sc: Sample Chain of Custody

29



NIN 404   4400500 04 CW			Collected by Michael Clayton	Collected date/time 05/16/19 10:30	Received da 05/18/19 08:	
MW-101 L1100588-01 GW				03/10/13 10.30	03/10/13 06.	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
0	14/04004070		date/time	date/time	14145	NA: 1 1: . T
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TI
Wet Chemistry by Method 9056A	WG1286592 WG1284387	1 1	05/25/19 20:19 05/24/19 11:33	05/25/19 20:19	ST CCE	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1284387	ı	05/24/19 11.33	05/25/19 11:23	CCE	Mt. Juliet, T
			Collected by	Collected date/time	Received da	te/time
MW-102 L1100588-02 GW			Michael Clayton	05/16/19 12:35	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
0	14/04004070		date/time	date/time	14145	NA: 1 1: . T
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, T
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:30	05/25/19 20:30	ST	Mt. Juliet, TI
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:25	CCE	Mt. Juliet, Tl
			Collected by	Collected date/time	Received da	te/time
MW-103 L1100588-03 GW			Michael Clayton	05/15/19 14:55	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, T
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:41	05/25/19 20:41	ST	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:28	CCE	Mt. Juliet, Ti
			Collected by	Collected date/time	Received da	ite/time
MW-108 L1100588-04 GW			Michael Clayton	05/14/19 14:40	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, T
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:52	05/25/19 20:52	ST	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:31	CCE	Mt. Juliet, T
			Collected by	Collected date/time	Received da	ite/time
MW-113 L1100588-05 GW			Michael Clayton	05/14/19 13:45	05/18/19 08:	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, T
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:03	05/25/19 21:03	ST	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:33	CCE	Mt. Juliet, T
			Collected by	Collected date/time	Received da	ite/time
MW-115 L1100588-06 GW			Michael Clayton	05/14/19 12:35	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
0	W04000===		date/time	date/time		NA
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, T
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:14	05/25/19 21:14	ST	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1284390	1	05/23/19 11:06	05/24/19 18:40	TRB	Mt. Juliet, TN

SAMPLE SUMMARY



















## ONE LAB. NATIONWIDE.

MW-116 L1100588-07 GW			Collected by Michael Clayton	Collected date/time 05/16/19 11:30	Received data 05/18/19 08:0	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:25	05/25/19 21:25	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:14	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received dat	e/time
MW-117 L1100588-08 GW			Michael Clayton	05/15/19 16:25	05/18/19 08:0	0
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:35	05/25/19 21:35	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:16	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received dat	e/time
MW-118 L1100588-09 GW			Michael Clayton	05/15/19 13:50	05/18/19 08:0	0
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 16:29	05/25/19 16:29	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:19	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received date	e/time
MW-119 L1100588-10 GW			Michael Clayton	05/16/19 09:15	05/18/19 08:0	0
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 16:44	05/25/19 16:44	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:21	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received dat	e/time

SAMPLE SUMMARY





















Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

Method

MW-117 DUP L1100588-11 GW

Gravimetric Analysis by Method 2540 C-2011

EB-2 L1100588-12 GW			Michael Clayton	05/16/19 13:05	05/18/19 08:0	0
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 17:14	05/25/19 17:14	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:27	TRB	Mt. Juliet, TN

Batch

WG1284166

WG1286607

WG1284393

Michael Clayton

Preparation

05/21/19 13:45

05/25/19 16:59

05/24/19 10:25

Collected by

date/time

Dilution

1

1

05/15/19 16:30

05/21/19 14:27

05/25/19 16:59

05/25/19 11:24

Analysis

date/time

05/18/19 08:00

Location

Mt. Juliet, TN

Mt. Juliet, TN

Mt. Juliet, TN

Analyst

MMF

ST

TRB

Collected date/time Received date/time



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ср

















Mark W. Beasley Project Manager

ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 10:30

L1100588

## Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	392000		2820	10000	1	05/23/2019 23:16	WG1284879

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1010		51.9	1000	1	05/25/2019 20:19	WG1286592
Fluoride	263	В	9.90	100	1	05/25/2019 20:19	WG1286592
Sulfate	9170		77.4	5000	1	05/25/2019 20:19	WG1286592



³Ss

# Cn



	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	118	J	12.6	200	1	05/25/2019 11:23	WG1284387
Calcium	103000		46.3	1000	1	05/25/2019 11:23	WG1284387









ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 12:35

L1100588

## Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	466000		2820	10000	1	05/23/2019 23:16	WG1284879

# <sup>2</sup>T<sub>0</sub>

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2870		51.9	1000	1	05/25/2019 20:30	WG1286592
Fluoride	196	В	9.90	100	1	05/25/2019 20:30	WG1286592
Sulfate	75400		77.4	5000	1	05/25/2019 20:30	WG1286592



# Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	150	J	12.6	200	1	05/25/2019 11:25	WG1284387
Calcium	121000		46.3	1000	1	05/25/2019 11:25	WG1284387



Cn









ONE LAB. NATIONWIDE.

Collected date/time: 05/15/19 14:55

# Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	396000		2820	10000	1	05/21/2019 14:27	WG1284166

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1100		51.9	1000	1	05/25/2019 20:41	WG1286592
Fluoride	213	В	9.90	100	1	05/25/2019 20:41	WG1286592
Sulfate	23400		77.4	5000	1	05/25/2019 20:41	WG1286592



# Cn

# <sup>°</sup>Qc









	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	154	J	12.6	200	1	05/25/2019 11:28	WG1284387
Calcium	106000		46.3	1000	1	05/25/2019 11:28	WG1284387

ONE LAB. NATIONWIDE.

Collected date/time: 05/14/19 14:40

## Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	529000		2820	10000	1	05/21/2019 12:08	WG1283769



	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2440		51.9	1000	1	05/25/2019 20:52	WG1286592
Fluoride	184	В	9.90	100	1	05/25/2019 20:52	WG1286592
Sulfate	34500		77.4	5000	1	05/25/2019 20:52	WG1286592



# Cn

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onac	10 1	<u>=</u>	3.30	100		03/23/2013 20.32	1101200332	5
fate	34500		77.4	5000	1	05/25/2019 20:52	<u>WG1286592</u>	Sr
							•	
atala (ICD) by Mat	had CO10D							6











	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	222		12.6	200	1	05/25/2019 11:31	WG1284387
Calcium	169000		46.3	1000	1	05/25/2019 11:31	WG1284387

ONE LAB. NATIONWIDE.

Collected date/time: 05/14/19 13:45

## Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	342000		2820	10000	1	05/21/2019 12:08	WG1283769























	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1580		51.9	1000	1	05/25/2019 21:03	WG1286592
Fluoride	120	В	9.90	100	1	05/25/2019 21:03	WG1286592
Sulfate	3150	<u>J</u>	77.4	5000	1	05/25/2019 21:03	WG1286592





	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	168	J	12.6	200	1	05/25/2019 11:33	WG1284387
Calcium	87200		46.3	1000	1	05/25/2019 11:33	WG1284387

ONE LAB. NATIONWIDE.

Collected date/time: 05/14/19 12:35

## Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	440000		2820	10000	1	05/21/2019 12:08	WG1283769

³Ss

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	598	J	51.9	1000	1	05/25/2019 21:14	WG1286592
Fluoride	184	В	9.90	100	1	05/25/2019 21:14	WG1286592
Sulfate	5630		77.4	5000	1	05/25/2019 21:14	WG1286592



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	75.1	J	12.6	200	1	05/24/2019 18:40	WG1284390
Calcium	128000	<u>01 V</u>	46.3	1000	1	05/24/2019 18:40	WG1284390









ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 11:30

## Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	349000		2820	10000	1	05/23/2019 23:16	WG1284879

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1660		51.9	1000	1	05/25/2019 21:25	WG1286592
Fluoride	189	В	9.90	100	1	05/25/2019 21:25	WG1286592
Sulfate	27000		77.4	5000	1	05/25/2019 21:25	WG1286592



Ss

# Cn









	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	144	J	12.6	200	1	05/25/2019 11:14	WG1284393
Calcium	93200		46.3	1000	1	05/25/2019 11:14	WG1284393

ONE LAB. NATIONWIDE.

Collected date/time: 05/15/19 16:25

# Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	341000		2820	10000	1	05/21/2019 14:27	WG1284166

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1250		51.9	1000	1	05/25/2019 21:35	WG1286592
Fluoride	147	В	9.90	100	1	05/25/2019 21:35	WG1286592
Sulfate	6660		77.4	5000	1	05/25/2019 21:35	WG1286592



# Cn

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	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	133	J	12.6	200	1	05/25/2019 11:16	WG1284393
Calcium	95300		46.3	1000	1	05/25/2019 11:16	WG1284393

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Collected date/time: 05/15/19 13:50

# Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	286000		2820	10000	1	05/21/2019 14:27	WG1284166

























	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1440		51.9	1000	1	05/25/2019 16:29	WG1286607
Fluoride	185		9.90	100	1	05/25/2019 16:29	WG1286607
Sulfate	16500		77.4	5000	1	05/25/2019 16:29	WG1286607

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	125	J	12.6	200	1	05/25/2019 11:19	WG1284393
Calcium	76400		46.3	1000	1	05/25/2019 11:19	WG1284393

ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 09:15

# Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	487000		2820	10000	1	05/23/2019 23:16	WG1284879

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2860		51.9	1000	1	05/25/2019 16:44	WG1286607
Fluoride	252		9.90	100	1	05/25/2019 16:44	WG1286607
Sulfate	47400		77.4	5000	1	05/25/2019 16:44	WG1286607



Ss

# Cn









	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	109	J	12.6	200	1	05/25/2019 11:21	WG1284393
Calcium	131000		46.3	1000	1	05/25/2019 11:21	WG1284393

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Collected date/time: 05/15/19 16:30

## Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	338000		2820	10000	1	05/21/2019 14:27	WG1284166

## Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1130		51.9	1000	1	05/25/2019 16:59	WG1286607
Fluoride	149		9.90	100	1	05/25/2019 16:59	WG1286607
Sulfate	6960		77.4	5000	1	05/25/2019 16:59	WG1286607



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# Cn



<sup>7</sup> Gl	





	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	132	J	12.6	200	1	05/25/2019 11:24	WG1284393
Calcium	95000		46.3	1000	1	05/25/2019 11:24	WG1284393

ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 13:05

## Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	U		2820	10000	1	05/23/2019 23:16	WG1284879

³Ss



	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	U		51.9	1000	1	05/25/2019 17:14	WG1286607
Fluoride	U		9.90	100	1	05/25/2019 17:14	WG1286607
Sulfate	U		77.4	5000	1	05/25/2019 17:14	WG1286607



# Cn

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	55.7	J	12.6	200	1	05/25/2019 11:27	WG1284393
Calcium	66.4	BJ	46.3	1000	1	05/25/2019 11:27	WG1284393









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Gravimetric Analysis by Method 2540 C-2011

L1100588-04,05,06

## Method Blank (MB)

(MB) R3413844-1 05/21/	19 12:08			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000







<sup>†</sup>Cn



(OS) L1100588-06 05/21/19 12:08 • (DUP) R3413844-3 05/21/19 12:08

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	440000	445000	1	1 13		5









(LCS) R3413844-2 05/21/19 12:08

(203) 113413044-2 03/21/1	Spike Amount	LCS Resul	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8660000	98.4	85.0-115	





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Gravimetric Analysis by Method 2540 C-2011

L1100588-03,08,09,11

## Method Blank (MB)

(MB) R3413851-1 05/21/19	9 14:27			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000









(OS) L1100588-11	05/21/19 1/1.27	(DLID) D3/138E1-3	05/21/19 1/1:27
(US) L110US00-11	03/21/19 14.27 •	(DUF) K3413631-3	03/21/19 14.27

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	338000	343000	1	1.47		5







### (LCS) R3413851-2 05/21/19 14:27





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ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1100588-01,02,07,10,12

## Method Blank (MB)

(MB) R3415426-1 05/23/1	19 23:16			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000





Ss





(OS) L1100588-10 05/23/19 23:16 • (DUP) R3415426-3 05/23/19 23:16

	Original Resu	It DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	487000	481000	1	1.24		5









(LCS) R3415426-2 05/23/19 23:16





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Wet Chemistry by Method 9056A

L1100588-01,02,03,04,05,06,07,08

### Method Blank (MB)

(MB) R3415072-1 05/25	/19 14:18			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	56.4	<u>J</u>	9.90	100
Sulfate	U		77.4	5000







# L1100485-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1100485-07 05/25/19 15:59 • (DUP) R3415072-3 05/25/19 16:10

	Original Result		Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	3800	3730	1	1.86		15
Fluoride	189	185	1	2.20		15
Sulfate	10100	9850	1	2.26		15







# L1100485-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1100485-14 05/25/19 18:09 • (DUP) R3415072-6 05/25/19 18:20

(03) 11100403 14 03/23/1	3 10.03 - (DOI)	113413072 0	03/23/13 1	0.20		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	U	0.000	1	0.000		15
Fluoride	U	0.000	1	0.000		15
Sulfate	U	0.000	1	0.000		15

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## Laboratory Control Sample (LCS)

(LCS) R3415072-2 05/2	5/19 14:29				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	40900	102	80.0-120	
Fluoride	8000	8450	106	80.0-120	
Sulfate	40000	41500	104	80.0-120	

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Wet Chemistry by Method 9056A

L1100588-01,02,03,04,05,06,07,08

### L1100485-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100485-07 05/25/19 15:59 • (MS) R3415072-4 05/25/19 16:20 • (MSD) R3415072-5 05/25/19 16:31

(00) 21100 100 07 00/20/1	3 10.03 (1110) 1	(0110072 1 00	0/20/10 10.20	(11100) 1100	, 2 0 00, 20, 10	10.01						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	3800	53800	53600	100	99.6	1	80.0-120			0.482	15
Fluoride	5000	189	5270	5220	102	101	1	80.0-120			0.983	15
Sulfate	50000	10100	59000	58900	97.8	97.7	1	80.0-120			0.132	15





# L1100485-14 Original Sample (OS) • Matrix Spike (MS)

(OS) L1100485-14 05/25/19 18:09 • (MS) R3415072-7 05/25/19 18:31

(00) 21100 100 11 00/20/1	0 .0.00 (0) .		, 20, 10 10.01				
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	ug/l	ug/l	ug/l	%		%	
Chloride	50000	U	50200	100	1	80.0-120	
Fluoride	5000	U	5110	102	1	80.0-120	
Sulfate	50000	U	50200	100	1	80.0-120	













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Wet Chemistry by Method 9056A

L1100588-09,10,11,12

## Method Blank (MB)

(MB) R3415074-1 05/	25/19 08:32			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100
Sulfate	U		77.4	5000





# L1100662-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1100662-02 05/25/19 17:44 • (DUP) R3415074-6 05/25/19 18:28

` '	` '	•				
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	23300	23400	1	0.484		15
Fluoride	777	780	1	0.475		15
Sulfate	56100	56200	1	0.340		15





## Laboratory Control Sample (LCS)

(I CS) P3/1507/L-2 05/25/19 08:46

(LC3) R3413074-2 03/23	3/19 00.40				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	40500	101	80.0-120	
Fluoride	8000	8190	102	80.0-120	
Sulfate	40000	41500	104	80.0-120	

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# L1100662-02 Original Sample (OS) • Matrix Spike (MS)

(OS) | 1100662-02 | 05/25/19 17:44 • (MS) | R3415074-7 | 05/25/19 18:43

(03) 11100002-02 03/23/	19 17.44 • (IVIS) I	13413074-7 03	1/23/13 10.43				
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	ug/l	ug/l	ug/l	%		%	
Chloride	50000	23300	72700	98.8	1	80.0-120	
Fluoride	5000	777	5760	99.7	1	80.0-120	
Sulfate	50000	56100	104000	95.6	1	80.0-120	Е

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Metals (ICP) by Method 6010B

### L1100588-01,02,03,04,05

### Method Blank (MB)

(MB) R3415216-1 05/26/	19 12:14			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000







## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3415216-2	05/26/19 12:17 •	(LCSD) R3415216-3	05/26/19 12:19

• •	,									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	998	986	99.8	98.6	80.0-120			1.26	20
Calcium	10000	9380	9480	93.8	94.8	80.0-120			0.996	20







# L1100383-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100383-01 05/25/19 10:23 • (MS) R3415228-2 05/25/19 10:28 • (MSD) R3415228-3 05/25/19 10:31

(03) [1100303-01 0.	3/23/19 10.23 • (1013) 1	13413226-2 0	3/23/13 10.20	• (IVI3D) K34132	220-3 03/23/	19 10.51							
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%	
Boron	1000	ND	1040	1060	97.5	99.9	1	75.0-125			2.35	20	
Calcium	10000	11300	20500	21000	92.3	97 1	1	75.0-125			2.30	20	







PAGE:

24 of 30

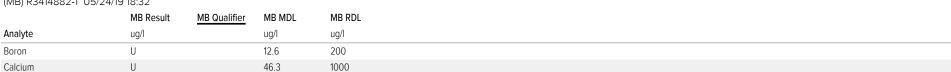
ONE LAB. NATIONWIDE.

L1100588-06

# Method Blank (MB)

(MB) R3414882-1 05/24/19 18:32

Metals (ICP) by Method 6010B









## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414882-2 05/24/19 18:34 • (LCSD) R3414882-3 05/24/19 18:37

(EGG) NO 11 1002 2 00/21	00) NO 111002 2 00/2 1/10 10:01 (2000) NO 111002 0 00/2 1/10 10:01													
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits				
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%				
Boron	1000	981	938	98.1	93.8	80.0-120			4.47	20				
Calcium	10000	9930	9690	99.3	96.9	80.0-120			2.49	20				



<sup>†</sup>Cn





## L1100588-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) I 1100588-06 05/24/19 18:40 • (MS) R3414882-5 05/24/19 18:45 • (MSD) R3414882-6 05/24/19 18:48

(03) 11100366-00 03/24/1	13 10.40 • (1013) 1	3414002-5 0	J/24/13 10.43 •	(10120) 1241400	32-0 03/24/13	10.40						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	75.1	1070	1040	99.5	96.3	1	75.0-125			3.06	20
Calcium	10000	128000	134000	135000	63.5	74 0	1	75 0-125	V	V	0.777	20





ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

1000

10000

L1100588-07,08,09,10,11,12

### Method Blank (MB)

Boron

Calcium

(MB) R3415021-1 05/25	5/19 10:45			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	293	<u>J</u>	46.3	1000







## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3415021-2 05/25/	(LCS) R3415021-2 05/25/19 10:47 • (LCSD) R3415021-3 05/25/19 10:49												
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits			
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%			

95.1

96.9







# <sup>7</sup>Gl

# L1100809-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

951

9690

97.4

99.3

974

9930

(03) 11100809-02 03/2	23/19 10.32 • (1013)	K3413021-3 U	3/23/19 10.37	• (INIOD) KO4100	121-0 03/23/1	19 10.59						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	ND	1120	1140	95.3	97.3	1	75.0-125			1.76	20
Calcium	10000	167000	175000	174000	81.4	71.7	1	75.0-125		V	0.560	20

80.0-120

80.0-120

2.35

2.46

20

20





# L1100823-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	2130	3040	3070	91.5	94.3	1	75.0-125			0.916	20
Calcium	10000	66800	75900	75400	91.9	86.6	1	75.0-125			0.692	20

# **GLOSSARY OF TERMS**



The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

Appleviations and	a Definitions
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier D	escrip'	tion
-------------	---------	------

В	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

















# **ACCREDITATIONS & LOCATIONS**





### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















		Billing Info	Analysis / Container / Preservative										nain of Custody	Page of _					
Plum Point Services Co., LLC 2739 SCR 623 Osceola, AR 72370			P.O. Box	s Payable c 567 , AR 72370	Pres Chk		42									Pace, National Co.	Analytical* enter for feeting & innovation		
Report to:  Dana Derrington				Christopher.Lussie , hlf@ftn-assoc.co	Dftn-										M	2065 Lebanon Rd Iount Juliet, TN 37			
Project Description: Plum Point Ener	rgy Station			City/State Collected:		, 1	res									PI	hone: 615-758-58 hone: 800-767-58 ax: 615-758-5859		
Phone: <b>870-815-1248</b> Fax:	1248 Client Project # 14590-1992-001			Lab Project # NAESOAR-P	LUMPOINT	- 1	250mlHDPE-NoPres	E-HNO3								L	# [ ] ] Joo	60589 9	
Collected by (print): Michael Claylon	Site/Facility II	)#		P.O.#			OmIHD	HDPE-								A	acctnum: NA		
Collected by (signature)  Marlus  Immediately Packed on Ice N y	1 9	y 10 D	4.4.37	Quote #	ults Needed	No.	SO4, TDS 25	B, Ca 250mlHDP								P	emplate: <b>T134757</b> relogin: <b>P708148</b> SR: <b>134 - Mark W. Beasley</b> B:		
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	Cl, F, S	Total								S	hipped Via: F	edEX Ground	
MW-101	GRAS	GW		5-16-19	1030	2	Х	X								57	Nettini ka	-01	
MW-102		GW	The second	5-16-19	F. BEARING	2	X	X										02	
MW-103		GW		5-15-19	1455	2	X	X							2		+6. F.W	03	
ИW-108	and the second	GW		5-14-19	1440	2	Х	X		RAD								OL	
MW-113		GW	13.	5-14-19	1345	7	X	X		FAR	SC	EN.	<0.51	nR/hr				0	
NW-115		GW		5-14-19	1235	2	X	X										0	
иW-116	in land	GW	10 (February)	5-16-19	1130	Ž	Х	X						- 4				6	
/IW-117		GW		5-15-19	1625	2	X	X									vanancii ortova - suorii anno	08	
/IW-118		GW		5-15-19	1350	2	X	X								$\neg \uparrow$		69	
<del>MW-119</del>		GW	4.5	5-16-19	915	2	X	X				7				$\neg$		10	
district 11 (C)										pH _ Flow _		_ Tem			COC Sea COC Sig Bottles	al Pre gned/A s arri	e Receipt ( sent/Intac ccurate: ve intact: les used:		
		FedExCourier			Tracking # 4794			37	QL	100			6		Suffici VOA Zer	ient v	olume sent If Applica dspace:	ble Y	
elinquished by: (Signature)	Tickel Clayetre 5-17-1		ytre 5-17-19 1300								Trip Blank	Recei		res No HCL/T	ЛеоН			Correct/C	
		Jace.		ime: R	eceived by: (Signa	iture,				Temp: °C Bottles Receive					if preser	vation i	required by L	ogin: Date/Time	
elinquished by : (Signature)		Date:	T	ime: Re	eceived for lab by	(Signa	ture)			Date: 5/18/1	9	Tin	ne:	0	Hold:			Condition: NCF / OK	

			Billing Infor	mation:					Analysi	/ Cont	ainer / Pres	ervative	- 1-1-1		Chain of Custody	Page of 4		
Plum Point Services 2739 SCR 623 Osceola, AR 72370	Accounts Payable P.O. Box 567 Osceola, AR 72370												Pace National C	Analytical*  Dentier for Testing & Innovation				
Report to:  Dana Derrington				hristopher.Lussi hlf@ftn-assoc.c	er@nrg.com, dld om	@ftn-									12065 Lebanon Rd Mount Juliet, TN 3 Phone: 615-758-5	7122 <b>1133</b> 123		
Project Description: Plum Point Energy	/ Station			City/State Collected:			Pres								Phone: 800-767-56 Fax: 615-758-5859			
Phone: <b>870-815-1248</b> ax:	Client Project (14590-1992)	lient Project # .4590-1992-001		Lab Project # NAESOAR-PLUMPOI			250mlHDPE-NoPres	250mlHDPE-HNO3							L#			
Collected by (print): MICHAEL CLASTON			P.O. 1		P.O.#			IHDPE							Acctnum: NAESOAR			
Make Commediately Rush		Rush? (Lab MUST Be No.  Same Day Five Day  Next Day 5 Day (R  Two Day 10 Day (		Quote #	sults Needed	ults Needed No. of		В, Са						PB:			Prelogin: P7 TSR: 134 - Ma	08148 ark W. Beasley
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	CI, F, SO4,	Total							Shipped Via:	FedEX Ground Sample # (lab only		
MW-117 DUP	GRAS	GW		5-15-19	1630	2	X	Х								- 11		
EB-2	1	GW		5-16-19	1305	2	X	X								12		
		GW				2	X	X								10.5		
	A	GW				2	X	X		R/	D SCRE	EN: <0	.5 mR/	nr -				
		GW				+1		A										
7.00								The second										
													5					
						711												
* Matrix:	Remarks:	da.							77.29		**			Sa Seal	mple Receipt Present/Inta	Checklist Ct. NP		
SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater										low	Ten	er	Bo Co	C Signettles a	ed/Accurate: arrive intact pottles used:	. Ky		
DW - Drinking Water Samples returned via:  OT - Other UPS FedEx C			ourier Tracking # Save											Sufficient volume sent:  If Applicable  VOA Zero Headspace:				
Relinquished by : (Signature)  Date:		1-19	Received by: (Si	-			Trip Blank Received: Yes HCLY TBR				oH Pr	eservat	ation Correct/Checked: ZY					
Relinquished by : (Signature)  Date:			anne i de la prima de la composición d	/3 <i>0</i> 0	Received by: (Si	gnature)			Ten G	190= 10:	4.17/65	ttles Receive	ed: If p	reserva	tion required by	Login: Date/Time		
Relinquished by : (Signature) Date:		Date:		Time;	Received for lab	by: (Sign	ature)		Dat	8/19	Tir	ne:	2 Hc	ld:		NCF / OF		



# ANALYTICAL REPORT

June 14, 2019

# Plum Point Services Co., LLC

Sample Delivery Group: L1106577

Samples Received: 05/18/2019

Project Number: 14590-1992-001

Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley

Project Manager

Results relate only to the items tested or calibrated and are reported as tounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 560302, 060303, and 060304.

September of the provided in laboratory standard operating procedures: 560302, 060303, and 060304.



















Cp: Cover Page	1				
Tc: Table of Contents					
Ss: Sample Summary					
Cn: Case Narrative	4				
Sr: Sample Results	5				
MW-108 L1106577-01	5				
MW-115 L1106577-02	6				
MW-117 L1106577-03	7				
MW-119 L1106577-04	8				
Qc: Quality Control Summary	9				
Metals (ICP) by Method 6010B	9				
GI: Glossary of Terms					
Al: Accreditations & Locations					
Sc: Sample Chain of Custody					























			Collected by	Collected date/time	Received da	te/time
MW-108 L1106577-01 GW			Michael Clayton	05/14/19 14:40	05/18/19 08:00	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:24	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-115 L1106577-02 GW			Michael Clayton	05/14/19 12:35	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:27	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-117 L1106577-03 GW			Michael Clayton	05/14/19 16:25	05/18/19 08:00	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:30	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-119 L1106577-04 GW			Michael Clayton	05/14/19 09:15	05/18/19 08:00	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:32	CCE	Mt. Juliet, TN



















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

















Mark W. Beasley Project Manager

MW-108

# SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

\*

Collected date/time: 05/14/19 14:40

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	224	В	12.6	200	1	06/12/2019 09:24	WG1294030



















# SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

L1106577

## Metals (ICP) by Method 6010B

Collected date/time: 05/14/19 12:35

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Calcium	128000		46.3	1000	1	06/12/2019 09:27	WG1294030



















#### SAMPLE RESULTS - 03 L1106577

ONE LAB. NATIONWIDE. Collected date/time: 05/14/19 16:25

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Calcium	98300		46.3	1000	1	06/12/2019 09:30	WG1294030



















#### SAMPLE RESULTS - 04 L1106577

ONE LAB. NATIONWIDE.



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>	
Analyte	ug/l		ug/l	ug/l		date / time		
Calcium	135000		46.3	1000	1	06/12/2019 09:32	WG1294030	



















## QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1106577-01,02,03,04

### Method Blank (MB)

(MB) R3420383-1 06/12/	(MB) R3420383-1 06/12/19 08:47					
	MB Result	MB Qualifier	MB MDL	MB RDL		
Analyte	ug/l		ug/l	ug/l		
Boron	51.0	<u>J</u>	12.6	200		
Calcium	H		46.3	1000		







### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(I CC) D3/12/03/83 3	06/12/10 00:40	• (LCSD) R3420383-3	06/12/19 08:52
(LC3) K342U303-2	00/12/19 00.49	• (LC3D) K3420303-3	00/12/19 00.32

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	1040	1010	104	101	80.0-120			2.24	20
Calcium	10000	9720	9690	97.2	96.9	80.0-120			0.230	20







# <sup>7</sup>Gl



(05	1106433-01	06/12/19 08:55 •	(MS	) R3420383-5	06/12/19 09:01 •	(MSD	) R3420383-6	06/12/19 09:03
$(\bigcirc \bigcirc$	) L1100 <del>-</del> 33-01	00/12/13 00.33	(1417	) NOTZ 0000-0	00/12/13 03.01	(17130	) NOTZ 0000-0	00/12/13 03.03

(CS) E1100435-01 00112/13 08.55 • (MS) K5420365-5 00112/13 03.01 • (MSD) K5420365-0 00112/13 03.05												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	ND	1080	1090	97.9	99.0	1	75.0-125			1.05	20
Calcium	10000	49100	59000	58700	98.7	96.1	1	75 0-125			0.454	20







### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

#### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
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Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qua	lifier	D	escri	ption

	1
В	The same analyte is found in the associated blank.
1	The identification of the analyte is acceptable; the reported value is an estimate







Ss















## **ACCREDITATIONS & LOCATIONS**





#### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

#### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	
A2LA - ISO 17025 5	1461.02	
Canada	1461.01	
EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

#### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















	Billing Information:						Analysis / Container / Preservative							Chain of Custody Page of						
Accounts Payable P.O. Box 567 Osceola, AR 72370 Osceola, AR 72370				, LLC Accounts Payable Pre Chi					Accounts Payable P.O. Box 567 Pres Chk 42								Pace Analytical* National Geotor for Indiag & Innovations			
Report to: Dana Derrington				hristopher.Lussier@nrg.com, dld@ftn- , hlf@ftn-assoc.com										12065 Lebanon Rd Mount Juliet, TN 3 Phone: 615-758-5	7122 11334					
Project Description: Plum Point Energy S	City/State					Pres							Phone 800-767-5 Fax: 615-758-5855	"一首最级						
Phone: <b>870-815-1248</b> Fäx:	Client Project # 14590-1992-001		Client Project #		t Project # Lab F		Lab Project # NAESOAR-PLUMPOINT		250mlHDPE-NoPres	HNO3							19 106577	AV Gt		
Collected by (print):	Site/Facility ID	#		P.O.#	4.4		OmlH	HDPE-				72.00	Acctnum: NAESOAR							
Collected by (signature)	The state of the s	ab MUST Be		Quote #			TDS 25	250mlH						Template:T134757  Prelogin: P708148						
My Live Clar Immediately Packed on Ice N Y L	Same DayFive Next Day5 Da Two Day10 E Three Day		y (Rad Only)		ults Needed	No.	SO4, Tf	B, Ca							PB:	FedEX Ground				
/ Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cnt	Cl, F,	Total						Remarks	Sample # (lab only					
MW-101	GRAS	GW		5-16-19	1030	2		X					1		-0	Section 1				
MW-102		GW		5-16-19	1835	2	X	X			1.60/				-02					
MW-103		GW		5-15-19	1455	2	X	X					April 1		-03	F -				
MW-108		GW		5-14-19	1440	2	X	X	RA	A.SC	TENN -	5 mR/hr			-0					
MW-113		GW		5-14-19	1345	2	X	X		AU SU	17-11-10	.o.mH/hr	n in		0	DESCRIPTION OF THE PARTY OF THE				
MW-115		GW		5-14-19	1235	2	X	X							The same of the sa	Communities				
MW-116	92.5	GW		5-16-19	1130	4	X	X							- 6					
MW-117		GW		5-15-19	1625	3	X	X				9.00		i i	0					
MW-118	1	GW		5-15-19	1350	2	X	X	4						1 4					
MW-119		GW	4.4	5-16-14	915	2	X	X				45			THE POST OF THE					
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater	Remarks:									oH	Temp		COC Sea COC Sign Bottles Correct	arrive intac bottles used	act. No X	N N				
DW - Drinking Water OT - Other	Samples recu UPS V_F	edEx C	ourier		Tracking # 4	79	48	1 8837 0400 Trip Blank Received: Yes (No)		Suffici	Sufficient volume sent:  If Applicable  VOA Zero Headspace:  Preservation Correct/Checked:  Y _N  N		_N							
Relinquished by: (Signature)		Date:	7-19	1300	Received by: (Sig Received by: (Sig					9	) H	CC/MeoH BR s Received:			by Login: Date/Time					
Relinquished by (Signater)		Date:				3	1		Tem 4.1	せつこし	11/Ks	24			Conditio					
Relinquished by : (Signature)		Date:		Time:	Received 100 lab	TU	gnature)		5	8/19	Time	800	Hold:		NCF /					

#### **Andy Vann**

From:

Mark Beasley

Sent:

Friday, June 07, 2019 2:07 PM

To:

Project Service; Sample Storage

Subject:

L1100588 \*FTNLRAR\* relog

Relog the following as R5 due 6/14:

L1100588-04 L1100588-06 BICP

L1100588-08

CAICP

CAICP

L1100588-10

CAICP

Thanks Mark

From: Heather Ferguson [mailto:hlf@ftn-assoc.com]

Sent: Friday, June 07, 2019 1:35 PM

To: Mark Beasley Cc: Dana Derrington

Subject: Lab Re-runs for SDG L1100588 (Plum Point EPA Program)

Hi Mark,

Could you verify the results for the samples below from the attached report and if correct, ask the lab to re-run the samples? Please do not re-run the sample for dissolved solids; the re-run result will be out of hold so we won't be able to use it anyway.

Well ID	Analyte	Result	Flag	RDL	Units
MW-108	BORON	0.222		0.2	mg/l
MW-115	CALCIUM	128		1	mg/l
MW-117	CALCIUM	95.3		1	mg/l
MW-119	CALCIUM	131		1	mg/l
MW-117	DISSOLVED SOLIDS	341		10	mg/l

← verify only; please do not include in re-runs.

Thank you!

Heather



Heather Ferguson

FTN Associates, Ltd.

3 Innwood Circle, Suite 220 & Little Rock, AR 72211

hlf@ftn-assoc.com

(501) 225-7779 so fax (501) 225-6738 http://www.ftn-assoc.com



# ANALYTICAL REPORT

May 28, 2019



















# Plum Point Services Co., LLC

Sample Delivery Group: L1100432 Samples Received: 05/18/2019

Project Number: 14590-1992-001

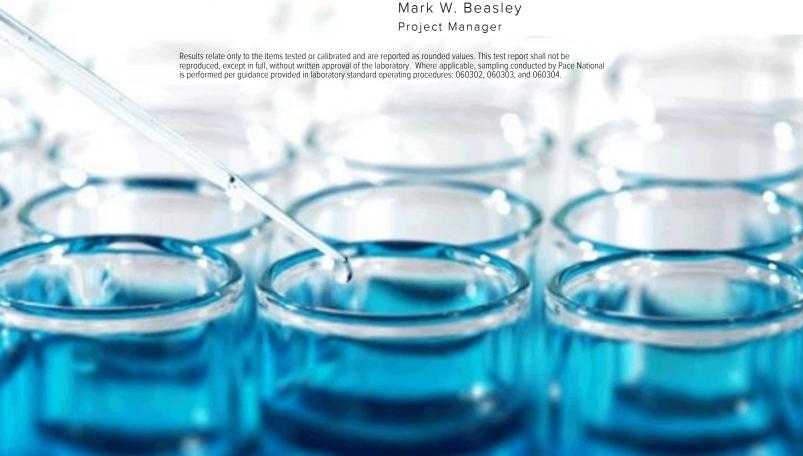
Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:





Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MW-119 L1100432-01	5
Qc: Quality Control Summary	6
Mercury by Method 7470A	6
Metals (ICP) by Method 6010B	7
Metals (ICPMS) by Method 6020	8
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Al: Accreditations & Locations	10
Sc: Sample Chain of Custody	11





















MW-119 L1100432-01 GW			Collected by Michael Clayton	Collected date/time 05/16/19 09:20	Received date 05/18/19 08:45	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Mercury by Method 7470A	WG1283577	1	05/20/19 16:00	05/21/19 11:25	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 10:52	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1284298	1	05/23/19 08:17	05/27/19 03:55	LAT	Mt. Juliet, TN





















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ср

















Mark W. Beasley Project Manager

# SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 09:20

#### Mercury by Method 7470A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.0490	0.200	1	05/21/2019 11:25	WG1283577

# Ss

### Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Lithium	31.8	В	5.30	15.0	1	05/25/2019 10:52	WG1284387
Molybdenum	U		1.60	5.00	1	05/25/2019 10:52	WG1284387



# Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Antimony	U	<u>J4</u>	0.754	2.00	1	05/27/2019 03:55	WG1284298
Arsenic	0.512	<u>J</u>	0.250	2.00	1	05/27/2019 03:55	WG1284298
Barium	199		0.360	5.00	1	05/27/2019 03:55	WG1284298
Beryllium	U		0.120	2.00	1	05/27/2019 03:55	WG1284298
Cadmium	U		0.160	1.00	1	05/27/2019 03:55	WG1284298
Chromium	U		0.540	2.00	1	05/27/2019 03:55	WG1284298
Cobalt	1.74	<u>J</u>	0.260	2.00	1	05/27/2019 03:55	WG1284298
Lead	0.250	<u>J</u>	0.240	2.00	1	05/27/2019 03:55	WG1284298
Selenium	0.564	<u>J</u>	0.380	2.00	1	05/27/2019 03:55	WG1284298
Thallium	U		0.190	2 00	1	05/27/2019 03:55	WG1284298











### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

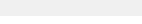
L1100432-01

#### Method Blank (MB)

Mercury by Method 7470A

(MB) R3413192-1 05/21/19 11:01

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Mercury	U		0.0490	0.200



<sup>2</sup>Tc





#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3413192-2 05/21/19 11:08 • (LCSD) R3413192-3 05/21/19 11:11

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Mercury	3.00	3.09	3.12	103	104	80.0-120			0.938	20





# <sup>6</sup>Qc



(OS) L1100361-01 05/21/19 11:13 • (MS) R3413192-4 05/21/19 11:16 • (MSD) R3413192-5 05/21/19 11:18

(00) 2000. 0.	00/21/10 11:10 (11:0) 110	5 mile (me) ne nelez 1 53,2 me mile (mes) ne nelez 6 53,2 me mile										
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilutio	n Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Mercury	3.00	U	3.08	3.47	103	116	1	75.0-125			11.8	20







#### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

L1100432-01

#### Method Blank (MB)

(MB) R3415216-1 05/26/19 12:14

Metals (ICP) by Method 6010B

(=/=				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Lithium	10.4	<u>J</u>	5.30	15.0
Molybdenum	U		1.60	5.00







#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3415216-2 05/26/19 12:17 • (LCSD) R3415216-3 05/26/19 12:19

` '	, ,									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Lithium	1000	1030	1040	103	104	80.0-120			0.253	20
Molybdenum	1000	996	969	99.6	96.9	80.0-120			2.73	20



<sup>†</sup>Cn









(OS) L1100383-01 05/25	5/19 10:23 • (IVIS) F	3415228-2 05	0/25/19 10:28	• (MSD) R3415∠	(28-3 05/25/	19 10:31							
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%	
Lithium	1000	16.3	1060	1060	104	104	1	75.0-125			0.101	20	
Molyhdenum	1000	ND	1010	958	101	95.8	1	75 0-125			4 91	20	





DATE/TIME:

05/28/19 11:06

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium Cobalt

Selenium

Thallium

Lead

## QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

# Method Blank (MB)

Metals (ICPMS) by Method 6020

U

U

U

U

U

U

U

U

0.947

	` /			
(MB) R3415125-1 05	5/27/19 02:42			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l







	1
<sup>4</sup> Cn	
•••	







# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

0.754

0.250

0.360

0.120

0.160

0.540

0.260

0.240

0.380

0.190

2.00

2.00

5.00

2.00

1.00

2.00

2.00

2.00

2.00

2.00

(LCS) R3415125-2 05/27/19 02:47 • (LCSD) R3415125-3 05/27/19 02:51
--

(LC3) R3413123-2	05/2//19 02:4/ • (LCSL	•									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Antimony	50.0	60.3	59.6	121	119	80.0-120	<u>J4</u>		1.24	20	
Arsenic	50.0	48.0	48.7	96.0	97.5	80.0-120			1.56	20	
Barium	50.0	48.9	49.2	97.8	98.4	80.0-120			0.624	20	
Beryllium	50.0	48.9	47.4	97.9	94.8	80.0-120			3.19	20	
Cadmium	50.0	49.2	50.4	98.4	101	80.0-120			2.47	20	
Chromium	50.0	53.5	50.2	107	100	80.0-120			6.48	20	
Cobalt	50.0	48.1	49.1	96.2	98.2	80.0-120			2.07	20	
Lead	50.0	49.0	48.7	98.1	97.5	80.0-120			0.581	20	
Selenium	50.0	48.1	48.6	96.2	97.3	80.0-120			1.14	20	
Thallium	50.0	48.7	48.8	97.4	97.7	80.0-120			0.295	20	







# **GLOSSARY OF TERMS**

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Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

#### Qualifier Description

В	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.















## **ACCREDITATIONS & LOCATIONS**





#### State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky <sup>1 6</sup>	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

#### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 <sup>5</sup>	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

#### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















			Billing Inform	mation:	7.7%		1	ar dv. h	Α	nalysis / (	Containe	tainer / Preservative			11.5	Chain of Custody	Pageof	
Plum Point Services C	o., LLC		Accounts P.O. Box	Payable 567			22	22 22	42							Pace.	Analytical® anter for Testing & Innovatio	
)sceola, AR 72370																		
Report to: Dana Derrington			Email To: Ch assoc.com,	Email To: Christopher.Lussier@nrg. assoc.com, hlf@ftn-assoc.com												12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859		
roject	tation			City/State Collected:								Grand (				Fax: 615-758-5859	2422	
hone: <b>870-815-1248</b>	870-815-1248   Client Project # 14590-1992-001				Lab Project # NAESOAR-PLUMPOINT				HN03							H238		
collected by (print):  Michael Classion	#	£,	P.O.#		PE-HN03	-Add H	Add							Acctnum: NAESOAR Template:T146260				
Collected by (signature):	Same Da	ab MUST Be		Quote #	ults Needed		250mlHDP	RA-226 1L-HDPE-Add HNO3	1L-HDPE-	The second						Prelogin: P708137 TSR: 134 - Mark W. Beasley		
Two Day10		10 D	ay (Rad Only)		Salari Salari			26 1	28 1							PB: Shipped Via: I	Via: FedEX Ground	
Packed on Ice N Y Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntr	Metals	3A-2	RA-228							Remarks	Sample # (lab only	
		GW	1	5-16-19	920	3		X	X								-01	
MW-119	Grab	GW		0-1611	700	3	X	X	X									
		GW				3	X	X	X									
		- GW		1 3 3 3 3								a gal						
	1		¥													4		
	1	A Committee																
								R/	up sc	REEN:	<0.5	mR/h						
		1-7-7			100				×									
	1																	
										1		1				imple Receipt	Checklost	
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay	Remarks:** Metals = As	***Log rad s,Ba,Be,Cd,	iums to a se Co,Cr,Hg,Li	eparate SDG*** ,Mo,Pb,Sb,Se,Tl	* (Li & Mo by 6	010)				pH Flo		Ten			COC Seal COC Sign Bottles Correct	Present/Intaced/Accurate: arrive intact bottles used:	Ct: ZNP _Y _ - - - - - - - - - - - - -	
WW - WasteWater DW - Drinking Water OT - Other  Relinquished by : (Signature)  Date:		urned via: FedEx C	Courier		Tracking # 4	794		883	7	0410					VOA Zero	nt volume sen  If Applic  Headspace: tion Correct/	able Y	
		17-19	Time: 1300	Received by: (S					Trip Bl	ank Rec		Yes /No HCL / Med TBR	н			Login: Date/Time		
Relinquished by : (Signature)	We C		Time:	Received by: (S	ignature	)			Temp:	:001	175	ttles Receive			icion required by	Condition		
Relinquished by : (Signature)	X - 6 X - 200	Date:		Time:	Received for la	b by: (Sig	gnature)			Date:	8/19	4	me: 9845		Hold:		NCF / O	



# ANALYTICAL REPORT

May 30, 2019



















# Plum Point Services Co., LLC

Sample Delivery Group: L1100433

Samples Received: 05/18/2019

Project Number: 14590-1992-001

Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley

Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	•
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Radiochemistry by Method SM7500Ra B M	7
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Sc: Sample Chain of Custody	10



















Collected by

Collected date/time Received date/time



MW-119 L1100433-01 Non-Potable Water			Michael Clayton	05/16/19 09:20	05/18/19 08:4	45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Radiochemistry by Method 904	WG1282757	1	05/20/19 08:52	05/23/19 15:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1284773	1	05/23/19 15:02	05/24/19 17:04	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1284773	1	05/23/19 15:02	05/24/19 17:04	RRF	Mt. Juliet. TN



















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ss













Mark W. Beasley Project Manager

# SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 09:20

#### L1100433

#### Radiochemistry by Method 904

	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
Analyte	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.20		0.366	0.539	05/23/2019 15:10	WG1282757
(T) Barium	114			62.0-143	05/23/2019 15:10	WG1282757
(T) Yttrium	116			79.0-136	05/23/2019 15:10	WG1282757







## Radiochemistry by Method Calculation

	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
Analyte	pCi/l		+ / -	pCi/I	date / time	
Combined Radium	2.35		0.774	0.732	05/24/2019 17:04	WG1284773





## Radiochemistry by Method SM7500Ra B M

	Result	Qualifier	Uncertainty	MDA	Analysis Date	<u>Batch</u>
Analyte	pCi/l		+ / -	pCi/I	date / time	
RADIUM-226	1.16		0.408	0.193	05/24/2019 17:04	WG1284773
(T) Barium-133	83.2			30.0-143	05/24/2019 17:04	WG1284773









#### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Radiochemistry by Method 904

L1100433-01

#### Method Blank (MB)

(T) Barium

(T) Yttrium

(MB) R3414542-1 05/	/23/19 10:45		
	MB Result	MB Qualifier	MB MDA
Analyte	pCi/I		pCi/l
Radium-228	0.186		0.368









(OS) L1098015-01 05/23/19 15:10 • (DUP) R3414542-5 05/23/19 10:45

107

116

,	,							
	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
Analyte	pCi/l	pCi/l		%			%	
Radium-228	0.715	0.455	1	44.5	0.529		20	3
(T) Barium	105	114						
(T) Yttrium	102	124						







#### Laboratory Control Sample (LCS)

(LCS) R3414542-2 05/23/19 10:45

200) 110 11 10 12 2 00/2	0, 10 10110				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	pCi/l	pCi/l	%	%	
Radium-228	5.00	5.27	105	80.0-120	
(T) Barium			120		
(T) Yttrium			116		

# Sc

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### L1097614-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1097614-01 05/23/19 10:45 • (MS) R3414542-3 05/23/19 10:45 • (MSD) R3414542-4 05/23/19 10:45

(00) 11007014 01 00	3) 21037014 01 03/23/13 10.43 (1113) 10.43 (1113) 10.43 (1113) 10.43												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/I	pCi/I	pCi/l	pCi/l	%	%		%			%		%
Radium-228	16.7	-0.135	16.3	16.0	97.5	95.7	1	70.0-130			1.80		20
(T) Barium		113			120	113							
(T) Yttrium		118			11.3	116							

### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Radiochemistry by Method SM7500Ra B M

L1100433-01

#### Method Blank (MB)

(MB) R3415635-1 05/24/19	9 17:04		
	MB Result	MB Qualifier	MB MDA
Analyte	pCi/l		pCi/l
Radium-226	0.459		0.209
(T) Barium-133	84.6		







#### L1100844-01 Original Sample (OS) • Duplicate (DUP)

. ,	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit	
Analyte	pCi/l	pCi/l		%			%		
Radium-226	0.495	0.573	1	14.6	0.182		20	3	
(T) Barium-133	90.4	88.8							







## Laboratory Control Sample (LCS)

(LCS) R3415635-2 05/	/24/19 1/:04
----------------------	--------------

(200) NO 110000 2 00/2 1/	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
Analyte	pCi/l	pCi/l	%	%
Radium-226	20.1	19.1	95.0	80.0-120
(T) Barium-133			79.1	





# L1100433-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100433-01 05/24/19 17:04 • (MS) R3415635-3 05/24/19 17:04 • (MSD) R3415635-4 05/24/19 17:04

, ,	, ,			'									
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/I	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	1.16	19.9	20.9	93.2	98.0	1	75.0-125			4.71		20
(T) Barium-133		83.2			81.1	84.7							

## **GLOSSARY OF TERMS**

#### ONE LAB. NATIONWIDE.

#### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

#### Abbreviations and Definitions

Appreviations and	d Definitions
MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

#### Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

















## **ACCREDITATIONS & LOCATIONS**





#### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina 1	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
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DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

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	4 1		:::: 1-f	ation:						Analy	ysis / Container / Preservative	1 67 .	
Plum Point Services Co., LLC P 739 SCR 623 Sceola, AR 72370 P P C R P C R P C R P C R P C R P C R P C R P C R P C R P C R P C R P C R R P C R R R R			Accounts F P.O. Box 5 Osceola, A	Payable 67		Pres Chk	22	1	2 4	2		Pace Analytical National Center for Testing & Innovation	
		Email To: Ch	ristopher.Lussier@r hlf@ftn-assoc.com	nrg.com, dld@f	ftn-						Mount Juliet, TN 371.22 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859		
oana Derrington roject rescription: Plum Point Energy	Station			City/State Collected:								L# // 004/33 H238	
hone: <b>870-815-1248</b>	Client Project # 14590-1992-0	001		NAESOAR-PLU	MPOINT		NO3	200	HN03	HN03		Acctnum: NAESOAR	
Collected by (print):	Site/Facility ID #			P.O.#			- 2	UPET	E-Add	E-Add		Template: <b>T146260</b> Prelogin: <b>P708137</b>	
Collected by (signature):	Rush? (Lat	Five 5 Day 10 D	Notified) Day y (Rad Only) ay (Rad Only)	Quote #	ts Needed	0	lo.	Metals 250mlHDFE-TINGS	RA-226 1L-HDPE-Add HNO3	RA-228 1L-HDPE-Ad		TSR: 134 - Mark W. Beasley PB: Shipped Via: FedEX Ground Remarks Sample # (lab only)	
Packed on Ice N Y Sample ID	Comp/Grab	Matrix *	Depth	Date	Time				X RA	X RA		-01	
MW-119	Grab	GW		5-16-19	920		3	X	-	X			
		GW					3	X	X	X			
			Aug.								3,		
		455 4 - 466				70 E			R	AD SO	CREEN: <0.5 mR/hr		
									1		Toma	Sample Receipt Checklist COC Seal Present/Intact: NP Y COC Signed/Accurate: Y	
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassa	Metals = As	**Log rad ,Ba,Be,Cd	diums to a I,Co,Cr,Hg,	separate SDG*** Li,Mo,Pb,Sb,Se,T	I (Li & Mo by	601	10)				pH Temp Flow Other	Bottles arrive intact.  Correct bottles used:  Sufficient volume sent:  If Applicable	
WW - WasteWater DW - Drinking Water OT - Other	Samples retu_UPS F	urned via: edEx	Courier _	Tracking #		g # 479 ed by: (Signat			88.	37	0410 Trip Blank Received: Yes /No HCL / Meol	VOA Zero Headspace: Preservation Correct/Checked:	
Relinquished by : (Signature)	ges!		17-19		Received by:						TBR OC Bottles Received	: If preservation required by Login: Date/Time	
Relinquished by : (Signature)		Date:	20 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	Time:					ure)		Date: 5/18/19 08:45	Hold: Condition	
Relinquished by : (Signature)		Date:	y i soonala	Time:	Received fo	riab	7		in	_	5/18/19 0843		





# ANALYTICAL REPORT

August 09, 2019

## Plum Point Services Co., LLC

Sample Delivery Group: L1125145

Samples Received: 08/03/2019

Project Number: 14590-1992-001

Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley

Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



















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MW-119 L1125145-05	9					
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GI: Glossary of Terms						
Al: Accreditations & Locations						
Sc: Sample Chain of Custody						























			Collected by	Collected date/time	Received da	te/time
MW-108 L1125145-01 GW			Michael Clayton	08/01/19 11:55	08/03/19 08	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:06	TRB	Mt. Juliet, Ti
			Collected by	Collected date/time	Received da	te/time
MW-115 L1125145-02 GW			Michael Clayton	08/01/19 09:40	08/03/19 08	:45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:09	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received date/time	
MW-117 L1125145-03 GW			Michael Clayton	08/02/19 12:20	08/03/19 08	:45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:11	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received date/time	
MW-117 DUP L1125145-04 GW			Michael Clayton	08/02/19 12:25	08/03/19 08	:45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, TI
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:14	TRB	Mt. Juliet, TI
			Collected by	Collected date/time	Received da	te/time
MW-119 L1125145-05 GW			Michael Clayton	08/02/19 09:20	08/03/19 08	:45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:17	TRB	Mt. Juliet, Ti
			Collected by	Collected date/time	Received date/time	
EPA EB-1 L1125145-06 GW			Michael Clayton	08/02/19 12:40	08/03/19 08	:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, Tl
Gravimente Analysis by Method 25TO C-2011	W01322031		30/00/13 IT.30	30/00/13 13.12	1411411	ivic. Julici, II



















Metals (ICP) by Method 6010B

WG1322637

08/04/19 14:03

08/06/19 11:19

TRB

Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ср

















Mark W. Beasley Project Manager

PAGE: 4 of 15

#### SAMPLE RESULTS - 01 L1125145

ONE LAB. NATIONWIDE.

Collected date/time: 08/01/19 11:55

## Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	127	ВЈ	12.6	200	1	08/06/2019 11:06	WG1322637



















# SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 08/01/19 09:40

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Calcium	125000		46.3	1000	1	08/06/2019 11:09	WG1322637



















Analyte

Calcium

### SAMPLE RESULTS - 03

ONE LAB. NATIONWIDE.

Collected date/time: 08/02/19 12:20

Metals (ICP) by Method 6010B

L1125145

Dilution

Analysis

date / time

08/06/2019 11:11

Batch

WG1322637

#### Gravimetric Analysis by Method 2540 C-2011

Result

102000

ug/l

Qualifier

MDL

ug/l

46.3

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	302000		2820	10000	1	08/06/2019 15:12	WG1322631

RDL

ug/l

1000





















Analyte

Calcium

### SAMPLE RESULTS - 04

ONE LAB. NATIONWIDE.

Collected date/time: 08/02/19 12:25

L1125145

Dilution

Analysis

date / time

08/06/2019 11:14

Batch

WG1322637

#### Gravimetric Analysis by Method 2540 C-2011

Result

102000

ug/l

Qualifier

MDL

ug/l

46.3

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	339000		2820	10000	1	08/06/2019 15:12	WG1322631

RDL

ug/l

1000



















MW-119

## SAMPLE RESULTS - 05

ONE LAB. NATIONWIDE.

Collected date/time: 08/02/19 09:20

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l	ug/l		date / time		
Calcium	97400		46.3	1000	1	08/06/2019 11:17	WG1322637	



















ONE LAB. NATIONWIDE.

Collected date/time: 08/02/19 12:40

#### L1125145

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	U		2820	10000	1	08/06/2019 15:12	WG1322631





















	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	U		2820	10000	1	08/06/2019 15:12	WG1322631

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	18.7	ВJ	12.6	200	1	08/06/2019 11:19	WG1322637
Calcium	U		46.3	1000	1	08/06/2019 11:19	WG1322637

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1125145-03,04,06

#### Method Blank (MB)

(MB) R3438618-1 08/06/19	15:12			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000









(OS) L1125145-03 08/06/19 15:12 • (DUP) R3438618-3 08/06/19 15:12

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	302000	306000	1	1.32		5









(LCS) R3438618-2 08/06/19 15:12

(200) 1.0 100010 2 00700	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	·
Dissolved Solids	8800000	8540000	97.0	85.0-115	





ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

10000

L1125145-01,02,03,04,05,06

#### Method Blank (MB)

Calcium

(MB) R3437811-1 08/06/19	/IB) R3437811-1 08/06/19 10:25								
	MB Result	MB Qualifier	MB MDL	MB RDL					
Analyte	ug/l		ug/l	ug/l					
Boron	12.8	<u>J</u>	12.6	200					
Calcium	U		46.3	1000					







<sup>†</sup>Cn

#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3437811-2 08/0	(LCS) R3437811-2 08/06/19 10:28 • (LCSD) R3437811-3 08/06/19 10:30												
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits			
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%			
Boron	1000	990	999	99.0	99.9	80.0-120			0.934	20			

80.0-120

2.43

20

105







## GI

### L1125119-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

10500

103

(OS) L1125119-01	08/06/19 10:33	· (MS) R3437811-5	08/06/19 10:38 •	(MSD) R3437811-6	08/06/19 10:40

10300

(O3) E1123113-01 00/00/13 10.33 * (M13) R343/611-3 00/00/13 10.36 * (M13D) R343/611-0 00/00/13 10.40												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	242	1030	1020	79.0	77.9	1	75.0-125			1.10	20
Calcium	10000	2330	34600	34700	323	323	1	75.0-125	J5	J5	0.159	20







#### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.



Ss

#### Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the resul reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section fo each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

	р

# Sr

Cn









#### Qualifier Description

В	The same analyte is found in the associated blank.	
J	The identification of the analyte is acceptable; the reported value is an estimate.	
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.	

#### **ACCREDITATIONS & LOCATIONS**





#### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

#### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

#### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















	1 3 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		Billing Info	ormation:			1			Analysis /	Container	/ Preservati	ve	-2.	Chain of Cu	stody Pageof _	
Plum Point Service: 2739 SCR 623 Osceola, AR 72370	9 SCR 623			Accounts Payable P.O. Box 567 Osceola, AR 72370				<b>ત્ર</b>	22	42					P. Net	Pace Analytical* National Genter for Testing & Innovestion	
Report to: Dana Derrington			Email To: Christopher.Lussier@nrg.com, dld@ft assoc.com, hlf@ftn-assoc.com										d.	V Se	12065 Leban Mount Juliet,	TN 37122	
Project Description: <b>Plum Point Ener</b>	gy Station			City/State Collected:	Beola an										Phone: 615-7 Phone: 800-7 Fax: 615-758-	67-5859 -5859	
Phone: <b>870-815-1248</b> Fax:	Client Project 14590-199			Lab Project #	PLUMPOINT		v	03	-HN03	103						25/45	
Collected by (print): MixHarl Claylo	Site/Facility I	cility ID # P.O. # <b>2019-</b>			325		NoPres	NoPre	250mlHDPE-HNO	DPE-HI						NAESOAR	
Collected by (signature):  Immediately Packed on Ice N Y		ay 10 D		Quote #	esults Needed	No. of	250mIHDPE-NoPres	B 250mIHDPE-HN03	B, Ca	Ca 250mIHDPE-HNO3					Prelogin: l TSR: 134 - PB:		
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	TDS 2	Total	Total	Total Ca	ger Fre		8.57		Shipped V	ia: FedEX Ground  Sample # (lab only)	
MW-108	GhAS	GW		8/1/19	1155	1		X								-01	
MW-115		GW		8/1/18	0940	1				Х						02	
MW-117		GW		8/2/19	1220	2	X			Х						03	
MW-117 DUP		GW		8/2/18	1225	2	X			Х					SE SEAL AT	ou	
MW-119		GW		8/2/19	0920	1				Х						0.5	
EPA EB-1	I V	GW	Sant of the sant	8/2/19	The second secon	2	Х	1	X							04	
		GW				2	X		X		3-1						
													- 4		L. L		
					* And the second of the second												
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater		40					The state of the s			pH Flow		emp		COC Seal COC Sign Bottles	ample Receip Present/Inted/Accurate arrive intac bottles used	tact: _NP _Y _I	
DW - Drinking Water OT - Other	Samples retu	rhed via: edEx Cou	rier		Tracking # 106	2 <	99	3 1	49:	2_5		2000		Sufficie	ent volume se	ent: ZY	
Relinquished by : (Signature)	69	Date: 8/2/	119	1500	Received by: (Signat					Trip Blan	nk Received	Yes No HCL / N TBR		Preserva	Headspace: ation Correct D SCREEN	:<0.5 mR/hr	
Relinquished by : (Signature)		Date:	7	ime:	Received by: (Signat	ture)			7	Temp:	1-2.54	Bottles Rece	ved:	If preserve	ation required b	y Login: Date/Time	
Relinquished by : (Signature)		Date:	Ī	ime:	Received for lab by:	(Signat	ure)			Date:	17	Time:		Hold:		Condition: NCF / OX	

7 - 1 - 10 Table



# ANALYTICAL REPORT

August 07, 2019

## Plum Point Services Co., LLC

Sample Delivery Group: L1125151

Samples Received: 08/03/2019

Project Number: 14590-1992-001

Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley Project Manager



















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Metals (ICPMS) by Method 6020	8
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Sc: Sample Chain of Custody	12























MW-119 L1125151-01 GW

Collected by Collected date/time Received date/time 08/02/19 09:20 08/03/19 08:45



Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Mercury by Method 7470A	WG1322653	1	08/04/19 13:31	08/05/19 09:46	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:27	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1322639	1	08/04/19 13:07	08/05/19 03:32	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1322639	1	08/04/19 13:07	08/05/19 09:46	LAT	Mt. Juliet, TN







'Sr











All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



















Mark W. Beasley Project Manager

ONE LAB. NATIONWIDE.

Collected date/time: 08/02/19 09:20

#### Mercury by Method 7470A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.0490	0.200	1	08/05/2019 09:46	WG1322653

#### Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Lithium	13.1	J	5.30	15.0	1	08/06/2019 11:27	WG1322637
Molybdenum	U		1.60	5.00	1	08/06/2019 11:27	WG1322637



Ss

### Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Antimony	U		0.754	2.00	1	08/05/2019 03:32	WG1322639
Arsenic	0.494	<u>J</u>	0.250	2.00	1	08/05/2019 03:32	WG1322639
Barium	141		0.360	5.00	1	08/05/2019 03:32	WG1322639
Beryllium	U		0.120	2.00	1	08/05/2019 03:32	WG1322639
Cadmium	U		0.160	1.00	1	08/05/2019 09:46	WG1322639
Chromium	U		0.540	2.00	1	08/05/2019 03:32	WG1322639
Cobalt	2.89		0.260	2.00	1	08/05/2019 03:32	WG1322639
Lead	U		0.240	2.00	1	08/05/2019 09:46	WG1322639
Selenium	U		0.380	2.00	1	08/05/2019 03:32	WG1322639
Thallium	U		0.190	2.00	1	08/05/2019 09:46	WG1322639











ONE LAB. NATIONWIDE.

Mercury by Method 7470A

#### Method Blank (MB)

(MB) R3437374-1 08/05/19 08:52 MB Result MB Qualifier MB MDL Analyte







#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3437374-2 08/05/19 08:54 • (LCSD) R3437374-3 08/05/19 08:56

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Mercury	3.00	3.29	3.23	110	108	80.0-120			2.01	20	







(OS) L1124604-01 08/05/19 08:57 • (MS) R3437374-4 08/05/19 08:59 • (MSD) R3437374-5 08/05/19 09:01

,	Spike Amount	Original Result		MSD Result	MS Rec.	MSD Rec.	Dilutio	n Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Mercury	3.00	ND	2.99	3.00	99.5	100	1	75.0-125			0.454	20







PAGE:

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ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1125151-01

#### Method Blank (MB)

Molybdenum

(MB) R3437811-1 08/0	6/19 10:25			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Lithium	U		5.30	15.0







#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

1.60

5.00

(LCS) R3437811-2 08/06/19 10:28 • (LCSD) R3437811-3 08/06/19 10:30

(200) 10 10 10 10 11 2 00 100 113	10.20 (2002	, 110 107 011 0 0	0,00,1010.00							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Lithium	1000	978	1000	97.8	100	80.0-120			2.26	20
Molybdenum	1000	1020	1040	102	104	80.0-120			1.42	20







## <sup>7</sup>Gl

### L1125119-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1125119-01 08/06/19 10:33 • (MS) R3437811-5 08/06/19 10:38 • (MSD) R3437811-6 08/06/19 10:40

(00) 1120110 01 00	700/13 10.55 · (IVIS) 10	34370113 00/0	00/15 10.50 - (	(WSD) (KS+57011	0 00/00/13	10.40						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Lithium	1000	222	1000	981	78.0	75.8	1	75.0-125			2.15	20
Molyhdenum	1000	229	1040	1030	81.0	80.5	1	75 0-125			0.489	20







DATE/TIME:

08/07/19 14:42

ONE LAB. NATIONWIDE.

Metals (ICPMS) by Method 6020

Method I	Blank (	MR)
----------	---------	-----

Chromium Cobalt

Selenium

Thallium

Lead

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Antimony	U		0.754	2.00
Arsenic	U		0.250	2.00
Barium	U		0.360	5.00
Beryllium	U		0.120	2.00
Cadmium	U		0.160	1.00















0.540

0.260

0.240

0.380

0.190

2.00

2.00

2.00

2.00

2.00

(LCS) R3437293-2 08/05/19 02:09 • (LCSD) R3437293-3 08/05/19 02:13	
--	--

0.951

U

U

U

U

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Antimony	50.0	47.3	46.5	94.6	93.1	80.0-120			1.58	20	
Arsenic	50.0	48.8	48.5	97.6	97.0	80.0-120			0.641	20	
Barium	50.0	44.4	43.8	88.8	87.6	80.0-120			1.35	20	
Beryllium	50.0	44.2	43.3	88.4	86.6	80.0-120			2.06	20	
Cadmium	50.0	53.0	52.1	106	104	80.0-120			1.75	20	
Chromium	50.0	50.5	49.6	101	99.2	80.0-120			1.72	20	
Cobalt	50.0	51.1	50.6	102	101	80.0-120			0.931	20	
Lead	50.0	49.0	50.5	98.0	101	80.0-120			2.99	20	
Selenium	50.0	49.9	49.2	99.8	98.4	80.0-120			1.47	20	
Thallium	50.0	47.8	47 9	95.6	95.8	80 0-120			0.225	20	







#### L1125122-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(/	( -)			( - /								
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Antimony	50.0	U	54.6	56.5	109	113	1	75.0-125			3.38	20
Arsenic	50.0	1.54	45.4	46.1	87.8	89.0	1	75.0-125			1.37	20
Barium	50.0	10.3	62.9	62.5	105	105	1	75.0-125			0.541	20
Beryllium	50.0	0.151	50.0	50.7	99.8	101	1	75.0-125			1.35	20
Cadmium	50.0	0.185	46.9	47.4	93.5	94.5	1	75.0-125			1.05	20
Chromium	50.0	U	41.9	42.0	83.8	83.9	1	75.0-125			0.191	20
Cobalt	50.0	U	40.9	41.1	81.9	82.3	1	75.0-125			0.448	20

ONE LAB. NATIONWIDE.

L1125151-01

Metals (ICPMS) by Method 6020

#### L1125122-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1125122-04 08/05/19 02:16 • (MS) R3437293-5 08/05/19 02:22 • (MSD) R3437293-6 08/05/19 02:26

(OS) L1123122-04 00/0	3/13 02.10 ° (IVIS) I	(3+3/233-3 0)	3/03/13 02.22	1 (IVISD) 1(S <del>T</del> S)	233-0 00/0	3/13 02.20						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Lead	50.0	U	49.5	51.5	98.9	103	1	75.0-125			4.12	20
Selenium	50.0	0.586	51.8	55.2	102	109	1	75.0-125			6.32	20
Thallium	50.0	0.205	48 3	49.6	96.1	98 9	1	75 0-125			2.80	20



















#### **GLOSSARY OF TERMS**

#### ONE LAB. NATIONWIDE.

#### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

#### Abbreviations and Definitions

Appleviations an	d Delimitoris
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

#### Qualifier Description

J

The identification of the analyte is acceptable; the reported value is an estimate.













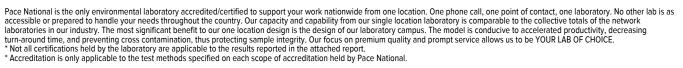






#### **ACCREDITATIONS & LOCATIONS**





#### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

#### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	
A2LA - ISO 17025 5	1461.02	
Canada	1461.01	
EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

#### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.











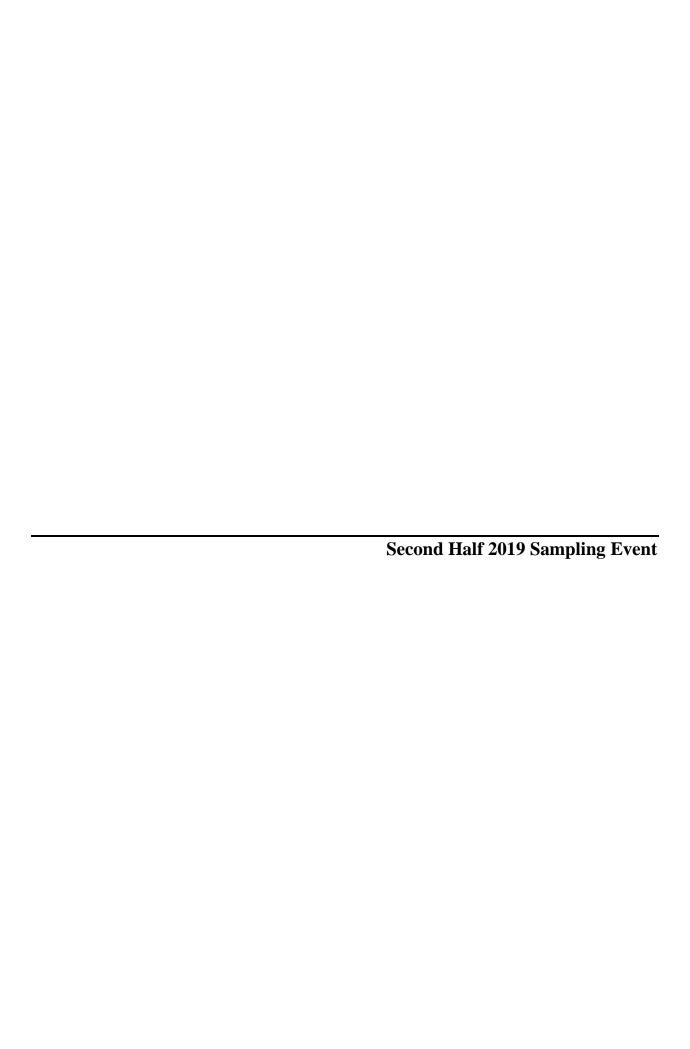








			Billing Info	rmation:		4			Analys	sis / Conta	ainer / Preser	vative		Chain of Custod	y Page 7 of 1
Plum Point Services ( 2739 SCR 623 Osceola, AR 72370			P.O. Box	s Payable 567 , AR 72370		Pres Chk	4	<b>4</b> 2						Pace	Analytical® Senter for Reiting & Innovetio
eport to: Dana Derrington				hristopher.Lus , hlf@ftn-assoc	sier@nrg.com, dld( .com	@ftn-		- 4						12065 Lebanon Ro Mount Juliet, TN 3 Phone: 615-758-5	7122
roject Description: Plum Point Energy :	Station	7		City/State Collected:	Seola An			HN03						Phone: 800-767-5 Fax: 615-758-5859	
hone: <b>870-815-1248</b> ax:	Client Project 14590-1992			Lab Project #	PLUMPOINT		33	-Add I						H20	6
ollected by (print):	Site/Facility ID	)#		P.O. # 2019-0032	5		E-HNC	1L-HDPE-Add						Accinum: NA	
pollected by (signature):  My Like Clip  mimediately acked on Ice N Y	Same Da		Day	Quote #	esults Needed	No.	Metals 250mlHDPE-HNO3	RA-226,RA-228 11						PB:	20966 rk W. Beasley
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	Metal	\$A-22			444			Shipped Via: Remarks	Sample # (lab only)
иW-119	Grab	GW		8/2/19	0920	2	X	Х							100
		GW				2	X	Х							
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				187934771											
Matrix: S - Soil AIR - Air F - Filter W - Groundwater B - Bioassay /W - WasteWater	Remarks:Me	tals = As,B	a,Be,Cd,Co,	Cr,Hg,Li,Mo,P	b,Sb,Se,TI					bH	Temp Other		COC Seal COC Signe Bottles a	mple Receipt ( Present/Intac ed/Accurate: arrive intact: bottles used:	t: MP Y N
OW - Drinking Water OT - Other	Samples returnUPSFe	ned via: dEx Cou	ırier		Tracking # [D8	35	99-	3 14	to make the	93		^	Sufficien	ot volume sent  If Applica  Headspace:	
elinquished by : (Signature)	2	Date:	115		Received by: (Signa						eived: Yes HCI	/ MeoH	Preservat	cion Correct/C	hecked: ZY _h
elinquished by : (Signature)		Date:			Received by: (Signa	ture)			Temp	): +.2=:	°C Bottles F		If preservat	tion required by L	ogin: Date/Time
telinquished by : (Signature)		Date:		ime:	Received for lab by	Signat	ture)		Date		Time:	45	Hold:		Condition: NCF / Ok





## ANALYTICAL REPORT

October 30, 2019

#### Plum Point Services Co., LLC

Sample Delivery Group: L1153616

Samples Received: 10/24/2019

Project Number: 14590-1992-001

Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



















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MW-116 L1153616-07	12
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Sc: Sample Chain of Custody

#### B. NATIONWIDE.

ONE	LA

Collected date/time Received date/time

Collected date/time Received date/time

Collected date/time Received date/time

Collected date/time Received date/time

10/24/19 08:45

10/24/19 08:45

10/24/19 08:45

10/22/19 15:06

10/22/19 08:00

10/22/19 08:54

Mt. Juliet, TN Mt. Juliet, TN Mt. Juliet, TN
Mt. Juliet, TN
,
Mt. Juliet, TN
e/time
15
Location
Mt. Juliet, TN
Mt. Juliet, TN
Mt. Juliet, TN

SAMPLE SUMMARY

Collected by

Collected by

Andrew Pruitt

Collected by

Andrew Pruitt

Collected by

Andrew Pruitt



Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 18:09	10/28/19 18:09	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370048	1	10/28/19 07:26	10/28/19 19:09	EL	Mt. Juliet, TN

### MW-108 L1153616-04 GW

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 18:26	10/28/19 18:26	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370048	1	10/28/19 07:26	10/28/19 19:11	EL	Mt. Juliet, TN

#### MW-113 L1153616-05 GW

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 18:44	10/28/19 18:44	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370048	1	10/28/19 07:26	10/28/19 19:14	EL	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
M/M/ 11E   11E2616 O6 C/M/			Andrew Pruitt	10/23/19 10:38	10/24/19 08:4	45

IVIVV	/-115	L1153616-06	GW	
				_

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 19:02	10/28/19 19:02	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370048	1	10/28/19 07:26	10/28/19 19:17	EL	Mt. Juliet, TN





















ONE	IΔR	ΝΔΤ	IONW
OIVE	$\Box \cap \Box$ .	1 1/// 1	

			Collected by	Collected date/time	Received da	te/time
MW-116 L1153616-07 GW			Andrew Pruitt	10/23/19 08:55	10/24/19 08:4	45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 19:37	10/28/19 19:37	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370049	1	10/28/19 17:12	10/29/19 01:32	EL	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-117 L1153616-08 GW			Andrew Pruitt	10/22/19 11:56	10/24/19 08:4	45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 20:47	10/28/19 20:47	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370049	1	10/28/19 17:12	10/29/19 01:35	EL	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-118 L1153616-09 GW			Andrew Pruitt	10/22/19 14:00	10/24/19 08:4	15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 21:05	10/28/19 21:05	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370049	1	10/28/19 17:12	10/29/19 01:37	EL	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-119 L1153616-10 GW			Andrew Pruitt	10/22/19 16:05	10/24/19 08:4	<b>1</b> 5
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369826	1	10/27/19 07:38	10/27/19 08:07	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 21:23	10/28/19 21:23	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370049	1	10/28/19 17:12	10/29/19 01:45	EL	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-117 DUP L1153616-11 GW			Andrew Pruitt	10/22/19 12:00	10/24/19 08:4	<b>1</b> 5
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369826	1	10/27/19 07:38	10/27/19 08:07	TH	Mt. Juliet, TN
Gravimente Analysis by Meniou 2040 C-2011	WG1309620	ı	10/2//19 07.36	10/2//13 00.0/	ΙП	WIL JUILEL, TIN

WG1370811

WG1370049

Batch

WG1369826

WG1370811

WG1370049

1

1

Dilution

1

1

1

SAMPLE SUMMARY



















Wet Chemistry by Method 9056A

EB-1 L1153616-12 GW

Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

Gravimetric Analysis by Method 2540 C-2011

Metals (ICP) by Method 6010B

Method

10/28/19 21:40

10/28/19 17:12

Collected by

Andrew Pruitt

Preparation

10/27/19 07:38

10/28/19 21:58

10/28/19 17:12

date/time

10/28/19 21:40

10/29/19 01:48

10/23/19 11:00

Analysis

date/time

10/27/19 08:07

10/28/19 21:58

10/29/19 01:51

LDC

EL

10/24/19 08:45

Analyst

TH

LDC

EL

Collected date/time Received date/time

Mt. Juliet, TN

Mt. Juliet, TN

Location

Mt. Juliet, TN

Mt. Juliet, TN

Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

















Mark W. Beasley Project Manager

ONE LAB. NATIONWIDE.

Collected date/time: 10/23/19 08:10

L1153616

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	404000		2820	10000	1	10/26/2019 16:35	WG1369825

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1370		51.9	1000	1	10/28/2019 17:33	WG1370811
Fluoride	264		9.90	100	1	10/28/2019 17:33	WG1370811
Sulfate	11900		77.4	5000	1	10/28/2019 17:33	WG1370811



Ss

# Cn



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	49.1	J	12.6	200	1	10/28/2019 19:03	WG1370048
Calcium	109000		46.3	1000	1	10/28/2019 19:03	WG1370048







ONE LAB. NATIONWIDE.

Collected date/time: 10/23/19 09:34

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	461000		2820	10000	1	10/26/2019 16:35	WG1369825

#### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	3620		51.9	1000	1	10/28/2019 17:51	WG1370811
Fluoride	201		9.90	100	1	10/28/2019 17:51	WG1370811
Sulfate	85600		77.4	5000	1	10/28/2019 17:51	WG1370811



Ss



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	60.2	<u>J</u>	12.6	200	1	10/28/2019 19:06	WG1370048
Calcium	117000		46.3	1000	1	10/28/2019 19:06	WG1370048









ONE LAB. NATIONWIDE.

Collected date/time: 10/22/19 15:06

L1153616

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	384000		2820	10000	1	10/26/2019 16:35	WG1369825

#### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1290		51.9	1000	1	10/28/2019 18:09	WG1370811
Fluoride	253		9.90	100	1	10/28/2019 18:09	WG1370811
Sulfate	24400		77.4	5000	1	10/28/2019 18:09	WG1370811



Ss

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	81.6	<u>J</u>	12.6	200	1	10/28/2019 19:09	WG1370048
Calcium	107000		46.3	1000	1	10/28/2019 19:09	WG1370048













ONE LAB. NATIONWIDE.

Collected date/time: 10/22/19 08:00

L1153616

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	528000		2820	10000	1	10/26/2019 16:35	WG1369825

# <sup>2</sup>Tc

#### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1950		51.9	1000	1	10/28/2019 18:26	WG1370811
Fluoride	205		9.90	100	1	10/28/2019 18:26	WG1370811
Sulfate	32900		77.4	5000	1	10/28/2019 18:26	WG1370811



	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	110	J	12.6	200	1	10/28/2019 19:11	WG1370048
Calcium	153000		46.3	1000	1	10/28/2019 19:11	WG1370048











ONE LAB. NATIONWIDE.

Collected date/time: 10/22/19 08:54

L1153616

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	307000		2820	10000	1	10/26/2019 16:35	WG1369825

# <sup>2</sup>Tc

#### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1730		51.9	1000	1	10/28/2019 18:44	WG1370811
Fluoride	110		9.90	100	1	10/28/2019 18:44	WG1370811
Sulfate	4880	<u>J</u>	77.4	5000	1	10/28/2019 18:44	WG1370811



	Decult	Ouglifier	MDI	DDI	Dilution	Amalusis	Datab
	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	88.1	<u>J</u>	12.6	200	1	10/28/2019 19:14	WG1370048
Calcium	75900		46.3	1000	1	10/28/2019 19:14	WG1370048











ONE LAB. NATIONWIDE.

Collected date/time: 10/23/19 10:38

L1153616

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	411000		2820	10000	1	10/26/2019 16:35	WG1369825

#### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1230		51.9	1000	1	10/28/2019 19:02	WG1370811
Fluoride	220		9.90	100	1	10/28/2019 19:02	WG1370811
Sulfate	5830		77.4	5000	1	10/28/2019 19:02	WG1370811



# Cn

Ss











#### Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	22.4	<u>J</u>	12.6	200	1	10/28/2019 19:17	WG1370048
Calcium	114000		46.3	1000	1	10/28/2019 19:17	WG1370048

Plum Point Services Co., LLC

ONE LAB. NATIONWIDE.

Collected date/time: 10/23/19 08:55

L1153616

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	417000		2820	10000	1	10/26/2019 16:35	WG1369825

# <sup>2</sup>Ta

#### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2750		51.9	1000	1	10/28/2019 19:37	WG1370811
Fluoride	216		9.90	100	1	10/28/2019 19:37	WG1370811
Sulfate	63100		77.4	5000	1	10/28/2019 19:37	WG1370811



³Ss

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	82.9	J	12.6	200	1	10/29/2019 01:32	WG1370049
Calcium	109000		46.3	1000	1	10/29/2019 01:32	WG1370049











ONE LAB. NATIONWIDE.

Collected date/time: 10/22/19 11:56

L1153616

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	322000		2820	10000	1	10/26/2019 16:35	WG1369825

#### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	864	J	51.9	1000	1	10/28/2019 20:47	WG1370811
Fluoride	136		9.90	100	1	10/28/2019 20:47	WG1370811
Sulfate	5450		77.4	5000	1	10/28/2019 20:47	WG1370811



	Result	Qualifier	MDL	KDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	864	J	51.9	1000	1	10/28/2019 20:47	WG1370811
Fluoride	136		9.90	100	1	10/28/2019 20:47	WG1370811
Sulfate	5450		77.4	5000	1	10/28/2019 20:47	WG1370811



	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	61.0	J	12.6	200	1	10/29/2019 01:35	WG1370049
Calcium	91000		46.3	1000	1	10/29/2019 01:35	WG1370049









ONE LAB. NATIONWIDE.

Collected date/time: 10/22/19 14:00

L1153616

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	335000		2820	10000	1	10/26/2019 16:35	WG1369825

# <sup>2</sup>Tc

#### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1450		51.9	1000	1	10/28/2019 21:05	WG1370811
Fluoride	162		9.90	100	1	10/28/2019 21:05	WG1370811
Sulfate	17500		77.4	5000	1	10/28/2019 21:05	WG1370811



Ss

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	45.9	<u>J</u>	12.6	200	1	10/29/2019 01:37	WG1370049
Calcium	91600		46.3	1000	1	10/29/2019 01:37	WG1370049











# SAMPLE RESULTS - 10

ONE LAB. NATIONWIDE.

Collected date/time: 10/22/19 16:05

L1153616

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	400000		2820	10000	1	10/27/2019 08:07	WG1369826

# 2 2

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2860		51.9	1000	1	10/28/2019 21:23	WG1370811
Fluoride	266		9.90	100	1	10/28/2019 21:23	WG1370811
Sulfate	47700		77.4	5000	1	10/28/2019 21:23	WG1370811



# <sup>4</sup>Cn

# <sup>5</sup>Sr

# Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	48.0	J	12.6	200	1	10/29/2019 01:45	WG1370049
Calcium	123000		46.3	1000	1	10/29/2019 01:45	WG1370049









# SAMPLE RESULTS - 11

ONE LAB. NATIONWIDE.

Collected date/time: 10/22/19 12:00

L1153616

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	296000		2820	10000	1	10/27/2019 08:07	WG1369826

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	871	<u>J</u>	51.9	1000	1	10/28/2019 21:40	WG1370811
Fluoride	129		9.90	100	1	10/28/2019 21:40	WG1370811
Sulfate	5380		77.4	5000	1	10/28/2019 21:40	<u>WG1370811</u>



Ss

# Cn













## Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	62.0	J	12.6	200	1	10/29/2019 01:48	WG1370049
Calcium	88400		46.3	1000	1	10/29/2019 01:48	WG1370049

# SAMPLE RESULTS - 12

ONE LAB. NATIONWIDE.

Collected date/time: 10/23/19 11:00

#### L1153616

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	U		2820	10000	1	10/27/2019 08:07	WG1369826

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	64.5	J	51.9	1000	1	10/28/2019 21:58	WG1370811
Fluoride	U		9.90	100	1	10/28/2019 21:58	WG1370811
Sulfate	U		77.4	5000	1	10/28/2019 21:58	WG1370811



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СQс

# Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	U		12.6	200	1	10/29/2019 01:51	WG1370049
Calcium	U		46.3	1000	1	10/29/2019 01:51	WG1370049







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Gravimetric Analysis by Method 2540 C-2011

L1153616-01,02,03,04,05,06,07,08,09

#### Method Blank (MB)

(MB) R3466394-1 10/26/19	16:35			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000





## L1153608-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1153608-10 10/26/19 16:35 • (DUP) R3466394-3 10/26/19 16:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	318000	315000	1	0.948		5





# L1153616-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1153616-09 10/26/19 16:35 • (DUP) R3466394-4 10/26/19 16:35

(00, 2000.0 00 .0, 20, .0	Original Result			DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	335000	334000	1	0.299		5





### Laboratory Control Sample (LCS)

(LCS) R3466394-2 10/26/19 16:35

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8300000	94.3	85 0-115	

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Gravimetric Analysis by Method 2540 C-2011

L1153616-10,11,12

### Method Blank (MB)

Dissolved Solids

(MB) R3465887-1 10/27/19 08:07 MB RDL MB Result MB Qualifier MB MDL Analyte ug/l ug/l ug/l







# L1153629-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1153629-04 10/27/19 08:07 • (DUP) R3465887-3 10/27/19 08:07

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	4540000	4850000	1	6.60	.13	5

2820

10000



<sup>†</sup>Cn



# L1153629-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1153629-12 10/27/19 08:07 • (DUP) R3465887-4 10/27/19 08:07

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	4140000	4060000	1	1.95		5





## Laboratory Control Sample (LCS)

(LCS) R3465887-2 10/27/19 08:07

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8240000	93.6	85 0-115	

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Wet Chemistry by Method 9056A

#### L1153616-01,02,03,04,05,06,07,08,09,10,11,12

#### Method Blank (MB)

(MB) R3466113-1 10/28/19 12:09

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100
Sulfate	П		77 4	5000







# L1153521-61 Original Sample (OS) • Duplicate (DUP)

(OS) L1153521-61 10/28/19 14:03 • (DUP) R3466113-3 10/28/19 14:20

(/	,					
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	95.9	69.2	1	32.3	<u>J P1</u>	15
Fluoride	U	0.000	1	0.000		15
Sulfate	171	153	1	11.5	J	15









# L1153616-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1153616-06 10/28/19 19:02 • (DLIP) R3466113-6 10/28/19 19:19

(00) 11100010 00 10/20/15	) [ [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]								
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits			
Analyte	ug/l	ug/l		%		%			
Chloride	1230	1220	1	0.579		15			
Fluoride	220	220	1	0.0454		15			
Sulfate	5830	5840	1	0.242		15			

# Sc

## Laboratory Control Sample (LCS)

(I CS) P3/166113\_2 10/28/19 12:27

(LCS) R3400113-2 10/26/	/19 12.27				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	39200	97.9	80.0-120	
Fluoride	8000	7920	99.0	80.0-120	
Sulfate	40000	39300	98.3	80.0-120	

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Wet Chemistry by Method 9056A

L1153616-01,02,03,04,05,06,07,08,09,10,11,12

### L1153582-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1153582-01 10/28/19 15:48 • (MS) R3466113-4 10/28/19 16:05 • (MSD) R3466113-5 10/28/19 16:58

(,												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	3430	52900	52800	98.9	98.8	1	80.0-120			0.105	15
Fluoride	5000	ND	5000	5040	99.3	100	1	80.0-120			0.681	15
Sulfate	50000	ND	50400	50700	98.4	99.1	1	80.0-120			0.771	15







# L1153616-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L1153616-07 10/28/19 19:37 • (MS) R3466113-7 10/28/19 20:30

(03) [1133010-07 10/20/1	(OS) ETISSOTO-O7 TO/20/13 13:37 • (MS) NS400TIS-7 TO/20/13 20:30												
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier						
Analyte	ug/l	ug/l	ug/l	%		%							
Chloride	50000	2750	52400	99.3	1	80.0-120							
Fluoride	5000	216	5190	99.4	1	80.0-120							
Sulfate	50000	63100	109000	91.7	1	80.0-120	Е						











PAGE:

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

#### L1153616-01,02,03,04,05,06

#### Method Blank (MB)

(MB) R3466084-1 10/28/19 18:00										
	MB Result	MB Qualifier	MB MDL	MB RDL						
Analyte	ug/l		ug/l	ug/l						
Boron	U		12.6	200						
Calcium	U		46.3	1000						







## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) NS+0000+ 2	Cuille America	•		LCC D.
(LCS) R3466084-2	10/28/19 18:02 • (LCSI	D) R3466084-3	10/28/19 18:04	

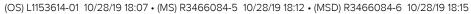
(,	Spike Amount	•	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	990	997	99.0	99.7	80.0-120			0.670	20
Calcium	10000	10100	10100	101	101	80.0-120			0.358	20







# L1153614-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)



(03) [1133014-01]	0/20/13 10.07 (1013) 13	7-00004-5 10/	20/13 10.12 • (	1413D) 11340000	7-0 10/20/13	10.15							
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%	
Boron	1000	35.7	1030	1030	98.9	99.5	1	75.0-125			0.551	20	
Calcium	10000	88600	97300	97100	87.7	85.7	1	75 0-125			0.207	20	





DATE/TIME:

10/30/19 14:07

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Metals (ICP) by Method 6010B

#### L1153616-07,08,09,10,11,12

#### Method Blank (MB)

(MB) R3466075-1 10/29	9/19 01:14			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000





## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3466075-7 10/29	9/19 02:17 • (LCSI	D) R3466075-	3 10/29/19 01:1	9						
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	975	977	97.5	97.7	80.0-120			0.229	20
Calcium	10000	9690	9800	96.9	98.0	80.0-120			1.18	20



<sup>†</sup>Cn





# L1153629-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1153629-01 10/29/19	9 01:22 • (MS) R	34660/5-5 10	/29/19 01:27 •	(MSD) R34660	/5-6 10/29/19	01:29						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	836	1770	1820	93.8	98.1	1	75.0-125			2.38	20
Calcium	10000	93000	102000	102000	86.2	89.6	1	75.0-125			0.335	20





### **GLOSSARY OF TERMS**

#### ONE LAB. NATIONWIDE.

#### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

#### Abbreviations and Definitions

P1

Abbic viations and	Deminions
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.

RPD value not applicable for sample concentrations less than 5 times the reporting limit.







Cn













# **ACCREDITATIONS & LOCATIONS**





#### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky <sup>1 6</sup>	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina 1	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

#### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

#### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















	-	J . € 1=	Billing Info	ormation:	3.		100	44.1		Analysis / (	Container /	Preserva	tive			Chain of Custody	Page ]
Plum Point Services Co., LLC 2739 SCR 623 Osceola, AR 72370			P.O. Box	Accounts Payable P.O. Box 567 Osceola, AR 72370					3						1 July 1	Pace, National C	Analytica enter for Testing
Report to: Dana Derrington			Email To: Richard.Gray@nrg.com, dld@ftn- assoc.com, hlf@ftn-assoc.com													12065 Lebanon Rd Mount Juliet, TN 37	
			Oscec	da,AR		Please Cir	cle: ET	Pres								Phone: 615-758-58 Phone: 800-767-58 Fax: 615-758-5859	
Phone: <b>870-815-1248</b> Fax:	14590-199		Lab Project # NAESOAR-PLUMPOINT				250mlHDPE-NoPres	HN03							J03		
Collected by (print): Andrewhitt	Site/Facility II				P.O. # 2019-00325			OmlHD	250mlHDPE-HNO3				241			Acctnum: IVA	
Collected by (signature):	Same D	Rush? (Lab MUST Be Notification of Same Day Five Day Next Day 5 Day (Rad Control of Same Day (Ra						TDS 25	250ml							Template: <b>T13</b> Prelogin: <b>P73</b>	5663
Immediately Packed on Ice N Y	Next Da	y 10 D	nly) Date Results Needed Only)		ults Needed	No. of	SO4, T	B, Ca.;							PM: <b>134 - Mar</b>		
Sample ID	Comp/Grab	Matrix *	Depth	Date	Date Time		Cntrs	Cl, F,	Total							Shipped Via: Fo	Sample #
MW-101	Gub	GW		10/23	19	0410	2	X	X			- 3	1		E-mail y		1-01
MW-102		GW		10/23	19	0934	2	X	X								02
MW-103		GW		10 22	119	1506	2	Х	X							25	03
MW-108	1/2/	GW		10/20	119	0800	2	Х	Х				1 1/2				04
MW-113		GW		10/22	19	0854	2	Х	Х								OS
MW-115		GW		10/23	19	1038	2	X	Х								06
MW-116		GW		10/23		0855	2	X	X								07
MW-117		GW	1	10/22		1166	2	Х	X			1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -				14.4	08
MW-118		GW		10/22	119	1400	2	X	X						Ç.		09
MW-119	V	GW		10/2:	419	1605	2	X	Х								10
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other Samples returned via:UPS FedExCo									pH Temp Flow Other				Sample Receipt Checklist COC Seal Present/Intact: YP COC Signed/Accurate: Bottles arrive intact: Correct bottles used:				
		edEx Cou				Tracking # 1275		5	5 8601		19051			Suffic VOA Ze	cient ero He	volume sent: If Applicate eadspace:	ole
Relinquished by: (9ignature)		Date: 10/33	119	1700		ceived by: (Signa			- 47	Trip Blani	k Received:	HCL/I	МеоН	Preservation Correct/Checked:			
Relinquished by : (Signeture)		Date:		Time:	Received by: (Signature)			e de la companya de l		Temp: A. 3.912	Temp: AHA°C Bottles Received: 3.913-4.1			If preservation required by Login: Date/Time			
Relinquished by : (Signature) Date:		Date:	Time: Received for la			ceived for lab by	y: (Signa	ure)		Date:	Date: Time: 145			Hold:			Condi NCF

	-		Billing Info	rmation:			Table 6		Analysis / Co	ntainer / Preserv	ative	7.1	Chain of Custody	Page 2 of 2	
Plum Point Services ( 739 SCR 623 Osceola, AR 72370	Co., LLC		Accounts Payable P.O. Box 567 Osceola, AR 72370				75					Pace Analytical * National Center for Testing & Innov			
eport to: Dana Derrington				tichard.Gray@nrg , hlf@ftn-assoc.c									12065 Lebanon Rd Mount Juliet, TN 371 Phone: 615-758-5858		
roject Description: Plum Point Energy	Station	City/State Collected:	Osceo	la, AR	Please Cir PT MT C		Pres						Phone: 800-767-5859 Fax: 615-758-5859		
hone: <b>870-815-1248</b>	Client Project 14590-1992			Lab Project # NAESOAR-P	LUMPOINT		250mlHDPE-NoPres	E-HNO3					SDG# L115	3618	
Collected by (print):	Site/Facility ID	)#	-	P.O. # 2019-00325			OmlHD	HDPE-					Acctnum: NAES	Table # Acctnum: NAESOAR	
collected by (signature):  Collected by (signatu	Rush? (L Same Da Next Da Two Day Three Da	y 5 Day		Quote #  Date Res	sults Needed	No.	SO4, TDS 25	B, Ca 250mlHDP					Prelogin: P735 PM: 134 - Mark PB:	W. Beasley	
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	Cl, F, 9	Total					Shipped Via: <b>Fe</b> Remarks	Sample # (lab only	
MW-117 DUP	Giab	GW		10/22/19	1200	2	Х	X						17	
EB-1	1	GW		10/23/13	1100	2	X	X						12	
		GW				2	X	X	0.44						
		GW				2	X	X							
		GW				2	X	X			7-47				
Var.					- 1							, .	<del> </del>		
													904		
						1							4		
									l leg						
* Matrix: \$\$ - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater	Remarks:								pH Flow	Temp Other		COC Seal COC Signed Bottles a	mple Receipt Ch Present/Intact: d/Accurate: rrive intact: ottles used:		
DW - Drinking Water OT - Other	Samples return	ned via:	urier		racking#	27	5	860	01	1051		Sufficien VOA Zero	t volume sent:  If Applicable Headspace:	<u> </u>	
Relinquished by : Bignature)		Date: 10/3	19	1700	Received by: (Sign	9			Trip Blank I	HCL, TBR	/ MeoH	RAD Scree	ion Correct/Che n <0.5 mR/hr:	<b>X</b> / <sub>1</sub> _	
Relinquished by : (Signature)		Date:			Received by: (Sign				3.962	41 -	24		on required by Log		
Relinquished by : (Signature)		Date:		Time:	Received for lab b	y: (Signa	Jure)		Date:	1-10 Time:	115	Hold:		NCF / OK	



# ANALYTICAL REPORT

November 13, 2019

# Plum Point Services Co., LLC

Sample Delivery Group: L1158374 Samples Received: 10/24/2019

Project Number: 14590-1992-001

Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

<sup>1</sup>Cp

















Entire Report Reviewed By:

Mark W. Beasley
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory, Whose applicables. Project Managing conducted by Prose Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MT-UL-0068 Whose sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MW-117 L1158374-01	5
MW-119 L1158374-02	6
Qc: Quality Control Summary	7
Metals (ICPMS) by Method 6020	7
GI: Glossary of Terms	8
Al: Accreditations & Locations	9
Sc: Sample Chain of Custody	10























			Collected by	Collected date/time	Received da	te/time
MW-117 L1158374-01 GW			Andrew Pruitt	10/22/19 11:56	10/24/19 08:4	45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICPMS) by Method 6020	WG1378898	1	11/12/19 11:09	11/12/19 17:29	LD	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-119 L1158374-02 GW			Andrew Pruitt	10/22/19 16:05	10/24/19 08:4	45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICPMS) by Method 6020	WG1378898	1	11/12/19 11:09	11/12/19 17:32	LD	Mt. Juliet, TN





















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

















Mark W. Beasley Project Manager

MW-117

#### SAMPLE RESULTS - 01 L1158374

ONE LAB. NATIONWIDE.

Collected date/time: 10/22/19 11:56 Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Calcium	80900		46.0	1000	1	11/12/2019 17:29	WG1378898



















MW-119

# SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 10/22/19 16:05

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Calcium	110000		46.0	1000	1	11/12/2019 17:32	WG1378898



















ONE LAB. NATIONWIDE.

Metals (ICPMS) by Method 6020

L1158374-01,02

#### Method Blank (MB)

Calcium

Calcium

(MB) R3471180-1 11/12/19 16:40 MB Result MB Qualifier MB MDL Analyte ug/l ug/l

U



# 1000

## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

46.0

(LCS) R3471180-2 11/12/19 16:44 • (LCSD) R3471180-3 11/12/19 16:47 Spike Amount LCS Result LCS Rec. LCSD Rec. LCSD Result Rec. Limits LCS Qualifier LCSD Qualifier RPD **RPD Limits** % ug/l ug/l % % % % Analyte ug/l 5000 4640 4610 92.8 92.2 80.0-120 0.596 20

# L1158207-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1158207-07 11/12/19 16:51 • (MS) R3471180-5 11/12/19 16:57 • (MSD) R3471180-6 11/12/19 17:01

(,			(	,								
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Calcium	5000	45400	51000	50000	112	92.0	1	75 O 125			2.04	20









<sup>†</sup>Cn











PAGE:

7 of 11

### **GLOSSARY OF TERMS**

#### ONE LAB. NATIONWIDE.

#### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

#### Abbreviations and Definitions

Abbreviations and	d Definitions
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
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Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
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Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

#### Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.













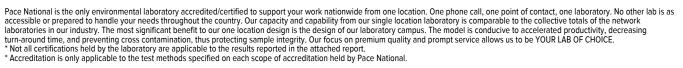






# **ACCREDITATIONS & LOCATIONS**





#### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
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lowa	364
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Kentucky <sup>2</sup>	16
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Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

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A2LA - ISO 17025 5	1461.02	
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EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

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Plum Point Services (	Co., LLC		Billing Info					1	Analysis /	Container / Preservative		Chain of Custoo	ly Page of
2739 SCR 623 Osceola, AR 72370	4		P.O. Box	s Payable 3567 , AR 72370		Pres Chk		5				Pack	P. Analytical ® Center for feeting & Innova
Report to: Dana Derrington				Richard.Gray@n	rg.com, dld@ftn- .com							12065 Lebanon Ri Mount Juliet, TN	
Project Description: Plum Point Energy	Station	City/State Collected: C	Sceo	lavAR	Please Cir	cle:	res	4				Phone: 615-758-5 Phone: 800-767-5 Fax: 615-758-585	858 859
Phone: 870-815-1248	Client Project	#		Lab Project #	PLUMPOINT		E-NoP	NO3				SDG#LLK	La. De void
Collected by (print); Andrewhirt	Site/Facility II	D#		P.O. # 2019-0032	5		250mlHDPE-NoPres	250mlHDPE-HNO3				JO3	1168374
ollected by (signature)		Lab MUST Be N		Quote#			\$ 250	OmlH				Template: T13	34757
mmediately Packed on Ice N Y	Next Da Two Da Three D	y 5 Day ( y 10 Day	Rad Only)	Date Re	esults Needed	No.	SO4, TDS	B, Ca 25				Prelogin: P73 PM: 134 - Mai	
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	Cl, F, S	Total B				Shipped Via: F	edEX Ground
/W-101	Gush	GW		10/23/19	10410	2	X	X					
IW-102	1	GW		10/23/13		2	X	x					-01
1W-103	1	GW		10/22/1		2	X	x					<del>03</del>
IW-108		GW		10/22/1		2	Х	х					
IW-113		GW		10/22/19		2	Х	X					0+
IW-115		GW		10/23/19	- 00	2	Х	x					-05
W-116		GW		10/23/19		2	X	х				-	
W-117	100	GW	11 11 11 11	10/22/19		2	Х	X				1 4 4	07
W-118		GW		10/32/19	1400	2	Х	X					-08
W-119	1	GW		10/22/1		2	X	X					09
atrix: Soil AIR - Air F - Filter - Groundwater B - Bioassay I - WasteWater	Remarks:		# 1 m				j. 1		pH .	Temp	COC Signed	ple Receipt C resent/Intact /Accurate: rive intact:	KORD X - R
N - Drinking Water - Other	Samples returnups X Fe	ned via: dExCourie	er	THE STATE OF THE S	Tracking #	7	5 8	3/60	1 93	0ther	Correct bo	ttles used: volume sent: If Applicab	
and Gignatures and Supplied and		Date: 10/23/		me:	Received by: (Signa	iture)			Trip Blani	K Received: Yes No HCL / MeoH	VOA Zero H Preservati RAD Screen	eadspace: on Correct/Ch <0.5 mR/hr:	ecked: X _N
elinquished by : (Signature)		Date:			Received by: (Signa	-			Temp: A 3.912		If preservation	on required by Lo	gin: Date/Time
elinquished by : (Signature)		Date:	Ti	me:	Received for lab by	(Signal	ure)		Date:	4-19 8:45	Hold:		Conditions NCF / OK

# **Andy Vann**

From:

Mark Beasley

Sent:

Thursday, November 7, 2019 4:18 PM

To:

Project Service; Sample Storage

Subject:

L1153616 \*FTNLRAR\* relog

Relog L1153616-08 & -10 for CAG. Log as R5 due 11/14.

Thanks Mark

From: Heather Ferguson [mailto:hlf@ftn-assoc.com]

Sent: Thursday, November 07, 2019 1:03 PM

To: Mark Beasley

Subject: Lab Re-Runs for SDG L1153616

CAUTION: This email originated from outside Pace Analytical. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Mark,

Could you ask the lab to verify the results for calcium at MW-117 and MW-119 from the attached SDG, and if the results are correct, to please re-run the samples?

Thanks so much!

Heather

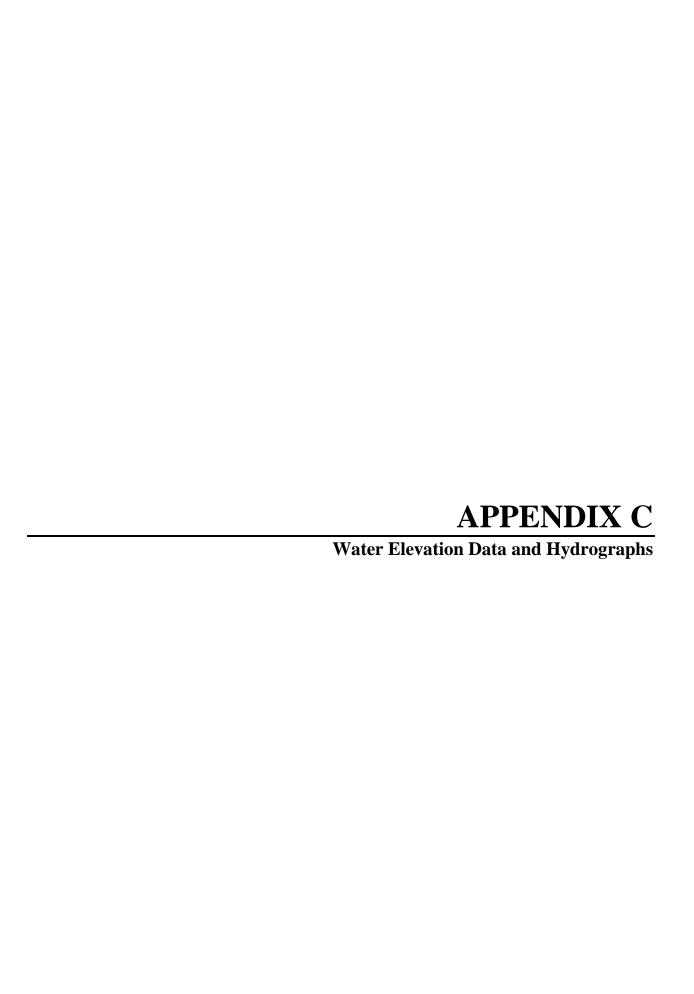
# Heather Ferguson



FTN Associates, Ltd. 3 Innwood Circle, Suite 220 Little Rock, AR 72211 P: (501) 225-7779

F: (501) 225-6738

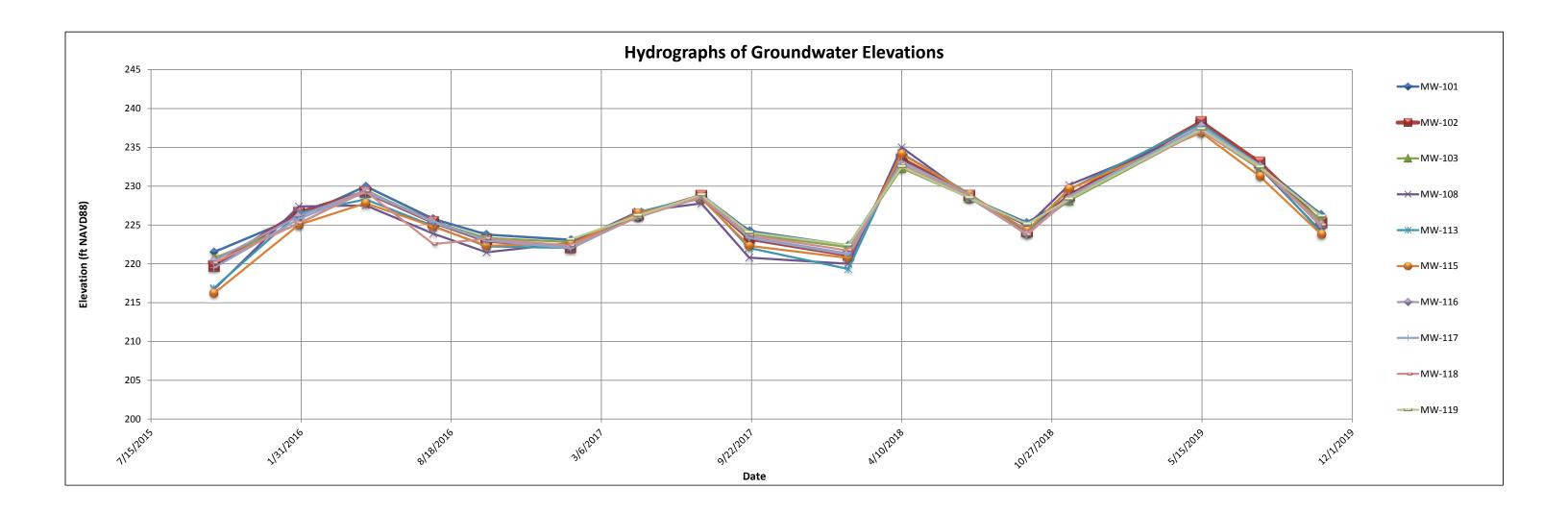
https://www.ftn-assoc.com

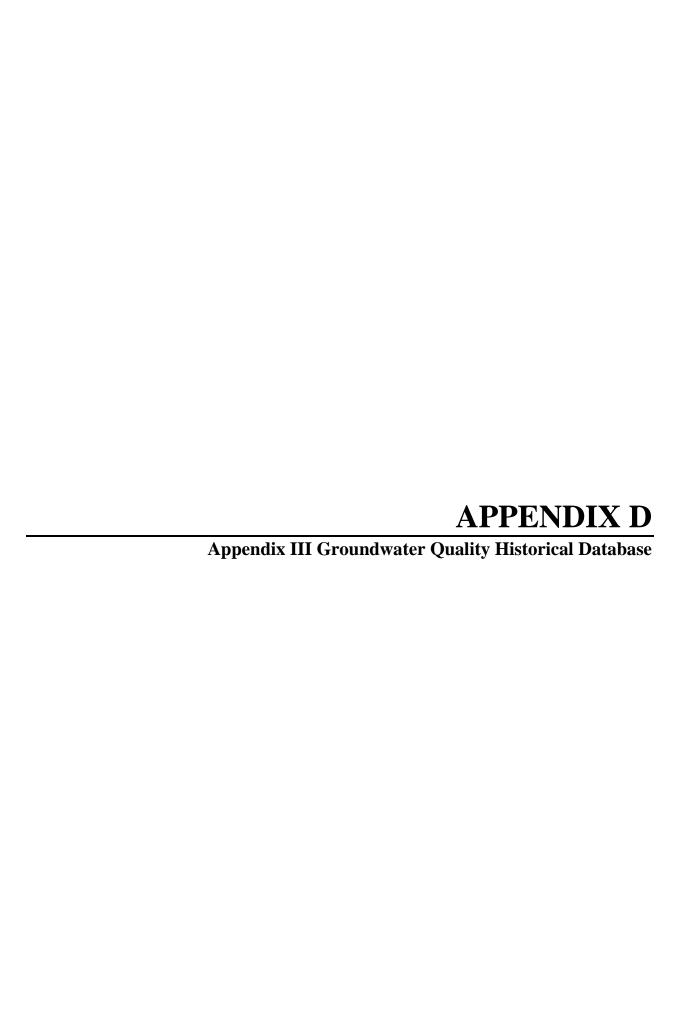


# Historical water levels.

	Water Surface Elevation (ft, North American Vertical Datum of 1988)									
Date	MW-101	MW-102	MW-103	MW-108	MW-113	MW-115	MW-116	MW-117	MW-118	MW-119
10/7/2015	221.51	219.73	220.71	216.68	216.87	216.17	220.40	219.48	220.12	N/A*
1/28/2016	226.07	226.58	225.16	227.39	226.53	225.03	226.14	225.78	225.22	N/A*
4/26/2016	229.97	229.24	229.48	227.53	228.30	227.80	229.43	229.23	229.33	N/A*
7/25/2016	225.79	225.38	225.41	223.87	224.87	224.78	225.33	225.45	222.53	N/A*
10/4/2016	223.76	223.00	223.33	221.47	222.23	222.34	223.10	222.99	223.23	N/A*
1/24/2017	223.08	222.09	222.79	222.66	222.03	222.54	222.12	222.00	222.34	223.14
4/24/2017	226.04	226.33	226.33	226.71	226.65	226.53	226.07	226.11	225.98	226.22
7/17/2017	228.89	228.74	228.48	227.77	228.65	228.41	228.53	228.77	228.65	228.86
9/19/2017	224.21	223.23	223.82	220.80	222.03	222.32	223.42	223.33	223.67	224.04
1/29/2018	222.35	221.12	222.14	220.01	219.32	220.74	221.33	221.18	221.71	222.39
4/10/2018	232.63	233.50	232.34	234.99	234.23	234.15	232.89	233.19	232.76	232.52
7/9/2018	228.52	228.81	228.50	228.72	229.03	228.95	228.49	228.87	228.73	228.49
9/24/2018	225.29	224.15	224.16	224.89	224.08	224.29	223.83	223.71	223.72	225.11
11/19/2018	228.54	228.80	228.16	230.16	229.57	229.62	228.31	228.71	228.46	228.33
2/18/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	236.90
5/14/2019	237.60	238.28	237.17	237.13	238.03	236.89	237.76	237.55	237.08	237.35
7/31/2019	232.75	233.02	232.22	232.39	232.66	231.26	232.55	232.75	232.40	232.48
10/21/2019	226.32	225.29	225.52	224.14	223.95	223.78	225.08	224.77	224.98	226.16

<sup>\*</sup>Monitoring well not installed yet.





		Boron	Calcium	Chloride	Fluoride	Sulfate	TDS	рН
Well	Sampling Date	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(su)
MW-101	downgradient	(61 -1	(61 –1	(61 –1	(61 –1	(61 –1	(6/ -/	(00)
	10/7/2015	0.0858(J)	116	3.02	0.281	12.4	401	6.4
	1/28/2016	0.114(J)	117	2.74	0.274	11.4	421(B)	6.6
	4/27/2016	0.105(J)	120	6.61	0.283	19.9	437	6.3
	7/26/2016	0.0877(J)	115	3.41	0.241	12.8	448(B)	6.6
	10/6/2016	0.089(J)	110	1.93	0.267	8.44	387	6.2
	1/25/2017	0.0681(J)	109	1.67	0.3	11.5	381	6.7
	4/26/2017	<1.8*	80.5	2.14	0.273	9.57	407	6.9
	7/20/2017	0.0903(BJ)	110	1.98	0.331	13.5	414	6.7
	9/20/2017	0.0718(J)	153	1.57	0.328	9.68	385	7.0
	12/11/2017	n/a	120	n/a	n/a	n/a	n/a	6.4
	4/12/2018	0.084(BJ)	121	2.75	0.307	17.4	420	6.4
	9/26/2018	0.0981(BJ)	115	1.94(B)	0.29(B)	14.6	421	6.8
	5/16/2019	0.118(J)	103	1.01	0.263(B)	9.17	392	6.6
	10/23/2019	0.0491(J)	109	1.37	0.264	11.9	404	7.0
MW-102	downgradient	(0)						
-	11/10/2015	0.0818(J)	121	5.53	0.16	82.3	434	6.8
	1/28/2016	0.125(J)	123	5.33	0.157	85.9	470	6.8
	4/27/2016	0.135(J)	131	6.32	0.154	103	478	6.7
	7/26/2016	0.122(J)	122	5.42	0.15	88.1	474(B)	7.7
	10/6/2016	0.0999(J)	120	5.18	0.158	83.2	458	6.0
	1/25/2017	0.0938(J)	118	4.5	0.182	88.8	435	5.8
	4/27/2017	0.12(J)	121	4.85	0.175	91	504	6.7
	7/19/2017	0.108(BJ)	126	4.28	0.207	85.4	461	6.6
	9/20/2017	0.0536(J)	25.9	4.29	0.194	88.7	454	6.7
	4/11/2018	0.144(BJ)	136	1.77	0.206	46.7	472	6.3
	7/9/2018	n/a	124	n/a	n/a	n/a	n/a	6.7
	9/27/2018	0.121(BJ)	121	3.84	0.183(B)	88.6	453	6.5
	5/16/2019	0.15(J)	121	2.87	0.196(B)	75.4	466	6.6
	10/23/2019	0.0602(J)	117	3.62	0.201	85.6	461	6.7
MW-103	downgradient							
	10/7/2015	0.119(J)	168	3.92	0.198	95	591	6.5
	1/28/2016	0.149(J)	153	2.66	0.188	60.1	539(B)	6.3
	4/27/2016	0.166(J)	147	4.06	0.17	62	517	6.5
	7/26/2016	0.142(J)	148	3.63	0.163	60.9	539(B)	6.3
	10/6/2016	0.137(J)	152	2.69	0.201	54.5	518	6.3
	1/26/2017	0.138(J)	135	2.82	0.223	52	477	6.8
	4/27/2017	0.137(J)	136	2.89	0.2	49.8	513	6.5
	7/20/2017	0.124(BJ)	136	2.28	0.24	52.2	506	6.6
	9/20/2017	0.134(J)	141	1.79	0.24	48.2	496	6.6
	4/11/2018	0.122(BJ)	128	3.24	0.163	80.6	468	6.2
	9/26/2018	0.145(BJ)	129	1.36(B)	0.217(B)	32.8	440	6.6
	5/15/2019	0.154(J)	106	1.1	0.213(B)	23.4	396	6.6
	10/22/2019	0.0816(J)	107	1.29	0.253	24.4	384	6.7

Asterisk indicates the value was below the practical quantitation limit.

B: Analyte was detected in an associated quality control blank.

J: Analyte was detected below the laboratory reporting detection limit; value is an estimate.

		Boron	Calcium	Chloride	Fluoride	Sulfate	TDS	рН	
Well	Sampling Date	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(su)	
MW-108	upgradient	(8/ -/	(8/ -/	(8/ =/	(8/ =/	(8/ =/	(8/ =/	(34)	
10100	1/28/2016	0.164(J)	166	5.34	0.158	44.4	555	6.7	
	4/28/2016	0.194(J)	178	2.81	0.134	45.2	638(B)	6.6	
	7/26/2016	0.158(J)	144	2.43	0.144	39.3	475(B)	9.8	
	10/6/2016	0.174(J)	158	2.48	0.169	41.4	539	6.2	
	1/26/2017	0.164(J)	154	2.64	0.202	51.6	513	7.0	
	4/25/2017	0.147(J)	151	3.1	0.167	45.7	488	6.8	
	7/18/2017	0.162(J)	167	3.03	0.191	39.4	576	6.7	
	9/19/2017	0.158(J)	170	2.06	0.199	43.8	578	6.7	
	4/10/2018	0.171(BJ)	183	3.03	0.177	44.5	582	6.5	
	9/25/2018	0.183(BJ)	163	3.11	0.188(B)	52.2	537	6.7	
	5/14/2019	0.224(B)	169	2.44	0.184(B)	34.5	529	6.8	
	8/1/2019	0.127(BJ)	n/a	n/a	n/a	n/a	n/a	7.1	
	10/22/2019	0.11(J)	153	1.95	0.205	32.9	528	6.7	
MW-113	upgradient 1.33 1.33 0.203 32.3 320 0.7								
	1/28/2016	0.102(J)	84.7	3.61	0.0808(J)	11	320(B)	6.6	
	4/28/2016	0.127(J)	72.5	2.05	0.0604(J)	8.99	321(B)	6.9	
	7/26/2016	0.144(J)	69.8	0.856(J)	0.057(J)	4.97(J)	281(B)	8.1	
	10/5/2016	0.0963(J)	84.7	2.63	0.0827(J)	9.51	323	6.0	
	1/26/2017	0.0891(J)	88.9	5.81	0.0901(J)	13.3	332	7.1	
	4/25/2017	0.089(J)	87.9	5.49	0.0944(J)	11.8	339	6.9	
	7/18/2017	0.0982(BJ)	82.5	3.96	0.119	10.9	321	6.8	
	9/19/2017	0.0998(J)	84.1	2.19	0.117	9.45	326	6.9	
	4/10/2018	0.0899(BJ)	92	2.94	0.0562(J)	10.1	340	6.4	
	9/25/2018	0.111(BJ)	90	2.84(B)	0.114(B)	9.81	337	6.7	
	5/14/2019	0.168(J)	87.2	1.58	0.12(B)	3.15(J)	342	6.7	
	10/22/2019	0.0881(J)	75.9	1.73	0.11	4.88(J)	307	6.7	
MW-115	upgradient								
	11/10/2015	0.0473(J)	109	2.14	0.23	8.23	363	7.0	
	1/28/2016	0.0617(J)	103	7.55	0.201	14.8	376	7.1	
	4/28/2016	0.0863(J)	115	1.83	0.179	5.63	443(B)	6.8	
	7/26/2016	0.0604(J)	114	1.22	0.2	4.79(J)	399(B)	9.0	
	10/5/2016	0.0737(J)	114	1.31	0.218	4.59(J)	446	6.1	
	1/27/2017	0.0602(J)	110	1.77	0.244	6.52	406	7.0	
	4/25/2017	0.0641(J)	106	2.71	0.203	6.75	385	6.8	
	7/18/2017	0.0608(BJ)	105	2.32	0.238	7.1	369	6.6	
	9/19/2017	0.0609(J)	116	0.835(J)	0.243	5.37	403	6.8	
	4/10/2018	0.0666(BJ)	111	1.34	0.209	5.81	368	6.3	
	9/25/2018	0.0764(BJ)	121	1.18(B)	0.216(B)	5(J)	417	6.7	
	5/14/2019	0.0751(J)	128	0.598(J)	0.184(B)	5.63	440	6.6	
	8/1/2019	n/a	125	n/a	n/a	n/a	n/a	7.1	
	10/23/2019	0.0224(J)	114	1.23	0.22	5.83	411	6.9	

Asterisk indicates the value was below the practical quantitation limit.

B: Analyte was detected in an associated quality control blank.

J: Analyte was detected below the laboratory reporting detection limit; value is an estimate.

		Boron	Calcium	Chloride	Fluoride	Sulfate	TDS	рН
Well	Sampling Date	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(su)
MW-116	downgradient	(***01 –1	(6/ -/	(6/ -/	(61 –)	(61 –1	(61 -1	(0.07)
	10/8/2015	0.108(J)	103	5.84	0.173	45.1	367	6.7
	1/28/2016	0.139(J)	111	5.67	0.165	78	426	6.8
	4/28/2016	0.142(J)	106	4.8	0.148	83.5	461(B)	6.6
	7/26/2016	0.115(J)	109	5.2	0.148	81.8	395(B)	6.2
	10/6/2016	0.126(J)	110	4.7	0.172	86.5	443	5.9
	1/25/2017	0.141(J)	118	4.85	0.201	89.2	467	5.9
	4/27/2017	0.137(J)	107	4.25	0.172	95.2	443	6.7
	7/19/2017	0.135(BJ)	111	4.45	0.208	98.4	435	6.5
	9/20/2017	0.132(J)	115	4.16	0.207	94.2	451	6.7
	1/30/2018	n/a	n/a	n/a	n/a	35.5	n/a	6.5
	4/11/2018	0.111(BJ)	137	4.9	0.166	113	511	6.4
	7/9/2018	n/a	125	n/a	n/a	n/a	n/a	6.6
	9/26/2018	0.153(BJ)	130	4.13	0.183(B)	97.5	500	6.6
	5/16/2019	0.144(J)	93.2	1.66	0.189(B)	27	349	6.6
	10/23/2019	0.0829(J)	109	2.75	0.216	63.1	417	6.7
MW-117	downgradient							
	10/8/2015	0.0733(J)	80.4	1.17	0.077(J)	5.21	281	6.6
	1/28/2016	0.096(J)	75.2	1.61	0.126	6.32	271(B)	6.5
	4/27/2016	0.13(J)	76.9	1.3	0.101	6.19	272	6.6
	7/26/2016	0.105(J)	78.2	1.25	0.0971(J)	5.48	271(B)	7.9
	10/5/2016	0.115(J)	85.5	1.53	0.11	5.68	287	5.1
	1/26/2017	0.097(J)	75.7	1.34	0.12	7.46	268	6.1
	4/25/2017	0.0835(J)	76.7	1.48	0.131	6.55	277	6.6
	7/18/2017	0.102(BJ)	77.6	1.36	0.151	6.56	292	6.4
	9/20/2017	0.106(J)	84.2	0.747(J)	0.144	6.43	280	6.5
	4/11/2018	0.0952(BJ)	82.5	1.57	0.124	7.28	290	6.4
	9/27/2018	0.127(BJ)	89.7	1.25(B)	0.144(B)	7.19	318	6.4
	11/19/2018	n/a	85.7	n/a	n/a	n/a	288	6.6
	5/15/2019	0.133(J)	98.3	1.25	0.147(B)	6.66	341	6.5
	8/2/2019	n/a	102	n/a	n/a	n/a	302	6.3
	10/22/2019	0.061(J)	80.9	0.864(J)	0.136	5.45	322	6.5
MW-118	downgradient				ı		1	
	10/9/2015	0.0916(J)	75.1	1.08	0.175	12	271	6.4
	1/28/2016	0.121(J)	73.4	1.59	0.175	11.5	269(B)	6.2
	4/28/2016	0.123(J)	94.1	1.8	0.119	26.7	378(B)	6.2
	7/26/2016	0.101(J)	85.4	2.13	0.133	26.6	322(B)	8.0
	10/5/2016	0.103(J)	78.1	1.48	0.157	15.1	294	6.3
	1/26/2017	0.106(J)	74.7	1.13(B)	0.188	13.4	275	6.1
	4/26/2017	0.0994(J)	71.1	1.47	0.163	12.2	276	6.3
	7/20/2017	0.104(BJ)	74.9	1.62	0.172	20.4	313	6.5
	9/20/2017	0.104(J)	85.1	1.17	0.187	18.5	305	6.5
	4/11/2018	0.0949(BJ)	71.8	1.36	0.157	15.2	257	5.8
	7/9/2018	n/a	n/a	n/a	n/a	n/a	n/a	6.5

Asterisk indicates the value was below the practical quantitation limit.

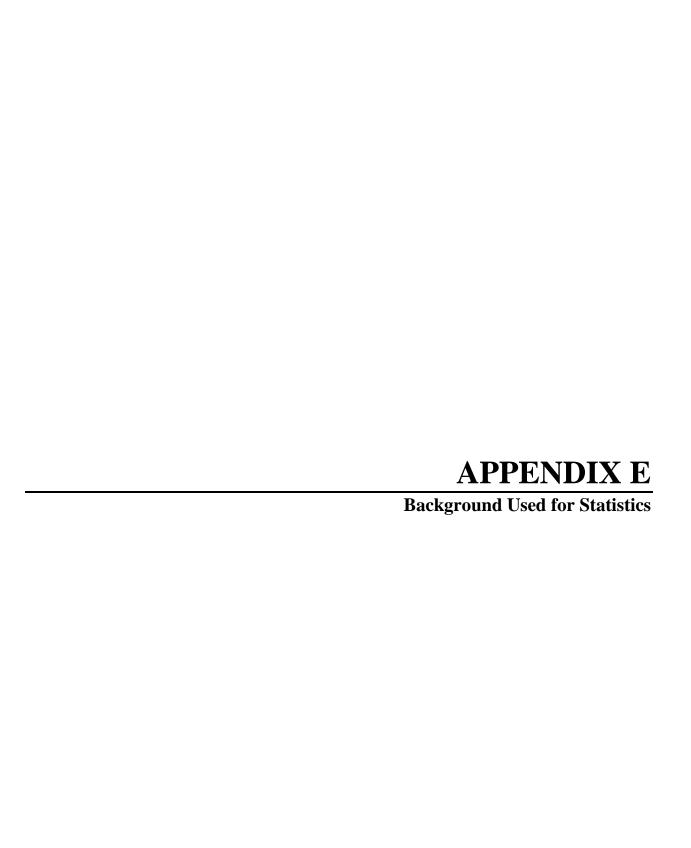
B: Analyte was detected in an associated quality control blank.

J: Analyte was detected below the laboratory reporting detection limit; value is an estimate.

		Boron	Calcium	Chloride	Fluoride	Sulfate	TDS	рН
Well	Sampling Date	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(su)
MW-118	9/27/2018	0.113(BJ)	80.6	1.33(B)	0.165(B)	17	375	6.3
(cont.)	5/15/2019	0.125(J)	76.4	1.44	0.185	16.5	286	6.0
	8/2/2019	n/a	n/a	n/a	n/a	n/a	n/a	6.1
	10/22/2019	0.0459(J)	91.6	1.45	0.162	17.5	335	6.4
MW-119	downgradient							
	1/25/2017	0.0922(J)	104	2.62	0.255	47.6	409	6.6
	4/27/2017	0.108(J)	106	2.8	0.198	39.1	403	6.8
	7/20/2017	0.0936(BJ)	103	6.84	0.256	48.7	432	6.6
	9/20/2017	0.0798(J)	92.7	2.3	0.289	38.7	338	6.8
	1/30/2018	0.0805(BJ)	99.3	2.07	0.259	35.5	380	6.4
	4/11/2018	0.095(BJ)	85.9	2.15	0.23	31.1	315	6.4
	9/27/2018	0.103(BJ)	99	2.3(B)	0.253(B)	41.6	290	6.7
	11/20/2018	0.0826(BJ)	94	1.96	0.271	33	343	6.8
	12/18/2018	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2/18/2019	0.11(J)	103	2.27	0.253	43	374	6.6
	5/16/2019	0.109(J)	135	2.86	0.252	47.4	487	6.4
	8/2/2019	n/a	97.4	n/a	n/a	n/a	n/a	6.4
	10/22/2019	0.048(J)	110	2.86	0.266	47.7	400	6.7

B: Analyte was detected in an associated quality control blank.

J: Analyte was detected below the laboratory reporting detection limit; value is an estimate.



#### **BACKGROUND DATA SETS**

This document describes recommended methods and procedures to evaluate the initial eight background values collected in accordance with §257.94(b), the landfill's SAP, and the Unified Guidance. As identified in the Unified Guidance, the term "background" refers to the natural or baseline groundwater quality at a site. Background conditions can range from an uncontaminated aquifer to a historically contaminated site with baseline conditions that are unaffected by recent releases that are actionable under the Resource Conservation and Recovery Act. The terms "background" and "baseline" are used interchangeably herein.

### **Establishing Background Data Sets**

Initial background data sets for the wells installed prior to 2016 (MW-101 through MW-103, MW-108, and MW-115 through MW-118) were screened prior to the second half 2017 monitoring period. Monitoring well MW-119 was installed in October 2016, and background data sets were screened prior to the first half 2019 monitoring period. The initial background data were screened using exploratory data analysis to identify potential trends, outliers, and spatial variability. Time-series plots, box-and-whiskers plots, and probability plots were applied to all background data sets to identify potential excursions from normal. Plots for the MW-119 data sets are attached to this appendix.

## Outliers and Rejected Data in Background Data Sets

The Unified Guidance recommends that background data be screened for potential outliers. However, it also advises that outliers not be removed unless a source of error or reason for the discrepancy can be identified. As advised in the Unified Guidance, select removal of extreme outliers without knowledge of error may be warranted to improve environmental protection, but removal of all outliers can mask real and legitimate changes in background data.

Outlier screening included the application of Dixon's or Tukey's outlier tests to the initial eight values to identify potential outliers for exclusion from the background data set. At this time, no outliers are excluded from the background data sets, primarily due to the limited number

of data available and the requirement to have a minimum of 8 to 10 data points for prediction limit analysis. No values have been removed due to independent evidence of error. If warranted in the future, data that are excluded from the historical database based on independent evidence of error or that are suspected of being unrepresentative of groundwater quality due to excessively high sample turbidity will be flagged with an "R" (for rejected) and will also be excluded from statistical analyses.

#### **Distribution Testing**

A parametric prediction limit test requires background data sets to be normally distributed, or mathematically transformed to be normally distributed. Where data cannot be transformed-normal, a non-parametric prediction limit is applied. Background data sets were evaluated using the Shapiro-Wilk test for normality to determine if parametric tests could be appropriately used. Results of the normality tests are shown on the prediction limit plots included in Appendix G. The Mann-Kendall test for trends and Theil-Sen trend line, discussed below, is a non-parametric test, and data evaluated with this test are not required to have a normal distribution.

### **Seasonality and Autocorrelation**

Background data sets were evaluated for the presence of seasonal effects on groundwater quality and autocorrelated data using an ANOVA test and the Rank von Neumann test, respectively. However, the results of the seasonality test were invalid due to violation of the test's requirement of a minimum of three values per season. A requirement of the Rank Von Neumann test is that the data sets be corrected for seasonality prior to evaluating for autocorrelation; therefore the results of the Rank Von Neumann test were also invalid. Data will be re-evaluated for seasonality and autocorrelation when sufficient data are available.

## Screening for Trends in Background Data Sets

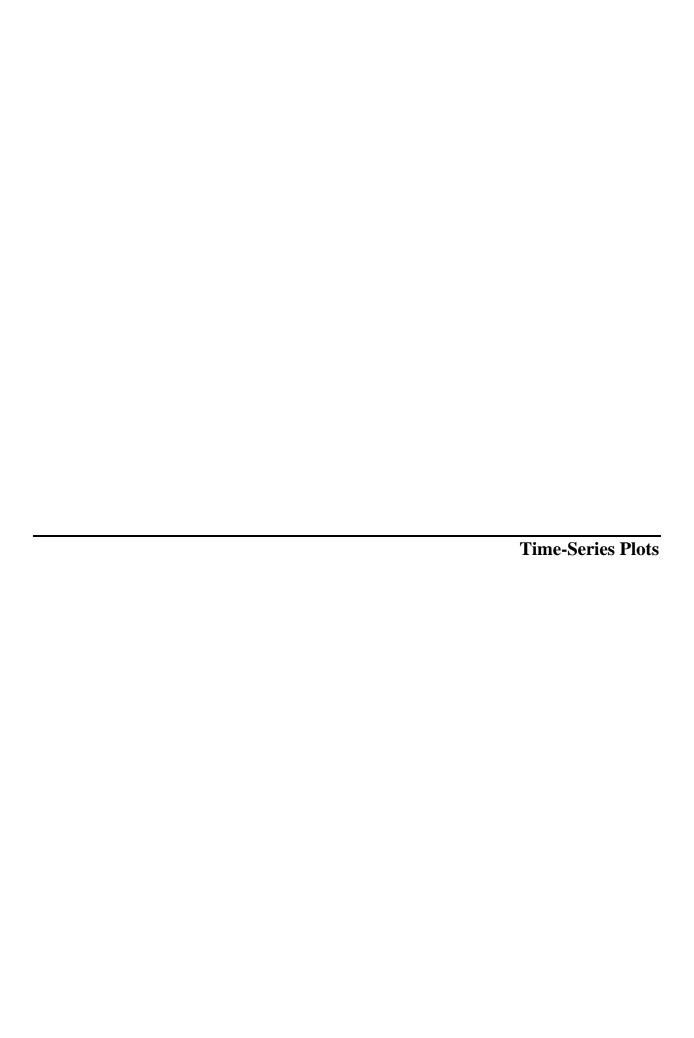
EPA guidance recommends screening background populations for statistically significant trends, because some tests (such as a prediction limit test) require a stationary statistical

distribution for valid results. The presence of statistically significant tends in background data may violate key assumptions of some statistical tests and require an alternate approach to testing the data. If trends are indicated in background populations, testing strategies that either correct for, or are not sensitive to, temporal variation may be required.

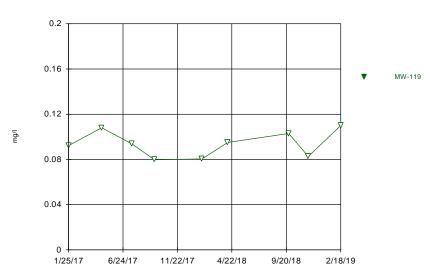
Background data sets were screened for statistically significant trends using the Mann-Kendall test and Theil-Sen trend line. At this time, none of the statistically evaluated well-parameter pairs contain statistically significant trends in their respective background data sets.

# **Prediction Limit Analysis**

Each of the statistically evaluated well-parameter pairs is tested using a prediction limit. Background data sets for each well-parameter pair are identified as an attachment to this document.





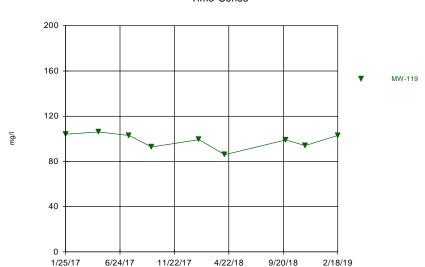


Constituent: Boron Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

#### Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

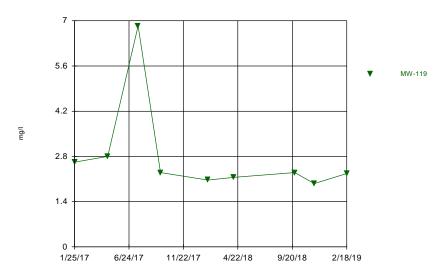
#### Time Series



Constituent: Calcium Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

#### Time Series

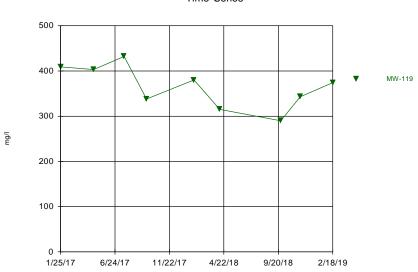


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Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

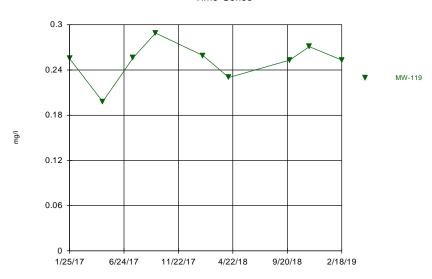
#### Time Series



Constituent: Dissolved Solids Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



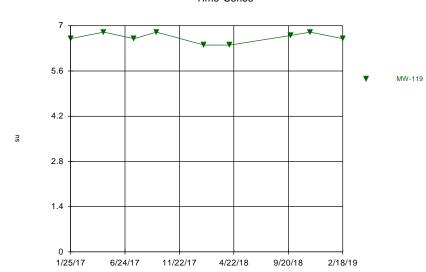


Constituent: Fluoride Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Time Series

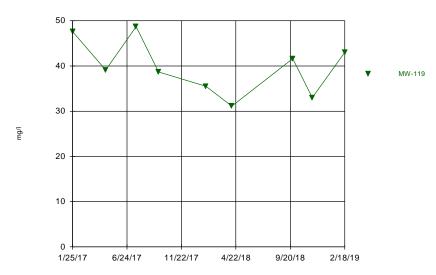


Constituent: pH Analysis Run 6/7/2019 11:24 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

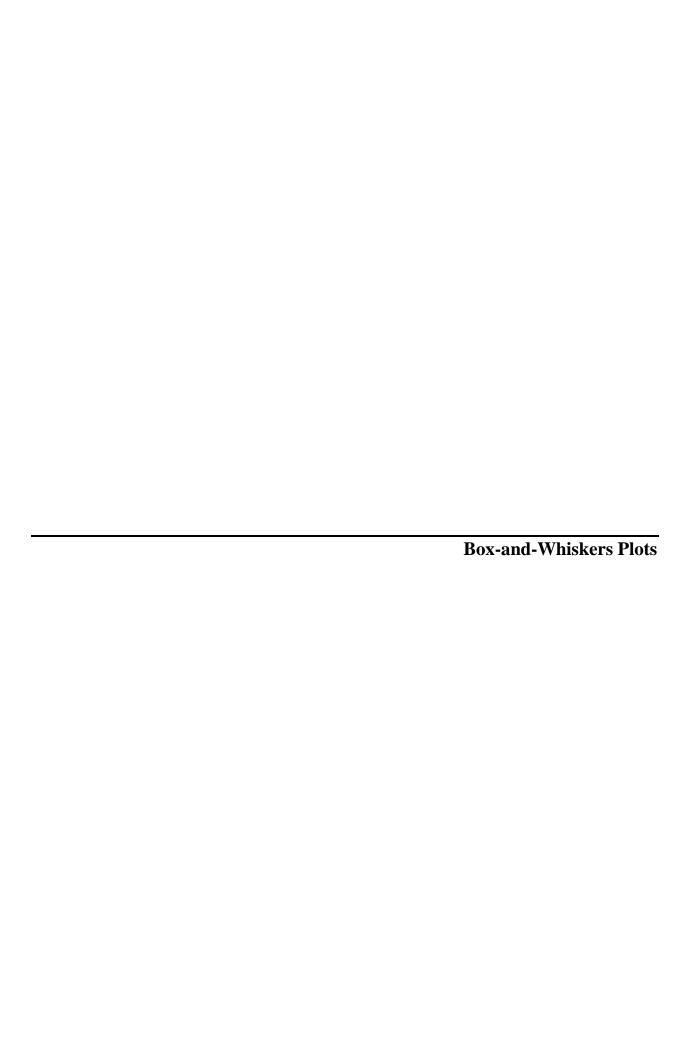
Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

#### Time Series

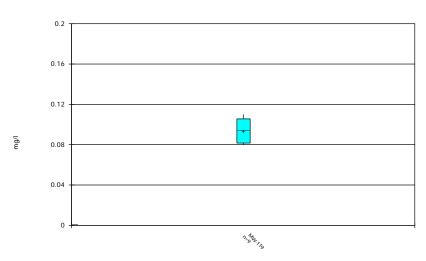


Constituent: Sulfate Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Box & Whiskers Plot

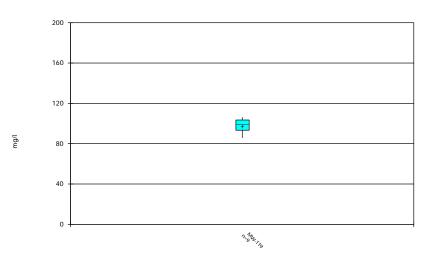


Constituent: Boron Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

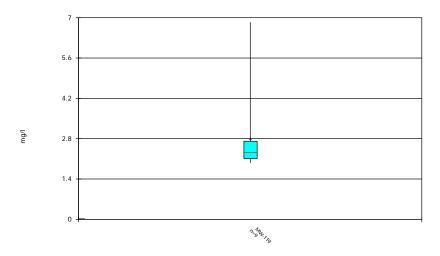
Box & Whiskers Plot



Constituent: Calcium Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box & Whiskers Plot

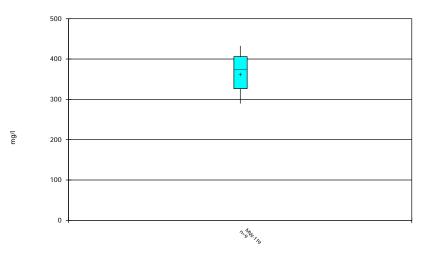


Constituent: Chloride Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

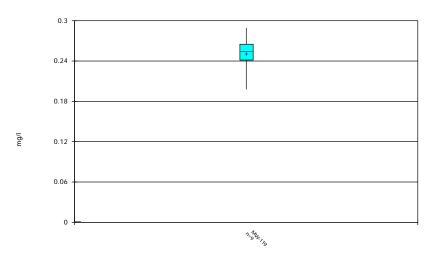
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot



#### Box & Whiskers Plot



Constituent: Fluoride Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

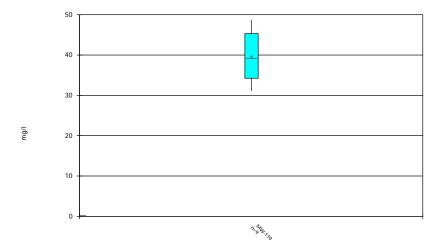


Constituent: pH Analysis Run 6/7/2019 11:25 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

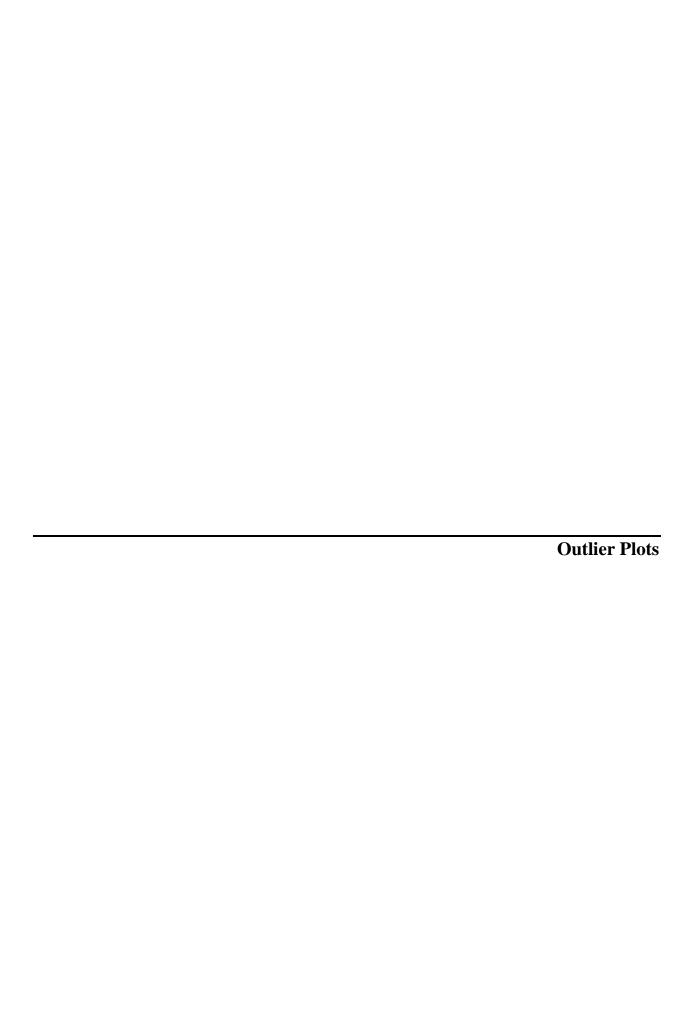
Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot



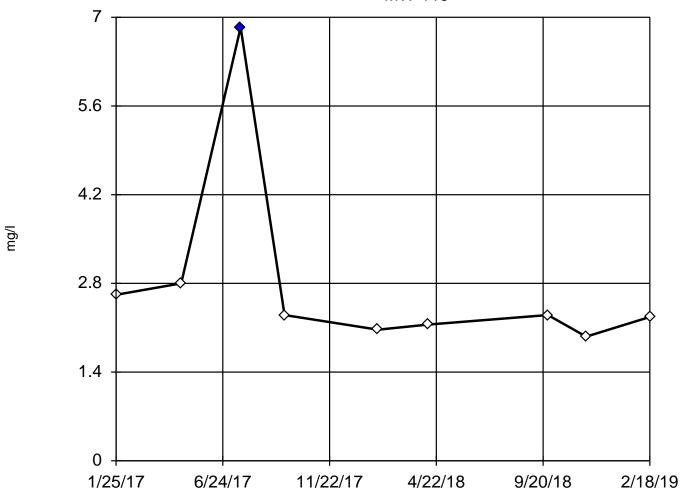
Constituent: Sulfate Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



# **Dixon's Outlier Test**





n = 9

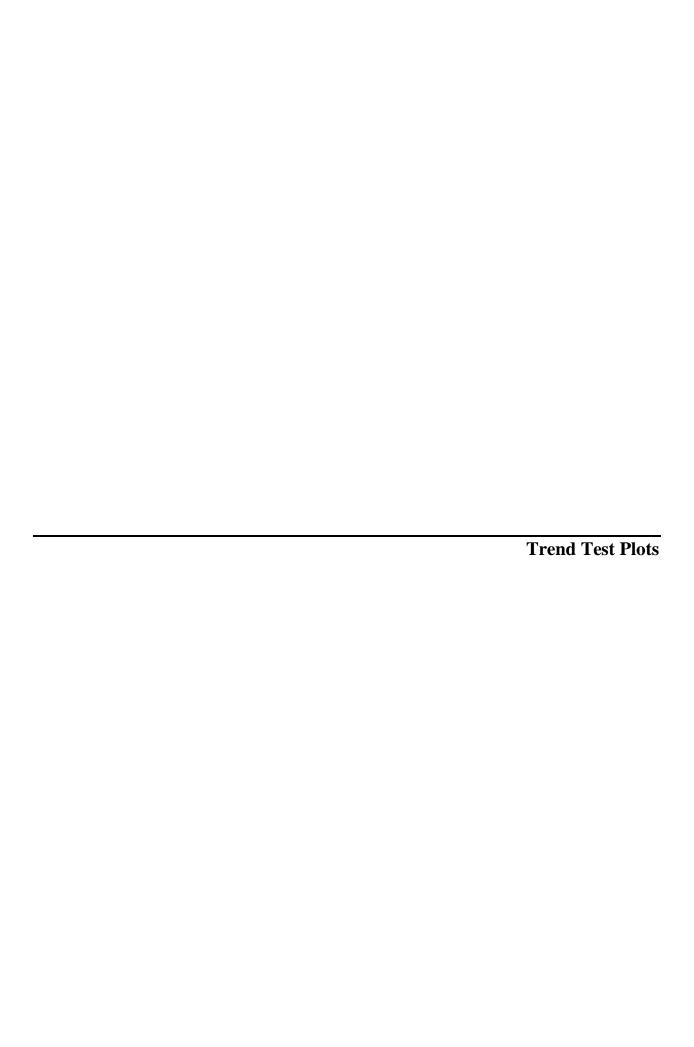
Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 2.812.
Std. Dev. = 1.533.
6.84: c = 0.847
tabl = 0.512.
Alpha = 0.05.

Normality test used: Shapiro Wilk@alpha = 0.1 Calculated = 0.9278 Critical = 0.851 The distribution, after removal of suspect value, was found to be normally distributed.

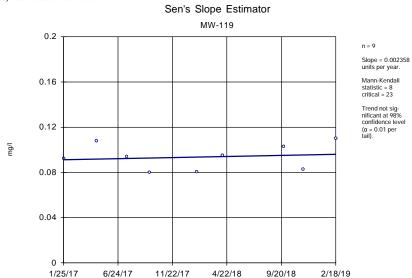
Constituent: Chloride Analysis Run 6/7/2019 11:21 AM
Plum Point Energy Station Client: Plum Point Services Company, LLC

Analysis Run 6/7/2019 11:21 AM View: 2019-1H MW-119 BG Evaluation

Data: PPES EPA CCR Rule Groundwater Database

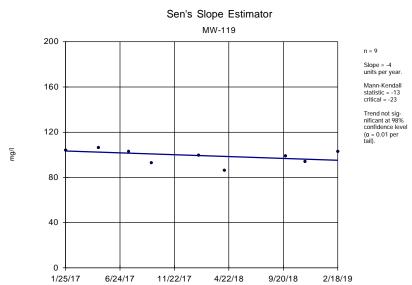


Hollow symbols indicate censored values.

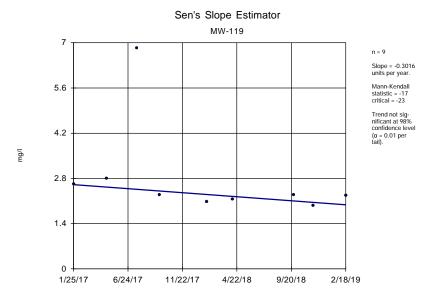


Constituent: Boron Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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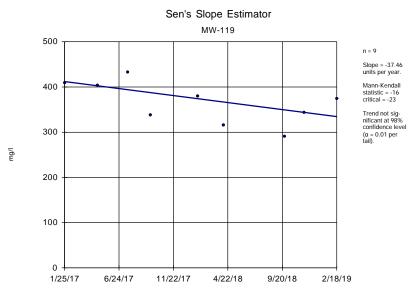


Constituent: Calcium Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

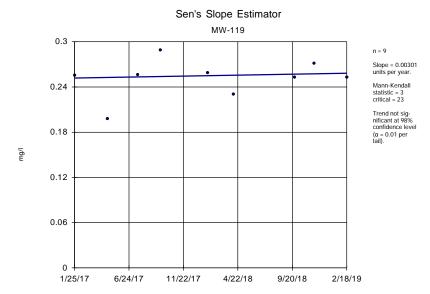


Constituent: Chloride Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



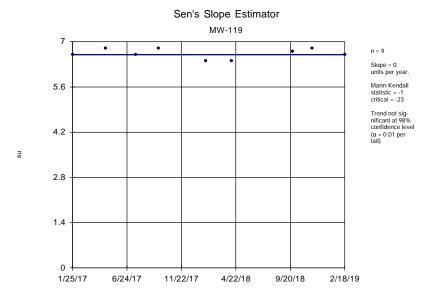
Constituent: Dissolved Solids Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Constituent: Fluoride Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

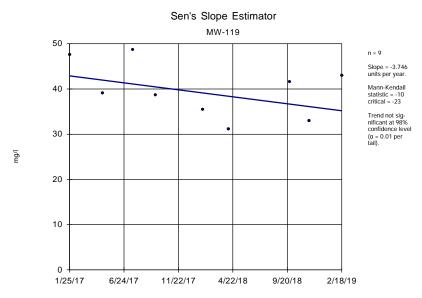
Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Constituent: pH Analysis Run 6/7/2019 11:26 AM View: 2019-1H MW-119 BG Evaluation

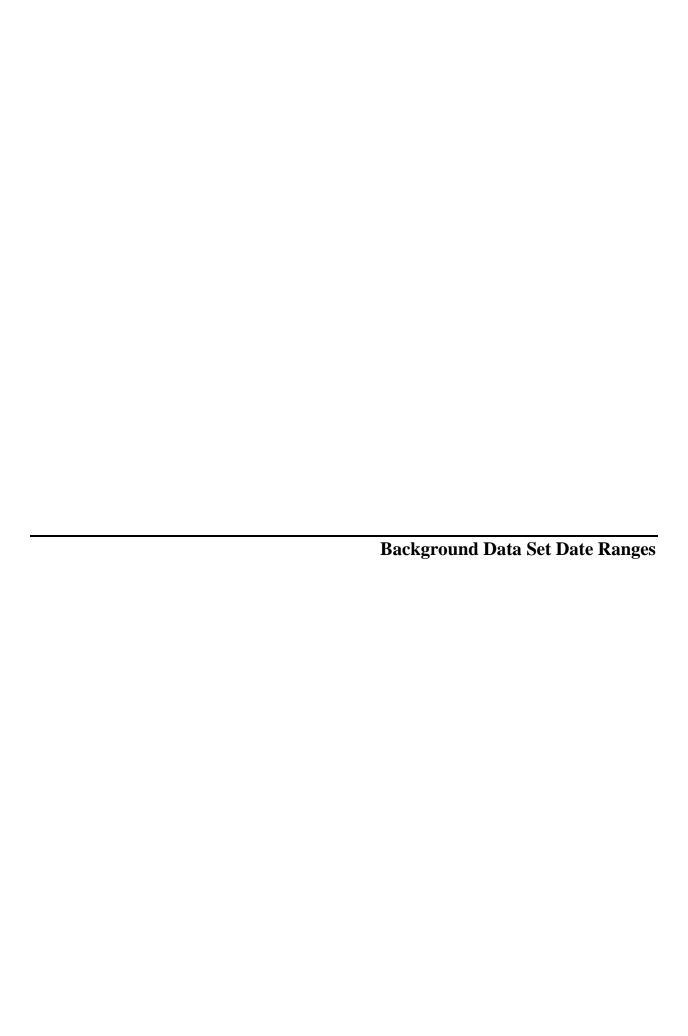
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Constituent: Sulfate Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Page 1

# **Date Ranges**

Date: 11/19/2019 4:24 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

## Boron (mg/l) MW-101 background:10/7/2015-7/20/2017 MW-102 background:10/7/2015-7/20/2017 MW-103 background:10/7/2015-7/20/2017 MW-108 background:10/7/2015-9/20/2017 MW-113 background:10/7/2015-9/20/2017 MW-115 background:10/7/2015-7/20/2017 MW-116 background:10/7/2015-7/20/2017 MW-117 background:10/7/2015-7/20/2017 MW-118 background:10/7/2015-7/20/2017 MW-119 background:6/7/2011-2/18/2019 Calcium (mg/l) MW-101 background:10/7/2015-7/20/2017 MW-102 background:10/7/2015-7/20/2017 MW-103 background:10/7/2015-7/20/2017 MW-108 background:10/7/2015-9/20/2017 MW-113 background:10/7/2015-9/20/2017 MW-115 background:10/7/2015-7/20/2017 MW-116 background:10/7/2015-7/20/2017 MW-117 background:10/7/2015-7/20/2017 MW-118 background:10/7/2015-7/20/2017 MW-119 background:6/7/2011-2/18/2019 Chloride (mg/l) MW-101 background:10/7/2015-7/20/2017 MW-102 background:10/7/2015-7/20/2017 MW-103 background:10/7/2015-7/20/2017 MW-108 background:10/7/2015-9/20/2017 MW-113 background:10/7/2015-9/20/2017 MW-115 background:10/7/2015-7/20/2017 MW-116 background:10/7/2015-7/20/2017 MW-117 background:10/7/2015-7/20/2017 MW-118 background:10/7/2015-7/20/2017 MW-119 background:6/7/2011-2/18/2019 Dissolved Solids (mg/l) MW-101 background:10/7/2015-7/20/2017 MW-102 background:10/7/2015-7/20/2017 MW-103 background:10/7/2015-7/20/2017 MW-108 background:10/7/2015-9/20/2017 MW-113 background:10/7/2015-9/20/2017 MW-115 background:10/7/2015-7/20/2017 MW-116 background:10/7/2015-7/20/2017 MW-117 background:10/7/2015-7/20/2017 MW-118 background:10/7/2015-7/20/2017 MW-119 background:6/7/2011-2/18/2019 Fluoride (mg/l) MW-101 background:10/7/2015-7/20/2017 MW-102 background:10/7/2015-7/20/2017 MW-103 background:10/7/2015-7/20/2017 MW-108 background:10/7/2015-9/20/2017 MW-113 background:10/7/2015-9/20/2017 MW-115 background:10/7/2015-7/20/2017 MW-116 background:10/7/2015-7/20/2017 MW-117 background:10/7/2015-7/20/2017 MW-118 background:10/7/2015-7/20/2017 MW-119 background:6/7/2011-2/18/2019 pH (su) MW-101 background:10/7/2015-7/20/2017 MW-102 background:10/7/2015-7/20/2017 MW-103 background:10/7/2015-7/20/2017 MW-108 background:10/7/2015-9/20/2017 MW-113 background:10/7/2015-9/20/2017 MW-115 background:10/7/2015-7/20/2017 MW-116 background:10/7/2015-7/20/2017

Page 2

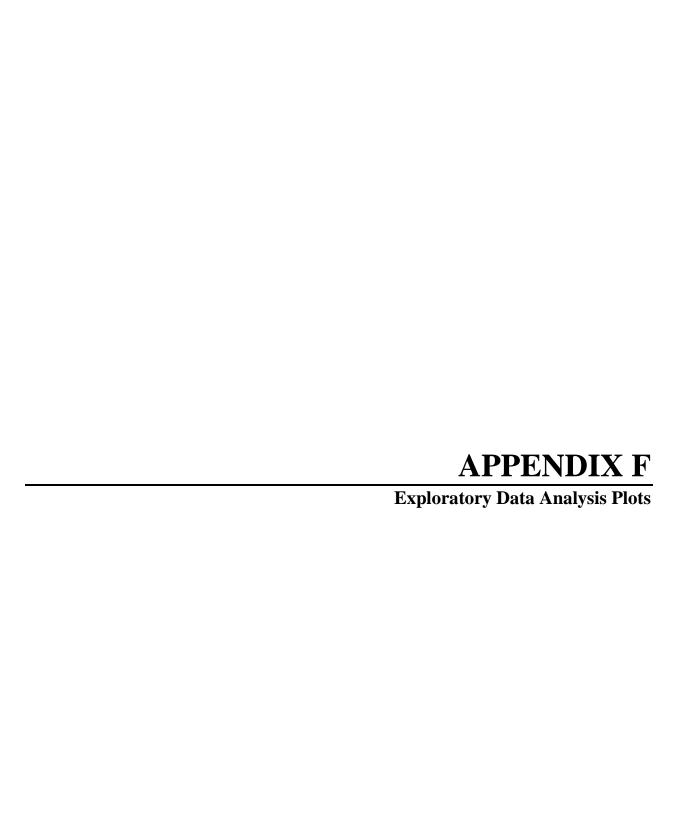
# **Date Ranges**

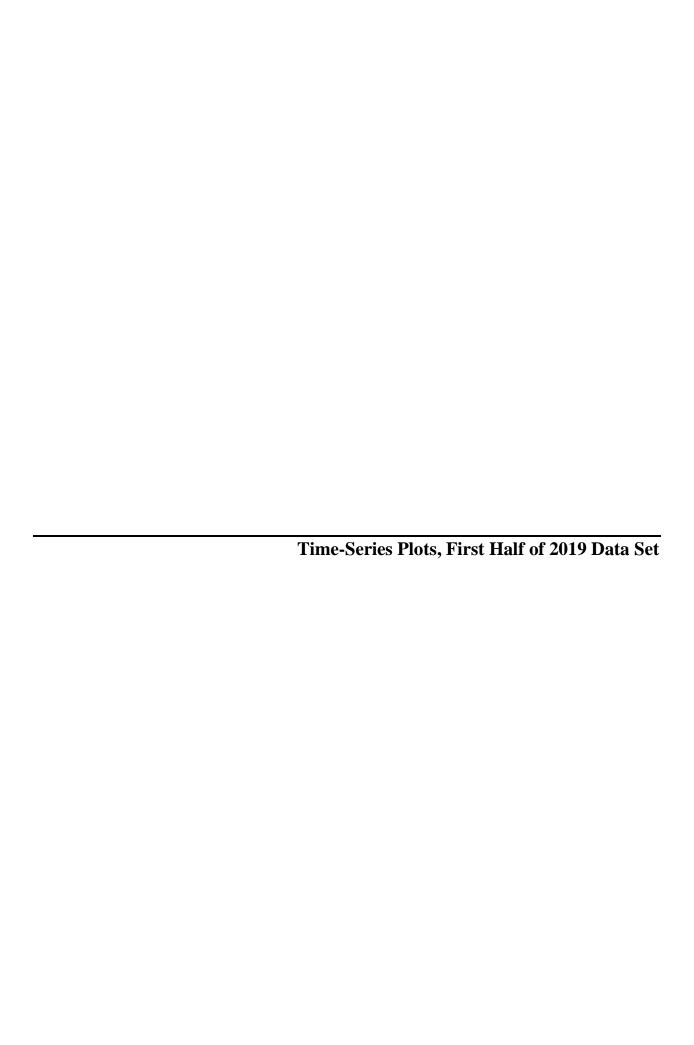
Date: 11/19/2019 4:24 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

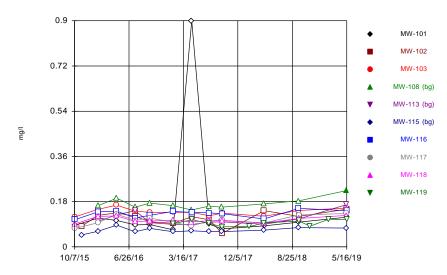
MW-117 background:10/7/2015-7/20/2017 MW-118 background:10/7/2015-7/20/2017 MW-119 background:6/7/2011-2/18/2019 Sulfate (mg/l)

MW-101 background:10/7/2015-7/20/2017
MW-102 background:10/7/2015-7/20/2017
MW-103 background:10/7/2015-7/20/2017
MW-108 background:10/7/2015-9/20/2017
MW-113 background:10/7/2015-9/20/2017
MW-115 background:10/7/2015-7/20/2017
MW-116 background:10/7/2015-1/30/2018
MW-117 background:10/7/2015-7/20/2017
MW-118 background:10/7/2015-7/20/2017
MW-119 background:6/7/2011-2/18/2019





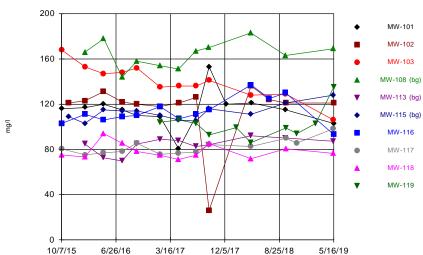




Constituent: Boron Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

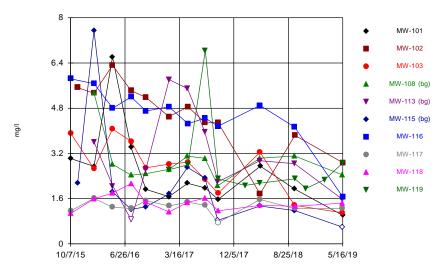
# Time Series



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Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

#### Time Series

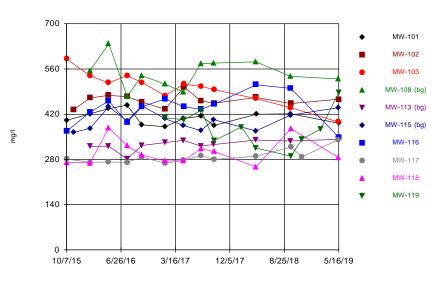


Constituent: Chloride Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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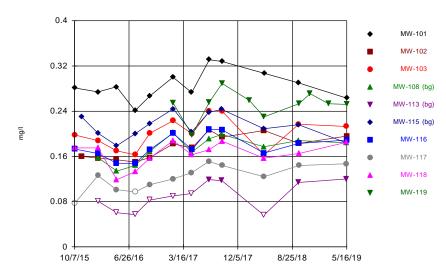
#### Time Series



Constituent: Dissolved Solids Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



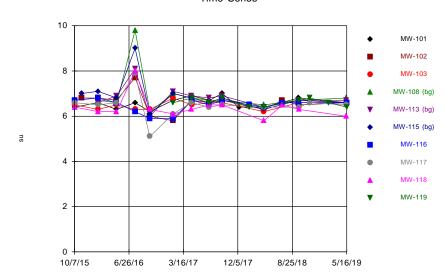


Constituent: Fluoride Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

## Time Series

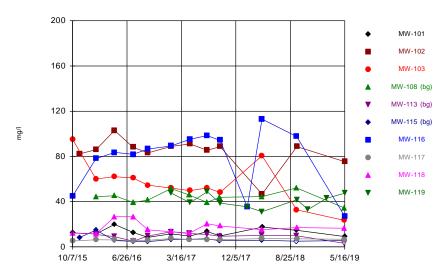


Constituent: pH Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

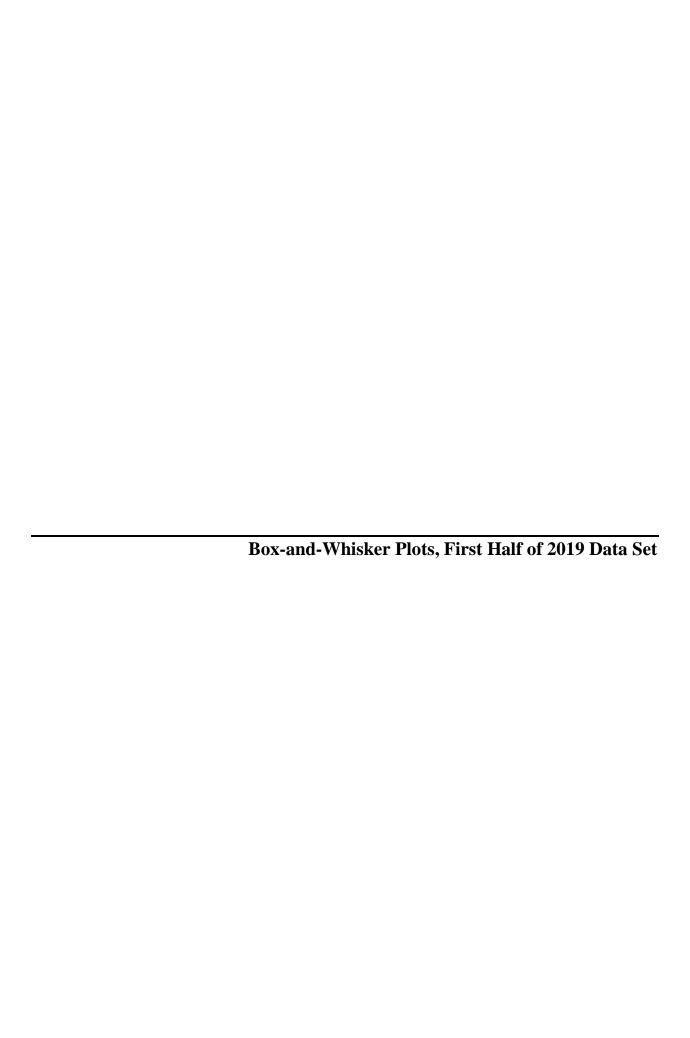
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.

#### Time Series

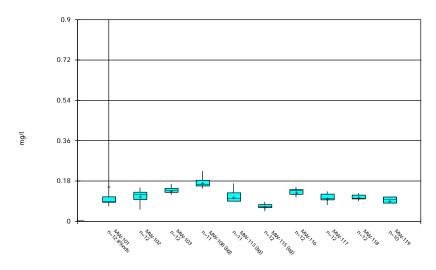


Constituent: Sulfate Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Box & Whiskers Plot

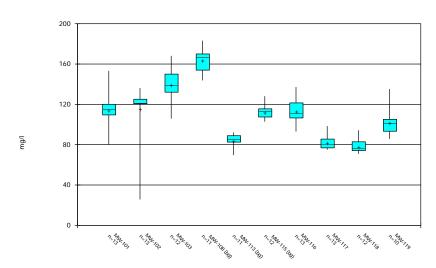


Constituent: Boron Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

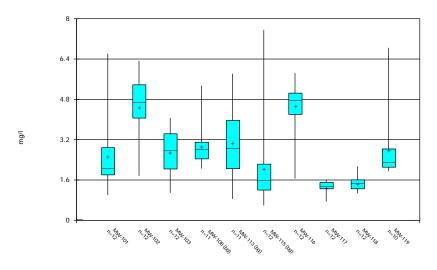
Box & Whiskers Plot



Constituent: Calcium Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box & Whiskers Plot

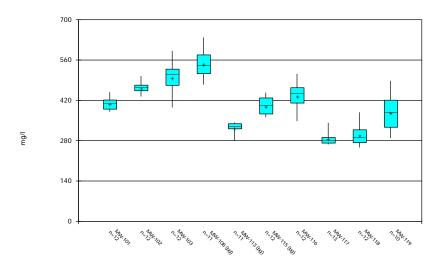


Constituent: Chloride Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

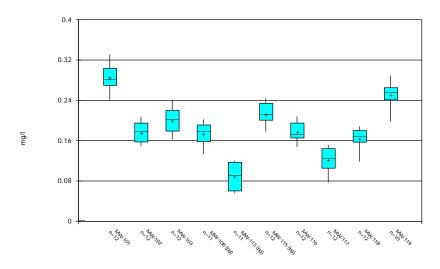
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot



Constituent: Dissolved Solids Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

#### Box & Whiskers Plot

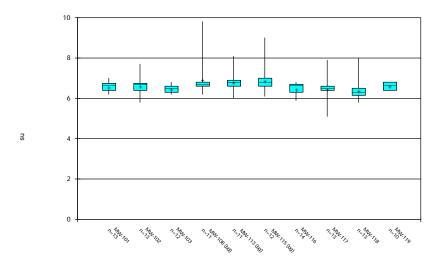


Constituent: Fluoride Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

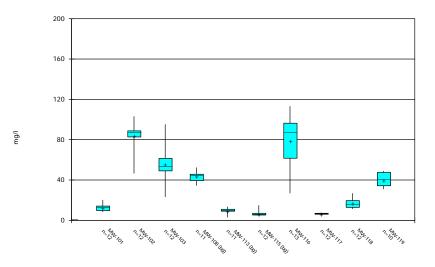


Constituent: pH Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

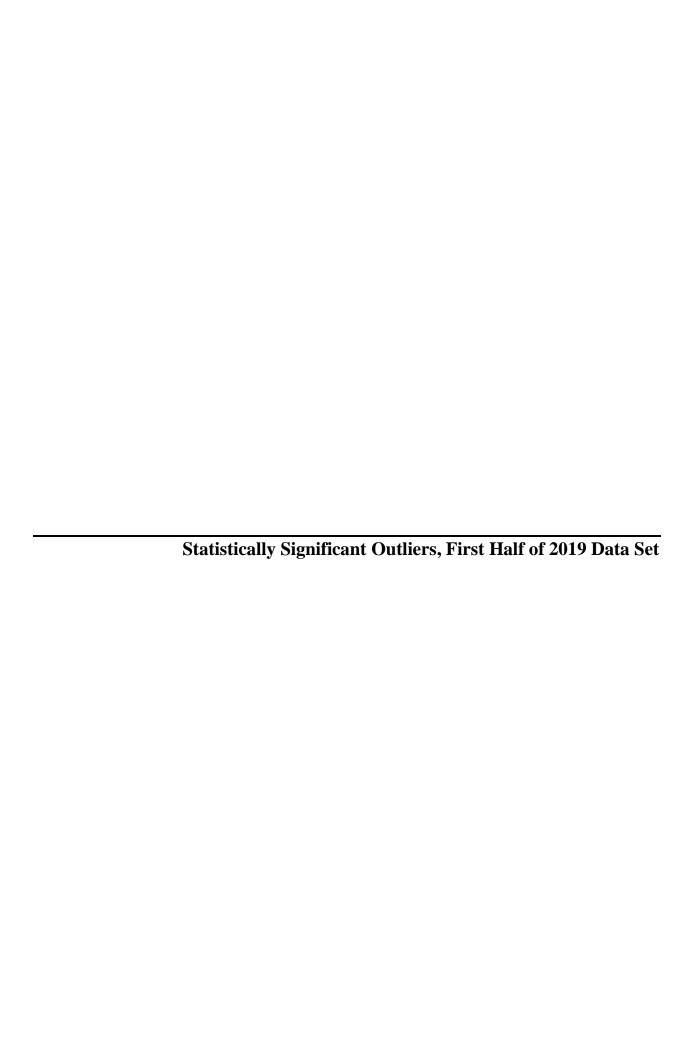
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

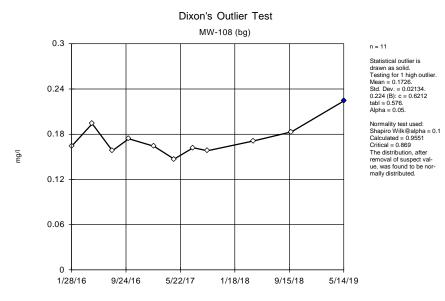
Box & Whiskers Plot



Constituent: Sulfate Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

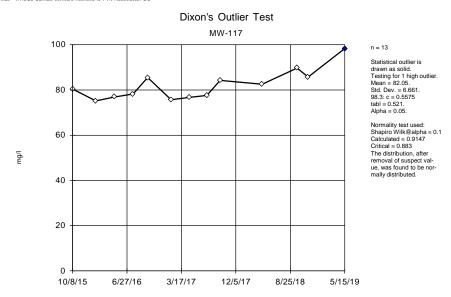
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database





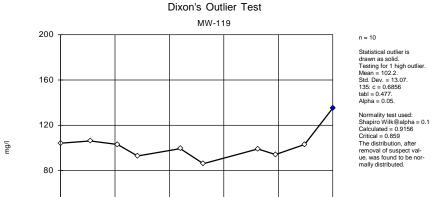
Constituent: Boron Analysis Run 10/1/2019 10:31 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Constituent: Calcium Analysis Run 10/1/2019 10:31 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Constituent: Calcium Analysis Run 10/1/2019 10:31 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

6/13/18

11/28/18

5/16/19

12/27/17

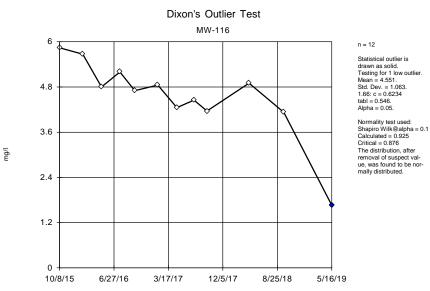
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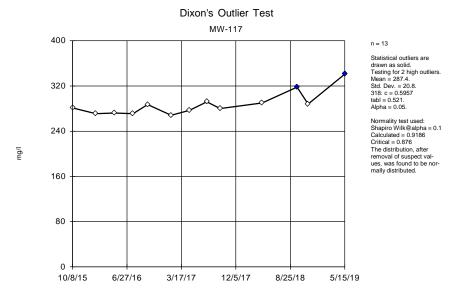
1/25/17

7/12/17



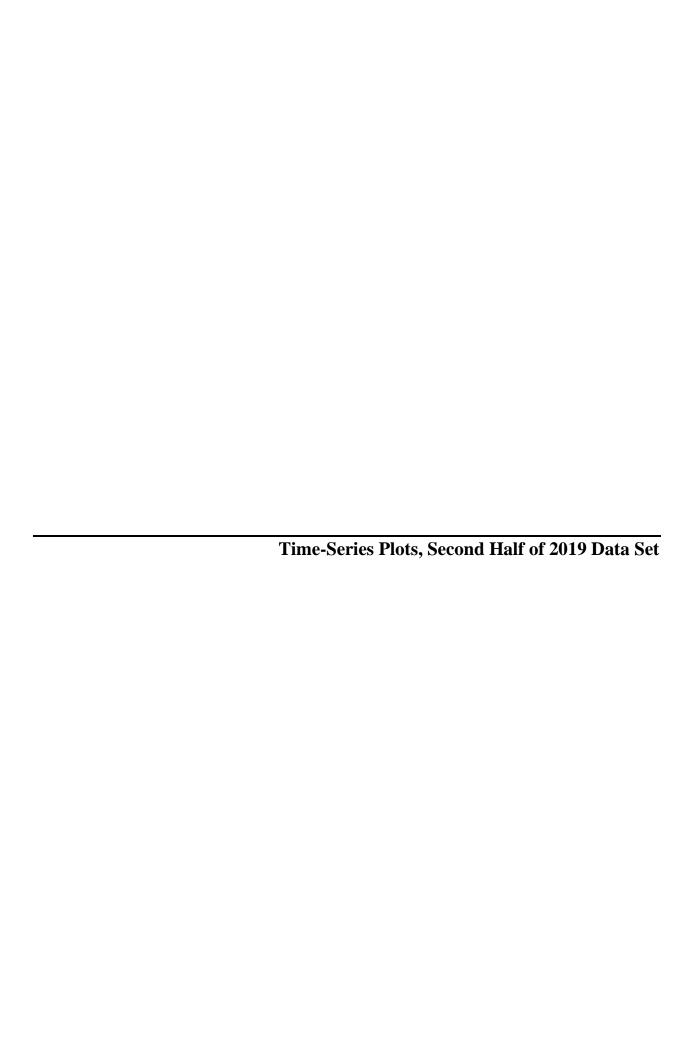
Constituent: Chloride Analysis Run 10/1/2019 10:31 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

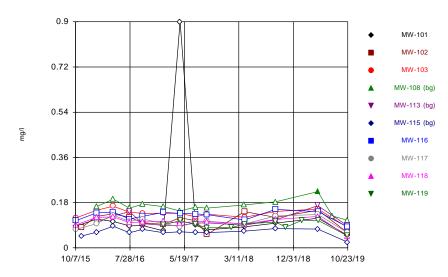


Constituent: Dissolved Solids Analysis Run 10/1/2019 10:32 AM View: 2019-1H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database







Constituent: Boron Analysis Run 11/8/2019 6:32 PM

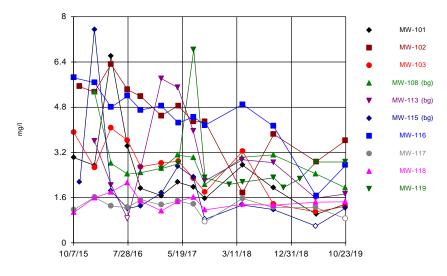
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

## Time Series 200 MW-101 MW-102 160 MW-103 MW-108 (bg) MW-113 (bg) MW-115 (bg) mg/l MW-116 MW-117 MW-118 MW-119 40 10/7/15 10/23/19 7/28/16 5/19/17 3/11/18 12/31/18

Constituent: Calcium Analysis Run 11/18/2019 11:28 AM View: 2019-2H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

#### Time Series

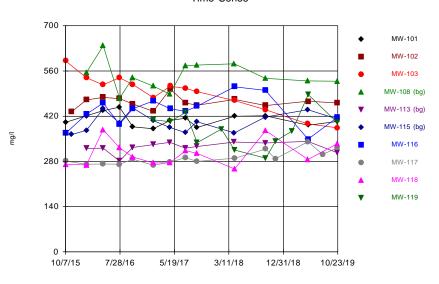


Constituent: Chloride Analysis Run 11/8/2019 6:32 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

#### Time Series

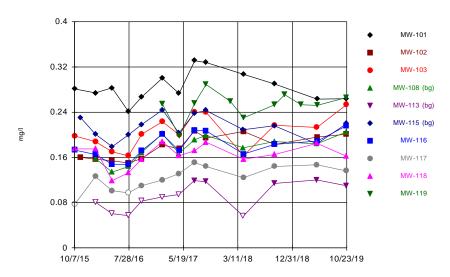


Constituent: Dissolved Solids Analysis Run 11/8/2019 6:32 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.



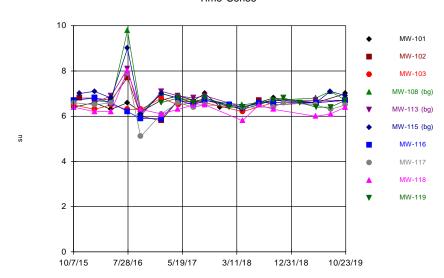


Constituent: Fluoride Analysis Run 11/8/2019 6:32 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

## Time Series

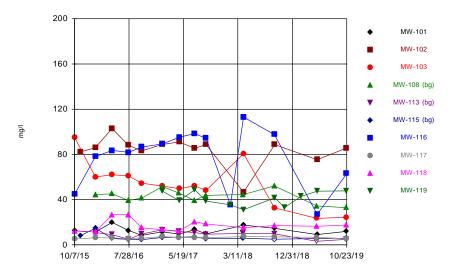


Constituent: pH Analysis Run 11/8/2019 6:32 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas<sup>tot</sup> v.9.6.23 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.

#### Time Series

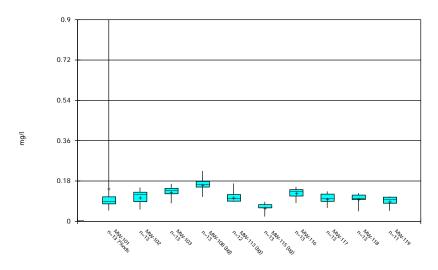


Constituent: Sulfate Analysis Run 11/8/2019 6:32 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Box & Whiskers Plot

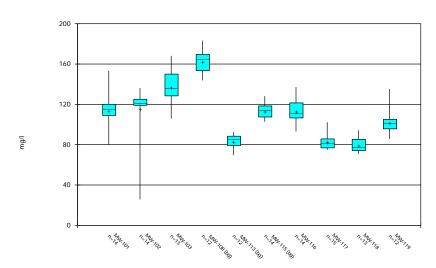


Constituent: Boron Analysis Run 11/8/2019 6:33 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

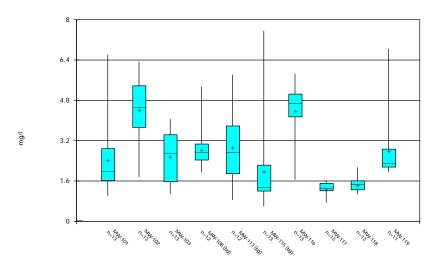
Box & Whiskers Plot



Constituent: Calcium Analysis Run 11/18/2019 11:29 AM View: 2019-2H Distributional

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box & Whiskers Plot

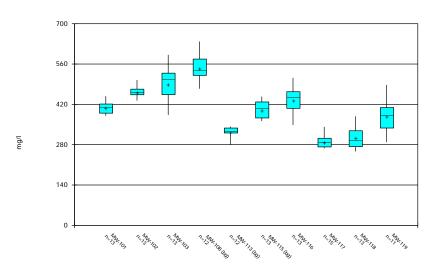


Constituent: Chloride Analysis Run 11/8/2019 6:33 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

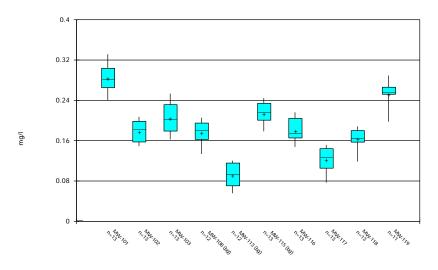
Box & Whiskers Plot



Constituent: Dissolved Solids Analysis Run 11/8/2019 6:33 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

#### Box & Whiskers Plot

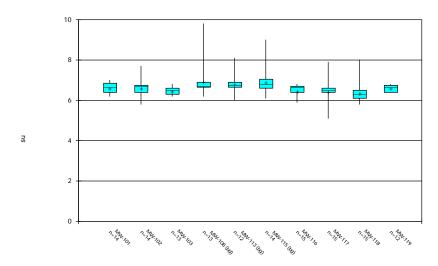


Constituent: Fluoride Analysis Run 11/8/2019 6:33 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

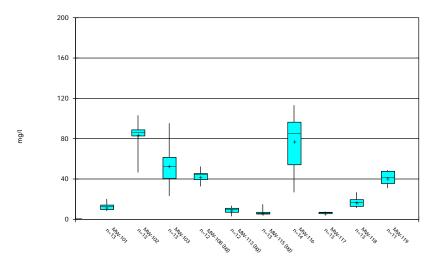


Constituent: pH Analysis Run 11/8/2019 6:33 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

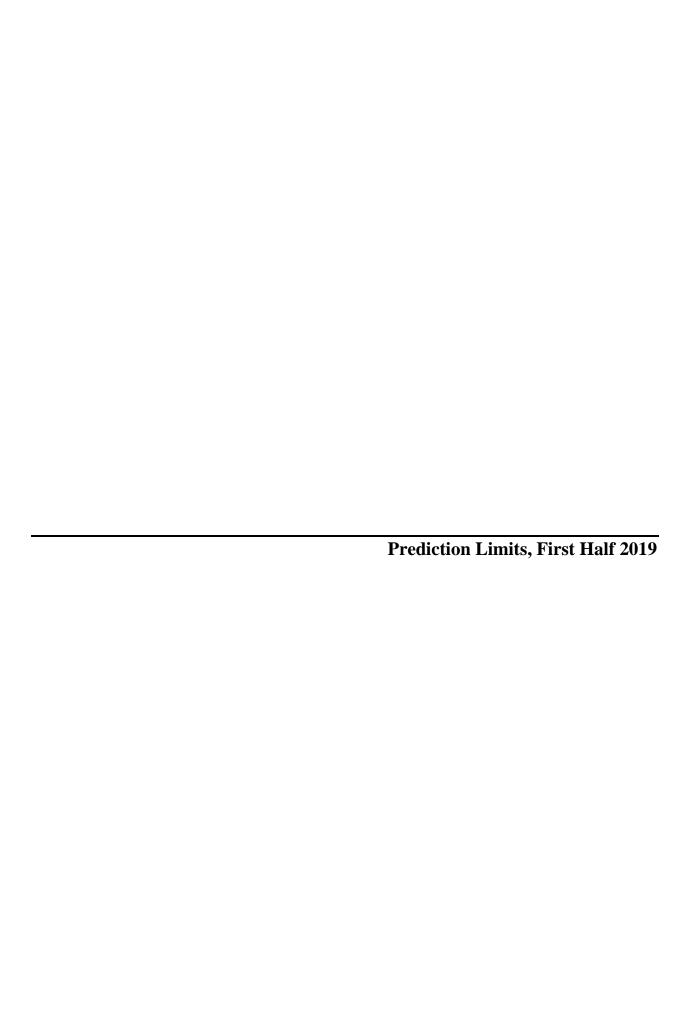


Constituent: Sulfate Analysis Run 11/8/2019 6:33 PM

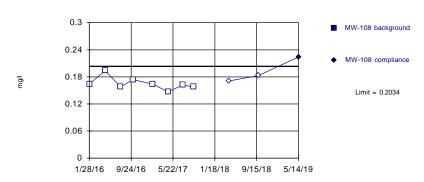
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



**Statistical Evaluation Results** 



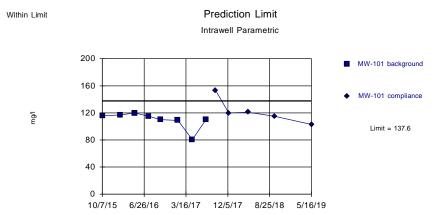
Exceeds Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.1651, Std. Dev\_=0.01391, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8869, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Boron Analysis Run 6/14/2019 10:48 AM View: 2019-1H PL
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

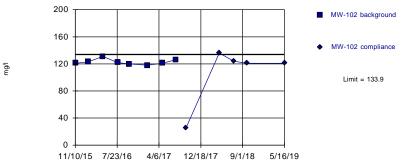
Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary (based on square transformation): Mean=12166, Std. Dev.=2464, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7547, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



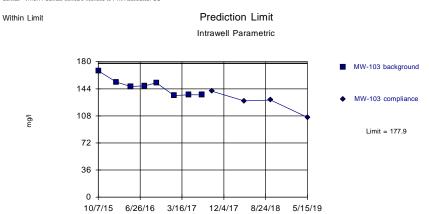


Background Data Summary: Mean=122.8, Std. Dev=4.062, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8956, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 6/7/2019 11:44 AM View: 2019-1H PL

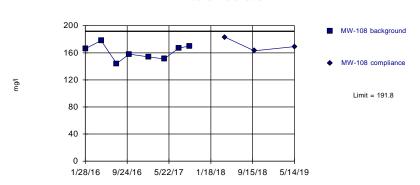
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v 9.6.14 Sanitas software licensed to ETN Associates, LIG



Background Data Summary: Mean=146.9, Std. Dev.=11.27, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8944, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Within Limit Prediction Limit
Intrawell Parametric

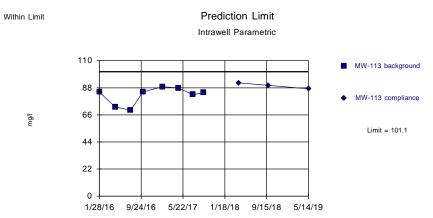


Background Data Summary: Mean=161, Std. Dev.=11.2, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.978, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 6/7/2019 11:44 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

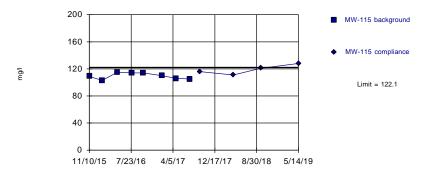
Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=81.89, Std. Dev.=6.976, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8334, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



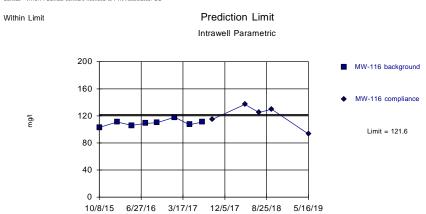


Background Data Summary: Mean=109.5, Std. Dev.=4.567, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9154, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 6/14/2019 10:48 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=109.4, Std. Dev.=4.438, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9448, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

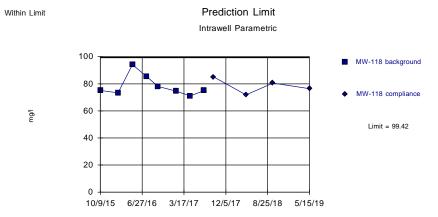
Exceeds Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=78.28, Std. Dev.=3.33, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8288, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 6/14/2019 10:48 AM View: 2019-1H PL
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

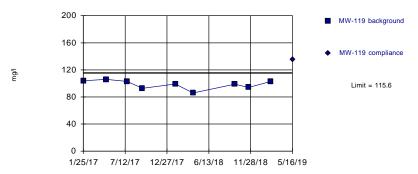
Sanitas™ v 9.6.14 Sanitas software licensed to ETN Associates. UG



Background Data Summary: Mean=78.35, Std. Dev.=7.66, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8173, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



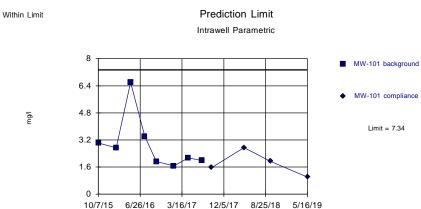


Background Data Summary: Mean=98.54, Std. Dev\_e6.524, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9156, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 6/14/2019 10:48 AM View: 2019-1H PL

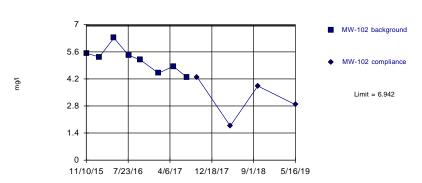
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=2.938, Sld. Dev.=1.6, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7523, critical = 0.749. Kappa = 2.751 (c-6, w-6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Within Limit Prediction Limit
Intrawell Parametric

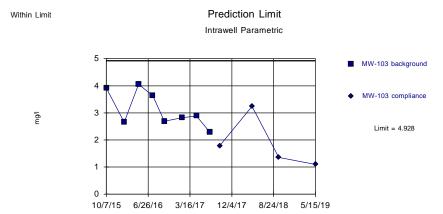


Background Data Summary: Mean=5.176, Std. Dev.=0.6418, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9652, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Chloride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

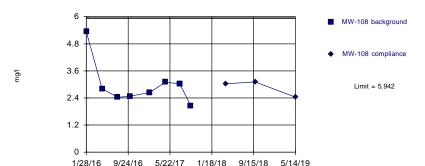
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Background Data Summary: Mean=3.119, Std. Dev.=0.6578, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.892, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



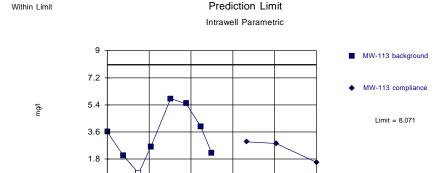


Background Data Summary (based on square root transformation): Mean=1.71, Std. Dev.=0.2644, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7994, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Chloride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

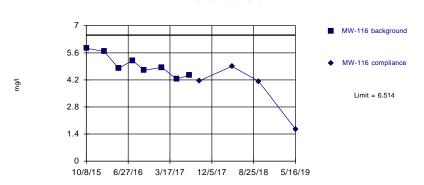
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.



Background Data Summary: Mean=3.325, Std. Dev.=1.725, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9503, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

1/28/16 9/24/16 5/22/17 1/18/18 9/15/18 5/14/19



Background Data Summary: Mean=4.97, Std. Dev.=0.5612, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9382, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Chloride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric

MW-117 background

MW-117 compliance

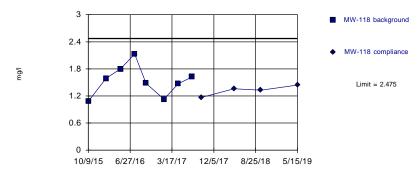
Limit = 1.789

Background Data Summary: Mean=1.38, Std. Dev.=0.1487, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9694, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

10/8/15 6/27/16 3/17/17 12/5/17 8/25/18 5/15/19

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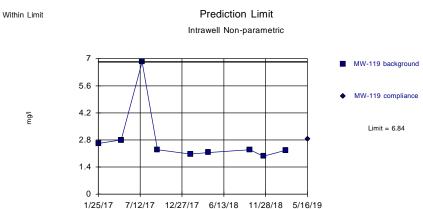


Background Data Summary: Mean=1.538, Std. Dev.=0.3407, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9523, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Chloride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

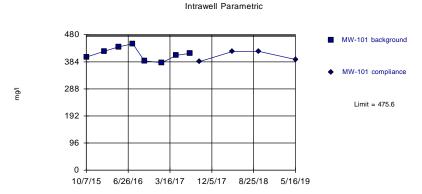
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 9 background values. Well-constituent pair annual alpha = 0.03886. Individual comparison alpha = 0.01809 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Within Limit Prediction Limit

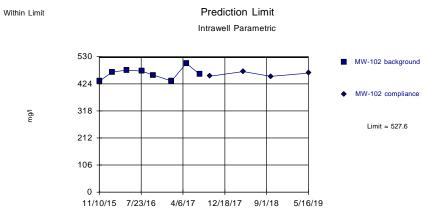


Background Data Summary: Mean=412, Std. Dev.=23.11, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.971, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Dissolved Solids Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Background Data Summary: Mean=464.3, Std. Dev.=23.04, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9447, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



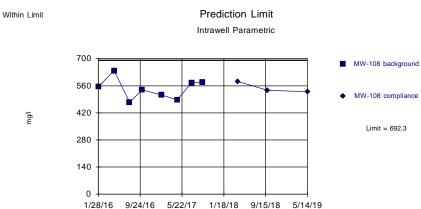


Background Data Summary: Mean=525, Std. Dev.=33.1, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9204, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

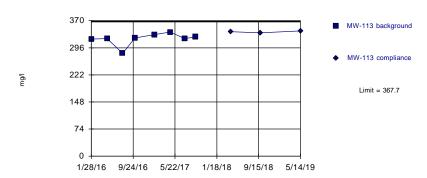
Constituent: Dissolved Solids Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=545.3, Std. Dev.=53.46, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9657, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

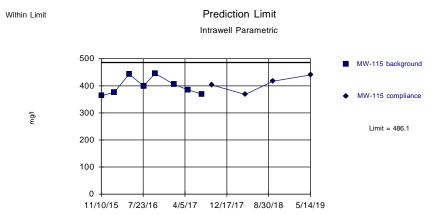


Background Data Summary: Mean=320.4, Std. Dev.=17.2, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7677, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Dissolved Solids Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

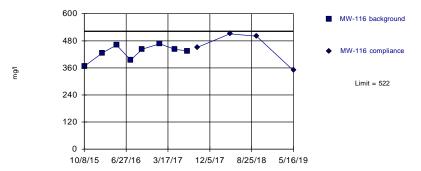
Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=398.4, Std. Dev.=31.87, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8923, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

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Within Limit Prediction Limit
Intrawell Parametric

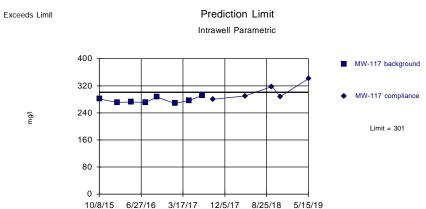


Background Data Summary: Mean=429.6, Std. Dev=33.6, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9103, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

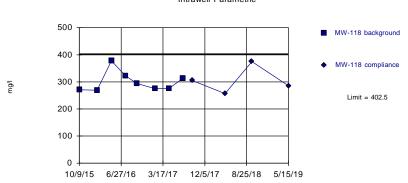
Constituent: Dissolved Solids Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9018, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

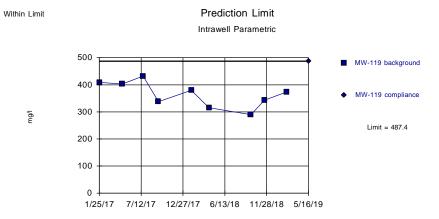


Background Data Summary: Mean=299.8, Std. Dev.=37.37, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8238, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Dissolved Solids Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=364.9, Std. Dev\_=46.79, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9717, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Within Limit Prediction Limit
Intrawell Parametric

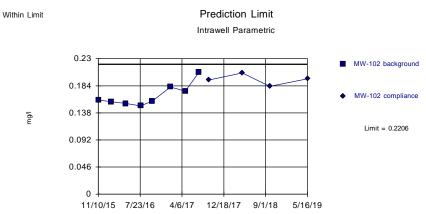


Background Data Summary: Mean=0.2813, Std. Dev.=0.02611, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9417, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

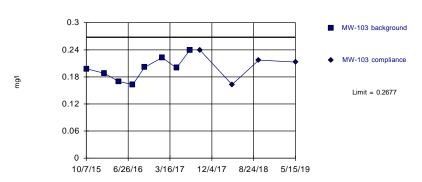
Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Background Data Summary: Mean=0.1679, Std. Dev.=0.01916, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8449, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

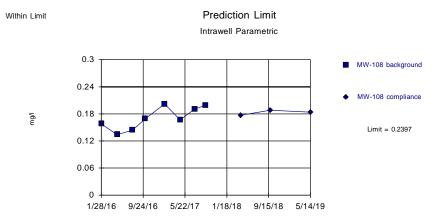


Background Data Summary: Mean=0.1979, Std. Dev\_=0.02539, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9583, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=0.1705, Std. Dev.=0.02516, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9368, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

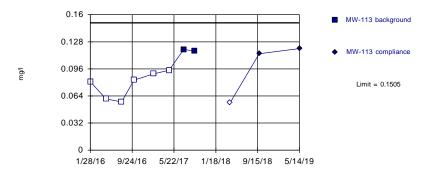
Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.

Within Limit

Prediction Limit
Intrawell Parametric

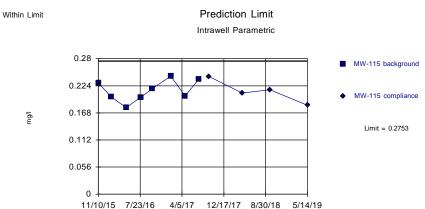


Background Data Summary: Mean=0.08768, Std. Dev.=0.02283, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9287, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

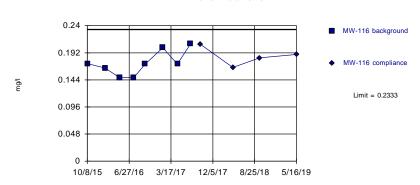
Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=0.2141, Std. Dev.=0.02223, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9478, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

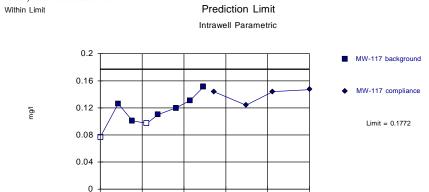


Background Data Summary: Mean=0.1734, Std. Dev\_=0.02179, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8928, critical = 0.749. Kappa = 2.751 (C=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas<sup>™</sup> v.9.6.14 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.

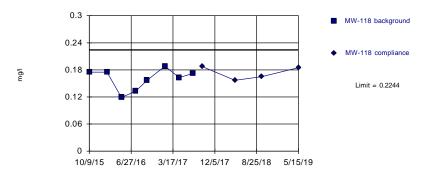


10/8/15 6/27/16 3/17/17 12/5/17 8/25/18 5/15/19

Background Data Summary: Mean=0.1141, Std. Dev.=0.02292, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.993, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

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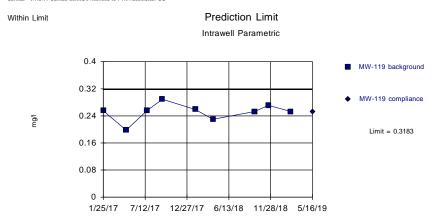


Background Data Summary: Mean=0.1603, Std. Dev.=0.02332, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9051, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

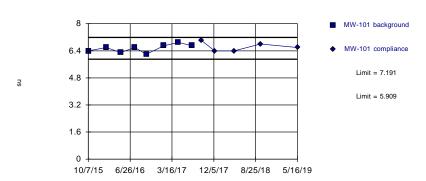
Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Background Data Summary: Mean=0.2516, Std. Dev.=0.02551, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8977, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.



Background Data Summary: Mean=6.55, Std. Dev=0.233, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9552, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Within Limits

Prediction Limit
Intrawell Parametric

MW-102 background

MW-102 compliance
Limit = 8.214
Limit = 5.061

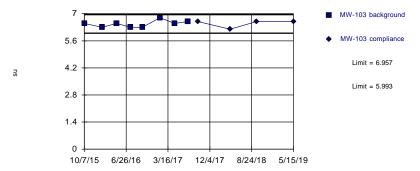
Background Data Summary: Mean=6.638, Std. Dev.=0.5731, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8994, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Within Limits Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=6.475, Std. Dev.=0.1753, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8695, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

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Within Limits

Prediction Limit
Intrawell Non-parametric

MW-108 background

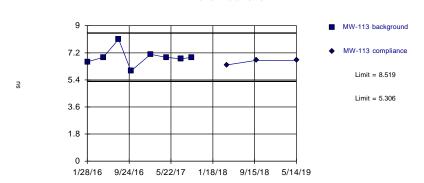
MW-108 compliance



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 8 background values. Well-constituent pair annual alpha = 0.08484. Individual comparison alpha = 0.04288 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Background Data Summary: Mean=6,913, Std. Dev.=0.5842, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.876, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Within Limits

Prediction Limit
Intrawell Parametric

MW-115 background

MW-115 compliance

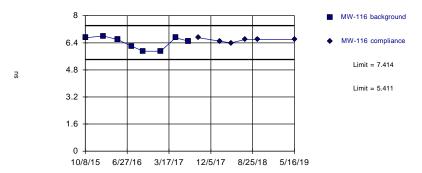
Limit = 9.384

Limit = 4.716

Background Data Summary: Mean=7.05, Std. Dev.=0.8485, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7617, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

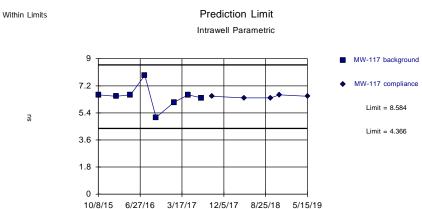
Within Limits Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=6.413, Std. Dev.=0.3643, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8539, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

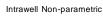
Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

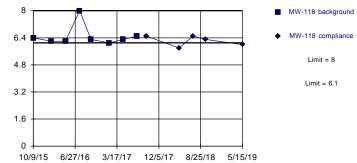


Background Data Summary: Mean=6.475, Std. Dev.=0.7667, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.871, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

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Exceeds Limits Prediction Limit



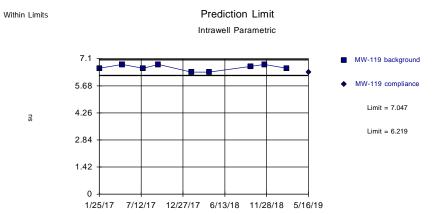


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 8 background values. Well-constituent pair annual alpha = 0.08484. Individual comparison alpha = 0.04288 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

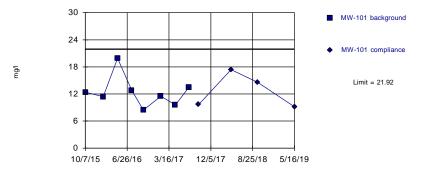
Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=6.633, Std. Dev.=0.1581, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8581, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

# Within Limit Prediction Limit Intrawell Parametric

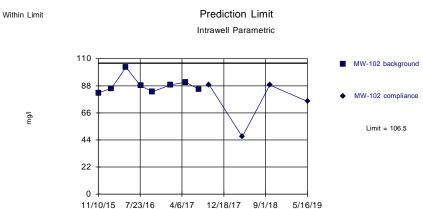


Background Data Summary: Mean=12.44, Std. Dev.=3.446, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8639, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

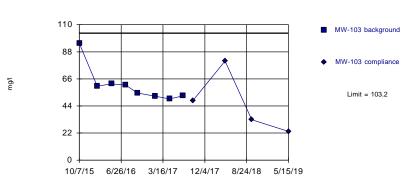
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=88.46, Std. Dev.=6.543, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8238, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.



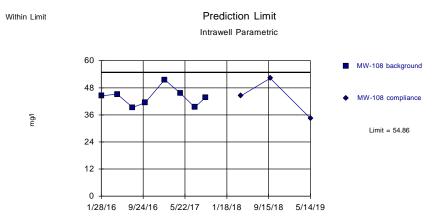


Background Data Summary (based on cube root transformation): Mean=3,914, Std. Dev.=0.2823, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.7518, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v 9.6.14 Sanitas software licensed to ETN Associates. LIG

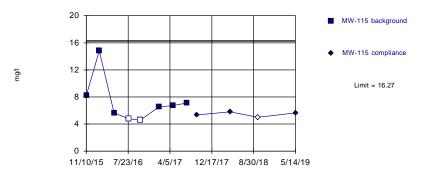


Background Data Summary: Mean=43.85, Std. Dev.=4.002, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9158, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.

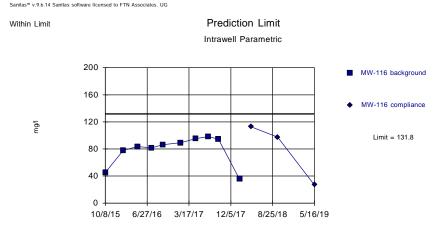
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=7.301, Std. Dev.=3.262, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7624, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Background Data Summary: Mean=78.74, Std. Dev.=21.34, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7947, critical = 0.781. Kappa = 2.485 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Within Limit

1.8 MW-117 background

MW-117 background

MW-117 compliance

Limit = 8.159

Prediction Limit

Background Data Summary: Mean=6.181, Std. Dev.=0.7192, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.958, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

10/8/15 6/27/16 3/17/17 12/5/17 8/25/18 5/15/19

Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

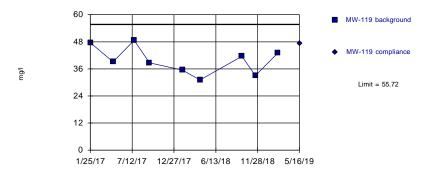
Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Background Data Summary: Mean=17.24, Std. Dev.=6.461, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8056, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

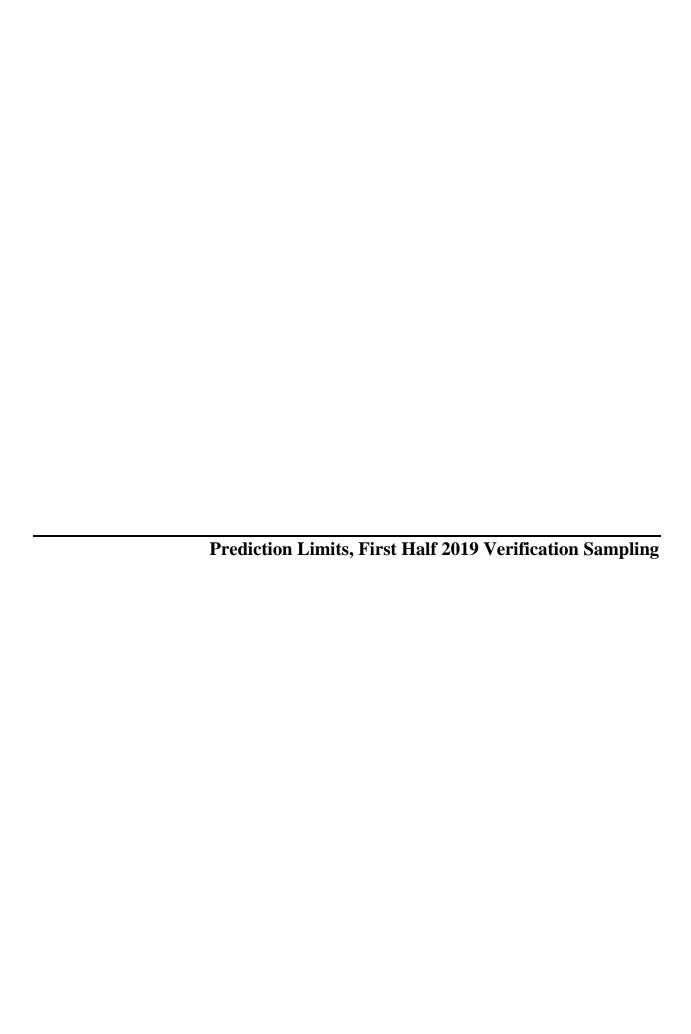




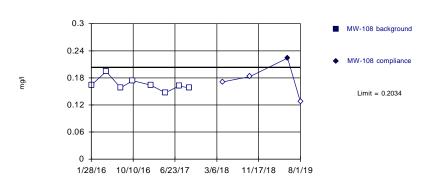
Background Data Summary: Mean=39.81, Std. Dev.=6.079, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.961, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



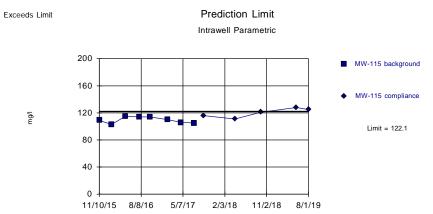
Prediction Limit Within Limit Intrawell Parametric



Background Data Summary: Mean=0.1651, Std. Dev.=0.01391, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8869, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Boron Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.20 Sanitas software licensed to FTN Associates. UG

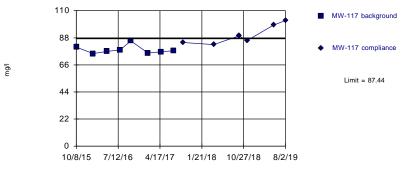


Background Data Summary: Mean=109.5, Std. Dev.=4.567, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9154, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Exceeds Limit

Prediction Limit

Intrawell Parametric

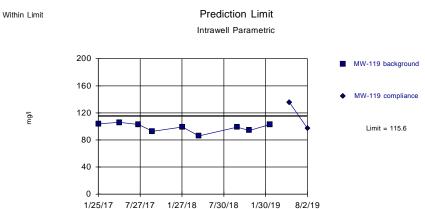


Background Data Summary: Mean=78.28, Std. Dev.=3.33, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8288, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification 

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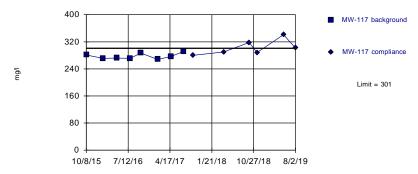


Background Data Summary: Mean=98.54, Std. Dev.=6.524, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9156, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Exceeds Limit

## Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9018, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

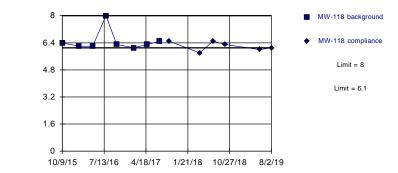
Constituent: Dissolved Solids Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.20 Sanitas software licensed to FTN Associates. UG

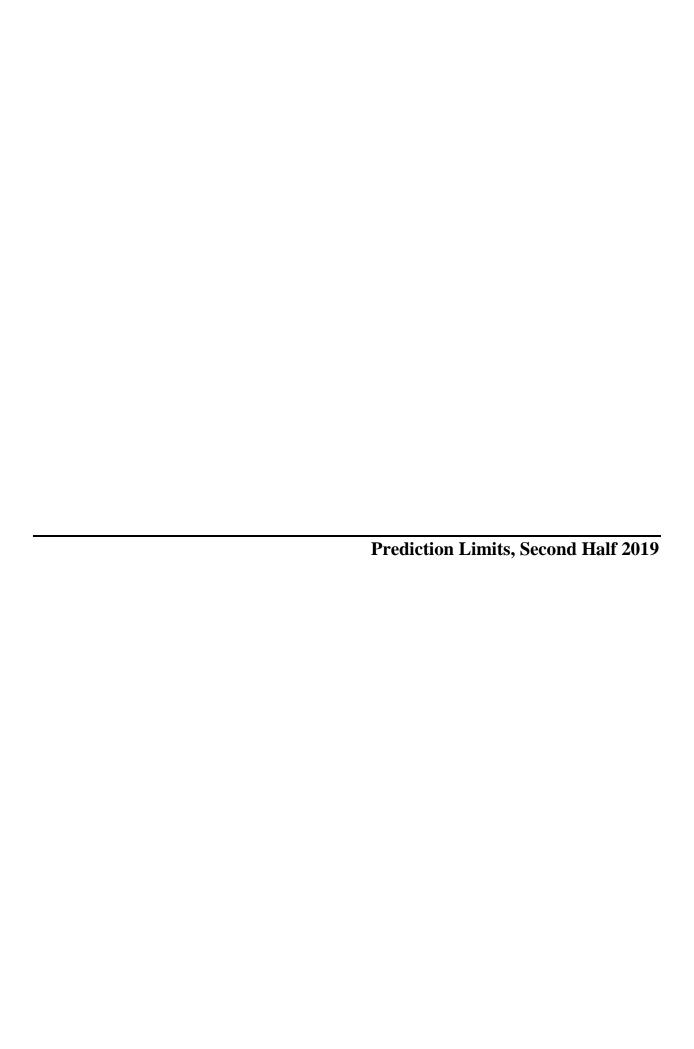
Within Limits

sn

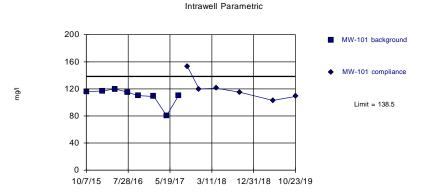
#### Prediction Limit Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 8 background values. Well-constituent pair annual alpha = 0.08484. Individual comparison alpha = 0.04288 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.



Within Limit Prediction Limit

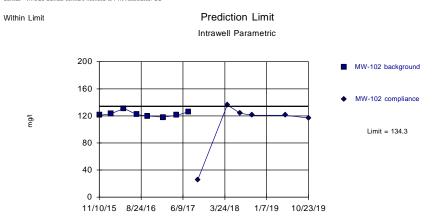


Background Data Summary (based on square transformation): Mean=12166, Std. Dev.=2464, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7547, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=122.8, Std. Dev.=4.062, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8956, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

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Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=146.9, Std. Dev.=11.27, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8944, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Within Limit Prediction Limit Intrawell Parametric

MW-108 background

MW-108 compliance

Limit = 192.8

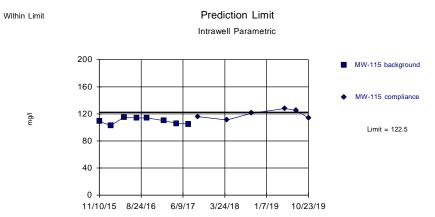
Background Data Summary: Mean=161, Std. Dev.=11.2, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapino Wilk @alpha = 0.01, calculated = 0.978, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.



Background Data Summary: Mean=81.89, Std. Dev\_e6.976, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8334, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

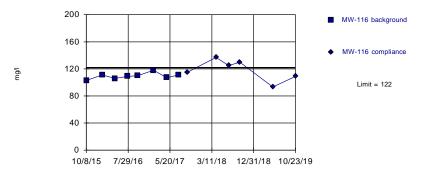
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=109.5, Std. Dev.=4.567, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9154, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

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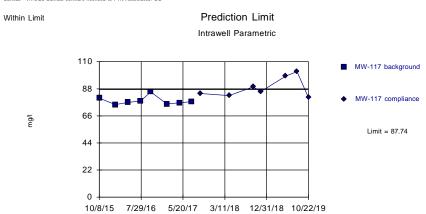


Background Data Summary: Mean=109.4, Std. Dev.=4.438, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9448, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

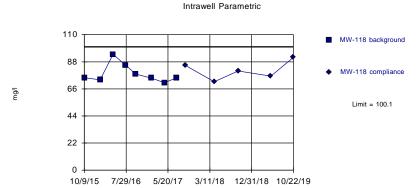
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Background Data Summary: Mean=78.28, Std. Dev.=3.33, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8288, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

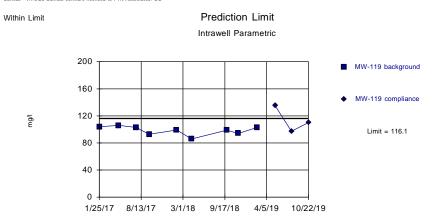
Within Limit Prediction Limit



Background Data Summary: Mean=78.35, Std. Dev.=7.66, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8173, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

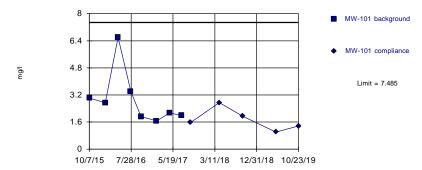
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=98.54, Std. Dev\_e6.524, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9156, critical = 0.764. Kappa = 2.698 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

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Within Limit Prediction Limit
Intrawell Parametric

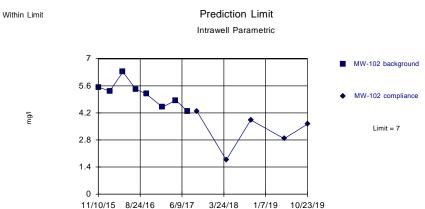


Background Data Summary: Mean=2.938, Std. Dev.=1.6, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7523, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

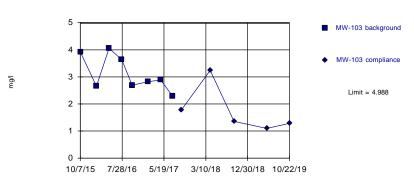
Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=5.176, Std. Dev.=0.6418, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9652, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.



Background Data Summary: Mean=3.119, Std. Dev.=0.6578, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.892, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v 9.6.23 Sanitas software licensed to ETN Associates. LIG

Within Limit

Prediction Limit

Intrawell Parametric

MW-108 background

MW-108 compliance

Limit = 6.06

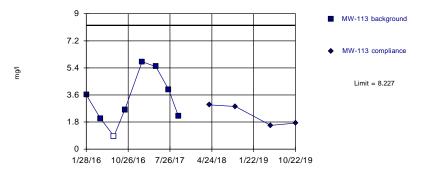
Background Data Summary (based on square root transformation): Mean=1.71, Std. Dev.=0.2644, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.7994, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.

Within Limit

Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=3.325, Std. Dev\_=1.725, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9503, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Prediction Limit

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.

11/10/15 8/24/16

Within Limit

Intrawell Parametric

MW-115 background

MW-115 compliance

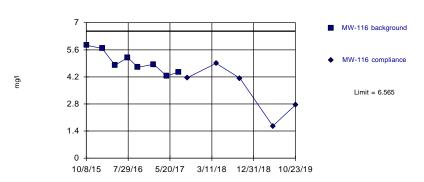
Limit = 9.527

Background Data Summary (based on cube root transformation): Mean=1.32, Std. Dev.=0.2814, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, accludated = 0.7839, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

6/9/17 3/24/18 1/7/19 10/23/19

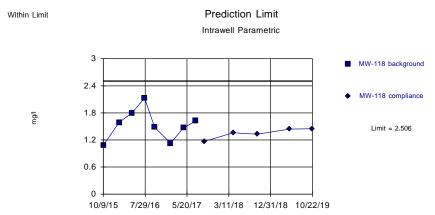


Background Data Summary: Mean=4.97, Std. Dev=0.5612, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9382, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

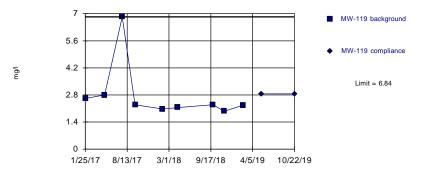


Background Data Summary: Mean=1.538, Std. Dev.=0.3407, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9523, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limit Prediction Limit
Intrawell Non-parametric

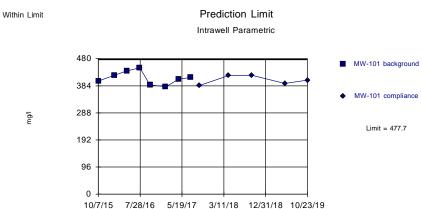


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 9 background values. Well-constituent pair annual alpha = 0.03586. Individual comparison alpha = 0.01809 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=412, Std. Dev.=23.11, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.971, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

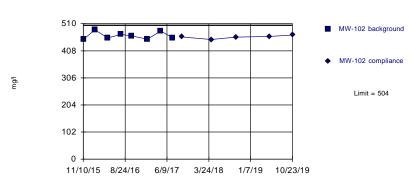
Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limit



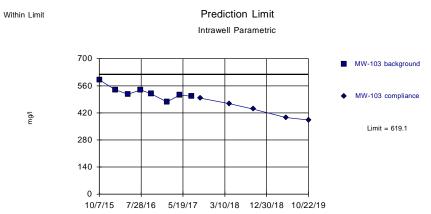


Background Data Summary: Mean=465, Std. Dev.=13.72, n=8. Seasonality was detected with 95% confidence and data were deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8927, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Background Data Summary: Mean=525, Std. Dev.=33.1, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9204, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Thrawell Parametric

MW-108 background

MW-108 compliance

Limit = 697.2

Prediction Limit

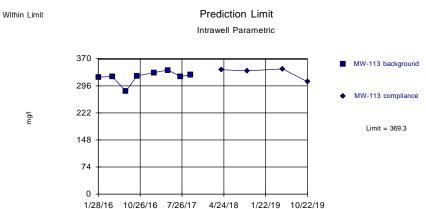
Background Data Summary: Mean=545.3, Std. Dev.=53.46, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9657, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

1/28/16 10/26/16 7/26/17 4/24/18 1/22/19 10/22/19

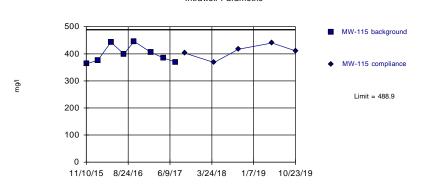
Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=320.4, Std. Dev.=17.2, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7677, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

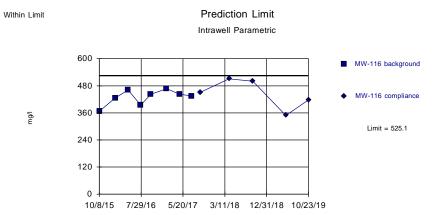


Background Data Summary: Mean=398.4, Std. Dev=31.87, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8923, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

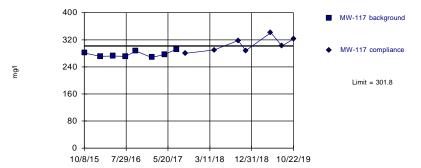
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=429.6, Std. Dev.=33.6, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9103, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



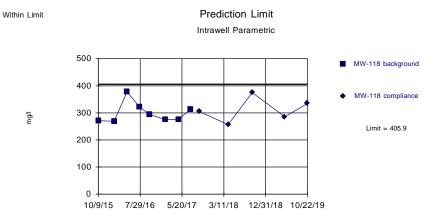


Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9018, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

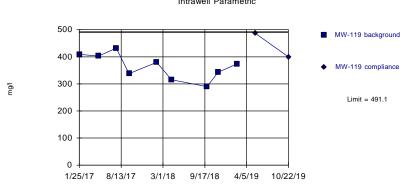
Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=299.8, Std. Dev.=37.37, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8238, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

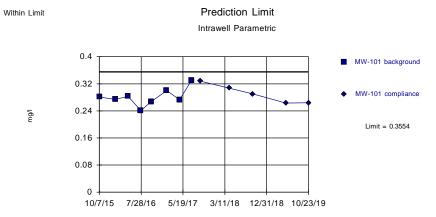


Background Data Summary: Mean=364.9, Std. Dev.=46.79, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9717, critical = 0.764. Kappa = 2.698 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

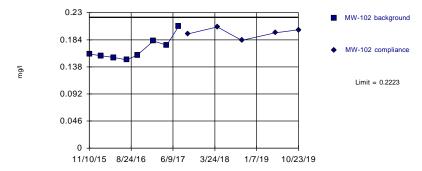


Background Data Summary: Mean=0.2813, Std. Dev =0.02611, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9417, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limit Prediction Limit
Intrawell Parametric

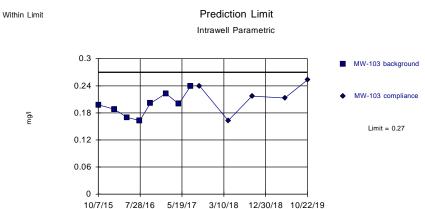


Background Data Summary: Mean=0.1679, Std. Dev\_=0.01916, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8449, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

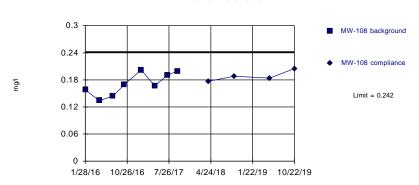
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=0.1979, Std. Dev.=0.02539, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9583, critical = 0.749. Kappa = 2.841 (C=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

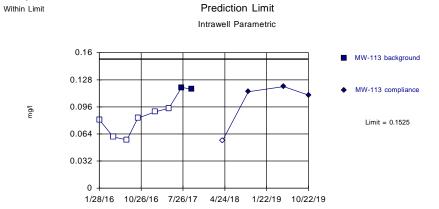


Background Data Summary: Mean=0.1705, Std. Dev\_=0.02516, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9368, critical = 0.749. Kappa = 2.841 (C=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Background Data Summary: Mean=0.08768, Std. Dev.=0.02283, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9287, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

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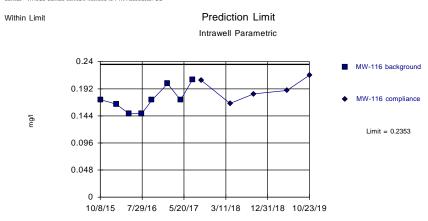


Background Data Summary: Mean=0.2141, Std. Dev\_=0.02223, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9478, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

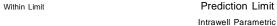
Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

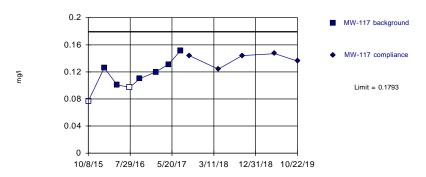
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v 9.6.23 Sanitas software licensed to ETN Associates. LIG



Background Data Summary: Mean=0.1734, Std. Dev.=0.02179, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8928, critical = 0.749. Kappa = 2.841 (C=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

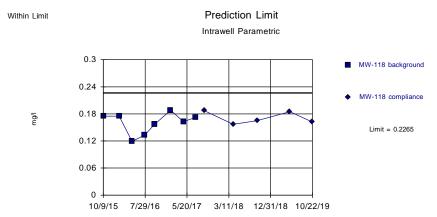




Background Data Summary: Mean=0.1141, Std. Dev.=0.02292, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.993, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

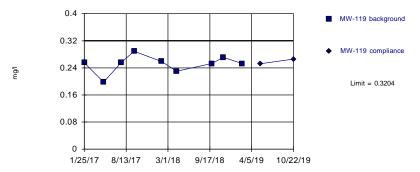
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=0.1603, Std. Dev.=0.02332, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9051, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

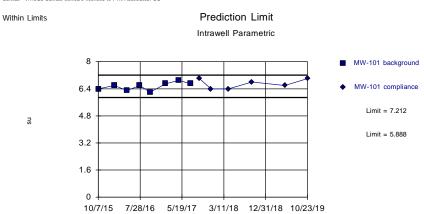




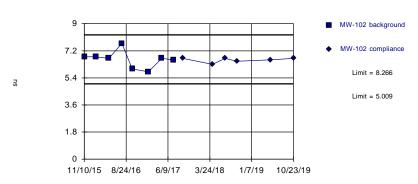
Background Data Summary: Mean=0.2516, Std. Dev.=0.02551, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8977, critical = 0.764. Kappa = 2.698 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v 9.6.23 Sanitas software licensed to ETN Associates, UG



Background Data Summary: Mean=6.55, Std. Dev.=0.233, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9552, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.



Background Data Summary: Mean=6.638, Std. Dev.=0.5731, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8994, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limits

Prediction Limit

Intrawell Parametric

MW-103 background

MW-103 compliance

Limit = 6.973

Limit = 5.977

1.4

0

10/7/15 7/28/16 5/19/17 3/10/18 12/30/18 10/22/19

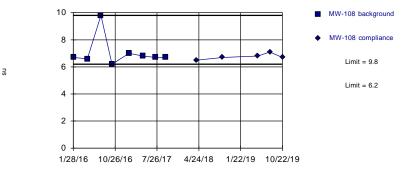
Background Data Summary: Mean=6.475, Std. Dev.=0.1753, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8695, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limits Prediction Limit
Intrawell Non-parametric

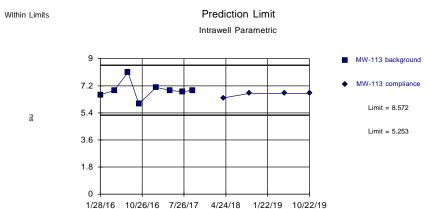


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 8 background values. Well-constituent pair annual alpha = 0.08484. Individual comparison alpha = 0.04288 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

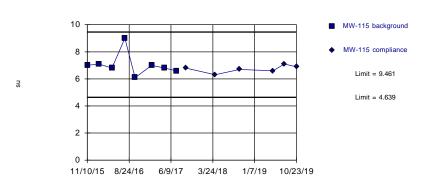
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=6.913, Std. Dev.=0.5842, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro VIIIk @alpha = 0.01, calculated = 0.876, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Background Data Summary: Mean=7.05, Std. Dev.=0.8485, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7617, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limits

Prediction Limit
Intrawell Parametric

MW-116 background

MW-116 compliance

Limit = 7.447

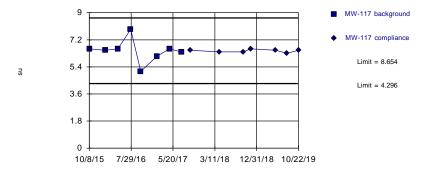
Limit = 5.378

Background Data Summary: Mean=6.413, Std. Dev.=0.3643, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8539, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limits Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=6.475, Std. Dev.=0.7667, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.871, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

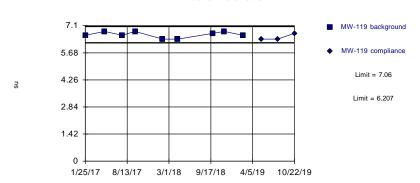
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limits Prediction Limit
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 8 background values. Well-constituent pair annual alpha = 0.08484. Individual comparison alpha = 0.04288 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.



Background Data Summary: Mean=6.633, Std. Dev.=0.1581, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8581, critical = 0.764. Kappa = 2.698 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limit

Intrawell Parametric

MW-101 background

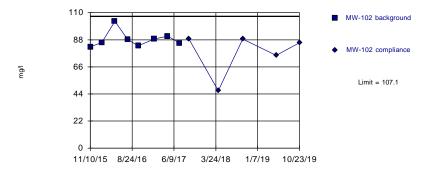
MW-101 compliance

Limit = 22.23

Background Data Summary: Mean=12.44, Std. Dev.=3.446, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8639, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

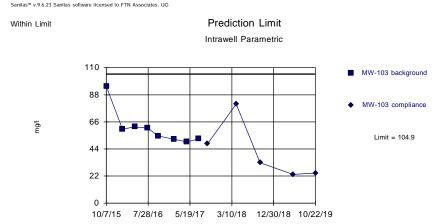




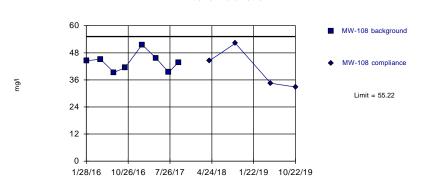
Background Data Summary: Mean=88.46, Std. Dev.=6.543, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8238, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Background Data Summary (based on cube root transformation): Mean=3.914, Std. Dev.=0.2823, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7518, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

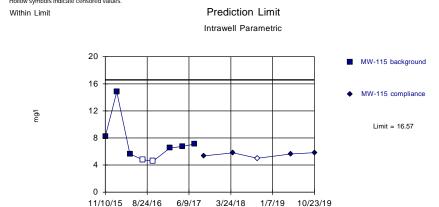


Background Data Summary: Mean=43.85, Std. Dev\_=4.002, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9158, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

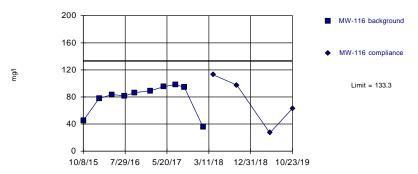
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG Hollow symbols indicate censored values.



Background Data Summary: Mean=7.301, Std. Dev.=3.262, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7624, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



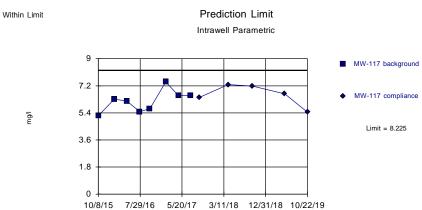


Background Data Summary: Mean=78.74, Std. Dev=21.34, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7947, critical = 0.781. Kappa = 2.555 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG



Background Data Summary: Mean=6.181, Std. Dev.=0.7192, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.958, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Within Limit

# Prediction Limit Intrawell Parametric

MW-118 background

MW-118 compliance

Limit = 35.6

Background Data Summary: Mean=17.24, Std. Dev.=6.461, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8056, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

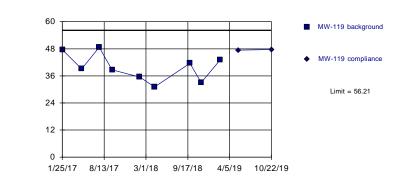
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Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

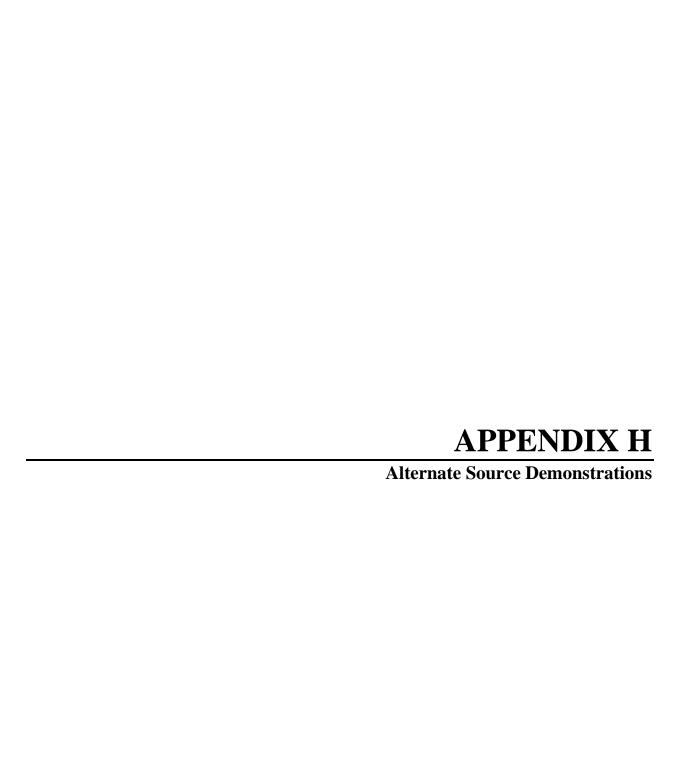
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

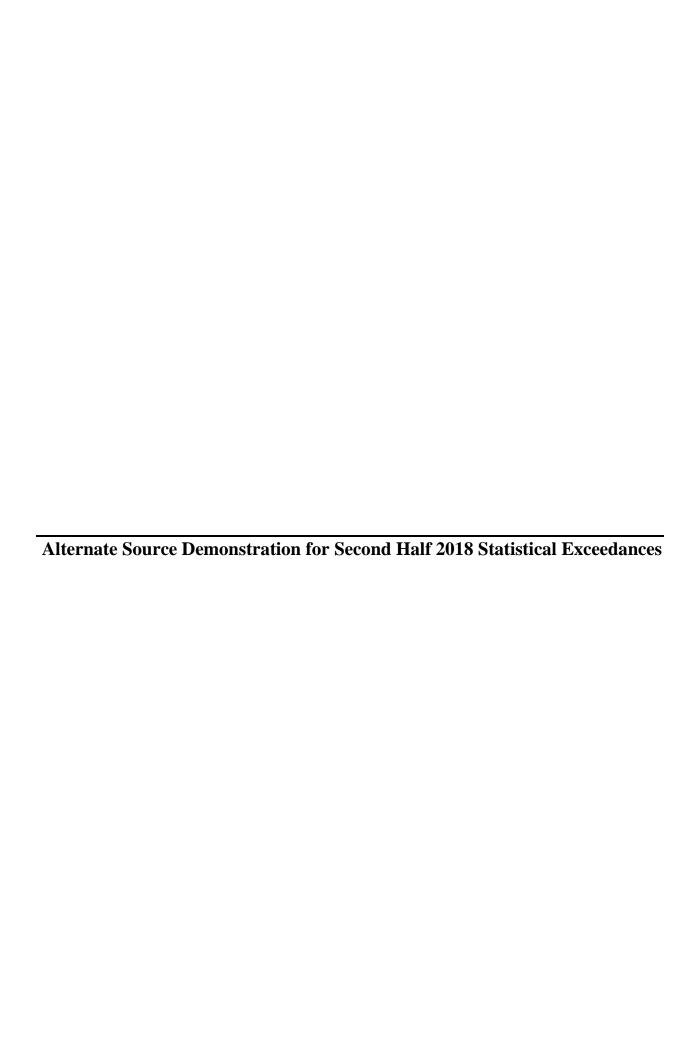
Within Limit

# Prediction Limit Intrawell Parametric



Background Data Summary: Mean=39.81, Std. Dev.=6.079, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.961, critical = 0.764. Kappa = 2.698 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.







#### TECHNICAL MEMORANDUM

**DATE:** January 29, 2019

TO: Matt Gray

Plum Point Services Company, LLC

FROM: Dana Derrington, PE, PG

FTN Associates, Ltd.

**SUBJECT:** Alternate Source Demonstration for Statistically Significant Increase

Second Half of 2018 Monitoring Period, Plum Point Energy Station Landfill

FTN No. R14590-1766-001

FTN Associates, Ltd. (FTN) has prepared this technical memorandum for the Plum Point Services Company, LLC (PPSC) coal combustion residual (CCR) landfill, which is regulated by the Environmental Protection Agency (EPA) Coal Combustion Residuals Rule, promulgated in Title 40 of the Code of Federal Regulations (40 CFR), Part 257. The landfill is also regulated by the Arkansas Pollution Control and Ecology Commission (APCEC) Regulation No. 22 and permitted by the Arkansas Department of Environmental Quality (ADEQ) under Permit No. 0303-S3N-R1.

FTN was contracted to sample groundwater and statistically evaluate the data from the second half of 2018 monitoring event. Based on statistical evaluation of the data, one statistically significant increase (SSI) over background concentrations was identified. Pursuant to \$257.94(e)(2), the landfill may demonstrate that a source other than the CCR unit caused the SSI over background levels for a constituent or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This memorandum, hereafter referred to as an alternate source demonstration (ASD), presents supporting evidence that the SSI was not caused by the CCR landfill.

#### 1.0 BACKGROUND

FTN performed groundwater sampling for the second half 2018 semiannual groundwater monitoring period during September 2018. Sample collection, preservation, shipment, analytical procedures, chain-of-custody control, and data quality control for this sampling event followed protocol outlined in the landfill's groundwater sampling and analysis plan (GWSAP) (FTN 2017b). Statistical evaluation of the data set followed the most recent EPA guidance (EPA 2009) and the landfill's statistical analysis plan (SAP) (FTN 2017c). An intrawell prediction

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limit evaluation identified that calcium at monitoring well MW-116, measured at level of 132 mg/L, exceeded the calculated limit of 121.6 mg/L. A site map showing the location of this well relative to the CCR landfill is included as Figure 1 (all figures are included in Attachment 1). The intrawell prediction limit plot is included as Figure 2.

At the request of FTN, the contracted third-party laboratory, Pace Analytical of Mount Juliet, Tennessee, re-analyzed the sample from MW-116 to rule out any laboratory-associated error. As shown in Table 1 (Attachment 2), the re-analyzed value was 130 mg/L, comparable to the value initially reported. The laboratory reports are included in Attachment 3.

The SSI for calcium at MW-116 was previously confirmed during the first half of 2018 monitoring period; therefore, verification sampling was not conducted. PPSC completed a successful ASD (FTN 2018) in response to the SSI in accordance with §257.94(e)(2). The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on October 9, 2018. As required by §257.94(e)(2), a copy of the ASD was included in the 2018 annual report (FTN 2019).

#### 2.0 DISCUSSION

A review of landfill leachate data, onsite background groundwater quality, and published literature was performed to determine if the SSI for calcium at MW-116 was indicative of influence from the CCR landfill. Findings from this review are discussed below within the context of groundwater quality at MW-116.

### 2.1 Comparison to Landfill Leachate

Landfill leachate samples are collected on a semiannual basis for the APCEC Regulation No. 22 program, as required by Permit No. 0303-S3N-R1. These data are publicly available on the ADEQ website<sup>1</sup>. Available data collected between 2011 and 2018 show calcium concentrations in leachate range from 7.6 to 23 mg/L. These data are co-plotted with measured calcium at MW-116 on the time-series plot attached as Figure 3, which shows that calcium levels in leachate are significantly lower than levels measured in groundwater at MW-116. Given the effects of dilution, this comparison demonstrates that the SSI for calcium is not due to leachate migration from the landfill.

## 2.2 Comparison to Onsite Background Groundwater Quality

Monitoring wells MW-108, MW-113, and MW-115 (Figure 1) are used to monitor onsite background groundwater water quality, as described in the landfill's groundwater monitoring system certification report (FTN 2017a). Calcium data collected at these locations are plotted on the attached time-series plot (Figure 4) and box-and-whiskers diagrams (Figure 5) along with

<sup>&</sup>lt;sup>1</sup> https://www.adeq.state.ar.us/sw/permits/facility\_data.aspx



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calcium data from MW-116. As is evident from these figures, measured calcium at MW-116 is comparable to onsite background groundwater quality.

### 2.3 Comparison to Published Groundwater Quality for the Aquifer

Each landfill monitoring well is screened in the Mississippi River Valley alluvial aquifer, the uppermost aquifer in the vicinity of the landfill (FTN 2017b). The US Geological Survey published a study of groundwater quality of the aquifer, specifically with respect to that of Holocene alluvium and Pleistocene valley train deposits, which are two of the major hydrogeologic units within the aquifer (Gonthier 2003). The landfill is located in Holocene alluvium, as shown on Figure 6. According to this study, the reported respective median and maximum values for measured calcium in wells screened in Holocene alluvium were 77 mg/L and 130 mg/L. These levels are comparable to those measured at MW-116 and at background wells MW-108, MW-113, and MW-115, as shown on Figures 4 and 5.

#### 3.0 CONCLUSIONS

In consideration of the information presented in this memorandum, FTN concludes that the SSI for calcium at MW-116 is not due to the migration of landfill leachate and that groundwater quality at MW-116 falls within the range of what can be expected in terms of natural fluctuations in groundwater quality.

This memorandum serves as the ASD prepared in accordance with §257.94(e)(2) and supports the position that the confirmed SSI identified for calcium at MW-116 was not due to a release from the landfill. Therefore, no further action is required and the landfill will remain in detection monitoring.

If you have questions or comments regarding this memorandum, please do not hesitate to call Dana Derrington, PE, PG, or Heather Ferguson at (501) 225-7779.

DLD/hlf

Attachments

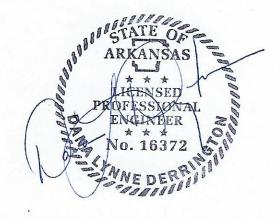
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### PROFESSIONAL ENGINEER'S CERTIFICATION

With this certification, I certify that I, as a Professional Engineer in the State of Arkansas, am a qualified professional engineer as defined in §257.53 of 40 CFR Part 257, that this technical memorandum has been prepared under my direction in accordance with generally accepted good engineering practices, that the findings are accurate to the best of my knowledge, and that the alternate source demonstration described herein meets the requirements of §257.94(e)(2) of 40 CFR Part 257.



Dana L. Derrington, Arkansas PE #16372

01/29/2019 Date

**İ**tn

### **REFERENCES**

- EPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance [EPA 530-R-09-007]. Washington, DC: Office of Resource Conservation and Recovery, Program Implementation and Information Division, US Environmental Protection Agency. March 2009.
- FTN. 2017a. Groundwater Monitoring Network Evaluation, Plum Point Energy Station Landfill. Little Rock, AR: FTN Associates, Ltd.
- ———. 2017b. *Groundwater Sampling and Analysis Plan, Plum Point Energy Station Landfill.* Little Rock, AR: FTN Associates, Ltd.
- ———. 2017c. Statistical Analysis Plan, Plum Point Energy Station Landfill. Little Rock, AR: FTN Associates, Ltd.
- ———. 2018. Alternate Source Demonstration for Statistically Significant Increase, First Half of 2018 Monitoring Period, Plum Point Energy Station Landfill [technical memorandum]. Little Rock, AR: FTN Associates, Ltd.
- ———. 2019. Plum Point Energy Station Groundwater Monitoring and Corrective Action 2018 Annual Report. Little Rock, AR: FTN Associates, Ltd.
- Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 03-4202]. Jackson, MS: National Water-Quality Assessment Program, US Geological Survey.
- Kresse, T.M., P.D. Hays, K.R. Merriman, J.A. Gillip, D.T. Fugitt, J.L. Spellman, A.M. Nottmeier, D.A. Westerman, J.M. Blackstock, and J.L. Battreal. 2014. Aquifers of Arkansas—Protection, Management, and Hydrologic and Geochemical Characteristics of Groundwater Resources in Arkansas [USGS Scientific Investigations Report 2014-5149]. Prepared in cooperation with the Arkansas Natural Resources Commission. Reston, VA: US Geological Survey. 334 pp. doi: <a href="http://dx.doi.org/10.3133/sir20145149">http://dx.doi.org/10.3133/sir20145149</a>.





Figures

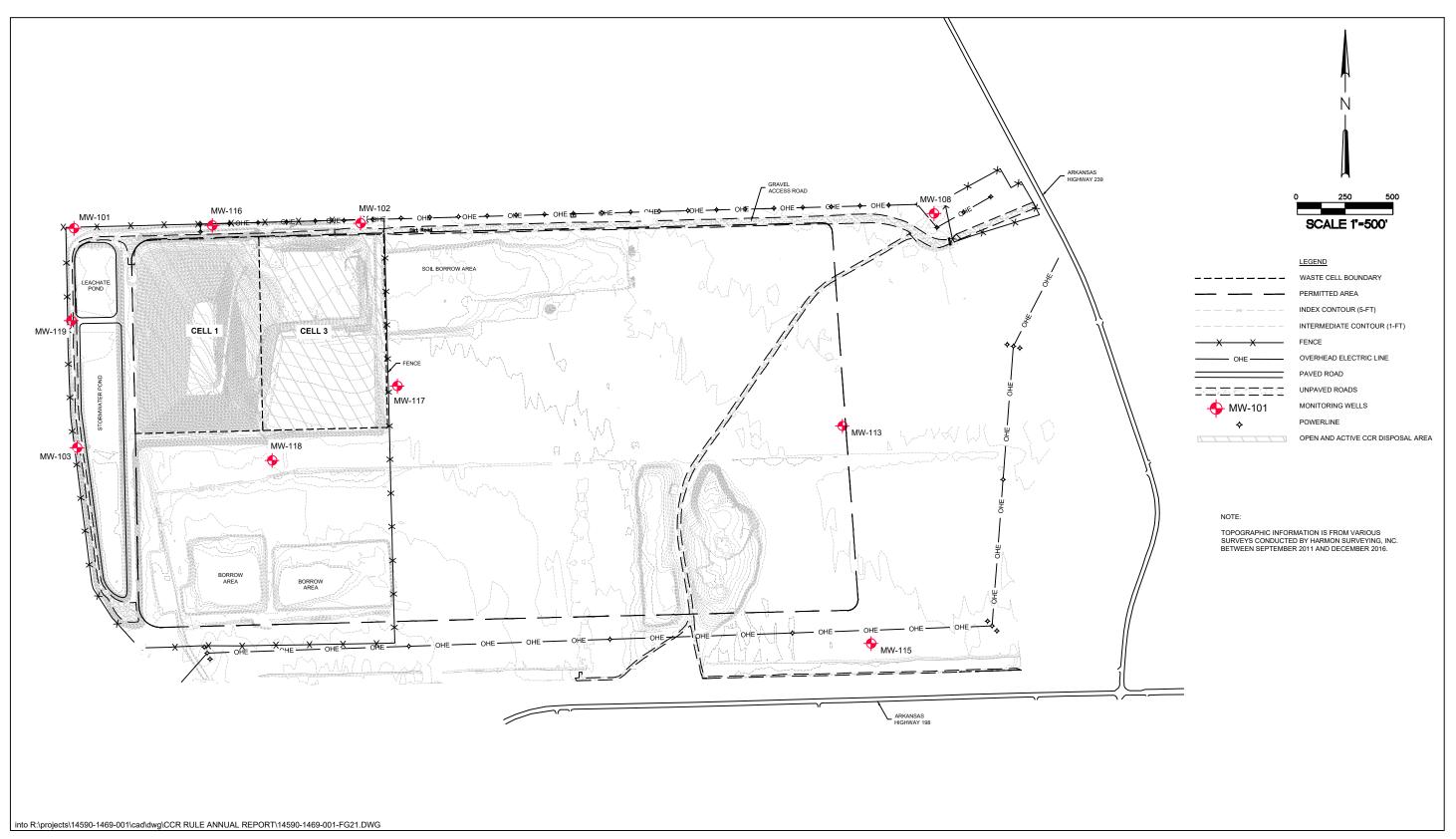
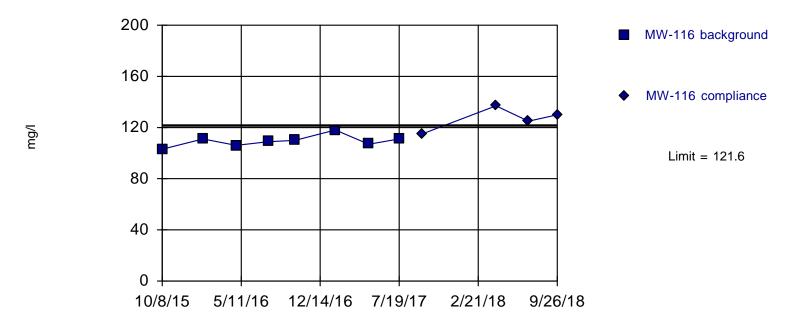


Figure 1. Monitoring well locations, Plum Point Energy Station.

**Exceeds Limit** 

### **Prediction Limit**

### Intrawell Parametric



Background Data Summary: Mean=109.4, Std. Dev.=4.438, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9448, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 10/31/2018 2:13 PM View: 2018-2H PL

Figure 2. Results of statistical analysis of calcium at MW-116 using prediction limits, second half of 2018.

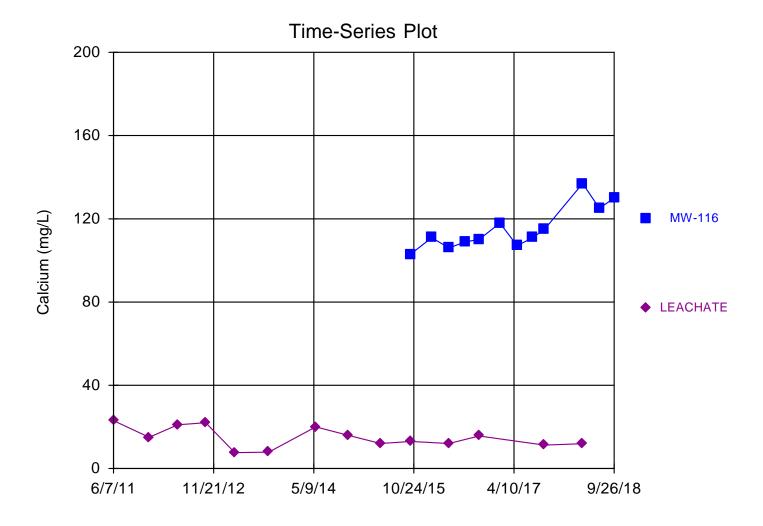


Figure 3. Time-series plot comparing measured calcium in landfill leachate to groundwater at MW-116.

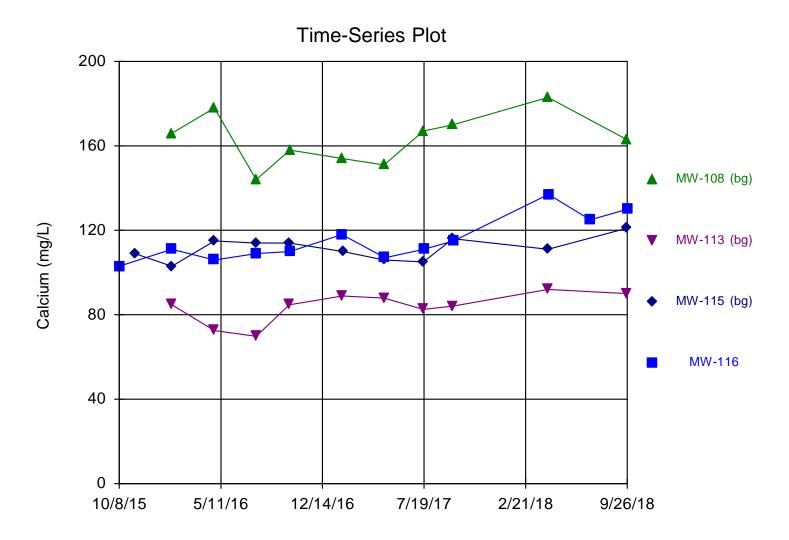


Figure 4. Time-series plot comparing measured calcium at MW-116 to onsite background groundwater quality.

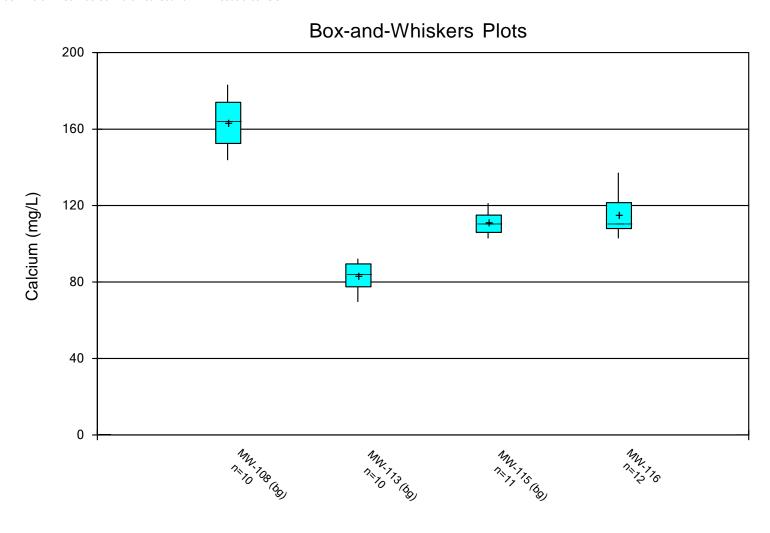


Figure 5. Box-and-whiskers plots comparing measured calcium at MW-116 to onsite background groundwater quality.

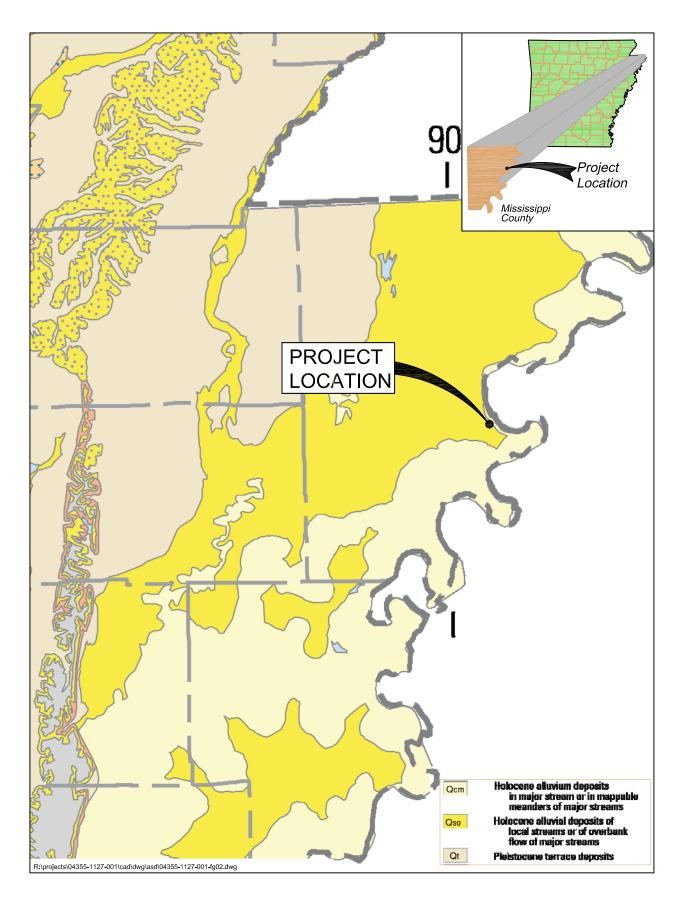


Figure 6. Surface geology of Mississippi County, Arkansas (adapted from Kresse et al. 2014).

<b>ATTA</b>	<b>CHM</b>	ENT	2
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Summary of Statistically Significant Results and Maximum Background and Published Levels

Table 1. Summary of statistically significant results and maximum background and published levels.

Well ID	Parameter	Prediction Limit (mg/L)	September 2018 Observation (mg/L)	SSI Confirmed?	Maximum Background Level <sup>(a)</sup> (mg/L)	Maximum Published Level <sup>(b)</sup> (mg/L)
MW-116	Calcium	121.6	132 (initial) 130 (lab re-test)	Yes	183 <sup>(c)</sup>	130

### Notes:

- a. Based on historical values at MW-108, MW-113, and MW-115.
- b. Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 03-4202]. Jackson, MS: US Geological Survey, National Water-Quality Assessment Program.
- c. Measured value at MW-108 during April 2018.

# ATTACHMENT 3 Laboratory Reports



# ANALYTICAL REPORT

October 08, 2018

### Plum Point Services Co., LLC

Sample Delivery Group: L1030036

Samples Received: 09/28/2018

Project Number: 14590-1766-001

Description: Plum Point Energy Station

Report To: Chris Lussier

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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MW-102 L1030036-02	7
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Sc: Sample Chain of Custody

30

Received date/time

### SAMPLE SUMMARY

Collected by

ONE	LAB.	NIATI	ONIV
OINE	LAD.	IVAII	CINV

Collected date/time

MW-101 L1030036-01 GW			Michael Clayton	09/26/18 14:05	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1174315	1	10/03/18 19:24	10/03/18 19:56	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 10:14	10/03/18 10:14	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:11	ST
			Collected by	Collected date/time	Received date/time
MW-102 L1030036-02 GW			Michael Clayton	09/27/18 11:25	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1175129	1	10/04/18 18:55	10/04/18 19:27	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 10:28	10/03/18 10:28	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:14	ST
			Collected by	Collected date/time	Received date/time
MW-103 L1030036-03 GW			Michael Clayton	09/26/18 12:55	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1174315	1	10/03/18 19:24	10/03/18 19:56	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 10:42	10/03/18 10:42	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:17	ST
			Collected by	Collected date/time	Received date/time
MW-108 L1030036-04 GW			Michael Clayton	09/25/18 13:50	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1173809	1	10/02/18 15:57	10/02/18 16:41	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 10:56	10/03/18 10:56	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:25	ST
			Collected by	Collected date/time	Received date/time
MW-113 L1030036-05 GW			Michael Clayton	09/25/18 12:50	09/28/18 09:45





















Gravimetric Analysis by Method 2540 C-2011

Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

Method

Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1174254	1	10/02/18 17:45	10/02/18 18:17	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 11:23	10/03/18 11:23	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:31	ST

Batch

WG1173809

WG1174175

WG1175467

Dilution

1

1

1

Preparation

10/02/18 15:57

10/03/18 11:09

10/03/18 17:25

Collected by

Michael Clayton

date/time

Analysis

date/time

10/02/18 16:41

10/03/18 11:09

10/04/18 17:28

09/25/18 11:15

Collected date/time

Analyst

JER

MAJ

ST

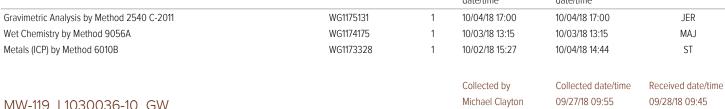
Received date/time

09/28/18 09:45

### SAMPLE SUMMARY

	N I A T	IONWI

			Collected by	Collected date/time	Received date/time
MW-116 L1030036-07 GW			Michael Clayton	09/26/18 15:15	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1174318	1	10/03/18 19:58	10/03/18 20:45	AJS
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 12:05	10/03/18 12:05	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:33	ST
			Collected by	Collected date/time	Received date/time
MW-117 L1030036-08 GW			Michael Clayton	09/27/18 13:05	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1175131	1	10/04/18 17:00	10/04/18 17:00	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 13:01	10/03/18 13:01	MAJ
Metals (ICP) by Method 6010B	WG1173328	1	10/02/18 15:27	10/04/18 14:42	ST
			Collected by	Collected date/time	Received date/time
MW-118 L1030036-09 GW			Michael Clayton	09/27/18 14:30	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1175131	1	10/04/18 17:00	10/04/18 17:00	JER



Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1175131	1	10/04/18 17:00	10/04/18 17:00	JER
Vet Chemistry by Method 9056A	WG1174175	1	10/03/18 13:29	10/03/18 13:29	MAJ
Metals (ICP) by Method 6010B	WG1173328	1	10/02/18 15:27	10/04/18 14:47	ST

MW-116 DUP L1030036-11 GW			Michael Clayton	09/26/18 15:20	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1174318	1	10/03/18 19:58	10/03/18 20:45	AJS
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 13:43	10/03/18 13:43	MAJ
Metals (ICP) by Method 6010B	WG1173328	1	10/02/18 15:27	10/04/18 14:55	ST

EB-2 L1030036-12 GW			Collected by Michael Clayton	Collected date/time 09/27/18 15:05	Received date/time 09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1175131	1	10/04/18 17:00	10/04/18 17:00	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 14:52	10/03/18 14:52	MAJ
Metals (ICP) by Method 6010B	WG1173328	1	10/02/18 15:27	10/04/18 14:58	ST



















Collected by

Collected date/time

Received date/time

















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley Project Manager

ONE LAB. NATIONWIDE.

Collected date/time: 09/26/18 14:05

### L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	421000		2820	10000	1	10/03/2018 19:56	WG1174315

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1940		51.9	1000	1	10/03/2018 10:14	WG1174175
Fluoride	290	В	9.90	100	1	10/03/2018 10:14	WG1174175
Sulfate	14600		77.4	5000	1	10/03/2018 10:14	WG1174175



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1940		51.9	1000	1	10/03/2018 10:14	WG1174175
Fluoride	290	В	9.90	100	1	10/03/2018 10:14	WG1174175
Sulfate	14600		77.4	5000	1	10/03/2018 10:14	WG1174175



Ss

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	98.1	<u>J</u>	12.6	200	1	10/04/2018 17:11	WG1175467
Calcium	115000		46.3	1000	1	10/04/2018 17:11	WG1175467









ONE LAB. NATIONWIDE.

Collected date/time: 09/27/18 11:25

L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	453000		2820	10000	1	10/04/2018 19:27	WG1175129

# 2\_\_\_

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	3840		51.9	1000	1	10/03/2018 10:28	WG1174175
Fluoride	183	В	9.90	100	1	10/03/2018 10:28	WG1174175
Sulfate	88600		77.4	5000	1	10/03/2018 10:28	WG1174175



Cn

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	121	J	12.6	200	1	10/04/2018 17:14	WG1175467
Calcium	121000		46.3	1000	1	10/04/2018 17:14	WG1175467











ONE LAB. NATIONWIDE.

Collected date/time: 09/26/18 12:55

L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	440000		2820	10000	1	10/03/2018 19:56	WG1174315

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1360		51.9	1000	1	10/03/2018 10:42	WG1174175
Fluoride	217	В	9.90	100	1	10/03/2018 10:42	WG1174175
Sulfate	32800		77.4	5000	1	10/03/2018 10:42	WG1174175



Ss

# Cn

# <sup>°</sup>Qc









	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	145	J	12.6	200	1	10/04/2018 17:17	WG1175467
Calcium	129000		46.3	1000	1	10/04/2018 17:17	WG1175467

ONE LAB. NATIONWIDE.

Collected date/time: 09/25/18 13:50

### L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	537000		2820	10000	1	10/02/2018 16:41	WG1173809



### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	3110		51.9	1000	1	10/03/2018 10:56	WG1174175
Fluoride	188	В	9.90	100	1	10/03/2018 10:56	WG1174175
Sulfate	52200		77.4	5000	1	10/03/2018 10:56	WG1174175



# Cn

Ss

















	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	183	<u>J</u>	12.6	200	1	10/04/2018 17:25	WG1175467
Calcium	163000		46.3	1000	1	10/04/2018 17:25	WG1175467

ONE LAB. NATIONWIDE.

Collected date/time: 09/25/18 12:50

### L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	337000		2820	10000	1	10/02/2018 16:41	WG1173809

# 2\_

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2840		51.9	1000	1	10/03/2018 11:09	WG1174175
Fluoride	114	В	9.90	100	1	10/03/2018 11:09	WG1174175
Sulfate	9810		77.4	5000	1	10/03/2018 11:09	WG1174175



# Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	111	J	12.6	200	1	10/04/2018 17:28	WG1175467
Calcium	90000		46.3	1000	1	10/04/2018 17:28	WG1175467



Cn









ONE LAB. NATIONWIDE.

Collected date/time: 09/25/18 11:15

### L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	417000		2820	10000	1	10/02/2018 18:17	WG1174254

Ss

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1180		51.9	1000	1	10/03/2018 11:23	WG1174175
Fluoride	216	В	9.90	100	1	10/03/2018 11:23	WG1174175
Sulfate	5000	<u>J</u>	77.4	5000	1	10/03/2018 11:23	WG1174175



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	<del></del>
Boron	76.4	<u>J</u>	12.6	200	1	10/04/2018 17:31	WG1175467
Calcium	123000		46.3	1000	1	10/04/2018 17:31	WG1175467









ONE LAB. NATIONWIDE.

Collected date/time: 09/26/18 15:15

L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	500000		2820	10000	1	10/03/2018 20:45	WG1174318

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	4130		51.9	1000	1	10/03/2018 12:05	WG1174175
Fluoride	183	B J6	9.90	100	1	10/03/2018 12:05	WG1174175
Sulfate	97500	<u>J6</u>	77.4	5000	1	10/03/2018 12:05	WG1174175



Ss

# Cn











	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	153	J	12.6	200	1	10/04/2018 17:33	WG1175467
Calcium	132000		46.3	1000	1	10/04/2018 17:33	WG1175467

ONE LAB. NATIONWIDE.

Collected date/time: 09/27/18 13:05

L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	318000		2820	10000	1	10/04/2018 17:00	WG1175131

# Ss

















	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1250		51.9	1000	1	10/03/2018 13:01	WG1174175
Fluoride	144	В	9.90	100	1	10/03/2018 13:01	WG1174175
Sulfate	7190		77.4	5000	1	10/03/2018 13:01	WG1174175



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	127	J	12.6	200	1	10/04/2018 14:42	WG1173328
Calcium	89800		46.3	1000	1	10/04/2018 14:42	WG1173328

ONE LAB. NATIONWIDE.

Collected date/time: 09/27/18 14:30

L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	375000		2820	10000	1	10/04/2018 17:00	WG1175131

# <sup>2</sup>T<sub>0</sub>

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1330		51.9	1000	1	10/03/2018 13:15	WG1174175
Fluoride	165	В	9.90	100	1	10/03/2018 13:15	WG1174175
Sulfate	17000		77.4	5000	1	10/03/2018 13:15	WG1174175



# Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	113	<u>J</u>	12.6	200	1	10/04/2018 14:44	WG1173328
Calcium	80600		46.3	1000	1	10/04/2018 14:44	WG1173328



Cn









ONE LAB. NATIONWIDE.

Collected date/time: 09/27/18 09:55

L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	290000		2820	10000	1	10/04/2018 17:00	WG1175131

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2300		51.9	1000	1	10/03/2018 13:29	WG1174175
Fluoride	253	В	9.90	100	1	10/03/2018 13:29	WG1174175
Sulfate	41600		77.4	5000	1	10/03/2018 13:29	WG1174175



# Cn

Ss













	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	103	J	12.6	200	1	10/04/2018 14:47	WG1173328
Calcium	99000		46.3	1000	1	10/04/2018 14:47	WG1173328

ONE LAB. NATIONWIDE.

Collected date/time: 09/26/18 15:20

L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	512000		2820	10000	1	10/03/2018 20:45	WG1174318

# <sup>2</sup>Tc

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	4140		51.9	1000	1	10/03/2018 13:43	WG1174175
Fluoride	189	В	9.90	100	1	10/03/2018 13:43	WG1174175
Sulfate	98400		77.4	5000	1	10/03/2018 13:43	WG1174175



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	121	<u>J</u>	12.6	200	1	10/04/2018 14:55	WG1173328
Calcium	130000		46.3	1000	1	10/04/2018 14:55	WG1173328











ONE LAB. NATIONWIDE.

Collected date/time: 09/27/18 15:05

L1030036

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	U		2820	10000	1	10/04/2018 17:00	WG1175131

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	311	<u>J</u>	51.9	1000	1	10/03/2018 14:52	WG1174175
Fluoride	U		9.90	100	1	10/03/2018 14:52	WG1174175
Sulfate	U		77.4	5000	1	10/03/2018 14:52	WG1174175



Ss

# Cn

# <sup>°</sup>Qc









	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	53.3	J	12.6	200	1	10/04/2018 14:58	WG1173328
Calcium	500	<u>J</u>	46.3	1000	1	10/04/2018 14:58	WG1173328

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Gravimetric Analysis by Method 2540 C-2011

L1030036-04,05

### Method Blank (MB)

(MB) R3347436-1 10/02/1	8 16:41			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	3000	J	2820	10000







<sup>†</sup>Cn

### L1030012-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1030012-09 10/02/18 16:41 • (DUP) R3347436-4 10/02/18 16:41

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	653000	677000	1	3.61		5









(LCS) R3347436-2 10/02/18 16:41 • (LCSD) R3347436-3 10/02/18 16:41

(===,	Spike Amount	′	LCSD Result		LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Dissolved Solids	8800000	8660000	8670000	98.4	98.5	85.0-115			0.115	5







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Gravimetric Analysis by Method 2540 C-2011

U

L1030036-06

### Method Blank (MB)

Dissolved Solids

(MB) R3347430-1 10/02/18 18:17

MB Result MB Qualifier MB MDL

Analyte ug/l ug/l



<sup>3</sup> Ss



2820

MB RDL

ug/l

10000

(LCS) R3347430-2 10/02	(LCS) R3347430-2 10/02/18 18:17 • (LCSD) R3347430-3 10/02/18 18:17									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Dissolved Solids	8800000	8740000	8940000	99.3	102	85 O-115			2 26	5













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Gravimetric Analysis by Method 2540 C-2011

L1030036-01,03

### Method Blank (MB)

(MB) R3347808-1 10/03/	/18 19:56			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000









(OS) L1030012-03 10/03/18 19:56 • (DUP) R3347808-4 10/03/18 19:56

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	396000	401000	1	1.25		5









(LCS) R3347808-2 10/03/18 19:56 • (LCSD) R3347808-3 10/03/18 19:56

(,	Spike Amount	•	LCSD Result		LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Dissolved Solids	8800000	8560000	8530000	97.3	96.9	85.0-115			0.351	5







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Gravimetric Analysis by Method 2540 C-2011

L1030036-07,11

### Method Blank (MB)

(MB) R3347801-1 10/03/18	3 20:45			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000







(OS) L1030003-04 10/03/18 20:45 • (DUP) R3347801-4 10/03/18 20:45

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	338000	343000	1	1.47		5







(LCS) R3347801-2 10/03/18 20:45 • (LCSD) R3347801-3 10/03/18 20:45

(,	•	•	LCSD Result		LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Dissolved Solids	8800000	8580000	8680000	97.5	98.6	85.0-115			1.16	5







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Gravimetric Analysis by Method 2540 C-2011

L1030036-02

### Method Blank (MB)

(MB) R3348180-1 10/0	4/18 19:27			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000





Ss

<sup>†</sup>Cn



10	20114000000	00 40 /	1/40 40 07	(0110	DOO 10100 1	10/01/10 10 07
						10/04/18 19:27

	Original Result	DUP Result	Dilution	DUP RPD	<b>DUP Qualifier</b>	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	437000	453000	1	3.60		5





### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3348180-2 10/04/18 19:27 • (LCSD) R3348180-3 10/04/18 19:27

,	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Dissolved Solids	8800000	8620000	8620000	98.0	98.0	85.0-115			0.000	5





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Gravimetric Analysis by Method 2540 C-2011

L1030036-08,09,10,12

### Method Blank (MB)

(MB) R3348179-1 10/04/1	8 17:00			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	3000	J	2820	10000







<sup>†</sup>Cn



(OS) L1029872-01 10/04/18 17:00 • (DUP) R3348179-4 10/04/18 17:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	170000	174000	1	2.33		5









(LCS) R3348179-2 10/04/18 17:00 • (LCSD) R3348179-3 10/04/18 17:00

(,	Spike Amount	•			LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Dissolved Solids	8800000	8650000	8640000	98.3	98.2	85.0-115			0.116	5







ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1030036-01,02,03,04,05,06,07,08,09,10,11,12

### Method Blank (MB)

(MB) R3347403-1 10/03	3/18 08:50			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	67.7	<u>J</u>	9.90	100
Sulfato	П		77.4	5000







### L1030036-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1030036-07 10/03/18 12:05 • (DUP) R3347403-4 10/03/18 12:19

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	4130	3980	1	3.69		15
Fluoride	183	207	1	12.3		15
Sulfate	97500	97500	1	0.00379		15









### L1030036-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1030036-11 10/03/18 13:43 • (DUP) R3347403-7 10/03/18 13:56

(03) 21030030 11 10/03/	10 15.45 - (DOI) 1	(33474037)	10/03/10 13	.50		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	4140	4080	1	1.59		15
Fluoride	189	196	1	3.49		15
Sulfate	98400	98200	1	0.134		15

### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(I CS) R3347403-2 10/03/18 09:04 • (I CSD) R3347403-3 10/03/18 09:18

(LCS) R334/403-2 10/03/	18 09:04 • (LCS	D) R3347403-	3 10/03/18 09:	lõ							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Chloride	40000	39300	39400	98.2	98.5	80.0-120			0.307	15	
Fluoride	8000	8020	8040	100	101	80.0-120			0.298	15	
Sulfate	40000	39500	39900	98.7	99.6	80.0-120			0.911	15	

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Wet Chemistry by Method 9056A

L1030036-01,02,03,04,05,06,07,08,09,10,11,12

### L1030036-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1030036-07 10/03/18 12:05 • (MS) R3347403-5 10/03/18 12:33 • (MSD) R3347403-6 10/03/18 12:47

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	4130	44800	45900	81.4	83.5	1	80.0-120			2.30	15
Fluoride	5000	183	4020	4380	76.6	83.9	1	80.0-120	<u>J6</u>		8.66	15
Sulfate	50000	97500	132000	133000	69.4	71.0	1	80.0-120	<u>E J6</u>	<u>E J6</u>	0.607	15









(03) £1030030-11 10/03/16 13.43 • (MS) K334/403-6 10/03/16 14.10							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	ug/l	ug/l	ug/l	%		%	
Chloride	50000	4140	54500	101	1	80.0-120	
Fluoride	5000	189	4940	95.0	1	80.0-120	
Sulfate	50000	98400	141000	84.9	1	80.0-120	Е











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## QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1030036-08,09,10,11,12

### Method Blank (MB)

(MB) R3347817-1 10/04/18	3 14:24			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000







### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3347817-2 10/04/18 14:26 • (LCSD) R3347817-3 10/04/18 14:29										
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	986	1010	98.6	101	80.0-120			1.96	20
Calcium	10000	9810	9950	98.1	99.5	80.0-120			1.41	20



<sup>†</sup>Cn





## L1030040-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1030040-01 10/04/18 14:31 • (MS) R334/81/-5 10/04/18 14:37 • (MSD) R334/81/-6 10/04/18 14:39												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	ND	1110	1080	101	97.7	1	75.0-125			2.62	20
Calcium	10000	/12000	422000	422000	<i>/</i> 11.2	13.7	1	75 O 125	\/	\/	0.0602	20





### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1030036-01,02,03,04,05,06,07

### Method Blank (MB)

(MB) R3347811-1 10/0	4/18 16:20			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000





Ss

<sup>†</sup>Cn



### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R334/811-2 10/04/18	16:22 • (LCSD)	R334/811-3 10	0/04/18 16:25							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	1040	1030	104	103	80.0-120			0.820	20
Calcium	10000	10100	9950	101	99.5	80.0-120			1.34	20

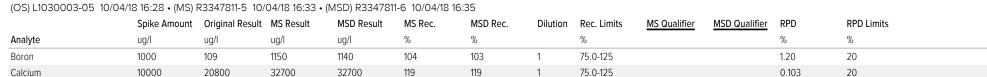






# GI

## L1030003-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)









# **GLOSSARY OF TERMS**

# Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

Appleviations an	d Delimitoris
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

O 1::0:	Donate and seat the seat
Qualifier	Description

	•
В	The same analyte is found in the associated blank.
Е	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries





















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# **ACCREDITATIONS & LOCATIONS**





### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

### Third Party Federal Accreditations

A2LA – ISO 17025 1461.0	1
A2LA – ISO 17025 <sup>5</sup> 1461.0	2
Canada 1461.0	1
EPA-Crypto TN000	003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















			Billing Information:						Analysis / (	Container	/ Preservative		Chain of Custody Page Lod									
Plum Point Services ( 2739 SCR 623 Osceola, AR 72370	Co., LLC		P.O. Bo	ts Payable x 567 a, AR 72370		Pres Chk		77					Pace	Analytical*								
Report to: Chris Lussier		M.		Christopher.Luse n, hif@ftn-assoc	sier@nrg.com, did@ .com	9ftn-																
Project Description: Plum Point Energy	Station			City/State Collected:			res															
Phone: <b>870-815-1248</b>	Client Proj 14590-1	766-001 NAI		Lab Project # NAESOAR-	DAR-PLUMPOINT		250mlHDPE-NoPres	PE-NoP						11 1030036								
ollected by (print):	Site/Facilit			P.O. #															OmlHD	250mlHDPE-HN03		Pace Analytica  I 12065 Lebanen Ad Mount Mullet, TN 37122 Phone: 615-756-5658 Phone: 615-756-5659 Fax: 615-756-5659 Fax: 615-756-5659 Fax: 615-756-5659  L# \(\mathcal{V}\) 300-350  G142  Acctnum: NAESOAR Template: T134757 Prelogin: P672602 TSR: 134 - Mark W. Beasle PB: Shipped Via: FedEX Gro Remarks   Sample # (I) D 2  TSR: 134 - Mark W. Beasle PB: Shipped Via: FedEX Gro Remarks   Sample # (I) D 2  TO 2  TO 3  TO 4  To 5  To 6  To 7  Temp: "C Settle Received: Ves / No Household Free Event June 1  Temp: "C Settle Received: If preservation required by Login: Date/Til U 15-2  Date: Time: Hold: Condition  To 120  Temp: "C Settles Received: If preservation required by Login: Date/Til U 15-2  Temp: "C Settles Received: If preservation required by Login: Date/Til U 15-2  Date: Time: Hold: Condition  To 120  To
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IW-108		GW		9/25/18		2	X	X														
W-113	100	GW		9/25/18		2	X	X					-									
W-115	16	GW		9/25/19		2	X	X														
W-116		GW	100	9/26/18	1515	2	X	X														
IW-117		GW	1	9/27/14		2	X	X	195/3					U Company of the Comp								
IW-118		GW		9/27/18	The state of the s	2	X	X					78.2	29								
W-119	V	GW	21 1	9/27/14	955	2	Х	X						10								
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Carlo Maria Constantino del 1922	A STANSON OF THE STAN		Billing Info	rmation:					Analysis /	Containe	er / Preservat	ive			Chain of Custody	Page of				
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Osceola, AR 72370															1					
Report to: Chris Lussier				hristopher.Lussie , hlf@ftn-assoc.co		ftn-									12065 Lebanon Rd Mount Juliet, TN 37 Phone: 615-758-583					
Project Description: Plum Point Energy S	Station	3-1		City/State Collected:			Pres								Phone: 800-767-585 Fax: 615-758-5859	■ <b>302</b> 36				
hone: <b>870-815-1248</b> ax:	Client Project # 14590-1766-001		Lab Project # NAESOAR-PI	ab Project # IAESOAR-PLUMPOINT		UMPOINT		250mlHDPE-NoPres	HNO3							L# 103	0036			
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MW-116 DUP		GW		9/26/18	1520	2	Х	X	100							-11				
B-2		GW		9/27/18	1505	2	X	Х	1 1							-12				
	The Real	GW	AT K	1250	100	2	X	X	150		2									
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# ANALYTICAL REPORT

October 31, 2018

# Plum Point Services Co., LLC

Sample Delivery Group: L1039096

Samples Received: 09/28/2018

Project Number: 14590-1766-001

Description: Plum Point Energy Station

Report To: Chris Lussier

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

DATE/TIME:

10/31/18 13:06

PAGE:

2 of 12



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MW-115 L1039096-01	5
MW-116 L1039096-02	6
MW-117 L1039096-03	7
Qc: Quality Control Summary	8
Metals (ICP) by Method 6010B	8
GI: Glossary of Terms	9
Al: Accreditations & Locations	10
Sc: Sample Chain of Custody	11























			Collected by	Collected date/time	Received date/time
MW-115 L1039096-01 GW			Michael Clayton	09/25/18 11:15	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1188395	1	10/30/18 13:37	10/30/18 19:48	ST
			Collected by	Collected date/time	Received date/time
MW-116 L1039096-02 GW			Michael Clayton	09/26/18 15:15	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1188395	1	10/30/18 13:37	10/30/18 19:51	ST
			Collected by	Collected date/time	Received date/time
MW-117 L1039096-03 GW			Michael Clayton	09/27/18 13:05	09/28/18 09:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1188395	1	10/30/18 13:37	10/30/18 19:54	ST



















Plum Point Services Co., LLC



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

<sup>1</sup>Cp

















Mark W. Beasley

MW-115

### SAMPLE RESULTS - 01 L1039096

ONE LAB. NATIONWIDE.

# Collected date/time: 09/25/18 11:15 Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l	ug/l		date / time		
Calcium	121000		46.3	1000	1	10/30/2018 19:48	WG1188395	



















MW-116

# SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 09/26/18 15:15

### Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Calcium	130000		46.3	1000	1	10/30/2018 19:51	WG1188395



















MW-117

# SAMPLE RESULTS - 03

ONE LAB. NATIONWIDE.

Collected date/time: 09/27/18 13:05

# Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Calcium	89700		46.3	1000	1	10/30/2018 19:54	WG1188395



















### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1039096-01,02,03

### Method Blank (MB)

(MB) R3355367-1 10/30/	18 18:41			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Calcium	Ш		46.3	1000









(LCS) R3355367-2	10/30/18 18:43 • (LCSE	) R3355367-3	10/30/18 18:46	
	Spike Amount	LCS Result	LCSD Result	LCS Rec

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Calcium	10000	9760	9640	97.6	96.4	80.0-120			1.25	20





GI



(OS) L1039094-02 10/30/18 18:48 • (MS) R3355367-5 10/30/18 18:53 • (MSD) R3355367-6 10/30/18 18:56

,	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Calcium	10000	53600	67400	67400	137	137	1	75.0-125	V	V	0.00416	20







# **GLOSSARY OF TERMS**

### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

### Qualifier Description

V

The sample concentration is too high to evaluate accurate spike recoveries.









Cn













# **ACCREDITATIONS & LOCATIONS**





### State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky <sup>1 6</sup>	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 <sup>5</sup>	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















Plum Point Services Co., LLC Account		nining tur	ming intormation:				Contract of	Analysis	Analysis / Container / Preservative					Chain of Custody Page / of					
		ts Payable ix 567 a, AR 72370	567			727							10	e Analytical*					
Report to: Email To: C				hristopher.Lussier@nrg.com, dld@f , hif@ftn-assoc.com			ı				-			12065 Lehamon Mount Juliet, Th					
Project Description: Plum Point Energy Station		City/State Collected:			165								Phone: 615-758 Phone: 800-767 Fax: 615-758-58	955 535	7				
Phone: <b>870-815-1248</b> Fax:	Client Project # 14590-1766-001		Lab Project # NAESOAR-PLUMPOINT			PE-NoPres	HNO3							G14	12 12	AN 0/30/2			
Collected by (print):	Site/F	acility ID #			P.O. 8			SomiHDPE	DPE				1		Acctnum N	039096	4		
Collected by (signature)	PR	Rush? (Lab MUST Be Notified) Same Day Five Day		Quote #	Quote #			250mlHDPE-			11.5			1	Template T	134757	ı		
Immediately Packed on ice N Y	Next Day 5 Day (Rad Only) Two Day 10 Day (Rad Only) Three Day		Date	Date Results Needed		SOA, TDS	5000 1000200							The second second	SR: 134 - Mark W. Beasley				
Sample ID	Comp	o/Grab	Matrix *	Depth	Date	Time	Cotrs	-1000000	Total					-		· Interestination	FedEX Ground		
MW-101	GN	o.h	GW	135	9/26/18	1405	2	X	X							Remarks	Sample F Data and		
MW-102			GW		9/27/18	27 T. F. S. L.	2	X	X	1000				100		10.300	701		
MW-103			GW	3/4	9/26/12		2	X	X	1				-	-	1	02		
MW-108	138	-	GW	8	9/25/		2	X	X							S WILES	63	9-	
MW-113		100	GW		9/25/1		2	X	X			14000		100		-	TOA.		
MW-115		1.3	GW		9/25/	The second second	2	X	X			5.46				10 M 10 10 10 10 10 10 10 10 10 10 10 10 10	-25	-0	
MW-116			GW	5 107	9/21/1	1 10-10	2	X	X								706	= (4)	
MW-117			GW	2941	9/27/1	/ /305	2	X	X	705		Jak .	87	-		100	97	-07	
MW-118	1		GW		9/27/1	THE RESERVE TO SERVE	2	X	X	40.57		04.4	-				78	-0	
MW-119	100	V	GW	7	9/27/18		2	X	X						200		-04		
* Matrix: Remarks: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater						RAD SCRE				pH Flow		TempOther			Eample Receipt Check/Rd COC Seal Fresent/Intact: NP V N COC Signed/Accurate No V N Notice arrive intact: NP N N				
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## **Andy Vann**

From: Mark Beasley

Sent: Tuesday, October 30, 2018 8:28 AM

To: Login; Sample Storage
Subject: L1030036 \*FTNLRAR\* relog

Relog L1030036-06, -07, & -08 for CAICP. Log as EX due 11/1.

Thanks Mark

From: Heather Ferguson [mailto:hlf@ftn-assoc.com]

Sent: Monday, October 29, 2018 5:03 PM

To: Mark Beasley Cc: Dana Derrington

Subject: FW: Pace National Report for 14590-1766-001 Plum Point Energy Station L1030036

Importance: High

Good afternoon Mark,

If it's still possible, could you ask the lab to verify/re-run the following samples from the attached SDG to confirm their values?

 Calcium (mg/l)
 MW-115

 Calcium (mg/l)
 MW-116

 Calcium (mg/l)
 MW-117

Thanks so much!

Heather



Heather Ferguson FTN Associates, Ltd. 3 Innwood Circle, Suite 220 ← Little Rock, AR 72211

3 Innwood Circle, Suite 220 ► Little Rock, AR 72211 (501) 225-7779 ► fax (501) 225-6738 hlf@ftn-assoc.com





3 Innwood Circle, Suite 220 • Little Rock, AR 72211 • (501) 225-7779 • Fax (501) 225-6738

### TECHNICAL MEMORANDUM

**DATE:** October 24, 2019

TO: Matt Gray

Plum Point Services Company, LLC

FROM: Dana Derrington, PE, PG

FTN Associates, Ltd.

**SUBJECT:** Alternate Source Demonstration for Statistically Significant Increases

First Half of 2019 Monitoring Period, Plum Point Energy Station Landfill

FTN No. R14590-1992-001

FTN Associates, Ltd. (FTN), has prepared this technical memorandum for the Plum Point Services Company, LLC (PPSC), coal combustion residual (CCR) landfill, which is regulated by the Environmental Protection Agency (EPA) Coal Combustion Residuals Rule, promulgated in Title 40 of the Code of Federal Regulations (40 CFR), Part 257. The landfill is also regulated by the Arkansas Pollution Control and Ecology Commission (APCEC) Regulation No. 22 and permitted by the Arkansas Department of Energy and Environment, Division of Environmental Quality (DEQ), under Permit No. 0303-S3N-R1.

FTN was contracted to sample groundwater and to statistically evaluate the data from the first half of 2019 monitoring event. Based on statistical evaluation of the data, three confirmed statistically significant increases (SSIs) over background concentrations were identified. Pursuant to §257.94(e)(2), the landfill may demonstrate that a source other than the CCR unit caused an SSI over background levels for a constituent or that an SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This memorandum, hereafter referred to as an alternate source demonstration (ASD), presents evidence that the confirmed SSIs are the result of off-site influence and/or natural fluctuations in groundwater quality.

### 1.0 BACKGROUND

FTN performed groundwater sampling for the first half 2019 semiannual groundwater monitoring period during May 2019. Sample collection, preservation, shipment, analytical procedures, chain-of-custody control, and data quality control for this sampling event followed protocol outlined in the landfill's groundwater sampling and analysis plan (GWSAP) (FTN 2017b). Statistical evaluation of the data set followed the most recent EPA guidance (EPA 2009) and the landfill's statistical analysis plan (SAP) (FTN 2017c). An intrawell prediction limit evaluation identified potential SSIs for boron at background well MW-108; calcium at background well MW-115 and at compliance wells MW-117 and MW-119; pH at MW-118; and total dissolved solids (TDS) at compliance well MW-117. A site

map showing the locations of these wells relative to the CCR unit (cells 1 and 3) is included as Figure 1 (all figures are included in Attachment 1). Intrawell prediction limit plots are included in Attachment 2.

At the request of FTN, the contracted third-party laboratory, Pace Analytical of Mount Juliet, Tennessee, re-analyzed the calcium samples to rule out any laboratory-associated error. The TDS sample at MW-117 was not re-analyzed because the sample was outside its 10-day holding time. As shown in Table 1 (Attachment 3), the re-analyzed values were the same or comparable to the values initially reported.

In accordance with the landfill's SAP and EPA guidance (EPA 2009), verification sampling was performed during August 2019 to confirm or disconfirm the potential SSIs. As shown in Table 1, the verification sampling results for boron at background well MW-108 and calcium at MW-119 were below their respective intrawell prediction limits, and the verification sampling result for pH at MW-118 was within the range of the upper and lower prediction limits. In accordance with landfill's SAP and EPA guidance (EPA 2009), the potential SSIs for these well-parameter pairs are disconfirmed. The remaining potential SSIs for calcium at background well MW-115 and for calcium and TDS at compliance well MW-117 were confirmed by the August 2019 verification sampling event, as shown in Table 1. Laboratory reports are included in Attachment 4.

### 2.0 DISCUSSION

A review of the monitoring system with respect to onsite background wells, background groundwater quality, published literature, and landfill leachate was performed to determine if the confirmed SSIs for calcium at background well MW-115 and for calcium and TDS at compliance well MW-117 were indicative of a release from the CCR unit. Findings from this review are discussed below.

### 2.1 Monitoring System Background Wells

As required by \$257.91(c)(1), the groundwater monitoring network is required to contain a minimum of one monitoring well that is hydraulically upgradient of the CCR management area for the purpose of monitoring background water quality. However, there is not a hydraulically upgradient location at this facility because the direction of groundwater flow is seasonably variable. As allowed by \$257.91(a)(1), a facility may utilize wells for background water quality that are not hydraulically upgradient of the CCR unit. For this reason, the facility incorporated monitoring wells MW-108, MW-113, and MW-115 (Figure 1) to monitor background water quality because those wells are positioned outside the potential zone of impact from the CCR unit. The rationale for this is based on the age of the landfill, the estimated maximum rate of groundwater flow, and the distance of MW-108, MW-113, and MW-115 from the CCR unit. Specifically:

- MW-108, MW-113, and MW-115 are located more than 2,300 ft from the eastern edge of cell 3,
- Groundwater at the landfill has historically exhibited a maximum flow rate of 40 ft/year, and
- The landfill became active during March 2010.



Using the information available above, a potential leachate plume would not be expected to have migrated more than 380 ft from the CCR unit as of the time of this evaluation. This estimate is conservative for the following reasons:

- 1. It assumes impact to groundwater occurred at the same time cell 1 was activated (March 2010) and does not account for travel time through the confining unit soils;
- 2. It assumes that groundwater flows in one direction; however, it is well-documented that groundwater flow at the landfill is multidirectional and reverses flow on a seasonal basis (FTN 2017a); and
- 3. It does not account for any physical or chemical properties of the constituents of concern that would cause them to travel at rates slower than groundwater (e.g., adsorption).

The position of MW-115 as a background well provides a key line of evidence that the SSI for calcium at this well (Table 1) is the result of off-site influence and/or natural fluctuation in groundwater quality.

### 2.2 Comparison to Onsite Background Groundwater Quality

Calcium and TDS data collected at compliance well MW-117 and background wells MW-108, MW-113, and MW-115 are plotted on the time-series plots and box-and-whiskers diagrams included in Attachment 2. As is evident from these figures, measured calcium and TDS at MW-117 are generally lower than values measured at the onsite background wells. This comparison provides supporting evidence that the currently measured values for these parameters reflect natural fluctuations in groundwater quality.

# 2.3 Comparison to Published Groundwater Quality for the Aquifer

Each monitoring well is screened in the Mississippi River Valley alluvial aquifer, the uppermost aquifer in the vicinity of the landfill (FTN 2017b). The US Geological Survey published a study of groundwater quality of the aquifer, specifically with respect to that of Holocene alluvium and Pleistocene valley train deposits, which are two of the major hydrogeologic units within the aquifer (Gonthier 2003). The landfill is located in Holocene alluvium, as shown on Figure 2. According to this study, the reported median and maximum calcium values in wells screened in Holocene alluvium were 77 mg/L and 130 mg/L, respectively. The reported median and maximum TDS values were 355 mg/L and 728 mg/L, respectively. As shown in Table 1, these levels are comparable to those measured at MW-117 and at background wells MW-108, MW-113, and MW-115. This comparison provides supporting evidence that the currently measured values of calcium and TDS at MW-117 reflect natural fluctuations in groundwater quality.

### 2.4 Comparison to Landfill Leachate

Landfill leachate samples are collected on a semiannual basis for the APCEC Regulation No. 22 program, as required by Permit No. 0303-S3N-R1. These data are publicly available on the DEQ



website<sup>1</sup>. Available data collected between 2011 and 2019 show calcium concentrations in leachate range from 7.6 to 23 mg/L. The calcium data from leachate are co-plotted with measured calcium at MW-117 on the time-series plot in Attachment 2, which shows that calcium levels in leachate are significantly lower than levels measured in groundwater at MW-117. This comparison provides a key line of evidence that the SSI for calcium at MW-117 is not due to a release from the CCR unit.

Another key line of evidence that the SSIs at MW-117 are not due to a release from the CCR unit is demonstrated by the Stiff and Piper diagrams included in Attachment 2. These graphs show the ionic composition of leachate versus groundwater quality at compliance well MW-117 and background wells MW-108, MW-113, and MW-115. As shown by the Stiff diagrams, the ionic composition of groundwater at MW-117 is similar to that of background groundwater quality, as is evident from the similarly shaped diagrams. In contrast, the Stiff diagrams for all monitoring wells are dissimilar to the leachate diagram, showing that leachate has not impacted groundwater quality. This is further demonstrated by the Piper diagram, which shows that data from MW-117 are plotted very closely to the data from background wells MW-108, MW-113, and MW-115. If leachate were impacting groundwater at MW-117, the plotted data for MW-117 would be positioned closer to the plotted data for leachate.

### 3.0 CONCLUSIONS

In consideration of the information presented in this memorandum, FTN concludes that the SSIs for calcium and TDS at MW-117 and for calcium at background well MW-115 are the result of off-site influence and/or natural fluctuations in groundwater quality.

This memorandum serves as the ASD prepared in accordance with §257.94(e)(2) and supports the position that the confirmed SSIs identified for calcium and TDS at MW-117 and for calcium at background well MW-115 are not due to a release from the CCR unit. Therefore, no further action is required and the landfill will remain in detection monitoring.

If you have questions or comments regarding this memorandum, please do not hesitate to call Dana Derrington, PE, PG, or Heather Ferguson at (501) 225-7779.

### DLD/hlf

Attachments

 $R: \ WP\_FILES \ 14590-1992-001 \ CORRESPONDENCE \ 2019-10-24\ FTN\ TO\ M.\ GRAY-1H2019\ ASD\ (EPA\ CCR) \ 2019-10-24\ TM-M\ GRAY-1H20$ 

<sup>&</sup>lt;sup>1</sup> https://www.adeq.state.ar.us/sw/permits/facility\_data.aspx



### PROFESSIONAL ENGINEER'S CERTIFICATION

With this certification, I certify that I, as a Professional Engineer in the State of Arkansas, am a qualified professional engineer as defined in §257.53 of Title 40 of the Code of Federal Regulations (CFR), Part 257, that this technical memorandum has been prepared under my direction in accordance with generally accepted good engineering practices, that the findings are accurate to the best of my knowledge, and that the alternate source demonstration described herein meets the requirements of §257.94(e)(2) of 40 CFR Part 257.



Dana L. Derrington, Arkansas PE #16372

10/24/2019

Date



### **REFERENCES**

- EPA [US Environmental Protection Agency]. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance [EPA 530-R-09-007]. Washington, DC: Office of Resource Conservation and Recovery, Program Implementation and Information Division, US Environmental Protection Agency. March 2009.
- FTN [FTN Associates, Ltd.]. 2017a. Groundwater Monitoring Network Evaluation, Plum Point Energy Station Landfill. Little Rock, AR: FTN Associates, Ltd.
- ———. 2017b. *Groundwater Sampling and Analysis Plan, Plum Point Energy Station Landfill*. Little Rock, AR: FTN Associates, Ltd.
- ———. 2017c. Statistical Analysis Plan, Plum Point Energy Station Landfill. Little Rock, AR: FTN Associates, Ltd.
- Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 03-4202]. Jackson, MS: National Water-Quality Assessment Program, US Geological Survey.
- Kresse, T.M., P.D. Hays, K.R. Merriman, J.A. Gillip, D.T. Fugitt, J.L. Spellman,
  A.M. Nottmeier, D.A. Westerman, J.M. Blackstock, and J.L. Battreal. 2014. Aquifers of Arkansas—Protection, Management, and Hydrologic and Geochemical Characteristics of Groundwater Resources in Arkansas [USGS Scientific Investigations Report 2014-5149]. Prepared in cooperation with the Arkansas Natural Resources Commission. Reston, VA: US Geological Survey. 334 pp. doi: http://dx.doi.org/10.3133/sir20145149.





Figures

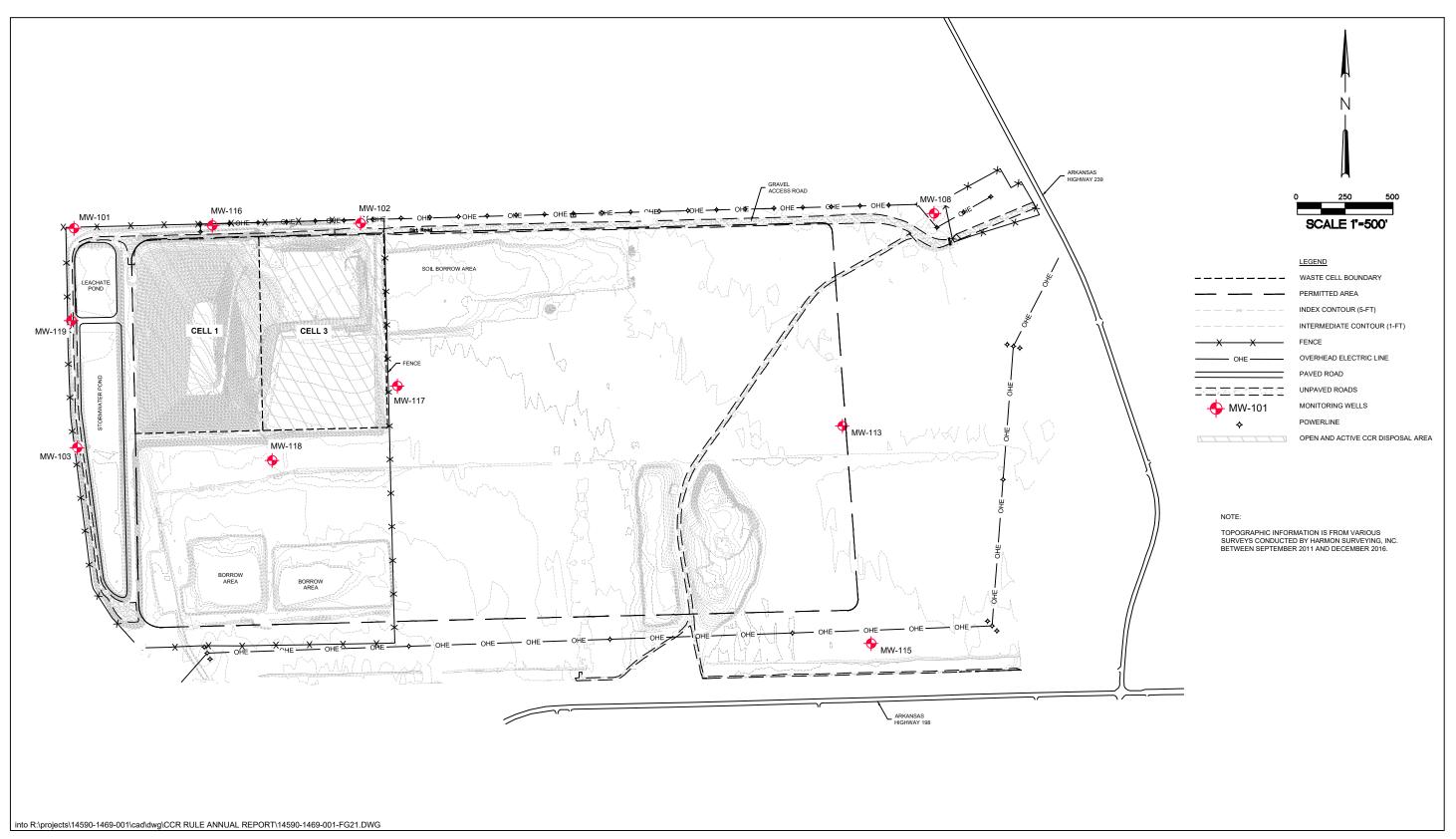


Figure 1. Monitoring well locations, Plum Point Energy Station.

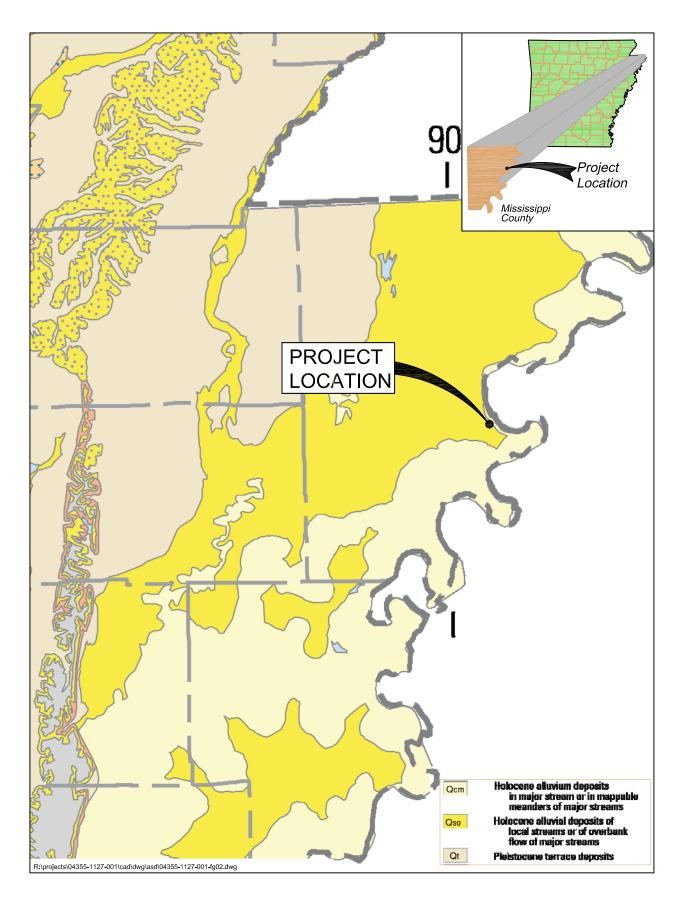


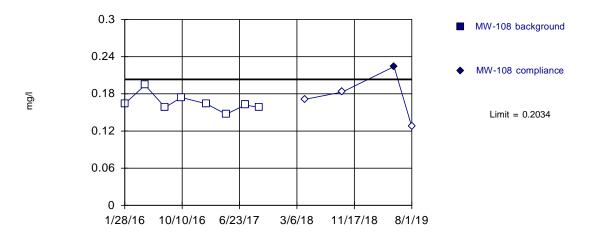
Figure 2. Surface geology of Mississippi County, Arkansas (adapted from Kresse et al. 2014).



Within Limit

### **Prediction Limit**

### Intrawell Parametric



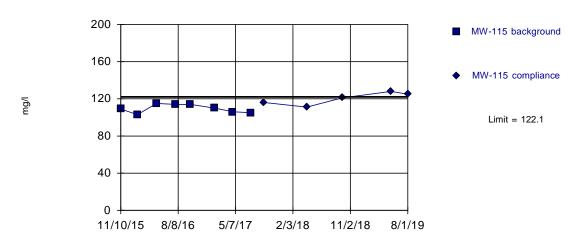
Background Data Summary: Mean=0.1651, Std. Dev.=0.01391, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8869, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Boron Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.20 Sanitas software licensed to FTN Associates. UG

# Exceeds Limit Prediction Limit Intrawell Parametric

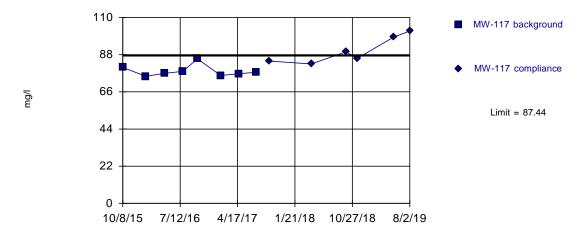


Background Data Summary: Mean=109.5, Std. Dev.=4.567, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9154, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

**Exceeds Limit** 

### **Prediction Limit**

### Intrawell Parametric



Background Data Summary: Mean=78.28, Std. Dev.=3.33, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8288, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

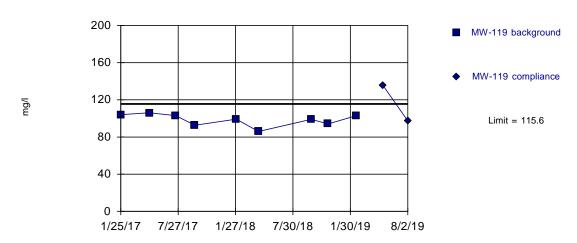
Constituent: Calcium Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.20 Sanitas software licensed to FTN Associates. UG

Within Limit Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=98.54, Std. Dev.=6.524, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9156, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

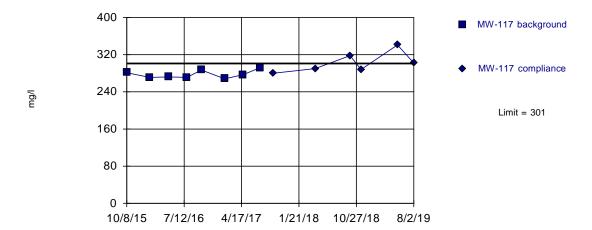
Constituent: Calcium Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

**Exceeds Limit** 

### **Prediction Limit**

### Intrawell Parametric



Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9018, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Dissolved Solids Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

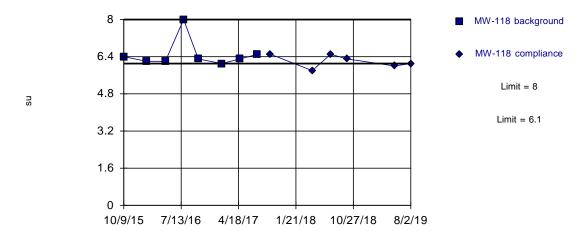
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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Within Limits

# Prediction Limit

Intrawell Non-parametric

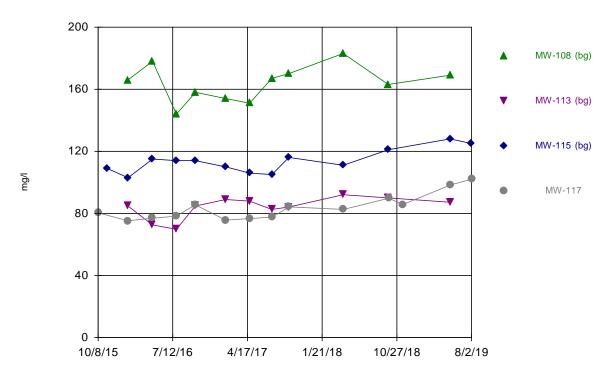


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 8 background values. Well-constituent pair annual alpha = 0.08484. Individual comparison alpha = 0.04288 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: pH Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

### Time Series

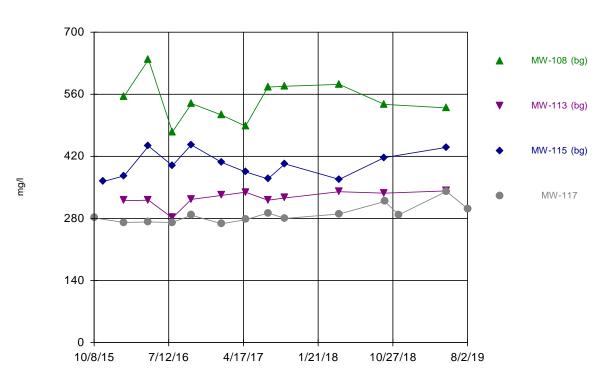


Constituent: Calcium Analysis Run 10/9/2019 12:40 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

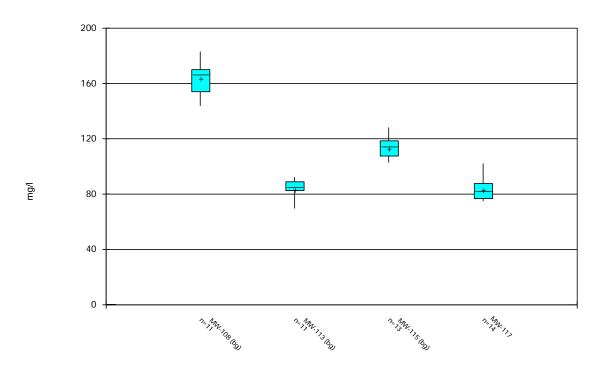
### Time Series



Constituent: Dissolved Solids Analysis Run 10/9/2019 12:40 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box & Whiskers Plot

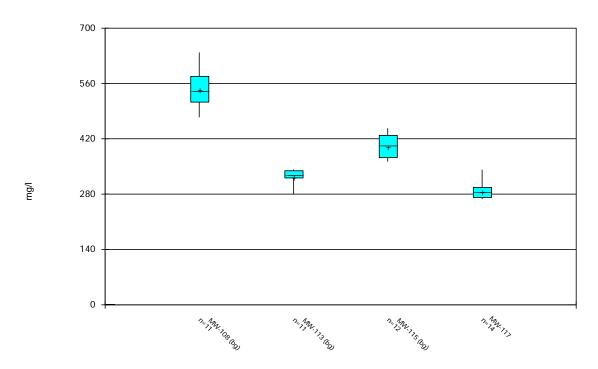


Constituent: Calcium Analysis Run 10/9/2019 12:41 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

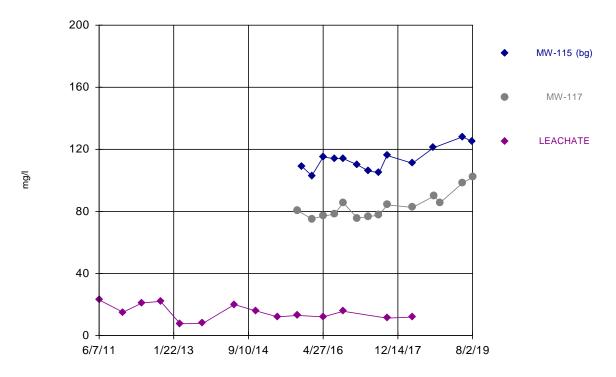
Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot



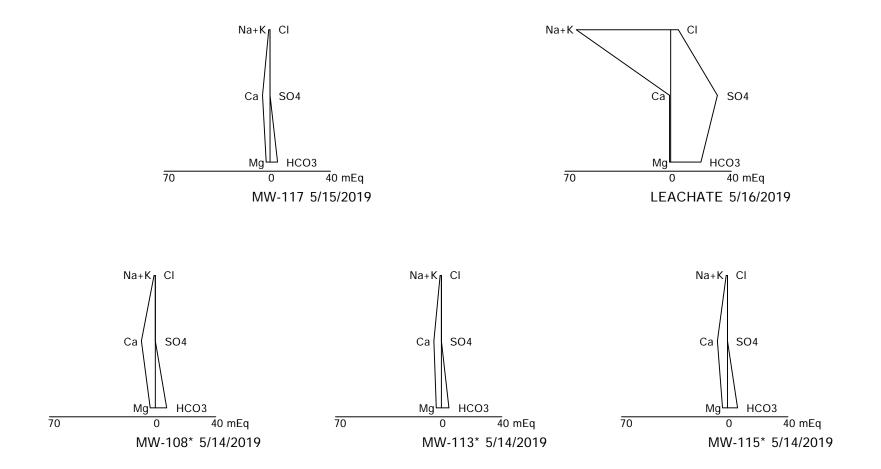
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# Time Series

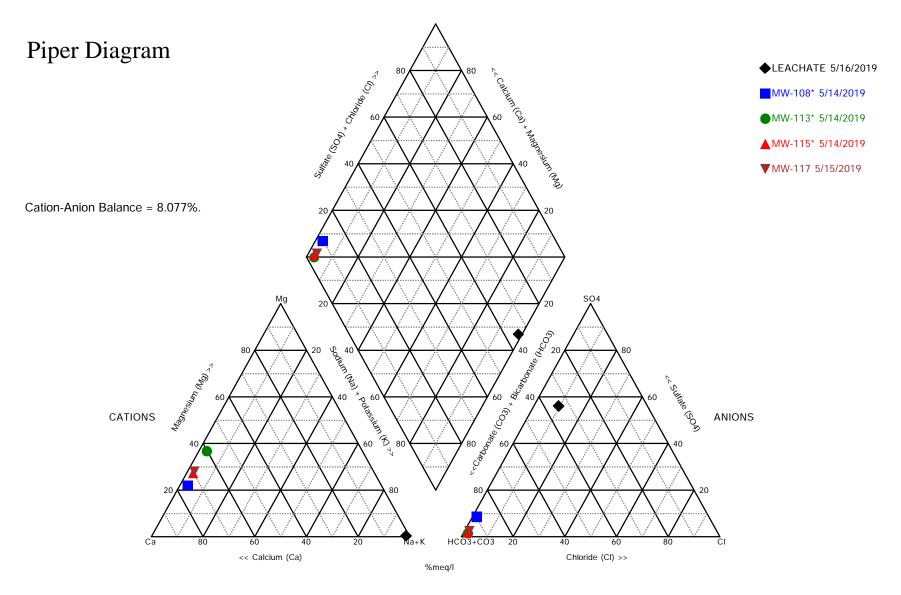


Constituent: Calcium Analysis Run 10/9/2019 12:45 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Stiff Diagram Analysis Run 10/21/2019 1:44 PM



Analysis Run 10/21/2019 1:42 PM



Table 1. Summary of statistically significant results and maximum background and published levels.

			May 2019 Observation				Maximum	Maximum	
Well ID	Parameter	Prediction Limit	Initial	Lab Retest	August 2019 Verification	SSI Confirmed?	Background Level <sup>(a)</sup>	Published Level <sup>(b)</sup>	
MW-108 <sup>(c)</sup>	Boron	0.2034 mg/L	0.222 mg/L	0.224 mg/L	0.127 mg/L	No	N/A <sup>(d)</sup>	N/A <sup>(d)</sup>	
MW-115 <sup>(c)</sup>	Calcium	122.1 mg/L	128 mg/L	128 mg/L	125 mg/L	Yes	183 mg/L		
MW-117	Calcium	87.44 mg/L	95.3 mg/L	98.3 mg/L	102 mg/L	Yes	(MW-108,	130 mg/L	
MW-119	Calcium	115.6 mg/L	131 mg/L	135 mg/L	97.4 mg/L	No	April 2018)		
MW-118	рН	6.1 su <sup>(e)</sup>	6.0 su	N/A <sup>(f)</sup>	6.1 su	No	$N/A^{(d)}$	N/A <sup>(d)</sup>	
MW-117	TDS	301 mg/L	341 mg/L	N/A <sup>(f)</sup>	302 mg/L	Yes	638 mg/L (MW-108, April 2016)	728 mg/L	

### Notes:

- a. Based on historical values at MW-108, MW-113, and MW-115.
- b. From Gonthier 2003.
- c. Background well.
- d. Not applicable; SSI was not confirmed.
- e. Lower prediction limit.
- f. Not applicable; parameter was not eligible for retesting by the laboratory.

### **REFERENCES**

Gonthier, G.J. 2003. Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998 [Water-Resources Investigations Report 03-4202]. Jackson, MS: US Geological Survey, National Water-Quality Assessment Program.

# ATTACHMENT 4 Laboratory Reports



# ANALYTICAL REPORT

May 29, 2019



















# Plum Point Services Co., LLC

Sample Delivery Group: L1100588 Samples Received: 05/18/2019

Project Number: 14590-1992-001

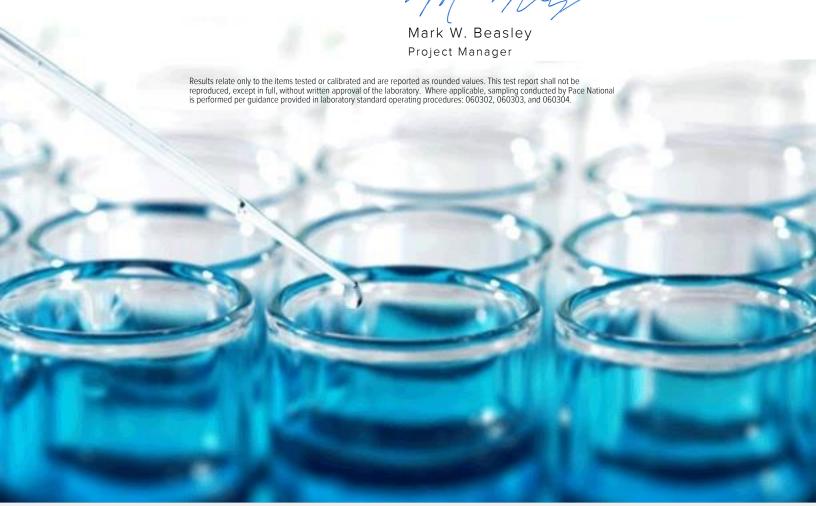
Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:





Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	5
Sr: Sample Results	6
MW-101 L1100588-01	6
MW-102 L1100588-02	7
MW-103 L1100588-03	8
MW-108 L1100588-04	9
MW-113 L1100588-05	10
MW-115 L1100588-06	11
MW-116 L1100588-07	12
MW-117 L1100588-08	13
MW-118 L1100588-09	14
MW-119 L1100588-10	15
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Qc: Quality Control Summary	18
Gravimetric Analysis by Method 2540 C-2011	18
Wet Chemistry by Method 9056A	21
Metals (ICP) by Method 6010B	24
GI: Glossary of Terms	27
Al: Accreditations & Locations	28



















Sc: Sample Chain of Custody

29



NIN 404   4400500 04 CW			Collected by Michael Clayton	Collected date/time 05/16/19 10:30	Received da 05/18/19 08:	
MW-101 L1100588-01 GW				03/10/13 10.30	03/10/13 06.	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
0	14/04004070		date/time	date/time	14145	NA: 1 1: . T
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TI
Wet Chemistry by Method 9056A	WG1286592 WG1284387	1 1	05/25/19 20:19 05/24/19 11:33	05/25/19 20:19	ST CCE	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1284387	ı	05/24/19 11.33	05/25/19 11:23	CCE	Mt. Juliet, T
			Collected by	Collected date/time	Received da	te/time
MW-102 L1100588-02 GW			Michael Clayton	05/16/19 12:35	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
0	14/04004070		date/time	date/time	14145	NA: 1 1: . T
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, T
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:30	05/25/19 20:30	ST	Mt. Juliet, TI
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:25	CCE	Mt. Juliet, Tl
			Collected by	Collected date/time	Received da	te/time
MW-103 L1100588-03 GW			Michael Clayton	05/15/19 14:55	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, T
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:41	05/25/19 20:41	ST	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:28	CCE	Mt. Juliet, Ti
			Collected by	Collected date/time	Received da	ite/time
MW-108 L1100588-04 GW			Michael Clayton	05/14/19 14:40	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, T
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:52	05/25/19 20:52	ST	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:31	CCE	Mt. Juliet, T
			Collected by	Collected date/time	Received da	ite/time
MW-113 L1100588-05 GW			Michael Clayton	05/14/19 13:45	05/18/19 08:	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, T
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:03	05/25/19 21:03	ST	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:33	CCE	Mt. Juliet, T
			Collected by	Collected date/time	Received da	ite/time
MW-115 L1100588-06 GW			Michael Clayton	05/14/19 12:35	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
0	W04000===		date/time	date/time		NA
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, T
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:14	05/25/19 21:14	ST	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1284390	1	05/23/19 11:06	05/24/19 18:40	TRB	Mt. Juliet, TN

SAMPLE SUMMARY



















### ONE LAB. NATIONWIDE.

MW-116 L1100588-07 GW			Collected by Michael Clayton	Collected date/time 05/16/19 11:30	Received data 05/18/19 08:0	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:25	05/25/19 21:25	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:14	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received dat	e/time
MW-117 L1100588-08 GW			Michael Clayton	05/15/19 16:25	05/18/19 08:0	0
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:35	05/25/19 21:35	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:16	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received dat	e/time
MW-118 L1100588-09 GW			Michael Clayton	05/15/19 13:50	05/18/19 08:0	0
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 16:29	05/25/19 16:29	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:19	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received date	e/time
MW-119 L1100588-10 GW			Michael Clayton	05/16/19 09:15	05/18/19 08:0	0
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 16:44	05/25/19 16:44	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:21	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received dat	e/time

SAMPLE SUMMARY





















Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

Method

MW-117 DUP L1100588-11 GW

Gravimetric Analysis by Method 2540 C-2011

EB-2 L1100588-12 GW			Michael Clayton	05/16/19 13:05	05/18/19 08:0	0
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 17:14	05/25/19 17:14	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:27	TRB	Mt. Juliet, TN

Batch

WG1284166

WG1286607

WG1284393

Michael Clayton

Preparation

05/21/19 13:45

05/25/19 16:59

05/24/19 10:25

Collected by

date/time

Dilution

1

1

05/15/19 16:30

05/21/19 14:27

05/25/19 16:59

05/25/19 11:24

Analysis

date/time

05/18/19 08:00

Location

Mt. Juliet, TN

Mt. Juliet, TN

Mt. Juliet, TN

Analyst

MMF

ST

TRB

Collected date/time Received date/time



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ср

















Mark W. Beasley Project Manager

ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 10:30

L1100588

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	392000		2820	10000	1	05/23/2019 23:16	WG1284879

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1010		51.9	1000	1	05/25/2019 20:19	WG1286592
Fluoride	263	В	9.90	100	1	05/25/2019 20:19	WG1286592
Sulfate	9170		77.4	5000	1	05/25/2019 20:19	WG1286592



³Ss

# Cn



	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	118	J	12.6	200	1	05/25/2019 11:23	WG1284387
Calcium	103000		46.3	1000	1	05/25/2019 11:23	WG1284387









ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 12:35

L1100588

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	466000		2820	10000	1	05/23/2019 23:16	WG1284879

# <sup>2</sup>T<sub>0</sub>

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2870		51.9	1000	1	05/25/2019 20:30	WG1286592
Fluoride	196	В	9.90	100	1	05/25/2019 20:30	WG1286592
Sulfate	75400		77.4	5000	1	05/25/2019 20:30	WG1286592



# Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	150	J	12.6	200	1	05/25/2019 11:25	WG1284387
Calcium	121000		46.3	1000	1	05/25/2019 11:25	WG1284387



Cn









ONE LAB. NATIONWIDE.

Collected date/time: 05/15/19 14:55

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	396000		2820	10000	1	05/21/2019 14:27	WG1284166

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1100		51.9	1000	1	05/25/2019 20:41	WG1286592
Fluoride	213	В	9.90	100	1	05/25/2019 20:41	WG1286592
Sulfate	23400		77.4	5000	1	05/25/2019 20:41	WG1286592



# Cn

# <sup>°</sup>Qc









	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	154	J	12.6	200	1	05/25/2019 11:28	WG1284387
Calcium	106000		46.3	1000	1	05/25/2019 11:28	WG1284387

ONE LAB. NATIONWIDE.

Collected date/time: 05/14/19 14:40

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	529000		2820	10000	1	05/21/2019 12:08	WG1283769

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2440		51.9	1000	1	05/25/2019 20:52	WG1286592
Fluoride	184	В	9.90	100	1	05/25/2019 20:52	WG1286592
Sulfate	34500		77.4	5000	1	05/25/2019 20:52	WG1286592



Ss



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	222		12.6	200	1	05/25/2019 11:31	WG1284387
Calcium	169000		46.3	1000	1	05/25/2019 11:31	WG1284387









ONE LAB. NATIONWIDE.

Collected date/time: 05/14/19 13:45

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	342000		2820	10000	1	05/21/2019 12:08	WG1283769























	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1580		51.9	1000	1	05/25/2019 21:03	WG1286592
Fluoride	120	В	9.90	100	1	05/25/2019 21:03	WG1286592
Sulfate	3150	<u>J</u>	77.4	5000	1	05/25/2019 21:03	WG1286592





	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	168	J	12.6	200	1	05/25/2019 11:33	WG1284387
Calcium	87200		46.3	1000	1	05/25/2019 11:33	WG1284387

ONE LAB. NATIONWIDE.

Collected date/time: 05/14/19 12:35

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	440000		2820	10000	1	05/21/2019 12:08	WG1283769

³Ss

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	598	J	51.9	1000	1	05/25/2019 21:14	WG1286592
Fluoride	184	В	9.90	100	1	05/25/2019 21:14	WG1286592
Sulfate	5630		77.4	5000	1	05/25/2019 21:14	WG1286592



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	75.1	J	12.6	200	1	05/24/2019 18:40	WG1284390
Calcium	128000	<u>01 V</u>	46.3	1000	1	05/24/2019 18:40	WG1284390









ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 11:30

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	349000		2820	10000	1	05/23/2019 23:16	WG1284879

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1660		51.9	1000	1	05/25/2019 21:25	WG1286592
Fluoride	189	В	9.90	100	1	05/25/2019 21:25	WG1286592
Sulfate	27000		77.4	5000	1	05/25/2019 21:25	WG1286592



Ss

# Cn









	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	144	J	12.6	200	1	05/25/2019 11:14	WG1284393
Calcium	93200		46.3	1000	1	05/25/2019 11:14	WG1284393

ONE LAB. NATIONWIDE.

Collected date/time: 05/15/19 16:25

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	341000		2820	10000	1	05/21/2019 14:27	WG1284166

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1250		51.9	1000	1	05/25/2019 21:35	WG1286592
Fluoride	147	В	9.90	100	1	05/25/2019 21:35	WG1286592
Sulfate	6660		77.4	5000	1	05/25/2019 21:35	WG1286592



# Cn

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	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	133	J	12.6	200	1	05/25/2019 11:16	WG1284393
Calcium	95300		46.3	1000	1	05/25/2019 11:16	WG1284393

ONE LAB. NATIONWIDE.

Collected date/time: 05/15/19 13:50

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	286000		2820	10000	1	05/21/2019 14:27	WG1284166

























	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1440		51.9	1000	1	05/25/2019 16:29	WG1286607
Fluoride	185		9.90	100	1	05/25/2019 16:29	WG1286607
Sulfate	16500		77.4	5000	1	05/25/2019 16:29	WG1286607

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	125	J	12.6	200	1	05/25/2019 11:19	WG1284393
Calcium	76400		46.3	1000	1	05/25/2019 11:19	WG1284393

ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 09:15

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	487000		2820	10000	1	05/23/2019 23:16	WG1284879

# Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	2860		51.9	1000	1	05/25/2019 16:44	WG1286607
Fluoride	252		9.90	100	1	05/25/2019 16:44	WG1286607
Sulfate	47400		77.4	5000	1	05/25/2019 16:44	WG1286607



Ss

# Cn









	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	109	J	12.6	200	1	05/25/2019 11:21	WG1284393
Calcium	131000		46.3	1000	1	05/25/2019 11:21	WG1284393

ONE LAB. NATIONWIDE.

Collected date/time: 05/15/19 16:30

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	338000		2820	10000	1	05/21/2019 14:27	WG1284166

### Wet Chemistry by Method 9056A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	1130		51.9	1000	1	05/25/2019 16:59	WG1286607
Fluoride	149		9.90	100	1	05/25/2019 16:59	WG1286607
Sulfate	6960		77.4	5000	1	05/25/2019 16:59	WG1286607



Ss

# Cn



<sup>7</sup> Gl	





	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	132	J	12.6	200	1	05/25/2019 11:24	WG1284393
Calcium	95000		46.3	1000	1	05/25/2019 11:24	WG1284393

ONE LAB. NATIONWIDE.

Collected date/time: 05/16/19 13:05

### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	U		2820	10000	1	05/23/2019 23:16	WG1284879

³Ss



	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Chloride	U		51.9	1000	1	05/25/2019 17:14	WG1286607
Fluoride	U		9.90	100	1	05/25/2019 17:14	WG1286607
Sulfate	U		77.4	5000	1	05/25/2019 17:14	WG1286607



# Cn

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	55.7	J	12.6	200	1	05/25/2019 11:27	WG1284393
Calcium	66.4	BJ	46.3	1000	1	05/25/2019 11:27	WG1284393









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Gravimetric Analysis by Method 2540 C-2011

L1100588-04,05,06

### Method Blank (MB)

(MB) R3413844-1 05/21/	19 12:08			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000







<sup>†</sup>Cn



(OS) L1100588-06 05/21/19 12:08 • (DUP) R3413844-3 05/21/19 12:08

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	440000	445000	1	1 13		5









(LCS) R3413844-2 05/21/19 12:08

(203) 113413044-2 03/21/1	Spike Amount	LCS Resul	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8660000	98.4	85.0-115	





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Gravimetric Analysis by Method 2540 C-2011

L1100588-03,08,09,11

### Method Blank (MB)

(MB) R3413851-1 05/21/19	9 14:27			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000









(OS) L1100588-11	05/21/19 1/1.27	(DLID) D3/13821-3	05/21/19 1/1:27
(U3) L110U300-11	03/21/19 14.27 •	(DUF) K3413631-3	03/21/19 14.27

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	338000	343000	1	1.47		5







### (LCS) R3413851-2 05/21/19 14:27





PAGE:

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1100588-01,02,07,10,12

### Method Blank (MB)

(MB) R3415426-1 05/23/1	19 23:16			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000





Ss





(OS) L1100588-10 05/23/19 23:16 • (DUP) R3415426-3 05/23/19 23:16

	Original Resu	It DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	487000	481000	1	1.24		5









(LCS) R3415426-2 05/23/19 23:16





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Wet Chemistry by Method 9056A

L1100588-01,02,03,04,05,06,07,08

### Method Blank (MB)

(MB) R3415072-1 05/25	/19 14:18			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	56.4	<u>J</u>	9.90	100
Sulfate	U		77.4	5000







### L1100485-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1100485-07 05/25/19 15:59 • (DUP) R3415072-3 05/25/19 16:10

	Original Result		Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	3800	3730	1	1.86		15
Fluoride	189	185	1	2.20		15
Sulfate	10100	9850	1	2.26		15







### L1100485-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1100485-14 05/25/19 18:09 • (DUP) R3415072-6 05/25/19 18:20

(03) 11100403 14 03/23/1	3 10.03 - (DOI)	113413072 0	03/23/13 1	0.20		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	U	0.000	1	0.000		15
Fluoride	U	0.000	1	0.000		15
Sulfate	U	0.000	1	0.000		15

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### Laboratory Control Sample (LCS)

(LCS) R3415072-2 05/2	5/19 14:29				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	40900	102	80.0-120	
Fluoride	8000	8450	106	80.0-120	
Sulfate	40000	41500	104	80.0-120	

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Wet Chemistry by Method 9056A

L1100588-01,02,03,04,05,06,07,08

### L1100485-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100485-07 05/25/19 15:59 • (MS) R3415072-4 05/25/19 16:20 • (MSD) R3415072-5 05/25/19 16:31

(00) 21100 100 07 00/20/1	3 10.03 (1110) 1	(0110072 1 00	0/20/10 10.20	(11102) 1100	, 2 0 00, 20, 10	10.01						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	3800	53800	53600	100	99.6	1	80.0-120			0.482	15
Fluoride	5000	189	5270	5220	102	101	1	80.0-120			0.983	15
Sulfate	50000	10100	59000	58900	97.8	97.7	1	80.0-120			0.132	15





# L1100485-14 Original Sample (OS) • Matrix Spike (MS)

(OS) L1100485-14 05/25/19 18:09 • (MS) R3415072-7 05/25/19 18:31

(00) 21100 100 11 00/20/1	0 .0.00 (0) .		, 20, 10 10.01				
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	ug/l	ug/l	ug/l	%		%	
Chloride	50000	U	50200	100	1	80.0-120	
Fluoride	5000	U	5110	102	1	80.0-120	
Sulfate	50000	U	50200	100	1	80.0-120	













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Wet Chemistry by Method 9056A

L1100588-09,10,11,12

### Method Blank (MB)

(MB) R3415074-1 05/	25/19 08:32			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100
Sulfate	U		77.4	5000





### L1100662-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1100662-02 05/25/19 17:44 • (DUP) R3415074-6 05/25/19 18:28

` '	` '	•				
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	23300	23400	1	0.484		15
Fluoride	777	780	1	0.475		15
Sulfate	56100	56200	1	0.340		15





### Laboratory Control Sample (LCS)

(I CS) P3/1507/L-2 05/25/19 08:46

(LC3) R3413074-2 03/23	3/19 00.40				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	40500	101	80.0-120	
Fluoride	8000	8190	102	80.0-120	
Sulfate	40000	41500	104	80.0-120	

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PAGE:

### L1100662-02 Original Sample (OS) • Matrix Spike (MS)

(OS) | 1100662-02 | 05/25/19 17:44 • (MS) | R3415074-7 | 05/25/19 18:43

(03) 11100002-02 03/23/	19 17.44 • (IVIS) I	13413074-7 03	1/23/13 10.43				
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	ug/l	ug/l	ug/l	%		%	
Chloride	50000	23300	72700	98.8	1	80.0-120	
Fluoride	5000	777	5760	99.7	1	80.0-120	
Sulfate	50000	56100	104000	95.6	1	80.0-120	Е

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

### L1100588-01,02,03,04,05

### Method Blank (MB)

(MB) R3415216-1 05/26/	19 12:14			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000







### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3415216-2	05/26/19 12:17 •	(LCSD) R3415216-3	05/26/19 12:19

• •	,									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	998	986	99.8	98.6	80.0-120			1.26	20
Calcium	10000	9380	9480	93.8	94.8	80.0-120			0.996	20







### L1100383-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100383-01 05/25/19 10:23 • (MS) R3415228-2 05/25/19 10:28 • (MSD) R3415228-3 05/25/19 10:31

(03) [1100303-01 0.	3/23/19 10.23 • (1013) 1	13413226-2 0	3/23/13 10.20	• (IVI3D) K34132	220-3 03/23/	19 10.51							
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%	
Boron	1000	ND	1040	1060	97.5	99.9	1	75.0-125			2.35	20	
Calcium	10000	11300	20500	21000	92.3	97 1	1	75.0-125			2.30	20	







PAGE:

24 of 30

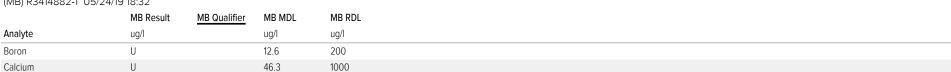
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L1100588-06

# Method Blank (MB)

(MB) R3414882-1 05/24/19 18:32

Metals (ICP) by Method 6010B









### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414882-2 05/24/19 18:34 • (LCSD) R3414882-3 05/24/19 18:37

(200) 110 111002 2 00/21	00) NO 111002 2 00/2 1/10 10:01 (2000) NO 111002 0 00/2 1/10 10:01													
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits				
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%				
Boron	1000	981	938	98.1	93.8	80.0-120			4.47	20				
Calcium	10000	9930	9690	99.3	96.9	80.0-120			2.49	20				



<sup>†</sup>Cn





### L1100588-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) I 1100588-06 05/24/19 18:40 • (MS) R3414882-5 05/24/19 18:45 • (MSD) R3414882-6 05/24/19 18:48

(03) 11100366-00 03/24/1	13 10.40 • (1013) 1	3414002-5 0	J/24/13 10.43 •	(10120) 1241400	32-0 03/24/13	10.40						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	75.1	1070	1040	99.5	96.3	1	75.0-125			3.06	20
Calcium	10000	128000	134000	135000	63.5	74 0	1	75 0-125	V	V	0.777	20





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Metals (ICP) by Method 6010B

1000

10000

L1100588-07,08,09,10,11,12

### Method Blank (MB)

Boron

Calcium

(MB) R3415021-1 05/25	5/19 10:45			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	293	<u>J</u>	46.3	1000







### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3415021-2 05/25/	(LCS) R3415021-2 05/25/19 10:47 • (LCSD) R3415021-3 05/25/19 10:49												
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits			
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%			

95.1

96.9







# <sup>7</sup>Gl

# L1100809-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

951

9690

97.4

99.3

974

9930

(03) 11100809-02 03/2	23/19 10.32 • (1013)	K3413021-3 U	3/23/19 10.37	• (INIOD) KO4100	121-0 03/23/1	19 10.59						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	ND	1120	1140	95.3	97.3	1	75.0-125			1.76	20
Calcium	10000	167000	175000	174000	81.4	71.7	1	75.0-125		V	0.560	20

80.0-120

80.0-120

2.35

2.46

20

20





### L1100823-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	2130	3040	3070	91.5	94.3	1	75.0-125			0.916	20
Calcium	10000	66800	75900	75400	91.9	86.6	1	75.0-125			0.692	20

# **GLOSSARY OF TERMS**



The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

Appleviations and	a Definitions
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier D	escrip'	tion
-------------	---------	------

В	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

















### **ACCREDITATIONS & LOCATIONS**





### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















		Billing Info	Analysis / Container / Preservative										nain of Custody	Page of _					
Plum Point Services Co., LLC 2739 SCR 623 Osceola, AR 72370			P.O. Box	s Payable c 567 , AR 72370	Pres Chk		42									Pace, National Co.	Analytical* enter for feeting & innovation		
Report to:  Dana Derrington				Christopher.Lussie , hlf@ftn-assoc.co	Dftn-										M	2065 Lebanon Rd Iount Juliet, TN 37			
Project Description: Plum Point Ener	rgy Station			City/State Collected:		, 1	res									PI	hone: 615-758-58 hone: 800-767-58 ax: 615-758-5859		
Phone: <b>870-815-1248</b> Fax:	1248 Client Project # 14590-1992-001			Lab Project # NAESOAR-P	LUMPOINT	- 1	250mlHDPE-NoPres	E-HNO3								L	# [ ] ] Joo	60589 9	
Collected by (print): Michael Claylon	Site/Facility II	)#		P.O.#			OmIHD	HDPE-								A	acctnum: NA		
Collected by (signature)  Marlus  Immediately Packed on Ice N _ Y	1 9	y 10 D	4.4.37	Quote #	ults Needed	No.	SO4, TDS 25	B, Ca 250mlHDP								P	emplate: <b>T134757</b> relogin: <b>P708148</b> SR: <b>134 - Mark W. Beasley</b> B:		
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	Cl, F, S	Total								S	hipped Via: F	edEX Ground	
MW-101	GRAS	GW		5-16-19	1030	2	Х	X								57	Nettini ka	-01	
MW-102		GW	The second	5-16-19	F. BEARING	2	X	X										02	
MW-103		GW		5-15-19	1455	2	X	X							2		+g - 12	03	
ИW-108	and the second	GW		5-14-19	1440	2	Х	X		RAD								OL	
MW-113		GW	13.	5-14-19	1345	7	X	X		FAR	SC	EN.	<0.51	nR/hr				0	
NW-115		GW		5-14-19	1235	2	X	X										0	
иW-116	in land	GW	10 (February)	5-16-19	1130	Ž	Х	X						- 4				6	
/IW-117		GW		5-15-19	1625	2	X	X									MANAGER CONTRACTOR CON	08	
/IW-118		GW		5-15-19	1350	2	X	X								$\neg \uparrow$		69	
WW-119		GW	4.5	5-16-19	915	2	X	X				7				$\neg$		10	
district 11 (C)										pH _ Flow _		_ Tem			COC Sea COC Sig Bottles	al Pre gned/A s arri	e Receipt ( sent/Intac ccurate: ve intact: les used:		
		FedExCourier			Tracking # 4794			37	QL	100			6		Suffici VOA Zer	ient v	olume sent If Applica dspace:	ble Y	
elinquished by: (Signature)	Tickel Clayetre 5-17-1		ytre 5-17-19 1300								Trip Blank	Recei		res No HCL/T	ЛеоН			Correct/C	
		Jace.		ime: R	eceived by: (Signa	iture,				Temp: °C Bottles Receive					if preser	vation i	required by L	ogin: Date/Time	
elinquished by : (Signature)		Date:	T	ime: Re	eceived for lab by	(Signa	ture)			Date: 5/18/1	9	Tin	ne:	0	Hold:			Condition: NCF / OK	

			Billing Infor	mation:					Analysi	/ Cont	ainer / Pres	ervative	- 1-1-1		Chain of Custody	Page of 4		
Plum Point Services 2739 SCR 623 Osceola, AR 72370	Accounts Payable P.O. Box 567 Osceola, AR 72370												Pace National C	Analytical*  Dentier for Testing & Innovation				
Report to:  Dana Derrington				hristopher.Lussi hlf@ftn-assoc.c	er@nrg.com, dld om	@ftn-									12065 Lebanon Rd Mount Juliet, TN 3 Phone: 615-758-5	7122 <b>1133</b> 123		
Project Description: Plum Point Energy	/ Station			City/State Collected:			Pres								Phone: 800-767-56 Fax: 615-758-5859			
Phone: <b>870-815-1248</b> ax:	Client Project (14590-1992)	lient Project # .4590-1992-001		Lab Project # NAESOAR-PLUMPOI			250mlHDPE-NoPres	250mlHDPE-HNO3							L#			
Collected by (print): MICHAEL CLASTON			P.O. 1		P.O.#			IHDPE							Acctnum: NAESOAR			
Make Commediately Rush		Rush? (Lab MUST Be No.  Same Day Five Day  Next Day 5 Day (R  Two Day 10 Day (		Quote #	sults Needed	ults Needed		В, Са						PB:			Prelogin: P7 TSR: 134 - Ma	08148 ark W. Beasley
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	CI, F, SO4,	Total							Shipped Via:	FedEX Ground Sample # (lab only		
MW-117 DUP	GRAS	GW		5-15-19	1630	2	X	Х								- 11		
EB-2	1	GW		5-16-19	1305	2	X	X								12		
		GW				2	X	X								10.5		
	A	GW				2	X	X		R/	D SCRE	EN: <0	.5 mR/	nr -				
		GW				+1		A										
7.00								The second										
													5					
						711												
* Matrix:	Remarks:	da.							77.29		**			Sa Seal	mple Receipt Present/Inta	Checklist Ct. NP		
SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater										low	Ten	er	Bo Co	C Signettles a	ed/Accurate: arrive intact pottles used:	. Ky		
DW - Drinking Water Samples returned via:  OT - Other UPS FedEx C			ourier Tracking # Save											Sufficient volume sent:  If Applicable  VOA Zero Headspace:				
Relinquished by : (Signature)  Date:		1-19	Received by: (Si	-			Trip Blank Received: Yes HCLY TBR				oH Pr	eservat	ation Correct/Checked: ZY					
Relinquished by : (Signature)  Date:			anne i de la prima de la composición d	/3 <i>0</i> 0	Received by: (Si	gnature)			Ten G	190= 10:	4.17/65	ttles Receive	ed: If p	reserva	tion required by	Login: Date/Time		
Relinquished by : (Signature) Date:		Date:		Time;	Received for lab	by: (Sign	ature)		Dat	8/19	Tir	ne:	2 Hc	ld:		NCF / OF		



# ANALYTICAL REPORT

June 14, 2019

# Plum Point Services Co., LLC

Sample Delivery Group: L1106577

Samples Received: 05/18/2019

Project Number: 14590-1992-001

Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley

Project Manager

Results relate only to the items tested or calibrated and are reported as tounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 560302, 060303, and 060304.

September of the provided in laboratory standard operating procedures: 560302, 060303, and 060304.



















Cp: Cover Page	1				
Tc: Table of Contents					
Ss: Sample Summary					
Cn: Case Narrative	4				
Sr: Sample Results	5				
MW-108 L1106577-01	5				
MW-115 L1106577-02	6				
MW-117 L1106577-03	7				
MW-119 L1106577-04	8				
Qc: Quality Control Summary	9				
Metals (ICP) by Method 6010B	9				
GI: Glossary of Terms					
Al: Accreditations & Locations					
Sc: Sample Chain of Custody					























			Collected by	Collected date/time	Received da	te/time
MW-108 L1106577-01 GW			Michael Clayton	05/14/19 14:40	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:24	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-115 L1106577-02 GW			Michael Clayton	05/14/19 12:35	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:27	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-117 L1106577-03 GW			Michael Clayton	05/14/19 16:25	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:30	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-119 L1106577-04 GW			Michael Clayton	05/14/19 09:15	05/18/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:32	CCE	Mt. Juliet, TN



















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ср

















Mark W. Beasley Project Manager

# SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

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Collected date/time: 05/14/19 14:40

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>	
Analyte	ug/l		ug/l	ug/l		date / time		
Boron	224	В	12.6	200	1	06/12/2019 09:24	WG1294030	



















# SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 05/14/19 12:35

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Calcium	128000		46.3	1000	1	06/12/2019 09:27	WG1294030



















# SAMPLE RESULTS - 03

ONE LAB. NATIONWIDE.

Collected date/time: 05/14/19 16:25

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Calcium	98300		46.3	1000	1	06/12/2019 09:30	WG1294030



















#### SAMPLE RESULTS - 04 L1106577

ONE LAB. NATIONWIDE.

Collected date/time: 05/14/19 09:15

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l	ug/l		date / time		
Calcium	135000		46.3	1000	1	06/12/2019 09:32	WG1294030	



















#### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1106577-01,02,03,04

#### Method Blank (MB)

(MB) R3420383-1 06/	/12/19 08:47			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	51.0	<u>J</u>	12.6	200
Calcium	U		46.3	1000





#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420383-2 06/12/19 08:49 • (LCSD) R3420383-3 06/12/19 08:52

'	•	•								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	1040	1010	104	101	80.0-120			2.24	20
Calcium	10000	9720	9690	97.2	96.9	80.0-120			0.230	20







#### L1106433-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) | 1106/33 01 06/12/10 08:55 - (MS) D3/20383 5 06/12/10 00:01 - (MSD) D3/20383 6 06/12/10 00:03

(OS) L1106433-01 06/12/19	9 (SIVI) • (IVIS) F	(3420383-5 0)	0/12/19 09:01 •	(IVISD) R34203	383-6 06/12/19	09:03						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	ND	1080	1090	97.9	99.0	1	75.0-125			1.05	20
Calcium	10000	/IQ100	59000	58700	92.7	96.1	1	75 O <sub>-</sub> 125			0.454	20





DATE/TIME:

06/14/19 09:59





#### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

#### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description
-----------------------

	· · · · · · · · · · · · · · · · · · ·
В	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.











<sup>°</sup>Qc









#### **ACCREDITATIONS & LOCATIONS**





#### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina 1	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

#### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

#### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















ACCOUNT: PROJECT: Plum Point Services Co., LLC 14590-1992-001

SDG: L1106577

DATE/TIME: 06/14/19 09:59 PAGE:

	Billing Information:						Analysis / Container / Preservative							Chain of Custody	Page Z of Z	1		
Plum Point Services Co 2739 SCR 623 Osceola, AR 72370	Accounts Payable P.O. Box 567 Osceola, AR 72370			ble Pres			42						Pace	Analytical*  sector for moting & tradvallan				
Report to: Dana Derrington				hristopher.Lussier , hlf@ftn-assoc.com		oftn-								12065 Lebanon Rd Mount Juliet, TN 3 Phone: 615-758-5	7122 11334			
Project Description: Plum Point Energy S	tation			City/State Collected:			Pres							Phone 615-758-5858 Phone 800-767-5859 Fax: 615-758-5859				
Phone: <b>870-815-1248</b> Fäx:	Client Project # 14590-1992-001		1-1748				UMPOINT		250mlHDPE-NoPres	HNO3							19 106577	AV Gt
Collected by (print):	Site/Facility ID	#		P.O.#	4.4		OmlH	HDPE-				72.00		Acctnum: NA	AESOAR			
Collected by (signature)	The state of the s	ab MUST Be		Quote #			TDS 25	250mlH						Template:T1				
My Live Clar Immediately Packed on Ice N Y L	Same Day Five Next Day 5 Di Two Day 10 I Ihree Day		y (Rad Only)		ults Needed	Needed No of		B, Ca						PB:	FedEX Ground			
/ Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cnt	Cl, F,	Total						Remarks	Sample # (lab only			
MW-101	GRAS	GW		5-16-19	1030	2		X					1		-0	Section 1		
MW-102		GW		5-16-19	1835	2	X	X			1.60/				-02			
MW-103		GW		5-15-19	1455	2	X	X					April 1		-03	F -		
MW-108		GW		5-14-19	1440	2	X	X	RA	A.SC	TENN -	5 mR/hr			-0			
MW-113		GW		5-14-19	1345	2	X	X		AU SU	17-11-10	.o.mH/hr			0	DESCRIPTION OF THE PARTY OF THE		
MW-115		GW		5-14-19	1235	2	X	X							The same of the sa	Communities		
MW-116	92.5	GW		5-16-19	1130	4	X	X							- 6			
MW-117		GW		5-15-19	1625	3	X	X				9.00		i i	0			
MW-118	1	GW		5-15-19	1350	2	X	X	4						1 4			
MW-119		GW	4.4	5-16-14	915	2	X	X				45			THE POST OF THE			
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater	Remarks:									oH	Temp		COC Sea COC Sign Bottles Correct	arrive intac bottles used	act. No X	N N		
DW - Drinking Water OT - Other	Samples recu UPS V_F	edEx C	ourier		Tracking # 4	11100		1 8837 0		8837 0400		Sufficient volume sent If Applic VOA Zero Headspace: Preservation Correct/		icable	ble			
Relinquished by: (Signature)		Date:	7-19	1300	Received by: (Sig Received by: (Sig					9	) H	CC/MeoH BR s Received:			by Login: Date/Time			
Relinquished by (Signate)		Date:				3	1		Tem 4.1	せつこし	11/Ks	24			Conditio			
Relinquished by : (Signature)		Date:		Time:	Received 100 lab	TU	gnature)		5	8/19	Time	800	Hold:		NCF /			

# **Andy Vann**

Project Service; Sample Storage Friday, June 07, 2019 2:07 PM Mark Beasley From: Sent: ö

L1100588 \*FTNLRAR\* relog

**Subject:** 

Relog the following as R5 due 6/14:

CAICP BICP L1100588-06 L1100588-04

CAICP L1100588-08

CAICP L1100588-10

Thanks

Mark

From: Heather Ferguson [mailto:hlf@ftn-assoc.com]

Sent: Friday, June 07, 2019 1:35 PM

To: Mark Beasley Cc: Dana Derrington

Subject: Lab Re-runs for SDG L1100588 (Plum Point EPA Program)

Hi Mark,

Could you verify the results for the samples below from the attached report and if correct, ask the lab to re-run the samples? Please do not re-run the sample for dissolved solids; the re-run result will be out of hold so we won't be able to use it anyway.

	- 1			- 1		
Units	l/gm	l/gm	l/gm	l/gm	l/gm	
Flag RDL	0.2	1	1	1	10	
Flag						
Result	0.222	128	95.3	131	341	
Analyte	BORON	CALCIUM	CALCIUM	CALCIUM	DISSOLVED SOLIDS	
Well ID	MW-108	MW-115	MW-117	MW-119	MW-117	

← verify only; please do not include in re-runs.

Thank you!

Heather



3 Innwood Circle, Suite 220 & Little Rock, AR 72211 FTN Associates, Ltd. Heather Ferguson

hlf@ftn-assoc.com

(501) 225-7779 \$ fax (501) 225-6738 http://www.ftn-assoc.com





# ANALYTICAL REPORT

August 09, 2019

#### Plum Point Services Co., LLC

Sample Delivery Group: L1125145

Samples Received: 08/03/2019

Project Number: 14590-1992-001

Description: Plum Point Energy Station

Report To: Dana Derrington

2739 SCR 623

Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley

Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



















Cp: Cover Page	1					
Tc: Table of Contents	2					
Ss: Sample Summary	3					
Cn: Case Narrative	4					
Sr: Sample Results	5					
MW-108 L1125145-01	5					
MW-115 L1125145-02	6					
MW-117 L1125145-03	7					
MW-117 DUP L1125145-04	8					
MW-119 L1125145-05	9					
EPA EB-1 L1125145-06	10					
Qc: Quality Control Summary	11					
Gravimetric Analysis by Method 2540 C-2011	11					
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Al: Accreditations & Locations	14					
Sc: Sample Chain of Custody						





















			Collected by	Collected date/time	Received da	ite/time
MW-108 L1125145-01 GW			Michael Clayton	08/01/19 11:55	08/03/19 08	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:06	TRB	Mt. Juliet, Ti
			Collected by	Collected date/time	Received da	te/time
MW-115 L1125145-02 GW			Michael Clayton	08/01/19 09:40	08/03/19 08	:45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:09	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-117 L1125145-03 GW			Michael Clayton	08/02/19 12:20	08/03/19 08	:45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, T
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:11	TRB	Mt. Juliet, TI
			Collected by	Collected date/time	Received da	te/time
MW-117 DUP L1125145-04 GW			Michael Clayton	08/02/19 12:25	08/03/19 08	:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, Ti
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:14	TRB	Mt. Juliet, T
			Collected by	Collected date/time	Received da	te/time
MW-119 L1125145-05 GW			Michael Clayton	08/02/19 09:20	08/03/19 08	:45
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:17	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
EPA EB-1 L1125145-06 GW			Michael Clayton	08/02/19 12:40	08/03/19 08	:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, T
the state of the s			2 27 0 07 10 1 1.00			



















Metals (ICP) by Method 6010B

WG1322637

08/04/19 14:03

08/06/19 11:19

TRB

Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ср

<sup>2</sup>Tc















## SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

Collected date/time: 08/01/19 11:55

L1125145

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	127	ВЈ	12.6	200	1	08/06/2019 11:06	WG1322637



















# SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 08/01/19 09:40

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>	
Analyte	ug/l		ug/l	ug/l		date / time		
Calcium	125000		46.3	1000	1	08/06/2019 11:09	WG1322637	



















## SAMPLE RESULTS - 03

ONE LAB. NATIONWIDE.

Collected date/time: 08/02/19 12:20

L1125145

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	302000		2820	10000	1	08/06/2019 15:12	WG1322631





















	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	302000		2820	10000	1	08/06/2019 15:12	WG1322631

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Calcium	102000		46.3	1000	1	08/06/2019 11:11	WG1322637

Analyte

Calcium

### SAMPLE RESULTS - 04

ONE LAB. NATIONWIDE.

Collected date/time: 08/02/19 12:25

L1125145

Dilution

Analysis

date / time

08/06/2019 11:14

Batch

WG1322637

#### Gravimetric Analysis by Method 2540 C-2011

Result

102000

ug/l

Qualifier

MDL

ug/l

46.3

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	339000		2820	10000	1	08/06/2019 15:12	WG1322631

RDL

ug/l

1000





















## SAMPLE RESULTS - 05

ONE LAB. NATIONWIDE.

Collected date/time: 08/02/19 09:20

L1125145

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>	
Analyte	ug/l		ug/l	ug/l		date / time		
Calcium	97400		46.3	1000	1	08/06/2019 11:17	WG1322637	



















## SAMPLE RESULTS - 06

ONE LAB. NATIONWIDE.

L1125145

#### Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	U		2820	10000	1	08/06/2019 15:12	WG1322631

#### Metals (ICP) by Method 6010B

Collected date/time: 08/02/19 12:40

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Boron	18.7	ВЈ	12.6	200	1	08/06/2019 11:19	WG1322637
Calcium	U		46.3	1000	1	08/06/2019 11:19	WG1322637















#### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1125145-03,04,06

#### Method Blank (MB)

 (MB) R3438618-1
 08/06/19 15:12

 MB Result
 MB Qualifier
 MB MDL
 MB RDL

 Analyte
 ug/l
 ug/l
 ug/l

 Dissolved Solids
 U
 2820
 10000



<sup>2</sup>Tc



#### L1125145-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1125145-03 08/06/19 15:12 • (DUP) R3438618-3 08/06/19 15:12

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	302000	306000	1	1.32		5

# <sup>⁴</sup>Cn







(LCS) R3438618-2 08/06/19 15:12

(200) 10 100010 2 00/00/	Spike Amount	nount LCS	CS Result LCS	CS Rec.	Rec. Limits
Analyte	ug/l	ug/l	g/l %		%
Dissolved Solids	8800000	8540	540000 97.0	7.0	85.0-115





#### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

#### L1125145-01,02,03,04,05,06

#### Method Blank (MB)

(MB) R3437811-1 08/06/	/19 10:25			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	12.8	<u>J</u>	12.6	200
Calcium	U		46.3	1000







<sup>†</sup>Cn

#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3437811-2 08/06/19 10:28 • (LCSD	R3437811-3 (	08/06/19 10:30			
		LOCD D	LOCD D	B 11 11	1.00.0 1:0

()	(	,								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	990	999	99.0	99.9	80.0-120			0.934	20
Calcium	10000	10300	10500	103	105	80.0-120			2.43	20







## L1125119-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(O3) L1123119-01 O	6/00/19 10.33 • (IVIS) KS	343/011-3 00/0	00/19 10.30 • 1	(1000) K343/011	-0 00/00/19	10.40						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	242	1030	1020	79.0	77.9	1	75.0-125			1.10	20
Calcium	10000	2330	34600	34700	323	323	1	75.0-125	J5	J5	0.159	20





#### - 3

#### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.



#### Abbreviations and Definitions

J5

Appreviations and	Definitions
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
В	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.

The sample matrix interfered with the ability to make any accurate determination; spike value is high.











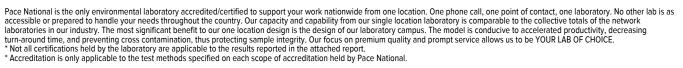






#### **ACCREDITATIONS & LOCATIONS**





#### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

#### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

#### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















			Billing Information:				Analysis / Container / Preservative					ve	-2.	Chain of Cu	stody Pageof		
Plum Point Services Co., LLC 2739 SCR 623 Osceola, AR 72370				Accounts Payable P.O. Box 567 Osceola, AR 72370				(3)	رع ره	22	42					P. Nat	D ace Analytical * oral Center for Testing & Innovation
Report to: Dana Derrington			Email To: Christopher.Lussier@nrg.com, dld@ft assoc.com, hlf@ftn-assoc.com												V Se	Mount Juliet,	12065 Lebanon Rd
Project Description: <b>Plum Point Ener</b>	gy Station		City/State Collected: BSeola BR											Phone: 800-767-5859 Fax: 615-758-5859			
Phone: <b>870-815-1248</b> Fax:  Client Project # 14590-1992-001			Lab Project # NAESOAR-PLUMPOINT				S	03	HN03	103					L# 1/25/45 H207		
Collected by (print):  Site/Facility ID #		D#	P.O.# 2019-00325				NoPre	PE-HN	250mlHDPE-HNO	DPE-HI						Acctnum: NAESOAR	
Collected by (signature):  Immediately Packed on Ice NY	Same II Next D Two Da	Rush? (Lab MUST Be Same Day Five Next Day 5 Da Two Day 10 D Three Day		Quote #	Results Needed		250mIHDPE-NoPres	B 250mIHDPE-HN03	В, Са	Ca 250mIHDPE-HNO3				# # P	Prelogin: I TSR: 134 - PB:	T130326 P720961 Mark W. Beasley	
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MW-115		GW		8/1/18	0940	1				Х						02	
MW-117		GW		8/2/19	1220	2	X			Х						03	
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MW-119		GW		8/2/19	0920	1				Х						0.5	
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7 - 1 - 10 Table





3 Innwood Circle, Suite 220 • Little Rock, AR 72211 • (501) 225-7779 • Fax (501) 225-6738

#### TECHNICAL MEMORANDUM

**DATE:** December 17, 2019

TO: Matt Gray

Plum Point Services Company, LLC

FROM: Dana Derrington, PE, PG

FTN Associates, Ltd.

**SUBJECT:** Alternate Source Demonstration for Statistically Significant Increases

Second Half of 2019 Monitoring Period, Plum Point Energy Station Landfill

FTN No. R14590-1992-001

FTN Associates, Ltd. (FTN), has prepared this technical memorandum for the Plum Point Services Company, LLC (PPSC), coal combustion residual (CCR) landfill, which is regulated by the Environmental Protection Agency (EPA) Coal Combustion Residuals Rule, promulgated in Title 40 of the Code of Federal Regulations (40 CFR), Part 257. The landfill is also regulated by the Arkansas Pollution Control and Ecology Commission (APCEC) Regulation No. 22 and permitted by the Arkansas Department of Energy and Environment, Division of Environmental Quality (DEQ), under Permit No. 0303-S3N-R1.

FTN was contracted to sample groundwater and to statistically evaluate the data from the second half of 2019 monitoring event. Based on statistical evaluation of the data, one confirmed statistically significant increase (SSI) over background concentrations was identified. Pursuant to \$257.94(e)(2), the landfill may demonstrate that a source other than the CCR unit caused an SSI over background levels for a constituent or that an SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This memorandum, hereafter referred to as an alternate source demonstration (ASD), presents evidence that the confirmed SSI is the result of natural fluctuations in groundwater quality and/or offsite influence.

#### 1.0 BACKGROUND

FTN performed groundwater sampling for the second half 2019 semiannual groundwater monitoring period during October 2019. Sample collection, preservation, shipment, analytical procedures, chain-of-custody control, and data quality control for this sampling event followed protocol outlined in the landfill's groundwater sampling and analysis plan (GWSAP) (FTN 2017b). Statistical evaluation of the data set followed the most recent EPA guidance (EPA 2009) and the landfill's statistical analysis plan (SAP) (FTN 2017c). An intrawell prediction

limit evaluation identified one confirmed SSI for total dissolved solids (TDS) at compliance well MW-117. This SSI was previously identified as confirmed during the first half of 2019 monitoring period and as such, verification sampling was not performed. PPSC completed a successful ASD for this SSI (and others) in accordance with §257.94(e)(2) (FTN 2019). The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on October 24, 2019.

A site map showing the location of MW-117 relative to the CCR unit (active landfill cells 1 and 3) is included as Figure 1 (all figures are included in Attachment 1). The second half of 2019 intrawell prediction limit plot for TDS at MW-117 is included in Attachment 2.

#### 2.0 DISCUSSION

A review of the monitoring system with respect to onsite background wells, background groundwater quality, published literature, and landfill leachate was performed to determine if the confirmed SSI for TDS at compliance well MW-117 was indicative of a release from the CCR unit. Findings from this review are discussed below.

#### 2.1 Monitoring System Background Wells

As required by §257.91(c)(1), the groundwater monitoring system is required to contain a minimum of one monitoring well that is hydraulically upgradient of the CCR management area for the purpose of monitoring background water quality. However, there is not a hydraulically upgradient location at this facility because the direction of groundwater flow is seasonably variable. As allowed by §257.91(a)(1), a facility may utilize wells for background water quality that are not hydraulically upgradient of the CCR unit. For this reason, the facility incorporated monitoring wells MW-108, MW-113, and MW-115 (Figure 1) to monitor background water quality because those wells are positioned outside the potential zone of impact from the CCR unit. The rationale for this is based on the age of the landfill, the estimated maximum rate of groundwater flow, and the distance of MW-108, MW-113, and MW-115 from the CCR unit. Specifically:

- MW-108, MW-113, and MW-115 are located more than 2,300 ft from the eastern edge of cell 3,
- Groundwater at the landfill has historically exhibited a maximum flow rate of 40 ft/year, and
- The landfill became active during March 2010.

Using the information available above, a potential leachate plume would not be expected to have migrated more than 390 ft from the CCR unit as of the time of this evaluation. This estimate is conservative for the following reasons:



- 1. It assumes impact to groundwater occurred at the same time cell 1 was activated (March 2010) and does not account for travel time through the confining unit soils;
- 2. It assumes that groundwater flows in one direction; however, it is well-documented that groundwater flow at the landfill is multidirectional and reverses flow on a seasonal basis (FTN 2017a); and
- 3. It does not account for any physical or chemical properties of the constituents of concern that would cause them to travel at rates slower than groundwater (e.g., adsorption).

#### 2.2 Comparison to Onsite Background Groundwater Quality

The TDS data collected at compliance well MW-117 and background wells MW-108, MW-113, and MW-115 are plotted on the time-series plots and box-and-whiskers diagrams included in Attachment 2. As is evident from these figures, measured TDS at MW-117 is generally lower than values measured at the onsite background wells. This comparison provides supporting evidence that the currently measured value for TDS at MW-117 reflects natural fluctuations in groundwater quality and/or offsite influence.

#### 2.3 Comparison to Published Groundwater Quality for the Aquifer

Each well in the monitoring system is screened in the Mississippi River Valley alluvial aquifer, the uppermost aquifer in the vicinity of the landfill (FTN 2017b). The US Geological Survey published a study of groundwater quality of the aquifer, specifically with respect to that of Holocene alluvium and Pleistocene valley train deposits, which are two of the major hydrogeologic units within the aquifer (Gonthier 2003). The landfill is located in Holocene alluvium, as shown on Figure 2. According to this study, the reported median and maximum TDS values were 355 mg/L and 728 mg/L, respectively. As shown in Table 1, these levels are comparable to those measured at MW-117 and at background wells MW-108, MW-113, and MW-115. This comparison provides supporting evidence that the currently measured value of TDS at MW-117 reflects natural fluctuations in groundwater quality and/or offsite influence.

#### 2.4 Comparison to Landfill Leachate

Landfill leachate samples are collected on a semiannual basis for the APCEC Regulation No. 22 program, as required by Permit No. 0303-S3N-R1. These data are publicly available on the DEQ website<sup>1</sup>. These data were used in combination with groundwater data to construct the Stiff and Piper diagrams (included in Attachment 2), which provide a key line of evidence that the SSI for TDS at MW-117 is not due to a release from the CCR unit. These diagrams show the ionic composition of leachate versus groundwater quality at compliance well MW-117 and background wells MW-108, MW-113, and MW-115. As shown by the Stiff diagrams, the ionic composition

<sup>&</sup>lt;sup>1</sup> https://www.adeq.state.ar.us/sw/permits/facility\_data.aspx



of groundwater at MW-117 is similar to that of background groundwater quality, as is evident from the similarly shaped diagrams. In contrast, the Stiff diagrams for all monitoring wells are dissimilar to the leachate diagram, showing that leachate has not impacted groundwater quality at these well locations. This is further demonstrated by the Piper diagram, which shows that data from MW-117 are plotted very closely to the data from background wells MW-108, MW-113, and MW-115. If leachate were impacting groundwater at MW-117, the plotted data for MW-117 would be positioned closer to the plotted data for leachate.

#### 3.0 CONCLUSIONS

In consideration of the information presented in this memorandum, FTN concludes that the SSI for TDS at MW-117 is the result of natural fluctuations in groundwater quality and/or offsite influence.

This memorandum serves as the ASD prepared in accordance with §257.94(e)(2) and supports the position that the confirmed SSI identified for TDS at MW-117 is not due to a release from the CCR unit. Therefore, no further action is required and the landfill will remain in detection monitoring.

If you have questions or comments regarding this memorandum, please do not hesitate to call Dana Derrington, PE, PG, at (314) 786-5855 or Heather Ferguson at (501) 225-7779.

DLD/hlf

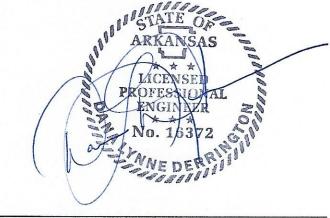
Attachments

R:\WP\_FILES\14590-1992-001\CORRESPONDENCE\2019-12-17 FTN TO M. GRAY - 2H2019 ASD (EPA CCR)\2019-12-17 TM-M GRAY.DOCX



#### PROFESSIONAL ENGINEER'S CERTIFICATION

With this certification, I certify that I, as a Professional Engineer in the State of Arkansas, am a qualified professional engineer as defined in §257.53 of Title 40 of the Code of Federal Regulations (CFR), Part 257, that this technical memorandum has been prepared under my direction in accordance with generally accepted good engineering practices, that the findings are accurate to the best of my knowledge, and that the alternate source demonstration described herein meets the requirements of §257.94(e)(2) of 40 CFR Part 257.



Dana L. Derrington, Arkansas PE #16372

12/17/2019

Date



#### REFERENCES

- EPA [US Environmental Protection Agency]. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance [EPA 530-R-09-007]. Washington, DC: Office of Resource Conservation and Recovery, Program Implementation and Information Division, US Environmental Protection Agency. March 2009.
- FTN [FTN Associates, Ltd.]. 2017a. Groundwater Monitoring Network Evaluation, Plum Point Energy Station Landfill. Little Rock, AR: FTN Associates, Ltd.
- ——. 2017b. *Groundwater Sampling and Analysis Plan, Plum Point Energy Station Landfill.* Little Rock, AR: FTN Associates, Ltd.
- ———. 2017c. *Statistical Analysis Plan, Plum Point Energy Station Landfill.* Little Rock, AR: FTN Associates, Ltd.
- ———. 2019. Alternate Source Demonstration for Statistically Significant Increases, First Half of 2019 Monitoring Period, Plum Point Energy Station Landfill. Little Rock, AR: FTN Associates, Ltd.
- Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 03-4202]. Jackson, MS: National Water-Quality Assessment Program, US Geological Survey.
- Kresse, T.M., P.D. Hays, K.R. Merriman, J.A. Gillip, D.T. Fugitt, J.L. Spellman,
   A.M. Nottmeier, D.A. Westerman, J.M. Blackstock, and J.L. Battreal. 2014. Aquifers of Arkansas—Protection, Management, and Hydrologic and Geochemical Characteristics of Groundwater Resources in Arkansas [USGS Scientific Investigations Report 2014-5149]. Prepared in cooperation with the Arkansas Natural Resources Commission. Reston, VA: US Geological Survey. 334 pp. doi: <a href="http://dx.doi.org/10.3133/sir20145149">http://dx.doi.org/10.3133/sir20145149</a>.





Figures

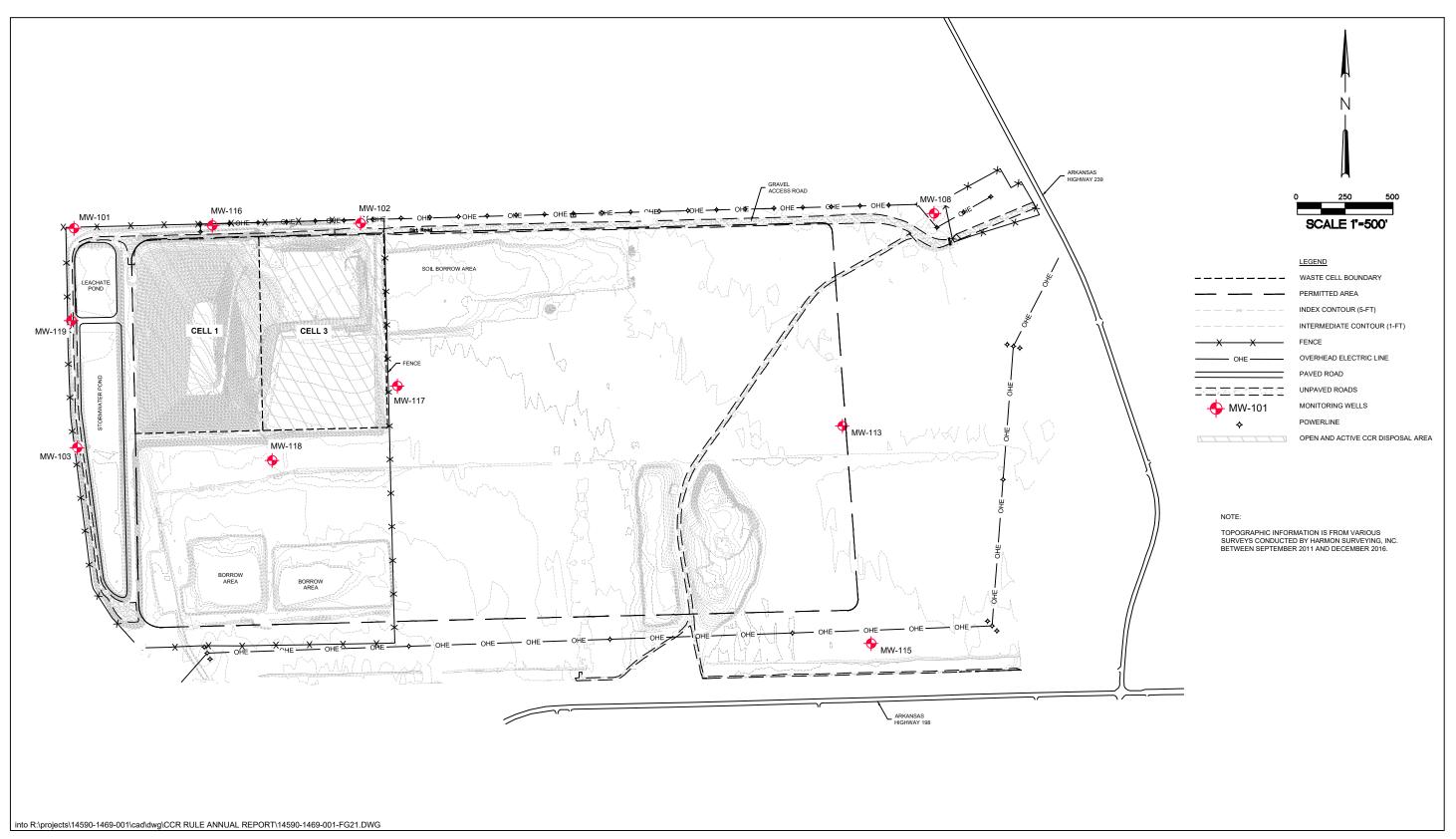


Figure 1. Monitoring well locations, Plum Point Energy Station.

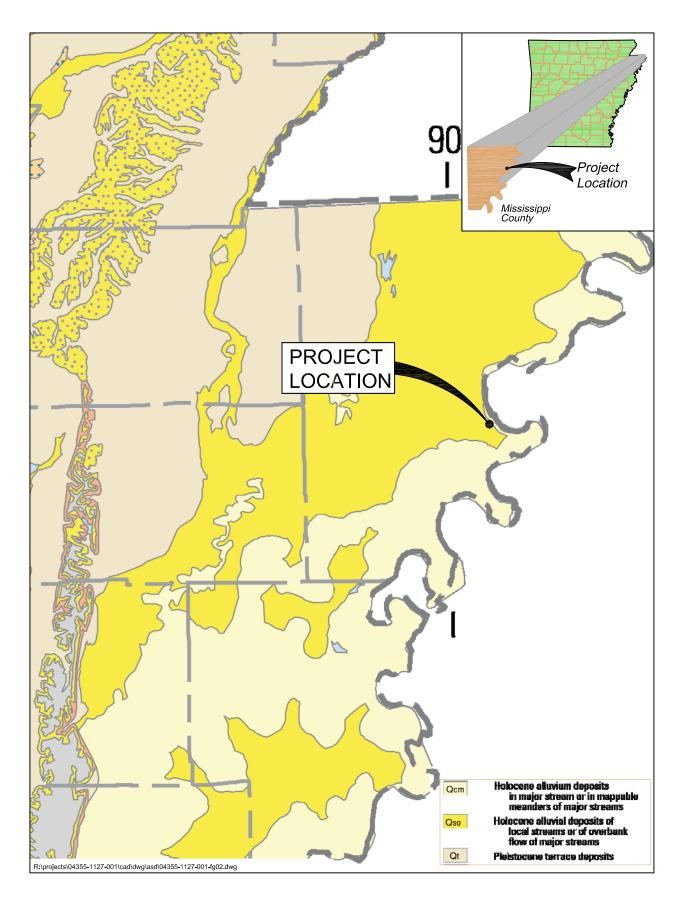


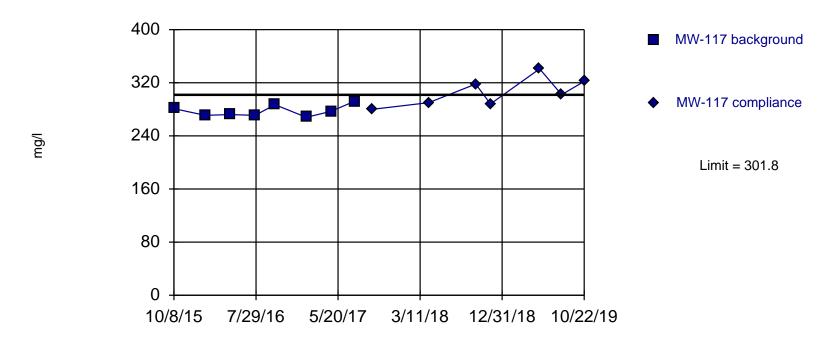
Figure 2. Surface geology of Mississippi County, Arkansas (adapted from Kresse et al. 2014).



**Exceeds Limit** 

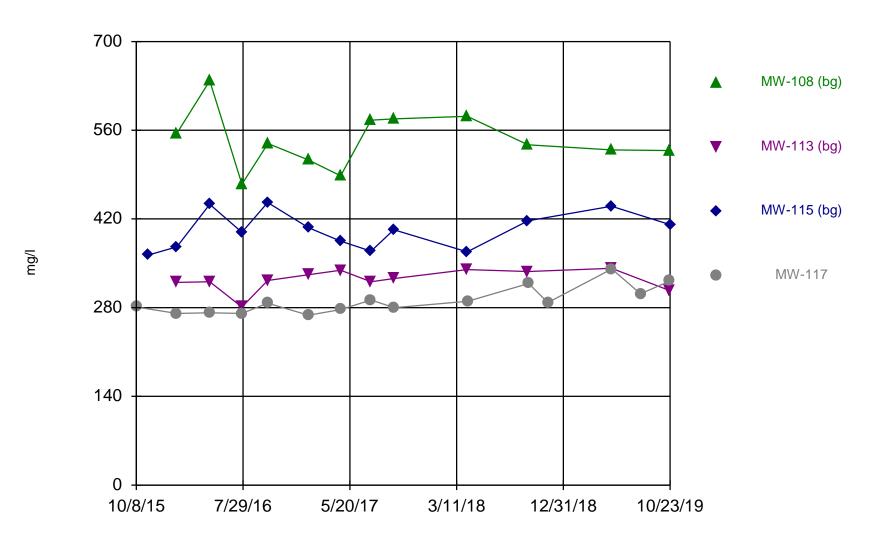
#### **Prediction Limit**

#### Intrawell Parametric



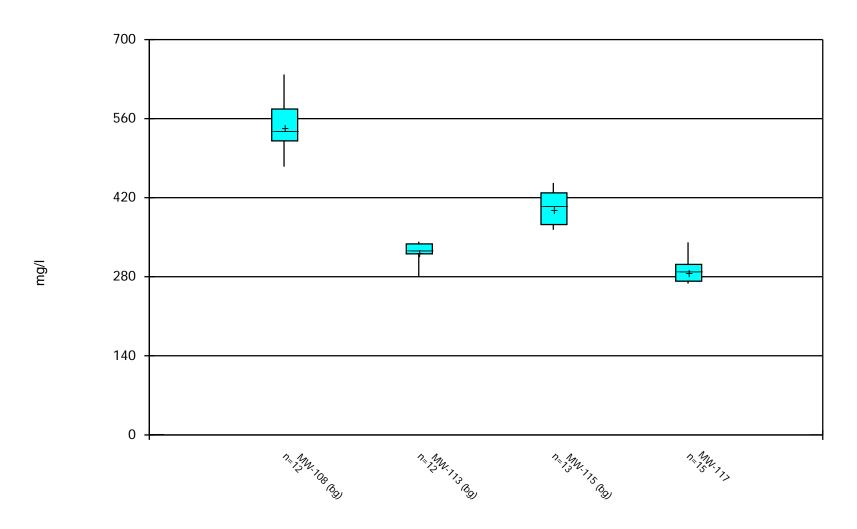
Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9018, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

#### **Time Series**

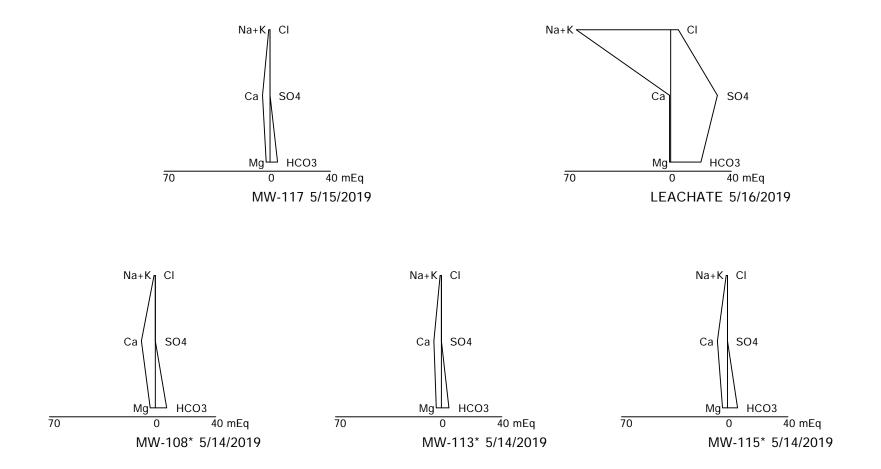


Constituent: Dissolved Solids Analysis Run 12/11/2019 10:23 AM View: 2019-2H Distributional Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

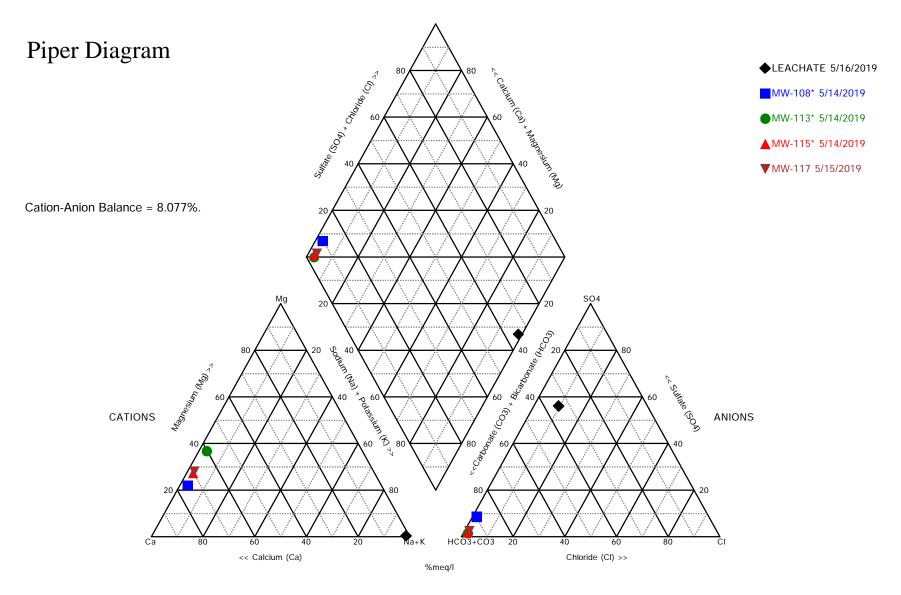
Box & Whiskers Plot



Constituent: Dissolved Solids Analysis Run 12/11/2019 10:25 AM View: 2019-2H Distributional Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



Stiff Diagram Analysis Run 10/21/2019 1:44 PM



Analysis Run 10/21/2019 1:42 PM



Table 1. Summary of statistically significant results and maximum background and published levels.

Well ID	Parameter	Prediction Limit	October 2019 Observation	SSI Confirmed?	Maximum Background Level <sup>(a)</sup>	Maximum Published Level <sup>(b)</sup>
MW-117	TDS	301.8 mg/L	322 mg/L	Yes	638 mg/L (MW-108, April 2016)	728 mg/L

#### Notes:

- a. Based on historical values at MW-108, MW-113, and MW-115.
- b. From Gonthier 2003.

#### **REFERENCES**

Gonthier, G.J. 2003. Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998 [Water-Resources Investigations Report 03-4202]. Jackson, MS: US Geological Survey, National Water-Quality Assessment Program.