EXECUTIVE NARRATIVE

Case No.: 48579
Site: Pierson's Creek
Number of Samples: 13 (Water, GW/SW)
Analysis: Metals (ICP-MS) and Hg

SDG No.: MBFQS9
Laboratory: Bonner Analytical Testing Co.
Sampling dates: 12/05/19 – 12/06/19
Validation SOP: HW-3b and 3c (Rev 1)

QAPP
Contractor: CDM Smith
Reference: DCN:3323-060-03778, February 2019

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.
Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.
Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:
None

Major Findings:
Samples MBFQW8, MBFQW7, MBFQX0, and MBFR92 have analytes that have been qualified J, J+ or J-.

Minor Findings:
One or more analytes in one or more samples are qualified "J" due to results between MDL and CRQL.

COMMENT:	**Metals:** One or more detected and non-detected analytes results are equal to or exceeded the project action levels for one or more samples. **Hg:** One or more detected and non-detected results exceeded the project action levels for one or more samples.

Reviewer Name(s): Constantin Stanca

Approver's Signature: **Date: 02-06-2020**

Name: **Narendra Kumar**

Affiliation: USEPA/R2/HWSB/HWSS

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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J–	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a “tentative identification”.	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	

DATA ASSESSMENT

ANALYSIS: METALS ICP-MS

The current SOP HW-3b (Rev 1) September 2016, USEPA Region II for the evaluation of ICP-MS metals generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated CCB analyte results are greater than or equal to MDLs and less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Antimony MBFQT5, MBFQT6, MBFQT7, MBFQW7, MBFQW8, MBFQX0, MBFQX1, MBFR92

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated ICB analyte results are greater than or equal to MDLs and less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Antimony MBFQT5, MBFQT6, MBFQT7, MBFQW7, MBFQW8, MBFQX0, MBFQX1, MBFR92

Field Blanks (MBFQX7)

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated filed blank analyte results are greater than or equal to MDLs and less than or equal to CRQLs. Detects are qualified as U. Non-detected analytes are not qualified. Sample results are reported at CRQLs.

Chromium MBFQS9, MBFQT4, MBFQT5, MBFQW7

Zinc MBFQS9

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated field blank analyte results are greater than the CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Copper MBFQS9, MBFQT4

The following samples have analyte values greater than the CRQL but less than the associated field blank result. The associated field blank analyte results are greater than the CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to the field blank result.

Copper MBFQS8, MBFQT5

The following sample has analyte values greater than the associated field blank but less than 10X the field blank result. The associated field blank analyte results are greater than the CRQLs. Detected analytes are qualified J. Non-detected analytes are not qualified. Sample results are left unchanged.

Copper MBFQW7

4. **INTERFERENCE CHECK SAMPLE**

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of ± 20% or ±2X CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ MDL are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is ≥ MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE (MBFQX0/MBFR92)

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 10. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

The following aqueous sample is associated with Serial Dilution (SD) sample that has analyte %D greater than 10% but less than 100%. The original sample analyte concentrations are greater than 50xMDLs. Detects are qualified as estimated J. Non-detects are not qualified.

Iron, Sodium MBFQW8

10. ICP-MS TUNE ANALYSIS

The Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) tune serves as an initial demonstration of instrument stability and precision. Prior to calibration, the laboratory shall analyze or scan the ICP-MS tuning solution at least five times (5x) consecutively. The tuning solution contains 100 µg/L of Be, Mg, Co, In, and Pb. The solution shall contain all required isotopes of the above elements. The laboratory shall make any adjustments necessary to bring peak width within the instrument manufacturer's specifications and adjust mass resolution to within 0.1 u over the range of 6-210 u. The Percent Relative Standard Deviation (%RSD) of the absolute signals for all analytes in the tuning solution must be < 5%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

11. ICP-MS INTERNAL STANDARDS

The analysis of Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) internal standards determines the existence and magnitude of instrument drift and physical interferences. The criteria for evaluation of internal standard results apply to all analytical and Quality Control (QC) samples analyzed during the run, beginning with the calibration.
All samples analyzed during a run, with the exception of the ICP-MS tune, shall contain internal standards. A minimum of five internal standards shall be added to each sample. The laboratory shall monitor the same internal standards throughout the entire analytical run and shall assign each analyte to at least one internal standard. The Percent Relative Intensity (%RI) in the sample

shall fall within 60-125% of the response in the calibration blank. If the %RI of the response in the sample falls outside of these limits, the laboratory shall reanalyze the original sample at a two-fold dilution with internal standard added. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

12. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

Not applicable.

ANALYSIS: MERCURY

The current SOP HW-3c (Rev 1) September 2016, USEPA Region II for the evaluation of Mercury generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time, pH (aqueous samples), or cooler temperature are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (28 days) and pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects (sample quantitation limits) will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for mercury. Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be employed to establish the analytical curve. At least one of the calibration standards shall be at or below the Contract Required Quantitation Limit (CRQL). The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The calibration curves for mercury shall possess a correlation coefficient of ≥ 0.995 to ensure the linearity over the calibrated range. The percent differences calculated for all of the non-zero standards must fall within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. All sample results

shall be reported from an analysis within the calibrated range. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for mercury by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every hour during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 85 – 115%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

5. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

6. FIELD DUPLICATE (MBFQX0/MBFR92)

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent

Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

The sample and/or its duplicate pair results are less than 5xCRQL and absolute difference between sample and duplicate is greater than CRQL. Detects are qualified as estimated J. Non-detects are qualified estimated UJ.

Mercury MBFQX0, MBFR92

7. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. Qualifications were applied to the samples and analytes as shown below.

Not applicable.

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: LCS01	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	37.9		ug/L	37.9		1	YES	S3VEM
Antimony	Spike	3.8		ug/L	3.8		1	YES	S3VEM
Arsenic	Spike	1.9		ug/L	1.9		1	YES	S3VEM
Barium	Spike	19.1		ug/L	19.1		1	YES	S3VEM
Beryllium	Spike	1.9		ug/L	1.9		1	YES	S3VEM
Cadmium	Spike	2.0		ug/L	2.0		1	YES	S3VEM
Calcium	Spike	955		ug/L	955		1	YES	S3VEM
Chromium	Spike	4.0		ug/L	4.0		1	YES	S3VEM
Cobalt	Spike	1.9		ug/L	1.9		1	YES	S3VEM
Copper	Spike	4.2		ug/L	4.2		1	YES	S3VEM
Iron	Spike	394		ug/L	394		1	YES	S3VEM
Lead	Spike	1.9		ug/L	1.9		1	YES	S3VEM
Magnesium	Spike	959		ug/L	959		1	YES	S3VEM
Manganese	Spike	1.9		ug/L	1.9		1	YES	S3VEM
Nickel	Spike	1.6		ug/L	1.6		1	YES	S3VEM
Potassium	Spike	1020		ug/L	1020		1	YES	S3VEM
Selenium	Spike	10.9		ug/L	10.9		1	YES	S3VEM
Silver	Spike	1.9		ug/L	1.9		1	YES	S3VEM
Sodium	Spike	907		ug/L	907		1	YES	S3VEM
Thallium	Spike	1.9		ug/L	1.9		1	YES	S3VEM
Vanadium	Spike	10.8		ug/L	10.8		1	YES	S3VEM
Zinc	Spike	3.9		ug/L	3.9		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQS8	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: TMW-21	pH: 1.	Sample Date: 12/05/2019	Sample Time: 10:10:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.056		ug/L	0.056		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQS8	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: TMW-21	pH: 1.	Sample Date: 12/05/2019	Sample Time: 10:10:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	220		ug/L	220		1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	2.0	U	1	YES	S3VEM
Arsenic	Target	12.4		ug/L	12.4		1	YES	S3VEM
Barium	Target	433		ug/L	433		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Calcium	Target	108000		ug/L	108000		1	YES	S3VEM
Chromium	Target	5.6		ug/L	5.6		1	YES	S3VEM
Cobalt	Target	2.0		ug/L	2.0		1	YES	S3VEM
Copper	Target	2.7	U	ug/L	2.7		1	YES	S3VEM
Iron	Target	12000		ug/L	12000	*	1	YES	S3VEM
Lead	Target	6.6		ug/L	6.6		1	YES	S3VEM
Magnesium	Target	42700		ug/L	42700		1	YES	S3VEM
Manganese	Target	442		ug/L	442		1	YES	S3VEM
Nickel	Target	4.3		ug/L	4.3		1	YES	S3VEM
Potassium	Target	36700		ug/L	36700		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Sodium	Target	157000		ug/L	157000	D*	3	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	1.1	J	ug/L	1.1	J	1	YES	S3VEM
Zinc	Target	9.8		ug/L	9.8		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQS9	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: TMW-22	pH: 1.	Sample Date: 12/05/2019	Sample Time: 10:10:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.050	U	ug/L	0.050	U	1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQS9	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: TMW-22	pH: 1.	Sample Date: 12/05/2019	Sample Time: 10:10:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8.4	J	ug/L	8.4	J	1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	2.0	U	1	YES	S3VEM
Arsenic	Target	8.8		ug/L	8.8		1	YES	S3VEM
Barium	Target	411		ug/L	411		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Calcium	Target	119000		ug/L	119000		1	YES	S3VEM
Chromium	Target	2.0	U	ug/L	1.8	J	1	YES	S3VEM
Cobalt	Target	0.93	J	ug/L	0.93	J	1	YES	S3VEM
Copper	Target	2.0	U	ug/L	0.84	J	1	YES	S3VEM
Iron	Target	12500		ug/L	12500	*	1	YES	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Magnesium	Target	41300		ug/L	41300		1	YES	S3VEM
Manganese	Target	2500		ug/L	2500		1	YES	S3VEM
Nickel	Target	2.0		ug/L	2.0		1	YES	S3VEM
Potassium	Target	20600		ug/L	20600		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Sodium	Target	587000		ug/L	587000	D*	10	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	1.1	J	ug/L	1.1	J	1	YES	S3VEM
Zinc	Target	2.0	U	ug/L	1.7	J	1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQT4	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: D5	pH: 1.	Sample Date: 12/05/2019	Sample Time: 12:30:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.024	J	ug/L	0.024	J	1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQT4	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: D5	pH: 1.	Sample Date: 12/05/2019	Sample Time: 12:30:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	20.0	U	ug/L	20.0	U	1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	2.0	U	1	YES	S3VEM
Arsenic	Target	1.9		ug/L	1.9		1	YES	S3VEM
Barium	Target	663		ug/L	663		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Calcium	Target	134000		ug/L	134000		1	YES	S3VEM
Chromium	Target	2.0	U	ug/L	0.40	J	1	YES	S3VEM
Cobalt	Target	1.6		ug/L	1.6		1	YES	S3VEM
Copper	Target	2.0	U	ug/L	1.3	J	1	YES	S3VEM
Iron	Target	24700		ug/L	24700	*	1	YES	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Magnesium	Target	18300		ug/L	18300		1	YES	S3VEM
Manganese	Target	678		ug/L	678		1	YES	S3VEM
Nickel	Target	10.1		ug/L	10.1		1	YES	S3VEM
Potassium	Target	12400		ug/L	12400		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	0.096	J	ug/L	0.096	J	1	YES	S3VEM
Sodium	Target	143000		ug/L	143000	D*	4	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Zinc	Target	7.8		ug/L	7.8		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQT5	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: D7	pH: 1.	Sample Date: 12/05/2019	Sample Time: 11:05:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.15		ug/L	0.15		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQT5	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: D7	pH: 1.	Sample Date: 12/05/2019	Sample Time: 11:05:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	50.7		ug/L	50.7		1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	0.69	J	1	YES	S3VEM
Arsenic	Target	5.3		ug/L	5.3		1	YES	S3VEM
Barium	Target	810		ug/L	810		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Calcium	Target	102000		ug/L	102000		1	YES	S3VEM
Chromium	Target	2.0	U	ug/L	0.69	J	1	YES	S3VEM
Cobalt	Target	0.65	J	ug/L	0.65	J	1	YES	S3VEM
Copper	Target	2.7	U	ug/L	2.4		1	YES	S3VEM
Iron	Target	4620		ug/L	4620	*	1	YES	S3VEM
Lead	Target	2.1		ug/L	2.1		1	YES	S3VEM
Magnesium	Target	22300		ug/L	22300		1	YES	S3VEM
Manganese	Target	873		ug/L	873		1	YES	S3VEM
Nickel	Target	3.9		ug/L	3.9		1	YES	S3VEM
Potassium	Target	12400		ug/L	12400		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	0.067	J	ug/L	0.067	J	1	YES	S3VEM
Sodium	Target	325000		ug/L	325000	D*	5	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Zinc	Target	12.7		ug/L	12.7		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQT6	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: D9	pH: 1.	Sample Date: 12/06/2019	Sample Time: 08:50:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.28		ug/L	0.28		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQT6	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: D9	pH: 1.	Sample Date: 12/06/2019	Sample Time: 08:50:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	195		ug/L	195		1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	0.43	J	1	YES	S3VEM
Arsenic	Target	4.1		ug/L	4.1		1	YES	S3VEM
Barium	Target	346		ug/L	346		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	0.11	J	ug/L	0.11	J	1	YES	S3VEM
Calcium	Target	88300		ug/L	88300		1	YES	S3VEM
Chromium	Target	2.3		ug/L	2.3		1	YES	S3VEM
Cobalt	Target	1.0		ug/L	1.0		1	YES	S3VEM
Copper	Target	9.6		ug/L	9.6		1	YES	S3VEM
Iron	Target	15200		ug/L	15200	*	1	YES	S3VEM
Lead	Target	17.4		ug/L	17.4		1	YES	S3VEM
Magnesium	Target	23100		ug/L	23100		1	YES	S3VEM
Manganese	Target	682		ug/L	682		1	YES	S3VEM
Nickel	Target	2.8		ug/L	2.8		1	YES	S3VEM
Potassium	Target	13200		ug/L	13200		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	0.20	J	ug/L	0.20	J	1	YES	S3VEM
Sodium	Target	325000		ug/L	325000	D*	5	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	1.5	J	ug/L	1.5	J	1	YES	S3VEM
Zinc	Target	21.8		ug/L	21.8		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQT7	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: D11	pH: 1.	Sample Date: 12/06/2019	Sample Time: 09:50:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.050	U	ug/L	0.050	U	1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQT7	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: D11	pH: 1.	Sample Date: 12/06/2019	Sample Time: 09:50:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	20.0	U	ug/L	20.0	U	1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	0.86	J	1	YES	S3VEM
Arsenic	Target	14.2		ug/L	14.2		1	YES	S3VEM
Barium	Target	910		ug/L	910		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Calcium	Target	110000		ug/L	110000		1	YES	S3VEM
Chromium	Target	0.89	J	ug/L	0.89	J	1	YES	S3VEM
Cobalt	Target	3.3		ug/L	3.3		1	YES	S3VEM
Copper	Target	3.9		ug/L	3.9		1	YES	S3VEM
Iron	Target	2760		ug/L	2760	*	1	YES	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Magnesium	Target	58800		ug/L	58800		1	YES	S3VEM
Manganese	Target	494		ug/L	494		1	YES	S3VEM
Nickel	Target	5.9		ug/L	5.9		1	YES	S3VEM
Potassium	Target	24900		ug/L	24900		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Sodium	Target	1480000		ug/L	1480000	D*	20	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	0.71	J	ug/L	0.71	J	1	YES	S3VEM
Zinc	Target	15.1		ug/L	15.1		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQT8	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: D13	pH: 1.	Sample Date: 12/06/2019	Sample Time: 10:10:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.050	U	ug/L	0.050	U	1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQT8	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: D13	pH: 1.	Sample Date: 12/06/2019	Sample Time: 10:10:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	20.0	U	ug/L	20.0	U	1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	2.0	U	1	YES	S3VEM
Arsenic	Target	0.73	J	ug/L	0.73	J	1	YES	S3VEM
Barium	Target	376		ug/L	376		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Calcium	Target	57100		ug/L	57100		1	YES	S3VEM
Chromium	Target	1.1	J	ug/L	1.1	J	1	YES	S3VEM
Cobalt	Target	0.31	J	ug/L	0.31	J	1	YES	S3VEM
Copper	Target	0.75	J	ug/L	0.75	J	1	YES	S3VEM
Iron	Target	16800		ug/L	16800	*	1	YES	S3VEM
Lead	Target	0.49	J	ug/L	0.49	J	1	YES	S3VEM
Magnesium	Target	17800		ug/L	17800		1	YES	S3VEM
Manganese	Target	449		ug/L	449		1	YES	S3VEM
Nickel	Target	0.79	J	ug/L	0.79	J	1	YES	S3VEM
Potassium	Target	9680		ug/L	9680		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Sodium	Target	356000		ug/L	356000	D*	5	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Zinc	Target	8.2		ug/L	8.2		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQW7	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: T14	pH: 1.	Sample Date: 12/05/2019	Sample Time: 11:35:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.39		ug/L	0.39		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQW7	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: T14	pH: 1.	Sample Date: 12/05/2019	Sample Time: 11:35:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	157		ug/L	157		1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	0.60	J	1	YES	S3VEM
Arsenic	Target	120		ug/L	120		1	YES	S3VEM
Barium	Target	207		ug/L	207		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	0.25	J	ug/L	0.25	J	1	YES	S3VEM
Calcium	Target	85300		ug/L	85300		1	YES	S3VEM
Chromium	Target	2.0	U	ug/L	1.1	J	1	YES	S3VEM
Cobalt	Target	5.5		ug/L	5.5		1	YES	S3VEM
Copper	Target	7.6	J	ug/L	7.6		1	YES	S3VEM
Iron	Target	3810		ug/L	3810	*	1	YES	S3VEM
Lead	Target	8.5		ug/L	8.5		1	YES	S3VEM
Magnesium	Target	15100		ug/L	15100		1	YES	S3VEM
Manganese	Target	305		ug/L	305		1	YES	S3VEM
Nickel	Target	4.6		ug/L	4.6		1	YES	S3VEM
Potassium	Target	11200		ug/L	11200		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	0.080	J	ug/L	0.080	J	1	YES	S3VEM
Sodium	Target	379000		ug/L	379000	D*	5	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	0.77	J	ug/L	0.77	J	1	YES	S3VEM
Zinc	Target	50.3		ug/L	50.3		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQW8	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: T15	pH: 1.	Sample Date: 12/05/2019	Sample Time: 09:20:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.25		ug/L	0.25		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQW8	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: T15	pH: 1.	Sample Date: 12/05/2019	Sample Time: 09:20:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	69.2		ug/L	69.2		1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	0.56	J	1	YES	S3VEM
Arsenic	Target	162		ug/L	162		1	YES	S3VEM
Barium	Target	165		ug/L	165		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	0.23	J	ug/L	0.23	J	1	YES	S3VEM
Calcium	Target	86000		ug/L	86000		1	YES	S3VEM
Chromium	Target	0.81	J	ug/L	0.81	J	1	YES	S3VEM
Cobalt	Target	8.0		ug/L	8.0		1	YES	S3VEM
Copper	Target	5.4		ug/L	5.4		1	YES	S3VEM
Iron	Target	4570	J	ug/L	4570	*	1	YES	S3VEM
Lead	Target	6.5		ug/L	6.5		1	YES	S3VEM
Magnesium	Target	16000		ug/L	16000		1	YES	S3VEM
Manganese	Target	315		ug/L	315		1	YES	S3VEM
Nickel	Target	4.6		ug/L	4.6		1	YES	S3VEM
Potassium	Target	12400		ug/L	12400		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Sodium	Target	411000	J	ug/L	411000	D*	5	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	0.77	J	ug/L	0.77	J	1	YES	S3VEM
Zinc	Target	52.0		ug/L	52.0		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQW8D	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location:	pH: 1.	Sample Date: 12/05/2019	Sample Time: 09:20:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.25		ug/L	0.25		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQW8D	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH: 1.	Sample Date: 12/05/2019	Sample Time: 09:20:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	70.1		ug/L	70.1		1	YES	S3VEM
Antimony	Target	0.63	J	ug/L	0.63	J	1	YES	S3VEM
Arsenic	Target	156		ug/L	156		1	YES	S3VEM
Barium	Target	162		ug/L	162		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	0.28	J	ug/L	0.28	J	1	YES	S3VEM
Calcium	Target	84500		ug/L	84500		1	YES	S3VEM
Chromium	Target	0.88	J	ug/L	0.88	J	1	YES	S3VEM
Cobalt	Target	7.8		ug/L	7.8		1	YES	S3VEM
Copper	Target	5.3		ug/L	5.3		1	YES	S3VEM
Iron	Target	4430		ug/L	4430		1	YES	S3VEM
Lead	Target	6.4		ug/L	6.4		1	YES	S3VEM
Magnesium	Target	15500		ug/L	15500		1	YES	S3VEM
Manganese	Target	305		ug/L	305		1	YES	S3VEM
Nickel	Target	4.4		ug/L	4.4		1	YES	S3VEM
Potassium	Target	12100		ug/L	12100		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	0.96	J	ug/L	0.96	J	1	YES	S3VEM
Zinc	Target	51.4		ug/L	51.4		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQW8L	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH: 1.	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	67.2	J	ug/L	67.2	J	5	YES	S3VEM
Antimony	Target	10.0	U	ug/L	10.0	U	5	YES	S3VEM
Arsenic	Target	168		ug/L	168		5	YES	S3VEM
Barium	Target	165		ug/L	165		5	YES	S3VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	5	YES	S3VEM
Cadmium	Target	5.0	U	ug/L	5.0	U	5	YES	S3VEM
Calcium	Target	88700		ug/L	88700		5	YES	S3VEM
Chromium	Target	10.0	U	ug/L	10.0	U	5	YES	S3VEM
Cobalt	Target	7.6		ug/L	7.6		5	YES	S3VEM
Copper	Target	6.6	J	ug/L	6.6	J	5	YES	S3VEM
Iron	Target	5050		ug/L	5050	*	5	YES	S3VEM
Lead	Target	6.3		ug/L	6.3		5	YES	S3VEM
Magnesium	Target	15900		ug/L	15900		5	YES	S3VEM
Manganese	Target	344		ug/L	344		5	YES	S3VEM
Nickel	Target	3.4	J	ug/L	3.4	J	5	YES	S3VEM
Potassium	Target	12600		ug/L	12600		5	YES	S3VEM
Selenium	Target	25.0	U	ug/L	25.0	U	5	YES	S3VEM
Silver	Target	5.0	U	ug/L	5.0	U	5	YES	S3VEM
Sodium	Target	466000		ug/L	466000	D*	25	YES	S3VEM
Thallium	Target	5.0	U	ug/L	5.0	U	5	YES	S3VEM
Vanadium	Target	25.0	U	ug/L	25.0	U	5	YES	S3VEM
Zinc	Target	54.5		ug/L	54.5		5	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQW8S	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location:	pH: 1.	Sample Date: 12/05/2019	Sample Time: 09:20:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Spike	1.1		ug/L	1.1		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQW8S	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH: 1.	Sample Date: 12/05/2019	Sample Time: 09:20:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	102		ug/L	102		1	YES	S3VEM
Arsenic	Spike	195		ug/L	195		1	YES	S3VEM
Barium	Spike	2080		ug/L	2080		1	YES	S3VEM
Beryllium	Spike	49.5		ug/L	49.5		1	YES	S3VEM
Cadmium	Spike	50.8		ug/L	50.8		1	YES	S3VEM
Chromium	Spike	186		ug/L	186		1	YES	S3VEM
Cobalt	Spike	479		ug/L	479		1	YES	S3VEM
Copper	Spike	240		ug/L	240		1	YES	S3VEM
Lead	Spike	26.2		ug/L	26.2		1	YES	S3VEM
Manganese	Spike	757		ug/L	757		1	YES	S3VEM
Nickel	Spike	465		ug/L	465		1	YES	S3VEM
Selenium	Spike	91.4		ug/L	91.4		1	YES	S3VEM
Silver	Spike	50.5		ug/L	50.5		1	YES	S3VEM
Thallium	Spike	51.3		ug/L	51.3		1	YES	S3VEM
Vanadium	Spike	520		ug/L	520		1	YES	S3VEM
Zinc	Spike	504		ug/L	504		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQX0	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: T17	pH: 1.	Sample Date: 12/06/2019	Sample Time: 11:35:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.15	J	ug/L	0.15		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQX0	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: T17	pH: 1.	Sample Date: 12/06/2019	Sample Time: 11:35:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	52.3		ug/L	52.3		1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	0.59	J	1	YES	S3VEM
Arsenic	Target	70.7		ug/L	70.7		1	YES	S3VEM
Barium	Target	153		ug/L	153		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	0.11	J	ug/L	0.11	J	1	YES	S3VEM
Calcium	Target	70500		ug/L	70500		1	YES	S3VEM
Chromium	Target	1.2	J	ug/L	1.2	J	1	YES	S3VEM
Cobalt	Target	3.9		ug/L	3.9		1	YES	S3VEM
Copper	Target	5.0		ug/L	5.0		1	YES	S3VEM
Iron	Target	3180		ug/L	3180	*	1	YES	S3VEM
Lead	Target	3.5		ug/L	3.5		1	YES	S3VEM
Magnesium	Target	18300		ug/L	18300		1	YES	S3VEM
Manganese	Target	347		ug/L	347		1	YES	S3VEM
Nickel	Target	3.5		ug/L	3.5		1	YES	S3VEM
Potassium	Target	11700		ug/L	11700		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Sodium	Target	430000		ug/L	430000	D*	5	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	0.74	J	ug/L	0.74	J	1	YES	S3VEM
Zinc	Target	30.4		ug/L	30.4		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQX1	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: T19	pH: 1.	Sample Date: 12/06/2019	Sample Time: 11:20:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.16		ug/L	0.16		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQX1	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: T19	pH: 1.	Sample Date: 12/06/2019	Sample Time: 11:20:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	56.5		ug/L	56.5		1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	0.53	J	1	YES	S3VEM
Arsenic	Target	70.7		ug/L	70.7		1	YES	S3VEM
Barium	Target	154		ug/L	154		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	0.14	J	ug/L	0.14	J	1	YES	S3VEM
Calcium	Target	71400		ug/L	71400		1	YES	S3VEM
Chromium	Target	1.3	J	ug/L	1.3	J	1	YES	S3VEM
Cobalt	Target	4.0		ug/L	4.0		1	YES	S3VEM
Copper	Target	5.5		ug/L	5.5		1	YES	S3VEM
Iron	Target	3210		ug/L	3210	*	1	YES	S3VEM
Lead	Target	3.7		ug/L	3.7		1	YES	S3VEM
Magnesium	Target	18400		ug/L	18400		1	YES	S3VEM
Manganese	Target	346		ug/L	346		1	YES	S3VEM
Nickel	Target	3.7		ug/L	3.7		1	YES	S3VEM
Potassium	Target	11800		ug/L	11800		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	0.061	J	ug/L	0.061	J	1	YES	S3VEM
Sodium	Target	430000		ug/L	430000	D*	5	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	0.75	J	ug/L	0.75	J	1	YES	S3VEM
Zinc	Target	32.0		ug/L	32.0		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQX7	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: Rinsate Blank	pH: 1.	Sample Date: 12/05/2019	Sample Time: 15:00:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.050	U	ug/L	0.050	U	1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFQX7	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: Rinsate Blank	pH: 1.	Sample Date: 12/05/2019	Sample Time: 15:00:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	20.0	U	ug/L	20.0	U	1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	2.0	U	1	YES	S3VEM
Arsenic	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Barium	Target	0.22	J	ug/L	0.22	J	1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Calcium	Target	40.8	J	ug/L	40.8	J	1	YES	S3VEM
Chromium	Target	0.36	J	ug/L	0.36	J	1	YES	S3VEM
Cobalt	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Copper	Target	2.7		ug/L	2.7		1	YES	S3VEM
Iron	Target	19.9	J	ug/L	19.9	J*	1	YES	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Magnesium	Target	500	U	ug/L	500	U	1	YES	S3VEM
Manganese	Target	0.36	J	ug/L	0.36	J	1	YES	S3VEM
Nickel	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Potassium	Target	500	U	ug/L	500	U	1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Sodium	Target	372	J	ug/L	372	J*	1	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Zinc	Target	1.8	J	ug/L	1.8	J	1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFR92	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location: T17	pH: 1.	Sample Date: 12/06/2019	Sample Time: 11:35:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.40	J	ug/L	0.40		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: MBFR92	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location: T17	pH: 1.	Sample Date: 12/06/2019	Sample Time: 11:35:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	52.5		ug/L	52.5		1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	0.54	J	1	YES	S3VEM
Arsenic	Target	67.0		ug/L	67.0		1	YES	S3VEM
Barium	Target	149		ug/L	149		1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Calcium	Target	67600		ug/L	67600		1	YES	S3VEM
Chromium	Target	1.2	J	ug/L	1.2	J	1	YES	S3VEM
Cobalt	Target	3.8		ug/L	3.8		1	YES	S3VEM
Copper	Target	4.6		ug/L	4.6		1	YES	S3VEM
Iron	Target	3250		ug/L	3250	*	1	YES	S3VEM
Lead	Target	3.6		ug/L	3.6		1	YES	S3VEM
Magnesium	Target	17500		ug/L	17500		1	YES	S3VEM
Manganese	Target	341		ug/L	341		1	YES	S3VEM
Nickel	Target	3.9		ug/L	3.9		1	YES	S3VEM
Potassium	Target	11200		ug/L	11200		1	YES	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Silver	Target	0.063	J	ug/L	0.063	J	1	YES	S3VEM
Sodium	Target	392000		ug/L	392000	D*	5	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	0.70	J	ug/L	0.70	J	1	YES	S3VEM
Zinc	Target	28.6		ug/L	28.6		1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project | **GroupID: 48579/EPW14029/MBFQS9** | **Lab Name: Bonner Analytical Testing Co.**

Sample Number: PBW01	Method: Mercury by Cold Vapor	Matrix: Water	MA Number: 2755.2
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.050	U	ug/L	0.050	U	1	YES	S3VEM

Sample Summary Report

Project Name: PIERSON'S CREEK Project **GroupID: 48579/EPW14029/MBFQS9** **Lab Name: Bonner Analytical Testing Co.**

Sample Number: PBW01	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	20.0	U	ug/L	20.0	U	1	YES	S3VEM
Antimony	Target	2.0	U	ug/L	2.0	U	1	YES	S3VEM
Arsenic	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Barium	Target	10.0	U	ug/L	10.0	U	1	YES	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Calcium	Target	-5.6	J	ug/L	-5.6	J	1	YES	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	YES	S3VEM
Cobalt	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Copper	Target	2.0	U	ug/L	2.0	U	1	YES	S3VEM
Iron	Target	200	U	ug/L	200	U	1	YES	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Magnesium	Target	500	U	ug/L	500	U	1	YES	S3VEM
Manganese	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Nickel	Target	-0.21	J	ug/L	-0.21	J	1	YES	S3VEM
Potassium	Target	58.8	J	ug/L	58.8	J	1	YES	S3VEM
Selenium	Target	-0.48	J	ug/L	-0.48	J	1	YES	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Sodium	Target	-51	J	ug/L	-51	J	1	YES	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	YES	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Zinc	Target	2.0	U	ug/L	2.0	U	1	YES	S3VEM