Friday, September 21, 2018

Karen Waters-Husted
CH2M HILL Plateau Remediation Company
825 Jadwin Avenue
Richland, WA 99352

Re: ALS Workorder: 1808427
Project Name: SURV, SEPTEMBER 2018
Project Number: S18-009

Dear Ms. Waters-Husted:

Two water samples were received from CH2M HILL Plateau Remediation Company, on 8/22/2018. The samples were scheduled for the following analysis:

Metals

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Katie M. OBrien
Project Manager

We certify that this data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1808427
Client Name: CH2M HILL Plateau Remediation Company
Client Project Name: SURV, SEPTEMBER 2018
Client Project Number: S18-009
Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B3KC26	1808427-1		WATER	21-Aug-18	12:01
B3KC28	1808427-2		WATER	21-Aug-18	12:01

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 1808427	C.O.C. # S18-009-010 Page 1 of 1

Collector: WILLIAM COLLINS CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-009	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, SEPTEMBER 2018	**Logbook No.:** HNF-N-506 -99/90	**Ice Chest No.:** Cus-1057
Shipped To (Lab): ALS Environmental Ft. Collins	**Method of Shipment:** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7730 2885 8163
Protocol: SURV	**Priority:** 30 Days	**Offsite Property No.:** 9835

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3KC26 (6)	N	W	8-21-18	1201	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 06	6 Months	HNO3 to pH <2
B3KC28 (7)	Y	W	8-21-18	1201	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 06	6 Months	HNO3 to pH <2

	Print First and Last Name	Signature	Date/Time
Relinquished By:	WILLIAM COLLINS CHPRC		AUG 2 1 2018 1240
Received By:	Janelle Zunker CHPRC		AUG 2 1 2018 1240
Relinquished By:	Janelle Zunker CHPRC		AUG 2 1 2018 1400
Received By:		FEDEX	
Relinquished By:	FED EX		
Received By:	C Trimble		8-22-18 1025
Relinquished By:			
Received By:			

Matrix *

S = Soil	DS = Drum Solids
SE = Sediment	DL = Drum Liquids
SO = Solid	T = Tissue
SL = Sludge	WI = Wipe
W = Water	L = Liquid
O = Oil	V = Vegetation
A = Air	X = Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 7/16/2018 FSR ID = FSR64371 A-6004-842 (REV 3)

ALS1808427 Sept. 21, 2018 Rev. 0

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC Workorder No: 1808427

Project Manager: MH Initials: CDS Date: 8-22-18

1.	Are airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
2.	Are custody seals on **shipping** containers intact?	NONE	YES	NO
3.	Are custody seals on **sample** containers intact?	NONE	YES	NO
4.	Is there a COC (chain-of-custody) present?		YES	NO
5.	Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		YES	NO
6.	Are short-hold samples present?		YES	NO
7.	Are all samples within holding times for the requested analyses?		YES	NO
8.	Were all sample containers received intact? (not broken or leaking)		YES	NO
9.	Is there sufficient sample for the requested analyses?		YES	NO
10.	Are all samples in the proper containers for the requested analyses?		YES	NO
11.	Are all aqueous samples preserved correctly, if required? (excluding volatiles)	N/A	YES	NO
12.	Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO
13.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	N/A	YES	NO
14.	Were the samples shipped on ice?		YES	NO
15.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #1 #3 #4	RAD ONLY	YES	NO

Cooler #:	1								
Temperature (°C):	Amb								
No. of custody seals on cooler:	2								
DOT Survey/ Acceptance Information — External µR/hr reading:	10								
Background µR/hr reading:	11								

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? **YES** / NO / NA (If no, see Form 008.)

Additional Information: **Please provide details here for any NO responses to gray-shaded boxes above, or any other issues noted:**

If applicable, was the client contacted? **YES / NO / NA** Contact: _____ Date/Time: _____

Project Manager Signature / Date: 8/23/18

Form 201r26.xls
(06/29/2018)

*IR Gun #1, VWR SN 170560549
*IR Gun #3, VWR SN 170647571
*IR Gun #4, Oakton, SN 2372220101-0002

1808427

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Metals

Case Narrative

CH2M HILL Plateau Remediation Company

SURV, SEPTEMBER 2018 – S18-009

Work Order Number: 1808427

1. The samples were prepared and analyzed based on SW-846, 3rd Edition procedures.

   For analysis by Trace ICP and ICP-MS, the samples were digested following method 3005A and the current revision of SOP 806.

2. Analysis by ICP-MS followed method 6020A and the current revision of SOP 827.

   Analysis by Trace ICP followed method 6010B and the current revision of SOP 834.

3. All standards and solutions are NIST traceable and were used within their recommended shelf life.

4. The samples were prepared and analyzed within the established hold time.

All in house quality control procedures were followed, as described below.

5. General quality control procedures.

   - A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in this digestion batch.
   - The preparation (method) blank associated with this digestion batch was below the reporting limit for the requested analytes. Sample results have been compared to the blank results and are flagged as appropriate. Chromium, manganese, sodium, and tin were detected above the MDL.
   - All laboratory control sample criteria were met.
   - All initial and continuing calibration blanks were below the reporting limit for the requested analytes.

- All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.
- The interference check samples and high standard read-backs associated with Method 6010B were within acceptance criteria.
- The interference check samples associated with Method 6020A were analyzed.

6. Matrix specific quality control procedures.

   Sample 1808427-1 was designated as the quality control sample for the ICP-Trace analysis. Sample 1808376-1 was designated as the quality control sample for the ICP-MS analysis. Results for the shared quality control sample are included at the client's request.

   Similarity of matrix and therefore relevance of the QC results should not be automatically inferred for any sample other than the native sample selected for QC.

   - A matrix spike and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for accuracy were met.
   - Matrix spike recoveries could not be evaluated for the following analyte:

Analyte	Sample ID
Strontium	1808376-1MS and -1MSD

     The concentration of this analyte in the native sample was greater than four times the concentration of matrix spike added during the digestion. When sample concentration is that much greater than the spike added, spike recoveries may not be accurate. The laboratory control sample indicates that the digestion and analysis were in control.

   - A matrix spike duplicate was digested and analyzed with each batch. All acceptance criteria for precision were met.
   - A serial dilution was analyzed with each ICP batch. All acceptance criteria were met.

7. It is a standard practice that samples for ICP-MS are analyzed at a dilution. The 10X factor can be considered an artifact of the prep and does not indicate a secondary dilution and is therefore not flagged as a dilution.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Pik Yee Yuen — 9/18/18
Pik Yee Yuen — Date
Inorganics Primary Data Reviewer

9/21/18
Inorganics Final Data Reviewer — Date

Inorganic Data Reporting Qualifiers

The following qualifiers are used as needed by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- A “B” is entered if the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL). If the analyte was analyzed for but not detected a “U” is entered. For samples, negative values are reported as non-detects (“U” flagged). For blanks, if the absolute value of the negative value is above the MDL and below the reporting limit, then the result is “B” flagged.

- QC qualifier -- Specified entries and their meanings are as follows:

  E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

  M - Duplicate injection precision was not met.

  N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

  Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

  * - Duplicate analysis (relative percent difference) not within control limits.

  S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

  C - The analyte was detected in both the sample and the associated QC blank, and the sample concentration was <=20X the blank concentration.

  D - Analyte was reported at a secondary dilution factor, typically DF>1 (i.e., the primary preparation required dilution to either bring the analyte within the calibration range or to minimize interference). Required for organics/wetchem if the sample was diluted.

Total Recoverable ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Field ID: B3KC26
Lab ID: 1808427-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 21-Aug-18
Date Extracted: 11-Sep-18
Date Analyzed: 12-Sep-18
Prep Method: SW3005 Rev A

Prep Batch: IP180911-4
QCBatchID: IP180911-4-6
Run ID: IT180912-1A5
Cleanup: NONE
Basis: As Received
File Name: 180912A.

Analyst: Steve Workman
Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	36	U	50	36
7440-70-2	CALCIUM	1	75000		1000	210
7439-89-6	IRON	1	30	U	50	30
7439-95-4	MAGNESIUM	1	12000		750	89
7723-14-0	PHOSPHORUS	1	36	B	200	5.3
7440-09-7	POTASSIUM	1	2300		1000	130
7440-23-5	SODIUM	1	6300		500	38
7440-62-2	VANADIUM	1	3.6	B	10	0.43

Data Package ID: *IT1808427-1*

Dissolved ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Field ID: B3KC28
Lab ID: 1808427-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 21-Aug-18
Date Extracted: 11-Sep-18
Date Analyzed: 12-Sep-18
Prep Method: SW3005 Rev A

Prep Batch: IP180911-4
QCBatchID: IP180911-4-6
Run ID: IT180912-1A5
Cleanup: NONE
Basis: As Received
File Name: 180912A.

Analyst: Steve Workman
Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	36	U	50	36
7440-70-2	CALCIUM	1	75000		1000	210
7439-89-6	IRON	1	30	U	50	30
7439-95-4	MAGNESIUM	1	12000		750	89
7723-14-0	PHOSPHORUS	1	37	B	200	5.3
7440-09-7	POTASSIUM	1	2300		1000	130
7440-23-5	SODIUM	1	6200		500	38
7440-62-2	VANADIUM	1	4.8	B	10	0.43

Data Package ID: *IT1808427-1*

Total Recoverable ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Field ID: B3KC26
Lab ID: 1808427-1

Analysis ReqCode: 6020_METALS_I

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 21-Aug-18
Date Extracted: 11-Sep-18
Date Analyzed: 12-Sep-18
Prep Method: SW3005 Rev A

Prep Batch: IP180911-4
QCBatchID: IP180911-4-2
Run ID: IM180912-11A5
Cleanup: NONE
Basis: As Received
File Name: 090SMPL_

Analyst: Brent A. Stanfield
Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7429-90-5	ALUMINUM	10	11	B	100	10
7440-36-0	ANTIMONY	10	0.12	U	1	0.12
7440-38-2	ARSENIC	10	1.6	B	2	0.39
7440-39-3	BARIUM	10	45		5	0.56
7440-41-7	BERYLLIUM	10	0.054	U	0.5	0.054
7440-43-9	CADMIUM	10	0.083	U	2	0.083
7440-47-3	CHROMIUM	10	7.3	BC	10	0.46
7440-48-4	COBALT	10	0.11	U	5	0.11
7440-50-8	COPPER	10	0.32	U	8	0.32
7439-92-1	LEAD	10	0.079	U	2	0.079
7439-96-5	MANGANESE	10	2	BC	5	0.36
7439-98-7	MOLYBDENUM	10	0.74	B	2	0.079
7440-02-0	NICKEL	10	1.7	B	20	0.92
7782-49-2	SELENIUM	10	2.2	B	10	0.65
7440-22-4	SILVER	10	0.029	U	0.5	0.029
7440-24-6	STRONTIUM	10	330		5	0.32
7440-28-0	THALLIUM	10	0.01	B	0.1	0.0041
7440-29-1	THORIUM	10	0.016	U	0.2	0.016
7440-31-5	TIN	10	0.62	BC	10	0.12
7440-61-1	URANIUM	10	0.9		0.1	0.0049
7440-66-6	ZINC	10	1.4	U	100	1.4

Data Package ID: *IM1808427-1*

Dissolved ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Field ID: B3KC28
Lab ID: 1808427-2

Analysis ReqCode: 6020_METALS_I

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 21-Aug-18
Date Extracted: 11-Sep-18
Date Analyzed: 12-Sep-18
Prep Method: SW3005 Rev A

Prep Batch: IP180911-4
QCBatchID: IP180911-4-2
Run ID: IM180912-11A5
Cleanup: NONE
Basis: As Received
File Name: 091SMPL_

Analyst: Brent A. Stanfield
Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7429-90-5	ALUMINUM	10	10	U	100	10
7440-36-0	ANTIMONY	10	0.14	B	1	0.12
7440-38-2	ARSENIC	10	1.2	B	2	0.39
7440-39-3	BARIUM	10	44		5	0.56
7440-41-7	BERYLLIUM	10	0.054	U	0.5	0.054
7440-43-9	CADMIUM	10	0.083	U	2	0.083
7440-47-3	CHROMIUM	10	6.1	BC	10	0.46
7440-48-4	COBALT	10	0.11	B	5	0.11
7440-50-8	COPPER	10	0.45	B	8	0.32
7439-92-1	LEAD	10	0.079	U	2	0.079
7439-96-5	MANGANESE	10	1.6	BC	5	0.36
7439-98-7	MOLYBDENUM	10	0.77	B	2	0.079
7440-02-0	NICKEL	10	1.4	B	20	0.92
7782-49-2	SELENIUM	10	2.2	B	10	0.65
7440-22-4	SILVER	10	0.029	U	0.5	0.029
7440-24-6	STRONTIUM	10	330		5	0.32
7440-28-0	THALLIUM	10	0.01	B	0.1	0.0041
7440-29-1	THORIUM	10	0.016	U	0.2	0.016
7440-31-5	TIN	10	0.55	BC	10	0.12
7440-61-1	URANIUM	10	0.84		0.1	0.0049
7440-66-6	ZINC	10	1.4	U	100	1.4

Data Package ID: *IM1808427-1*

ICP Metals

Method SW6010B

Method Blank

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Lab ID: IP180911-4MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 11-Sep-18
Date Analyzed: 12-Sep-18

Prep Batch: IP180911-4
QCBatchID: IP180911-4-6
Run ID: IT180912-1A5
Cleanup: NONE
Basis: N/A
File Name: 180912A.

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	36	U	50	36
7440-70-2	CALCIUM	1	210	U	1000	210
7439-89-6	IRON	1	30	U	50	30
7439-95-4	MAGNESIUM	1	89	U	750	89
7723-14-0	PHOSPHORUS	1	5.3	U	200	5.3
7440-09-7	POTASSIUM	1	130	U	1000	130
7440-23-5	SODIUM	1	86	B	500	38
7440-62-2	VANADIUM	1	0.43	U	10	0.43

Data Package ID: *IT1808427-1*

ICP Metals

Method SW6010B

Laboratory Control Sample

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Lab ID: IP180911-4LCS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 09/11/2018
Date Analyzed: 09/12/2018
Prep Method: SW3005A

Prep Batch: IP180911-4
QCBatchID: IP180911-4-6
Run ID: IT180912-1A5
Cleanup: NONE
Basis: N/A
File Name: 180912A.

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-42-8	BORON	1000	943	50		94	80 - 120%
7440-70-2	CALCIUM	40000	37500	1000		94	80 - 120%
7439-89-6	IRON	1000	918	50		92	80 - 120%
7439-95-4	MAGNESIUM	40000	38400	750		96	80 - 120%
7723-14-0	PHOSPHORUS	10000	9410	200		94	80 - 120%
7440-09-7	POTASSIUM	40000	36400	1000		91	80 - 120%
7440-23-5	SODIUM	40000	36400	500		91	80 - 120%
7440-62-2	VANADIUM	500	461	10		92	80 - 120%

Data Package ID: *IT1808427-1*

ICP Metals

Method SW6010B

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Field ID: B3KC26
LabID: 1808427-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 21-Aug-18
Date Extracted: 11-Sep-18
Date Analyzed: 12-Sep-18
Prep Method: SW3005 Rev A

Prep Batch: IP180911-4
QCBatchID: IP180911-4-6
Run ID: IT180912-1A5
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 180912A.

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-42-8	BORON	36	U	964		50	1000	96	80 - 120%
7440-70-2	CALCIUM	75000		113000		1000	40000	95	80 - 120%
7439-89-6	IRON	30	U	908		50	1000	91	80 - 120%
7439-95-4	MAGNESIUM	12000		50700		750	40000	96	80 - 120%
7723-14-0	PHOSPHORUS	36	B	9290		200	10000	93	80 - 120%
7440-09-7	POTASSIUM	2300		40800		1000	40000	96	80 - 120%
7440-23-5	SODIUM	6300		44600		500	40000	96	80 - 120%
7440-62-2	VANADIUM	3.6	B	456		10	500	91	80 - 120%

Field ID: B3KC26
LabID: 1808427-1MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 21-Aug-18
Date Extracted: 11-Sep-18
Date Analyzed: 12-Sep-18
Prep Method: SW3005 Rev A

Prep Batch: IP180911-4
QCBatchID: IP180911-4-6
Run ID: IT180912-1A5
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 180912A.

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-42-8	BORON	972		1000	97	50	20	1
7440-70-2	CALCIUM	114000		40000	97	1000	20	1
7439-89-6	IRON	918		1000	92	50	20	1
7439-95-4	MAGNESIUM	51100		40000	97	750	20	1
7723-14-0	PHOSPHORUS	9480		10000	94	200	20	2
7440-09-7	POTASSIUM	41100		40000	97	1000	20	1
7440-23-5	SODIUM	44800		40000	96	500	20	1
7440-62-2	VANADIUM	460		500	91	10	20	1

Data Package ID: *IT1808427-1*

Prep Batch ID: IP180911-4

Start Date: 09/11/18
Start Time: 11:09
Prep Analyst: Jill M. Latelle

End Date: 09/11/18
End Time: 18:00

Concentration Method: NONE
Extract Method: SW3005A
Initial Volume Units: ml
Final Volume Units: ml

Batch Created By: jml
Date Created: 09/11/18
Time Created: 11:09
Validated By: jml
Date Validated: 09/11/18
Time Validated: 12:38

Comments:

QC Batch ID: IP180911-4-6

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP180911-4	MB	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808427
IP180911-4	LCS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808427
1808427-1	MS	B3KC26	WATER	8/21/2018	50	50	NONE	1	1808427
1808427-1	MSD	B3KC26	WATER	8/21/2018	50	50	NONE	1	1808427
1808427-1	SMP	B3KC26	WATER	8/21/2018	50	50	NONE	1	1808427
1808427-2	SMP	B3KC28	WATER	8/21/2018	50	50	NONE	1	1808427

QC Types

CAR	Carrier reference sample	DUP	Laboratory Duplicate
LCS	Laboratory Control Sample	LCSD	Laboratory Control Sample Duplicat
MB	Method Blank	MS	Laboratory Matrix Spike
MSD	Laboratory Matrix Spike Duplicate	REP	Sample replicate
RVS	Reporting Level Verification Standar	SMP	Field Sample
SYS	Sample Yield Spike		

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Lab ID: IP180911-4MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 11-Sep-18
Date Analyzed: 12-Sep-18

Prep Batch: IP180911-4
QCBatchID: IP180911-4-2
Run ID: IM180912-11A5
Cleanup: NONE
Basis: N/A
File Name: 073SMPL_

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL
7429-90-5	ALUMINUM	10	10	U	100	10
7440-36-0	ANTIMONY	10	0.12	U	1	0.12
7440-38-2	ARSENIC	10	0.39	U	2	0.39
7440-39-3	BARIUM	10	0.56	U	5	0.56
7440-41-7	BERYLLIUM	10	0.054	U	0.5	0.054
7440-43-9	CADMIUM	10	0.083	U	2	0.083
7440-47-3	CHROMIUM	10	0.68	B	10	0.46
7440-48-4	COBALT	10	0.11	U	5	0.11
7440-50-8	COPPER	10	0.32	U	8	0.32
7439-92-1	LEAD	10	0.079	U	2	0.079
7439-96-5	MANGANESE	10	1.7	B	5	0.36
7439-98-7	MOLYBDENUM	10	0.079	U	2	0.079
7440-02-0	NICKEL	10	0.92	U	20	0.92
7782-49-2	SELENIUM	10	0.65	U	10	0.65
7440-22-4	SILVER	10	0.029	U	0.5	0.029
7440-24-6	STRONTIUM	10	0.32	U	5	0.32
7440-28-0	THALLIUM	10	0.0041	U	0.1	0.0041
7440-29-1	THORIUM	10	0.016	U	0.2	0.016
7440-31-5	TIN	10	0.55	B	10	0.12
7440-61-1	URANIUM	10	0.0049	U	0.1	0.0049
7440-66-6	ZINC	10	1.4	U	100	1.4

Data Package ID: *IM1808427-1*

ICPMS Metals

Method SW6020A

Laboratory Control Sample

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Lab ID: IM180911-4LCS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 09/11/2018
Date Analyzed: 09/12/2018
Prep Method: SW3005A

Prep Batch: IP180911-4
QCBatchID: IP180911-4-2
Run ID: IM180912-11A5
Cleanup: NONE
Basis: N/A
File Name: 074SMPL_

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7429-90-5	ALUMINUM	5000	4480	100		90	80 - 120%
7440-36-0	ANTIMONY	30	26.9	1		90	80 - 120%
7440-38-2	ARSENIC	100	96.7	2		97	80 - 120%
7440-39-3	BARIUM	100	93.6	5		94	80 - 120%
7440-41-7	BERYLLIUM	50	49.5	0.5		99	80 - 120%
7440-43-9	CADMIUM	30	29.8	2		99	80 - 120%
7440-47-3	CHROMIUM	500	483	10		97	80 - 120%
7440-48-4	COBALT	100	99.7	5		100	80 - 120%
7440-50-8	COPPER	1000	941	8		94	80 - 120%
7439-92-1	LEAD	50	48.8	2		98	80 - 120%
7439-96-5	MANGANESE	100	95.8	5		96	80 - 120%
7439-98-7	MOLYBDENUM	100	93.6	2		94	80 - 120%
7440-02-0	NICKEL	500	502	20		100	80 - 120%
7782-49-2	SELENIUM	100	95.2	10		95	80 - 120%
7440-22-4	SILVER	10	9.67	0.5		97	80 - 120%
7440-24-6	STRONTIUM	100	96.2	5		96	80 - 120%
7440-28-0	THALLIUM	2	1.82	0.1		91	80 - 120%
7440-29-1	THORIUM	10	9.81	0.2		98	80 - 120%
7440-31-5	TIN	500	451	10		90	80 - 120%
7440-61-1	URANIUM	10	9.22	0.1		92	80 - 120%
7440-66-6	ZINC	2000	1940	100		97	80 - 120%

Data Package ID: *IM1808427-1*

ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Field ID: SHARED QC
LabID: 1808376-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 16-Aug-18
Date Extracted: 11-Sep-18
Date Analyzed: 12-Sep-18
Prep Method: SW3005 Rev A

Prep Batch: IP180911-4
QCBatchID: IP180911-4-2
Run ID: IM180912-11A5
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 085SMPL_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7429-90-5	ALUMINUM	10	U	4440		100	5000	89	75 - 125%
7440-36-0	ANTIMONY	0.23	B	28.2		1	30	93	75 - 125%
7440-38-2	ARSENIC	2	B	102		2	100	101	75 - 125%
7440-39-3	BARIUM	59		149		5	100	90	75 - 125%
7440-41-7	BERYLLIUM	0.054	U	50.8		0.5	50	102	75 - 125%
7440-43-9	CADMIUM	0.083	U	28.4		2	30	95	75 - 125%
7440-47-3	CHROMIUM	17		492		10	500	95	75 - 125%
7440-48-4	COBALT	0.13	B	98.6		5	100	99	75 - 125%
7440-50-8	COPPER	0.45	B	927		8	1000	93	75 - 125%
7439-92-1	LEAD	0.079	U	49.7		2	50	99	75 - 125%
7439-96-5	MANGANESE	2.4	BC	95.2		5	100	93	75 - 125%
7439-98-7	MOLYBDENUM	1.9	B	95.8		2	100	94	75 - 125%
7440-02-0	NICKEL	2.7	B	489		20	500	97	75 - 125%
7782-49-2	SELENIUM	1	B	99.4		10	100	98	75 - 125%
7440-22-4	SILVER	0.029	U	9.69		0.5	10	97	75 - 125%
7440-24-6	STRONTIUM	450		532		5	100	78	75 - 125%
7440-28-0	THALLIUM	0.0041	U	1.87		0.1	2	94	75 - 125%
7440-29-1	THORIUM	0.016	U	10.1		0.2	10	101	75 - 125%
7440-31-5	TIN	0.44	BC	470		10	500	94	75 - 125%
7440-61-1	URANIUM	28		37		0.1	10	94	75 - 125%
7440-66-6	ZINC	1.4	U	1900		100	2000	95	75 - 125%

Data Package ID: *IM1808427-1*

ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1808427
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: SURV, SEPTEMBER 2018 S18-009

Field ID: SHARED QC
LabID: 1808376-1MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 16-Aug-18
Date Extracted: 11-Sep-18
Date Analyzed: 12-Sep-18
Prep Method: SW3005 Rev A

Prep Batch: IP180911-4
QCBatchID: IP180911-4-2
Run ID: IM180912-11A5
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 086SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7429-90-5	ALUMINUM	4480		5000	90	100	20	1
7440-36-0	ANTIMONY	27.5		30	91	1	20	2
7440-38-2	ARSENIC	101		100	99	2	20	1
7440-39-3	BARIUM	152		100	93	5	20	2
7440-41-7	BERYLLIUM	50.7		50	101	0.5	20	0
7440-43-9	CADMIUM	29.4		30	98	2	20	4
7440-47-3	CHROMIUM	491		500	95	10	20	0
7440-48-4	COBALT	99.1		100	99	5	20	0
7440-50-8	COPPER	931		1000	93	8	20	0
7439-92-1	LEAD	50.3		50	101	2	20	1
7439-96-5	MANGANESE	96.3		100	94	5	20	1
7439-98-7	MOLYBDENUM	96		100	94	2	20	0
7440-02-0	NICKEL	489		500	97	20	20	0
7782-49-2	SELENIUM	94.8		100	94	10	20	5
7440-22-4	SILVER	9.92		10	99	0.5	20	2
7440-24-6	STRONTIUM	527		100	72	5	20	1
7440-28-0	THALLIUM	1.88		2	94	0.1	20	1
7440-29-1	THORIUM	10.3		10	103	0.2	20	2
7440-31-5	TIN	477		500	95	10	20	1
7440-61-1	URANIUM	37.4		10	98	0.1	20	1
7440-66-6	ZINC	1910		2000	95	100	20	1

Data Package ID: *IM1808427-1*

Prep Batch ID: IP180911-4

Start Date: 09/11/18
Start Time: 11:09
Prep Analyst: Jill M. Latelle

End Date: 09/11/18
End Time: 18:00

Concentration Method: NONE
Extract Method: SW3005A
Initial Volume Units: ml
Final Volume Units: ml

Batch Created By: jml
Date Created: 09/11/18
Time Created: 11:09
Validated By: jml
Date Validated: 09/11/18
Time Validated: 12:38

Comments:

QC Batch ID: IP180911-4-2

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP180911-4	MB	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808376
IM180911-4	LCS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808376
1808376-1	MS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808376
1808376-1	MSD	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808376
1808355-1	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808355
1808375-1	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808375
1808375-2	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808375
1808376-1	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808376
1808376-2	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808376
1808376-3	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808376
1808376-4	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1808376
1808427-1	SMP	B3KC26	WATER	8/21/2018	50	50	NONE	1	1808427
1808427-2	SMP	B3KC28	WATER	8/21/2018	50	50	NONE	1	1808427

QC Types

CAR	Carrier reference sample		DUP	Laboratory Duplicate
LCS	Laboratory Control Sample		LCSD	Laboratory Control Sample Duplicat
MB	Method Blank		MS	Laboratory Matrix Spike
MSD	Laboratory Matrix Spike Duplicate		REP	Sample replicate
RVS	Reporting Level Verification Standar		SMP	Field Sample
SYS	Sample Yield Spike			