



Friday, August 30, 2019

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

Re: ALS Workorder: 1908303  
Project Name: CERCLA, August 2019  
Project Number: I19-026

Dear Ms. Waters-Husted:

One water sample was received from CH2M HILL Plateau Remediation Company, on 8/13/2019. The sample was 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 method employed.

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

Sincerely,

ALS Environmental  
Katie M. O'Brien  
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:** 1908303

**Client Name:** CH2M HILL Plateau Remediation Company

**Client Project Name:** CERCLA, August 2019

**Client Project Number:** I19-026

**Client PO Number:** BOA 54854

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B3PVJ4	1908303-1		WATER	08-Aug-19	11:40

<b>CH2M Hill Plateau Remediation Company</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <b>1908303</b>		C.O.C.# <b>I19-026-007</b>
Collector: <b>Juan Aguilar /CHPRC</b>		Contact/Requester: <b>Karen Waters-Husted</b>		Page 1 of 1
SAF No.: <b>I19-026</b>		Sampling Origin: <b>Hanford Site</b>		Telephone No.: <b>509-376-4650</b>
Project Title: <b>CERCLA, August 2019</b>		Logbook No.: <b>HNF-N-506 - 107194</b>		Purchase Order/Charge Code: <b>300071</b>
Shipped To (Lab): <b>ALS Environmental Ft. Collins</b>		Method of Shipment: <b>Commercial Carrier</b>		Ice Chest No.: <b>6W5-689</b>
Protocol: <b>CERCLA</b>		Priority: <b>30 Days</b>		Bill of Lading/Air Bill No.: <b>775958949954</b>
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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		<b>SPECIAL INSTRUCTIONS</b> N/A		
Sample No. <b>B3PVJ4</b>	Filter <b>N</b>	* <b>W</b>	Date <b>8-8-19</b>	Time <b>1140</b>
No/Type Container <b>1x500-mL G/P</b>		Sample Analysis <b>6020_METALS_ICPMS: Uranium (1)</b>		Holding Time <b>6 Months</b>
Preservative <b>HNO3 to pH &lt;2</b>		Offsite Property No.: <b>11435</b>		

Relinquished By: <b>Juan Aguilar /CHPRC</b>	<b>AUG 08 2019 1150</b>	Received By: <b>Jennelle Zumbach /CHPRC</b>	<b>AUG 08 2019 1150</b>	Matrix *
Print First and Last Name	Signature	Print First and Last Name	Signature	S = Soil
Relinquished By: <b>Jennelle Zumbach /CHPRC</b>	<b>AUG 08 2019 1200</b>	Received By: <b>SSU-1</b>	<b>AUG 08 2019 1200</b>	DS = Drum Solids
Print First and Last Name	Signature	Print First and Last Name	Signature	DL = Drum Liquid
Relinquished By: <b>SSU-1</b>	<b>AUG 12 2019 0745</b>	Received By: <b>Troy Bacon /CHPRC</b>	<b>AUG 12 2019 0745</b>	T = Tissue
Print First and Last Name	Signature	Print First and Last Name	Signature	WI = Wipe
Relinquished By: <b>Troy Bacon /CHPRC</b>	<b>AUG 12 2019 1400</b>	Received By: <b>FEDEX</b>	<b>AUG 12 2019 1400</b>	L = Liquid
Print First and Last Name	Signature	Print First and Last Name	Signature	V = Vegetation
Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:		X = Other
<b>FINAL SAMPLE DISPOSITION</b>				





ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC Workorder No: 1908303  
Project Manager: KMO Initials: Em Date: 08.13.19

1. Are airbills / shipping documents present and/or removable?		DROP OFF	<input checked="" type="radio"/> YES	<input type="radio"/> NO			
2. Are custody seals on <b>shipping</b> containers intact?		NONE	<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
3. Are custody seals on <b>sample</b> containers intact?		NONE	<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
4. Is there a COC (chain-of-custody) present?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
6. Are short-hold samples present?			YES	<input checked="" type="radio"/> NO			
7. Are all samples within holding times for the requested analyses?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
8. Were all sample containers received intact? (not broken or leaking)			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
9. Is there sufficient sample for the requested analyses?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
10. Are all samples in the proper containers for the requested analyses?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)		N/A	<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
12. Are all aqueous non-preserved samples pH 4-9?		<input checked="" type="radio"/> N/A	YES	<input type="radio"/> NO *			
13. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)		<input checked="" type="radio"/> N/A	YES	<input type="radio"/> NO			
14. Were the samples shipped on ice?			<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO			
15. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*:	#1	#3	#4	RAD ONLY	<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>							
Temperature (°C): <u>Amb</u>							
No. of custody seals on cooler: <u>2</u>							
External µR/hr reading: <u>12</u>							
Background µR/hr reading: <u>13</u>							
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)							

\* Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

All client bottle ID's vs ALS lab ID's double-checked by: Em

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

Project Manager Signature / Date: [Signature] 8/13/19

1908303

ORIGIN D:PSCA (309) 528-9426  
LESLY WALL  
CH2M  
6287 LATAM ST.  
6289 LATAM ST.  
RICHLAND WA 99354  
UNITED STATES US

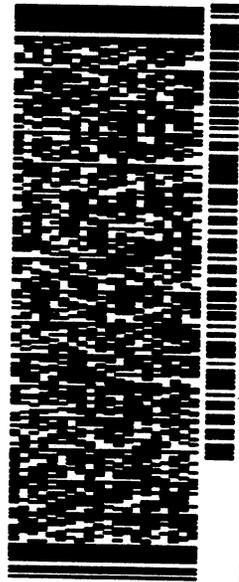
SHIP DATE: 12AUG19  
ACTWGHT: 17.00 LB  
CAD: 10706805/INETA1100  
BILL THIRD PARTY

TO JULIE ELLINGSON  
ALS GLOBAL  
225 COMMERCE DRIVE

12-2

FORT COLLINS CO 80524  
(970) 400-1511  
REF: PTR#11456CAJW300072  
DEPT:

567.03E9E7.05A2

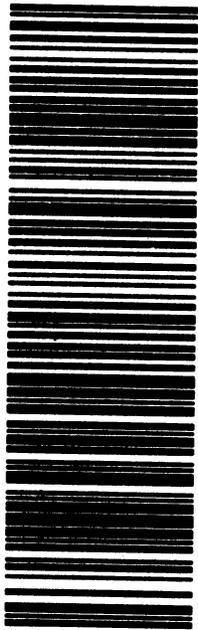


TRK# 7759 5896 9954  
0201

TUE - 13 AUG 10:30A  
PRIORITY OVERNIGHT  
DSR

XH FTCA

CO-US 80524  
DEN



**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](http://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 Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.



# Metals

## Case Narrative

---

### **CH2M HILL Plateau Remediation Company**

CERCLA, August 2019 -- I19-026

Work Order Number: 1908303

1. The sample was prepared and analyzed based on SW-846, 3<sup>rd</sup> Edition procedures.

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

2. Analysis by ICP-MS followed method 6020B and the current revision of SOP 827.
3. All standards and solutions are NIST traceable and were used within their recommended shelf life.
4. The sample was prepared and analyzed within the established hold time.

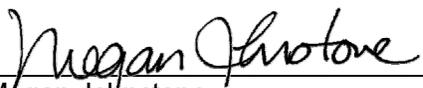
All in house quality control procedures were followed, as described below.

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 analyte. Sample results have been compared to the blank results and are flagged as appropriate.
  - All laboratory control sample criteria were met.
  - All initial and continuing calibration blanks were below the reporting limit for the requested analyte.
  - All initial and continuing calibration verifications were within the acceptance criteria for the requested analyte.



- The interference check samples associated with Method 6020B were analyzed.
6. Matrix specific quality control procedures.
- Sample 1908191-5 was designated as the quality control sample for this analysis. Results for the shared quality control samples 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 this batch. All acceptance criteria for accuracy and precision were met.
  - A serial dilution was analyzed with this 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.

  
\_\_\_\_\_  
Megan Johnstone  
Inorganics Primary Data Reviewer

8/28/19  
Date

  
\_\_\_\_\_  
Keith M. W.  
Inorganics Final Data Reviewer

8/30/19  
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  $\leq 20X$  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 URANIUM****Method SW6020B****Sample Results**

**Lab Name:** ALS -- Fort Collins  
**Client Name:** CH2M HILL Plateau Remediation Company  
**Client Project ID:** CERCLA, August 2019 I19-026  
**Work Order Number:** 1908303      **Final Volume:** 50 ml  
**Reporting Basis:** As Received      **Matrix:** WATER  
**Analyst:** Nicole C. Chirban      **Result Units:** UG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Flag	Sample Aliquot
B3PVJ4	1908303-1	8/8/2019	8/24/2019	08/26/2019	N/A	10	12	0.1	0.0049		50 ml

**Comments:**

1. ND or U = Not Detected at or above the client requested detection limit.

**Data Package ID:** *im1908303-1*

# ICPMS Metals

## Method SW6020B

### Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1908303

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, August 2019 I19-026

Lab ID: IP190824-4MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 24-Aug-19

Date Analyzed: 26-Aug-19

Prep Batch: IP190824-4

QCBatchID: IP190824-4-5

Run ID: IM190826-10A5

Cleanup: NONE

Basis: N/A

File Name: 052SMPL\_

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
7440-61-1	URANIUM	10	0.0049	U	0.1	0.0049

Data Package ID: *im1908303-1*

# ICPMS Metals

## Method SW6020B

### Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1908303

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, August 2019 I19-026

Lab ID: IM190824-4LCS	Sample Matrix: WATER	Prep Batch: IP190824-4	Sample Aliquot: 50 ml
	% Moisture: N/A	QCBatchID: IP190824-4-5	Final Volume: 50 ml
	Date Collected: N/A	Run ID: IM190826-10A5	Result Units: UG/L
	Date Extracted: 08/24/2019	Cleanup: NONE	Clean DF: 1
	Date Analyzed: 08/26/2019	Basis: N/A	
	Prep Method: SW3005A	File Name: 053SMPL_	

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-61-1	URANIUM	10	9.24	0.1		92	80 - 120%

Data Package ID: *im1908303-1*

## ICPMS Metals

Method SW6020B

## Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1908303

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, August 2019 I19-026

Field ID: SHARED QC
LabID: 1908191-5MS

Sample Matrix: WATER  
 % Moisture: N/A  
 Date Collected: 06-Aug-19  
 Date Extracted: 24-Aug-19  
 Date Analyzed: 26-Aug-19  
 Prep Method: SW3005 Rev A

Prep Batch: IP190824-4  
 QCBatchID: IP190824-4-5  
 Run ID: IM190826-10A5  
 Cleanup: NONE  
 Basis: As Received

Sample Aliquot: 50 ml  
 Final Volume: 50 ml  
 Result Units: UG/L  
 File Name: 060SMPL\_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-61-1	URANIUM	6.6		16.1		0.1	10	96	75 - 125%

Field ID: SHARED QC
LabID: 1908191-5MSD

Sample Matrix: WATER  
 % Moisture: N/A  
 Date Collected: 06-Aug-19  
 Date Extracted: 24-Aug-19  
 Date Analyzed: 26-Aug-19  
 Prep Method: SW3005 Rev A

Prep Batch: IP190824-4  
 QCBatchID: IP190824-4-5  
 Run ID: IM190826-10A5  
 Cleanup: NONE  
 Basis: As Received

Sample Aliquot: 50 ml  
 Final Volume: 50 ml  
 Result Units: UG/L  
 File Name: 061SMPL\_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-61-1	URANIUM	16.1		10	95	0.1	20	0

Data Package ID: *im1908303-1*

Prep Batch ID: IP190824-4

Start Date: 08/24/19	End Date: 08/24/19	Concentration Method: NONE	Batch Created By: jml
Start Time: 10:12	End Time: 18:00	Extract Method: SW3005A	Date Created: 08/24/19
Prep Analyst: Jill M. Latelle		Initial Volume Units: ml	Time Created: 10:12
<b>Comments:</b>		Final Volume Units: ml	Validated By: jml
			Date Validated: 08/24/19
			Time Validated: 11:07

QC Batch ID: IP190824-4-5

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP190824-4	MB	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
IM190824-4	LCS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908191-5	MS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908191-5	MSD	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908191-3	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908191-4	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908191-5	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908302-1	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908302
1908303-1	SMP	B3PVJ4	WATER	8/8/2019	50	50	NONE	1	1908303
1908331-3	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908331
1908331-5	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908331
1908377-1	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908377

**QC Types**

CAR	Carrier reference sample		DLS	Detection Limit Standard
DUP	Laboratory Duplicate		LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicat		LODV	Limit of Detection Verification
LOQV	Limit of Quantitation Verification		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