



7/29/2016
ALS1607094

Ft. Collins, Colorado

LIMS Version: 6.820

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Friday, July 29, 2016

Dave Todak
CH2M HILL Plateau Remediation Company
2420 Stevens Center
Richland, WA 99352

Re: ALS Workorder: 1607094
Project Name: 100-HR-3 Long Term & Interim Action Monitoring - Water
Project Number: F16-039

Dear Mr. Todak:

Two water samples were received from CH2M HILL Plateau Remediation Company, on 7/7/2016. The samples were scheduled for the following analyses:

Metals

Inorganics

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
Julie Ellingson
Project Manager

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522
ALS GROUP USA, CORP. Part of the ALS Laboratory Group An ALS Limited Company

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1607094

Client Name: CH2M HILL Plateau Remediation Company

Client Project Name: 100-HR-3 Long Term & Interim Action Monitoring - Water

Client Project Number: F16-039

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B35L89	1607094-1		WATER	30-Jun-16	12:22
B35L86	1607094-2		WATER	30-Jun-16	12:22

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-039-084	PAGE 1 OF 1
COLLECTOR Curt Hoffman CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9547, screened interval	PROJECT DESIGNATION 100-HR-3 Long Term & Interim Action Monitoring - Water	FIELD LOGBOOK NO. HNF-N-645-6/4	SAF NO. F16-039	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS
ICE CHEST NO. GWS-485	ACTUAL SAMPLE DEPTH 57.65'	OFFSITE PROPERTY NO. 6793	COA 300115	BILL OF LADING/AIR BILL NO. 7766668199038	
SHIPPED TO ALS Environmental Ft. Collins	ORIGINAL				

MATRIX*	PRESERVATION	HNO3 to pH
A=Air		<2
DL=Drum		6 Months
Liquids		
DS=Drum		
Solids		
L=Liquid		G/P
O=Oil		
S=Soil		1
SE=Sediment		500ml
T=Tissue		SEE ITEM (1) IN SPECIAL INSTRUCTIONS
V=Vegetation		
W=Water		
WI=Wipe		
X=Other		

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B35L89	WATER	6/30/16	1222 ✓

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	DATE/TIME
RELINQUISHED BY/REMOVED FROM Curt Hoffman CHPRC	RECEIVED BY/STORED IN SSU #1	DATE/TIME JUN 30 2016 1500
RELINQUISHED BY/REMOVED FROM SSU #1	RECEIVED BY/STORED IN Troy Bacar CHPRC	DATE/TIME JUL 03 2016 0940
RELINQUISHED BY/REMOVED FROM Troy Bacar CHPRC	RECEIVED BY/STORED IN FEDEX	DATE/TIME JUL 03 2016 1400
RELINQUISHED BY/REMOVED FROM Fedex	RECEIVED BY/STORED IN Sista Maliky	DATE/TIME 7-7-16 0955
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME

LABORATORY SECTION	TITLE	DATE/TIME
RECEIVED BY		
FINAL SAMPLE DISPOSITION	DISPOSED BY	DATE/TIME

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-039-081	PAGE 1 OF 1
COLLECTOR Curt Hoffman CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9547, screened interval	PROJECT DESIGNATION 100-HR-3 Long Term & Interim Action Monitoring - Water	FIELD LOGBOOK NO. iHNF-A-645-6/4	ACTUAL SAMPLE DEPTH 57.65'	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS
ICE CHEST NO. GWS-485	OFFSITE PROPERTY NO. 6793	SAF NO. F16-039	COA 300115	BILL OF LADING/AIR BILL NO. 7766 6819 9038	
SHIPPED TO ALS Environmental Ft. Collins	ORIGINAL				

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HNO3 to pH	Cool <=6C
A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water X=Other	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. N/A	6 Months	<2	14 Days
		HOLDING TIME		
		TYPE OF CONTAINER		G/P
		NO. OF CONTAINER(S)		1
		VOLUME		250ml
		SAMPLE ANALYSIS		SEE ITEM (2) IN SPECIAL INSTRUCTIONS
		SAMPLE DATE		
		SAMPLE TIME		

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	DATE/TIME
B35L86	WATER	6/30/16	1222	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM Curt Hoffman CHPRC	DATE/TIME JUN 30 2016 1500	RECEIVED BY/STORED IN SSU #1	DATE/TIME JUN 30 2016 1500	(1) 6020_METALS_ICPMS: COMMON {Chromium, Lead}; 6020_METALS_ICPMS: COMMON (Add-on) {Uranium}; 6010_METALS_ICP: COMMON {Calcium, Magnesium, Potassium, Sodium}; (2) 2320_ALKALINITY: COMMON (Add-on) {Bicarbonate};	
RELINQUISHED BY/REMOVED FROM SSU #1	DATE/TIME JUL 03 2016 0935	RECEIVED BY/STORED IN Troy Bacon CHPRC	DATE/TIME JUL 03 2016 0935		
RELINQUISHED BY/REMOVED FROM Troy Bacon CHPRC	DATE/TIME JUL 05 2016 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME JUL 05 2016 1400		
RELINQUISHED BY/REMOVED FROM Fedex	DATE/TIME 7-7-16 0935	RECEIVED BY/STORED IN Scott Malby	DATE/TIME 7-7-16 0935		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC

Workorder No: 1607094

Project Manager: JME

Initials: SDM Date: 7-7-16

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	NONE	<input checked="" type="radio"/> YES	NO
3. Are Custody seals on sample containers intact?	NONE	<input checked="" type="radio"/> YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ___ < green pea ___ > green pea	<input checked="" type="radio"/> N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ___ dusting ___ moderate ___ heavy	N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 <input checked="" type="radio"/> #4		<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.4</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>10</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <input checked="" type="radio"/> YES / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

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

Project Manager Signature / Date: [Signature] 7/7/16

1607094

1607094

ORIGIN: DPSCA (509) 373-3560
JANELLE ZUNKER
1740 N
6269 LATAH ST.
RICHLAND, WA 99334
UNITED STATES US

SHIP DATE: 05 JUL 16
ACTWGT: 53.00 LB
CAD: 107066057/NET/3730
BILL THIRD PARTY

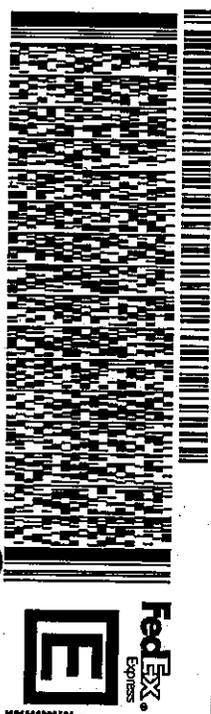
TO JULIE ELLINGSON
ALS GLOBAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
REF: 6793

PO: NV DEPT:

12
-2

540J16CBD/727F



TRK# 7766 6819 9038
0201

WED - 06 JUL 10:30A
PRIORITY OVERNIGHT
DSR

XH FTCA

CO-US 80524 DEN



2.40c

After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
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Metals Case Narrative

CH2M HILL Plateau Remediation Company

100-HR-3 Long Term & Interim Action Monitoring – Water – F16-039

Work Order Number: 1607094

1. This report consists of 2 water samples.
2. The samples were received cool and intact by ALS on 07/07/16.
3. The samples had a pH less than 2 upon receipt.
4. 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.

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

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

6. All standards and solutions are NIST traceable and were used within their recommended shelf life.
7. The samples were prepared and analyzed within the established hold times.

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

8. 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. Sodium was detected above the MDL. Sample results have been compared to the blank results.



- 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 readbacks associated with Method 6010B were within acceptance criteria.
- The interference check samples associated with Method 6020A were analyzed.

9. Matrix specific quality control procedures.

Sample 1607122-2 was designated as the quality control sample for each ICP 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 each batch. All acceptance criteria for accuracy were met.
- A serial dilution was analyzed with each ICP batch. All acceptance criteria were met.

10. 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.



Jill Latelle
Inorganics Primary Data Reviewer

7/20/16
Date



Julie Ellinger
Inorganics Final Data Reviewer

7/28/16
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 ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-03

Field ID:	B35L89
Lab ID:	1607094-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 30-Jun-16
Date Extracted: 12-Jul-16
Date Analyzed: 13-Jul-16
Prep Method: SW3005 Rev A

Prep Batch: IP160712-4
QCBatchID: IP160712-4-1
Run ID: IT160713-1A3
Cleanup: NONE
Basis: As Received
File Name: 160713A.

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

Analysis ReqCode: 6010_METALS_I

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-70-2	CALCIUM	1	52000	1000	23		
7439-95-4	MAGNESIUM	1	15000	750	21		
7440-09-7	POTASSIUM	1	5400	1000	170		
7440-23-5	SODIUM	1	23000	1000	26		

Data Package ID: *it1607094-1*

Total Recoverable ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-03

Field ID:	B35L86
Lab ID:	1607094-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 30-Jun-16
Date Extracted: 12-Jul-16
Date Analyzed: 13-Jul-16
Prep Method: SW3005 Rev A

Prep Batch: IP160712-4
QCBatchID: IP160712-4-1
Run ID: IT160713-1A3
Cleanup: NONE
Basis: As Received
File Name: 160713A.

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

Analysis ReqCode: 6010_METALS_I

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-70-2	CALCIUM	1	52000	1000	23		
7439-95-4	MAGNESIUM	1	15000	750	21		
7440-09-7	POTASSIUM	1	5500	1000	170		
7440-23-5	SODIUM	1	23000	1000	26		

Data Package ID: *it1607094-1*

Total Recoverable ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-03

Field ID:	B35L89
Lab ID:	1607094-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 30-Jun-16
Date Extracted: 12-Jul-16
Date Analyzed: 14-Jul-16
Prep Method: SW3005 Rev A

Prep Batch: IP160712-4
QCBatchID: IP160712-4-2
Run ID: IM160713-11A6
Cleanup: NONE
Basis: As Received
File Name: 180SMPL_

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

Analysis ReqCode: 6020_METALS_I

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-47-3	CHROMIUM	10	12	10	1.1		
7439-92-1	LEAD	10	0.54	2	0.16	B	
7440-61-1	URANIUM	10	3.2	0.1	0.027		

Data Package ID: *im1607094-1*

Total Recoverable ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-03

Field ID:	B35L86
Lab ID:	1607094-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 30-Jun-16
Date Extracted: 12-Jul-16
Date Analyzed: 14-Jul-16
Prep Method: SW3005 Rev A

Prep Batch: IP160712-4
QCBatchID: IP160712-4-2
Run ID: IM160713-11A6
Cleanup: NONE
Basis: As Received
File Name: 181SMPL_

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

Analysis ReqCode: 6020_METALS_I

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-47-3	CHROMIUM	10	12	10	1.1		
7439-92-1	LEAD	10	0.23	2	0.16	B	
7440-61-1	URANIUM	10	3.2	0.1	0.027		

Data Package ID: *im1607094-1*

7/29/2016
ALS1607094

ICP Metals

Method SW6010B

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-03

Lab ID: IP160712-4MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 12-Jul-16

Date Analyzed: 13-Jul-16

Prep Batch: IP160712-4

QCBatchID: IP160712-4-1

Run ID: IT160713-1A3

Cleanup: NONE

Basis: N/A

File Name: 160713A.

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-70-2	CALCIUM	1	23	1000	23	U	
7439-95-4	MAGNESIUM	1	21	750	21	U	
7440-09-7	POTASSIUM	1	170	1000	170	U	
7440-23-5	SODIUM	1	77	1000	26	B	

Data Package ID: *it1607094-1*

Date Printed: Wednesday, July 20, 2016

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7/29/2016
ALS1607094

ICP Metals

Method SW6010B

Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-03

Lab ID: IP160712-4LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07/12/2016

Date Analyzed: 07/13/2016

Prep Method: SW3005A

Prep Batch: IP160712-4

QC Batch ID: IP160712-4-1

Run ID: IT160713-1A3

Cleanup: NONE

Basis: N/A

File Name: 160713A.

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
7440-70-2	CALCIUM	40000	40400	1000		101	80 - 120%
7439-95-4	MAGNESIUM	40000	40000	750		100	80 - 120%
7440-09-7	POTASSIUM	40000	40600	1000		101	80 - 120%
7440-23-5	SODIUM	40000	40000	1000		100	80 - 120%

Data Package ID: *it1607094-1*

Date Printed: Wednesday, July 20, 2016

ALS -- Fort Collins

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ICP Metals

Method SW6010B

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F1

Field ID: SHARED QC
LabID: 1607122-2MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 06-Jul-16
Date Extracted: 12-Jul-16
Date Analyzed: 13-Jul-16
Prep Method: SW3005 Rev A

Prep Batch: IP160712-4
QCBatchID: IP160712-4-1
Run ID: IT160713-1A3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 160713A.

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-70-2	CALCIUM	46000		86300		1000	40000	102	80 - 120%
7439-95-4	MAGNESIUM	18000		58400		750	40000	101	80 - 120%
7440-09-7	POTASSIUM	5400		49000		1000	40000	109	80 - 120%
7440-23-5	SODIUM	27000		68900		1000	40000	105	80 - 120%

Field ID: SHARED QC
LabID: 1607122-2MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 06-Jul-16
Date Extracted: 12-Jul-16
Date Analyzed: 13-Jul-16
Prep Method: SW3005 Rev A

Prep Batch: IP160712-4
QCBatchID: IP160712-4-1
Run ID: IT160713-1A3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 160713A.

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-70-2	CALCIUM	86000		40000	101	1000	20	0
7439-95-4	MAGNESIUM	58100		40000	100	750	20	1
7440-09-7	POTASSIUM	48400		40000	108	1000	20	1
7440-23-5	SODIUM	67900		40000	103	1000	20	1

Data Package ID: *it1607094-1*

7/29/2016
ALS1607094

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-03

Lab ID: IP160712-4MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 12-Jul-16

Date Analyzed: 14-Jul-16

Prep Batch: IP160712-4

QCBatchID: IP160712-4-2

Run ID: IM160713-11A6

Cleanup: NONE

Basis: N/A

File Name: 177SMPL_

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-47-3	CHROMIUM	10	1.1	10	1.1	U	
7439-92-1	LEAD	10	0.16	2	0.16	U	
7440-61-1	URANIUM	10	0.027	0.1	0.027	U	

Data Package ID: im1607094-1

Date Printed: Wednesday, July 20, 2016

ALS -- Fort Collins

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LIMS Version: 6.820

7/29/2016
ALS1607094

ICPMS Metals

Method SW6020A

Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-03

Lab ID: IM160712-4LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07/12/2016

Date Analyzed: 07/14/2016

Prep Method: SW3005A

Prep Batch: IP160712-4

QCBatchID: IP160712-4-2

Run ID: IM160713-11A6

Cleanup: NONE

Basis: N/A

File Name: 179SMPL_

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
7440-47-3	CHROMIUM	500	460	10		92	80 - 120%
7439-92-1	LEAD	50	49.5	2		99	80 - 120%
7440-61-1	URANIUM	10	9.51	0.1		95	80 - 120%

Data Package ID: *im1607094-1*

Date Printed: Wednesday, July 20, 2016

ALS -- Fort Collins

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LIMS Version: 6.820

ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F1

Field ID: SHARED QC	Sample Matrix: WATER	Prep Batch: IP160712-4	Sample Aliquot: 50 ml
LabID: 1607122-2MS	% Moisture: N/A	QCBatchID: IP160712-4-2	Final Volume: 50 ml
	Date Collected: 06-Jul-16	Run ID: IM160713-11A6	Result Units: UG/L
	Date Extracted: 12-Jul-16	Cleanup: NONE	File Name: 186SMPL_
	Date Analyzed: 14-Jul-16	Basis: As Received	
	Prep Method: SW3005 Rev A		

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-47-3	CHROMIUM	5.4	B	490		10	500	97	75 - 125%
7439-92-1	LEAD	0.16	U	52.6		2	50	105	75 - 125%
7440-61-1	URANIUM	3		13.2		0.1	10	102	75 - 125%

Field ID: SHARED QC	Sample Matrix: WATER	Prep Batch: IP160712-4	Sample Aliquot: 50 ml
LabID: 1607122-2MSD	% Moisture: N/A	QCBatchID: IP160712-4-2	Final Volume: 50 ml
	Date Collected: 06-Jul-16	Run ID: IM160713-11A6	Result Units: UG/L
	Date Extracted: 12-Jul-16	Cleanup: NONE	File Name: 189SMPL_
	Date Analyzed: 14-Jul-16	Basis: As Received	
	Prep Method: SW3005 Rev A		

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-47-3	CHROMIUM	474		500	94	10	20	3
7439-92-1	LEAD	49.6		50	99	2	20	6
7440-61-1	URANIUM	12.7		10	97	0.1	20	4

Data Package ID: *im1607094-1*



Inorganics Case Narrative

CH2M HILL Plateau Remediation Company 100-HR-3 Long Term & Interim Action Monitoring - Water - Water -- F16-039

Work Order Number: 1607094

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 07/07/16.
3. The sample was prepared for analysis based on Standard Methods for the Examination of Water and Wastewater, 20th Edition 1998 procedures.
4. The sample was analyzed following Standard Method procedures for the current revision of the following SOP and method:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Bicarbonate	SM2320B	1106

5. All standards and solutions were used within their recommended shelf life.
6. The sample was prepared and analyzed within the established hold time for this analysis.

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

7. General quality control procedures.
 - n A preparation (method) blank, laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) were prepared and analyzed with the samples in this preparation batch.
 - n The method blank associated with this batch was below the reporting limit for the requested analyte.
 - n All laboratory control sample criteria were met.



8. Matrix specific quality control procedures.

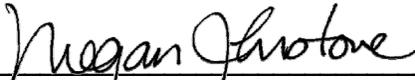
Sample 1607094-2 was designated as the quality control sample for this analysis.

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.

n A sample duplicate was prepared and analyzed with this batch. All guidance criteria for precision were met.

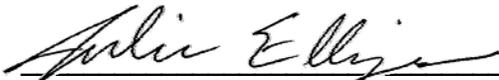
9. A reduced aliquot was taken of the sample for the bicarbonate analysis. Reporting limits were elevated accordingly.

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

7/19/16
Date



Julie Elliz
Inorganics Final Data Reviewer

7/28/16
Date



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.
 - 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.
 - C - The analyte was detected in both the sample and the associated QC blank, and the sample concentration was $\leq 5X$ 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.

7/29/2016

ALS1607094

Bicarbonate as Calcium Carbonate

Method SM2320BM

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-0

Field ID:	B35L86
Lab ID:	1607094-2

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 30-Jun-16

Date Extracted: 08-Jul-16

Date Analyzed: 08-Jul-16

Prep Method: NONE

Prep Batch: AK160708-1

QCBatchID: AK160708-1-1

Run ID: AK160708-1A

Cleanup: NONE

Basis: As Received

File Name: Manual Entry

Analyst: Kristina L. Peters

Sample Aliquot: 25 ML

Final Volume: 100 ML

Result Units: UG/L

Clean DF: 1

Analysis ReqCode: 2320_ALKALINIT

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	Result Qualifier	EPA Qualifier
471-34-1	BICARBONATE AS CaCO3	1	140000	20000		

Data Package ID: ak1607094-1

7/29/2016
ALS1607094

Bicarbonate as Calcium Carbonate

Method SM2320BM

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-0

Lab ID: AK160708-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 08-Jul-16

Date Analyzed: 08-Jul-16

Prep Method: NONE

Prep Batch: AK160708-1

QCBatchID: AK160708-1-1

Run ID: AK160708-1A

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	Result Qualifier	EPA Qualifier
471-34-1	BICARBONATE AS CaCO3	1	5000	5000	U	

Data Package ID: ak1607094-1

Bicarbonate as Calcium Carbonate

Method SM2320BM

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-0

Lab ID: AK160708-1LCS	Sample Matrix: WATER	Prep Batch: AK160708-1	Sample Aliquot: 100 ml
	% Moisture: N/A	QCBatchID: AK160708-1-1	Final Volume: 100 ml
	Date Collected: N/A	Run ID: AK160708-1A	Result Units: UG/L
	Date Extracted: 07/08/2016	Cleanup: NONE	Clean DF: 1
	Date Analyzed: 07/08/2016	Basis: N/A	
	Prep Method: NONE	File Name: Manual Entry	

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
	TOTAL ALKALINITY AS CaCO3	100000	100000	5000		100	85 - 115%

Lab ID: AK160708-1LCSD	Sample Matrix: WATER	Prep Batch: AK160708-1	Sample Aliquot: 100 ml
	% Moisture: N/A	QCBatchID: AK160708-1-1	Final Volume: 100 ml
	Date Collected: N/A	Run ID: AK160708-1A	Result Units: UG/L
	Date Extracted: 07/08/2016	Cleanup: NONE	Clean DF: 1
	Date Analyzed: 07/08/2016	Basis: N/A	
	Prep Method: NONE	File Name: Manual Entry	

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
	TOTAL ALKALINITY AS CaCO3	100000	99900	5000		100	15	0

Data Package ID: ak1607094-1

7/29/2016
ALS1607094

Bicarbonate as Calcium Carbonate

Method SM2320BM

Duplicate Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1607094

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Water F16-0

Field ID:	B35L86
Lab ID:	1607094-2D

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 06/30/2016
Date Extracted: 07/08/2016
Date Analyzed: 07/08/2016

Prep Batch: AK160708-1
QCBatchID: AK160708-1-1
Run ID: AK160708-1A
Cleanup: NONE
Basis: As Received
File Name: Manual Entry

Sample Aliquot: 25 ml
Final Volume: 100 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Sample Result	Samp Qual	Duplicate Result	Dup Qual	Reporting Limit	Dilution Factor	RPD	RPD Limit
471-34-1	BICARBONATE AS CaCO3	140000		140000		20000	1	2	15

Data Package ID: ak1607094-1