



Saturday, December 30, 2017

Sherry Lynch
CH2M HILL Plateau Remediation Company
825 Jadwin Avenue
Richland, WA 99352

Re: ALS Workorder: 1708265
Project Name: 618-10 Verification Sampling - Soils
Project Number: FRC17-06

Dear Lynch:

One soil sample was received from CH2M HILL Plateau Remediation Company, on 8/15/2017. The sample was scheduled for the following analysis:

Metals

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

This report was originally submitted on 08/30/2017. Not all analyses dates were showing up on the forms. It is being resubmitted with the additional forms in order to display all analyses dates.

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
For Shiloh J. Summy
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, 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.

PROBLEM AND DISCREPANCY (P&D) REPORT

P&D Number: PD18-0023
Rev. Number: 0
Laboratory: ALS
SDG Number: ALS1708265
Date Initiated: 10/31/2017

SAMPLE EVENT INFORMATION

SAF NUM(S): FRC17-06

SAMPLING INFORMATION

NUMBER OF SAMPLES: 1

SAMPLE MATRIX: SOIL

ISSUE BACKGROUND

CLASS: Data Issues

TYPE: Incorrect Analysis Date

DESCRIPTION: Lithium and Uranium results by 6020 have two different analysis dates in the EDD. The PDF report has one - 8/28/17.

RESOLUTION

PROPOSED RESOLUTION: Please correct the issue and resubmit the hard copy and electronic copy data packages

FINAL RESOLUTION: accept resolution

SUBMITTED BY:

MEDLEY, HA

10/31/2017

SAMPLE ISSUE RESOLUTION (SIR) REPORT

SIR Number: SIR18-0068
Rev. Number: 0
Date Initiated: 10/09/2017

SAMPLE EVENT INFORMATION

SAF NUM(S): FRC17-06
LABORATORY: ALS

SAMPLING INFORMATION

NUMBER OF SAMPLES: 1
SAMPLE NUMBERS: B3C2K8A
SAMPLE MATRIX: SOIL
SDG NUM(S): ALS1708265

ISSUE BACKGROUND

CLASS: Laboratory Issue
TYPE: Chain of Custody Issue
DESCRIPTION: COC FRC17-06-365; B3C2K8A
 The laboratory receipt signature is on the wrong line. Laboratory signed received by box 8 and should have signed received by box 5.

RESOLUTION

PROPOSED RESOLUTION: DOCUMENT AND CLOSE

FINAL RESOLUTION: DOCUMENT AND CLOSE

SUBMITTED BY:

CUTSFORTH, EC

11/02/2017

ACCEPTED BY:

NAGEL, SE

11/02/2017

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1708265

Client Name: CH2M HILL Plateau Remediation Company

Client Project Name: 618-10 Verification Sampling - Soils

Client Project Number: FRC17-06

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B3C2K8A	1708265-1		SOIL	10-Aug-17	8:05

1708265

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CH2M Hill Plateau Remediation Company
COLLECTOR J. Craig
SAMPLING LOCATION 618-10 Verification SPLIT DU6-1
ICE CHEST NO. WCH-13-014
SHIPPED TO

COMPANY CONTACT NAGEL, SE
TELEPHONE NO. 373-5869
PROJECT COORDINATOR NAGEL, SE
PROJECT DESIGNATION 618-10 Verification Sampling - Soils
FIELD LOGBOOK NO. HNF-N-887 1
ACTUAL SAMPLE DEPTH N/A
OFFSITE PROPERTY NO. PTR# 8309
SAF NO. FRC17-06
COA 304196
BILL OF LADING/AIR BILL NO. Fed Ex 7799 7513 3239

FRC17-06-365
PRICE CODE C13
AIR QUALITY
METHOD OF SHIPMENT FEDERAL EXPRESS
DATA TURNAROUND 3 Days / 3 Days
ORIGINAL

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SPECIAL HANDLING AND/OR STORAGE
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 regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	Cool <=6C	6 Months	G/P	1	125ml	N/A

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SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B3C2K8A	SOIL	8/10/17	0805

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Jim Craig	8/10/17 0945		R. Coffman / R. Coffman	8/10/17 0945
R. Coffman	8/10/17 1330		1060 / REFER # 3A	8/10/17 1330
M. Coffman	8/14/17 0500		1060 / REFER # 3A	8/14/17 0500
R. Coffman	8/14/17 1500		Fed Ex	8-14-17

CHAIN OF POSSESSION

SPECIAL INSTRUCTIONS
 TRVL-17-195
 (1) 6010_METALS_ICP: COMMON {Antimony, Arsenic, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; 6010_METALS_ICP: COMMON (Add-on) {Beryllium, Lead, Selenium, Strontium, Tin}; 6020_METALS_ICPMS: COMMON (Add-on) {Lithium, Uranium};

LABORATORY SECTION RECEIVED BY [Signature] 8/15/17 0925
FINAL SAMPLE DISPOSITION DISPOSAL METHOD

PRINTED ON 8/9/2017 **FSR ID = FSR48855** **TRVL NUM = TRVL-17-195** **A-6003-618 (REV 2)**



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC

Workorder No: 1708265

Project Manager: _____

Initials: JNS

Date: 8/15/17

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)	<input checked="" type="radio"/> N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	<input checked="" type="radio"/> N/A	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	<input checked="" type="radio"/> N/A	YES	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*: <u>#2</u> #4	RAD ONLY	<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>10</u>			
Background µR/hr reading: <u>10</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)			

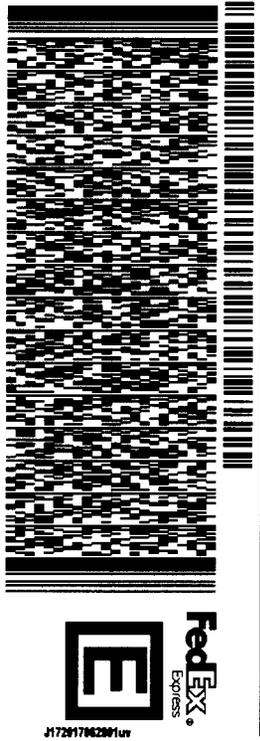
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

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

Project Manager Signature / Date: Shilah dummy 8/15/17

Form 201r24.xls (06/04/2012) *IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

TRK# 7799 7513 3239
 0201
 XH FTCA
 CO-US DEN
 80524
 TUE - 15 AUG 10:30A
 PRIORITY OVERNIGHT



TO SHILOH SUMMY
 ALS ENVIRONMENTAL-FT. COLLINS
 225 COMMERCE DRIVE
 FORT COLLINS
 FORT COLLINS CO 80524
 (970) 480-1511
 REF: 304196
 DEPT:
 PO:
 NV:
 ORIGIN: PSCA (509) 947-5192
 TOM EDMUNDSON
 CH2M
 1060 BATTLE BLVD.
 RICHLAND, WA 98352
 UNITED STATES US
 SHIP DATE: 14AUG17
 ACTWGT: 12.00 LB
 CAD: 107066051MNET3920
 BILL THIRD PARTY
 549J11577E104C

10-2
 1708265

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 Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.



Metals

Case Narrative

CH2M HILL Plateau Remediation Company

618-10 Verification Sampling – Soils – FRC17-06

Work Order Number: 1708265

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 08/15/17.
3. The sample had a pH > 2 upon receipt.
4. The sample was prepared and analyzed based on SW-846, 3rd Edition procedures.

For analysis by Trace ICP and ICP-MS, the sample was 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 sample was 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 sample in this digestion batch.
 - The preparation (method) blank associated with this digestion batch was below the reporting limit for the requested analytes. Lead 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 read-backs 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 1708265-1 was designated as the quality control sample for each 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.

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

<u>Analyte</u>	<u>Sample ID</u>
Manganese	-1MS

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 serial dilution was analyzed with this ICP batch. All acceptance criteria were met.

10. The sample required dilutions to bring several analytes into the analytical range of the Trace ICP.

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.

Emily Lyons
Emily Lyons
Inorganics Primary Data Reviewer

8/29/17
Date

Shih-Ling
Inorganics Final Data Reviewer

8/30/17
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.

Method SW6010B
Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1708265
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 618-10 Verification Sampling - Soils FRC17-06

Field ID: B3C2K8A	Sample Matrix: SOIL	Prep Batch: IP170817-3	Analyst: Steve Workman
Lab ID: 1708265-1	% Moisture: 0.6	QCBatchID: IP170817-3-1	Sample Aliquot: 1.044 g
	Date Collected: 10-Aug-17	Run ID: IT170818-1A2	Final Volume: 100 ml
	Date Extracted: 17-Aug-17	Cleanup: NONE	Result Units: UG/KG
	Date Analyzed: 18-Aug-17	Basis: Dry Weight	Clean DF: 1
	Prep Method: SW3050 Rev B	File Name: 170818A.	

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-36-0	ANTIMONY	1	1500	B	1900	580
7440-38-2	ARSENIC	1	1300		960	290
7440-39-3	BARIUM	1	83000		9600	2900
7440-41-7	BERYLLIUM	1	320	B	480	140
7440-43-9	CADMIUM	1	140	U	480	140
7440-47-3	CHROMIUM	1	3900		960	290
7440-48-4	COBALT	5	9600	D	4800	1400
7440-50-8	COPPER	1	13000		960	290
7439-92-1	LEAD	5	4900	D	1400	430
7439-96-5	MANGANESE	1	410000		960	290
7440-02-0	NICKEL	1	7800		1900	580
7782-49-2	SELENIUM	5	720	UD	2400	720
7440-22-4	SILVER	1	290	U	960	290
7440-24-6	STRONTIUM	1	22000		960	290
7440-31-5	TIN	5	7200	UD	24000	7200
7440-62-2	VANADIUM	5	89000	D	4800	1400
7440-66-6	ZINC	1	49000		1900	580

Data Package ID: IT1708265-1

Total LITHIUM

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: 618-10 Verification Sampling - Soils FRC17-06
Work Order Number: 1708265 **Final Volume:** 100 ml
Reporting Basis: Dry Weight **Matrix:** SOIL
Analyst: Brent A. Stanfield **Result Units:** UG/KG

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Flag	Sample Aliquot
B3C2K8A	1708265-1	8/10/2017	8/17/2017	08/28/2017	0.644	10	4200	1900	580		1.044 g

Comments:

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

Data Package ID: *IM1708265-1*

Total URANIUM**Method SW6020A****Sample Results****Lab Name:** ALS -- Fort Collins**Client Name:** CH2M HILL Plateau Remediation Company**Client Project ID:** 618-10 Verification Sampling - Soils FRC17-06**Work Order Number:** 1708265**Final Volume:** 100 ml**Reporting Basis:** Dry Weight**Matrix:** SOIL**Analyst:** Brent A. Stanfield**Result Units:** UG/KG

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Flag	Sample Aliquot
B3C2K8A	1708265-1	8/10/2017	8/17/2017	08/23/2017	0.644	10	420	9.6	2.9		1.044 g

Comments:

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

Data Package ID: *IM1708265-1***Date Printed:** Friday, December 08, 2017**ALS -- Fort Collins**

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LIMS Version: 6.850

ICP Metals

Method SW6010B

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1708265

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 618-10 Verification Sampling - Soils FRC17-06

Lab ID: IP170817-3MB

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 17-Aug-17

Date Analyzed: 18-Aug-17

Prep Batch: IP170817-3

QCBatchID: IP170817-3-1

Run ID: IT170818-1A2

Cleanup: NONE

Basis: N/A

File Name: 170818A.

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL
7440-36-0	ANTIMONY	1	600	U	2000	600
7440-38-2	ARSENIC	1	300	U	1000	300
7440-39-3	BARIUM	1	3000	U	10000	3000
7440-41-7	BERYLLIUM	1	150	U	500	150
7440-43-9	CADMIUM	1	150	U	500	150
7440-47-3	CHROMIUM	1	300	U	1000	300
7440-48-4	COBALT	1	300	U	1000	300
7440-50-8	COPPER	1	300	U	1000	300
7439-92-1	LEAD	1	190	B	300	90
7439-96-5	MANGANESE	1	300	U	1000	300
7440-02-0	NICKEL	1	600	U	2000	600
7782-49-2	SELENIUM	1	150	U	500	150
7440-22-4	SILVER	1	300	U	1000	300
7440-24-6	STRONTIUM	1	300	U	1000	300
7440-31-5	TIN	1	1500	U	5000	1500
7440-62-2	VANADIUM	1	300	U	1000	300
7440-66-6	ZINC	1	600	U	2000	600

Data Package ID: IT1708265-1

ICP Metals**Method SW6010B****Laboratory Control Sample**

Lab Name: ALS -- Fort Collins

Work Order Number: 1708265

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 618-10 Verification Sampling - Soils FRC17-06

Lab ID: IP170817-3LCS

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 08/17/2017

Date Analyzed: 08/18/2017

Prep Method: SW3050B

Prep Batch: IP170817-3

QCBatchID: IP170817-3-1

Run ID: IT170818-1A2

Cleanup: NONE

Basis: N/A

File Name: 170818A.

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-36-0	ANTIMONY	50000	48500	2000		97	80 - 120%
7440-38-2	ARSENIC	100000	94100	1000		94	80 - 120%
7440-39-3	BARIUM	100000	99600	10000		100	80 - 120%
7440-41-7	BERYLLIUM	5000	4870	500		97	80 - 120%
7440-43-9	CADMIUM	50000	47600	500		95	80 - 120%
7440-47-3	CHROMIUM	20000	20600	1000		103	80 - 120%
7440-48-4	COBALT	50000	48000	1000		96	80 - 120%
7440-50-8	COPPER	25000	26000	1000		104	80 - 120%
7439-92-1	LEAD	50000	50000	300		100	80 - 120%
7439-96-5	MANGANESE	50000	50900	1000		102	80 - 120%
7440-02-0	NICKEL	50000	52300	2000		105	80 - 120%
7782-49-2	SELENIUM	200000	176000	500		88	80 - 120%
7440-22-4	SILVER	10000	9320	1000		93	80 - 120%
7440-24-6	STRONTIUM	50000	49600	1000		99	80 - 120%
7440-31-5	TIN	50000	51200	5000		102	80 - 120%
7440-62-2	VANADIUM	50000	51000	1000		102	80 - 120%
7440-66-6	ZINC	50000	48900	2000		98	80 - 120%

Data Package ID: IT1708265-1

Date Printed: Tuesday, August 29, 2017

ALS -- Fort Collins

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LIMS Version: 6.845

ICP Metals

Method SW6010B

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1708265

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 618-10 Verification Sampling - Soils FRC17-06

Field ID: B3C2K8A
LabID: 1708265-1MS

Sample Matrix: SOIL
 % Moisture: 0.6
 Date Collected: 10-Aug-17
 Date Extracted: 17-Aug-17
 Date Analyzed: 18-Aug-17
 Prep Method: SW3050 Rev B

Prep Batch: IP170817-3
 QCBatchID: IP170817-3-1
 Run ID: IT170818-1A2
 Cleanup: NONE
 Basis: Dry Weight

Sample Aliquot: 1.04 g
 Final Volume: 100 ml
 Result Units: UG/KG
 File Name: 170818A.

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-36-0	ANTIMONY	1500	B	40700		1940	48400	81	80 - 120%
7440-38-2	ARSENIC	1300		89700		968	96800	91	80 - 120%
7440-39-3	BARIUM	83000		174000		9680	96800	95	80 - 120%
7440-41-7	BERYLLIUM	320	B	4880		484	4840	94	80 - 120%
7440-43-9	CADMIUM	140	U	45100		484	48400	93	80 - 120%
7440-47-3	CHROMIUM	3900		22800		968	19400	97	80 - 120%
7440-48-4	COBALT	9600	D	55100		4840	48400	94	80 - 120%
7440-50-8	COPPER	13000		38300		968	24200	105	80 - 120%
7439-92-1	LEAD	4900	D	52200		1450	48400	98	80 - 120%
7439-96-5	MANGANESE	410000		392000		968	48400	-45	80 - 120%
7440-02-0	NICKEL	7800		56000		1940	48400	100	80 - 120%
7782-49-2	SELENIUM	720	UD	181000		2420	194000	93	80 - 120%
7440-22-4	SILVER	290	U	8790		968	9680	91	80 - 120%
7440-24-6	STRONTIUM	22000		73900		968	48400	107	80 - 120%
7440-31-5	TIN	7200	UD	45800		24200	48400	95	80 - 120%
7440-62-2	VANADIUM	89000	D	133000		4840	48400	91	80 - 120%
7440-66-6	ZINC	49000		91400		1940	48400	87	80 - 120%

Data Package ID: IT1708265-1

ICP Metals

Method SW6010B

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1708265

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 618-10 Verification Sampling - Soils FRC17-06

Field ID: B3C2K8A
LabID: 1708265-1MSD

Sample Matrix: SOIL
 % Moisture: 0.6
 Date Collected: 10-Aug-17
 Date Extracted: 17-Aug-17
 Date Analyzed: 18-Aug-17
 Prep Method: SW3050 Rev B

Prep Batch: IP170817-3
 QCBatchID: IP170817-3-1
 Run ID: IT170818-1A2
 Cleanup: NONE
 Basis: Dry Weight

Sample Aliquot: 1.039 g
 Final Volume: 100 ml
 Result Units: UG/KG
 File Name: 170818A.

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-36-0	ANTIMONY	41500		48400	83	1940	20	2
7440-38-2	ARSENIC	92600		96900	94	969	20	3
7440-39-3	BARIUM	176000		96900	96	9690	20	1
7440-41-7	BERYLLIUM	5110		4840	99	484	20	5
7440-43-9	CADMIUM	46600		48400	96	484	20	3
7440-47-3	CHROMIUM	23100		19400	99	969	20	2
7440-48-4	COBALT	55500		48400	95	4840	20	1
7440-50-8	COPPER	38700		24200	107	969	20	1
7439-92-1	LEAD	53400		48400	100	1450	20	2
7439-96-5	MANGANESE	376000		48400	-77	969	20	4
7440-02-0	NICKEL	57200		48400	102	1940	20	2
7782-49-2	SELENIUM	180000		194000	93	2420	20	0
7440-22-4	SILVER	9010		9690	93	969	20	2
7440-24-6	STRONTIUM	71300		48400	101	969	20	4
7440-31-5	TIN	49100		48400	101	24200	20	7
7440-62-2	VANADIUM	142000		48400	111	4840	20	7
7440-66-6	ZINC	96800		48400	98	1940	20	6

Data Package ID: IT1708265-1

Prep Batch ID: IP170817-3

Start Date: 08/17/17	End Date: 08/17/17	Concentration Method: NONE	Batch Created By: jml
Start Time: 11:43	End Time: 18:00	Extract Method: SW3050B	Date Created: 08/17/17
Prep Analyst: Jill M. Latelle		Initial Volume Units: g	Time Created: 11:43
Comments:		Final Volume Units: ml	Validated By: jml
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>			Date Validated: 08/17/17
			Time Validated: 12:20

QC Batch ID: IP170817-3-1

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP170817-3	MB	XXXXXX	SOIL	XXXXXX	1	100	NONE	1	1708265
IP170817-3	LCS	XXXXXX	SOIL	XXXXXX	1	100	NONE	1	1708265
1708265-1	MS	B3C2K8A	SOIL	8/10/2017	1.04	100	NONE	1	1708265
1708265-1	MSD	B3C2K8A	SOIL	8/10/2017	1.039	100	NONE	1	1708265
1708265-1	DUP	B3C2K8A	SOIL	8/10/2017	1.045	100	NONE	1	1708265
1708265-1	SMP	B3C2K8A	SOIL	8/10/2017	1.044	100	NONE	1	1708265

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: 1708265

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 618-10 Verification Sampling - Soils FRC17-06

Lab ID: IP170817-3MB

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 17-Aug-17

Date Analyzed: 23-Aug-17

Prep Batch: IP170817-3

QCBatchID: IP170817-3-4

Run ID: IM170823-10A3

Cleanup: NONE

Basis: N/A

File Name: 077SMPL_

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL
7440-61-1	URANIUM	10	3	U	10	3

Data Package ID: IM1708265-1

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1708265

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 618-10 Verification Sampling - Soils FRC17-06

Lab ID: IP170817-3MB

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 17-Aug-17

Date Analyzed: 28-Aug-17

Prep Batch: IP170817-3

QCBatchID: IP170817-3-4

Run ID: IM170827-10A5

Cleanup: NONE

Basis: N/A

File Name: 068SMPL_

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL
7439-93-2	LITHIUM	10	600	U	2000	600

Data Package ID: IM1708265-1

ICPMS Metals

Method SW6020A

Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1708265

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 618-10 Verification Sampling - Soils FRC17-06

Lab ID: IM170817-3LCS

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 08/17/2017

Date Analyzed: 08/28/2017

Prep Method: SW3050B

Prep Batch: IP170817-3

QCBatchID: IP170817-3-4

Run ID: IM170827-10A5

Cleanup: NONE

Basis: N/A

File Name: 069SMPL_

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7439-93-2	LITHIUM	100000	98400	2000		98	80 - 120%
7440-61-1	URANIUM	1000	931	10		93	80 - 120%

Data Package ID: *IM1708265-1*

ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1708265

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 618-10 Verification Sampling - Soils FRC17-06

Field ID: B3C2K8A
LabID: 1708265-1MS

Sample Matrix: SOIL
 % Moisture: 0.6
 Date Collected: 10-Aug-17
 Date Extracted: 17-Aug-17
 Date Analyzed: 28-Aug-17
 Prep Method: SW3050 Rev B

Prep Batch: IP170817-3
 QCBatchID: IP170817-3-4
 Run ID: IM170827-10A5
 Cleanup: NONE
 Basis: Dry Weight

Sample Aliquot: 1.04 g
 Final Volume: 100 ml
 Result Units: UG/KG
 File Name: 073SMPL_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7439-93-2	LITHIUM	4200		105000		1940	96800	104	75 - 125%
7440-61-1	URANIUM	420		1370		9.68	968	98	75 - 125%

Field ID: B3C2K8A
LabID: 1708265-1MSD

Sample Matrix: SOIL
 % Moisture: 0.6
 Date Collected: 10-Aug-17
 Date Extracted: 17-Aug-17
 Date Analyzed: 28-Aug-17
 Prep Method: SW3050 Rev B

Prep Batch: IP170817-3
 QCBatchID: IP170817-3-4
 Run ID: IM170827-10A5
 Cleanup: NONE
 Basis: Dry Weight

Sample Aliquot: 1.039 g
 Final Volume: 100 ml
 Result Units: UG/KG
 File Name: 074SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7439-93-2	LITHIUM	105000		96900	104	1940	20	0
7440-61-1	URANIUM	1280		969	89	9.69	20	7

Data Package ID: IM1708265-1

Prep Batch ID: IP170817-3

Start Date: 08/17/17	End Date: 08/17/17	Concentration Method: NONE	Batch Created By: jml
Start Time: 11:43	End Time: 18:00	Extract Method: SW3050B	Date Created: 08/17/17
Prep Analyst: Jill M. Latelle		Initial Volume Units: g	Time Created: 11:43
Comments:		Final Volume Units: ml	Validated By: jml
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>			Date Validated: 08/17/17
			Time Validated: 12:20

QC Batch ID: IP170817-3-4

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP170817-3	MB	XXXXXX	SOIL	XXXXXX	1	100	NONE	1	1708265
IM170817-3	LCS	XXXXXX	SOIL	XXXXXX	1	100	NONE	1	1708265
1708265-1	MS	B3C2K8A	SOIL	8/10/2017	1.04	100	NONE	1	1708265
1708265-1	MSD	B3C2K8A	SOIL	8/10/2017	1.039	100	NONE	1	1708265
1708265-1	DUP	B3C2K8A	SOIL	8/10/2017	1.045	100	NONE	1	1708265
1708265-1	SMP	B3C2K8A	SOIL	8/10/2017	1.044	100	NONE	1	1708265

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		