ALS Environmental

Ft. Collins, Colorado

LIMS Version: 6.813

Tuesday, May 10, 2016

Laine Sumner
CH2M HILL Plateau Remediation Company
2420 Stevens Center
Richland, WA 99352

Re: ALS Workorder: 1605033
Project Name: 100-DX P&T Resin Reconditioning
Project Number: F16-029

Dear Ms. Sumner:

Two water samples were received from CH2M HILL Plateau Remediation Company, on 4/5/2016. 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
Julie Ellingson
Project Manager

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1605033
Client Name: CH2M HILL Plateau Remediation Company
Client Project Name: 100-DX P&T Resin Reconditioning
Client Project Number: F16-029
Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B353V8	1605033-2		WATER	04-Apr-16	8:46
B353W0	1605033-3		WATER	04-Apr-16	8:46

RECHECK, RECOUNT, OR REANALYSIS ORDER

04/19/2016

Order Number: **160419ALS-R8826**

ALS Environmental Ft. Collins

225 Commerce Drive

Fort Collins, CO 80524

Sample Delivery Group:ALS1604057

Method Name:6020_METALS_ICPMS

Sample#: B353V8 Sample Date: 4/4/2016 8:46:00 AM SAF #:F16-029

Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)
1604057-2	4/19/2016 2:12:00 PM	Chromium	REANALYZE	15 Days / 15 Days

Special Instructions: Result out of expected trend. SLF 04/19/2016

Sample#: B353W0 Sample Date: 4/4/2016 8:46:00 AM SAF #:F16-029

Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)
1604057-3	4/19/2016 2:12:00 PM	Chromium	REANALYZE	15 Days / 15 Days

Special Instructions: Result out of expected trend. SLF 04/19/2016

Deliver Report Results to:CHPRC
P.O. Box 1600
Richland, WA 99352
C/O Mr.Scot Fitzgerald

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F16-029-011 | PAGE 1 OF 1

COLLECTOR K.C. Patterson/CHPRC	**COMPANY CONTACT** SUMNER, LC	**TELEPHONE NO.** 376-3922	**PROJECT COORDINATOR** SUMNER, LC
SAMPLING LOCATION 100-DX, Train D valve V-M228D	**PROJECT DESIGNATION** 100-DX P&T Resin Reconditioning		**SAF NO.** F16-029
ICE CHEST NO. GLES-397	**FIELD LOGBOOK NO.** HNF-N-491 15	**ACTUAL SAMPLE DEPTH** N/A	**COA** 302841
SHIPPED TO ALS Environmental Ft. Collins	**OFFSITE PROPERTY NO.** 6487		**BILL OF LADING/AIR BILL NO.** 776033824715

PRICE CODE C07 | **AIR QUALITY** ☐ | **DATA TURNAROUND** 3 Days / 7 Days

METHOD OF SHIPMENT FEDERAL EXPRESS

ORIGINAL

1605033 vel05
1604057 SET 5/4/16

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
*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. NA

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	HNO3 to pH <2
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	500mL
SAMPLE ANALYSIS	6020_METALS_ICPMS: COMMON {Chromium};

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B353V8 (2)	WATER	APR 04 2016	0846	✓

5/10/2016
ALS1605033

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.C. Patterson/CHPRC	APR 04 2016 1010	Frank Hall CHPRC	APR 04 2016 1016
Frank Hall	APR 04 2016 1700	FEDEX	
FEDEX	4-5-16 0930	Scott Maltby	4-5-16 0930

SPECIAL INSTRUCTIONS
TEST 2

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

4 of 15

PRINTED ON 3/22/2016 | FSR ID = FSR29103 | TRVL NUM = TRVL-16-116 | A-6003-613 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F16-029-013 | PAGE 1 OF 1

COLLECTOR
K.C. Patterson/CHPRC

COMPANY CONTACT
SUMNER, LC

TELEPHONE NO.
376-3922

PROJECT COORDINATOR
SUMNER, LC

PRICE CODE C07 | **DATA TURNAROUND** 3 Days / 7 Days

AIR QUALITY ☐

SAMPLING LOCATION
100-DX, Train D valve V-M228D -- DUP

PROJECT DESIGNATION
100-DX P&T Resin Reconditioning

SAF NO.
F16-029

ICE CHEST NO.
GWS-397

FIELD LOGBOOK NO.
HNF-N-491 15

ACTUAL SAMPLE DEPTH
N/A

COA
302841

METHOD OF SHIPMENT
FEDERAL EXPRESS

ORIGINAL

SHIPPED TO
ALS Environmental Ft. Collins

OFFSITE PROPERTY NO.
6487

BILL OF LADING/AIR BILL NO.
7760 3382 4715

1605033 rels
H604057 5/4/16

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
*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. NA

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	HNO3 to pH <2
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	500mL
SAMPLE ANALYSIS	6020_METALS_ICPMS: COMMON {Chromium};

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B353W0 (3)	WATER	APR 04 2016	0846	✓

5/10/2016
ALS1605033

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

	DATE/TIME		DATE/TIME
RELINQUISHED BY/REMOVED FROM K.C. Patterson/CHPRC	APR 04 2016 1010	RECEIVED BY/STORED IN Frank Hall CHPRC	APR 04 2016 1010
RELINQUISHED BY/REMOVED FROM Frank Hall CHPRC	APR 04 2016 1400	RECEIVED BY/STORED IN FEDEX	
RELINQUISHED BY/REMOVED FROM Fedex	4-5-16 0930	RECEIVED BY/STORED IN Scott Mathy	4-5-16 0930
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	

SPECIAL INSTRUCTIONS
TEST 2

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

5 of 15

PRINTED ON 3/22/2016 | FSR ID = FSR29104 | TRVL NUM = TRVL-16-116 | A-6003-618 (REV 2)

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ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC Workorder No: 1604057

Project Manager: JME Initials: SDM Date: 4-5-16

1.	Does this project require any special handling in addition to standard ALS procedures?		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 or other representative documents?		(YES)	NO
5.	Are the COC and bottle labels complete and legible?		(YES)	NO
6.	Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(YES)	NO
7.	Were airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
* 8.	Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	YES	(NO)
9.	Are all aqueous non-preserved samples pH 4-9?	N/A	(YES)	NO
10.	Is there sufficient sample for the requested analyses?		(YES)	NO
11.	Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12.	Are all samples within holding times for the requested analyses?		(YES)	NO
13.	Were all sample containers received intact? (not broken or leaking, etc.)		(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	(N/A)	YES	NO
15.	Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	(NO)
16.	Were the samples shipped on ice?		YES	(NO)
17.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: (#2) #4	RAD ONLY	YES	(NO)

Cooler #:	1							
Temperature (°C):	Amb→	16.4°C						
No. of custody seals on cooler:	2							
DOT Survey/ Acceptance Information — External µR/hr reading:	11							
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: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

8.) see attached pH excursion Sheet.

If applicable, was the client contacted? (YES) / NO / NA Contact: S. Fitzgerald Date/Time: 4-5-16

Project Manager Signature / Date: 4-5-16

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC Workorder No: 1604057

Project Manager: JME Initials: SDM Date: 4-5-16

NOTE:

No pH adjustments shall be made without prior consent of Project Manager. After pH adjustments, hold metals and radchem samples ≥ 16 hrs. before analysis.

Was the pH of any sample adjusted by the laboratory? (YES) (See Table below) / **NO**

pH Excursion:

ALS Sample ID	Client Sample ID	Initial pH	Final pH	Reagent Used	Volume Added (mL)	Lot No. of Reagent	Requested Analysis	Initials / Date / Time
1604057-1	B353V6	6.0	<2.0	HNO_3	1.0	108740	Metals	SDM 4-5-16 1450
" -2	B353V8	6.0						
" -3	B353W0	6.0						
" -4	B353W2	6.0						
" -5	B353W4	6.0						
" -6	B353W6	6.0						
" -7	B353W8	6.0						
" -8	B353X0	6.0						
" -9	B353X2	6.0						
" -10	B353X4	6.0	↓	↓	↓	↓	↓	↓

If applicable, was the client contacted? (YES) / NO / NA Contact: S. Fitzgerald Date/Time: 4-5-16

Project Manager Signature / Date: 4-5-16

Form 201r24.xls (06/04/2012)

Page ___ of ___

1604057

Page 1 of 2

ORIGIN ID:PSCA (509) 528-9426
LESLY WALL
CH2M
6267 LATAH ST.
6269 LATAH ST.
RICHLAND, WA 99354
UNITED STATES US

SHIP DATE: 04APR16
ACTWGT: 25.00 LB
CAD: 107066051/INET3730

BILL THIRD PARTY

TO JULIE ELLINGSON
ALS GLOBAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511 REF: PTR#6487
INV:
PO: DEPT

11
-2

540J110427/727F

FedEx Express

Amb→ 16.4°C

TUE - 05 APR 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7760 3382 4715

DSR
80524
CO-US DEN

XH FTCA

Metals

Case Narrative

CH2M HILL Plateau Remediation Company

100-DX P & T Resin Reconditioning – F16-029

Work Order Number: 1605033

1. This report consists of 2 water samples. This report is a re-log from work order 1604057.

2. The samples were received intact at ambient temperature by ALS on 05/04/16.

3. The samples did not have a pH less than 2 upon receipt. The samples were preserved with nitric acid to a pH less than 2 upon receipt.

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

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

5. 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 time.

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 analyte. 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 analyte.
- All initial and continuing calibration verifications were within the acceptance criteria for the requested analyte.
- The interference check samples associated with Method 6020A were analyzed.

9. Matrix specific quality control procedures.

   Sample 1605054-5 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 were met.
   - A sample duplicate and matrix spike duplicate were digested and analyzed with this batch. All acceptance criteria for precision were met.
   - A serial dilution was analyzed with this 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 — 5/10/16
Jill Latelle — Date
Inorganics Primary Data Reviewer

5/10/16
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 <=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.

Total Recoverable CHROMIUM

Method SW6020A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: 100-DX P&T Resin Reconditioning F16-029
Work Order Number: 1605033 **Final Volume:** 50 ml
Reporting Basis: As Received **Matrix:** WATER
Analyst: Brent A. Stanfield **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
B353V8	1605033-2	4/4/2016	5/5/2016	05/07/2016	N/A	10	89	10	1.1		50 ml
B353W0	1605033-3	4/4/2016	5/5/2016	05/07/2016	N/A	10	88	10	1.1		50 ml

Comments:

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

Data Package ID: *im1605033-1*

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS Environmental -- FC
Work Order Number: 1605033
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-DX P&T Resin Reconditioning F16-029

Lab ID: IP160505-1MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 05-May-16
Date Analyzed: 07-May-16

Prep Batch: IP160505-1
QCBatchID: IP160505-1-2
Run ID: IM160506-10A5
Cleanup: NONE
Basis: N/A
File Name: 156SMPL_

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	

Data Package ID: *im1605033-1*

ICPMS Metals

Method SW6020A

Laboratory Control Sample

Lab Name: ALS Environmental -- FC
Work Order Number: 1605033
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-DX P&T Resin Reconditioning F16-029

Lab ID: IM160505-1LCS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 05/05/2016
Date Analyzed: 05/07/2016
Prep Method: SW3005A

Prep Batch: IP160505-1
QCBatchID: IP160505-1-2
Run ID: IM160506-10A5
Cleanup: NONE
Basis: N/A
File Name: 157SMPL_

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	483	10		97	80 - 120%

Data Package ID: *im1605033-1*

ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC
Work Order Number: 1605033
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-DX P&T Resin Reconditioning F16-029

Field ID: SHARED QC
LabID: 1605054-5MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 03-May-16
Date Extracted: 05-May-16
Date Analyzed: 07-May-16
Prep Method: SW3005 Rev A

Prep Batch: IP160505-1
QCBatchID: IP160505-1-2
Run ID: IM160506-10A5
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 169SMPL_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-47-3	CHROMIUM	8.8	B	487		10	500	96	75 - 125%

Field ID: SHARED QC
LabID: 1605054-5MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 03-May-16
Date Extracted: 05-May-16
Date Analyzed: 07-May-16
Prep Method: SW3005 Rev A

Prep Batch: IP160505-1
QCBatchID: IP160505-1-2
Run ID: IM160506-10A5
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 170SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-47-3	CHROMIUM	492		500	97	10	20	1

Data Package ID: *im1605033-1*