



Ft. Collins, Colorado

LIMS Version: 6.808

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Monday, March 28, 2016

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

Re: ALS Workorder: 1603288
Project Name: 200W Pump & Treat - Treatment Plant Water Sampling
Project Number: F15-005

Dear Ms. Sumner:

Three water samples were received from CH2M HILL Plateau Remediation Company, on 3/16/2016. 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,

A handwritten signature in black ink that reads "Julie Ellingson".

ALS Environmental
Julie Ellingson
Project Manager

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1603288

Client Name: CH2M HILL Plateau Remediation Company

Client Project Name: 200W Pump & Treat - Treatment Plant Water Sampling

Client Project Number: F15-005

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B34PX3	1603288-1		WATER	15-Mar-16	9:50
B34PX9	1603288-2		WATER	15-Mar-16	8:52
B34PY5	1603288-3		WATER	15-Mar-16	8:52

CH2M Hill Plateau Remediation Company
COLLECTOR J.R. Aquilino/CHPRC
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
COMPANY CONTACT SUMNER, LC
TELEPHONE NO. 376-3922
PROJECT COORDINATOR SUMNER, LC
PRICE CODE 7C
PAGE 1 OF 1

SAMPLING LOCATION 289-T, Effluent Tank, Valve V07-Y80, DUP
ICE CHEST NO. 605-479
PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Water Sampling
FIELD LOGBOOK NO. HNF-N-491-15/13
ACTUAL SAMPLE DEPTH N/A
SAF NO. F15-005
AIR QUALITY
PRICE CODE 7C
DATA TURNAROUND 15 Days / 15 Days

SHIPPED TO ALS Environmental Ft. Collins
BILL OF LADING/AIR BILL NO. 775878640074
METHOD OF SHIPMENT ORIGINAL
FEDERAL EXPRESS

MATRIX*
A=Air
DL=Drum
L=Liquid
S=Soil
SF=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

PRESERVATION HNO3 to pH <2, NaOH to pH >=12/Cool <-6C
HOLDING TIME 6 Months
TYPE OF CONTAINER G/P
NO. OF CONTAINER(S) 1
VOLUME 500mL
SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS (Cyanide); 9010_CYANIDE: COMMON (Cyanide);

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO. 3 **MATRIX*** WATER
SAMPLE DATE MAR 15 2016 **SAMPLE TIME** 0852

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J.R. Aquilino/CHPRC	MAR 15 2016 0955	L.D. Wall CHPRC	MAR 15 2016 0955
L.D. Wall	MAR 15 2016 1400	FEDEX	
CH2M Hill		Carroll J. Dumbach	3-16-16 102

SPECIAL INSTRUCTIONS
TRVL-16-083
(1) 6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc}; 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron};

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

FRONT PANEL: FSR ID = FSR25309 TRVL NUM = TRVL160083
BACK PANEL: A-6003-618 (REV 2014-08)



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC

Workorder No: 1603288

Project Manager: JE

Initials: CDT Date: 3-16-16

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?	<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	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*: <input checked="" type="radio"/> #2 #4 RAD ONLY		<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>1.4</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>7</u>			
Background µR/hr reading: <u>6</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] 3/16/16

16032-88

ORIGIN: PSCA (509) 328-9426
 LESLY WALL
 CHRYM
 6277 LATAH ST.
 8260 LATAH ST.
 RICHLAND WA 99354
 UNITED STATES

SHIP DATE: 15MAR16
 ACT WGT: 16.00 LB
 CAD: 10706605MINET3730

BILL THIRD PARTY

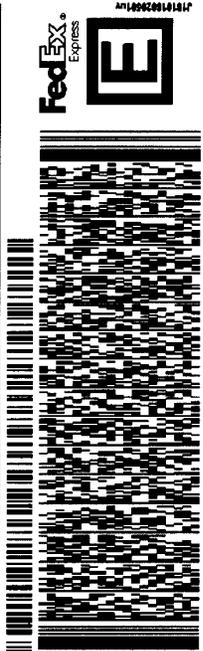
TO **JULIE ELLINGSON**
ALS GLOBAL
225 COMMERCE DRIVE

7-2
1.4

540J1CF34727F

FORT COLLINS CO 80524
 REF: PTR# 6438

(970) 480-1511
 INV
 P.O. DEPT.



WED - 16 MAR 10:30A
PRIORITY OVERNIGHT

TRK# **7758 7864 8074**

DSR
80524
 CO-US **DEN**

XH FTCA



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



Metals

Case Narrative

CH2M HILL Plateau Remediation Company

200W Pump & Treat – Treatment Plant Water Sampling – F15-005

Work Order Number: 1603288

1. This report consists of 3 water samples.
2. The samples were received cool and intact by ALS on 03/16/16.
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. Aluminum, calcium, cobalt, magnesium, manganese, sodium, and zinc have results 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 1603288-1 was designated as the quality control sample for each ICP 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 each batch. All acceptance criteria for accuracy were met.
 - A sample duplicate and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for precision were met.
 - A serial dilution was analyzed with each ICP batch. All acceptance criteria were met.
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

3/28/16
Date



Audie E. Elze
Inorganics Final Data Reviewer

3/28/16
Date

Priority Problem and Discrepancy Report**ALS****SDG ALS1603288**05/18/16

The data package has the following issues:

Sample results for cyanide in the electronic data report are reported as <RL, SOW requires that result are reported to the MDL. Please reissue the EDD with cyanide results reported to the MDL for samples B34PX3 (1603288-1), B34PX9 (1603288-2) and B34PY5 (1603288-3).

Resolution: *Provide correction.*

Lab Response: Resubmit correct EDD.

Please correct the issue and resubmit the electronic packages.



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 $\leq 5X$ 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 ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Field ID:	B34PX3
Lab ID:	1603288-1

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Mar-16
 Date Extracted: 17-Mar-16
 Date Analyzed: 21-Mar-16
 Prep Method: SW3005 Rev A

Prep Batch: IP160317-3
 QCBatchID: IP160317-3-5
 Run ID: IT160321-1A7
 Cleanup: NONE
 Basis: As Received
 File Name: 160321A.

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

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-42-8	BORON	1	18	30	6.4	B	
7440-70-2	CALCIUM	1	71000	1000	23		
7439-89-6	IRON	1	16	50	16	U	
7439-95-4	MAGNESIUM	1	22000	750	21		
7440-09-7	POTASSIUM	1	5600	1000	170		
7440-23-5	SODIUM	1	21000	500	26		

Data Package ID: *IT1603288-1*

Total Recoverable ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Field ID:	B34PX9
Lab ID:	1603288-2

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Mar-16
 Date Extracted: 17-Mar-16
 Date Analyzed: 21-Mar-16
 Prep Method: SW3005 Rev A

Prep Batch: IP160317-3
 QCBatchID: IP160317-3-5
 Run ID: IT160321-1A7
 Cleanup: NONE
 Basis: As Received
 File Name: 160321A.

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

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-42-8	BORON	1	41	30	6.4		
7440-70-2	CALCIUM	1	69000	1000	23		
7439-89-6	IRON	1	16	50	16	U	
7439-95-4	MAGNESIUM	1	22000	750	21		
7440-09-7	POTASSIUM	1	5400	1000	170		
7440-23-5	SODIUM	1	22000	500	26		

Data Package ID: *IT1603288-1*

Total Recoverable ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Field ID:	B34PY5
Lab ID:	1603288-3

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Mar-16
 Date Extracted: 17-Mar-16
 Date Analyzed: 21-Mar-16
 Prep Method: SW3005 Rev A

Prep Batch: IP160317-3
 QCBatchID: IP160317-3-5
 Run ID: IT160321-1A7
 Cleanup: NONE
 Basis: As Received
 File Name: 160321A.

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

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-42-8	BORON	1	40	30	6.4		
7440-70-2	CALCIUM	1	69000	1000	23		
7439-89-6	IRON	1	16	50	16	U	
7439-95-4	MAGNESIUM	1	22000	750	21		
7440-09-7	POTASSIUM	1	5400	1000	170		
7440-23-5	SODIUM	1	22000	500	26		

Data Package ID: *IT1603288-1*

Total Recoverable ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Field ID: B34PX3 Lab ID: 1603288-1	Sample Matrix: WATER % Moisture: N/A Date Collected: 15-Mar-16 Date Extracted: 17-Mar-16 Date Analyzed: 25-Mar-16 Prep Method: SW3005 Rev A	Prep Batch: IP160317-3 QCBatchID: IP160317-3-3 Run ID: IM160325-12A8 Cleanup: NONE Basis: As Received File Name: 147SMPL_	Analyst: Brent A. Stanfield Sample Aliquot: 50 ml Final Volume: 50 ml Result Units: UG/L Clean DF: 1
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Analysis ReqCode: 6020_METALS_I

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	10	30	50	14	BC	
7440-47-3	CHROMIUM	10	25	10	1.1		
7440-48-4	COBALT	10	0.08	1	0.07	BC	
7440-50-8	COPPER	10	1.1	8	1.1	U	
7439-96-5	MANGANESE	10	0.66	5	0.3	BC	
7439-98-7	MOLYBDENUM	10	3.7	1	0.41		
7440-02-0	NICKEL	10	4.2	5	4.2	U	
7782-49-2	SELENIUM	10	2.7	1	0.66		
7440-61-1	URANIUM	10	1.1	0.1	0.027		
7440-66-6	ZINC	10	16	20	9.1	BC	

Data Package ID: IM1603288-1

Total Recoverable ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Field ID: B34PX9
Lab ID: 1603288-2

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Mar-16
 Date Extracted: 17-Mar-16
 Date Analyzed: 25-Mar-16
 Prep Method: SW3005 Rev A

Prep Batch: IP160317-3
 QCBatchID: IP160317-3-3
 Run ID: IM160325-12A8
 Cleanup: NONE
 Basis: As Received
 File Name: 154SMPL_

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
7429-90-5	ALUMINUM	10	24	50	14	BC	
7440-47-3	CHROMIUM	10	1.2	10	1.1	B	
7440-48-4	COBALT	10	11	1	0.07		
7440-50-8	COPPER	10	6.9	8	1.1	B	
7439-96-5	MANGANESE	10	44	5	0.3		
7439-98-7	MOLYBDENUM	10	37	1	0.41		
7440-02-0	NICKEL	10	7.8	5	4.2		
7782-49-2	SELENIUM	10	2.8	1	0.66		
7440-61-1	URANIUM	10	0.89	0.1	0.027		
7440-66-6	ZINC	10	9.1	20	9.1	U	

Data Package ID: IM1603288-1

Total Recoverable ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Field ID: B34PY5
Lab ID: 1603288-3

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Mar-16
 Date Extracted: 17-Mar-16
 Date Analyzed: 25-Mar-16
 Prep Method: SW3005 Rev A

Prep Batch: IP160317-3
 QCBatchID: IP160317-3-3
 Run ID: IM160325-12A8
 Cleanup: NONE
 Basis: As Received
 File Name: 155SMPL_

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
7429-90-5	ALUMINUM	10	30	50	14	BC	
7440-47-3	CHROMIUM	10	1.4	10	1.1	B	
7440-48-4	COBALT	10	11	1	0.07		
7440-50-8	COPPER	10	5.6	8	1.1	B	
7439-96-5	MANGANESE	10	44	5	0.3		
7439-98-7	MOLYBDENUM	10	36	1	0.41		
7440-02-0	NICKEL	10	9.5	5	4.2		
7782-49-2	SELENIUM	10	3.2	1	0.66		
7440-61-1	URANIUM	10	0.91	0.1	0.027		
7440-66-6	ZINC	10	9.1	20	9.1	U	

Data Package ID: IM1603288-1

ICP Metals
Method SW6010B
Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Lab ID: FP160317-3MB

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: N/A
 Date Extracted: 17-Mar-16
 Date Analyzed: 21-Mar-16

Prep Batch: IP160317-3
 QCBatchID: IP160317-3-5
 Run ID: IT160321-1A7
 Cleanup: NONE
 Basis: N/A
 File Name: 160321A.

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
7440-42-8	BORON	1	6.4	30	6.4	U	
7440-70-2	CALCIUM	1	130	1000	23	B	
7439-89-6	IRON	1	16	50	16	U	
7439-95-4	MAGNESIUM	1	22	750	21	B	
7440-09-7	POTASSIUM	1	170	1000	170	U	
7440-23-5	SODIUM	1	140	500	26	B	

Data Package ID: IT1603288-1

ICP Metals
Method SW6010B
Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Lab ID: FP160317-3LCS

Sample Matrix: WATER

Prep Batch: IP160317-3

Sample Aliquot: 50 ml

% Moisture: N/A

QCBatchID: IP160317-3-5

Final Volume: 50 ml

Date Collected: N/A

Run ID: IT160321-1A7

Result Units: UG/L

Date Extracted: 03/17/2016

Cleanup: NONE

Clean DF: 1

Date Analyzed: 03/21/2016

Basis: N/A

Prep Method: SW3005A

File Name: 160321A.

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-42-8	BORON	1000	1060	30		106	80 - 120%
7440-70-2	CALCIUM	40000	41500	1000		104	80 - 120%
7439-89-6	IRON	1000	1040	50		104	80 - 120%
7439-95-4	MAGNESIUM	40000	41300	750		103	80 - 120%
7440-09-7	POTASSIUM	40000	42500	1000		106	80 - 120%
7440-23-5	SODIUM	40000	40700	500		102	80 - 120%

Data Package ID: IT1603288-1

ICP Metals

Method SW6010B

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC
Work Order Number: 1603288
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-

Field ID: B34PX3	Sample Matrix: WATER	Prep Batch: IP160317-3	Sample Aliquot: 50 ml
LabID: 1603288-1MS	% Moisture: N/A	QCBatchID: IP160317-3-5	Final Volume: 50 ml
	Date Collected: 15-Mar-16	Run ID: IT160321-1A7	Result Units: UG/L
	Date Extracted: 17-Mar-16	Cleanup: NONE	File Name: 160321A.
	Date Analyzed: 21-Mar-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
7440-42-8	BORON	18	B	1070		30	1000	105	80 - 120%
7440-70-2	CALCIUM	71000		112000		1000	40000	102	80 - 120%
7439-89-6	IRON	16	U	1020		50	1000	102	80 - 120%
7439-95-4	MAGNESIUM	22000		62800		750	40000	102	80 - 120%
7440-09-7	POTASSIUM	5600		51400		1000	40000	114	80 - 120%
7440-23-5	SODIUM	21000		64300		500	40000	107	80 - 120%

Field ID: B34PX3	Sample Matrix: WATER	Prep Batch: IP160317-3	Sample Aliquot: 50 ml
LabID: 1603288-1MSD	% Moisture: N/A	QCBatchID: IP160317-3-5	Final Volume: 50 ml
	Date Collected: 15-Mar-16	Run ID: IT160321-1A7	Result Units: UG/L
	Date Extracted: 17-Mar-16	Cleanup: NONE	File Name: 160321A.
	Date Analyzed: 21-Mar-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
7440-42-8	BORON	1090		1000	107	30	20	1
7440-70-2	CALCIUM	112000		40000	104	1000	20	1
7439-89-6	IRON	1030		1000	103	50	20	1
7439-95-4	MAGNESIUM	63300		40000	103	750	20	1
7440-09-7	POTASSIUM	51600		40000	115	1000	20	0
7440-23-5	SODIUM	64500		40000	108	500	20	0

Data Package ID: IT1603288-1

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Lab ID: FP160317-3MB

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: N/A
 Date Extracted: 17-Mar-16
 Date Analyzed: 25-Mar-16

Prep Batch: IP160317-3
 QCBatchID: IP160317-3-3
 Run ID: IM160325-12A8
 Cleanup: NONE
 Basis: N/A
 File Name: 130SMPL_

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
7429-90-5	ALUMINUM	10	24	50	14	B	
7440-47-3	CHROMIUM	10	1.1	10	1.1	U	
7440-48-4	COBALT	10	0.09	1	0.07	B	
7439-96-5	MANGANESE	10	2.7	5	0.3	B	
7439-98-7	MOLYBDENUM	10	0.41	1	0.41	U	
7440-02-0	NICKEL	10	4.2	5	4.2	U	
7782-49-2	SELENIUM	10	0.66	1	0.66	U	
7440-61-1	URANIUM	10	0.027	0.1	0.027	U	
7440-66-6	ZINC	10	11	20	9.1	B	

Data Package ID: IM1603288-1

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Lab ID: FP160317-3MB

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: N/A
 Date Extracted: 17-Mar-16
 Date Analyzed: 26-Mar-16

Prep Batch: IP160317-3
 QCBatchID: IP160317-3-3
 Run ID: IM160326-10A7
 Cleanup: NONE
 Basis: N/A
 File Name: 017SMPL_

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
7440-50-8	COPPER	10	1.1	8	1.1	U	

Data Package ID: IM1603288-1

ICPMS Metals
Method SW6020A
Laboratory Control Sample

Lab Name: ALS Environmental -- FC
Work Order Number: 1603288
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-005

Lab ID: FM160317-3LCS

Sample Matrix: WATER **Prep Batch:** IP160317-3 **Sample Aliquot:** 50 ml
% Moisture: N/A **QCBatchID:** IP160317-3-3 **Final Volume:** 50 ml
Date Collected: N/A **Run ID:** IM160325-12A8 **Result Units:** UG/L
Date Extracted: 03/17/2016 **Cleanup:** NONE **Clean DF:** 1
Date Analyzed: 03/25/2016 **Basis:** N/A
Prep Method: SW3005A **File Name:** 131SMPL_

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7429-90-5	ALUMINUM	5000	5440	50		109	80 - 120%
7440-47-3	CHROMIUM	500	522	10		104	80 - 120%
7440-48-4	COBALT	100	108	1		108	80 - 120%
7440-50-8	COPPER	1000	1070	8		107	80 - 120%
7439-96-5	MANGANESE	100	112	5		112	80 - 120%
7439-98-7	MOLYBDENUM	100	108	1		108	80 - 120%
7440-02-0	NICKEL	500	506	5		101	80 - 120%
7782-49-2	SELENIUM	100	103	1		103	80 - 120%
7440-61-1	URANIUM	10	10.9	0.1		109	80 - 120%
7440-66-6	ZINC	2000	2150	20		108	80 - 120%

Data Package ID: IM1603288-1

ICPMS Metals
Method SW6020A
Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC
Work Order Number: 1603288
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-

Field ID: B34PX3	Sample Matrix: WATER	Prep Batch: IP160317-3	Sample Aliquot: 50 ml
LabID: 1603288-1MS	% Moisture: N/A	QCBatchID: IP160317-3-3	Final Volume: 50 ml
	Date Collected: 15-Mar-16	Run ID: IM160325-12A8	Result Units: UG/L
	Date Extracted: 17-Mar-16	Cleanup: NONE	File Name: 150SMPL_
	Date Analyzed: 25-Mar-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
7429-90-5	ALUMINUM	30	BC	5380		50	5000	107	75 - 125%
7440-47-3	CHROMIUM	25		538		10	500	103	75 - 125%
7440-48-4	COBALT	0.08	BC	105		1	100	105	75 - 125%
7440-50-8	COPPER	1.1	U	1050		8	1000	105	75 - 125%
7439-96-5	MANGANESE	0.66	BC	108		5	100	108	75 - 125%
7439-98-7	MOLYBDENUM	3.7		109		1	100	105	75 - 125%
7440-02-0	NICKEL	4.2	U	486		5	500	97	75 - 125%
7782-49-2	SELENIUM	2.7		98.9		1	100	96	75 - 125%
7440-61-1	URANIUM	1.1		10.7		0.1	10	96	75 - 125%
7440-66-6	ZINC	16	BC	2110		20	2000	105	75 - 125%

Data Package ID: IM1603288-1

ICPMS Metals
Method SW6020A
Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC
Work Order Number: 1603288
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-

Field ID:	B34PX3
LabID:	1603288-1MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 15-Mar-16
Date Extracted: 17-Mar-16
Date Analyzed: 25-Mar-16
Prep Method: SW3005 Rev A

Prep Batch: IP160317-3
QCBatchID: IP160317-3-3
Run ID: IM160325-12A8
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 151SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7429-90-5	ALUMINUM	5300		5000	105	50	20	1
7440-47-3	CHROMIUM	538		500	103	10	20	0
7440-48-4	COBALT	104		100	104	1	20	1
7440-50-8	COPPER	1040		1000	104	8	20	2
7439-96-5	MANGANESE	108		100	108	5	20	0
7439-98-7	MOLYBDENUM	110		100	106	1	20	1
7440-02-0	NICKEL	489		500	98	5	20	1
7782-49-2	SELENIUM	100		100	97	1	20	1
7440-61-1	URANIUM	12.4		10	113	0.1	20	15
7440-66-6	ZINC	2100		2000	104	20	20	1

Data Package ID: IM1603288-1



Inorganics Case Narrative

CH2M HILL Plateau Remediation Company 200W Pump & Treat - Treatment Plant Water Sampling -- F15-005

Work Order Number: 1603288

1. This report consists of 3 water samples.
2. The samples were received cool and intact by ALS on 03/16/16.
3. The samples had been correctly preserved for the requested analysis.
4. The samples were prepared for analysis based on SW-846, 3rd Edition procedures.
5. The samples were analyzed following SW-846 procedures for the current revision of the following SOP and method:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Total cyanide	9014	1110

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

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

8. 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.



- n All initial and continuing calibration blanks were below the reporting limit for the requested analyte.
 - n All initial and continuing calibration verifications were within the acceptance criteria for the requested analyte.
9. Matrix specific quality control procedures.
- Due to limited sample volume, matrix QC could not be performed. A laboratory control sample duplicate was performed and has been provided instead.
10. Sample dilutions were not required for the requested analysis.

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
Megan Johnstone
Inorganics Primary Data Reviewer

3/26/16
Date

Audie Elljes
Inorganics Final Data Reviewer

3/28/1
Date



Inorganic Data Reporting Qualifiers

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

- Concentration 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 ALS’s Method Detection Limit. If the analyte was analyzed for but not detected a “U” is entered.
- 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 $\leq 5X$ 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.

CYANIDE, TOTAL**Method SW9014****Sample Results****Lab Name:** ALS Environmental -- FC**Client Name:** CH2M HILL Plateau Remediation Company**Client Project ID:** 200W Pump & Treat - Treatment Plant Water Sampling F15-005**Work Order Number:** 1603288**Final Volume:** 50 ml**Reporting Basis:** As Received**Matrix:** WATER**Analyst:** Dan Sheneman**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
B34PX3	1603288-1	3/15/2016	3/17/2016	03/18/2016	N/A	1	3.6	10	3.6	U	50 ml
B34PX9	1603288-2	3/15/2016	3/17/2016	03/18/2016	N/A	1	3.6	10	3.6	U	50 ml
B34PY5	1603288-3	3/15/2016	3/17/2016	03/18/2016	N/A	1	3.6	10	3.6	U	50 ml

Comments:

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

Data Package ID: *cn1603288-1*

Total Cyanide

Method SW9014

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-00

Lab ID: CN160317-1MB

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: N/A
 Date Extracted: 17-Mar-16
 Date Analyzed: 18-Mar-16

Prep Batch: CN160317-1
 QCBatchID: CN160317-1-1
 Run ID: CN160318-4
 Cleanup: NONE
 Basis: N/A
 File Name: Manual Entry

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
57-12-5	CYANIDE, TOTAL	1	3.6	10	3.6	U	

Data Package ID: *cn1603288-1*

Total Cyanide

Method SW9014

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1603288

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 200W Pump & Treat - Treatment Plant Water Sampling F15-00

Lab ID: CN160317-1LCS	Sample Matrix: WATER % Moisture: N/A Date Collected: N/A Date Extracted: 03/17/2016 Date Analyzed: 03/18/2016 Prep Method: SW9010B	Prep Batch: CN160317-1 QCBatchID: CN160317-1-1 Run ID: CN160318-4 Cleanup: NONE Basis: N/A File Name: Manual Entry	Sample Aliquot: 50 ml Final Volume: 50 ml Result Units: UG/L Clean DF: 1
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CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
57-12-5	CYANIDE, TOTAL	200	173	10		87	85 - 115%

Lab ID: CN160317-1LCSD	Sample Matrix: WATER % Moisture: N/A Date Collected: N/A Date Extracted: 03/17/2016 Date Analyzed: 03/18/2016 Prep Method: SW9010B	Prep Batch: CN160317-1 QCBatchID: CN160317-1-1 Run ID: CN160318-4 Cleanup: NONE Basis: N/A File Name: Manual Entry	Sample Aliquot: 50 ml Final Volume: 50 ml Result Units: UG/L Clean DF: 1
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CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
57-12-5	CYANIDE, TOTAL	400	350	10		88	30	1

Data Package ID: *cn1603288-1*