



Saturday, August 20, 2016

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

Re: ALS Workorder: 1608136  
Project Name: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-Wa  
Project Number: F16-007

Dear Mr. Todak:

Two water samples were received from CH2M HILL Plateau Remediation Company, on 8/6/2016. The samples were scheduled for the following analyses:

Metals  
GC/MS Volatiles

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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 -- Fort Collins

## Sample Number(s) Cross-Reference Table

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**OrderNum:** 1608136  
**Client Name:** CH2M HILL Plateau Remediation Company  
**Client Project Name:** FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-  
**Client Project Number:** F16-007  
**Client PO Number:** BOA 54854

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B34T89	1608136-1		WATER	04-Aug-16	10:30
B34T90	1608136-2		WATER	04-Aug-16	10:30

CH2M Hill Plateau Remediation Company  
 COLLECTOR: Curt Hoffman  
 CHPRC  
 CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST  
 PROJECT COORDINATOR: TODAK, D  
 TELEPHONE NO.: 376-6427  
 PRICE CODE: 7H  
 AIR QUALITY:   
 SAF NO.: F16-007  
 COA: 300192  
 METHOD OF SHIPMENT: FEDERAL EXPRESS  
 BILL OF LADING/AIR BILL NO.: 7769 2917 4241

COMPANY CONTACT: TODAK, D  
 PROJECT DESIGNATION: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis - Water  
 FIELD LOGBOOK NO.: HNF-N-645-5/16  
 OFFSITE PROPERTY NO.: 6908  
 ACTUAL SAMPLE DEPTH: 284'

CH2M Hill Plateau Remediation Company  
 CURT HOFFMAN  
 CHPRC  
 GWS-390  
 ALS Environmental Ft. Collins  
 SHIPPED TO

MATRIX\*  
 A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other  
 PRESERVATION: HNO3 to pH <2  
 HOLDING TIME: 6 Months  
 TYPE OF CONTAINER: G/P  
 NO. OF CONTAINER(S): 1  
 VOLUME: 500ml  
 SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SPECIAL HANDLING AND/OR STORAGE  
 SAMPLE NO.: B34T89  
 MATRIX\*: WATER  
 SAMPLE DATE: 8/14/16  
 SAMPLE TIME: 1030  
 FILTER

CHAIN OF POSSESSION  
 RELINQUISHED BY/REMOVED FROM: Curt Hoffman CHPRC  
 DATE/TIME: AUG 04 2016 1346  
 RELINQUISHED BY/REMOVED FROM: S5U#1  
 DATE/TIME: AUG 05 2016 0720  
 RELINQUISHED BY/REMOVED FROM: Troy Bacon CHPRC  
 DATE/TIME: AUG 05 2016 1400  
 RELINQUISHED BY/REMOVED FROM: Troy Bacon CHPRC  
 DATE/TIME: 8-06-16 1035  
 RECEIVED BY/STORED IN: FEDEX  
 DATE/TIME: 8-6-16 1035  
 RECEIVED BY/STORED IN: S5U#1  
 DATE/TIME: AUG 04 2016 1346  
 RECEIVED BY/STORED IN: Troy Bacon CHPRC  
 DATE/TIME: AUG 05 2016 0720  
 RECEIVED BY/STORED IN: FEDEX  
 DATE/TIME: 8-6-16 1035

SPECIAL INSTRUCTIONS  
 (1) 6020\_METALS\_ICPMS: COMMON (Add-on) {Manganese, Uranium};  
 FILTER

LABORATORY RECEIVED BY: S5U#1  
 SECTION: CHPRC  
 DISPOSAL METHOD: DISPOSITION

FRIDAY 8/19/16

PRINTED ON 6/2/2016  
 FSR ID = FSR33039  
 TRVL NUM = TRVL-16-166  
 A-6003-618 (REV 2)

COLLECTOR  
Curt Hoffman  
CHPRC

COMPANY CONTACT  
TODAK, D  
376-6427

PROJECT COORDINATOR  
TODAK, D

PRICE CODE 7H

AIR QUALITY

METHOD OF SHIPMENT  
FEDERAL EXPRESS

DATA TURNAROUND  
30 Days / 30 Days

SAMPLING LOCATION  
C9411, I-010

PROJECT DESIGNATION  
FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis - Water

SAF NO. F16-007

COA 300192

BILL OF LADING/AIR BILL NO.  
7769 29174241

ORIGINAL

ICE CHEST NO.  
GWS-390

FIELD LOGBOOK NO.  
HNF-N-645-5/16

ACTUAL SAMPLE DEPTH  
284'

OFFSITE PROPERTY NO.  
6908

SHIPPED TO  
ALS Environmental Ft. Collins

MATRIX\*  
A=Air  
DL=Drum  
L=Liquids  
DS=Drum  
S=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

PRESERVATION  
HCl or H2SO4 to pH <2/Cool 14 Days

HOLDING TIME  
aGs\*

TYPE OF CONTAINER  
3

NO. OF CONTAINER(S)  
40ml

VOLUME  
SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE ANALYSIS

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO. MATRIX\*  
B34T90 WATER

SAMPLE DATE SAMPLE TIME  
8/4/16 1030 ✓

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM  
Curt Hoffman  
DATE/TIME  
AUG 04 2016 1345

RECEIVED BY/STORED IN  
SSU#1  
DATE/TIME  
AUG 05 2016 0720

RELINQUISHED BY/REMOVED FROM  
Troy Bacon  
CHPRC  
DATE/TIME  
AUG 05 2016 1400

RECEIVED BY/STORED IN  
Troy Bacon  
CHPRC  
DATE/TIME  
AUG 05 2016 0720

RELINQUISHED BY/REMOVED FROM  
Felix  
DATE/TIME  
8-6-16 1035

RECEIVED BY/STORED IN  
Sgt. Minky  
DATE/TIME  
8-6-16 loss

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

LABORATORY SECTION  
RECEIVED BY

FINAL SAMPLE DISPOSITION  
DISPOSAL METHOD

TITLE

DISPOSED BY

DATE/TIME

1608136

SPECIAL INSTRUCTIONS  
(1) 8260\_VOA\_GCMS: COMMON {Carbon tetrachloride, Trichloroethene};



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC

Workorder No: 1608136

Project Manager: JME

Initials: SDM Date: 8-6-16

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	N/A	<input checked="" type="radio"/> 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		<input checked="" type="radio"/> YES	NO
Cooler #:	<u>1</u>		
Temperature (°C):	<u>1.6</u>		
No. of custody seals on cooler:	<u>2</u>		
External µR/hr reading:	<u>12</u>		
Background µR/hr reading:	<u>11</u>		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <input checked="" type="radio"/> YES <input type="radio"/> 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] 8/8/16

8/20/2016

ALS1608136

1608136

1608136 SDM  
8-6-16

ORIGIN ID: PSCA (509) 528-9426  
LESLY WALL  
CH2M  
8267 LATAH ST.  
8269 LATAH ST.  
RICHLAND, WA 99354  
UNITED STATES US

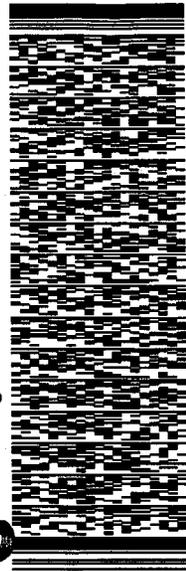
SHIP DATE: 05AUG16  
ACTWGT: 94.00 LB  
CAD: 107066051/INET3790  
BILL THIRD PARTY

TO JULIE ELLINGSON  
ALS GLOBAL  
225 COMMERCE DRIVE

FORT COLLINS CO 80524  
(970) 490-1511  
REF: PTT# 6908  
NV.  
PO. DEPT.

12  
-2

544J11137014EB



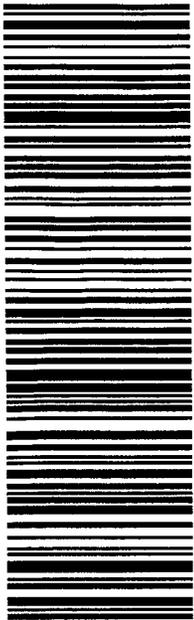
J16291M7661ur

TRK# 7769 2917 4241  
0201

SATURDAY 12:00P  
PRIORITY OVERNIGHT

X0 FTCA

DSR 80524  
CO-US DEN



**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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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.

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



# Metals

## Case Narrative

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

FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis - Water – F16-007

Work Order Number: 1608136

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 08/06/16.
3. The sample was analyzed for dissolved metals. The sample had been filtered prior to receipt, and had a pH less than 2 upon receipt.
4. The samples were prepared and analyzed based on SW-846, 3<sup>rd</sup> Edition procedures.

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

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 sample was 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 sample in this digestion batch.
  - The preparation (method) blank associated with this digestion batch was below the reporting limit for the requested analytes. 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 associated with Method 6020A were analyzed.

9. Matrix specific quality control procedures.

Sample 1608136-1 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.

- A matrix spike and matrix spike duplicate were digested and analyzed with this batch. All acceptance criteria for accuracy were met.
- A serial dilution was analyzed with this ICP batch. Acceptance criteria were not met.

<u>Analyte</u>	<u>Sample ID</u>
Manganese	1608136-1L
Uranium	1608136-1L

The native sample results are flagged for serial dilution failure.

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

8/18/16  
Date

  
\_\_\_\_\_  
Inorganics Final Data Reviewer

8/20/16  
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.

# Dissolved ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1608136

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Field ID:	B34T89
Lab ID:	1608136-1

Sample Matrix: WATER  
% Moisture: N/A  
Date Collected: 04-Aug-16  
Date Extracted: 16-Aug-16  
Date Analyzed: 18-Aug-16  
Prep Method: SW3005 Rev A

Prep Batch: IP160816-1  
QCBatchID: IP160816-1-3  
Run ID: IM160817-11A7  
Cleanup: NONE  
Basis: As Received  
File Name: 143SMPL\_

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
7439-96-5	MANGANESE	10	33	5	0.3		E
7440-61-1	URANIUM	10	2.1	0.1	0.027		E

Data Package ID: *im1608136-1*

8/20/2016  
ALS1608136

# ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1608136

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Lab ID: IP160816-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 16-Aug-16

Date Analyzed: 17-Aug-16

Prep Batch: IP160816-1

QCBatchID: IP160816-1-3

Run ID: IM160817-11A7

Cleanup: NONE

Basis: N/A

File Name: 114SMPL\_

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
7439-96-5	MANGANESE	10	0.3	5	0.3	U	
7440-61-1	URANIUM	10	0.027	0.1	0.027	U	

Data Package ID: *im1608136-1*

Date Printed: Thursday, August 18, 2016

ALS -- Fort Collins

Page 1 of 1

LIMS Version: 6.824

8/20/2016

ALS1608136

# ICPMS Metals

Method SW6020A

## Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1608136

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Lab ID: IM160816-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 08/16/2016

Date Analyzed: 08/17/2016

Prep Method: SW3005A

Prep Batch: IP160816-1

QCBatchID: IP160816-1-3

Run ID: IM160817-11A7

Cleanup: NONE

Basis: N/A

File Name: 116SMPL\_

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
7439-96-5	MANGANESE	100	96.3	5		96	80 - 120%
7440-61-1	URANIUM	10	8.95	0.1		89	80 - 120%

Data Package ID: *im1608136-1*

# ICPMS Metals

Method SW6020A

## Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1608136

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Anal

Field ID: B34T89
LabID: 1608136-1MS

Sample Matrix: WATER  
% Moisture: N/A  
Date Collected: 04-Aug-16  
Date Extracted: 16-Aug-16  
Date Analyzed: 18-Aug-16  
Prep Method: SW3005 Rev A

Prep Batch: IP160816-1  
QCBatchID: IP160816-1-3  
Run ID: IM160817-11A7  
Cleanup: NONE  
Basis: As Received

Sample Aliquot: 50 ml  
Final Volume: 50 ml  
Result Units: UG/L  
File Name: 146SMPL\_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7439-96-5	MANGANESE	33		129		5	100	96	75 - 125%
7440-61-1	URANIUM	2.1		11.2		0.1	10	92	75 - 125%

Field ID: B34T89
LabID: 1608136-1MSD

Sample Matrix: WATER  
% Moisture: N/A  
Date Collected: 04-Aug-16  
Date Extracted: 16-Aug-16  
Date Analyzed: 18-Aug-16  
Prep Method: SW3005 Rev A

Prep Batch: IP160816-1  
QCBatchID: IP160816-1-3  
Run ID: IM160817-11A7  
Cleanup: NONE  
Basis: As Received

Sample Aliquot: 50 ml  
Final Volume: 50 ml  
Result Units: UG/L  
File Name: 147SMPL\_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7439-96-5	MANGANESE	130		100	97	5	20	1
7440-61-1	URANIUM	11		10	89	0.1	20	3

Data Package ID: *im1608136-1*



## GC/MS Volatiles Case Narrative

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### **CH2M HILL Plateau Remediation Company** FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-water -- F16-007

Work Order Number: 1608136

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 08/06/16. The sample was free of headspace prior to analysis and had a pH < 2 at the time of analysis.
2. The sample was prepared according to SW-846, 3rd Edition procedures. Specifically, the water sample was prepared using purge and trap procedures based on Method 5030C.
3. The sample was analyzed using GC/MS with an RTX-624, RTX-VMS, or equivalent capillary column according to the current revision of SOP 525 based on SW-846 Method 8260. All positive results were quantitated against the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and mass spectrum of the sample versus the daily calibration standard.
4. All initial calibration criteria were met.
5. All initial calibrations are verified by comparing a second source standard calibration verification (ICV) against the calibration curve. All criteria for initial calibration verification were met.
6. All compounds in the daily (continuing) calibration verification were within 20%D.
7. Methylene chloride, acetone and 2-butanone are common laboratory contaminants. In order to minimize the levels of these compounds detected in the gc/ms analysis, ALS has designated its volatile laboratory as a restricted access area. In addition, the laboratory has been equipped with a dedicated, air intake and exhaust system that operates under positive pressure in order to minimize cross contamination of these compounds. Due to fluctuations in ambient laboratory conditions, reported sample values for common laboratory contaminants may be due to lab contamination even if the compound in question is not detected in the associated method blank.



All method blank criteria were met.

8. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.
9. Matrix QC was performed for this analysis. Since a sample from this client was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.
10. The sample was analyzed within the established holding time.
11. All surrogate recoveries were within acceptance criteria.
12. All internal standard recoveries were within acceptance criteria.
13. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.

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 Knodel  
Organics Primary Data Reviewer

8/19/16  
Date

  
\_\_\_\_\_  
Arlic E. Ellinger  
Organics Final Data Reviewer

8/20/16  
Date

ALS  
Data Qualifier Flags  
Organics

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- \*:** This flag indicates that a spike recovery is equal to or outside the control criteria used.
- +:** This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.

8/20/2016  
ALS1608136

# GC/MS Volatiles

Method SW8260\_25C

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1608136

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-

Lab ID: VL160811-3MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 11-Aug-16

Date Analyzed: 11-Aug-16

Prep Batch: VL160811-3

QCBatchID: VL160811-3-1

Run ID: VL160811-3A

Cleanup: NONE

Basis: N/A

File Name: C70990

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
56-23-5	CARBON TETRACHLORIDE	1	0.3	1	0.3	U	
79-01-6	TRICHLOROETHENE	1	0.3	1	0.3	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25.1		25	101	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	22.8		25	91	84 - 118
2037-26-5	TOLUENE-D8	22.9		25	92	85 - 115

Data Package ID: VL1608136-1

Date Printed: Friday, August 19, 2016

ALS -- Fort Collins

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8/20/2016  
ALS1608136

# GC/MS Volatiles

Method SW8260\_25C

## Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1608136

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-

Field ID:	B34T90
Lab ID:	1608136-2

Sample Matrix: WATER  
% Moisture: N/A  
Date Collected: 04-Aug-16  
Date Extracted: 11-Aug-16  
Date Analyzed: 11-Aug-16  
Prep Method: SW5030 Rev C

Prep Batch: VL160811-3  
QCBatchID: VL160811-3-1  
Run ID: VL160811-3A  
Cleanup: NONE  
Basis: As Received  
File Name: C71016

Analyst: Joe Kostelnik  
Sample Aliquot: 10 ml  
Final Volume: 10 ml  
Result Units: UG/L  
Clean DF: 1

Analysis ReqCode: 8260\_VOA\_GCM

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
56-23-5	CARBON TETRACHLORIDE	1	2.1	1	0.3		
79-01-6	TRICHLOROETHENE	1	0.3	1	0.3	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	24.4		25	98	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	22.8		25	91	84 - 118
2037-26-5	TOLUENE-D8	23.4		25	94	85 - 115

Data Package ID: VL1608136-1

Date Printed: Friday, August 19, 2016

ALS -- Fort Collins

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LIMS Version: 6.824

# GC/MS Volatiles

Method SW8260\_25C

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1608136

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-

Lab ID: VL160811-3LCS	<b>Sample Matrix:</b> WATER <b>% Moisture:</b> N/A <b>Date Collected:</b> N/A <b>Date Extracted:</b> 08/11/2016 <b>Date Analyzed:</b> 08/11/2016 <b>Prep Method:</b> SW5030C	<b>Prep Batch:</b> VL160811-3 <b>QCBatchID:</b> VL160811-3-1 <b>Run ID:</b> VL160811-3A <b>Cleanup:</b> NONE <b>Basis:</b> N/A <b>File Name:</b> C70987	<b>Sample Aliquot:</b> 10 ml <b>Final Volume:</b> 10 ml <b>Result Units:</b> UG/L <b>Clean DF:</b> 1
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CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
56-23-5	CARBON TETRACHLORIDE	10	9.99	1		100	77 - 122%
79-01-6	TRICHLOROETHENE	10	10.1	1		101	83 - 117%

Lab ID: VL160811-3LCSD	<b>Sample Matrix:</b> WATER <b>% Moisture:</b> N/A <b>Date Collected:</b> N/A <b>Date Extracted:</b> 08/11/2016 <b>Date Analyzed:</b> 08/11/2016 <b>Prep Method:</b> SW5030C	<b>Prep Batch:</b> VL160811-3 <b>QCBatchID:</b> VL160811-3-1 <b>Run ID:</b> VL160811-3A <b>Cleanup:</b> NONE <b>Basis:</b> N/A <b>File Name:</b> C70988	<b>Sample Aliquot:</b> 10 ml <b>Final Volume:</b> 10 ml <b>Result Units:</b> UG/L <b>Clean DF:</b> 1
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CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
56-23-5	CARBON TETRACHLORIDE	10	10.4	1		104	20	4
79-01-6	TRICHLOROETHENE	10	10.5	1		105	20	4

### Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25	103		101		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	96		96		84 - 118
2037-26-5	TOLUENE-D8	25	97		96		85 - 115

Data Package ID: VL1608136-1