

Tuesday, June 21, 2016

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

Re: ALS Workorder: 1606271  
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 6/15/2016. The samples were scheduled for the following analyses:

Metals  
GC/MS Volatiles

---

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:** 1606271

**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

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B34977	1606271-1		WATER	13-Jun-16	12:25
B34978	1606271-2		WATER	13-Jun-16	12:25

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** 1606271 **PAGE 1 OF 1**

**COLLECTOR** Chris Fulton  
CHPRC

**SAMPLING LOCATION** C9414, I-008

**ICE CHEST NO.** 6005-469

**SHIPPED TO** ALS Environmental Ft. Collins

**COMPANY CONTACT** TODAYAK, D 376-6427

**PROJECT COORDINATOR** TODAYAK, D

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

**FIELD LOGBOOK NO.** HNF-N-6453 1987

**SAF NO.** F16-007

**COA** 300192

**PRICE CODE** 7H

**AIR QUALITY**

**METHOD OF SHIPMENT** FEDERAL EXPRESS

**ACTUAL SAMPLE DEPTH** 361.21

**BILL OF LADING/AIR BILL NO.** 7765 1441 0668

**DATA TURNAROUND** 30 Days / 30 Days

**ORIGINAL**

MATRIX*	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE DATE	SAMPLE TIME	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	HNO3 to pH <2	6 Months	G/P	1	500mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	JUN 13 2016	1225	WATER

**SPECIAL HANDLING AND/OR STORAGE**

**SAMPLE NO.** B34977 ①

**CHAIN OF POSSESSION**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
Chris Fulton CHPRC	JUN 13 2016 1300		SSU-1	JUN 13 2016 1300	FILTER
Leah Wall CHPRC	JUN 14 2016 0740	Leah Wall	Leah Wall	JUN 14 2016 0740	
Leah Wall CHPRC	JUN 14 2016 1400	Leah Wall	FEDEX	JUN 14 2016 1400	
Leah Wall CHPRC	JUN 14 2016 1400	Leah Wall	FEDEX	JUN 14 2016 1400	
Leah Wall CHPRC	JUN 14 2016 1400	Leah Wall	FEDEX	JUN 14 2016 1400	
Leah Wall CHPRC	JUN 14 2016 1400	Leah Wall	FEDEX	JUN 14 2016 1400	

**LABORATORY SECTION** RECEIVED BY

**FINAL SAMPLE DISPOSITION** DISPOSAL METHOD

**PRINTED ON** 1/13/2016 **FRS ID = FSR19885** **TRVL NUM = TRVL-16-059** **A-6003-618 (REV 2)**

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

14lbs

F16-007-064 PAGE 1 OF 1

**COMPANY CONTACT**  
TODAK, D  
TELEPHONE NO. 376-6427

**PROJECT COORDINATOR**  
TODAK, D

**PRICE CODE** 7H **AIR QUALITY**

**DATA TURNAROUND**  
30 Days / 30 Days

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

**FIELD LOGBOOK NO.** HNF-N-645-3 p 287 **ACTUAL SAMPLE DEPTH** 361.21

**SAF NO.** F16-007

**COA** 300192

**METHOD OF SHIPMENT**  
FEDERAL EXPRESS

**ORIGINAL**

**BILL OF LADING/AIR BILL NO.**  
7765 14410668

**OFFSITE PROPERTY NO.**  
1721

**1606271**

PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE DATE	SAMPLE TIME
HCl or H2SO4 to pH <2/Cool 14 Days		aGs*	3	40ml	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	JUN 13 2016	1225

**SPECIAL HANDLING AND/OR STORAGE**

**SAMPLE NO.** 2 **MATRIX\*** WATER

**CH2M Hill Plateau Remediation Company**

**COLLECTOR** Chris Fulton  
CHPRC

**SAMPLING LOCATION** C9414, I-008

**ICE CHEST NO.** GWS-469

**SHIPPED TO** ALS Environmental Ft. Collins

**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

**CHAIN OF POSSESSION**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Chris Fulton CHPRC	JUN 13 2016 1300		SSU-1	JUN 13 2016 1300
Leahy Wash CHPRC	JUN 14 2016 0740		Leahy Wash CHPRC	JUN 14 2016 0740
Leahy Wash CHPRC	JUN 14 2016 1400		FEDEX Crimble C Jumbal	JUN 14 2016 1400
FEDEX				
RELINQUISHED BY/REMOVED FROM	DATE/TIME		RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME		RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME		RECEIVED BY/STORED IN	DATE/TIME

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

**LABORATORY SECTION** RECEIVED BY

**FINAL SAMPLE DISPOSITION** DISPOSAL METHOD

**PRINTED ON** 1/13/2016 **FRS ID = FSR19885** **TRVL NUM = TRVL-16-059** **A-6003-618 (REV 2)**



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC

Workorder No: 1606271

Project Manager: JE

Initials: CDT Date: 6-15-16

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	<input checked="" type="radio"/> NO <sup>COT 6-5-16</sup>
15. Do any water samples contain sediment? Amount Amount of sediment: ___ dusting ___ moderate ___ heavy	N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 <input checked="" type="radio"/> #4	RAD ONLY	<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>4.0</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>11</u>			
Background µR/hr reading: <u>12</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: *JE* 6/15/16

ORIGIN ID: PSCA (509) 373-3580  
JANELLE ZUNKER  
CH2M  
6269 LATAH ST.  
RICHLAND, WA 98354  
UNITED STATES US

SHIP DATE: 14JUN16  
ACTWGT: 19.80 LB  
CAD: 107066051/MNET3730

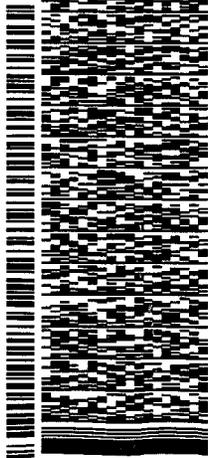
BILL THIRD PARTY

TO JULIE ELLINGSON  
ALS GLOBAL  
225 COMMERCE DRIVE

FORT COLLINS CO 80524  
REF: 6724

INV: (970) 490-1511  
PO:

DEPT:



4101102829174

4.0

WED - 15 JUN 10:30A

PRIORITY OVERNIGHT

TRK# 7765 1441 0668

DSR

80524

CO-US DEN

XH FTCA



6402308D/27F

11-2

1606271

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. 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**

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

Work Order Number: 1606271

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 06/15/16.
3. The sample was to be analyzed for dissolved metals. The sample had been filtered prior to receipt, and had a pH less than 2 upon receipt.
4. The sample was 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 1606271-1 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. 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

6/21/16  
Date

  
\_\_\_\_\_  
Audie Ellinger  
Inorganics Final Data Reviewer

6/21/16  
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  $\leq 5X$  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.

6/21/2016  
ALS1606271

# Dissolved ICPMS Metals

## Method SW6020A Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1606271

Client Name: CH2M HILL Plateau Remediation Company

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

Field ID: B34977

Lab ID: 1606271-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 13-Jun-16

Date Extracted: 16-Jun-16

Date Analyzed: 20-Jun-16

Prep Method: SW3005 Rev A

Prep Batch: IP160616-2

QCBatchID: IP160616-2-3

Run ID: IM160620-10A9

Cleanup: NONE

Basis: As Received

File Name: 048SMPL\_

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	34	5	0.3		
7440-61-1	URANIUM	10	2.1	0.1	0.027		

Data Package ID: *im1606271-1*

Date Printed: Tuesday, June 21, 2016

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.816

6/21/2016  
ALS1606271

# ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1606271

Client Name: CH2M HILL Plateau Remediation Company

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

Lab ID: IP160616-2MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 16-Jun-16

Date Analyzed: 20-Jun-16

Prep Batch: IP160616-2

QCBatchID: IP160616-2-3

Run ID: IM160620-10A9

Cleanup: NONE

Basis: N/A

File Name: 045SMPL\_

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: *im1606271-1*

Date Printed: Tuesday, June 21, 2016

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.816

6/21/2016  
ALS1606271

# ICPMS Metals

Method SW6020A

## Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1606271

Client Name: CH2M HILL Plateau Remediation Company

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

Lab ID: IM160616-2LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 06/16/2016

Date Analyzed: 06/20/2016

Prep Method: SW3005A

Prep Batch: IP160616-2

QCBatchID: IP160616-2-3

Run ID: IM160620-10A9

Cleanup: NONE

Basis: N/A

File Name: 046SMPL\_

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	106	5		106	80 - 120%
7440-61-1	URANIUM	10	10.3	0.1		103	80 - 120%

Data Package ID: *im1606271-1*

# ICPMS Metals

Method SW6020A

## Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1606271

Client Name: CH2M HILL Plateau Remediation Company

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

Field ID: B34977	Sample Matrix: WATER	Prep Batch: IP160616-2	Sample Aliquot: 50 ml
LabID: 1606271-1MS	% Moisture: N/A	QCBatchID: IP160616-2-3	Final Volume: 50 ml
	Date Collected: 13-Jun-16	Run ID: IM160620-10A9	Result Units: UG/L
	Date Extracted: 16-Jun-16	Cleanup: NONE	File Name: 051SMPL_
	Date Analyzed: 20-Jun-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
7439-96-5	MANGANESE	34		139		5	100	105	75 - 125%
7440-61-1	URANIUM	2.1		12.4		0.1	10	102	75 - 125%

Field ID: B34977	Sample Matrix: WATER	Prep Batch: IP160616-2	Sample Aliquot: 50 ml
LabID: 1606271-1MSD	% Moisture: N/A	QCBatchID: IP160616-2-3	Final Volume: 50 ml
	Date Collected: 13-Jun-16	Run ID: IM160620-10A9	Result Units: UG/L
	Date Extracted: 16-Jun-16	Cleanup: NONE	File Name: 052SMPL_
	Date Analyzed: 20-Jun-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
7439-96-5	MANGANESE	140		100	106	5	20	1
7440-61-1	URANIUM	12.6		10	105	0.1	20	2

Data Package ID: *im1606271-1*



## GC/MS Volatiles Case Narrative

---

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

Work Order Number: 1606271

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 06/15/16.

The sample was free of headspace prior to analysis and had a pH < 2 at the time of analysis.

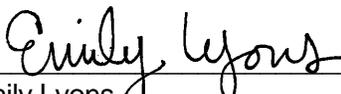
2. The sample was prepared according to SW-846, 3rd Edition procedures. Specifically, the water sample was prepared using purge and trap procedures based on Method 5030C.
3. The sample was analyzed using GC/MS with an RTX-624, RTX-VMS, or equivalent capillary column according to the current revision 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 verifications 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.



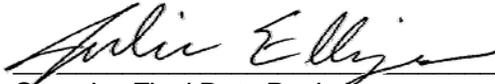
All method blank criteria were met.

8. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.
9. A matrix spike and matrix spike duplicate were not performed because of insufficient sample. A laboratory control sample and laboratory control sample duplicate were performed instead.
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. Due to the concentration of a target analyte, the sample was analyzed at a dilution. The reporting limit has been adjusted accordingly.
14. 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 Lyons  
Organics Primary Data Reviewer

6/20/16  
Date

  
\_\_\_\_\_  
Julie Elliza  
Organics Final Data Reviewer

6/21/16  
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.

6/21/2016  
ALS1606271

# GC/MS Volatiles

Method SW8260\_25C

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1606271

Client Name: CH2M HILL Plateau Remediation Company

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

Lab ID: VL160616-3MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 16-Jun-16

Date Analyzed: 16-Jun-16

Prep Batch: VL160616-3

QCBatchID: VL160616-3-2

Run ID: VL160616-3A

Cleanup: NONE

Basis: N/A

File Name: C69282

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	25.5		25	102	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	24.2		25	97	84 - 118
2037-26-5	TOLUENE-D8	23.8		25	95	85 - 115

Data Package ID: VL1606271-1

Date Printed: Monday, June 20, 2016

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.816

6/21/2016  
ALS1606271

# GC/MS Volatiles

Method SW8260\_25C

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1606271

Client Name: CH2M HILL Plateau Remediation Company

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

Field ID:	B34978
Lab ID:	1606271-2

Sample Matrix: WATER

Prep Batch: VL160616-3

Analyst: Joe Kostelnik

% Moisture: N/A

QC Batch ID: VL160616-3-2

Sample Aliquot: 10 ml

Date Collected: 13-Jun-16

Run ID: VL160616-3A

Final Volume: 10 ml

Date Extracted: 16-Jun-16

Cleanup: NONE

Result Units: UG/L

Date Analyzed: 16-Jun-16

Basis: As Received

Clean DF: 1

Analysis ReqCode: 8260\_VOA\_GCM

Prep Method: SW5030 Rev C

File Name: C69290

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
79-01-6	TRICHLOROETHENE	1	2.2	1	0.3		

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25.6		25	103	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	24.2		25	97	84 - 118
2037-26-5	TOLUENE-D8	23.8		25	95	85 - 115

Data Package ID: VL1606271-1

6/21/2016  
ALS1606271

# GC/MS Volatiles

Method SW8260\_25C

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1606271

Client Name: CH2M HILL Plateau Remediation Company

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

Field ID:	B34978
Lab ID:	1606271-2RR1

Sample Matrix: WATER

Prep Batch: VL160616-3

Analyst: Joe Kostelnik

% Moisture: N/A

QCBatchID: VL160616-3-2

Sample Aliquot: 10 ml

Date Collected: 13-Jun-16

Run ID: VL160616-3A

Final Volume: 10 ml

Date Extracted: 16-Jun-16

Cleanup: NONE

Result Units: UG/L

Date Analyzed: 16-Jun-16

Basis: As Received

Clean DF: 1

Analysis ReqCode: 8260\_VOA\_GCM

Prep Method: SW5030 Rev C

File Name: C69292

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
56-23-5	CARBON TETRACHLORIDE	5	120	5	1.5	D	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	128	D	125	102	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	123	D	125	98	84 - 118
2037-26-5	TOLUENE-D8	121	D	125	97	85 - 115

Data Package ID: VL1606271-1

# GC/MS Volatiles

Method SW8260\_25C

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1606271

Client Name: CH2M HILL Plateau Remediation Company

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

Lab ID: VL160616-3LCS	<b>Sample Matrix:</b> WATER <b>% Moisture:</b> N/A <b>Date Collected:</b> N/A <b>Date Extracted:</b> 06/16/2016 <b>Date Analyzed:</b> 06/16/2016 <b>Prep Method:</b> SW5030C	<b>Prep Batch:</b> VL160616-3 <b>QCBatchID:</b> VL160616-3-2 <b>Run ID:</b> VL160616-3A <b>Cleanup:</b> NONE <b>Basis:</b> N/A <b>File Name:</b> C69277	<b>Sample Aliquot:</b> 10 ml <b>Final Volume:</b> 10 ml <b>Result Units:</b> UG/L <b>Clean DF:</b> 1
-----------------------	---	--	---

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
56-23-5	CARBON TETRACHLORIDE	10	10.9	1		109	77 - 122%
79-01-6	TRICHLOROETHENE	10	10.8	1		108	83 - 117%

Lab ID: VL160616-3LCSD	<b>Sample Matrix:</b> WATER <b>% Moisture:</b> N/A <b>Date Collected:</b> N/A <b>Date Extracted:</b> 06/16/2016 <b>Date Analyzed:</b> 06/16/2016 <b>Prep Method:</b> SW5030C	<b>Prep Batch:</b> VL160616-3 <b>QCBatchID:</b> VL160616-3-2 <b>Run ID:</b> VL160616-3A <b>Cleanup:</b> NONE <b>Basis:</b> N/A <b>File Name:</b> C69278	<b>Sample Aliquot:</b> 10 ml <b>Final Volume:</b> 10 ml <b>Result Units:</b> UG/L <b>Clean DF:</b> 1
------------------------	---	--	---

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
56-23-5	CARBON TETRACHLORIDE	10	10.3	1		103	20	5
79-01-6	TRICHLOROETHENE	10	10.3	1		103	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	104		102		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	100		100		84 - 118
2037-26-5	TOLUENE-D8	25	98		98		85 - 115

Data Package ID: VL1606271-1