Ft. Collins, Colorado

LIMS Version: 6.911

Saturday, September 28, 2019

Karen Waters-Husted
CH2M HILL Plateau Remediation Company
825 Jadwin Avenue
Richland, WA 99352

Re: ALS Workorder: 1909244
Project Name: Groundwater Background Study,
Project Number: X19-002

Dear Ms. Waters-Husted:

Two water samples were received from CH2M HILL Plateau Remediation Company, on 9/13/2019. The samples were scheduled for the following analysis:

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
Katie M. OBrien
Project Manager

We certify that this data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522
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ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1909244
Client Name: CH2M HILL Plateau Remediation Company
Client Project Name: Groundwater Background Study,
Client Project Number: X19-002
Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B3R053	1909244-1		WATER	11-Sep-19	9:41
B3R057	1909244-2		WATER	12-Sep-19	10:11

ALS1909244

Sept. 28, 2019

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 1909244	C.O.C. # X19-002-212 Page 1 of ~~1~~ 2

Collector:	Juan Aguilar /CHPRC	**Contact/Requester:**	WATERS-HUSTED, K	**Telephone No.:**	376-4650
SAF No.:	X19-002	**Sampling Origin:**	Hanford Site	**Purchase Order/Charge Code:**	300071
Project Title:	Groundwater Background Study,	**Logbook No.:**	HNF-N-506 ~103/60	**Ice Chest No.:**	GWS-061
Shipped To (Lab):	ALS Environmental Ft. Collins	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.:**	77762 22389187
Protocol:	SURV	**Priority:**	30 Days	**Offsite Property No.:**	11583

POSSIBLE SAMPLE HAZARDS/REMARK
*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.

SPECIAL INSTRUCTIONS
Batch with A, I, S, and W SAFs.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3R053 1	N	W	9-11-19	0941	5x40-mL aGs*	8260_VOA_GCMS: COMMON	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C

Relinquished By:	Print First and Last Name	Signature	Date/Time	Received By:	Print First and Last Name	Signature	Date/Time
Juan Aguilar /CHPRC			SEP 1 1 2019 1118	Janelle Zunker CHPRC			SEP 1 1 2019 1118
Janelle Zunker CHPRC			SEP 1 1 2019 1130	SSU-1			SEP 1 1 2019 1130
SSU-1			SEP 1 2 2019 0630	Janelle Zunker CHPRC			SEP 1 2 2019 0630
Janelle Zunker CHPRC			SEP 1 2 2019 1400	FEDEX			9/13/19 9:52

Matrix *

S	= Soil	DS	= Drum Solids
SE	= Sediment	DL	= Drum Liquid
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

9/14/19

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Rev. 0

Printed On 6/4/2019 FSR ID = FSR80850 A-6004-842 (REV 3)

CHAIN OF CUSTODY SIGNATURE CONTINUATION

1909244

COC No: X19-002-212

Page 2 of 2

PRINT NAME / SIGNATURE		PRINT NAME / SIGNATURE	
Relinquished by: [redacted]	Date/Time:	Received by: EMILY LYONS Emily Lyons 09.13.19	Date/Time: 0952
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
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Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:

A-6007-699 (REV 0)

ALS1909244

Sept. 28, 2019

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 1909244	C.O.C. # X19-002-216 Page 1 of 1

Collector:	Mike Esparza /CHPRC	**Contact/Requester:**	WATERS-HUSTED, K	**Telephone No.:**	376-4650
SAF No.:	X19-002	**Sampling Origin:**	Hanford Site	**Purchase Order/Charge Code:**	300071
Project Title:	Groundwater Background Study,	**Logbook No.:**	HNF-N-506-103/61	**Ice Chest No.:**	GWS-384
Shipped To (Lab):	ALS Environmental Ft. Collins	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.:**	7762 2851 7468
Protocol:	SURV	**Priority:**	30 Days	**Offsite Property No.:**	11590

POSSIBLE SAMPLE HAZARDS/REMARK
*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.

SPECIAL INSTRUCTIONS
Batch with A, I, S, and W SAFs.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3R057 3	N	W	~~AUG~~ Sep 12 2019 9/12/19	1011	5x40-mL aGs*	8260_VOA_GCMS: COMMON	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C

Relinquished By:	Signature	Date/Time	Received By:	Signature	Date/Time
Mike Esparza /CHPRC		~~AUG~~ Sep 12 2019 1300	Jeff Lucas /CHPRC		~~AUG~~ Sep 12 2019 1300
Jeff Lucas /CHPRC		SEP 12 2019 1400	FEDEX		
FEDEX			EMILY LYONS	Emily Lyons	09.13.19 0952

Matrix *

S = Soil	DS = Drum Solids
SE = Sediment	DL = Drum Liquid
SO = Solid	T = Tissue
SL = Sludge	WI = Wipe
W = Water	L = Liquid
O = Oil	V = Vegetation
A = Air	X = Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 6/4/2019 FSR ID = FSR80854 A-6004-842 (REV 3)

Rev. 0

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC Workorder No: 1909244

Project Manager: KMO Initials: TEM Date: 9/13/19

1. Are airbills / shipping documents present and/or removable?		DROP OFF	YES	NO
2. Are custody seals on **shipping** containers intact?		NONE	YES	NO *
3. Are custody seals on **sample** containers intact?		NONE	YES	NO *
4. Is there a COC (chain-of-custody) present?			YES	NO *
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)			YES	NO *
6. Are short-hold samples present?			YES	NO
7. Are all samples within holding times for the requested analyses?			YES	NO *
8. Were all sample containers received intact? (not broken or leaking)			YES	NO *
9. Is there sufficient sample for the requested analyses?			YES	NO *
10. Are all samples in the proper containers for the requested analyses?			YES	NO *
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)		N/A	YES	NO *
12. Are all aqueous non-preserved samples pH 4-9?		N/A	YES	NO *
13. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)		N/A	YES	NO
14. Were the samples shipped on ice?			YES	NO
15. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*: #1 #3 #4	RAD ONLY	YES	NO

Cooler #:	11583	11590						
Temperature (°C):	4.2	0.3						
No. of custody seals on cooler:	2	2						
DOT Survey/ Acceptance Information — External µR/hr reading:	13	13						
Background µR/hr reading:	13							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)

*** Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.**

All client bottle ID's vs ALS lab ID's double-checked by: TEM

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

Project Manager Signature / Date: [signature] 9/14/19

Form 201r27.xls
(02/11/2019)

*IR Gun #1, VWR SN 170560549
*IR Gun #3, VWR SN 170647571
*IR Gun #4, Oakton, SN 2372220101-0002

1409244

ORIGIN ID:PSCA (509) 531-0450
TROY BACON
CH2M
6267 LATAH ST.
RICHLAND, WA 99352
UNITED STATES US

SHIP DATE: 12SEP19
ACTWGT: 89.00 LB
CAD: 107668051/INET4160

BILL THIRD PARTY

TO JULIE ELLINGSON
ALS GLOBAL-FORT COLLINS
225 COMMERCE DR
FORT COLLINS CO 80524
(970) 490-1511
INV:
PO:
REF: PTR#11583
DEPT:

13-2

1583

567J1/9D04/05A2

FedEx Express

J1B291906240 1sw

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80524
CO-US DEN

TRK# 0201 7762 2238 9187

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1409244

1909244

ORIGIN ID:PSCA (509) 531-0450
TROY BACON
CH2M
6267 LATAH ST.
RICHLAND, WA 99352
UNITED STATES US

SHIP DATE: 12SEP19
ACTWGT: 72.00 LB
CAD: 107066051/INET4160

BILL THIRD PARTY

TO JULIE ELLINGSON
ALS GLOBAL-FORT COLLINS
225 COMMERCE DR
FORT COLLINS CO 80524
(970) 490-1511
INV:
PO:
REF: PTR#11590
DEPT:

13-2

11590

0-3

567J1/9D04/05A2

FedEx Express

J192619082401cm

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TRK# 0201 7762 2851 7468

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1909244

GC/MS Volatiles

Case Narrative

CH2M HILL Plateau Remediation Company

Groundwater Background Study, -- X19-002

Work Order Number: 1909244

1. These samples were prepared according to SW-846, 3rd Edition procedures. Specifically, the water samples were prepared using purge and trap procedures based on Method 5030C.

2. The samples were 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.

3. All initial calibration criteria were met.

4. 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.

5. Per the guidance in methods 8000 and 8260, all compounds in each of the daily (continuing) calibration verifications had sufficient response to support accurate quantitation of the data included in this report.

6. 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.

7. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.

8. Sample 1909241-1 was designated as the quality control sample for this analysis. Results for the shared quality control samples are included at the client's request. Similarity of matrix and therefore relevance of the QC results should not be automatically inferred for any sample other than the native sample selected for QC.

   All matrix spike and matrix spike duplicate recoveries and RPDs were within acceptance criteria.

9. The samples were analyzed within the established holding time.

10. All surrogate recoveries were within acceptance criteria.

11. All internal standard recoveries were within acceptance criteria.

12. 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.

Mindy Norton
Organics Primary Data Reviewer

9/26/19
Date

Organics Final Data Reviewer

9/28/19
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.**

GC/MS Volatiles

Method SW8260_25C

Method Blank

Lab Name: ALS -- Fort Collins
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Lab ID: VL190918-4MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 18-Sep-19
Date Analyzed: 18-Sep-19

Prep Batch: VL190918-4
QCBatchID: VL190918-4-2
Run ID: VL190918-4A
Cleanup: NONE
Basis: N/A
File Name: D73370

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

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL
75-01-4	VINYL CHLORIDE	1	0.15	U	1	0.15
75-35-4	1,1-DICHLOROETHENE	1	0.3	U	1	0.3
67-64-1	ACETONE	1	3	U	10	3
75-15-0	CARBON DISULFIDE	1	0.3	U	1	0.3
75-09-2	METHYLENE CHLORIDE	1	0.34	U	1	0.34
75-34-3	1,1-DICHLOROETHANE	1	0.3	U	1	0.3
78-93-3	2-BUTANONE	1	3	U	10	3
67-66-3	CHLOROFORM	1	0.3	U	1	0.3
71-55-6	1,1,1-TRICHLOROETHANE	1	0.3	U	1	0.3
56-23-5	CARBON TETRACHLORIDE	1	0.15	U	1	0.15
107-06-2	1,2-DICHLOROETHANE	1	0.15	U	1	0.15
71-43-2	BENZENE	1	0.3	U	1	0.3
79-01-6	TRICHLOROETHENE	1	0.5	U	1	0.5
108-10-1	4-METHYL-2-PENTANONE	1	3	U	10	3
108-88-3	TOLUENE	1	0.3	U	1	0.3
79-00-5	1,1,2-TRICHLOROETHANE	1	0.3	U	1	0.3
127-18-4	TETRACHLOROETHENE	1	0.3	U	1	0.3
108-90-7	CHLOROBENZENE	1	0.3	U	1	0.3
100-41-4	ETHYLBENZENE	1	0.3	U	1	0.3
1330-20-7	TOTAL XYLENES	1	1	U	1	

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C

Method Blank

Lab Name: ALS -- Fort Collins
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Lab ID: VL190918-4MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 18-Sep-19
Date Analyzed: 18-Sep-19

Prep Batch: VL190918-4
QCBatchID: VL190918-4-2
Run ID: VL190918-4A
Cleanup: NONE
Basis: N/A
File Name: D73370

Sample Aliquot: 1 ml
Final Volume: 1 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25.4		25	102	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25.5		25	102	84 - 118
2037-26-5	TOLUENE-D8	25		25	100	85 - 115

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Field ID: B3R053
Lab ID: 1909244-1

Analysis ReqCode: 8260_VOA_GCM

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 11-Sep-19
Date Extracted: 18-Sep-19
Date Analyzed: 18-Sep-19
Prep Method: SW5030 Rev C

Prep Batch: VL190918-4
QCBatchID: VL190918-4-2
Run ID: VL190918-4A
Cleanup: NONE
Basis: As Received
File Name: D73380

Analyst: Cory C. Lewis
Sample Aliquot: 10 ml
Final Volume: 10 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
75-01-4	VINYL CHLORIDE	1	0.15	U	1	0.15
75-35-4	1,1-DICHLOROETHENE	1	0.3	U	1	0.3
67-64-1	ACETONE	1	3	U	10	3
75-15-0	CARBON DISULFIDE	1	0.3	U	1	0.3
75-09-2	METHYLENE CHLORIDE	1	0.5	J	1	0.34
75-34-3	1,1-DICHLOROETHANE	1	0.3	U	1	0.3
78-93-3	2-BUTANONE	1	3	U	10	3
67-66-3	CHLOROFORM	1	0.3	U	1	0.3
71-55-6	1,1,1-TRICHLOROETHANE	1	0.3	U	1	0.3
56-23-5	CARBON TETRACHLORIDE	1	0.15	U	1	0.15
107-06-2	1,2-DICHLOROETHANE	1	0.15	U	1	0.15
71-43-2	BENZENE	1	0.3	U	1	0.3
79-01-6	TRICHLOROETHENE	1	0.5	U	1	0.5
108-10-1	4-METHYL-2-PENTANONE	1	3	U	10	3
108-88-3	TOLUENE	1	0.3	U	1	0.3
79-00-5	1,1,2-TRICHLOROETHANE	1	0.3	U	1	0.3
127-18-4	TETRACHLOROETHENE	1	0.3	U	1	0.3
108-90-7	CHLOROBENZENE	1	0.3	U	1	0.3
100-41-4	ETHYLBENZENE	1	0.3	U	1	0.3
1330-20-7	TOTAL XYLENES	1	1	U	1	

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C

Sample Results

Lab Name: **ALS -- Fort Collins**
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Field ID: B3R053
Lab ID: 1909244-1

Analysis ReqCode: **8260_VOA_GCM**

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 11-Sep-19
Date Extracted: 18-Sep-19
Date Analyzed: 18-Sep-19
Prep Method: SW5030 Rev C

Prep Batch: VL190918-4
QCBatchID: VL190918-4-2
Run ID: VL190918-4A
Cleanup: NONE
Basis: As Received
File Name: D73380

Analyst: Cory C. Lewis
Sample Aliquot: 1 ml
Final Volume: 1 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL

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	25.2		25	101	84 - 118
2037-26-5	TOLUENE-D8	24.9		25	100	85 - 115

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Field ID: B3R057
Lab ID: 1909244-2

Analysis ReqCode: 8260_VOA_GCM

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 12-Sep-19
Date Extracted: 18-Sep-19
Date Analyzed: 18-Sep-19
Prep Method: SW5030 Rev C

Prep Batch: VL190918-4
QCBatchID: VL190918-4-2
Run ID: VL190918-4A
Cleanup: NONE
Basis: As Received
File Name: D73381

Analyst: Cory C. Lewis
Sample Aliquot: 10 ml
Final Volume: 10 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
75-01-4	VINYL CHLORIDE	1	0.15	U	1	0.15
75-35-4	1,1-DICHLOROETHENE	1	0.3	U	1	0.3
67-64-1	ACETONE	1	3	U	10	3
75-15-0	CARBON DISULFIDE	1	0.3	U	1	0.3
75-09-2	METHYLENE CHLORIDE	1	2.4		1	0.34
75-34-3	1,1-DICHLOROETHANE	1	0.3	U	1	0.3
78-93-3	2-BUTANONE	1	3	U	10	3
67-66-3	CHLOROFORM	1	0.3	U	1	0.3
71-55-6	1,1,1-TRICHLOROETHANE	1	0.3	U	1	0.3
56-23-5	CARBON TETRACHLORIDE	1	0.15	U	1	0.15
107-06-2	1,2-DICHLOROETHANE	1	0.15	U	1	0.15
71-43-2	BENZENE	1	0.3	U	1	0.3
79-01-6	TRICHLOROETHENE	1	0.5	U	1	0.5
108-10-1	4-METHYL-2-PENTANONE	1	3	U	10	3
108-88-3	TOLUENE	1	0.3	U	1	0.3
79-00-5	1,1,2-TRICHLOROETHANE	1	0.3	U	1	0.3
127-18-4	TETRACHLOROETHENE	1	0.3	U	1	0.3
108-90-7	CHLOROBENZENE	1	0.3	U	1	0.3
100-41-4	ETHYLBENZENE	1	0.3	U	1	0.3
1330-20-7	TOTAL XYLENES	1	1	U	1	

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C

Sample Results

Lab Name: **ALS -- Fort Collins**
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Field ID: B3R057
Lab ID: 1909244-2

Analysis ReqCode: **8260_VOA_GCM**

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 12-Sep-19
Date Extracted: 18-Sep-19
Date Analyzed: 18-Sep-19
Prep Method: SW5030 Rev C

Prep Batch: VL190918-4
QCBatchID: VL190918-4-2
Run ID: VL190918-4A
Cleanup: NONE
Basis: As Received
File Name: D73381

Analyst: Cory C. Lewis
Sample Aliquot: 1 ml
Final Volume: 1 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25.2		25	101	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25.1		25	100	84 - 118
2037-26-5	TOLUENE-D8	25		25	100	85 - 115

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Lab ID: VL190918-4LCS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 09/18/2019
Date Analyzed: 09/18/2019
Prep Method: SW5030C

Prep Batch: VL190918-4
QCBatchID: VL190918-4-2
Run ID: VL190918-4A
Cleanup: NONE
Basis: N/A
File Name: D73366

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

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
75-01-4	VINYL CHLORIDE	10	10.4	1		104	72 - 123%
75-35-4	1,1-DICHLOROETHENE	10	8.58	1		86	77 - 119%
67-64-1	ACETONE	40	34.2	10		85	62 - 142%
75-15-0	CARBON DISULFIDE	10	8.83	1		88	76 - 121%
75-09-2	METHYLENE CHLORIDE	10	8.59	1		86	71 - 130%
75-34-3	1,1-DICHLOROETHANE	10	9.01	1		90	83 - 119%
78-93-3	2-BUTANONE	40	33.4	10		84	70 - 135%
67-66-3	CHLOROFORM	10	8.89	1		89	82 - 119%
71-55-6	1,1,1-TRICHLOROETHANE	10	9.06	1		91	80 - 120%
56-23-5	CARBON TETRACHLORIDE	10	9.54	1		95	77 - 122%
107-06-2	1,2-DICHLOROETHANE	10	8.66	1		87	74 - 128%
71-43-2	BENZENE	10	8.97	1		90	83 - 117%
79-01-6	TRICHLOROETHENE	10	9.02	1		90	83 - 117%
108-10-1	4-METHYL-2-PENTANONE	40	35.4	10		88	73 - 125%
108-88-3	TOLUENE	10	9.06	1		91	82 - 113%
79-00-5	1,1,2-TRICHLOROETHANE	10	8.88	1		89	78 - 116%
127-18-4	TETRACHLOROETHENE	10	9.28	1		93	84 - 117%
108-90-7	CHLOROBENZENE	10	8.89	1		89	81 - 113%
100-41-4	ETHYLBENZENE	10	9.11	1		91	81 - 113%
179601-23-	M+P-XYLENE	20	18	1		90	82 - 115%
95-47-6	O-XYLENE	10	8.81	1		88	81 - 115%

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Lab ID: VL190918-4LCSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 09/18/2019
Date Analyzed: 09/18/2019
Prep Method: SW5030C

Prep Batch: VL190918-4
QCBatchID: VL190918-4-2
Run ID: VL190918-4A
Cleanup: NONE
Basis: N/A
File Name: D73367

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

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
75-01-4	VINYL CHLORIDE	10	10.3	1		103	20	1
75-35-4	1,1-DICHLOROETHENE	10	8.71	1		87	20	2
67-64-1	ACETONE	40	36.9	10		92	30	8
75-15-0	CARBON DISULFIDE	10	8.95	1		89	20	1
75-09-2	METHYLENE CHLORIDE	10	8.88	1		89	20	3
75-34-3	1,1-DICHLOROETHANE	10	9.22	1		92	20	2
78-93-3	2-BUTANONE	40	34.6	10		87	30	4
67-66-3	CHLOROFORM	10	8.93	1		89	20	1
71-55-6	1,1,1-TRICHLOROETHANE	10	9.24	1		92	20	2
56-23-5	CARBON TETRACHLORIDE	10	9.43	1		94	20	1
107-06-2	1,2-DICHLOROETHANE	10	8.93	1		89	20	3
71-43-2	BENZENE	10	9.17	1		92	20	2
79-01-6	TRICHLOROETHENE	10	9.07	1		91	20	1
108-10-1	4-METHYL-2-PENTANONE	40	37.1	10		93	30	5
108-88-3	TOLUENE	10	8.9	1		89	20	2
79-00-5	1,1,2-TRICHLOROETHANE	10	9.15	1		92	20	3
127-18-4	TETRACHLOROETHENE	10	9.02	1		90	20	3
108-90-7	CHLOROBENZENE	10	9.11	1		91	20	2
100-41-4	ETHYLBENZENE	10	9.21	1		92	20	1
179601-23-	M+P-XYLENE	20	18.2	1		91	20	1
95-47-6	O-XYLENE	10	8.98	1		90	20	2

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: **ALS -- Fort Collins**
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

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	100		103		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	103		103		84 - 118
2037-26-5	TOLUENE-D8	25	101		100		85 - 115

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Field ID: SHARED QC
LabID: 1909241-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 11-Sep-19
Date Extracted: 18-Sep-19
Date Analyzed: 18-Sep-19
Prep Method: SW5030 Rev C

Prep Batch: VL190918-4
QCBatchID: VL190918-4-2
Run ID: VL190918-4A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 10 ml
Final Volume: 10 ml
Result Units: UG/L
File Name: D73385

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
75-01-4	VINYL CHLORIDE	0.15	U	11.2		1	10	112	72 - 123%
75-35-4	1,1-DICHLOROETHENE	0.3	U	9.07		1	10	91	77 - 119%
67-64-1	ACETONE	3	U	37.7		10	40	94	62 - 142%
75-15-0	CARBON DISULFIDE	0.3	U	9.13		1	10	91	76 - 121%
75-09-2	METHYLENE CHLORIDE	0.34	U	9.02		1	10	90	71 - 130%
75-34-3	1,1-DICHLOROETHANE	0.3	U	9.42		1	10	94	83 - 119%
78-93-3	2-BUTANONE	3	U	34.2		10	40	85	70 - 135%
67-66-3	CHLOROFORM	0.3	U	9.52		1	10	95	82 - 119%
71-55-6	1,1,1-TRICHLOROETHANE	0.3	U	9.42		1	10	94	80 - 120%
56-23-5	CARBON TETRACHLORIDE	0.15	U	9.67		1	10	97	77 - 122%
107-06-2	1,2-DICHLOROETHANE	0.15	U	9.07		1	10	91	74 - 128%
71-43-2	BENZENE	0.3	U	9.49		1	10	95	83 - 117%
79-01-6	TRICHLOROETHENE	2.1		11.4		1	10	93	83 - 117%
108-10-1	4-METHYL-2-PENTANONE	3	U	35.1		10	40	88	73 - 125%
108-88-3	TOLUENE	0.3	U	9.29		1	10	93	82 - 113%
79-00-5	1,1,2-TRICHLOROETHANE	0.3	U	9.3		1	10	93	78 - 116%
127-18-4	TETRACHLOROETHENE	0.3	U	9.37		1	10	94	84 - 117%
108-90-7	CHLOROBENZENE	0.3	U	9.31		1	10	93	81 - 113%
100-41-4	ETHYLBENZENE	0.3	U	9.42		1	10	94	81 - 113%

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Field ID: SHARED QC
LabID: 1909241-1MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 11-Sep-19
Date Extracted: 18-Sep-19
Date Analyzed: 18-Sep-19
Prep Method: SW5030 Rev C

Prep Batch: VL190918-4
QCBatchID: VL190918-4-2
Run ID: VL190918-4A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 10 ml
Final Volume: 10 ml
Result Units: UG/L
File Name: D73386

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
75-01-4	VINYL CHLORIDE	10.3		10	103	1	20	8
75-35-4	1,1-DICHLOROETHENE	8.43		10	84	1	20	7
67-64-1	ACETONE	37.9		40	95	10	30	0
75-15-0	CARBON DISULFIDE	8.66		10	87	1	20	5
75-09-2	METHYLENE CHLORIDE	8.68		10	87	1	20	4
75-34-3	1,1-DICHLOROETHANE	9.19		10	92	1	20	2
78-93-3	2-BUTANONE	35.1		40	88	10	30	3
67-66-3	CHLOROFORM	9.07		10	91	1	20	5
71-55-6	1,1,1-TRICHLOROETHANE	8.91		10	89	1	20	6
56-23-5	CARBON TETRACHLORIDE	9.08		10	91	1	20	6
107-06-2	1,2-DICHLOROETHANE	8.99		10	90	1	20	1
71-43-2	BENZENE	9.11		10	91	1	20	4
79-01-6	TRICHLOROETHENE	10.8		10	87	1	20	5
108-10-1	4-METHYL-2-PENTANONE	36.5		40	91	10	30	4
108-88-3	TOLUENE	9.08		10	91	1	20	2
79-00-5	1,1,2-TRICHLOROETHANE	9.28		10	93	1	20	0
127-18-4	TETRACHLOROETHENE	9.43		10	94	1	20	1
108-90-7	CHLOROBENZENE	8.94		10	89	1	20	4
100-41-4	ETHYLBENZENE	8.89		10	89	1	20	6

Data Package ID: *VL1909244-1*

GC/MS Volatiles

Method SW8260_25C
Matrix Spike And Matrix Spike Duplicate

Lab Name: **ALS -- Fort Collins**
Work Order Number: 1909244
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: Groundwater Background Study, X19-002

Surrogate Recovery MS/MSD

CASNO	Target Analyte	Spike Added	MS % Rec.	MS Flag	MSD % Rec.	MSD Flag	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25	101		100		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	103		102		84 - 118
2037-26-5	TOLUENE-D8	25	99		100		85 - 115

Data Package ID: *VL1909244-1*

Prep Batch ID: VL190918-4

Start Date: 09/18/19
Start Time: 9:48
Prep Analyst: Cory C. Lewis

End Date: 09/18/19
End Time: 19:32

Concentration Method: NONE
Extract Method: SW5030C
Initial Volume Units: ml
Final Volume Units: ml

Batch Created By: CCL
Date Created: 09/18/19
Time Created: 11:31
Validated By: CCL
Date Validated: 09/19/19
Time Validated: 8:17

Comments:

QC Batch ID: VL190918-4-2

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
VL190918-4	MB	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909241
VL190918-4	LCS	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909241
VL190918-4	LCSD	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909241
1909241-1	MS	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909241
1909241-1	MSD	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909241
1909241-1	SMP	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909241
1909241-15	SMP	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909241
1909241-2	SMP	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909241
1909244-1	SMP	B3R053	WATER	9/11/2019	10	10	NONE	1	1909244
1909244-2	SMP	B3R057	WATER	9/12/2019	10	10	NONE	1	1909244
1909305-2	SMP	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909305
1909305-4	SMP	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909305
1909305-5	SMP	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1909305

QC Types

CAR	Carrier reference sample	DLS	Detection Limit Standard
DUP	Laboratory Duplicate	LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicat	LODV	Limit of Detection Verification
LOQV	Limit of Quantitation Verification	MB	Method Blank
MS	Laboratory Matrix Spike	MSD	Laboratory Matrix Spike Duplicate
REP	Sample replicate	RVS	Reporting Level Verification Standar
SMP	Field Sample	SYS	Sample Yield Spike