



Ft. Collins, Colorado

LIMS Version: 7.004

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Friday, January 31, 2020

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

Re: ALS Workorder: 2001315
Project Name: RCRA, January 2020
Project Number: W20-001

Dear Ms. Waters-Husted:

Three water samples were received from CH2M HILL Plateau Remediation Company, on 1/22/2020. The samples were scheduled for the following analyses:

GC/MS VolatilesInorganics

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. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental

Katie M. O'Brien
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.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 2001315

Client Name: CH2M HILL Plateau Remediation Company

Client Project Name: RCRA, January 2020

Client Project Number: W20-001

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B3TX61	2001315-1		WATER	21-Jan-20	9:55
B3TX67	2001315-2		WATER	21-Jan-20	9:03
B3TX73	2001315-3		WATER	21-Jan-20	8:58

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			2001315	C.O.C.# W20-001-004		
					Page 1 of 1			
Collector: Juan Aguilar CHPRC		Contact/Requester: Karen Waters-Husted			Telephone No.: 509-376-4650			
SAF No.: W20-001		Sampling Origin: Hanford Site			Purchase Order/Charge Code: 300071			
Project Title: RCRA, January 2020		Logbook No.: HNF-N-506 -112-188			Ice Chest No.: GWS-681			
Shipped To (Lab): ALS Environmental Ft. Collins		Method of Shipment: Commercial Carrier			Bill of Lading/Air Bill No.: 77510716291			
Protocol: RCRA		Priority: 30 Days			Offsite Property No.: N/A			
POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1					SPECIAL INSTRUCTIONS N/A			
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3TX61	N	W	JAN 21 2020	0955	5x40-mL aGs*	8260_VOA_GCMS: COMMON	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C

Relinquished By			Received By			Matrix *		
<i>Print First and Last Name</i>	<i>Signature</i>	<i>Date/Time</i>	<i>Print First and Last Name</i>	<i>Signature</i>	<i>Date/Time</i>	S = Soil	DS = Drum Solids	
Juan Aguilar CHPRC		JAN 21 2020 1000	Janelle Zunker CHPRC		JAN 21 2020 1006	SE = Sediment	DL = Drum Liquids	
Janelle Zunker CHPRC		JAN 21 2020 1400	FEDEX			SO = Solid	T = Tissue	
			FEDEX			SL = Sludge	WI = Wipe	
			Erik Evans			W = Water	L = Liquid	
			1/22/20 0950			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:

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Collector: Juan Aguilar CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: W20-001	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: RCRA, January 2020	Logbook No.: HNF-N-506-112-188	Ice Chest No.: GWS-681
Shipped To (Lab): ALS Environmental Ft. Collins	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7775 (6871625)
Protocol: RCRA	Priority: 30 Days	Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3TX67	N	W	JAN 21 2020	0903	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C

Relinquished By	Received By	Matrix *
Print First and Last Name Signature Date/Time	Print First and Last Name Signature Date/Time	
Juan Aguilar CHPRC JAN 21 2020 1000	Janelle Zunker CHPRC JAN 21 2020 1000	S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
FEDEX	FEDEX	
	Erik Evans 1/22/20 0950	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:
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CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	2001315	C.O.C.# W20-001-006
			Page 1 of 1

Collector: Mike Esparza ICHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: W20-001	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: RCRA, January 2020	Logbook No.: HNF-N-506 113	Ice Chest No.: GWS-651
Shipped To (Lab): ALS Environmental Ft. Collins	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7775128716259
Protocol: RCRA	Priority: 30 Days	Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3TX73	N	W	JAN 21 2020	0858	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By			Received By			Matrix *	
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time		
Mike Esparza ICHPRC		JAN 21 2020 0858	Janelle Zunker CHPRC		JAN 21 2020 0858	S = Soil	DS = Drum Solids
Janelle Zunker CHPRC		JAN 21 2020 1400				SE = Sediment	DL = Drum Liquids
	FEDEX		Erik Evans		1/22/20 0956	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:
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2001315

ORIGIN ID:PSCA (500) 373-3580
JANELLE ZUNKER
CH2M
6289 LATAH ST.

SHIP DATE: 21JAN20
ACTWGT: 85.00 LB
CAD: 107066051/NET4220

RICHLAND, WA 99354
UNITED STATES US

BILL THIRD PARTY

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

9-2

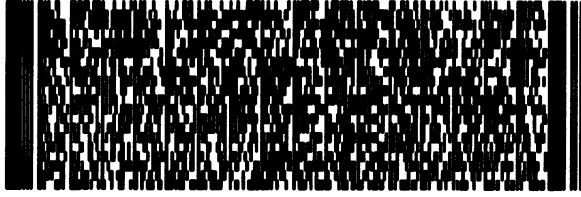
FORT COLLINS CO 80524

0.1°C

(970) 490-1511
INV:
PO:

REF: 300072 / GWS-681
DEPT:

568L2DF82FE4A



WED - 22 JAN 10:30A
PRIORITY OVERNIGHT

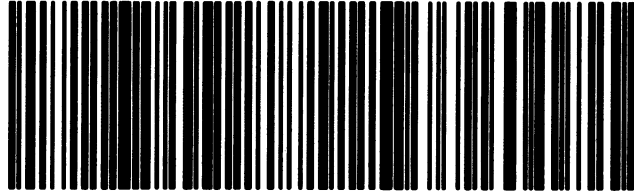
TRK# 7775 6871 6259
0201

DSR

80524

CO-US DEN

XH FTCA



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GC/MS Volatiles Case Narrative

CH2M HILL Plateau Remediation Company RCRA, January 2020 – W20-001

Work Order Number: 2001315

1. 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.
2. 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.
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 2001318-1 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 sample was 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
Mindy Norton
Organics Primary Data Reviewer

1/31/20
Date

Kath M. O.
Organics Final Data Reviewer

1/31/20
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:** 2001315**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** RCRA, January 2020 W20-001**Lab ID:** VL200128-3MB**Sample Matrix:** WATER**% Moisture:** N/A**Date Collected:** N/A**Date Extracted:** 28-Jan-20**Date Analyzed:** 28-Jan-20**Prep Batch:** VL200128-3**QCBatchID:** VL200128-3-4**Run ID:** VL200128-3A**Cleanup:** NONE**Basis:** N/A**File Name:** C89444**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	0.38	U	1	0.38
75-35-4	1,1-DICHLOROETHENE	1	0.48	U	1	0.48
67-64-1	ACETONE	1	5.4	U	10	5.4
75-15-0	CARBON DISULFIDE	1	0.31	U	1	0.31
75-09-2	METHYLENE CHLORIDE	1	1	U	2	1
75-34-3	1,1-DICHLOROETHANE	1	0.32	U	1	0.32
78-93-3	2-BUTANONE	1	3	U	10	3
67-66-3	CHLOROFORM	1	0.31	U	1	0.31
71-55-6	1,1,1-TRICHLOROETHANE	1	0.36	U	1	0.36
56-23-5	CARBON TETRACHLORIDE	1	0.38	U	1	0.38
107-06-2	1,2-DICHLOROETHANE	1	0.41	U	1	0.41
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	0.34	U	1	0.34
79-00-5	1,1,2-TRICHLOROETHANE	1	0.33	U	1	0.33
127-18-4	TETRACHLOROETHENE	1	0.35	U	1	0.35
108-90-7	CHLOROBENZENE	1	0.34	U	1	0.34
100-41-4	ETHYLBENZENE	1	0.33	U	1	0.33
1330-20-7	TOTAL XYLENES	1	1	U	1	

Data Package ID: VL2001315-1**Date Printed:** Friday, January 31, 2020**ALS -- Fort Collins**

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GC/MS Volatiles

Method SW8260_25C

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Lab ID: VL200128-3MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 28-Jan-20

Date Analyzed: 28-Jan-20

Prep Batch: VL200128-3

QCBatchID: VL200128-3-4

Run ID: VL200128-3A

Cleanup: NONE

Basis: N/A

File Name: C89444

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
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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	24.1		25	96	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	26.5		25	106	84 - 118
2037-26-5	TOLUENE-D8	24.6		25	99	85 - 115

Data Package ID: VL2001315-1

GC/MS Volatiles

Method SW8260_25C

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Field ID: B3TX61

Lab ID: 2001315-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 21-Jan-20

Date Extracted: 28-Jan-20

Date Analyzed: 28-Jan-20

Prep Method: SW5030 Rev C

Prep Batch: VL200128-3

QCBatchID: VL200128-3-4

Run ID: VL200128-3A

Cleanup: NONE

Basis: As Received

File Name: C89453

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	Result Qualifier	Reporting Limit	MDL
75-01-4	VINYL CHLORIDE	1	0.38	U	1	0.38
75-35-4	1,1-DICHLOROETHENE	1	0.48	U	1	0.48
67-64-1	ACETONE	1	5.4	U	10	5.4
75-15-0	CARBON DISULFIDE	1	0.31	U	1	0.31
75-09-2	METHYLENE CHLORIDE	1	1	U	2	1
75-34-3	1,1-DICHLOROETHANE	1	0.32	U	1	0.32
78-93-3	2-BUTANONE	1	3	U	10	3
67-66-3	CHLOROFORM	1	0.31	U	1	0.31
71-55-6	1,1,1-TRICHLOROETHANE	1	0.36	U	1	0.36
56-23-5	CARBON TETRACHLORIDE	1	0.38	U	1	0.38
107-06-2	1,2-DICHLOROETHANE	1	0.41	U	1	0.41
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	0.34	U	1	0.34
79-00-5	1,1,2-TRICHLOROETHANE	1	0.33	U	1	0.33
127-18-4	TETRACHLOROETHENE	1	0.35	U	1	0.35
108-90-7	CHLOROBENZENE	1	0.34	U	1	0.34
100-41-4	ETHYLBENZENE	1	0.33	U	1	0.33
1330-20-7	TOTAL XYLENES	1	1	U	1	

Data Package ID: VL2001315-1

Date Printed: Friday, January 31, 2020

ALS -- Fort Collins

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GC/MS Volatiles

Method SW8260_25C

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Field ID: B3TX61	Sample Matrix: WATER	Prep Batch: VL200128-3	Analyst: Joe Kostelnik
Lab ID: 2001315-1	% Moisture: N/A	QCBatchID: VL200128-3-4	Sample Aliquot: 1 ml
Analysis ReqCode: 8260_VOA_GCM	Date Collected: 21-Jan-20	Run ID: VL200128-3A	Final Volume: 1 ml
	Date Extracted: 28-Jan-20	Cleanup: NONE	Result Units: UG/L
	Date Analyzed: 28-Jan-20	Basis: As Received	Clean DF: 1
	Prep Method: SW5030 Rev C	File Name: C89453	

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	24.9		25	100	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	26		25	104	84 - 118
2037-26-5	TOLUENE-D8	24.4		25	98	85 - 115

Data Package ID: VL2001315-1

GC/MS Volatiles**Method SW8260_25C****Laboratory Control Sample and Laboratory Control Sample Duplicate**

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Lab ID: VL200128-3LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 01/28/2020

Date Analyzed: 01/28/2020

Prep Method: SW5030C

Prep Batch: VL200128-3

QCBatchID: VL200128-3-4

Run ID: VL200128-3A

Cleanup: NONE

Basis: N/A

File Name: C89441

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	11.9	1		119	72 - 123%
75-35-4	1,1-DICHLOROETHENE	10	10	1		100	77 - 119%
67-64-1	ACETONE	40	39.4	10		98	62 - 142%
75-15-0	CARBON DISULFIDE	10	10.2	1		102	76 - 121%
75-09-2	METHYLENE CHLORIDE	10	9.43	2		94	71 - 130%
75-34-3	1,1-DICHLOROETHANE	10	10.3	1		103	83 - 119%
78-93-3	2-BUTANONE	40	41.9	10		105	70 - 135%
67-66-3	CHLOROFORM	10	10.3	1		103	82 - 119%
71-55-6	1,1,1-TRICHLOROETHANE	10	11	1		110	80 - 120%
56-23-5	CARBON TETRACHLORIDE	10	10.6	1		106	77 - 122%
107-06-2	1,2-DICHLOROETHANE	10	10.3	1		103	74 - 128%
71-43-2	BENZENE	10	9.76	1		98	83 - 117%
79-01-6	TRICHLOROETHENE	10	10.8	1		108	83 - 117%
108-10-1	4-METHYL-2-PENTANONE	40	36.4	10		91	73 - 125%
108-88-3	TOLUENE	10	9.49	1		95	82 - 113%
79-00-5	1,1,2-TRICHLOROETHANE	10	9.12	1		91	78 - 116%
127-18-4	TETRACHLOROETHENE	10	9.97	1		100	84 - 117%
108-90-7	CHLOROBENZENE	10	9.64	1		96	81 - 113%
100-41-4	ETHYLBENZENE	10	9.85	1		98	81 - 113%
179601-23-	M+P-XYLENE	20	19.2	1		96	82 - 115%
95-47-6	O-XYLENE	10	9.53	1		95	81 - 115%

Data Package ID: VL2001315-1

Date Printed: Friday, January 31, 2020

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GC/MS Volatiles

Method SW8260_25C

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Lab ID: VL200128-3LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 01/28/2020

Date Analyzed: 01/28/2020

Prep Method: SW5030C

Prep Batch: VL200128-3

QC Batch ID: VL200128-3-4

Run ID: VL200128-3A

Cleanup: NONE

Basis: N/A

File Name: C89442

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	11.5	1		115	20	3
75-35-4	1,1-DICHLOROETHENE	10	9.8	1		98	20	2
67-64-1	ACETONE	40	41.8	10		105	30	6
75-15-0	CARBON DISULFIDE	10	9.93	1		99	20	3
75-09-2	METHYLENE CHLORIDE	10	9.27	2		93	20	2
75-34-3	1,1-DICHLOROETHANE	10	10	1		100	20	2
78-93-3	2-BUTANONE	40	39.8	10		99	30	5
67-66-3	CHLOROFORM	10	10.1	1		101	20	2
71-55-6	1,1,1-TRICHLOROETHANE	10	10.5	1		105	20	5
56-23-5	CARBON TETRACHLORIDE	10	10.5	1		105	20	1
107-06-2	1,2-DICHLOROETHANE	10	9.85	1		99	20	4
71-43-2	BENZENE	10	9.65	1		97	20	1
79-01-6	TRICHLOROETHENE	10	10.7	1		107	20	0
108-10-1	4-METHYL-2-PENTANONE	40	35.6	10		89	30	2
108-88-3	TOLUENE	10	9.29	1		93	20	2
79-00-5	1,1,2-TRICHLOROETHANE	10	9.28	1		93	20	2
127-18-4	TETRACHLOROETHENE	10	10.2	1		102	20	2
108-90-7	CHLOROBENZENE	10	9.62	1		96	20	0
100-41-4	ETHYLBENZENE	10	9.67	1		97	20	2
179601-23-	M+P-XYLENE	20	19.5	1		98	20	2
95-47-6	O-XYLENE	10	9.61	1		96	20	1

Data Package ID: VL2001315-1

Date Printed: Friday, January 31, 2020

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GC/MS Volatiles

Method SW8260_25C

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

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	97		97		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	106		106		84 - 118
2037-26-5	TOLUENE-D8	25	97		99		85 - 115

Data Package ID: VL2001315-1

GC/MS Volatiles

Method SW8260_25C

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Field ID: SHARED QC

LabID: 2001318-1MS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 21-Jan-20

Date Extracted: 28-Jan-20

Date Analyzed: 28-Jan-20

Prep Method: SW5030 Rev C

Prep Batch: VL200128-3

QCBatchID: VL200128-3-4

Run ID: VL200128-3A

Cleanup: NONE

Basis: As Received

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

File Name: C89457

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
75-01-4	VINYL CHLORIDE	0.38	U	11.9		1	10	119	72 - 123%
75-35-4	1,1-DICHLOROETHENE	0.48	U	9.91		1	10	99	77 - 119%
67-64-1	ACETONE	5.4	U	45.2		10	40	113	62 - 142%
75-15-0	CARBON DISULFIDE	0.31	U	10.2		1	10	102	76 - 121%
75-09-2	METHYLENE CHLORIDE	16		24.7		2	10	92	71 - 130%
75-34-3	1,1-DICHLOROETHANE	0.32	U	10.5		1	10	105	83 - 119%
78-93-3	2-BUTANONE	3	U	47.6		10	40	119	70 - 135%
67-66-3	CHLOROFORM	0.31	U	10.6		1	10	106	82 - 119%
71-55-6	1,1,1-TRICHLOROETHANE	0.36	U	11.2		1	10	112	80 - 120%
56-23-5	CARBON TETRACHLORIDE	0.38	U	11.3		1	10	113	77 - 122%
107-06-2	1,2-DICHLOROETHANE	0.41	U	11.1		1	10	111	74 - 128%
71-43-2	BENZENE	0.3	U	9.93		1	10	99	83 - 117%
79-01-6	TRICHLOROETHENE	0.5	U	11.5		1	10	115	83 - 117%
108-10-1	4-METHYL-2-PENTANONE	3	U	42.3		10	40	106	73 - 125%
108-88-3	TOLUENE	0.34	U	9.85		1	10	98	82 - 113%
79-00-5	1,1,2-TRICHLOROETHANE	0.33	U	10.1		1	10	101	78 - 116%
127-18-4	TETRACHLOROETHENE	0.35	U	10		1	10	100	84 - 117%
108-90-7	CHLOROBENZENE	0.34	U	10		1	10	100	81 - 113%
100-41-4	ETHYLBENZENE	0.33	U	10.1		1	10	101	81 - 113%

Data Package ID: VL2001315-1

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GC/MS Volatiles

Method SW8260_25C

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Field ID: SHARED QC

LabID: 2001318-1MSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 21-Jan-20

Date Extracted: 28-Jan-20

Date Analyzed: 28-Jan-20

Prep Method: SW5030 Rev C

Prep Batch: VL200128-3

QCBatchID: VL200128-3-4

Run ID: VL200128-3A

Cleanup: NONE

Basis: As Received

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

File Name: C89458

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
75-01-4	VINYL CHLORIDE	11.6		10	116	1	20	3
75-35-4	1,1-DICHLOROETHENE	9.88		10	99	1	20	0
67-64-1	ACETONE	45.5		40	114	10	30	1
75-15-0	CARBON DISULFIDE	9.68		10	97	1	20	5
75-09-2	METHYLENE CHLORIDE	24.2		10	86	2	20	2
75-34-3	1,1-DICHLOROETHANE	10.2		10	102	1	20	3
78-93-3	2-BUTANONE	47.2		40	118	10	30	1
67-66-3	CHLOROFORM	10.4		10	104	1	20	2
71-55-6	1,1,1-TRICHLOROETHANE	10.5		10	105	1	20	7
56-23-5	CARBON TETRACHLORIDE	10.9		10	109	1	20	4
107-06-2	1,2-DICHLOROETHANE	10.8		10	108	1	20	3
71-43-2	BENZENE	9.58		10	96	1	20	4
79-01-6	TRICHLOROETHENE	10.8		10	108	1	20	7
108-10-1	4-METHYL-2-PENTANONE	42.1		40	105	10	30	1
108-88-3	TOLUENE	9.87		10	99	1	20	0
79-00-5	1,1,2-TRICHLOROETHANE	10.5		10	105	1	20	4
127-18-4	TETRACHLOROETHENE	10.1		10	101	1	20	1
108-90-7	CHLOROBENZENE	10		10	100	1	20	0
100-41-4	ETHYLBENZENE	9.88		10	99	1	20	2

Data Package ID: VL2001315-1

GC/MS Volatiles

Method SW8260_25C

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

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	97		97		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	108		107		84 - 118
2037-26-5	TOLUENE-D8	25	98		100		85 - 115

Data Package ID: VL2001315-1

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Prep Batch ID: VL200128-3

Start Date: 01/28/20	End Date: 01/28/20	Concentration Method: NONE	Batch Created By: JXK
Start Time: 9:03	End Time: 16:54	Extract Method: SW5030C	Date Created: 01/29/20
Prep Analyst: Joe Kostelnik		Initial Volume Units: ml	Time Created: 8:23
Comments:		Final Volume Units: ml	Validated By: JXK
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>			Date Validated: 01/29/20
			Time Validated: 16:44

QC Batch ID: VL200128-3-4

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
VL200128-3	MB	XXXXXX	WATER	XXXXXX	10	10	NONE	1	2001318
VL200128-3	LCS	XXXXXX	WATER	XXXXXX	10	10	NONE	1	2001318
VL200128-3	LCSD	XXXXXX	WATER	XXXXXX	10	10	NONE	1	2001318
2001318-1	MS	XXXXXX	WATER	XXXXXX	10	10	NONE	1	2001318
2001318-1	MSD	XXXXXX	WATER	XXXXXX	10	10	NONE	1	2001318
2001315-1	SMP	B3TX61	WATER	1/21/2020	10	10	NONE	1	2001315
2001318-1	SMP	XXXXXX	WATER	XXXXXX	10	10	NONE	1	2001318

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



Inorganics Case Narrative

CH2M HILL Plateau Remediation Company

RCRA, January 2020 -- W20-001

Work Order Number: 2001315

1. The samples were prepared for analysis based on Environmental Monitoring Systems Laboratory (EMSL) Rev 2.1 procedures and Standard Methods for the Examination of Water and Wastewater, 20th Edition 1998 procedures.
2. The samples were analyzed following EMSL and Standard Method procedures for the current revisions of the following SOPs and methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	SM2320B	1106
Bicarbonate	SM2320B	1106
Carbonate	SM2320B	1106
Hydroxide	SM2320B	1106
Chloride	300.0 Revision 2.1	1113
Fluoride	300.0 Revision 2.1	1113
Nitrate as N	300.0 Revision 2.1	1113
Nitrite as N	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

3. All standards and solutions were used within their recommended shelf life.
4. The samples were prepared and analyzed within the established hold time for each analysis.

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

5. 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 each preparation batch.



- n The method blank associated with each batch was below the reporting limit for the requested analytes. Sample results have been compared to the blank results and are flagged as appropriate.
- n All laboratory control sample criteria were met.
- n All initial and continuing calibration blanks were below the reporting limit for the requested analytes.
- n All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.

6. Matrix specific quality control procedures.

Sample 2001315-3 was designated as the quality control sample for the anion analysis. Sample 2001315-2 was designated as the quality control sample for the alkalinity, bicarbonate, carbonate and hydroxide 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.

- n A matrix spike (MS) was prepared and analyzed with the anion batch. All guidance criteria for precision and accuracy were met.
- n A sample duplicate was prepared and analyzed with the alkalinity, bicarbonate, carbonate and hydroxide batch. All guidance criteria for precision were met.

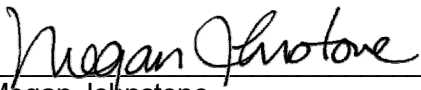
7. Reduced aliquots were taken of the sample for the alkalinity, bicarbonate, carbonate and hydroxide analysis. Reporting limits were elevated accordingly.

It is a standard practice that samples for CHPRC on the ion chromatograph are analyzed at a dilution. The 2X factor can be considered an artifact of the prep and does not indicate a secondary dilution and is therefore not flagged as a dilution.

8. 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.



Megan Johnstone
Inorganics Primary Data Reviewer

1/31/20
Date



Kath M. W.
Inorganics Final Data Reviewer

1/31/20
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 $\leq 20X$ 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.

BICARBONATE AS CaCO₃**Method SM2320B****Sample Results**

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: RCRA, January 2020 W20-001
Work Order Number: 2001315 **Final Volume:** 100 ml
Reporting Basis: As Received **Matrix:** WATER
Prep Method: NONE **Result Units:** MG/L
Analyst: Keli J. Smith

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	Flag	Sample Aliquot
B3TX67	2001315-2	01/21/2020	01/27/2020	01/27/2020	N/A	1	130	20		25 ml

Comments:

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

Data Package ID: *ak2001315-1*

CARBONATE AS CaCO₃**Method SM2320B****Sample Results**

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: RCRA, January 2020 W20-001
Work Order Number: 2001315 **Final Volume:** 100 ml
Reporting Basis: As Received **Matrix:** WATER
Prep Method: NONE **Result Units:** MG/L
Analyst: Keli J. Smith

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	Flag	Sample Aliquot
B3TX67	2001315-2	01/21/2020	01/27/2020	01/27/2020	N/A	1	20	20	U	25 ml

Comments:

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

Data Package ID: *ak2001315-1*

HYDROXIDE AS CaCO3**Method SM2320BH****Sample Results**

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: RCRA, January 2020 W20-001
Work Order Number: 2001315 **Final Volume:** 100 ml
Reporting Basis: As Received **Matrix:** WATER
Prep Method: NONE **Result Units:** MG/L
Analyst: Keli J. Smith

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/LOQ/LOD	Flag	Sample Aliquot
B3TX67	2001315-2	01/21/2020	01/27/2020	01/27/2020	N/A	1	20	20	U	25 ml

Comments:

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

Data Package ID: ak2001315-1

TOTAL ALKALINITY AS CaCO₃**Method SM2320B****Sample Results**

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: RCRA, January 2020 W20-001
Work Order Number: 2001315 **Final Volume:** 100 ml
Reporting Basis: As Received **Matrix:** WATER
Prep Method: NONE **Result Units:** MG/L
Analyst: Keli J. Smith

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	Flag	Sample Aliquot
B3TX67	2001315-2	01/21/2020	01/27/2020	01/27/2020	N/A	1	130	20		25 ml

Comments:

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

Data Package ID: *ak2001315-1*

Ion Chromatography

Method EPA300.0 Revision 2.1

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Field ID:	B3TX73
Lab ID:	2001315-3

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 21-Jan-20

Date Extracted: 22-Jan-20

Date Analyzed: 22-Jan-20

Prep Method: NONE

Prep Batch: ic200122-1

QCBatchID: ic200122-1-1

Run ID: IC200122-1a2

Cleanup: NONE

Basis: As Received

File Name: 200122IC3LIMS2

Analyst: Joel F. Nolte

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
16984-48-8	FLUORIDE	2	0.33		0.2	0.078
16887-00-6	CHLORIDE	2	16		0.4	0.15
14797-65-0	NITRITE AS N	2	0.14	U	0.3	0.14
14797-55-8	NITRATE AS N	2	21		0.4	0.18
14808-79-8	SULFATE	2	83		2	1.1

Data Package ID: *ic2001315-1*

Date Printed: Friday, January 31, 2020

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BICARBONATE AS CaCO3

Method SM2320B

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Lab ID: AK200127-2MB

Sample Matrix: WATER
% Moisture: N/A

Prep Batch: AK200127-2
QCBatchID: AK200127-2-2
Run ID: AK200127-1a1
Cleanup: NONE
Basis: N/A

Sample Aliquot: 100 ml
Final Volume: 100 ml
Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK200127-2MB	1/27/2020	01/27/2020	N/A	1	5	5	U

Comments:

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

Data Package ID: ak2001315-1

CARBONATE AS CaCO3

Method SM2320B

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Lab ID: AK200127-2MB

Sample Matrix: WATER
% Moisture: N/A

Prep Batch: AK200127-2
QCBatchID: AK200127-2-2
Run ID: AK200127-1a1
Cleanup: NONE
Basis: N/A

Sample Aliquot: 100 ml
Final Volume: 100 ml
Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK200127-2MB	1/27/2020	01/27/2020	N/A	1	5	5	U

Comments:

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

Data Package ID: ak2001315-1

HYDROXIDE AS CaCO₃**Method SM2320BH****Method Blank****Lab Name:** ALS -- Fort Collins**Work Order Number:** 2001315**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** RCRA, January 2020 W20-001**Lab ID:** AK200127-2MB**Sample Matrix:** WATER**% Moisture:** N/A**Prep Batch:** AK200127-2**QC Batch ID:** AK200127-2-2**Run ID:** AK200127-1a1**Cleanup:** NONE**Basis:** N/A**Sample Aliquot:** 100 ml**Final Volume:** 100 ml**Result Units:** MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK200127-2MB	1/27/2020	01/27/2020	N/A	1	5	5	U

Comments:

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

Data Package ID: ak2001315-1

TOTAL ALKALINITY AS CaCO3

Method SM2320B

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Lab ID: AK200127-2MB

Sample Matrix: WATER
% Moisture: N/A

Prep Batch: AK200127-2
QCBatchID: AK200127-2-2
Run ID: AK200127-1a1
Cleanup: NONE
Basis: N/A

Sample Aliquot: 100 ml
Final Volume: 100 ml
Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK200127-2MB	1/27/2020	01/27/2020	N/A	1	5	5	U

Comments:

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

Data Package ID: *ak2001315-1*

TOTAL ALKALINITY AS CaCO3

Method SM2320B

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Lab ID: AK200127-2LCS	Sample Matrix: WATER % Moisture: N/A Date Collected: N/A Date Extracted: 27-Jan-20 Date Analyzed: 27-Jan-20 Prep Method: NONE	Prep Batch: AK200127-2 QCBatchID: AK200127-2-2 Run ID: AK200127-1a1 Cleanup: NONE Basis: N/A	Sample Aliquot: 100 ml Final Volume: 100 ml Result Units: MG/L
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CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
3812-32-6	TOTAL ALKALINITY AS CaCO3	100	99.9	5		100	85 - 115

Lab ID: AK200127-2LCSD	Sample Matrix: WATER % Moisture: N/A Date Collected: N/A Date Extracted: 27-Jan-20 Date Analyzed: 27-Jan-20 Prep Method: NONE	Prep Batch: AK200127-2 QCBatchID: AK200127-2-2 Run ID: AK200127-1a1 Cleanup: NONE Basis: N/A	Sample Aliquot: 100 ml Final Volume: 100 ml Result Units: MG/L
------------------------	--	---	---

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
3812-32-6	TOTAL ALKALINITY AS CaCO3	100	98.2	5		98	15	2

Data Package ID: ak2001315-1

BICARBONATE AS CaCO₃**Method SM2320B****Duplicate Sample Results****Lab Name:** ALS -- Fort Collins**Work Order Number:** 2001315**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** RCRA, January 2020 W20-001**Reporting Basis:** As Received**Sample Aliquot:** 25 ml**Final Volume:** 100ml**Matrix:** WATER**Result Units:** MG/L

Client Sample ID	Lab ID	Date Prepared	Date Analyzed	Dilution Factor	Duplicate Result	Dup Qual	Sample Result	Samp Qual	Reporting Limit	RPD	RPD Limit
B3TX67	2001315-2D	01/27/2020	01/27/2020	1	126		130		20	4	15

Comments:

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

Data Package ID: ak2001315-1**Date Printed:** Friday, January 31, 2020**ALS -- Fort Collins**

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CARBONATE AS CaCO₃**Method SM2320B****Duplicate Sample Results****Lab Name:** ALS -- Fort Collins**Work Order Number:** 2001315**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** RCRA, January 2020 W20-001**Reporting Basis:** As Received**Sample Aliquot:** 25 ml**Final Volume:** 100ml**Matrix:** WATER**Result Units:** MG/L

Client Sample ID	Lab ID	Date Prepared	Date Analyzed	Dilution Factor	Duplicate Result	Dup Qual	Sample Result	Samp Qual	Reporting Limit	RPD	RPD Limit
B3TX67	2001315-2D	01/27/2020	01/27/2020	1	20	U	20	U	20		15

Comments:

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

Data Package ID: ak2001315-1**Date Printed:** Friday, January 31, 2020**ALS -- Fort Collins**

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HYDROXIDE AS CaCO₃**Method SM2320BH****Duplicate Sample Results****Lab Name:** ALS -- Fort Collins**Work Order Number:** 2001315**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** RCRA, January 2020 W20-001**Reporting Basis:** As Received**Sample Aliquot:** 25 ml**Final Volume:** 100ml**Matrix:** WATER**Result Units:** MG/L

Client Sample ID	Lab ID	Date Prepared	Date Analyzed	Dilution Factor	Duplicate Result	Dup Qual	Sample Result	Samp Qual	Reporting Limit	RPD	RPD Limit
B3TX67	2001315-2D	01/27/2020	01/27/2020	1	20	U	20	U	20		15

Comments:

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

Data Package ID: ak2001315-1

TOTAL ALKALINITY AS CaCO3

Method SM2320B

Duplicate Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Reporting Basis: As Received

Sample Aliquot: 25 ml

Final Volume: 100ml

Matrix: WATER

Result Units MG/L

Client Sample ID	Lab ID	Date Prepared	Date Analyzed	Dilution Factor	Duplicate Result	Dup Qual	Sample Result	Samp Qual	Reporting Limit	RPD	RPD Limit
B3TX67	2001315-2D	01/27/2020	01/27/2020	1	126		130		20	4	15

Comments:

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

Data Package ID: *ak2001315-1*

Prep Batch ID: AK200127-2

Start Date: 01/27/20	End Date: 01/27/20	Concentration Method: NONE	Batch Created By: kjs
Start Time: 11:30	End Time: 14:30	Extract Method: NONE	Date Created: 01/27/20
Prep Analyst: Keli J. Smith		Initial Volume Units: ml	Time Created: 10:59
Comments:		Final Volume Units: ml	Validated By: mmj
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>			Date Validated: 01/29/20
			Time Validated: 10:48

QC Batch ID: AK200127-2-2

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
AK200127-2	MB	XXXXXX	WATER	XXXXXX	100	100	NONE	1	2001315
AK200127-2	LCS	XXXXXX	WATER	XXXXXX	100	100	NONE	1	2001315
AK200127-2	LCSD	XXXXXX	WATER	XXXXXX	100	100	NONE	1	2001315
2001315-2	DUP	B3TX67	WATER	1/21/2020	25	100	NONE	1	2001315
2001287-1	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	2001287
2001291-1	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	2001291
2001291-2	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	2001291
2001293-2	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	2001293
2001293-3	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	2001293
2001315-2	SMP	B3TX67	WATER	1/21/2020	25	100	NONE	1	2001315

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

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Method EPA300.0 Revision 2.1

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Lab ID: ic200122-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 22-Jan-20

Date Analyzed: 22-Jan-20

Prep Batch: ic200122-1

QCBatchID: ic200122-1-1

Run ID: IC200122-1a2

Cleanup: NONE

Basis: N/A

File Name: 200122IC3LIMS2

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL
16984-48-8	FLUORIDE	1	0.039	U	0.1	0.039
16887-00-6	CHLORIDE	1	0.076	U	0.2	0.076
14797-65-0	NITRITE AS N	1	0.069	U	0.15	0.069
14797-55-8	NITRATE AS N	1	0.092	U	0.2	0.092
14808-79-8	SULFATE	1	0.53	U	1	0.53

Data Package ID: ic2001315-1

Date Printed: Friday, January 31, 2020

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Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 2001315

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: RCRA, January 2020 W20-001

Lab ID: ic200122-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 01/22/2020

Date Analyzed: 01/22/2020

Prep Method: NONE

Prep Batch: ic200122-1

QCBatchID: ic200122-1-1

Run ID: IC200122-1a2

Cleanup: NONE

Basis: N/A

File Name: 200122IC3LIMS2

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
16984-48-8	FLUORIDE	5	5.21	0.1		104	90 - 110%
16887-00-6	CHLORIDE	10	10.5	0.2		105	90 - 110%
14797-65-0	NITRITE AS N	5	5.22	0.15		104	90 - 110%
14797-55-8	NITRATE AS N	10	10.5	0.2		105	90 - 110%
14808-79-8	SULFATE	50	51.8	1		104	90 - 110%

Lab ID: ic200122-1LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 01/22/2020

Date Analyzed: 01/22/2020

Prep Method: NONE

Prep Batch: ic200122-1

QCBatchID: ic200122-1-1

Run ID: IC200122-1a2

Cleanup: NONE

Basis: N/A

File Name: 200122IC3LIMS2

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
16984-48-8	FLUORIDE	5	5.1	0.1		102	15	2
16887-00-6	CHLORIDE	10	10.5	0.2		105	15	0
14797-65-0	NITRITE AS N	5	5.21	0.15		104	15	0
14797-55-8	NITRATE AS N	10	10.5	0.2		105	15	0
14808-79-8	SULFATE	50	51.8	1		104	15	0

Data Package ID: ic2001315-1

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Method EPA300.0 Revision 2.1

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 2001315
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: RCRA, January 2020 W20-001

Field ID: B3TX73
LabID: 2001315-3MS

Sample Matrix: WATER	Prep Batch: ic200122-1	Sample Aliquot: 5 ml
% Moisture: N/A	QCBatchID: ic200122-1-1	Final Volume: 5 ml
Date Collected: 21-Jan-20	Run ID: IC200122-1a2	Result Units: MG/L
Date Extracted: 22-Jan-20	Cleanup: NONE	File Name: 200122IC3LIMS2
Date Analyzed: 22-Jan-20	Basis: As Received	
Prep Method: NONE		

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
16984-48-8	FLUORIDE	0.33		4.41		0.2	4	102	85 - 115%
16887-00-6	CHLORIDE	16		26.4		0.4	10	103	85 - 115%
14797-65-0	NITRITE AS N	0.138	U	4.06		0.3	4	96	85 - 115%
14797-55-8	NITRATE AS N	21		31.1		0.4	10	97	85 - 115%
14808-79-8	SULFATE	83		123		2	40	98	85 - 115%

Field ID: B3TX73
LabID: 2001315-3MSD

Sample Matrix: WATER	Prep Batch: ic200122-1	Sample Aliquot: 5 ml
% Moisture: N/A	QCBatchID: ic200122-1-1	Final Volume: 5 ml
Date Collected: 21-Jan-20	Run ID: IC200122-1a2	Result Units: MG/L
Date Extracted: 22-Jan-20	Cleanup: NONE	File Name: 200122IC3LIMS2
Date Analyzed: 22-Jan-20	Basis: As Received	
Prep Method: NONE		

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
16984-48-8	FLUORIDE	4.4		4	102	0.2	15	0
16887-00-6	CHLORIDE	26.5		10	104	0.4	15	0
14797-65-0	NITRITE AS N	4.05		4	95	0.3	15	0
14797-55-8	NITRATE AS N	31.3		10	100	0.4	15	1
14808-79-8	SULFATE	124		40	102	2	15	1

Data Package ID: ic2001315-1

Prep Batch ID: ic200122-1

Start Date: 01/22/20	End Date: 01/22/20	Concentration Method: NONE	Batch Created By: jfn
Start Time: 12:36	End Time: 16:30	Extract Method: NONE	Date Created: 01/22/20
Prep Analyst: Joel F. Nolte		Initial Volume Units: ml	Time Created: 12:36
Comments:		Final Volume Units: ml	Validated By: jfn
waters			Date Validated: 01/23/20
			Time Validated: 9:44

QC Batch ID: ic200122-1-1

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
ic200122-1	RVS	XXXXXX	WATER	XXXXXX	5	5	NONE	1	2001315
ic200122-1	MB	XXXXXX	WATER	XXXXXX	5	5	NONE	1	2001315
ic200122-1	LCS	XXXXXX	WATER	XXXXXX	5	5	NONE	1	2001315
ic200122-1	LCSD	XXXXXX	WATER	XXXXXX	5	5	NONE	1	2001315
2001315-3	MS	B3TX73	WATER	1/21/2020	5	5	NONE	1	2001315
2001315-3	MSD	B3TX73	WATER	1/21/2020	5	5	NONE	1	2001315
2001315-3	SMP	B3TX73	WATER	1/21/2020	5	5	NONE	1	2001315
2001326-1	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	2001326
2001326-2	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	2001326
2001327-1	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	2001327
2001327-2	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	2001327

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
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