

3/15/2018

REV.0



a member of **The GEL Group** INC



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March 15, 2018

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF S18-002
Work Order: 443944
SDG: GEL443944

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 16, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

Heather Shaffer
Project Manager

Purchase Order: 300071 - 7H

Chain of Custody: S18-002-182, S18-002-187, S18-002-222, S18-002-225, S18-002-226, S18-002-230, S18-002-233, S18-002-234, S18-002-235, S18-002-427, S18-002-432, S18-002-433, S18-002-443, S18-002-460, S18-002-462, S18-002-464, S18-002-472, S18-002-475, S18-002-564, S18-002-565, S18-002-624, S18-002-656, S18-002-677, S18-002-678 and S18-002-679

Enclosures



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Sample Issue Resolution

SAMPLE ISSUE RESOLUTION (SIR) REPORT		SIR Number: SIR18-0529 Rev. Number: 0 Date Initiated: 03/08/2018
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	F16-045	
LABORATORY:	GEL	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	1	
SAMPLE NUMBERS:	B3HW41	
SAMPLE MATRIX:	WATER	
SDG NUM(S):	GEL443944	
<u>ISSUE BACKGROUND</u>		
CLASS:	Field Sampling Issue	
TYPE:	Insufficient Sample Volume Collected	
DESCRIPTION:	One vial for 8260_VOA analysis on sample ID B3HW41 was received with headspace	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	The lab will avoid using this vial.	
FINAL RESOLUTION:	Accept proposed resolution.	
SUBMITTED BY:		
SHAFFER, H	03/08/2018	
ACCEPTED BY:		
NAGEL, SE	03/08/2018	

Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S18-002
SDG: GEL443944**

March 15, 2018

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on February 16, 2018, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative.

Sample Identification

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
443944001	B3H6H0
443944002	B3H6J6
443944003	B3H6J7
443944004	B3H5Y8
443944005	B3H4B4
443944006	B3H4C0
443944007	B3H4C1
443944008	B3H672
443944009	B3H673
443944010	B3H6V1
443944011	B3HBY2
443944012	B3H4B6
443944013	B3H4B3
443944014	B3H4B8
443944015	B3H5L7
443944016	B3H652
443944017	B3H4B9
443944018	B3H405
443944019	B3H442
443944020	B3H6F9
443944021	B3H6J4
443944022	B3H6J5

443944023	B3H5Y7
443944024	B3H6V2
443944025	B3H873
443944026	B3HCK6
443944027	B3HCK7
443944028	B3HCK8

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: GC/MS Volatile, General Chemistry, Metals and Radiochemistry.

We certify that this 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.



Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443944
Work Order #: 443944

GC/MS Volatile

Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

Continuing Calibration Verification Requirements

The calibration verification standard requirements were not all met for samples 443944013 (B3H4B3), 443944014 (B3H4B8) and 443944017 (B3H4B9). Dichlorodifluoromethane recovered at 21.9%D and Trichlorofluoromethane recovered at 20.9%D in the daily CCV analyzed on 2/19/18. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

Quality Control (QC) Information

Matrix Spike/Matrix Spike Duplicate Recovery Statement

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits.

Sample	Analyte	Value
1203973337 (Non SDG 443833001PSD)	2-Butanone	64* (70%-130%)

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203973336 (Non SDG 443833001PS)	Acetone	53* (70%-130%)
1203973337 (Non SDG 443833001PSD)	Acetone	49* (70%-130%)

Technical Information

Sample Dilutions/Methanol Dilutions

Samples 443944013 (B3H4B3) and 443944017 (B3H4B9) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443944	
	013	017
Carbon tetrachloride	4X	2X

Metals

Determination of Metals by ICP-MS

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

General Chemistry

Ion Chromatography

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Sample Dilutions

The following samples 1203973201 (B3H6H0DUP), 1203973202 (B3H6H0PS), 443944001 (B3H6H0), 443944003 (B3H6J7), 443944004 (B3H5Y8) and 443944005 (B3H4B4) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443944			
	001	003	004	005
Several	100X 1X	5X 1X	10X 1X	5X 1X

Miscellaneous Information

Manual Integrations

Samples 443944002 (B3H6J6), 443944003 (B3H6J7), 443944004 (B3H5Y8) and 443944005 (B3H4B4) were manually integrated to correctly position the baseline as set in the calibration standards.

Ion Chromatography

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Holding Times

Samples (See Below) were analyzed outside of the method specified holding time due to instrument problems delaying the analysis. The analysis was performed as soon as possible by the analyst. The data is qualified.

Sample	Analyte	Value
1203973213 (B3HBY2DUP)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
1203973214 (B3HBY2PS)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944007 (B3H4C1)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944008 (B3H672)	Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944009 (B3H673)	Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944011 (B3HBY2)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18

Sample Dilutions

The following samples 1203973213 (B3HBY2DUP), 1203973214 (B3HBY2PS), 443944007 (B3H4C1), 443944008 (B3H672), 443944009 (B3H673) and 443944011 (B3HBY2) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443944			
	007	008	009	011
Chloride	20X	1X	1X	10X
Nitrate	20X	20X	20X	10X
Sulfate	20X	20X	20X	10X

Radiochemistry**I129LL_SEP_LEPS_GS: COMMON (low level)**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information**Sample Re-prep/Re-analysis**

Samples were reprepared due to high LCS recovery. The re-analysis is being reported.

9310_ALPHABETA_GPC: Gross Beta

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information**Gross Alpha/Beta Preparation Information**

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Recounts

Samples 1203974609 (B3H405DUP) and 443944018 (B3H405) were recounted due to high relative percent difference/relative error ratio. The recounts are reported.

Miscellaneous Information**Additional Comments**

The matrix spike and matrix spike duplicate, 1203974610 (B3H405MS) and 1203974611 (B3H405MSD), aliquots were reduced to conserve sample volume.

TRITIUM_DIST_LSC: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information**Additional Comments**

The matrix spike, 1203973173 (Non SDG 443932001MS), aliquot was reduced to conserve sample volume.

TC99_EIE_LSC: COMMON

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST <i>443944</i>				C.O.C.# S18-002-427
						Page 1 of 1
Collector:	Juan Aguilar /CHPRC	Contact/Requester:	Karen Waters-Husted		Telephone No.:	509-376-4650
SAF No.:	S18-002	Sampling Origin:	Hanford Site		Purchase Order/Charge Code:	300071
Project Title:	Sitewide Surv, February 2018	Logbook No.:	HNF-N-506-98140		Ice Chest No.:	N/A 2-15-18 GWS-738
Shipped To (Lab):	TestAmerica Incorporated, Rich	Method of Shipment	GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.:	N/A 2-15-18 771492104888
Protocol	SURV <i>GEL KS 2/14/18</i>	Priority:	30 Days		Offsite Property No.:	N/A 2-15-18 9067
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
B3H6H0	N	W	2-15-18	0926	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: <i>Juan Aguilar</i> Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1125 Print First and Last Name: Juan Aguilar /CHPRC	Received By: Troy Bacon Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1125 Print First and Last Name: Troy Bacon /CHPRC	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	
Relinquished By: Troy Bacon Signature: <i>[Signature]</i> Date/Time: FEB 15 2018, 400 Print First and Last Name: Troy Bacon /CHPRC	Received By: FEDEX Signature: _____ Date/Time: _____ Print First and Last Name: _____		
Relinquished By: FedEx Signature: _____ Date/Time: _____ Print First and Last Name: _____	Received By: <i>[Signature]</i> Signature: <i>[Signature]</i> Date/Time: 2/16/18 0845 Print First and Last Name: _____		
Relinquished By: _____ Signature: _____ Date/Time: _____ Print First and Last Name: _____	Received By: _____ Signature: _____ Date/Time: _____ Print First and Last Name: _____		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST <i>442944</i>				C.O.C.# S18-002-432		
						Page 1 of 1		
Collector: Juan Aguilar /CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506 <i>48/40</i>		Ice Chest No.: <i>N/A</i> <i>2-15-18</i> <i>GWS-738</i>				
Shipped To (Lab): TestAmerica Incorporated, Rich		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: <i>N/A</i> <i>2-15-18</i> <i>77149267888</i>				
Protocol: SURV <i>GEL</i> <i>CS 2/14/18</i>		Priority: 30 Days		Offsite Property No.: <i>N/A</i> <i>2-15-18</i> <i>9067</i>				
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
B3H6J6	N	W	2-15-18	0815	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

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Relinquished By: <i>Juan Aguilar</i> CHPRC <i>FEB 15 2018 1125</i> Print First and Last Name Signature Date/Time			Received By: <i>Troy Bacon</i> CHPRC <i>FEB 15 2018 1125</i> Print First and Last Name Signature Date/Time			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		
Relinquished By: <i>Troy Bacon</i> CHPRC <i>FEB 15 2018 1400</i> Print First and Last Name Signature Date/Time			Received By: FEDEX Print First and Last Name Signature Date/Time					
Relinquished By: <i>FedEx</i> Print First and Last Name Signature Date/Time			Received By: <i>C. Tomplin</i> Print First and Last Name Signature <i>2/16/18 0845</i> Date/Time					
Relinquished By: Print First and Last Name Signature Date/Time			Received By: Print First and Last Name Signature Date/Time					
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 442944	C.O.C. # S18-002-433
		Page 1 of 1

Collector: Juan Aguilar CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 - 98140	Ice Chest No.: ^{TJB} N/A ²⁻¹⁵⁻¹⁸ GWS-738
Shipped To (Lab): <u>TestAmerica Incorporated, Rich</u>	Method of Shipment: GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.: ^{TJB} N/A ²⁻¹⁵⁻¹⁸ 771492648588
Protocol: SURV ^{GEL} _{ICS 2/14/18}	Priority: 30 Days	Offsite Property No.: ^{TJB} N/A ²⁻¹⁵⁻¹⁸ 9067

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
B3H6J7	N	W	2-15-18	1042	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: <u>Juan Aguilar</u> CHPRC Signature: _____ Date/Time: FEB 15 2018 1125	Received By: <u>Troy Bacon</u> CHPRC Signature: _____ Date/Time: FEB 15 2018 1125	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
Relinquished By: <u>Troy Bacon</u> CHPRC Signature: _____ Date/Time: FEB 15 2018 1400	Received By: FEDEX Signature: _____ Date/Time: _____	
Relinquished By: <u>FedEx</u> Signature: _____ Date/Time: _____	Received By: <u>C. Tardif</u> Signature: _____ Date/Time: 2/16/18 0845	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	

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 443944	C.O.C. # S18-002-443 Page 1 of 1
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Collector: Juan Aguilar /CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 -98140	Ice Chest No.: N/A ^{FOR} GWS-738 2-15-18
Shipped To (Lab): TestAmerica Incorporated, Rich	Method of Shipment: GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.: N/A ^{TLB} 771492148585 2-15-18
Protocol: SURV ^{GEL}	Priority: 30 Days ^{KS 2/14/18}	Offsite Property No.: N/A ^{TLB} 9067 2-15-18

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
B3H5Y8	N	W	2-15-18	1007	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Juan Aguilar ^{Troy Bacon} Signature:  Date/Time: FEB 15 2018 1125	Received By: Troy Bacon /CHPRC Signature:  Date/Time: FEB 15 2018 1125	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
Relinquished By: Troy Bacon /CHPRC Signature:  Date/Time: FEB 15 2018 1400	Received By: FEDEX Signature: _____ Date/Time: _____	
Relinquished By: Fedex Signature: _____ Date/Time: _____	Received By: C. Tomlin Signature:  Date/Time: 2/16/18 0845	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By: _____ Date/Time: _____
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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443944	C.O.C.# S18-002-460 Page 1 of 1
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Collector: Malcom Chunn CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 95/96	Ice Chest No.: N/A 605-422
Shipped To (Lab): TestAmerica Incorporated, Rich	Method of Shipment: GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.: N/A 7714 96298460
Protocol: SURV GEL 2/14/18	Priority: 30 Days	Offsite Property No.: N/A 9067

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
B3H4B4	N	W	FEB 15 2018	1123	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: MR Ch Malcom Chunn CHPRC Print First and Last Name Signature Date/Time: FEB 15 2018 1240	Received By: [Signature] Chris Fulton CHPRC Print First and Last Name Signature Date/Time: FEB 15 2018 1240	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	
Relinquished By: [Signature] Chris Fulton CHPRC Print First and Last Name Signature Date/Time: FEB 15 2018 1400	Received By: FEDEX Print First and Last Name Signature Date/Time:		
Relinquished By: FedEx Print First and Last Name Signature Date/Time:	Received By: [Signature] C. Taylor Print First and Last Name Signature Date/Time: 2/14/18 0845		
Relinquished By: _____ Print First and Last Name Signature Date/Time:	Received By: _____ Print First and Last Name Signature Date/Time:		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443944				C.O.C.# S18-002-462	
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Collector: Malcom Chunn CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650			
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071			
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506 95/96		Ice Chest No.: 605-422			
Shipped To (Lab): TestAmerica Incorporated, Rich		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: 7714 96298466			
Protocol: SURV GEL KS 2/14/18		Priority: 30 Days		Offsite Property No.: N/A 9067			
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
B3H4C0	N	W	FEB 15 2018	0835	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: MR Chunn FEB 15 2018 1200 <small>Malcom Chunn CHPRC</small> Print First and Last Name Signature Date/Time			Received By: Chris Fulton FEB 15 2018 1200 <small>CHPRC</small> Print First and Last Name Signature Date/Time			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		
Relinquished By: Chris Fulton FEB 15 2018 1400 <small>CHPRC</small> Print First and Last Name Signature Date/Time			Received By: FEDEX Print First and Last Name Signature Date/Time					
Relinquished By: FedEx Print First and Last Name Signature Date/Time			Received By: C. Taylor 2/16/18 0845 Print First and Last Name Signature Date/Time					
Relinquished By: Print First and Last Name Signature Date/Time			Received By: Print First and Last Name Signature Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process):				Disposed By:		Date/Time:

3/15/2018

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST <i>443944</i>				C.O.C.# S18-002-464		
						Page 1 of 1		
Collector: Malcom Chunn CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506 <i>95/96</i>		Ice Chest No.: <i>N/A</i> <i>6WS-422</i>				
Shipped To (Lab): TestAmerica Incorporated, Rich		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: <i>N/A</i> <i>777496298460</i>				
Protocol: SURV <i>GEL</i> <i>KS 2/14/18</i>		Priority: 30 Days		Offsite Property No.: <i>N/A</i> <i>9067</i>				
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 <i>DO: 2/15/18</i>				
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H4C1	N	W	FEB 15 2018	0944	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

3/15/2018

Relinquished By: <i>MR Chunn</i> Print First and Last Name: <i>MR Chunn</i> Signature: _____ Date/Time: FEB 15 2018 1240	Received By: <i>Chris Fulton</i> Print First and Last Name: <i>Chris Fulton</i> Signature: _____ Date/Time: FEB 15 2018 1240	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
Relinquished By: <i>Chris Fulton</i> Print First and Last Name: <i>Chris Fulton</i> Signature: _____ Date/Time: FEB 15 2018 1400	Received By: FEDEX Print First and Last Name: _____ Signature: _____ Date/Time: _____	
Relinquished By: <i>FedEx</i> Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: <i>C. Carlin</i> Print First and Last Name: <i>C. Carlin</i> Signature: _____ Date/Time: 2/15/18 0845	
Relinquished By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____	
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 <i>443944</i>			C.O.C.# S18-002-472			
					Page 1 of 1			
Collector: Malcom Chunn CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506 <i>95/96</i>		Ice Chest No.: <i>605-422</i>				
Shipped To (Lab): TestAmerica Incorporated, Rich		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: <i>1714 9629 8460</i>				
Protocol: SURV <i>GEL KS 2/14/18</i>		Priority: 30 Days		Offsite Property No.: <i>N/A 9067</i>				
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 <i>REV. 2/15/18</i>					
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H672	N	W	FEB 15 2018	<i>1254</i>	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

3/15/2018

Relinquished By: <i>MCh</i> Malcom Chunn CHPRC <i>FEB 15 2018 1300</i> Print First and Last Name Signature Date/Time	Received By: Chris Fulton CHPRC <i>[Signature]</i> <i>FEB 15 2018 1300</i> Print First and Last Name Signature Date/Time	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	
Relinquished By: Chris Fulton CHPRC <i>[Signature]</i> <i>FEB 15 2018 1900</i> Print First and Last Name Signature Date/Time	Received By: FEDEX Print First and Last Name Signature Date/Time		
Relinquished By: FedEx Print First and Last Name Signature Date/Time	Received By: C. Tomplin <i>[Signature]</i> <i>2/16/18 0845</i> Print First and Last Name Signature Date/Time		
Relinquished By: Print First and Last Name Signature Date/Time	Received By: Print First and Last Name Signature Date/Time		
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 <i>443944</i>			C.O.C.# S18-002-475			
					Page 1 of 1			
Collector: Malcom Chunn CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506 <i>95/96</i>		Ice Chest No.: <i>N/A</i>				
Shipped To (Lab): TestAmerica Incorporated, Rich		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: <i>N/A 771496298460</i>				
Protocol: SURV <i>GEL</i>		Priority: 30 Days		Offsite Property No.: <i>N/A 90607</i>				
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
B3H673	N	W	FEB 15 2018	1254	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

3/15/2018

Relinquished By: <i>[Signature]</i> Print First and Last Name: Malcom Chunn Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1300	Received By: Chris Fulton Print First and Last Name: <i>[Signature]</i> Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1300	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			
Relinquished By: Chris Fulton Print First and Last Name: <i>[Signature]</i> Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1400	Received By: FEDEX Print First and Last Name: <i>[Signature]</i> Signature: <i>[Signature]</i> Date/Time:				
Relinquished By: Fedex Print First and Last Name: <i>[Signature]</i> Signature: <i>[Signature]</i> Date/Time:	Received By: C-Tarplin Print First and Last Name: <i>[Signature]</i> Signature: <i>[Signature]</i> Date/Time: 2/16/18 0845				
Relinquished By: Print First and Last Name: <i>[Signature]</i> Signature: <i>[Signature]</i> Date/Time:	Received By: Print First and Last Name: <i>[Signature]</i> Signature: <i>[Signature]</i> Date/Time:				
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 443944				C.O.C. # S18-002-564		
						Page 1 of 1		
Collector: Juan Aguilar /CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506 - 98/40		Ice Chest No.: ^{FEB} N/A ²⁻¹⁵⁻¹⁸ GWS-738				
Shipped To (Lab): TestAmerica Incorporated, Rich		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: ^{FEB} N/A ²⁻¹⁵⁻¹⁸ 771492198586				
Protocol: SURV		Priority: 30 Days		Offsite Property No.: ^{FEB} N/A ²⁻¹⁵⁻¹⁸ 9067				
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
B3H6V1	N	W	2-15-18	0830	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

3/15/2018

Relinquished By: Juan Aguilar /CHPRC <i>[Signature]</i> FEB 15 2018 1125 Print First and Last Name Signature Date/Time	Received By: Troy Bacon CHPRC <i>Troy L. Bacon</i> FEB 15 2018 1125 Print First and Last Name Signature Date/Time	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		
Relinquished By: Troy Bacon CHPRC <i>Troy L. Bacon</i> FEB 15 2018 1400 Print First and Last Name Signature Date/Time	Received By: FEDEX Print First and Last Name Signature Date/Time			
Relinquished By: FedEx Print First and Last Name Signature Date/Time	Received By: C. Tarpin <i>C. Tarpin</i> 2/16/18 0845 Print First and Last Name Signature Date/Time			
Relinquished By: Print First and Last Name Signature Date/Time	Received By: Print First and Last Name Signature Date/Time			
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 4439144			C.O.C.# S18-002-656																	
Collector: <u>Juan Aguilar</u> /CHPRC		Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650																			
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071																				
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506-98140	Ice Chest No.: N/A ^{TJB} 2-15-18 GWS-738																				
Shipped To (Lab): <u>TestAmerica Incorporated, Rich</u>	Method of Shipment: GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.: N/A ^{TJB} 2-15-18 771492698385																				
Protocol: SURV	Priority: 30 Days	Offsite Property No.: N/A ^{TJB} 2-15-18 9067																				
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																				
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Sample No.</th> <th>Filter</th> <th>*</th> <th>Date</th> <th>Time</th> <th>No/Type Container</th> <th>Sample Analysis</th> <th>Holding Time</th> <th>Preservative</th> </tr> </thead> <tbody> <tr> <td>B3HBY2</td> <td>N</td> <td>W</td> <td>2-15-18</td> <td>1007</td> <td>1x125-mL P</td> <td>300.0_ANIONS_IC: COMMON</td> <td>48 Hours</td> <td>Cool <=6C</td> </tr> </tbody> </table>		Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative	B3HBY2	N	W	2-15-18	1007	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C			
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative														
B3HBY2	N	W	2-15-18	1007	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C														

3/15/2018

Relinquished By: <u>Juan Aguilar</u> /CHPRC Signature: _____ Date/Time: FEB 15 2018 1125	Received By: <u>Troy Bacon</u> CHPRC Signature: _____ Date/Time: FEB 15 2018 1125	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
Relinquished By: <u>Troy Bacon</u> CHPRC Signature: _____ Date/Time: FEB 15 2018 1400	Received By: <u>FEDEX</u> Signature: _____ Date/Time: _____	
Relinquished By: <u>FEDEX</u> Signature: _____ Date/Time: _____	Received By: <u>C. T. ...</u> Signature: _____ Date/Time: 2/16/18 0845	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	
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 443944	C.O.C. # S18-002-233
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Collector: Malcom Chunn CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 95/96	Ice Chest No.: 6WS-738
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 77149269885
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9067

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
B3H4B6	Y	W	FEB 15 2018	1123	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3H4B3	N	W			1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3H4B3	N	W			5x40-mL aGs*	8260_VOA_GCMS_IX: COMMON REV 1	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C

Relinquished By: MRC Malcom Chunn Print First and Last Name Signature FEB 15 2018 1240 Date/Time	Received By: [Signature] Chris Fulton CHPRC Print First and Last Name Signature FEB 15 2018 1240 Date/Time	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
Relinquished By: [Signature] Chris Fulton CHPRC Print First and Last Name Signature FEB 15 2018 1400 Date/Time	Received By: FEDEX Print First and Last Name Signature Date/Time	
Relinquished By: FedEx Print First and Last Name Signature Date/Time	Received By: [Signature] C. Tolpin Print First and Last Name Signature 2/14/18 0845 Date/Time	
Relinquished By: _____ Print First and Last Name Signature Date/Time	Received By: _____ Print First and Last Name Signature Date/Time	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By: _____ Date/Time: _____

CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443944	C.O.C.# S18-002-234
Page 1 of 1		

Collector: Malcom Chunn CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 95/96	Ice Chest No.: 605-738
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7714 9621 8586
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9067

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
B3H4B8	N	W	FEB 15 2018	0835	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3H4B8	N	W			5x40-mL aGs*	8260_VOA_GCMS_IX: COMMON REV 1	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3H5L7	Y	W			1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

3/15/2018

Relinquished By: M.R. Chunn Print First and Last Name: M.R. Chunn Signature: [Signature] Date/Time: FEB 15 2018 1240	Received By: Chris Fulton CHPRC Print First and Last Name: Chris Fulton Signature: [Signature] Date/Time: FEB 15 2018 1240	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	
Relinquished By: Chris Fulton CHPRC Print First and Last Name: Chris Fulton Signature: [Signature] Date/Time: FEB 15 2018 1400	Received By: FEDEX Print First and Last Name: FEDEX Signature: [Signature] Date/Time:		
Relinquished By: FedEx Print First and Last Name: FedEx Signature: [Signature] Date/Time:	Received By: C. Stimpin Print First and Last Name: C. Stimpin Signature: [Signature] Date/Time: 2/16/18 0845		
Relinquished By: Print First and Last Name: Signature: Date/Time:	Received By: Print First and Last Name: Signature: Date/Time:		
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: Malcom Chunn CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 95/96	Ice Chest No.: 605-422
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7714 96298460
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9067

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
B3H652	Y	W	FEB 15 2018	0944	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3H4B9	N	W			1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3H4B9	N	W			5x40-mL aGs*	8260_VOA_GCMS_IX: COMMON REV 1	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C

3/15/2018

Relinquished By: MC Malcom Chunn Print First and Last Name Signature FEB 15 2018 1240 Date/Time	Received By: CF Chris Fulton CHPRC Print First and Last Name Signature FEB 15 2018 1240 Date/Time	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		
Relinquished By: CF Chris Fulton CHPRC Print First and Last Name Signature FEB 15 2018 Date/Time	Received By: FEDEX Print First and Last Name Signature Date/Time			
Relinquished By: FEDEX Print First and Last Name Signature Date/Time	Received By: CT C. Taylor Print First and Last Name Signature 2/16/18 Date/Time			
Relinquished By: Print First and Last Name Signature Date/Time	Received By: Print First and Last Name Signature Date/Time			
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 413944				C.O.C. # S18-002-182		
						Page 1 of 1		
Collector: MIKE ESPARZA CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506-97-61		Ice Chest No.: 6005-422				
Shipped To (Lab): GEL Laboratories, LLC		Method of Shipment: Commercial Carrier		Bill of Lading/Air Bill No.: 771496398460				
Protocol: SURV		Priority: 30 Days		Offsite Property No.: 9067				
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
B3H405	N		FEB 15 2018	1145	1x1-L P	9310_ALPHABETA_GPC: Gross Beta	6 Months	HNO3 to pH <2

3/15/2018

Relinquished By: MIKE ESPARZA <i>Mike Esparza</i> Print First and Last Name Signature	Received By: SSU-1 FEDEX <i>[Signature]</i> Print First and Last Name Signature	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
Relinquished By: FedEx Print First and Last Name Signature	Received By: C. Taplin <i>[Signature]</i> Print First and Last Name Signature	
Relinquished By: Print First and Last Name Signature	Received By: Print First and Last Name Signature	
Relinquished By: Print First and Last Name Signature	Received By: Print First and Last Name Signature	
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 443944	C.O.C. # S18-002-187 Page 1 of 1
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Collector: MIKE ESPARZA <small>CHPRC</small>	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 - 97-C1	Ice Chest No.: 6605-422
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771496298460
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9067

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
B3H442	N		FEB 15 2018	1318	1x250-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

Relinquished By: MIKE ESPARZA <small>Print First and Last Name</small>	Received By: SSU-1 FEDEX <small>Print First and Last Name</small>	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
Signature: <i>[Signature]</i> <small>Signature</small>	Signature: <i>[Signature]</i> <small>Signature</small>	
Date/Time: FEB 15 2018 <small>Date/Time</small>	Date/Time: 2/16/18 0845 <small>Date/Time</small>	
Date/Time: 1345 <small>Date/Time</small>	Date/Time: 1345 <small>Date/Time</small>	
Relinquished By: FedEx <small>Print First and Last Name</small>	Received By: C. Tarplin <small>Print First and Last Name</small>	
Signature: <i>[Signature]</i> <small>Signature</small>	Signature: <i>[Signature]</i> <small>Signature</small>	
Date/Time: <small>Date/Time</small>	Date/Time: <small>Date/Time</small>	
Relinquished By: <small>Print First and Last Name</small>	Received By: <small>Print First and Last Name</small>	
Signature: <small>Signature</small>	Signature: <small>Signature</small>	
Date/Time: <small>Date/Time</small>	Date/Time: <small>Date/Time</small>	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:
		Date/Time:

3/15/2018

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CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443944	C.O.C. # S18-002-222
Page 1 of 1		
Collector: Juan Aguilar <small>CHPRC</small>	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506-98140	Ice Chest No.: GWS-675
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771494665170
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9062

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
B3H6F9	N	W	2-15-18	0926	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H6F9	N	W	2-15-18	0926	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

Relinquished By: <u>Juan Aguilar</u> <small>CHPRC</small> Signature: _____ Date/Time: FEB 15 2018 1125	Received By: <u>Troy Bacon</u> <small>CHPRC</small> Signature: _____ Date/Time: FEB 15 2018 1125	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
Relinquished By: <u>Troy Bacon</u> <small>CHPRC</small> Signature: _____ Date/Time: FEB 15 2018 1100	Received By: <u>FEDEX</u> Signature: _____ Date/Time: _____	
Relinquished By: <u>FEDEX</u> Signature: _____ Date/Time: _____	Received By: <u>C. Amplin</u> Signature: _____ Date/Time: 2/16/18 0845	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____ Date/Time: _____

3/15/2018

REV.0

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443944				C.O.C.# S18-002-225		
						Page 1 of 1		
Collector: Juan Aguilar /CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506-98/40		Ice Chest No.: GWS-738				
Shipped To (Lab): GEL Laboratories, LLC		Method of Shipment Commercial Carrier		Bill of Lading/Air Bill No.: 77492198585				
Protocol SURV		Priority: 30 Days		Offsite Property No.: 9067				
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
B3H6J4	N	W	2-15-18	0815	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H6J4	N	W	2-15-18	0815	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

3/15/2018

Relinquished By: Juan Aguilar CHPRC Signature:	FEB 15 2018 Date/Time: 1125	Received By: Troy Bacon CHPRC Signature:	FEB 15 2018 Date/Time: 1125	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	
Relinquished By: Troy Bacon CHPRC Signature:	FEB 15 2018 Date/Time: 1405	Received By: FEDEX Signature: _____	Date/Time: _____		
Relinquished By: FEDEX Signature: _____	Date/Time: _____	Received By: C. Tanpin Signature:	2/16/18 Date/Time: 0845		
Relinquished By: _____ Signature: _____	Date/Time: _____	Received By: _____ Signature: _____	Date/Time: _____		
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____	Date/Time: _____

3/10/18

REV.0

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443944			C.O.C.# S18-002-226			
					Page 1 of 1			
Collector: Juan Aguilar ICPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506-98140		Ice Chest No.: GWS-675				
Shipped To (Lab): GEL Laboratories, LLC		Method of Shipment: Commercial Carrier		Bill of Lading/Air Bill No.: 771494105170				
Protocol: SURV		Priority: 30 Days		Offsite Property No.: 9062				
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
B3H6J5	N	W	2-15-18	1042	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H6J5	N	W	2-15-18	1042	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

3/15/2018

Relinquished By: Print First and Last Name: Juan Aguilar Signature: ICPRC Date/Time: FEB 15 2018 1125	Received By: Troy Bacon Print First and Last Name: Troy L. Bacon Signature: ICPRC Date/Time: FEB 15 2018 1125	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	
Relinquished By: CHPRC Print First and Last Name: Troy L. Bacon Signature: Troy L. Bacon Date/Time: FEB 15 2018 1420	Received By: FEDEX Print First and Last Name: FEDEX Signature: FEDEX Date/Time:		
Relinquished By: FedEx Print First and Last Name: FedEx Signature: FedEx Date/Time:	Received By: C. Carlin Print First and Last Name: C. Carlin Signature: C. Carlin Date/Time: 2/14/18 0845		
Relinquished By: Print First and Last Name: Signature: Date/Time:	Received By: Print First and Last Name: Signature: Date/Time:		
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

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REV.0

CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 4439144	C.O.C.# S18-002-230
		Page 1 of 1

Collector: Juan Aguilar CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 -98140	Ice Chest No.: GWS-675
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771494165170
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9062

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
B3H5Y7	N	W	2-15-18	1007	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H5Y7	N	W	2-15-18	1007	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

3/15/2018

Relinquished By: Print First and Last Name: Juan Aguilar Signature: Date/Time: FEB 15 2018 1125	Received By: Troy Bacon CHPRC Print First and Last Name: Troy L. Bacon Signature: Date/Time: FEB 15 2018 1125	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	
Relinquished By: CHPRC Print First and Last Name: Troy L. Bacon Signature: Date/Time: FEB 15 2018 1400	Received By: FEDEX Print First and Last Name: FEDEX Signature: Date/Time:		
Relinquished By: FedEx Print First and Last Name: FedEx Signature: Date/Time:	Received By: C. Tomlin Print First and Last Name: C. Tomlin Signature: Date/Time: 2/16/18 0845		
Relinquished By: Print First and Last Name: Signature: Date/Time:	Received By: Print First and Last Name: Signature: Date/Time:		
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

330149

REV.0

CH2MHill Plateau
Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.#
S18-002-565

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443944

Collector: Juan Aguilar #CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 - 98140	Ice Chest No.: GWS-675
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7749466517
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9062

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
B3H6V2	N	W	2-15-18	1007	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H6V2	N	W	2-15-18	1007	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

Relinquished By: Juan Aguilar #CHPRC Signature: [Signature] Date/Time: FEB 15 2018 1125	Received By: Troy Bacon #CHPRC Signature: Troy L. Bacon Date/Time: FEB 15 2018 1125	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	
Relinquished By: CHPRC Troy L. Bacon Signature: Troy L. Bacon Date/Time: FEB 15 2018 1100	Received By: FEDEX Signature: [Signature] Date/Time: [Signature]		
Relinquished By: FedEx Signature: [Signature] Date/Time: [Signature]	Received By: C. Tardin Signature: [Signature] Date/Time: 2/16/18 0845		
Relinquished By: [Signature] Date/Time: [Signature]	Received By: [Signature] Date/Time: [Signature]		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

340149

3/15/2018

REV.0

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443944		C.O.C.# S18-002-624
				Page 1 of 1
Collector: Juan Aguilar CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650		
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071		
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506-98140	Ice Chest No.: BWS-738		
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771492698585		
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9067		

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
B3H873	N	W	2-15-18	0830	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H873	N	W	2-15-18	0830	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

Relinquished By: Juan Aguilar CHPRC <small>Print First and Last Name Signature Date/Time</small>	Received By: Troy L. Bacon CHPRC <small>Print First and Last Name Signature Date/Time</small>	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
Relinquished By: Troy L. Bacon CHPRC <small>Print First and Last Name Signature Date/Time</small>	Received By: FEDEX <small>Print First and Last Name Signature Date/Time</small>	
Relinquished By: FedEx <small>Print First and Last Name Signature Date/Time</small>	Received By: <small>Print First and Last Name Signature Date/Time</small>	
Relinquished By: <small>Print First and Last Name Signature Date/Time</small>	Received By: <small>Print First and Last Name Signature Date/Time</small>	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By: _____ Date/Time: _____

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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443944				C.O.C.# S18-002-677		
						Page 1 of 1		
Collector: Malcom Chunn CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506 95/96		Ice Chest No.: 605-422				
Shipped To (Lab): GEL Laboratories, LLC		Method of Shipment: Commercial Carrier		Bill of Lading/Air Bill No.: 771496298460				
Protocol: SURV		Priority: 30 Days		Offsite Property No.: 91067				
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
B3HCK6	N	W	FEB 15 2018	1123	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None

3/15/2018

Relinquished By: MR CL Print First and Last Name: _____ Signature: _____ Date/Time: FEB 15 2018 1240	Received By: Chris Fulton Print First and Last Name: _____ Signature: [Signature] Date/Time: FEB 15 2018 1240	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WL = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Chris Fulton Print First and Last Name: _____ Signature: [Signature] Date/Time: FEB 15 2018 1450	Received By: FEDEX Print First and Last Name: _____ Signature: _____ Date/Time: _____	
Relinquished By: FedEx Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: [Signature] Print First and Last Name: _____ Signature: _____ Date/Time: 2/16/18 0845	
Relinquished By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____ Date/Time: _____

3/15/2018

REV.0

CH2MHill Plateau Remediation Company		811bs 443944		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C.# S18-002-678	
						Page 1 of 1	
Collector: Malcom Chunn CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650			
SAF No.: S18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071			
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506 95/96		Ice Chest No.: 6W5-738			
Shipped To (Lab): GEL Laboratories, LLC		Method of Shipment: Commercial Carrier		Bill of Lading/Air Bill No.: 771496298585			
Protocol: SURV		Priority: 30 Days		Offsite Property No.: 9067			

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
B3HCK7	N	W	FEB 15 2018	0944	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3HCK7	N	W			1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2
B3HCK7	N	W			1x250-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

3/15/2018

Relinquished By: Malcom Chunn Print First and Last Name: <u>Malcom Chunn</u> Signature: <u>[Signature]</u> Date/Time: <u>FEB 15 2018 1240</u>		Received By: Chris Fulton Print First and Last Name: <u>Chris Fulton</u> Signature: <u>[Signature]</u> Date/Time: <u>FEB 15 2018 1240</u>		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			
Relinquished By: Chris Fulton Print First and Last Name: <u>Chris Fulton</u> Signature: <u>[Signature]</u> Date/Time: <u>FEB 15 2018 1400</u>		Received By: FEDEX Print First and Last Name: <u>FEDEX</u> Signature: _____ Date/Time: _____					
Relinquished By: FedEx Print First and Last Name: <u>FedEx</u> Signature: _____ Date/Time: _____		Received By: C. Tomlin Print First and Last Name: <u>C. Tomlin</u> Signature: <u>[Signature]</u> Date/Time: <u>2/16/18 0845</u>					
Relinquished By: Print First and Last Name: _____ Signature: _____ Date/Time: _____		Received By: Print First and Last Name: _____ Signature: _____ Date/Time: _____					
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:		Date/Time:	

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REV.0

91105

CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443944	C.O.C.# S18-002-679 Page 1 of 1
Collector: Malcom Chunn CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 95/96	Ice Chest No.: 6WS-422
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771496298460
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9067

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
B3HCK8	N	W	FEB 15 2018	0835	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3HCK8	N	W	/	/	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2
B3HCK8	N	W	/	/	1x250-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

3/15/2018

Relinquished By: Mr Chunn Print First and Last Name: Mr Chunn Signature: [Signature] Date/Time: FEB 15 2018 1240	Received By: Chris Fulton Print First and Last Name: [Signature] Signature: [Signature] Date/Time: FEB 15 2018 1240	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	
Relinquished By: Chris Fulton Print First and Last Name: [Signature] Signature: [Signature] Date/Time: FEB 15 2018 1240	Received By: FEDEX Print First and Last Name: [Signature] Signature: [Signature] Date/Time:		
Relinquished By: FedEx Print First and Last Name: [Signature] Signature: [Signature] Date/Time:	Received By: C. Tamplin Print First and Last Name: [Signature] Signature: [Signature] Date/Time: 2/16/18 0845		
Relinquished By: Print First and Last Name: [Signature] Signature: [Signature] Date/Time:	Received By: Print First and Last Name: [Signature] Signature: [Signature] Date/Time:		
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

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REV.0

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol-condensation product	Organics	Semi-Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (Organics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The analyte was detected in the associated method blank \geq MDC or $>5\%$ sample activity.	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $> 5\%$ of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $> 5\%$ of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy--Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 15 March 2018

State	Certification
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122017-25
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Volatile Analysis

Case Narrative

**GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443944
Work Order #: 443944**

Product: Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

Analytical Method: SW846 8260C

Analytical Procedure: GL-OA-E-038 REV# 26

Analytical Batch: 1739833

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443944013	B3H4B3
443944014	B3H4B8
443944017	B3H4B9
1203973334	Method Blank (MB)
1203973335	Laboratory Control Sample (LCS)
1203973336	443833001(NonSDG) Post Spike (PS)
1203973337	443833001(NonSDG) Post Spike Duplicate (PSD)
1203974615	Method Blank (MB)
1203974616	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

Continuing Calibration Verification Requirements

The calibration verification standard requirements were not all met for samples 443944013 (B3H4B3), 443944014 (B3H4B8) and 443944017 (B3H4B9). Dichlorodifluoromethane recovered at 21.9%D and Trichlorofluoromethane recovered at 20.9%D in the daily CCV analyzed on 2/19/18. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

Quality Control (QC) Information

Matrix Spike/Matrix Spike Duplicate Recovery Statement

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits.

Sample	Analyte	Value
1203973337 (Non SDG 443833001PSD)	2-Butanone	64* (70%-130%)

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
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1203973336 (Non SDG 443833001PS)	Acetone	53* (70%-130%)
1203973337 (Non SDG 443833001PSD)	Acetone	49* (70%-130%)

Technical Information

Sample Dilutions/Methanol Dilutions

Samples 443944013 (B3H4B3) and 443944017 (B3H4B9) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443944	
	013	017
Carbon tetrachloride	4X	2X

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443944 GEL Work Order: 443944

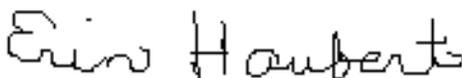
The Qualifiers in this report are defined as follows:

- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Erin Haubert

Date: 14 MAR 2018

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

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SDG Number: GEL443944	Date Collected: 02/15/2018 11:23	Matrix: WATER
Lab Sample ID: 443944013	Date Received: 02/16/2018 08:45	
Client ID: B3H4B3	Client: CPRC001	Project: CPRC0S18002
Batch ID: 1739833	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 02/16/2018 17:02	Inst: VOA3.I	Dilution: 1
Prep Date: 02/16/2018 17:02	Analyst: JP1	Purge Vol: 5 mL
Data File: 021618V3\3V515.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
79-01-6	Trichloroethylene		2.42	ug/L	0.300	2.00	1.00
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	1.7
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00	4.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	4.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	3.11	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0

Volatile
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Sample Summary

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SDG Number: GEL443944	Date Collected: 02/15/2018 11:23	Matrix: WATER
Lab Sample ID: 443944013	Date Received: 02/16/2018 08:45	
Client ID: B3H4B3	Client: CPRC001	Project: CPRC0S18002
Batch ID: 1739833	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 02/16/2018 17:02	Inst: VOA3.I	Dilution: 1
Prep Date: 02/16/2018 17:02	Analyst: JP1	Purge Vol: 5 mL
Data File: 021618V3\3V515.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
591-78-6	2-Hexanone	U	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: GEL443944	Date Collected: 02/15/2018 11:23	Matrix: WATER
Lab Sample ID: 443944013	Date Received: 02/16/2018 08:45	
Client ID: B3H4B3DL	Client: CPRC001	Project: CPRC0S18002
Batch ID: 1739833	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 02/20/2018 14:36	Inst: VOA3.I	Dilution: 4
Prep Date: 02/20/2018 14:36	Analyst: JP1	Purge Vol: 5 mL
Data File: 022018V3\3W211.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride	D	238	ug/L	1.20	8.00	3.00

Volatile
Certificate of Analysis
Sample Summary

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SDG Number: GEL443944
Lab Sample ID: 443944014

Client ID: B3H4B8
Batch ID: 1739833
Run Date: 02/16/2018 17:33
Prep Date: 02/16/2018 17:33
Data File: 021618V3\3V516.D

Date Collected: 02/15/2018 08:35
Date Received: 02/16/2018 08:45
Client: CPRC001
Method: SW846 8260C
Inst: VOA3.I
Analyst: JP1

Column: DB-624

Matrix: WATER

Project: CPRC0S18002
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	1.00
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	1.7
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	3.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00	4.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	4.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	J	3.32	ug/L	1.60	5.00	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0

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Sample Summary

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SDG Number: GEL443944
Lab Sample ID: 443944014

Client ID: B3H4B8
Batch ID: 1739833
Run Date: 02/16/2018 17:33
Prep Date: 02/16/2018 17:33
Data File: 021618V3\3V516.D

Date Collected: 02/15/2018 08:35
Date Received: 02/16/2018 08:45
Client: CPCR001
Method: SW846 8260C
Inst: VOA3.I
Analyst: JP1

Column: DB-624

Matrix: WATER

Project: CPCR0S18002
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
591-78-6	2-Hexanone	U	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500

Volatile
Certificate of Analysis
Sample Summary

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SDG Number: GEL443944
Lab Sample ID: 443944017

Client ID: B3H4B9
Batch ID: 1739833
Run Date: 02/16/2018 18:05
Prep Date: 02/16/2018 18:05
Data File: 021618V3\3V517.D

Date Collected: 02/15/2018 09:44
Date Received: 02/16/2018 08:45
Client: CPCR001
Method: SW846 8260C
Inst: VOA3.I
Analyst: JP1

Column: DB-624

Matrix: WATER

Project: CPCR0S18002
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
79-01-6	Trichloroethylene	J	1.37	ug/L	0.300	2.00	1.00
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	1.7
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00	4.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	4.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	2.77	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0

Volatile
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Sample Summary

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SDG Number: GEL443944	Date Collected: 02/15/2018 09:44	Matrix: WATER
Lab Sample ID: 443944017	Date Received: 02/16/2018 08:45	
Client ID: B3H4B9	Client: CPRC001	Project: CPRC0S18002
Batch ID: 1739833	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 02/16/2018 18:05	Inst: VOA3.I	Dilution: 1
Prep Date: 02/16/2018 18:05	Analyst: JP1	Purge Vol: 5 mL
Data File: 021618V3\3V517.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
591-78-6	2-Hexanone	U	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: GEL443944	Date Collected: 02/15/2018 09:44	Matrix: WATER
Lab Sample ID: 443944017	Date Received: 02/16/2018 08:45	
Client ID: B3H4B9DL	Client: CPRC001	Project: CPRC0S18002
Batch ID: 1739833	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 02/20/2018 15:07	Inst: VOA3.I	Dilution: 2
Prep Date: 02/20/2018 15:07	Analyst: JP1	Purge Vol: 5 mL
Data File: 022018V3\3W212.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride	D	141	ug/L	0.600	4.00	3.00

Quality Control Summary

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QC Summary

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
QC1203973335	LCS										
1,1,1,2-Tetrachloroethane	50.0			44.2	ug/L		88	(70%-130%)	JP1	02/16/18	10:43
1,1,1-Trichloroethane	50.0			50.7	ug/L		101	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0			41.8	ug/L		84	(70%-130%)			
1,1,2-Trichloroethane	50.0			42.5	ug/L		85	(70%-130%)			
1,1-Dichloroethane	50.0			47.0	ug/L		94	(70%-130%)			
1,1-Dichloroethylene	50.0			49.2	ug/L		98	(70%-130%)			
1,2,3-Trichloropropane	50.0			42.9	ug/L		86	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0			40.7	ug/L		81	(70%-130%)			
1,2-Dibromoethane	50.0			43.8	ug/L		88	(70%-130%)			
1,2-Dichloroethane	50.0			50.3	ug/L		101	(70%-130%)			
1,2-Dichloropropane	50.0			46.7	ug/L		93	(70%-130%)			
1,4-Dichlorobenzene	50.0			41.1	ug/L		82	(70%-130%)			
2-Butanone	250			249	ug/L		99	(70%-130%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
2-Hexanone	250			226	ug/L		90	(70%-130%)	JP1	02/16/18	10:43
4-Methyl-2-pentanone	250			203	ug/L		81	(70%-130%)			
Acetone	250			246	ug/L		99	(70%-130%)			
Acetonitrile	1250			1110	ug/L		89	(70%-130%)			
Benzene	50.0			45.3	ug/L		91	(70%-130%)			
Bromodichloromethane	50.0			48.5	ug/L		97	(70%-130%)			
Bromoform	50.0			42.2	ug/L		84	(70%-130%)			
Bromomethane	50.0			41.1	ug/L		82	(70%-130%)			
Carbon disulfide	250			225	ug/L		90	(70%-130%)			
Carbon tetrachloride	50.0			49.7	ug/L		99	(70%-130%)			
Chlorobenzene	50.0			41.5	ug/L		83	(70%-130%)			
Chloroethane	50.0			45.4	ug/L		91	(70%-130%)			
Chloroform	50.0			48.5	ug/L		97	(70%-130%)			
Chloromethane	50.0			47.0	ug/L		94	(70%-130%)			
Dibromochloromethane	50.0			43.8	ug/L		88	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
Dibromomethane	50.0			46.5	ug/L		93	(70%-130%)	JP1	02/16/18	10:43
Dichlorodifluoromethane	50.0			47.0	ug/L		94	(70%-130%)			
Ethylbenzene	50.0			43.6	ug/L		87	(70%-130%)			
Iodomethane	250			225	ug/L		90	(70%-130%)			
Methylene chloride	50.0			46.5	ug/L		93	(70%-130%)			
Styrene	50.0			44.1	ug/L		88	(70%-130%)			
Tetrachloroethylene	50.0			40.8	ug/L		82	(70%-130%)			
Toluene	50.0			41.0	ug/L		82	(70%-130%)			
Trichloroethylene	50.0			48.3	ug/L		97	(70%-130%)			
Trichlorofluoromethane	50.0			50.6	ug/L		101	(70%-130%)			
Vinyl acetate	250			224	ug/L		90	(70%-130%)			
Vinyl chloride	50.0			47.4	ug/L		95	(70%-130%)			
Xylenes (total)	150			124	ug/L		83	(70%-130%)			
cis-1,2-Dichloroethylene	50.0			47.7	ug/L		95	(70%-130%)			
cis-1,3-Dichloropropylene	50.0			48.7	ug/L		97	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
trans-1,2-Dichloroethylene	50.0			49.0	ug/L		98	(70%-130%)	JP1	02/16/18	10:43
trans-1,3-Dichloropropylene	50.0			46.8	ug/L		94	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			52.3	ug/L		105	(70%-130%)			
**Bromofluorobenzene	50.0			51.1	ug/L		102	(70%-130%)			
**Toluene-d8	50.0			46.8	ug/L		94	(70%-130%)			
QC1203974616 LCS											
1,1,1,2-Tetrachloroethane	50.0			53.7	ug/L		107	(70%-130%)		02/20/18	10:23
1,1,1-Trichloroethane	50.0			60.1	ug/L		120	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0			50.8	ug/L		102	(70%-130%)			
1,1,2-Trichloroethane	50.0			51.5	ug/L		103	(70%-130%)			
1,1-Dichloroethane	50.0			54.5	ug/L		109	(70%-130%)			
1,1-Dichloroethylene	50.0			59.0	ug/L		118	(70%-130%)			
1,2,3-Trichloropropane	50.0			52.8	ug/L		106	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0			54.8	ug/L		110	(70%-130%)			
1,2-Dibromoethane	50.0			54.8	ug/L		110	(70%-130%)			
1,2-Dichloroethane	50.0			60.0	ug/L		120	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
1,2-Dichloropropane	50.0			54.2	ug/L		108	(70%-130%)	JP1	02/20/18	10:23
1,4-Dichlorobenzene	50.0			48.8	ug/L		98	(70%-130%)			
2-Butanone	250			295	ug/L		118	(70%-130%)			
2-Hexanone	250			273	ug/L		109	(70%-130%)			
4-Methyl-2-pentanone	250			255	ug/L		102	(70%-130%)			
Acetone	250			285	ug/L		114	(70%-130%)			
Acetonitrile	1250			1310	ug/L		105	(70%-130%)			
Benzene	50.0			52.6	ug/L		105	(70%-130%)			
Bromodichloromethane	50.0			57.8	ug/L		116	(70%-130%)			
Bromoform	50.0			53.0	ug/L		106	(70%-130%)			
Bromomethane	50.0			49.4	ug/L		99	(70%-130%)			
Carbon disulfide	250			270	ug/L		108	(70%-130%)			
Carbon tetrachloride	50.0			59.9	ug/L		120	(70%-130%)			
Chlorobenzene	50.0			50.0	ug/L		100	(70%-130%)			
Chloroethane	50.0			53.5	ug/L		107	(70%-130%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
Chloroform	50.0			56.8	ug/L		114	(70%-130%)	JP1	02/20/18	10:23
Chloromethane	50.0			55.9	ug/L		112	(70%-130%)			
Dibromochloromethane	50.0			55.2	ug/L		110	(70%-130%)			
Dibromomethane	50.0			55.5	ug/L		111	(70%-130%)			
Dichlorodifluoromethane	50.0			60.0	ug/L		120	(70%-130%)			
Ethylbenzene	50.0			52.1	ug/L		104	(70%-130%)			
Iodomethane	250			265	ug/L		106	(70%-130%)			
Methylene chloride	50.0			51.4	ug/L		103	(70%-130%)			
Styrene	50.0			53.4	ug/L		107	(70%-130%)			
Tetrachloroethylene	50.0			51.1	ug/L		102	(70%-130%)			
Toluene	50.0			50.3	ug/L		101	(70%-130%)			
Trichloroethylene	50.0			57.8	ug/L		116	(70%-130%)			
Trichlorofluoromethane	50.0			59.7	ug/L		119	(70%-130%)			
Vinyl acetate	250			268	ug/L		107	(70%-130%)			
Vinyl chloride	50.0			55.7	ug/L		111	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
cis-1,2-Dichloroethylene	50.0			54.5	ug/L		109	(70%-130%)	JP1	02/20/18	10:23
cis-1,3-Dichloropropylene	50.0			55.7	ug/L		111	(70%-130%)			
trans-1,2-Dichloroethylene	50.0			59.2	ug/L		118	(70%-130%)			
trans-1,3-Dichloropropylene	50.0			55.9	ug/L		112	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			51.7	ug/L		103	(70%-130%)			
**Bromofluorobenzene	50.0			51.0	ug/L		102	(70%-130%)			
**Toluene-d8	50.0			44.8	ug/L		90	(70%-130%)			
QC1203973334 MB											
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					02/16/18	12:17
1,1,1-Trichloroethane			U	0.300	ug/L						
1,1,2,2-Tetrachloroethane			U	0.300	ug/L						
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2,3-Trichloropropane			U	0.300	ug/L						
1,2-Dibromo-3-chloropropane			U	0.500	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
1,2-Dibromoethane			U	0.300	ug/L				JP1	02/16/18	12:17
1,2-Dichloroethane			U	0.300	ug/L						
1,2-Dichloropropane			U	0.300	ug/L						
1,4-Dichlorobenzene			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
2-Chloro-1,3-butadiene			U	0.300	ug/L						
2-Hexanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Acetonitrile			U	16.7	ug/L						
Acrolein			U	3.00	ug/L						
Acrylonitrile			U	3.00	ug/L						
Allyl chloride			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Bromodichloromethane			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
Bromoform			U	0.300	ug/L				JP1	02/16/18	12:17
Bromomethane			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroethane			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Chloromethane			U	0.300	ug/L						
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L						
Dichlorodifluoromethane			U	0.300	ug/L						
Ethyl methacrylate			U	3.00	ug/L						
Ethylbenzene			U	0.300	ug/L						
Iodomethane			U	3.00	ug/L						
Isobutyl alcohol			U	33.0	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
Methacrylonitrile			U	3.00	ug/L				JP1	02/16/18	12:17
Methyl methacrylate			U	3.00	ug/L						
Methylene chloride			U	1.60	ug/L						
Propionitrile			U	3.00	ug/L						
Styrene			U	0.300	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Trichlorofluoromethane			U	0.300	ug/L						
Vinyl acetate			U	1.60	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
cis-1,2-Dichloroethylene			U	0.300	ug/L						
cis-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,2-Dichloroethylene			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
trans-1,3-Dichloropropylene			U	0.300	ug/L				JP1	02/16/18	12:17
trans-1,4-Dichloro-2-butene			U	1.50	ug/L						
**1,2-Dichloroethane-d4	50.0			53.1	ug/L		106	(70%-130%)			
**Bromofluorobenzene	50.0			51.5	ug/L		103	(70%-130%)			
**Toluene-d8	50.0			46.9	ug/L		94	(70%-130%)			
QC1203974615 MB											
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					02/20/18	11:58
1,1,1-Trichloroethane			U	0.300	ug/L						
1,1,2,2-Tetrachloroethane			U	0.300	ug/L						
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2,3-Trichloropropane			U	0.300	ug/L						
1,2-Dibromo-3-chloropropane			U	0.500	ug/L						
1,2-Dibromoethane			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
1,2-Dichloropropane			U	0.300	ug/L				JP1	02/20/18	11:58
1,4-Dichlorobenzene			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
2-Chloro-1,3-butadiene			U	0.300	ug/L						
2-Hexanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Acetonitrile			U	16.7	ug/L						
Acrolein			U	3.00	ug/L						
Acrylonitrile			U	3.00	ug/L						
Allyl chloride			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Bromodichloromethane			U	0.300	ug/L						
Bromoform			U	0.300	ug/L						
Bromomethane			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
Carbon disulfide			U	1.60	ug/L				JP1	02/20/18	11:58
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroethane			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Chloromethane			U	0.300	ug/L						
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L						
Dichlorodifluoromethane			U	0.300	ug/L						
Ethyl methacrylate			U	3.00	ug/L						
Ethylbenzene			U	0.300	ug/L						
Iodomethane			U	3.00	ug/L						
Isobutyl alcohol			U	33.0	ug/L						
Methacrylonitrile			U	3.00	ug/L						
Methyl methacrylate			U	3.00	ug/L						

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
Methylene chloride			U	1.60	ug/L				JP1	02/20/18	11:58
Propionitrile			U	3.00	ug/L						
Styrene			U	0.300	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Trichlorofluoromethane			U	0.300	ug/L						
Vinyl acetate			U	1.60	ug/L						
Vinyl chloride			U	0.300	ug/L						
cis-1,2-Dichloroethylene			U	0.300	ug/L						
cis-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,2-Dichloroethylene			U	0.300	ug/L						
trans-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,4-Dichloro-2-butene			U	1.50	ug/L						
**1,2-Dichloroethane-d4	50.0			52.2	ug/L		104	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
**Bromofluorobenzene	50.0			52.9	ug/L		106	(70%-130%)	JP1	02/20/18	11:58
**Toluene-d8	50.0			46.0	ug/L		92	(70%-130%)			
QC1203973336 443833001 PS											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	52.6	ug/L		105	(70%-130%)		02/16/18	19:07
1,1,1-Trichloroethane	50.0	U	0.00	56.1	ug/L		112	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00	49.1	ug/L		98	(70%-130%)			
1,1,2-Trichloroethane	50.0	U	0.00	50.5	ug/L		101	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00	52.5	ug/L		105	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00	53.1	ug/L		106	(70%-130%)			
1,2,3-Trichloropropane	50.0	U	0.00	50.3	ug/L		101	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	52.8	ug/L		106	(70%-130%)			
1,2-Dibromoethane	50.0	U	0.00	52.2	ug/L		104	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	58.0	ug/L		116	(70%-130%)			
1,2-Dichloropropane	50.0	U	0.00	50.8	ug/L		102	(70%-130%)			
1,4-Dichlorobenzene	50.0	U	0.00	46.9	ug/L		94	(70%-130%)			
2-Butanone	250	TU	0.00	180	ug/L		72	(70%-130%)			

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QC Summary

Workorder: 443944

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
2-Hexanone	250	U	0.00		197	ug/L	79	(70%-130%)	JP1	02/16/18	19:07
4-Methyl-2-pentanone	250	U	0.00		234	ug/L	94	(70%-130%)			
Acetone	250	TU	0.00	T	134	ug/L	53 *	(70%-130%)			
Acetonitrile	1250	U	0.00		1310	ug/L	105	(70%-130%)			
Benzene	50.0	U	0.00		48.5	ug/L	97	(70%-130%)			
Bromodichloromethane	50.0	U	0.00		54.2	ug/L	108	(70%-130%)			
Bromoform	50.0	U	0.00		49.4	ug/L	99	(70%-130%)			
Bromomethane	50.0	U	0.00		53.9	ug/L	108	(70%-130%)			
Carbon disulfide	250	U	0.00		249	ug/L	100	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00		58.8	ug/L	118	(70%-130%)			
Chlorobenzene	50.0	U	0.00		45.4	ug/L	91	(70%-130%)			
Chloroethane	50.0	U	0.00		54.1	ug/L	108	(70%-130%)			
Chloroform	50.0	U	0.00		54.1	ug/L	108	(70%-130%)			
Chloromethane	50.0	U	0.00		54.2	ug/L	108	(70%-130%)			
Dibromochloromethane	50.0	U	0.00		54.7	ug/L	109	(70%-130%)			

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QC Summary

Workorder: 443944

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
Dibromomethane	50.0	U	0.00	53.3	ug/L		107	(70%-130%)	JP1	02/16/18	19:07
Dichlorodifluoromethane	50.0	U	0.00	65.0	ug/L		130	(70%-130%)			
Ethylbenzene	50.0	U	0.00	49.4	ug/L		99	(70%-130%)			
Iodomethane	250	U	0.00	250	ug/L		100	(70%-130%)			
Methylene chloride	50.0		25.8	74.7	ug/L		98	(70%-130%)			
Styrene	50.0	U	0.00	51.1	ug/L		102	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00	49.3	ug/L		99	(70%-130%)			
Toluene	50.0	U	0.00	47.7	ug/L		95	(70%-130%)			
Trichloroethylene	50.0	U	0.00	53.7	ug/L		107	(70%-130%)			
Trichlorofluoromethane	50.0	U	0.00	61.4	ug/L		123	(70%-130%)			
Vinyl acetate	250	U	0.00	291	ug/L		116	(70%-130%)			
Vinyl chloride	50.0	U	0.00	55.3	ug/L		111	(70%-130%)			
Xylenes (total)	150	U	0.00	146	ug/L		97	(70%-130%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	52.6	ug/L		105	(70%-130%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	50.4	ug/L		101	(70%-130%)			

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QC Summary

Workorder: 443944

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Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS												
Batch	1739833											
trans-1,2-Dichloroethylene	50.0	U	0.00		54.5	ug/L		109	(70%-130%)	JP1	02/16/18	19:07
trans-1,3-Dichloropropylene	50.0	J	0.340		52.7	ug/L		105	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		51.1		53.5	ug/L		107	(70%-130%)			
**Bromofluorobenzene	50.0		50.5		50.0	ug/L		100	(70%-130%)			
**Toluene-d8	50.0		48.7		46.3	ug/L		93	(70%-130%)			
QC1203973337 443833001 PSD												
1,1,1,2-Tetrachloroethane	50.0	U	0.00		49.6	ug/L	6	99	(0%-20%)		02/16/18	19:39
1,1,1-Trichloroethane	50.0	U	0.00		54.6	ug/L	3	109	(0%-20%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00		46.0	ug/L	7	92	(0%-20%)			
1,1,2-Trichloroethane	50.0	U	0.00		50.4	ug/L	0	101	(0%-20%)			
1,1-Dichloroethane	50.0	U	0.00		52.5	ug/L	0	105	(0%-20%)			
1,1-Dichloroethylene	50.0	U	0.00		53.8	ug/L	1	108	(0%-20%)			
1,2,3-Trichloropropane	50.0	U	0.00		46.8	ug/L	7	94	(0%-20%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00		48.2	ug/L	9	96	(0%-20%)			
1,2-Dibromoethane	50.0	U	0.00		50.9	ug/L	3	102	(0%-20%)			
1,2-Dichloroethane	50.0	U	0.00		54.6	ug/L	6	109	(0%-20%)			

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QC Summary

Workorder: 443944

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
1,2-Dichloropropane	50.0	U	0.00		50.3	ug/L	1	101	(0%-20%)	JP1	02/16/18 19:39
1,4-Dichlorobenzene	50.0	U	0.00		45.4	ug/L	3	91	(0%-20%)		
2-Butanone	250	TU	0.00	T	159	ug/L	13	64*	(0%-20%)		
2-Hexanone	250	U	0.00		176	ug/L	11	71	(0%-20%)		
4-Methyl-2-pentanone	250	U	0.00		219	ug/L	7	88	(0%-20%)		
Acetone	250	TU	0.00	T	124	ug/L	8	49*	(0%-20%)		
Acetonitrile	1250	U	0.00		1220	ug/L	7	98	(0%-20%)		
Benzene	50.0	U	0.00		48.1	ug/L	1	96	(0%-20%)		
Bromodichloromethane	50.0	U	0.00		53.4	ug/L	1	107	(0%-20%)		
Bromoform	50.0	U	0.00		47.3	ug/L	4	95	(0%-20%)		
Bromomethane	50.0	U	0.00		49.1	ug/L	9	98	(0%-20%)		
Carbon disulfide	250	U	0.00		250	ug/L	0	100	(0%-20%)		
Carbon tetrachloride	50.0	U	0.00		55.6	ug/L	6	111	(0%-20%)		
Chlorobenzene	50.0	U	0.00		46.9	ug/L	3	94	(0%-20%)		
Chloroethane	50.0	U	0.00		50.9	ug/L	6	102	(0%-20%)		

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
Chloroform	50.0	U	0.00	51.9	ug/L	4	104	(0%-20%)	JP1	02/16/18	19:39
Chloromethane	50.0	U	0.00	49.2	ug/L	10	98	(0%-20%)			
Dibromochloromethane	50.0	U	0.00	52.8	ug/L	4	106	(0%-20%)			
Dibromomethane	50.0	U	0.00	52.9	ug/L	1	106	(0%-20%)			
Dichlorodifluoromethane	50.0	U	0.00	58.6	ug/L	10	117	(0%-20%)			
Ethylbenzene	50.0	U	0.00	46.4	ug/L	6	93	(0%-20%)			
Iodomethane	250	U	0.00	252	ug/L	1	101	(0%-20%)			
Methylene chloride	50.0		25.8	74.7	ug/L	0	98	(0%-20%)			
Styrene	50.0	U	0.00	50.8	ug/L	1	102	(0%-20%)			
Tetrachloroethylene	50.0	U	0.00	47.5	ug/L	4	95	(0%-20%)			
Toluene	50.0	U	0.00	45.4	ug/L	5	91	(0%-20%)			
Trichloroethylene	50.0	U	0.00	51.7	ug/L	4	103	(0%-20%)			
Trichlorofluoromethane	50.0	U	0.00	54.1	ug/L	13	108	(0%-20%)			
Vinyl acetate	250	U	0.00	251	ug/L	15	101	(0%-20%)			
Vinyl chloride	50.0	U	0.00	51.9	ug/L	6	104	(0%-20%)			

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QC Summary

Workorder: 443944

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1739833										
Xylenes (total)	150	U	0.00	148	ug/L	1	98	(0%-20%)	JP1	02/16/18	19:39
cis-1,2-Dichloroethylene	50.0	U	0.00	51.5	ug/L	2	103	(0%-20%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	49.9	ug/L	1	100	(0%-20%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	54.8	ug/L	1	110	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	J	0.340	51.5	ug/L	2	102	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		51.1	49.3	ug/L		99	(70%-130%)			
**Bromofluorobenzene	50.0		50.5	48.3	ug/L		97	(70%-130%)			
**Toluene-d8	50.0		48.7	44.9	ug/L		90	(70%-130%)			

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (Organics only)

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QC Summary

Workorder: 443944

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Volatile
Surrogate Recovery Report

SDG Number: GEL443944

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203973335	LCS for batch 1739833	105	94	102
1203973334	MB for batch 1739833	106	94	103
443944013	B3H4B3	103	89	99
443944014	B3H4B8	106	99	100
443944017	B3H4B9	110	93	100
1203973336	B3D7T6PS	107	93	100
1203973337	B3D7T6PSD	99	90	97
1203974616	LCS for batch 1739833	103	90	102
1203974615	MB for batch 1739833	104	92	106
443944013	B3H4B3DL	109 D	94 D	102 D
443944017	B3H4B9DL	108 D	91 D	103 D

Surrogate

DCED4 = 1,2-Dichloroethane-d4

TOL = Toluene-d8

BFB = Bromofluorobenzene

Acceptance Limits

(70%-130%)

(70%-130%)

(70%-130%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443944
Work Order #: 443944

Product: Determination of Metals by ICP-MS**Analytical Method:** SW846 3005A/6020B**Analytical Procedure:** GL-MA-E-014 REV# 32**Analytical Batch:** 1739925**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 14**Preparation Batch:** 1739924

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443944012	B3H4B6
443944013	B3H4B3
443944014	B3H4B8
443944015	B3H5L7
443944016	B3H652
443944017	B3H4B9
1203973648	Method Blank (MB) ICP-MS
1203973649	Laboratory Control Sample (LCS)
1203973652	443936011(NonSDGL) Serial Dilution (SD)
1203973650	443936011(NonSDGS) Matrix Spike (MS)
1203973651	443936011(NonSDGSD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information**ICSA/ICSAB Statement**

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443944 GEL Work Order: 443944

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: **Name: Nik-Cole Elmore****Date: 15 MAR 2018****Title: Data Validator**

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443944

CONTRACT: CPRC0S18002

METHOD TYPE: SW846

SAMPLE ID: 443944012

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H4B6

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	21.1	ug/L		3	10	10	1	MS	BAJ	02/27/18 23:51	180227-1	1739925

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443944

CONTRACT: CPRC0S18002

METHOD TYPE: SW846

SAMPLE ID:443944013

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H4B3

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	29.5	ug/L		3	10	10	1	MS	BAJ	02/27/18 23:54	180227-1	1739925

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443944

CONTRACT: CPRC0S18002

METHOD TYPE: SW846

SAMPLE ID: 443944014

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H4B8

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	02/27/18 23:57	180227-1	1739925

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443944

CONTRACT: CPRC0S18002

METHOD TYPE: SW846

SAMPLE ID:443944015

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H5L7

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	02/28/18 00:01	180227-1	1739925

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443944

CONTRACT: CPRC0S18002

METHOD TYPE: SW846

SAMPLE ID:443944016

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H652

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	94.3	ug/L		3	10	10	1	MS	BAJ	02/28/18 00:04	180227-1	1739925

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443944

CONTRACT: CPRC0S18002

METHOD TYPE: SW846

SAMPLE ID:443944017

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H4B9

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	100	ug/L		3	10	10	1	MS	BAJ	02/28/18 00:07	180227-1	1739925

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

MS SW846 3005A/6020B

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: March 15, 2018

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CH2M Hill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739925										
QC1203973649		LCS									
Chromium	50.0			49.3	ug/L		98.7	(80%-120%)	BAJ	02/27/18	23:15
QC1203973648		MB									
Chromium			U	3.00	ug/L					02/27/18	23:11
QC1203973650		443936011 MS									
Chromium	50.0		12.9	64.7	ug/L		104	(75%-125%)		02/27/18	23:21
QC1203973651		443936011 MSD									
Chromium	50.0		12.9	65.3	ug/L	0.877	105	(0%-20%)		02/27/18	23:25
QC1203973652		443936011 SDILT									
Chromium			12.9 DU	15.0	ug/L	N/A		(0%-20%)		02/27/18	23:31

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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QC Summary

Workorder: 443944

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
----------	-----	--------	------	----	-------	--------	------	-------	-------	------	------

Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443944
Work Order #: 443944**

Product: Ion Chromatography**Analytical Method:** 9056_ANIONS_IC**Analytical Procedure:** GL-GC-E-086 REV# 25**Analytical Batches:** 1739764 and 1739766

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443944001	B3H6H0
443944002	B3H6J6
443944003	B3H6J7
443944004	B3H5Y8
443944005	B3H4B4
443944006	B3H4C0
443944007	B3H4C1
443944008	B3H672
443944009	B3H673
443944010	B3H6V1
443944011	B3HBY2
1203973199	Method Blank (MB)
1203973200	Laboratory Control Sample (LCS)
1203973201	443944001(B3H6H0) Sample Duplicate (DUP)
1203973202	443944001(B3H6H0) Post Spike (PS)
1203973211	Method Blank (MB)
1203973212	Laboratory Control Sample (LCS)
1203973213	443944011(B3HBY2) Sample Duplicate (DUP)
1203973214	443944011(B3HBY2) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information**Holding Times**

Samples (See Below) were analyzed outside of the method specified holding time due to instrument problems delaying the analysis. The analysis was performed as soon as possible by the analyst. The data is qualified.

Sample	Analyte	Value
1203973213 (B3HBY2DUP)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
1203973214 (B3HBY2PS)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944007 (B3H4C1)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944008 (B3H672)	Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944009 (B3H673)	Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944011 (B3HBY2)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18

Sample Dilutions

The following samples 1203973201 (B3H6H0DUP), 1203973202 (B3H6H0PS), 443944001 (B3H6H0), 443944003 (B3H6J7), 443944004 (B3H5Y8), 443944005 (B3H4B4), 1203973213 (B3HBY2DUP), 1203973214 (B3HBY2PS), 443944007 (B3H4C1), 443944008 (B3H672), 443944009 (B3H673) and 443944011 (B3HBY2) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	443944							
	001	003	004	005	007	008	009	011
Several	100X 1X	5X 1X	10X 1X	5X 1X	20X 1X	20X 1X	20X 1X	10X 1X

Miscellaneous Information

Manual Integrations

Samples 443944002 (B3H6J6), 443944003 (B3H6J7), 443944004 (B3H5Y8) and 443944005 (B3H4B4) were manually integrated to correctly position the baseline as set in the calibration standards.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443944 GEL Work Order: 443944

The Qualifiers in this report are defined as follows:

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

D Results are reported from a diluted aliquot of sample.

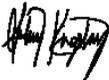
U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:**Name: Aubrey Kingsbury****Date: 13 MAR 2018****Title: Analyst I**

Sample Data Summary

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Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-002

Client Sample ID: B3H6H0 Project: CPRC0S18002
 Sample ID: 443944001 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 09:26
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride		552	33.0	500	ug/L		1	MAR1	02/16/18	1231	1739764	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	38200	6700	20000	ug/L		100	MAR1	02/16/18	1913	1739764	2
Nitrate-N	D	144000	3300	10000	ug/L		100					
Sulfate	D	176000	13300	40000	ug/L		100					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-002

Client Sample ID: B3H6J6 Project: CPRC0S18002
 Sample ID: 443944002 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 08:15
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride	B	69.8	67.0	200	ug/L		1	MAR1	02/16/18	1302	1739764	1
Fluoride	U	33.0	33.0	500	ug/L		1					
Nitrate-N	U	33.0	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Sulfate	U	133	133	500	ug/L		1					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

Notes:**Column headers are defined as follows:**

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-002

Client Sample ID: B3H6J7 Project: CPRC0S18002
 Sample ID: 443944003 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:42
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	434	33.0	500	ug/L		1	MAR1	02/16/18	1332	1739764	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	11500	335	1000	ug/L		5	MAR1	02/16/18	2045	1739764	2
Nitrate-N	D	9900	165	500	ug/L		5					
Sulfate	D	49300	665	2000	ug/L		5					

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	9056_ANIONS_IC		
2	9056_ANIONS_IC		

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-002

Client Sample ID: B3H5Y8 Project: CPRC0S18002
 Sample ID: 443944004 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:07
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	354	33.0	500	ug/L		1	MAR1	02/16/18	1403	1739764	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	15400	670	2000	ug/L		10	MAR1	02/16/18	2116	1739764	2
Nitrate-N	D	28400	330	1000	ug/L		10					
Sulfate	D	88500	1330	4000	ug/L		10					

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	9056_ANIONS_IC		
2	9056_ANIONS_IC		

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-002

Client Sample ID: B3H4B4 Project: CPRC0S18002
 Sample ID: 443944005 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 11:23
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride		546	33.0	500	ug/L		1	MAR1	02/16/18	1434	1739764	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	30000	335	1000	ug/L		5	MAR1	02/16/18	2147	1739764	2
Nitrate-N	D	15700	165	500	ug/L		5					
Sulfate	D	55000	665	2000	ug/L		5					

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	9056_ANIONS_IC		
2	9056_ANIONS_IC		

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-002

Client Sample ID: B3H4C0 Project: CPRC0S18002
 Sample ID: 443944006 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 08:35
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride	B	140	67.0	200	ug/L		1	JXH5	02/16/18	1107	1739766	1
Fluoride	U	33.0	33.0	500	ug/L		1					
Nitrate-N	U	33.0	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Sulfate	U	133	133	500	ug/L		1					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

Notes:**Column headers are defined as follows:**

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-002

Client Sample ID: B3H672 Project: CPRC0S18002
 Sample ID: 443944008 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 12:54
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride		9340	67.0	200	ug/L		1	JXH5	02/16/18	1208	1739766	1
Fluoride	B	196	33.0	500	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Nitrate-N	DX	42900	660	2000	ug/L		20	JXH5	02/19/18	2234	1739766	2
Sulfate	D	28100	2660	8000	ug/L		20					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-002

Client Sample ID: B3H6V1 Project: CPRC0S18002
 Sample ID: 443944010 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 08:30
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride	U	67.0	67.0	200	ug/L		1	JXH5	02/16/18	1310	1739766	1
Fluoride	U	33.0	33.0	500	ug/L		1					
Nitrate-N	U	33.0	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Sulfate	U	133	133	500	ug/L		1					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-002

Client Sample ID: B3HBY2 Project: CPRC0S18002
 Sample ID: 443944011 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:07
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	284	33.0	500	ug/L		1	JXH5	02/16/18	1341	1739766	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	15300	670	2000	ug/L		10	JXH5	02/19/18	1114	1739766	2
Nitrate-N	DX	27500	330	1000	ug/L		10					
Sulfate	D	86100	1330	4000	ug/L		10					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: March 13, 2018

Page 1 of 4

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1739764										
QC1203973201	443944001	DUP									
Chloride	D	38200	D	36800	ug/L	3.62		(0%-20%)	MAR1	02/16/18	19:43
Fluoride		552		532	ug/L	3.72	^	(+/-500)		02/16/18	15:05
Nitrate-N	D	144000	D	144000	ug/L	0.229		(0%-20%)		02/16/18	19:43
Nitrite-N	U	33.0	U	33.0	ug/L	N/A				02/16/18	15:05
Sulfate	D	176000	D	176000	ug/L	0.426		(0%-20%)		02/16/18	19:43
QC1203973200	LCS										
Chloride	5000			4800	ug/L		96.1	(80%-120%)		02/16/18	17:40
Fluoride	2500			2540	ug/L		102	(80%-120%)			
Nitrate-N	2500			2470	ug/L		98.6	(80%-120%)			
Nitrite-N	2500			2510	ug/L		101	(80%-120%)			
Sulfate	10000			10000	ug/L		100	(80%-120%)			
QC1203973199	MB										
Chloride			U	67.0	ug/L					02/16/18	17:09
Fluoride			U	33.0	ug/L						
Nitrate-N			U	33.0	ug/L						

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QC Summary

Workorder: 443944

Page 2 of 4

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1739764										
Nitrite-N			U	33.0	ug/L				MAR1	02/16/18	17:09
Sulfate			U	133	ug/L						
QC1203973202 443944001 PS											
Chloride	5.00	D	0.382 D	5.13	mg/L		94.9	(75%-125%)		02/16/18	20:14
Fluoride	2.50		0.552	2.99	mg/L		97.4	(75%-125%)		02/16/18	15:36
Nitrate-N	2.50	D	1.44 D	4.05	mg/L		104	(75%-125%)		02/16/18	20:14
Nitrite-N	2.50	U	0.00	2.43	mg/L		97.2	(75%-125%)		02/16/18	15:36
Sulfate	10.0	D	1.76 D	11.6	mg/L		98.5	(75%-125%)		02/16/18	20:14
Batch 1739766											
QC1203973213 443944011 DUP											
Chloride		D	15300 D	15300	ug/L	0.209		(0%-20%)	JXH5	02/19/18	11:45
Fluoride		B	284 B	287	ug/L	1.3 ^		(+/-500)		02/16/18	18:19
Nitrate-N		DX	27500 DX	27500	ug/L	0.00726		(0%-20%)		02/19/18	11:45
Nitrite-N		U	33.0 U	33.0	ug/L	N/A				02/16/18	18:19
Sulfate		D	86100 D	85800	ug/L	0.39		(0%-20%)		02/19/18	11:45
QC1203973212 LCS											
Chloride	5000			4830	ug/L		96.7	(80%-120%)		02/16/18	16:47
Fluoride	2500			2520	ug/L		101	(80%-120%)			

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QC Summary

Workorder: 443944

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1739766										
Nitrate-N	2500			2440	ug/L		97.6	(80%-120%)	JXH5	02/16/18	16:47
Nitrite-N	2500			2480	ug/L		99	(80%-120%)			
Sulfate	10000			9940	ug/L		99.4	(80%-120%)			
QC1203973211	MB										
Chloride			U	67.0	ug/L					02/16/18	16:16
Fluoride			U	33.0	ug/L						
Nitrate-N			U	33.0	ug/L						
Nitrite-N			U	33.0	ug/L						
Sulfate			U	133	ug/L						
QC1203973214	443944011 PS										
Chloride	5.00	D	1.53	D	6.38	mg/L	96.9	(75%-125%)		02/19/18	12:16
Fluoride	2.50	B	0.284		2.77	mg/L	99.5	(75%-125%)		02/16/18	18:50
Nitrate-N	2.50	DX	2.75	DX	5.43	mg/L	107	(75%-125%)		02/19/18	12:16
Nitrite-N	2.50	U	0.00		2.32	mg/L	92.7	(75%-125%)		02/16/18	18:50
Sulfate	10.0	D	8.61	D	18.9	mg/L	103	(75%-125%)		02/19/18	12:16

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range

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QC Summary

Workorder: 443944

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).										
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples.										
D	Results are reported from a diluted aliquot of sample.										
N	Spike Sample recovery is outside control limits.										
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443944
Work Order #: 443944**

Product: I129LL_SEP_LEPS_GS: COMMON (low level)

Analytical Method: DOE EML HASL-300,I-01 Modified

Analytical Procedure: GL-RAD-A-006 REV# 21

Analytical Batch: 1741322

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443944020	B3H6F9
443944021	B3H6J4
443944022	B3H6J5
443944023	B3H5Y7
443944024	B3H6V2
443944025	B3H873
443944026	B3HCK6
443944027	B3HCK7
443944028	B3HCK8
1203976948	Method Blank (MB)
1203976949	443944020(B3H6F9) Sample Duplicate (DUP)
1203976950	443944020(B3H6F9) Matrix Spike (MS)
1203976951	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Sample Re-prep/Re-analysis

Samples were re-prepped due to high LCS recovery. The re-analysis is being reported.

Product: 9310_ALPHABETA_GPC: Gross Beta

Analytical Method: 9310_ALPHABETA_GPC

Analytical Procedure: GL-RAD-A-001 REV# 19

Analytical Batch: 1740281

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
------------------------------	--

443944018	B3H405
1203974608	Method Blank (MB)
1203974609	443944018(B3H405) Sample Duplicate (DUP)
1203974610	443944018(B3H405) Matrix Spike (MS)
1203974611	443944018(B3H405) Matrix Spike Duplicate (MSD)
1203974612	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Recounts

Samples 1203974609 (B3H405DUP) and 443944018 (B3H405) were recounted due to high relative percent difference/relative error ratio. The recounts are reported.

Miscellaneous Information

Additional Comments

The matrix spike and matrix spike duplicate, 1203974610 (B3H405MS) and 1203974611 (B3H405MSD), aliquots were reduced to conserve sample volume.

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

Analytical Procedure: GL-RAD-A-002 REV# 22

Analytical Batch: 1739760

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443944019	B3H442
443944027	B3HCK7
443944028	B3HCK8
1203973171	Method Blank (MB)
1203973172	443932001(NonSDG) Sample Duplicate (DUP)
1203973173	443932001(NonSDG) Matrix Spike (MS)
1203973174	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information**Additional Comments**

The matrix spike, 1203973173 (Non SDG 443932001MS), aliquot was reduced to conserve sample volume.

Product: TC99_EIE_LSC: COMMON

Analytical Method: TC99_EIE_LSC

Analytical Procedure: GL-RAD-A-059 REV# 5

Analytical Batch: 1739980

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443944020	B3H6F9
443944021	B3H6J4
443944022	B3H6J5
443944023	B3H5Y7
443944024	B3H6V2
443944025	B3H873
443944027	B3HCK7
443944028	B3HCK8
1203973816	Method Blank (MB)
1203973817	443979016(NonSDG) Sample Duplicate (DUP)
1203973818	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443944 GEL Work Order: 443944

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Heather McCarty

Date: 07 MAR 2018

Title: Analyst II

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944018	Date Collected: 02/15/2018 11:45	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H405		Prep Basis: "As Received"
Batch ID: 1740281	Method: 9310_ALPHABETA_GPC	SOP Ref: GL-RAD-A-001
Run Date: 03/06/2018 11:45	Analyst: JXK3	Instrument: PIC5A
Data File: B1740281r1.xls	Aliquot: 125 mL	Count Time: 60 min
Prep Batch: 1740281	Prep Method: EPA 900.0/SW846 9310	
Prep Date: 03/05/2018 13:06		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-47-2	Beta BETA	U	2.70	pCi/L	+/-1.85	1.91	2.81	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

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SDG Number: GEL443944
 Lab Sample ID: 443944019

Client: CPRC001
 Date Collected: 02/15/2018 13:18
 Date Received: 02/16/2018 08:45

Project: CPRC0S18002
 Matrix: WATER

Client ID: B3H442
 Batch ID: 1739760
 Run Date: 02/19/2018 16:42
 Data File: T1739760.xls
 Prep Batch: 1739760
 Prep Date: 02/19/2018 08:43

Method: TRITIUM_DIST_LSC
 Analyst: MXH8
 Aliquot: 50 mL
 Prep Method: EPA 906.0 Modified

Prep Basis: "As Received"
 SOP Ref: GL-RAD-A-002
 Instrument: LSCRED
 Count Time: 50 min

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		3220	pCi/L	+/-283	685	278	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944020	Date Collected: 02/15/2018 09:26	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6F9		Prep Basis: "As Received"
Batch ID: 1741322	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 10:37	Analyst: BSW1	Instrument: XRAY1
Data File: I443944020.CNF;3	Aliquot: 0.8 L	Count Time: 240 min
Prep Batch: 1741322	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		2.02	pCi/L	+/-0.960	0.982	0.919	1.00
Surrogate/Tracer recovery		Result	Nominal	Units	Recovery%	Acceptable Limits		

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944020	Date Collected: 02/15/2018 09:26	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6F9	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1739980	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 02/25/2018 08:34	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1739980.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1739980		
Prep Date: 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		6280	pCi/L	+/-98.7	719	37.7	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2550	3070	CPM	83.2	(30%-105%)

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944021	Date Collected: 02/15/2018 08:15	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6J4		Prep Basis: "As Received"
Batch ID: 1741322	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 10:38	Analyst: BSW1	Instrument: XRAY2
Data File: I443944021.CNF;2	Aliquot: 1.2 L	Count Time: 120 min
Prep Batch: 1741322	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.423	pCi/L	+/-0.412	0.415	0.655	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944021	Date Collected: 02/15/2018 08:15	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6J4	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1739980	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 02/25/2018 09:01	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1739980.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1739980		
Prep Date: 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-17.7	pCi/L	+/-20.7	20.7	36.9	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2630	3070	CPM	85.8	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944022	Date Collected: 02/15/2018 10:42	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6J5		Prep Basis: "As Received"
Batch ID: 1741322	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 10:38	Analyst: BSW1	Instrument: XRAY4
Data File: I443944022.CNF;2	Aliquot: 1.2 L	Count Time: 120 min
Prep Batch: 1741322	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		1.07	pCi/L	+/-0.504	0.515	0.617	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944022	Date Collected: 02/15/2018 10:42	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6J5	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1739980	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 02/25/2018 09:28	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1739980.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1739980		
Prep Date: 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		57.0	pCi/L	+/-20.3	21.3	32.0	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	3020	3070	CPM	98.4	(30%-105%)

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944023	Date Collected: 02/15/2018 10:07	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H5Y7		Prep Basis: "As Received"
Batch ID: 1741322	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 10:38	Analyst: BSW1	Instrument: XRAY5
Data File: I443944023.CNF;2	Aliquot: 1.2 L	Count Time: 120 min
Prep Batch: 1741322	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		3.17	pCi/L	+/-1.45	1.49	1.11	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944023	Date Collected: 02/15/2018 10:07	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H5Y7	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1739980	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 02/25/2018 09:55	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1739980.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1739980		
Prep Date: 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		1370	pCi/L	+/-48.2	162	35.5	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2710	3070	CPM	88.3	(30%-105%)

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944024	Date Collected: 02/15/2018 10:07	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6V2		Prep Basis: "As Received"
Batch ID: 1741322	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 11:10	Analyst: BSW1	Instrument: GAM05
Data File: I443944024.CNF;2	Aliquot: 1.2 L	Count Time: 141 min
Prep Batch: 1741322	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		2.62	pCi/L	+/-1.28	1.30	0.827	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944024	Date Collected: 02/15/2018 10:07	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6V2	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1739980	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 02/25/2018 10:22	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1739980.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1739980		
Prep Date: 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		1230	pCi/L	+/-44.7	146	33.6	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2840	3070	CPM	92.5	(30%-105%)

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944025	Date Collected: 02/15/2018 08:30	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H873		Prep Basis: "As Received"
Batch ID: 1741322	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 11:10	Analyst: BSW1	Instrument: GAM21
Data File: I443944025.CNF;2	Aliquot: 1.2 L	Count Time: 120 min
Prep Batch: 1741322	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.141	pCi/L	+/-0.307	0.314	0.520	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944025	Date Collected: 02/15/2018 08:30	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H873	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1739980	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 02/25/2018 10:49	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1739980.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1739980		
Prep Date: 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-16.8	pCi/L	+/-17.8	17.8	31.8	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2980	3070	CPM	97.1	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944026	Date Collected: 02/15/2018 11:23	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3HCK6		Prep Basis: "As Received"
Batch ID: 1741322	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 13:39	Analyst: BSW1	Instrument: XRAY1
Data File: I443944026.CNF;2	Aliquot: 1.2 L	Count Time: 120 min
Prep Batch: 1741322	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		0.768	pCi/L	+/-0.547	0.552	0.530	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944027	Date Collected: 02/15/2018 09:44	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3HCK7		Prep Basis: "As Received"
Batch ID: 1741322	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 13:39	Analyst: BSW1	Instrument: XRAY2
Data File: I443944027.CNF;2	Aliquot: 1.2 L	Count Time: 120 min
Prep Batch: 1741322	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.195	pCi/L	+/-0.387	0.397	0.794	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944027	Date Collected: 02/15/2018 09:44	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3HCK7	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1739760	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 02/19/2018 17:34	Aliquot: 50 mL	Instrument: LSCRED
Data File: T1739760.xls	Prep Method: EPA 906.0 Modified	Count Time: 50 min
Prep Batch: 1739760		
Prep Date: 02/19/2018 08:43		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1960	pCi/L	+/-245	451	283	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944027	Date Collected: 02/15/2018 09:44	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3HCK7	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1739980	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 02/25/2018 11:16	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1739980.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1739980		
Prep Date: 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		87.7	pCi/L	+/-23.5	25.5	35.8	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2630	3070	CPM	85.8	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944028	Date Collected: 02/15/2018 08:35	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3HCK8	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1741322	Analyst: BSW1	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 13:39	Aliquot: 1.2 L	Instrument: XRAY4
Data File: I443944028.CNF;2	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 120 min
Prep Batch: 1741322		
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.183	pCi/L	+/-0.334	0.345	0.572	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944028	Date Collected: 02/15/2018 08:35	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3HCK8	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1739760	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 02/19/2018 18:26	Aliquot: 50 mL	Instrument: LSCRED
Data File: T1739760.xls	Prep Method: EPA 906.0 Modified	Count Time: 50 min
Prep Batch: 1739760		
Prep Date: 02/19/2018 08:43		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	24.1	pCi/L	+/-162	162	283	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

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SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944028	Date Collected: 02/15/2018 08:35	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3HCK8	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1739980	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 02/25/2018 11:42	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1739980.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1739980		
Prep Date: 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-11.1	pCi/L	+/-19.0	19.0	33.5	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2820	3070	CPM	91.9	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: March 7, 2018
Page 1 of 3

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1741322								
QC1203976948	MB								
Iodine-129			U	0.0887	pCi/L			BSW1	02/23/1813:41
				Uncert: +/-0.411					
				TPU: +/-0.413					
QC1203976949	443944020	DUP							
Iodine-129		2.02		2.81	pCi/L				02/23/1813:41
				Uncert: +/-0.960		RPD: 65 (0% - 100%)			
				TPU: +/-0.982		RER: 1.91 (0-2)			
QC1203976950	443944020	MS							
Iodine-129		52.0	2.02	53.1	pCi/L	REC: 100 (75%-125%)			02/23/1815:53
				Uncert: +/-0.960					
				TPU: +/-0.982					
QC1203976951	LCS								
Iodine-129		34.7		35.5	pCi/L	REC: 102 (80%-120%)			02/23/1815:54
				Uncert: +/-3.84					
				TPU: +/-5.22					
Rad Gas Flow									
Batch	1740281								
QC1203974608	MB								
Beta			U	-0.246	pCi/L			JXK3	03/06/1810:33
				Uncert: +/-1.25					
				TPU: +/-1.25					
QC1203974609	443944018	DUP							
Beta		U	2.70	3.22	pCi/L				03/06/1811:45
				Uncert: +/-1.85		RPD: 18 (0% - 100%)			
				TPU: +/-1.91		RER: 0.379 (0-2)			
QC1203974610	443944018	MS							
Beta		1880	U	2.70	pCi/L	REC: 102 (75%-125%)			03/06/1810:34
				Uncert: +/-1.85					
				TPU: +/-1.91					
QC1203974611	443944018	MSD							
Beta		1880	U	2.70	pCi/L	REC: 99 (75%-125%)			03/06/1810:34
				Uncert: +/-1.85		RPD: 3 (0%-20%)			
				TPU: +/-1.91		RER: 0.223 (0-2)			
QC1203974612	LCS								
Beta		376		385	pCi/L	REC: 102 (80%-120%)			03/06/1810:34
				Uncert: +/-13.5					
				TPU: +/-63.7					
Rad Liquid Scintillation									
Batch	1739760								
QC1203973171	MB								
Tritium			U	-18.7	pCi/L			MXH8	02/19/1819:18
				Uncert: +/-157					
				TPU: +/-157					

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 443944

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1739760								
QC1203973172	443932001	DUP							
Tritium		7660		7940	pCi/L				02/19/1820:11
		Uncert:	+/-391	+/-403		RPD:	4	(0%-20%)	
		TPU:	+/-1530	+/-1590		RER:	0.253	(0-2)	
QC1203973173	443932001	MS							
Tritium	5160	7660		12100	pCi/L	REC:	87	(75%-125%)	02/19/1821:03
		Uncert:	+/-391	+/-718					
		TPU:	+/-1530	+/-2460					
QC1203973174	LCS								
Tritium	2580			2200	pCi/L	REC:	85	(80%-120%)	02/19/1821:55
		Uncert:		+/-251					
		TPU:		+/-493					
Batch	1739980								
QC1203973816	MB								
Technetium-99			U	-11.6	pCi/L			CXS7	02/25/1813:03
		Uncert:		+/-20.9					
		TPU:		+/-20.9					
**Technetium-99m Tracer	3070			2590	CPM	REC:	84	(30%-105%)	
QC1203973817	443979016	DUP							
Technetium-99		228		261	pCi/L				02/25/1813:31
		Uncert:	+/-30.6	+/-34.0		RPD:	13	(0%-20%)	
		TPU:	+/-40.1	+/-45.1		RER:	1.05	(0-2)	
**Technetium-99m Tracer	3070	2340		2240	CPM	REC:	73	(30%-105%)	
QC1203973818	LCS								
Technetium-99	888			828	pCi/L	REC:	93	(80%-120%)	02/25/1813:58
		Uncert:		+/-40.4					
		TPU:		+/-102					
**Technetium-99m Tracer	3070			2610	CPM	REC:	85	(30%-105%)	

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- A The TIC is a suspected aldol-condensation product
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The analyte was detected in both the associated QC blank and in the sample.
- B The analyte was detected in the associated method blank >= MDC or >5% sample activity.
- C Analyte has been confirmed by GC/MS analysis
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- E Reported value is estimated due to interferences. See comment in narrative.
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as

