



a member of **The GEL Group** INC



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March 13, 2018

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

Re: CHPRC SAF W18-002
Work Order: 443758
SDG: GEL443758

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 14, 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: W18-002-057, W18-002-070, W18-002-076, W18-002-077, W18-002-096, W18-002-100, W18-002-101, W18-002-103, W18-002-105, W18-002-107, W18-002-121, W18-002-123, W18-002-125 and W18-002-127
Enclosures

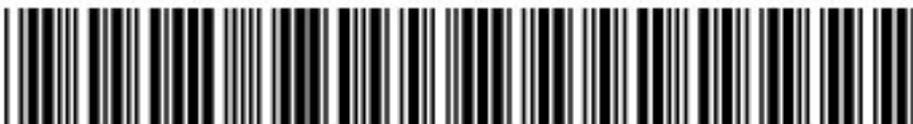


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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF W18-002
SDG: GEL443758**

March 13, 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 14, 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>
443758001	B3H3C9
443758002	B3H356
443758003	B3H357
443758004	B3H371
443758005	B3H380
443758006	B3H384
443758007	B3H3M3
443758008	B3H3M8
443758009	B3H3N3
443758010	B3H3N7
443758011	B3H3D0
443758012	B3H3C8
443758013	B3H383
443758014	B3H3M5
443758015	B3H3M1
443758016	B3H3N6

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: General Chemistry and Metals.

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
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL443758
Work Order #: 443758

Metals

Determination of Metals by ICP

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.

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

Carbon, Total Organic

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.

Cyanide, Total

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-analysis

Sample443758014 (B3H3M5) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Cyanide, Chlorinated

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-analysis

Sample443758015 (B3H3M1) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Cyanide, Amenable to Chlorination

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.

Cyanide, Free

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.

Cyanide, Free

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

Total CN levels above the MDL for Free CN were detected in samples . Free CN was performed per SOP (GL-GC-E-073).

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 1203971621 (Non SDG 443751001DUP), 1203971622 (Non SDG 443751001PS), 443758006 (B3H384), 443758007 (B3H3M3) and 443758008 (B3H3M8) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443758		
	006	007	008
Chloride	5X	20X	10X
Nitrate	5X	20X	10X
Sulfate	5X	20X	10X

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 1203971653 (B3H3N7DUP), 1203971654 (B3H3N7PS), 443758001 (B3H3C9), 443758003 (B3H357), 443758004 (B3H371), 443758005 (B3H380), 443758009 (B3H3N3) and 443758010 (B3H3N7) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443758					
	001	003	004	005	009	010
Several	5X 1X	5X 100X 1X	5X 1X	5X 1X	10X 1X	10X 1X

Miscellaneous Information

Manual Integrations

Sample 443758002 (B3H356) were manually integrated to correctly position the baseline as set in the calibration standards.

Alkalinity

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

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST <i>443758</i>			C.O.C.# W18-002-096			
					Page 1 of 1			
Collector: Daniel Klug CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: W18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: RCRA, February 2018		Logbook No.: HNF-N-506 <i>98/38</i>		Ice Chest No.: <i>N/A</i> <i>6WS-677</i>				
Shipped To (Lab): TestAmerica Incorporated, Rich		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: <i>N/A</i> <i>7714 7435447</i>				
Protocol: RCRA		Priority: 30 Days		Offsite Property No.: <i>N/A</i> <i>9050</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
B3H3C9	N	W	FEB 13 2018	1115	1x125-mL P.	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Daniel Klug CHPRC	<i>D. Klug</i>	FEB 13 2018	1125	Received By: Roger Friesz Jr. CHPRC	<i>R. Friesz Jr.</i>	FEB 13 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: Roger Friesz Jr. CHPRC	<i>R. Friesz Jr.</i>	FEB 13 2018	1400	Received By: FEDEX				
Relinquished By: Fedex	<i>Fedex</i>			Received By: C. Tomplin	<i>C. Tomplin</i>	2/14/18	0130	
Relinquished By:				Received By:				
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 443758				C.O.C.# W18-002-100		
						Page 1 of 1		
Collector: Daniel Klug CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: W18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: RCRA, February 2018 GEL		Logbook No.: HNF-N-506 98/38		Ice Chest No.: N/A GWS-677				
Shipped To (Lab): <u>TestAmerica Incorporated, Rich</u>		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: N/A 7774743547				
Protocol: RCRA KS 2/2/18		Priority: 30 Days		Offsite Property No.: N/A 9050				
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
B3H356	N	W	FEB 13 2018	0800	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

3/13/2018

Relinquished By: D. Klug Daniel Klug CHPRC Print First and Last Name Signature Date/Time	Received By: R. Friesz Jr. Roger Friesz Jr. CHPRC 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: R. Friesz Jr. Roger Friesz Jr. CHPRC 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. T. ... 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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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443758			C.O.C.# W18-002-101			
					Page 1 of 1			
Collector: Daniel Klug CHERC	Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650					
SAF No.: W18-002	Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071					
Project Title: RCRA, February 2018	Logbook No.: HNF-N-506 98/38		Ice Chest No.: N/A 6WS-677					
Shipped To (Lab): TestAmerica Incorporated, Rich	Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: N/A 77147413547					
Protocol: RCRA	Priority: 30 Days		Offsite Property No.: N/A 9050					
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
B3H357	N	W	FEB 13 2018	0923	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

3/13/2018

Relinquished By: Daniel Klug CHERC <i>D. KO</i> Print First and Last Name	Signature <i>[Signature]</i>	Date/Time FEB 13 2018 1105	Received By: Roger Friesz Jr. ICHERC <i>[Signature]</i> Print First and Last Name	Signature <i>[Signature]</i>	Date/Time FEB 13 2018 1105	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: Roger Friesz Jr. ICHERC <i>[Signature]</i> Print First and Last Name	Signature <i>[Signature]</i>	Date/Time FEB 13 2018 1400	Received By: FEDEX	Signature <i>[Signature]</i>	Date/Time <i>[Signature]</i>	
Relinquished By: FedEx Print First and Last Name	Signature <i>[Signature]</i>	Date/Time <i>[Signature]</i>	Received By: C. Tarplin <i>[Signature]</i> Print First and Last Name	Signature <i>[Signature]</i>	Date/Time 2/14/18 0930	
Relinquished By: Print First and Last Name	Signature <i>[Signature]</i>	Date/Time <i>[Signature]</i>	Received By: Print First and Last Name	Signature <i>[Signature]</i>	Date/Time <i>[Signature]</i>	
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 443758			C.O.C. # W18-002-103			
					Page 1 of 1			
Collector: Daniel Klug CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: W18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: RCRA, February 2018 GEL		Logbook No.: HNF-N-506 98/38		Ice Chest No.: N/A 605-677				
Shipped To (Lab): <u>TestAmerica Incorporated, Rich</u>		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: N/A 7714 74133417				
Protocol: RCRA KS 2/14/18		Priority: 30 Days		Offsite Property No.: N/A 9050				
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 2/10/21/18					
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H371	N	W	FEB 13 2018	1015	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

3/13/2018

Relinquished By: D. Klug Print First and Last Name: D. Klug Signature: [Signature] Date/Time: FEB 13 2018 1105	Received By: Roger Friesz Jr. Print First and Last Name: [Signature] Signature: [Signature] Date/Time: FEB 13 2018 1105	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: Roger Friesz Jr. Print First and Last Name: [Signature] Signature: [Signature] Date/Time: FEB 13 2018 1100	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. Tarplin Print First and Last Name: [Signature] Signature: [Signature] Date/Time: 2/14/18 0930	
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 443758			C.O.C.# W18-002-105
					Page 1 of 1
Collector: Juan Aguilar /CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650	
SAF No.: W18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071	
Project Title: RCRA, February 2018		Logbook No.: HNF-N-506-95-93		Ice Chest No.: TLP N/A 2-13-18 GWS-677	
Shipped To (Lab): Test America Incorporated, Rich		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: TLP 2-13-18 77147413347	
Protocol: RCRA		Priority: 30 Days		Offsite Property No.: N/A 2-13-18 9050	
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
B3H380	N	W	2-13-18	1247	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Juan Aguilar /CHPRC Print First and Last Name: _____ Signature: _____ Date/Time: FEB 13 2018 1306	Received By: Juan Aguilar Troy Bacon /CHPRC Print First and Last Name: _____ Signature: _____ Date/Time: FEB 13 2018 1306	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 Print First and Last Name: _____ Signature: _____ Date/Time: FEB 13 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: C. Tamplin Print First and Last Name: _____ Signature: _____ Date/Time: 2/14/18 8:30	
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 443758	C.O.C.# W18-002-107
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Collector: IVAN SCHAEFFER CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: W18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: RCRA, February 2018 GEL	Logbook No.: HNF-N-506 98/37	Ice Chest No.: 2/13/18 CWS-598
Shipped To (Lab): TestAmerica Incorporated, Rich KS 2/8/18	Method of Shipment: GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.: 2/13/18 771468705294
Protocol: RCRA	Priority: 30 Days	Offsite Property No.: 2/13/18 9048

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
 Low Volume Wells. Do not use for QC.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H384	N	W	FEB 17 2018	1344	1x60-mL P mac 2/12/18 125	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: IVAN SCHAEFFER <small>CHPRC</small> <i>[Signature]</i> FEB 12 2018 1415	Received By: SSU-1 <small>CHPRC</small> <i>[Signature]</i> FEB 12 2018 1415	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: SSU-1 <small>CHPRC</small> <i>[Signature]</i> FEB 13 2018 0715	Received By: Roger Friesz Jr. <small>CHPRC</small> <i>[Signature]</i> FEB 13 2018 0715	
Relinquished By: Roger Friesz Jr. <small>CHPRC</small> <i>[Signature]</i> FEB 13 2018 1400	Received By: FEDEX <small>CHPRC</small> <i>[Signature]</i> FEB 13 2018 1400	
Relinquished By: FedEx <small>CHPRC</small> <i>[Signature]</i> FEB 13 2018 1400	Received By: C. Tamplin <small>CHPRC</small> <i>[Signature]</i> 2/14/18 0930	

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 443758			C.O.C.# W18-002-121			
					Page 1 of 1			
Collector: Juan Aguilar CHPRC	Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650					
SAF No.: W18-002	Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071					
Project Title: RCRA, February 2018 GEL	Logbook No.: HNF-N-506 - 95193		Ice Chest No.: N/A GWS-677					
Shipped To (Lab): Test America Incorporated, Rich	Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: N/A 97714 943547					
Protocol: RCRA KS 2/12/18	Priority: 30 Days		Offsite Property No.: N/A 9050					
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 Low Volume Wells. Do not use for QC.					
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H3M3	N	W	2-13-18	0947	1x60-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

3/13/2018

Relinquished By: <u>Juan Aguilar</u> CHPRC FEB 13 2018 1120 Print First and Last Name Signature Date/Time	Received By: <u>Troy Bacon</u> CHPRC FEB 13 2018 1120 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: <u>Troy Bacon</u> CHPRC FEB 13 2018 1400 Print First and Last Name Signature Date/Time	Received By: FEDEX Print First and Last Name Signature Date/Time			
Relinquished By: <u>Feder</u> Print First and Last Name Signature Date/Time	Received By: <u>C. Tamplin</u> Print First and Last Name Signature Date/Time 2/14/18 0730			
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 443758	C.O.C.# W18-002-123
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Collector: Juan Aguilar ICHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: W18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: RCRA, February 2018 GEL	Logbook No.: HNF-N-506-95193	Ice Chest No.: GWS-677
Shipped To (Lab): TestAmerica Incorporated, Rich	Method of Shipment: GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.: 7714 74135447
Protocol: RCRA KS 2/2/18	Priority: 30 Days	Offsite Property No.: 9090

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
 Low Volume Wells. Do not use for QC.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H3M8	N	W	2-13-18	1108	1x60-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Print First and Last Name: Juan Aguilar Signature: Date/Time: FEB 13 2018 1120	Received By: Troy Bacon Print First and Last Name: Troy L Bacon Signature: Date/Time: FEB 13 2018 1120	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 Print First and Last Name: Troy L Bacon Signature: Date/Time: FEB 13 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. Tarplin Print First and Last Name: C. Tarplin Signature: Date/Time: 2/14/18 0930				
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:

17 d 192

3/13/2018

REV.0

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443758			C.O.C.# W18-002-125			
Page 1 of 1								
Collector: Juan Aguilar ICHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: W18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: RCRA, February 2018 GEL		Logbook No.: HNF-N-506--95193		Ice Chest No.: ^{TLB} 2-13-18 ^{N/A} GWS-677				
Shipped To (Lab): TestAmerica Incorporated, Rich		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: ^{TLB} 2-13-18 ^{N/A} 771494135447				
Protocol: RCRA RS 2/2/18		Priority: 30 Days		Offsite Property No.: ^{TLB} 2-13-18 ^{N/A} 9050				
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
B3H3N3	N	W	2-13-18	1027	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

3/13/2018

Relinquished By: <u>Juan Aguilar</u> <small>ICHPRC</small> Print First and Last Name Signature Date/Time	Received By: <u>Troy Bacon</u> <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: <u>Troy Bacon</u> <small>CHPRC</small> Print First and Last Name Signature Date/Time	Received By: <u>FEDEX</u> Print First and Last Name Signature Date/Time	
Relinquished By: <u>FedEx</u> Print First and Last Name Signature Date/Time	Received By: <u>C. Tarplin</u> 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: _____

180192

REV.0

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443758				C.O.C. # W18-002-127	
						Page 1 of 1	
Collector: Juan Aguilar ICHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650			
SAF No.: W18-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071			
Project Title: RCRA, February 2018		Logbook No.: HNF-N-506-95193		Ice Chest No.: N/A GWS-677			
Shipped To (Lab): PestAmerica Incorporated, Rich		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: N/A 7714 9443547			
Protocol: RCRA		Priority: 30 Days		Offsite Property No.: N/A 9050			
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
B3H3N7	N	W	2-13-18	0811	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Juan Aguilar ICHPRC	FEB 13 2018	1120	Received By: Troy Bacon CHPRC	FEB 13 2018	1120	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
<i>Print First and Last Name</i>	<i>Signature</i>	<i>Date/Time</i>	<i>Print First and Last Name</i>	<i>Signature</i>	<i>Date/Time</i>	
Relinquished By: Troy Bacon CHPRC	FEB 13 2018	1400	Received By: FEDEX			
<i>Print First and Last Name</i>	<i>Signature</i>	<i>Date/Time</i>	<i>Print First and Last Name</i>	<i>Signature</i>	<i>Date/Time</i>	
Relinquished By: FedEx			Received By: C. Tarplin	2/14/18	0930	
<i>Print First and Last Name</i>	<i>Signature</i>	<i>Date/Time</i>	<i>Print First and Last Name</i>	<i>Signature</i>	<i>Date/Time</i>	
Relinquished By:			Received By:			
<i>Print First and Last Name</i>	<i>Signature</i>	<i>Date/Time</i>	<i>Print First and Last Name</i>	<i>Signature</i>	<i>Date/Time</i>	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:
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19003

3/13/2018

REV.0

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C.# W18-002-057
		443758		82165
Collector: Daniel Klug CHPRC		Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650	
SAF No.: W18-002	Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071	
Project Title: RCRA, February 2018	Logbook No.: HNF-N-506 98/38		Ice Chest No.: 605-677	
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment Commercial Carrier		Bill of Lading/Air Bill No.: 7714 74138447	
Protocol RCRA	Priority: 30 Days		Offsite Property No.: 9050	

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
B3H3D0	Y	W	FEB 13 2018	1115	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B3H3D0	Y	W			1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C
B3H3C8	N	W			1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3H3C8	N	W			1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B3H3C8	N	W			1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C
B3H3C8	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C

3/13/2018

Relinquished By: Daniel Klug CHPRC Signature: <i>[Signature]</i> Date/Time: FEB 13 2018 1125	Received By: Roger Friesz Jr. CHPRC Signature: <i>[Signature]</i> Date/Time: FEB 13 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: Roger Friesz Jr. CHPRC Signature: <i>[Signature]</i> Date/Time: FEB 13 2018 400	Received By: FEDEX Signature: _____ Date/Time: _____	
Relinquished By: Fedex Signature: _____ Date/Time: _____	Received By: C. Trappin Signature: <i>[Signature]</i> Date/Time: 2/14/18 0930	
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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REV.0

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C.# W18-002-070
Collector: IVAN SCHAEFFER CHPRC		Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650	
SAF No.: W18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071		
Project Title: RCRA, February 2018	Logbook No.: HNF-N-506 48/37	Ice Chest No.: 6WS-598		
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No.: 7714 68705294		
Protocol RCRA	Priority: 30 Days	Offsite Property No.: 9048		

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
 Low Volume Wells. Do not use for QC.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H383	N	W	FEB 12 2018	1344	1x125-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B3H383	N	W	FEB 12 2018	1344	1x125-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

3/13/2018

Relinquished By: IVAN SCHAEFFER CHPRC <i>Ivan Schaeffer</i> Print First and Last Name Signature	FEB 12 2018 ¹⁴¹⁵ Date/Time	Received By: SSU-1 Print First and Last Name Signature	FEB 12 2018 ¹⁴¹⁵ 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: SSU-1 Print First and Last Name Signature	FEB 13 2018 ⁰⁷¹⁵ Date/Time	Received By: Roger Friesz Jr. CHPRC <i>Roger Friesz Jr.</i> Print First and Last Name Signature	FEB 13 2018 ⁰⁷¹⁵ Date/Time	
Relinquished By: Roger Friesz Jr. CHPRC <i>Roger Friesz Jr.</i> Print First and Last Name Signature	FEB 13 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: <i>C. Tarplin</i> <i>C. Tarplin</i> Print First and Last Name Signature	2/14/18 ⁰⁷³⁰ Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

2/14/2018

REV.0

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448758	C.O.C.# W18-002-076 Page 1 of 1
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Collector: Juan Aguilar IC/PRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: W18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: RCRA, February 2018	Logbook No.: HNF-N-506-95193	Ice Chest No.: GWS-677
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 57714 74135447
Protocol: RCRA	Priority: 30 Days	Offsite Property No.: 9050

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
 Low Volume Wells. Do not use for QC.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H3M5	Y	W	2-13-18	0947	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C
B3H3M1	N	W	2-13-18	0947	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C

3/13/2018

Relinquished By: Juan Aguilar IC/PRC Signature: <i>[Signature]</i> Date/Time: FEB 13 2018 1120	Received By: Troy Bacon CHPRC Signature: <i>[Signature]</i> Date/Time: FEB 13 2018 1120	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: <i>[Signature]</i> Date/Time: FEB 13 2018 1400	Received By: EDEX Signature: _____ Date/Time: _____	
Relinquished By: FedEx Signature: _____ Date/Time: _____	Received By: C. Tomlin Signature: <i>[Signature]</i> Date/Time: 2/14/18 0930	
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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REV.0

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443758	C.O.C.# W18-002-077
Page 1 of 1		

Collector: Juan Aguilar CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: W18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: RCRA, February 2018	Logbook No.: HNF-N-506-95193	Ice Chest No.: GWS-677
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771474135447
Protocol: RCRA	Priority: 30 Days	Offsite Property No.: 9050

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
B3H3N6	N	W	2-13-18	0811	1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B3H3N6	N	W	2-13-18	0811	1x500-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

3/13/2018

Relinquished By: Juan Aguilar CHPRC Print First and Last Name Signature Date/Time	Received By: Bacon CHPRC 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: Bacon CHPRC 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. Taplin 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:

230792

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 13 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 Radchem	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

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443758
Work Order #: 443758

Product: Determination of Metals by ICP**Analytical Method:** SW846 3005A/6010D**Analytical Procedure:** GL-MA-E-013 REV# 30**Analytical Batch:** 1739220**Product: Determination of Metals by ICP-MS****Analytical Method:** SW846 3005A/6020B**Analytical Procedure:** GL-MA-E-014 REV# 32**Analytical Batch:** 1739227**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 14**Preparation Batches:** 1739219 and 1739226

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443758011	B3H3D0
443758012	B3H3C8
443758013	B3H383
443758016	B3H3N6
1203971720	Method Blank (MB) ICP
1203971721	Laboratory Control Sample (LCS)
1203971724	443758011(B3H3D0L) Serial Dilution (SD)
1203971722	443758011(B3H3D0S) Matrix Spike (MS)
1203971723	443758011(B3H3D0SD) Matrix Spike Duplicate (MSD)
1203971735	Method Blank (MB) ICP-MS
1203971736	Laboratory Control Sample (LCS)
1203971739	443758011(B3H3D0L) Serial Dilution (SD)
1203971737	443758011(B3H3D0S) Matrix Spike (MS)
1203971738	443758011(B3H3D0SD) 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.

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: GEL443758 GEL Work Order: 443758

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: 09 MAR 2018****Title: Data Validator**

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443758

CONTRACT: CPCR0W18002

METHOD TYPE: SW846

SAMPLE ID: 443758011

BASIS: As Received

DATE COLLECTED 13-FEB-18

CLIENT ID: B3H3D0

LEVEL: Low

DATE RECEIVED 14-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	02/27/18 13:20	180227-5	1739227
7440-38-2	Arsenic	6.96	ug/L		2	5	5	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-39-3	Barium	51	ug/L		0.67	2	2	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	02/28/18 11:55	180228-7	1739227
7440-42-8	Boron	23.3	ug/L	B	15	50	50	1	P	HSC	03/02/18 15:03	030218-1	1739220
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-70-2	Calcium	48800	ug/L		50	200	200	1	P	HSC	03/02/18 15:03	030218-1	1739220
7440-47-3	Chromium	5.6	ug/L	B	3	10	10	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-50-8	Copper	0.317	ug/L	B	0.3	1	1	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	03/02/18 15:03	030218-1	1739220
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7439-95-4	Magnesium	13800	ug/L		110	300	300	1	P	HSC	03/02/18 15:03	030218-1	1739220
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7439-98-7	Molybdenum	6.47	ug/L		0.2	0.5	0.5	1	MS	PRB	02/28/18 13:43	180228-6	1739227
7440-02-0	Nickel	2.81	ug/L		0.6	2	2	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-09-7	Potassium	7630	ug/L		50	150	150	1	P	HSC	03/02/18 15:03	030218-1	1739220
7782-49-2	Selenium	5.27	ug/L		2	5	5	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-23-5	Sodium	26900	ug/L		100	300	300	1	P	HSC	03/02/18 15:03	030218-1	1739220
7440-24-6	Strontium	253	ug/L		2	10	10	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	PRB	02/26/18 21:13	180226-4	1739227
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	PRB	02/26/18 17:58	180226-3	1739227
7440-61-1	Uranium	15.4	ug/L		0.067	0.2	0.2	1	MS	PRB	02/26/18 21:13	180226-4	1739227
7440-62-2	Vanadium	18.3	ug/L		1	5	5	1	P	HSC	03/02/18 15:03	030218-1	1739220
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	02/26/18 17:58	180226-3	1739227

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739220	1739219	SW846 3005A	50	mL	50	mL	02/14/18	JXM8
1739227	1739226	SW846 3005A	50	mL	50	mL	02/14/18	JXM8

***Analytical Methods:**

METALS

-1-

INORGANICS ANALYSIS DATA PACKAGE

P SW846 3005A/6010D
MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443758

CONTRACT: CPCR0W18002

METHOD TYPE: SW846

SAMPLE ID: 443758012

BASIS: As Received

DATE COLLECTED 13-FEB-18

CLIENT ID: B3H3C8

LEVEL: Low

DATE RECEIVED 14-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	02/27/18 13:27	180227-5	1739227
7440-38-2	Arsenic	7.13	ug/L		2	5	5	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-39-3	Barium	50	ug/L		0.67	2	2	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	02/28/18 12:04	180228-7	1739227
7440-42-8	Boron	24.6	ug/L	B	15	50	50	1	P	HSC	03/02/18 15:13	030218-1	1739220
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-70-2	Calcium	48600	ug/L		50	200	200	1	P	HSC	03/02/18 15:13	030218-1	1739220
7440-47-3	Chromium	11.5	ug/L		3	10	10	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-50-8	Copper	0.535	ug/L	B	0.3	1	1	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7439-89-6	Iron	46.5	ug/L	B	30	100	100	1	P	HSC	03/02/18 15:13	030218-1	1739220
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7439-95-4	Magnesium	13700	ug/L		110	300	300	1	P	HSC	03/02/18 15:13	030218-1	1739220
7439-96-5	Manganese	1.04	ug/L	B	1	5	5	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7439-98-7	Molybdenum	6.48	ug/L		0.2	0.5	0.5	1	MS	PRB	02/28/18 13:50	180228-6	1739227
7440-02-0	Nickel	4.85	ug/L		0.6	2	2	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-09-7	Potassium	7700	ug/L		50	150	150	1	P	HSC	03/02/18 15:13	030218-1	1739220
7782-49-2	Selenium	5.57	ug/L		2	5	5	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-23-5	Sodium	26800	ug/L		100	300	300	1	P	HSC	03/02/18 15:13	030218-1	1739220
7440-24-6	Strontium	247	ug/L		2	10	10	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	PRB	02/26/18 21:29	180226-4	1739227
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	PRB	02/26/18 18:14	180226-3	1739227
7440-61-1	Uranium	15.5	ug/L		0.067	0.2	0.2	1	MS	PRB	02/26/18 21:29	180226-4	1739227
7440-62-2	Vanadium	19	ug/L		1	5	5	1	P	HSC	03/02/18 15:13	030218-1	1739220
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	02/26/18 18:14	180226-3	1739227

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739220	1739219	SW846 3005A	50	mL	50	mL	02/14/18	JXM8
1739227	1739226	SW846 3005A	50	mL	50	mL	02/14/18	JXM8

***Analytical Methods:**

METALS

-1-

INORGANICS ANALYSIS DATA PACKAGE

P SW846 3005A/6010D
MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443758

CONTRACT: CPRCOW18002

METHOD TYPE: SW846

SAMPLE ID: 443758013

BASIS: As Received

DATE COLLECTED 12-FEB-18

CLIENT ID: B3H383

LEVEL: Low

DATE RECEIVED 14-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-38-2	Arsenic	5.29	ug/L	B	5	30	30	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-39-3	Barium	18	ug/L		1	5	5	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-70-2	Calcium	10800	ug/L		50	200	200	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-47-3	Chromium	33	ug/L		3	10	10	1	MS	PRB	02/26/18 18:17	180226-3	1739227
7440-47-3	Chromium	30.9	ug/L		1	5	5	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	03/02/18 15:16	030218-1	1739220
7439-89-6	Iron	605	ug/L		30	100	100	1	P	HSC	03/02/18 15:16	030218-1	1739220
7439-95-4	Magnesium	3500	ug/L		110	300	300	1	P	HSC	03/02/18 15:16	030218-1	1739220
7439-96-5	Manganese	18.2	ug/L		2	10	10	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-02-0	Nickel	3.92	ug/L	B	1.5	5	5	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-09-7	Potassium	2710	ug/L		50	150	150	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-23-5	Sodium	86700	ug/L		100	300	300	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-62-2	Vanadium	71.4	ug/L		1	5	5	1	P	HSC	03/02/18 15:16	030218-1	1739220
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	03/02/18 15:16	030218-1	1739220

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739220	1739219	SW846 3005A	50	mL	50	mL	02/14/18	JXM8
1739227	1739226	SW846 3005A	50	mL	50	mL	02/14/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D
MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443758

CONTRACT: CPCR0W18002

METHOD TYPE: SW846

SAMPLE ID:443758016

BASIS: As Received

DATE COLLECTED 13-FEB-18

CLIENT ID: B3H3N6

LEVEL: Low

DATE RECEIVED 14-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-38-2	Arsenic	5	ug/L	U	5	30	30	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-39-3	Barium	29.3	ug/L		1	5	5	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-70-2	Calcium	21000	ug/L		50	200	200	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-47-3	Chromium	31.5	ug/L		1	5	5	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-47-3	Chromium	33.5	ug/L		3	10	10	1	MS	PRB	02/26/18 18:20	180226-3	1739227
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	03/02/18 15:19	030218-1	1739220
7439-89-6	Iron	51.9	ug/L	B	30	100	100	1	P	HSC	03/02/18 15:19	030218-1	1739220
7439-95-4	Magnesium	6900	ug/L		110	300	300	1	P	HSC	03/02/18 15:19	030218-1	1739220
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-02-0	Nickel	1.5	ug/L	U	1.5	5	5	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-09-7	Potassium	3570	ug/L		50	150	150	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-23-5	Sodium	91600	ug/L		100	300	300	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-62-2	Vanadium	47.4	ug/L		1	5	5	1	P	HSC	03/02/18 15:19	030218-1	1739220
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	03/02/18 15:19	030218-1	1739220

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739220	1739219	SW846 3005A	50	mL	50	mL	02/14/18	JXM8
1739227	1739226	SW846 3005A	50	mL	50	mL	02/14/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D
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 9, 2018

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 443758

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739227										
QC1203971736	LCS										
Aluminum	2000			2130	ug/L		107	(80%-120%)	PRB	02/26/18	17:55
Antimony	50.0			47.6	ug/L		95.3	(80%-120%)		02/27/18	13:18
Arsenic	50.0			48.5	ug/L		97	(80%-120%)		02/26/18	17:55
Barium	50.0			48.0	ug/L		96	(80%-120%)			
Beryllium	50.0			50.7	ug/L		101	(80%-120%)	SKJ	02/28/18	11:53
Cadmium	50.0			49.8	ug/L		99.6	(80%-120%)	PRB	02/26/18	17:55
Chromium	50.0			49.2	ug/L		98.5	(80%-120%)			
Cobalt	50.0			48.3	ug/L		96.6	(80%-120%)			
Copper	50.0			50.5	ug/L		101	(80%-120%)			
Lead	50.0			49.6	ug/L		99.1	(80%-120%)			
Manganese	50.0			48.7	ug/L		97.4	(80%-120%)			
Molybdenum	50.0			49.9	ug/L		99.8	(80%-120%)		02/28/18	13:42
Nickel	50.0			50.5	ug/L		101	(80%-120%)		02/26/18	17:55

GEL LABORATORIES LLC

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QC Summary

Workorder: 443758

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739227										
Selenium	50.0			49.0	ug/L		98	(80%-120%)	PRB	02/26/18	17:55
Silver	50.0			51.1	ug/L		102	(80%-120%)			
Strontium	50.0			47.5	ug/L		95.1	(80%-120%)			
Thallium	50.0			41.0	ug/L		82.1	(80%-120%)			
Thorium	50.0			47.2	ug/L		94.4	(80%-120%)		02/26/18	21:10
Tin	50.0			49.7	ug/L		99.4	(80%-120%)		02/26/18	17:55
Uranium	50.0			48.1	ug/L		96.2	(80%-120%)		02/26/18	21:10
Zinc	50.0			47.5	ug/L		95	(80%-120%)		02/26/18	17:55
QC1203971735	MB										
Aluminum			U	19.3	ug/L					02/26/18	17:51
Antimony			U	1.00	ug/L					02/27/18	13:16
Arsenic			U	2.00	ug/L					02/26/18	17:51
Barium			U	0.670	ug/L						
Beryllium			U	0.200	ug/L				SKJ	02/28/18	11:52
Cadmium			U	0.300	ug/L				PRB	02/26/18	17:51
Chromium			U	3.00	ug/L						

GEL LABORATORIES LLC

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QC Summary

Workorder: 443758

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739227										
Cobalt			U	0.300	ug/L				PRB	02/26/18	17:51
Copper			U	0.300	ug/L						
Lead			U	0.500	ug/L						
Manganese			U	1.00	ug/L						
Molybdenum			U	0.200	ug/L					02/28/18	13:40
Nickel			U	0.600	ug/L					02/26/18	17:51
Selenium			U	2.00	ug/L						
Silver			U	0.300	ug/L						
Strontium			U	2.00	ug/L						
Thallium			U	0.600	ug/L						
Thorium			U	0.700	ug/L					02/26/18	21:07
Tin			U	1.00	ug/L					02/26/18	17:51
Uranium			U	0.067	ug/L					02/26/18	21:07
Zinc			U	3.30	ug/L					02/26/18	17:51
QC1203971737 443758011 MS											
Aluminum	2000	U	19.3	1910	ug/L		95.5	(75%-125%)		02/26/18	18:01

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443758

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739227										
Antimony	50.0	U	1.00	47.2	ug/L		93.9	(75%-125%)	PRB	02/27/18	13:22
Arsenic	50.0		6.96	54.3	ug/L		94.7	(75%-125%)		02/26/18	18:01
Barium	50.0		51.0	96.1	ug/L		90.1	(75%-125%)			
Beryllium	50.0	U	0.200	50.1	ug/L		100	(75%-125%)	SKJ	02/28/18	11:56
Cadmium	50.0	U	0.300	47.3	ug/L		94.5	(75%-125%)	PRB	02/26/18	18:01
Chromium	50.0	B	5.60	52.4	ug/L		93.7	(75%-125%)			
Cobalt	50.0	U	0.300	46.1	ug/L		92	(75%-125%)			
Copper	50.0	B	0.317	46.5	ug/L		92.3	(75%-125%)			
Lead	50.0	U	0.500	46.3	ug/L		92.6	(75%-125%)			
Manganese	50.0	U	1.00	47.5	ug/L		93.5	(75%-125%)			
Molybdenum	50.0		6.47	56.2	ug/L		99.5	(75%-125%)		02/28/18	13:45
Nickel	50.0		2.81	49.4	ug/L		93.1	(75%-125%)		02/26/18	18:01
Selenium	50.0		5.27	52.6	ug/L		94.6	(75%-125%)			
Silver	50.0	U	0.300	48.2	ug/L		96.3	(75%-125%)			
Strontium	50.0		253	290	ug/L		N/A	(75%-125%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443758

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Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS												
Batch	1739227											
Thallium	50.0	U	0.600		38.6	ug/L		76.8	(75%-125%)	PRB	02/26/18	18:01
Thorium	50.0	U	0.700		46.3	ug/L		92.1	(75%-125%)		02/26/18	21:16
Tin	50.0	U	1.00		48.5	ug/L		96.6	(75%-125%)		02/26/18	18:01
Uranium	50.0		15.4		61.7	ug/L		92.5	(75%-125%)		02/26/18	21:16
Zinc	50.0	U	3.30		45.2	ug/L		88.1	(75%-125%)		02/26/18	18:01
QC1203971738 443758011 MSD												
Aluminum	2000	U	19.3		1950	ug/L	2.05	97.4	(0%-20%)		02/26/18	18:04
Antimony	50.0	U	1.00		50.3	ug/L	6.44	100	(0%-20%)		02/27/18	13:23
Arsenic	50.0		6.96		56.1	ug/L	3.27	98.3	(0%-20%)		02/26/18	18:04
Barium	50.0		51.0		101	ug/L	5.26	101	(0%-20%)			
Beryllium	50.0	U	0.200		52.3	ug/L	4.21	105	(0%-20%)	SKJ	02/28/18	11:58
Cadmium	50.0	U	0.300		49.5	ug/L	4.55	98.9	(0%-20%)	PRB	02/26/18	18:04
Chromium	50.0	B	5.60		54.6	ug/L	3.96	97.9	(0%-20%)			
Cobalt	50.0	U	0.300		47.6	ug/L	3.33	95.1	(0%-20%)			
Copper	50.0	B	0.317		47.7	ug/L	2.58	94.7	(0%-20%)			
Lead	50.0	U	0.500		48.7	ug/L	4.86	97.3	(0%-20%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739227										
Manganese	50.0	U	1.00		49.3	ug/L	3.67	97.1	(0%-20%)	PRB	02/26/18 18:04
Molybdenum	50.0		6.47		58.9	ug/L	4.62	105	(0%-20%)		02/28/18 13:47
Nickel	50.0		2.81		51.0	ug/L	3.19	96.3	(0%-20%)		02/26/18 18:04
Selenium	50.0		5.27		55.1	ug/L	4.61	99.6	(0%-20%)		
Silver	50.0	U	0.300		49.9	ug/L	3.43	99.7	(0%-20%)		
Strontium	50.0		253		307	ug/L	5.9	N/A	(0%-20%)		
Thallium	50.0	U	0.600		40.6	ug/L	4.99	80.8	(0%-20%)		
Thorium	50.0	U	0.700		48.6	ug/L	4.79	96.6	(0%-20%)		02/26/18 21:20
Tin	50.0	U	1.00		50.7	ug/L	4.45	101	(0%-20%)		02/26/18 18:04
Uranium	50.0		15.4		64.6	ug/L	4.61	98.4	(0%-20%)		02/26/18 21:20
Zinc	50.0	U	3.30		45.6	ug/L	0.868	88.9	(0%-20%)		02/26/18 18:04
QC1203971739 443758011 SDILT											
Aluminum		U	3.32	DU	96.5	ug/L	N/A		(0%-20%)		02/26/18 18:11
Antimony		U	0.192	DU	5.00	ug/L	N/A		(0%-20%)		02/27/18 13:25
Arsenic			6.96	DU	10.0	ug/L	N/A		(0%-20%)		02/26/18 18:11
Barium			51.0	D	10.0	ug/L	1.97		(0%-20%)		

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739227										
Beryllium	U	0.010	DU	1.00	ug/L	N/A		(0%-20%)	SKJ	02/28/18	11:59
Cadmium	U	0.021	DU	1.50	ug/L	N/A		(0%-20%)	PRB	02/26/18	18:11
Chromium	B	5.60	DU	15.0	ug/L	N/A		(0%-20%)			
Cobalt	U	0.091	DU	1.50	ug/L	N/A		(0%-20%)			
Copper	B	0.317	DU	1.50	ug/L	N/A		(0%-20%)			
Lead	U	0.028	DU	2.50	ug/L	N/A		(0%-20%)			
Manganese	U	0.759	DU	5.00	ug/L	N/A		(0%-20%)			
Molybdenum		6.47	D	1.28	ug/L	1.24		(0%-20%)		02/28/18	13:49
Nickel		2.81	DU	3.00	ug/L	N/A		(0%-20%)		02/26/18	18:11
Selenium		5.27	DU	10.0	ug/L	N/A		(0%-20%)			
Silver	U	0.041	DU	1.50	ug/L	N/A		(0%-20%)			
Strontium		253	D	48.2	ug/L	4.85		(0%-20%)			
Thallium	U	0.177	DU	3.00	ug/L	N/A		(0%-20%)			
Thorium	U	0.227	DU	3.50	ug/L	N/A		(0%-20%)		02/26/18	21:26
Tin	U	0.214	DU	5.00	ug/L	N/A		(0%-20%)		02/26/18	18:11

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Parname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739227										
Uranium		15.4	D	3.09	ug/L	.266		(0%-20%)	PRB	02/26/18	21:26
Zinc	U	1.17	DU	16.5	ug/L	N/A		(0%-20%)		02/26/18	18:11
Metals Analysis-ICP											
Batch	1739220										
QC1203971721	LCS										
Antimony	500			458	ug/L		91.6	(80%-120%)	HSC	03/02/18	15:01
Arsenic	500			468	ug/L		93.6	(80%-120%)			
Barium	500			461	ug/L		92.1	(80%-120%)			
Boron	500			460	ug/L		92.1	(80%-120%)			
Cadmium	500			456	ug/L		91.1	(80%-120%)			
Calcium	5000			4520	ug/L		90.5	(80%-120%)			
Chromium	500			457	ug/L		91.3	(80%-120%)			
Cobalt	500			464	ug/L		92.8	(80%-120%)			
Copper	500			459	ug/L		91.7	(80%-120%)			
Iron	5000			4490	ug/L		89.8	(80%-120%)			
Magnesium	5000			4530	ug/L		90.7	(80%-120%)			
Manganese	500			464	ug/L		92.8	(80%-120%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1739220										
Nickel	500			449	ug/L		89.9	(80%-120%)	HSC	03/02/18	15:01
Potassium	5000			4840	ug/L		96.8	(80%-120%)			
Silver	500			454	ug/L		90.8	(80%-120%)			
Sodium	5000			4500	ug/L		90	(80%-120%)			
Vanadium	500			461	ug/L		92.1	(80%-120%)			
Zinc	500			454	ug/L		90.7	(80%-120%)			
QC1203971720	MB										
Antimony			U	3.50	ug/L					03/02/18	14:58
Arsenic			U	5.00	ug/L						
Barium			U	1.00	ug/L						
Boron			U	15.0	ug/L						
Cadmium			U	1.00	ug/L						
Calcium			U	50.0	ug/L						
Chromium			U	1.00	ug/L						
Cobalt			U	1.00	ug/L						
Copper			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1739220										
Iron			U	30.0	ug/L				HSC	03/02/18	14:58
Magnesium			U	110	ug/L						
Manganese			U	2.00	ug/L						
Nickel			U	1.50	ug/L						
Potassium			U	50.0	ug/L						
Silver			U	1.00	ug/L						
Sodium			U	100	ug/L						
Vanadium			U	1.00	ug/L						
Zinc			U	3.30	ug/L						
QC1203971722 443758011 MS											
Antimony	500	U	3.50	478	ug/L		95.5	(75%-125%)		03/02/18	15:06
Arsenic	500	B	6.38	565	ug/L		112	(75%-125%)			
Barium	500		50.2	580	ug/L		106	(75%-125%)			
Boron	500	B	23.3	576	ug/L		111	(75%-125%)			
Cadmium	500	U	1.00	524	ug/L		105	(75%-125%)			
Calcium	5000		48800	53100	ug/L		N/A	(75%-125%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1739220										
Chromium	500		5.32	473	ug/L		93.5	(75%-125%)	HSC	03/02/18	15:06
Cobalt	500	U	1.00	525	ug/L		105	(75%-125%)			
Copper	500	B	-3.46	477	ug/L		95.4	(75%-125%)			
Iron	5000	U	30.0	5230	ug/L		104	(75%-125%)			
Magnesium	5000		13800	18700	ug/L		99	(75%-125%)			
Manganese	500	U	2.00	468	ug/L		93.6	(75%-125%)			
Nickel	500	B	2.66	454	ug/L		90.3	(75%-125%)			
Potassium	5000		7630	13400	ug/L		115	(75%-125%)			
Silver	500	U	1.00	525	ug/L		105	(75%-125%)			
Sodium	5000		26900	31700	ug/L		N/A	(75%-125%)			
Vanadium	500		18.3	493	ug/L		95	(75%-125%)			
Zinc	500	U	3.30	467	ug/L		93.3	(75%-125%)			
QC1203971723	443758011 MSD										
Antimony	500	U	3.50	484	ug/L	1.3	96.7	(0%-20%)		03/02/18	15:08
Arsenic	500	B	6.38	509	ug/L	10.4	101	(0%-20%)			
Barium	500		50.2	524	ug/L	10.2	94.7	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1739220										
Boron	500	B	23.3	518	ug/L	10.7	98.9	(0%-20%)	HSC	03/02/18	15:08
Cadmium	500	U	1.00	468	ug/L	11.2	93.6	(0%-20%)			
Calcium	5000		48800	53400	ug/L	0.605	N/A	(0%-20%)			
Chromium	500		5.32	477	ug/L	0.861	94.3	(0%-20%)			
Cobalt	500	U	1.00	469	ug/L	11.2	93.9	(0%-20%)			
Copper	500	B	-3.46	485	ug/L	1.68	97	(0%-20%)			
Iron	5000	U	30.0	4710	ug/L	10.4	93.6	(0%-20%)			
Magnesium	5000		13800	18500	ug/L	1.29	94.2	(0%-20%)			
Manganese	500	U	2.00	474	ug/L	1.23	94.7	(0%-20%)			
Nickel	500	B	2.66	458	ug/L	0.732	91	(0%-20%)			
Potassium	5000		7630	12800	ug/L	3.96	104	(0%-20%)			
Silver	500	U	1.00	475	ug/L	10.1	94.9	(0%-20%)			
Sodium	5000		26900	31400	ug/L	0.859	N/A	(0%-20%)			
Vanadium	500		18.3	501	ug/L	1.56	96.6	(0%-20%)			
Zinc	500	U	3.30	472	ug/L	1.12	94.4	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1739220										
	QC1203971724 443758011 SDILT										
Antimony	U	0.421	DU	17.5	ug/L	N/A		(0%-20%)	HSC	03/02/18	15:10
Arsenic	B	6.38	DU	25.0	ug/L	N/A		(0%-20%)			
Barium		50.2	D	10.2	ug/L	1.81		(0%-20%)			
Boron	B	23.3	DU	75.0	ug/L	N/A		(0%-20%)			
Cadmium	U	0.024	DU	5.00	ug/L	N/A		(0%-20%)			
Calcium		48800	D	9910	ug/L	1.59		(0%-20%)			
Chromium		5.32	BD	1.05	ug/L	1.11		(0%-20%)			
Cobalt	U	-0.209	DU	5.00	ug/L	N/A		(0%-20%)			
Copper	B	-3.46	DU	15.0	ug/L	N/A		(0%-20%)			
Iron	U	28.5	DU	150	ug/L	N/A		(0%-20%)			
Magnesium		13800	D	2820	ug/L	2.07		(0%-20%)			
Manganese	U	0.253	DU	10.0	ug/L	N/A		(0%-20%)			
Nickel	B	2.66	DU	7.50	ug/L	N/A		(0%-20%)			
Potassium		7630	D	1560	ug/L	2		(0%-20%)			
Silver	U	-0.0758	DU	5.00	ug/L	N/A		(0%-20%)			

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Paramname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1739220										
Sodium		26900	D	5490	ug/L	2.11		(0%-20%)	HSC	03/02/18	15:10
Vanadium		18.3	BD	3.77	ug/L	3.15		(0%-20%)			
Zinc	U	0.286	DU	16.5	ug/L	N/A		(0%-20%)			

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
- 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 #: GEL443758
Work Order #: 443758**

Product: Carbon, Total Organic

Analytical Method: SW846 9060A

Analytical Procedure: GL-GC-E-093 REV# 15

Analytical Batch: 1740028

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443758012	B3H3C8
1203973942	Method Blank (MB)
1203973943	Laboratory Control Sample (LCS)
1203973944	443758012(B3H3C8) Sample Duplicate (DUP)
1203973945	443758012(B3H3C8) Post Spike (PS)

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.

Product: Cyanide, Free

Analytical Method: 9014_CYANIDE

Analytical Procedure: GL-GC-E-073 REV# 8

Analytical Batches: 1740076 and 1740078

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443758011	B3H3D0
443758012	B3H3C8
443758014	B3H3M5
443758015	B3H3M1
1203974063	Method Blank (MB)
1203974064	Laboratory Control Sample (LCS)
1203974065	443785005(NonSDG) Sample Duplicate (DUP)
1203974066	443758011(B3H3D0) Sample Duplicate (DUP)

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

Total CN levels above the MDL for Free CN were detected in samples . Free CN was performed per SOP (GL-GC-E-073).

Product: Cyanide, Amenable to Chlorination

Analytical Method: 9012_CYANIDE

Analytical Procedure: GL-GC-E-107 REV# 10

Analytical Batches: 1740066, 1740065 and 1740064

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443758011	B3H3D0
443758012	B3H3C8
443758014	B3H3M5
443758015	B3H3M1

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.

Product: Cyanide, Total**Analytical Method:** 9012_CYANIDE**Analytical Procedure:** GL-GC-E-095 REV# 21**Analytical Batches:** 1740056 and 1740055

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443758011	B3H3D0
443758012	B3H3C8
443758014	B3H3M5
443758015	B3H3M1
1203974020	Method Blank (MB)
1203974021	Laboratory Control Sample (LCS)
1203974022	443758011(B3H3D0) Sample Duplicate (DUP)
1203974023	443871007(NonSDG) Sample Duplicate (DUP)
1203974024	443758011(B3H3D0) Matrix Spike (MS)
1203974025	443871007(NonSDG) Matrix Spike (MS)

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-analysis**

Sample 443758014 (B3H3M5) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Product: Cyanide, Chlorinated

Analytical Method: 9012_CYANIDE

Analytical Procedure: GL-GC-E-095 REV# 21

Analytical Batches: 1740065 and 1740064

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443758011	B3H3D0
443758012	B3H3C8
443758014	B3H3M5
443758015	B3H3M1
1203974044	Method Blank (MB)
1203974045	Laboratory Control Sample (LCS)
1203974046	443785005(NonSDG) Sample Duplicate (DUP)
1203974047	443758011(B3H3D0) Sample Duplicate (DUP)

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-analysis

Sample 443758015 (B3H3M1) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Product: Ion Chromatography**Analytical Method:** 9056_ANIONS_IC**Analytical Procedure:** GL-GC-E-086 REV# 25**Analytical Batches:** 1739178 and 1739192

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443758001	B3H3C9
443758002	B3H356
443758003	B3H357
443758004	B3H371
443758005	B3H380
443758006	B3H384
443758007	B3H3M3
443758008	B3H3M8
443758009	B3H3N3
443758010	B3H3N7
1203971619	Method Blank (MB)
1203971620	Laboratory Control Sample (LCS)
1203971621	443751001(NonSDG) Sample Duplicate (DUP)
1203971622	443751001(NonSDG) Post Spike (PS)
1203971651	Method Blank (MB)
1203971652	Laboratory Control Sample (LCS)
1203971653	443758010(B3H3N7) Sample Duplicate (DUP)
1203971654	443758010(B3H3N7) 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**Sample Dilutions**

The following samples 1203971621 (Non SDG 443751001DUP), 1203971622 (Non SDG 443751001PS), 443758006 (B3H384), 443758007 (B3H3M3), 443758008 (B3H3M8), 1203971653 (B3H3N7DUP), 1203971654 (B3H3N7PS), 443758001 (B3H3C9), 443758003 (B3H357), 443758004 (B3H371), 443758005 (B3H380), 443758009 (B3H3N3) and 443758010 (B3H3N7) 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	443758								
	001	003	004	005	006	007	008	009	010
Several	5X 1X	5X 100X 1X	5X 1X	5X 1X	5X 1X	20X 1X	10X 1X	10X 1X	10X 1X

Miscellaneous Information**Manual Integrations**

Sample 443758002 (B3H356) were manually integrated to correctly position the baseline as set in the calibration standards.

Product: Alkalinity**Analytical Method:** 2320_ALKALINITY**Analytical Procedure:** GL-GC-E-033 REV# 13**Analytical Batch:** 1740628

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443758012	B3H3C8
443758013	B3H383
443758016	B3H3N6
1203975520	Laboratory Control Sample (LCS)
1203975521	443644008(NonSDG) Sample Duplicate (DUP)
1203975522	443936013(B3H375) Sample Duplicate (DUP)

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.

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: GEL443758 GEL Work Order: 443758

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).

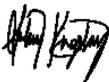
D Results are reported from a diluted aliquot of sample.

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

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

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 W18-002

Client Sample ID: B3H356 Project: CPRCOW18002
 Sample ID: 443758002 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 08:00
 Receive Date: 14-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	90.7	67.0	200	ug/L		1	JXH5	02/14/18	1251	1739192	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 W18-002

Client Sample ID: B3H357 Project: CPRCOW18002
 Sample ID: 443758003 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 09:23
 Receive Date: 14-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	301	33.0	500	ug/L		1	JXH5	02/14/18	1322	1739192	1
Nitrite-N	B	203	33.0	250	ug/L		1					
Nitrate-N	D	182000	3300	10000	ug/L		100	JXH5	02/14/18	2340	1739192	2
Sulfate	D	189000	13300	40000	ug/L		100					
Chloride	D	33300	335	1000	ug/L		5	JXH5	02/15/18	1319	1739192	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	
3	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 W18-002

Client Sample ID: B3H371 Project: CPRCOW18002
 Sample ID: 443758004 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 10:15
 Receive Date: 14-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	359	33.0	500	ug/L		1	JXH5	02/14/18	1353	1739192	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	12200	335	1000	ug/L		5	JXH5	02/15/18	0011	1739192	2
Nitrate-N	D	10900	165	500	ug/L		5					
Sulfate	D	52900	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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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 W18-002

Client Sample ID: B3H380 Project: CPRCOW18002
 Sample ID: 443758005 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 12:47
 Receive Date: 14-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	339	33.0	500	ug/L		1	JXH5	02/14/18	1424	1739192	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	19300	335	1000	ug/L		5	JXH5	02/15/18	0042	1739192	2
Nitrate-N	D	7640	165	500	ug/L		5					
Sulfate	D	34300	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 W18-002

Client Sample ID: B3H384 Project: CPRCOW18002
 Sample ID: 443758006 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 12-FEB-18 13:44
 Receive Date: 14-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		4050	33.0	500	ug/L		1	MAR1	02/14/18	1219	1739178	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	12500	335	1000	ug/L		5	MAR1	02/14/18	1445	1739178	2
Nitrate-N	D	15200	165	500	ug/L		5					
Sulfate	D	45200	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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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 W18-002

Client Sample ID: B3H3M3 Project: CPRCOW18002
 Sample ID: 443758007 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 09:47
 Receive Date: 14-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		2070	33.0	500	ug/L		1	MAR1	02/14/18	1248	1739178	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	21600	1340	4000	ug/L		20	MAR1	02/14/18	1514	1739178	2
Nitrate-N	D	48400	660	2000	ug/L		20					
Sulfate	D	45200	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

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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 W18-002

Client Sample ID: B3H3M8 Project: CPRC0W18002
 Sample ID: 443758008 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 11:08
 Receive Date: 14-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		1940	33.0	500	ug/L		1	MAR1	02/14/18	1348	1739178	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	19500	670	2000	ug/L		10	MAR1	02/14/18	1542	1739178	2
Nitrate-N	D	25900	330	1000	ug/L		10					
Sulfate	D	42700	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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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 W18-002

Client Sample ID: B3H3N7 Project: CPRCOW18002
 Sample ID: 443758010 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 08:11
 Receive Date: 14-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		2360	33.0	500	ug/L		1	JXH5	02/14/18	1525	1739192	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	19300	670	2000	ug/L		10	JXH5	02/15/18	0143	1739192	2
Nitrate-N	D	33300	330	1000	ug/L		10					
Sulfate	D	41900	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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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-002

Client Sample ID: B3H3D0 Project: CPRCOW18002
 Sample ID: 443758011 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 11:15
 Receive Date: 14-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		7.83	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	0928	1740056	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/21/18	1212	1740078	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	2.20	1.67	5.00	ug/L		1	AXH3	02/21/18	1157	1740066	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	0915	1740055
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0750	1740064

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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 W18-002

Client Sample ID: B3H3C8 Project: CPRCOW18002
 Sample ID: 443758012 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 11:15
 Receive Date: 14-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOC: COMMON "As Received"												
Total Organic Carbon #1	U	330	330	1000	ug/L		1	TSM	02/23/18	2358	1740028	1
Total Organic Carbon #2	U	330	330	1000	ug/L		1					
Total Organic Carbon #3	U	330	330	1000	ug/L		1					
Total Organic Carbon #4	U	330	330	1000	ug/L		1					
Total Organic Carbon Average	U	330	330	1000	ug/L		1					
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		8.26	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	0932	1740056	2
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/21/18	1212	1740078	3
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	2.13	1.67	5.00	ug/L		1	AXH3	02/21/18	1157	1740066	4
Titration and Ion Analysis												
2320_ALKALINITY: GW 01 "As Received"												
Alkalinity, Total as CaCO3		117000	1450	4000	ug/L			RXB5	02/23/18	1513	1740628	5
Bicarbonate alkalinity (CaCO3)		117000	1450	4000	ug/L							
Carbonate alkalinity (CaCO3)	U	1450	1450	4000	ug/L							
Hydroxide alkalinity as CaCO3	U	1450	1450	4000	ug/L							

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	0915	1740055
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0750	1740064

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	9012_CYANIDE	
3	9014_CYANIDE	
4	9012_CYANIDE	
5	2320_ALKALINITY	

Notes:

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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 W18-002

Client Sample ID: B3H3C8	Project: CPRCOW18002
Sample ID: 443758012	Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
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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 W18-002

Client Sample ID: B3H383 Project: CPRCOW18002
 Sample ID: 443758013 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 12-FEB-18 13:44
 Receive Date: 14-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis												
2320_ALKALINITY: COMMON (Alkalinity only) "As Received"												
Alkalinity, Total as CaCO3		125000	1450	4000	ug/L			RXB5	02/23/18	1515	1740628	1

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	2320_ALKALINITY		

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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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-002

Client Sample ID: B3H3M5 Project: CPRCOW18002
 Sample ID: 443758014 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 09:47
 Receive Date: 14-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	U	1.67	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	0939	1740056	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1034	1740076	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1157	1740066	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	0915	1740055
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0750	1740064

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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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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 W18-002

Client Sample ID: B3H3M1 Project: CPRCOW18002
 Sample ID: 443758015 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 09:47
 Receive Date: 14-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	U	1.67	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	0934	1740056	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1034	1740076	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1157	1740066	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	0915	1740055
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0750	1740064

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-002

Client Sample ID: B3H3N6 Project: CPRCOW18002
 Sample ID: 443758016 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 13-FEB-18 08:11
 Receive Date: 14-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis												
2320_ALKALINITY: COMMON (Alkalinity only) "As Received"												
Alkalinity, Total as CaCO3		120000	1450	4000	ug/L			RXB5	02/23/18	1519	1740628	1

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	2320_ALKALINITY		

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

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QC Summary

Report Date: March 13, 2018

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 443758

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1740028										
QC1203973944	443758012	DUP									
Total Organic Carbon Average		U	330	U	330	ug/L	N/A		TSM	02/24/18	00:37
QC1203973943	LCS										
Total Organic Carbon Average	10000				10600	ug/L		106 (80%-120%)		02/23/18	23:48
QC1203973942	MB										
Total Organic Carbon Average			U		330	ug/L				02/23/18	23:39
QC1203973945	443758012	PS									
Total Organic Carbon Average	10.0	U	0.293		11.6	mg/L		113 (75%-125%)		02/24/18	01:16
Flow Injection Analysis											
Batch	1740056										
QC1203974022	443758011	DUP									
Cyanide, Total			7.83		8.37	ug/L	6.67 ^	(+/-5.00)	AXH3	02/20/18	09:29
QC1203974023	443871007	DUP									
Cyanide, Total		U	1.67	B	2.05	ug/L	39.8 ^	(+/-5.00)		02/20/18	09:47
QC1203974021	LCS										
Cyanide, Total	50.0				50.3	ug/L		101 (80%-120%)		02/20/18	09:27
QC1203974020	MB										
Cyanide, Total			U		1.67	ug/L				02/20/18	09:26
QC1203974024	443758011	MS									
Cyanide, Total	100		7.83		112	ug/L		104 (75%-125%)		02/20/18	09:31

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1740056										
QC1203974025	443871007	MS									
Cyanide, Total	100	U	1.67	113	ug/L		112	(75%-125%)	AXH3	02/20/18	09:48
Batch	1740065										
QC1203974046	443785005	DUP									
Cyanide, Chlorinated			93.0	90.2	ug/L	3.06		(0%-20%)	AXH3	02/21/18	09:04
QC1203974047	443758011	DUP									
Cyanide, Chlorinated			5.63	B	4.99	ug/L	12.1	^ (+/-5.00)		02/21/18	08:59
QC1203974045	LCS										
Cyanide, Chlorinated	50.0		U	1.67	ug/L		0	(-200%-200%)		02/21/18	08:57
QC1203974044	MB										
Cyanide, Chlorinated			U	1.67	ug/L					02/21/18	08:56
Batch	1740078										
QC1203974065	443785005	DUP									
Free Cyanide		U	3.00	U	3.00	ug/L	N/A		AXH3	02/21/18	12:12
QC1203974066	443758011	DUP									
Free Cyanide		U	3.00	U	3.00	ug/L	N/A			02/21/18	12:12
QC1203974064	LCS										
Free Cyanide	100			99.7	ug/L		99.7	(80%-120%)		02/21/18	12:12
QC1203974063	MB										
Free Cyanide			U	3.00	ug/L					02/21/18	12:12
Ion Chromatography											
Batch	1739178										
QC1203971621	443751001	DUP									
Chloride			6870	6860	ug/L	0.124		(0%-20%)	MAR1	02/14/18	18:06

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1739178										
Fluoride	B	114	B	112	ug/L	1.15	^	(+/-500)	MAR1	02/14/18	18:06
Nitrate-N		372		371	ug/L	0.35	^	(+/-250)			
Nitrite-N	U	33.0	U	33.0	ug/L	N/A					
Sulfate	D	55600	D	55200	ug/L	0.763		(0%-20%)		02/14/18	19:33
QC1203971620	LCS										
Chloride	5000			4830	ug/L			96.5	(80%-120%)	02/14/18	17:37
Fluoride	2500			2590	ug/L			104	(80%-120%)		
Nitrate-N	2500			2490	ug/L			99.4	(80%-120%)		
Nitrite-N	2500			2420	ug/L			96.9	(80%-120%)		
Sulfate	10000			9950	ug/L			99.5	(80%-120%)		
QC1203971619	MB										
Chloride			U	67.0	ug/L					02/14/18	17:08
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						

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QC Summary

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1739178										
QC1203971622	443751001 PS										
Chloride	5.00		6.87		12.2	mg/L		107 (75%-125%)	MAR1	02/14/18	18:35
Fluoride	2.50	B	0.114		2.66	mg/L		102 (75%-125%)			
Nitrate-N	2.50		0.372		2.85	mg/L		99.2 (75%-125%)			
Nitrite-N	2.50	U	0.00		2.42	mg/L		96.9 (75%-125%)			
Sulfate	10.0	D	5.56	D	15.7	mg/L		101 (75%-125%)		02/14/18	20:02
Batch	1739192										
QC1203971653	443758010 DUP										
Chloride		D	19300	D	19200	ug/L	0.125	(0%-20%)	JXH5	02/15/18	02:14
Fluoride			2360		2370	ug/L	0.363 ^	(+/-500)		02/14/18	15:56
Nitrate-N		D	33300	D	33300	ug/L	0.126	(0%-20%)		02/15/18	02:14
Nitrite-N		U	33.0	U	33.0	ug/L	N/A			02/14/18	15:56
Sulfate		D	41900	D	41700	ug/L	0.529	(0%-20%)		02/15/18	02:14
QC1203971652	LCS										
Chloride	5000				4750	ug/L		94.9 (80%-120%)		02/14/18	11:49
Fluoride	2500				2510	ug/L		101 (80%-120%)			
Nitrate-N	2500				2400	ug/L		96.1 (80%-120%)			
Nitrite-N	2500				2420	ug/L		96.8 (80%-120%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1739192										
Sulfate	10000			9830	ug/L		98.3	(80%-120%)	JXH5	02/14/18	11:49
QC1203971651	MB										
Chloride			U	67.0	ug/L					02/14/18	11:18
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						
QC1203971654	443758010 PS										
Chloride	5.00	D	1.93	D	6.86	mg/L		98.6	(75%-125%)	02/15/18	02:45
Fluoride	2.50		2.36		4.97	mg/L		104	(75%-125%)	02/14/18	17:29
Nitrate-N	2.50	D	3.33	D	6.00	mg/L		107	(75%-125%)	02/15/18	02:45
Nitrite-N	2.50	U	0.00		2.34	mg/L		93.7	(75%-125%)	02/14/18	17:29
Sulfate	10.0	D	4.19	D	14.1	mg/L		99.3	(75%-125%)	02/15/18	02:45
Titration and Ion Analysis											
Batch	1740628										
QC1203975521	443644008 DUP										
Alkalinity, Total as CaCO3			174000		175000	ug/L	0.344	(0%-20%)	RXB5	02/23/18	13:41
Bicarbonate alkalinity (CaCO3)			174000		175000	ug/L	0.344	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1740628										
Carbonate alkalinity (CaCO3)	U	1450	U	1450	ug/L	N/A			RXB5	02/23/18	13:41
Hydroxide alkalinity as CaCO3	U	1450	U	1450	ug/L	N/A					
QC1203975522 443936013 DUP											
Alkalinity, Total as CaCO3		118000		118000	ug/L	0		(0%-20%)		02/23/18	16:46
Bicarbonate alkalinity (CaCO3)		118000		118000	ug/L	0		(0%-20%)			
Carbonate alkalinity (CaCO3)	U	1450	U	1450	ug/L	N/A					
Hydroxide alkalinity as CaCO3	U	1450	U	1450	ug/L	N/A					
QC1203975520 LCS											
Alkalinity, Total as CaCO3	100000			108000	ug/L		108	(80%-120%)		02/23/18	13:37

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
- 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.
- 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

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QC Summary

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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.