



March 15, 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: 443936
SDG: GEL443936

Dear Mr. Fitzgerald:

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

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

Sincerely,

Heather Shaffer
Project Manager

Purchase Order: 300071 -7H
Chain of Custody: W18-002-050, W18-002-051, W18-002-061, W18-002-062, W18-002-063, W18-002-069,
W18-002-099 and W18-002-104
Enclosures

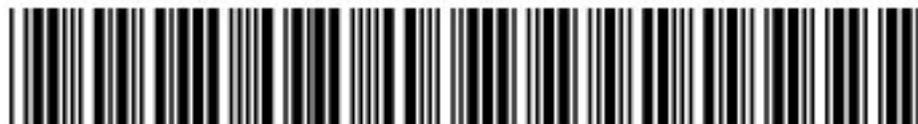


Table of Contents

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	8
Data Review Qualifier Definitions.....	18
Laboratory Certifications.....	20
Metals Analysis.....	22
Case Narrative.....	23
Sample Data Summary.....	27
Quality Control Summary.....	36
General Chem Analysis.....	48
Case Narrative.....	49
Sample Data Summary.....	58
Quality Control Summary.....	75

Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF W18-002
SDG: GEL443936**

March 15, 2018

Laboratory Identification:

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

Summary

Sample receipt

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

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

Sample Identification

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
443936001	B3H348
443936002	B3H376
443936003	B3H3J5
443936004	B3H319
443936005	B3H320
443936006	B3H313
443936007	B3H3F7
443936008	B3H3H4
443936009	B3H3H5
443936010	B3H3F8
443936011	B3H349
443936012	B3H347
443936013	B3H375
443936014	B3H377

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
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443936
Work Order #: 443936

Metals

Determination of Metals by ICP

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

Instrument Calibration

The samples in this SDG contained sodium at concentrations more than ten times the amount present in the calibration blank, therefore the data was not adversely affected. 443936011 (B3H349), 443936012 (B3H347), 443936013 (B3H375) and 443936014 (B3H377).

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium and sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 443936011 (B3H349), 443936012 (B3H347), 443936013 (B3H375) and 443936014 (B3H377).

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the acceptance criteria. However, where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Sample	Analyte	Value
1203973539 (MB)	Potassium	62.2 between (50 - 75)

Determination of Metals by ICP-MS

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.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the acceptance criteria. However, where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Sample	Analyte	Value
1203973648 (MB)	Tin	1.8 between (1 - 2.5)

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

Sample443936012 (B3H347) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Cyanide, Chlorinated

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, 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, 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

Sample 1203974057 (LCS) 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 1203973091 (Non SDG 443931003DUP), 1203973092 (Non SDG 443931003PS),

443936001 (B3H348) and 443936002 (B3H376) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443936	
	001	002
Chloride	10X	10X
Nitrate	10X	10X
Sulfate	10X	10X

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 443936	C.O.C.# W18-002-099 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 - 98/40	Ice Chest No.: N/A 605-738
Shipped To (Lab): TestAmerica Incorporated, Rich	Method of Shipment: GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.: N/A 77492698585
Protocol: RCRA KS 2/14/18	Priority: 30 Days	Offsite Property No.: N/A 9067

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A KW.2/15/18
---	---

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H348	N	W	2-15-18	1214	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Juan Aguilar /CHPRC <i>[Signature]</i>	FEB 15 2018 1240	Received By: Lesly Wall /CHPRC <i>[Signature]</i>	FEB 15 2018 1240	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Lesly Wall /CHPRC <i>[Signature]</i>	FEB 15 2018 1400	Received By: FEDEX	[Signature] [Date/Time]	
Relinquished By: FedEx	[Signature] [Date/Time]	Received By: C. Tamplin <i>[Signature]</i>	2/16/18 0845	
Relinquished By:	[Signature] [Date/Time]	Received By:	[Signature] [Date/Time]	

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

MARCH 15, 2018

REV. 0

Page 11 of 80

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST <i>443926</i>				C.O.C.# W18-002-104		
						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 <i>GEL</i>		Logbook No.: HNF-N-506-98140		Ice Chest No.: <i>JCB</i> 2-15-18 GWS-738				
Shipped To (Lab): TestAmerica Incorporated, Rich		Method of Shipment GOVERNMENT VEHICLE		Bill of Lading/Air Bill No. <i>JCB</i> 2-15-18 77149261888				
Protocol RCRA <i>KS 2/14/18</i>		Priority: 30 Days		Offsite Property No.: <i>JCB</i> 2-15-18 9067				
POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1				SPECIAL INSTRUCTIONS N/A				
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H376	N	W	2-15-18	1108	1x125-mL P	300.0_ANIONS_IC: COMMON.	48 Hours	Cool <=6C

MARCH 15, 2018

Relinquished By: Juan Aguilar /CHPRC <i>[Signature]</i> Print First and Last Name Signature Date/Time FEB 15 2018 1125			Received By: Troy Bacon CHPRC <i>[Signature]</i> Print First and Last Name Signature Date/Time FEB 15 2018 1125			Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other		
Relinquished By: Troy Bacon CHPRC <i>[Signature]</i> Print First and Last Name Signature Date/Time FEB 15 2018 1400			Received By: FEDEX Print First and Last Name Signature Date/Time					
Relinquished By: FedEx Print First and Last Name Signature Date/Time			Received By: C. Tomlin <i>[Signature]</i> Print First and Last Name Signature Date/Time 2/16/18 0845					
Relinquished By: Print First and Last Name Signature Date/Time			Received By: Print First and Last Name Signature Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process):				Disposed By:		Date/Time:

Page 12 of 80

REV. 0

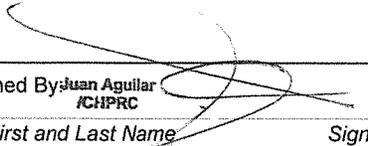
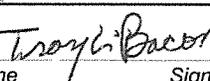
Collector: Juan Aguilar CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: W18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: RCRA, February 2018	Logbook No.: HNF-N-506-98140	Ice Chest No.: GWS-738
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 77149219885
Protocol: RCRA	Priority: 30 Days	Offsite Property No.: 9067

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H3J5	N	W	2-15-18	0830	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C
B3H319	Y	W	2-15-18	0830	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C

MARCH 15, 2018

Relinquished By: Juan Aguilar Signature:  Date/Time: FEB 15 2018 1125	Received By: Troy Bacon Signature:  Date/Time: FEB 15 2018 1125	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: Troy Bacon Signature:  Date/Time: FEB 15 2018 1400	Received By: FEDEX Signature: _____ Date/Time: _____		
Relinquished By: FedEx Signature: _____ Date/Time: _____	Received By: C. Taplin Signature:  Date/Time: 2/16/18 0845		
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____	Disposed By: _____	Date/Time: _____

Page 13 of 18

REV. 0

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 - 48/40	Ice Chest No.: GWS-738
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771492618585
Protocol: RCRA	Priority: 30 Days	Offsite Property No.: 9067

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
---	------------------------------------

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H320	Y	W	2-15-18	0926	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C
B3H313	N	W	2-15-18	0926	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C

MARCH 15, 2018

Relinquished By: Juan Aguilar CHPRC <i>[Signature]</i> Print First and Last Name Signature	FEB 15 2018 1125 Date/Time	Received By: Troy Bacon CHPRC <i>[Signature]</i> Print First and Last Name Signature	FEB 15 2018 1125 Date/Time	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: Troy Bacon CHPRC <i>[Signature]</i> Print First and Last Name Signature	FEB 15 2018 1100 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. Carplin <i>[Signature]</i> Print First and Last Name Signature	2/16/18 0845 Date/Time		
Relinquished By: Print First and Last Name Signature	Date/Time	Received By: Print First and Last Name Signature	Date/Time		
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

REV. 0

CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443936	C.O.C.# W18-002-061 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-506-98/4D	Ice Chest No.: GWS-675
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7714 941015170
Protocol: RCRA	Priority: 30 Days	Offsite Property No.: 9062

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
---	------------------------------------

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H3F7	N	W	2-15-18	1007	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C
B3H3H4	Y	W	2-15-18	1007	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C

MARCH 15, 2018

Relinquished By: <i>Juan Aguilar</i> Print First and Last Name: Juan Aguilar Signature: <i>Juan Aguilar</i> Date/Time: FEB 15 2018 1125	Received By: <i>Troy Bacon</i> Print First and Last Name: Troy L. Bacon Signature: <i>Troy L. Bacon</i> Date/Time: FEB 15 2018 1125	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: <i>Troy L. Bacon</i> Print First and Last Name: Troy L. Bacon Signature: <i>Troy L. Bacon</i> Date/Time: FEB 15 2018 1420	Received By: FEDEX Print First and Last Name: FEDEX Signature: <i>FEDEX</i> Date/Time:	
Relinquished By: FedEx Print First and Last Name: FedEx Signature: <i>FedEx</i> Date/Time:	Received By: <i>C. Tanpin</i> Print First and Last Name: C. Tanpin Signature: <i>C. Tanpin</i> Date/Time: 2/16/18 0845	
Relinquished By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____ Date/Time: _____

Page 13 of 80

REV. 0

Collector: Juan Aguilar
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-506-98140
Ice Chest No.: GWS-675
Shipped To (Lab): GEL Laboratories, LLC
Method of Shipment: Commercial Carrier
Bill of Lading/Air Bill No.: 7714 9460 5170
Protocol: RCRA
Priority: 30 Days
Offsite Property No.: 9062

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H3H5	Y	W	2-15-18	1007	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C
B3H3F8	N	W	2-15-18	1007	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON	14 Days	NaOH to pH >=12 / Cool <=6C

MARCH 15, 2018

Relinquished By: Juan Aguilar Signature: [Signature] Date/Time: FEB 15 2018 1125	Received By: Troy Bacon Signature: [Signature] Date/Time: FEB 15 2018 1125	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: Troy Bacon Signature: [Signature] Date/Time: FEB 15 2018 1400	Received By: FEDEX Signature: [Signature] Date/Time: [Signature]		
Relinquished By: FedEx Signature: [Signature] Date/Time: [Signature]	Received By: C. Tomlin Signature: [Signature] Date/Time: 2/16/18 0845		
Relinquished By: [Signature] Signature: [Signature] Date/Time: [Signature]	Received By: [Signature] Signature: [Signature] Date/Time: [Signature]		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Page 16 of 18

REV. 0

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 - 48140	Ice Chest No.: 6005-738
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 774902
Protocol: RCRA	Priority: 30 Days	Offsite Property No.: 9067

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
 N/A
B/L# 77492698585

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H349	Y	W	2-15-18	1214	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B3H349	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
B3H347	N	W			1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3H347	N	W			1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B3H347	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
B3H347	N	W			2-15-18	1214	1x250-mL aG	9060_TOC: COMMON

MARCH 15, 2018

Relinquished By: Juan Aguilar /CHPRC Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1240	Received By: Lesty Wall /CHPRC Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1240	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Lesty Wall /CHPRC Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1400	Received By: FEDEX Signature: _____ Date/Time: _____	
Relinquished By: FedEx Signature: _____ Date/Time: _____	Received By: C-Tarplin Signature: <i>[Signature]</i> Date/Time: 2/16/18 0845	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____ Date/Time: _____

Page 17 of 80

REV. 0

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443936	C.O.C.# W18-002-069
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 - 98140	Ice Chest No.: GWS-675
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7714 9465170
Protocol: RCRA	Priority: 30 Days	Offsite Property No.: 9062

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H375	N	W	2-15-18	1108	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3H375	N	W	↓	↓	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B3H375	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
B3H375	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3H377	Y	W			1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B3H377	Y	W			2-15-18	1108	1x500-mL aG	9014_CN (FREE): COMMON; 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON

MARCH 15, 2018

Relinquished By: Juan Aguilar /CHPRC Print First and Last Name: Juan Aguilar Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1125	Received By: Troy Bacon /CHPRC Print First and Last Name: Troy L. Bacon Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1125	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: CHPRC Troy L. Bacon Print First and Last Name: Troy L. Bacon Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1460	Received By: FEDEX Print First and Last Name: FEDEX Signature: <i>[Signature]</i> Date/Time:		
Relinquished By: FedEx Print First and Last Name: FedEx Signature: <i>[Signature]</i> Date/Time:	Received By: C. Tarplin Print First and Last Name: C. Tarplin Signature: <i>[Signature]</i> Date/Time: 2/16/18 0845		
Relinquished By: Print First and Last Name: Signature: Date/Time:	Received By: Print First and Last Name: Signature: Date/Time:		
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

Page 16 of 80

REV. 0



SAMPLE RECEIPT & REVIEW FORM

HS

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>443936</u>		
Received By: <u>C. Tarplin</u>		Date Received: <u>16 Feb 2018</u>		
Carrier and Tracking Number		Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other <u>771494665170</u> <u>771491191873</u> <u>771496298585</u> <u>771496298460</u> <u>771494454512</u>		
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.		
Shipped as a DOT Hazardous?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____		
COC/Samples marked or classified as radioactive?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> (CPM) mR/Hr Classified as: <u>Rad 1</u> Rad 2 Rad 3		
Is package, COC, and/or Samples marked HAZ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:		
Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Wet Ice</u> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: <u>2°C</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: _____ IR4-17 Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>			If Yes, Are Encores or Soil Kits present? Yes _____ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No _____ N/A _____ (If unknown, select No) VOA vials free of headspace? Yes _____ No <input checked="" type="checkbox"/> N/A _____ Sample ID's and containers affected: <u>B3H7Y7 has one vial w/ headspace</u> <u>B3H4B9 has one vial w/ headspace</u> <u>B3H7Y2 has one vial w/ headspace</u>
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
12 Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
Comments (Use Continuation Form if needed):				

PM (or PMA) review: Initials MTH Date 02/19/18 Page 1 of 1

GL-CHL-SR-001 Rev 5

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: CPRC

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

Laboratory Certifications

List of current GEL Certifications as of 15 March 2018

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

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443936
Work Order #: 443936

Product: Determination of Metals by ICP**Analytical Method:** SW846 3005A/6010D**Analytical Procedure:** GL-MA-E-013 REV# 30**Analytical Batch:** 1739886**Product: Determination of Metals by ICP-MS****Analytical Method:** SW846 3005A/6020B**Analytical Procedure:** GL-MA-E-014 REV# 32**Analytical Batch:** 1739925**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 14**Preparation Batches:** 1739885 and 1739924

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443936011	B3H349
443936012	B3H347
443936013	B3H375
443936014	B3H377
1203973539	Method Blank (MB) ICP
1203973540	Laboratory Control Sample (LCS)
1203973543	443936011(B3H349L) Serial Dilution (SD)
1203973541	443936011(B3H349S) Matrix Spike (MS)
1203973542	443936011(B3H349SD) Matrix Spike Duplicate (MSD)
1203973648	Method Blank (MB) ICP-MS
1203973649	Laboratory Control Sample (LCS)
1203973652	443936011(B3H349L) Serial Dilution (SD)
1203973650	443936011(B3H349S) Matrix Spike (MS)
1203973651	443936011(B3H349SD) 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**Instrument Calibration**

The samples in this SDG contained sodium at concentrations more than ten times the amount present in the calibration blank, therefore the data was not adversely affected. 443936011 (B3H349), 443936012 (B3H347), 443936013 (B3H375) and 443936014 (B3H377)-ICP.

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium and sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 443936011 (B3H349), 443936012 (B3H347), 443936013 (B3H375) and 443936014 (B3H377)-ICP.

ICSA/ICSAB Statement

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

Quality Control (QC) Information**Method Blank (MB) Statement**

The method blanks (MB) analyzed with this SDG met the acceptance criteria. However, where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Sample	Analyte	Value
1203973539 (MB)	Potassium	62.2 between (50 - 75)
1203973648 (MB)	Tin	1.8 between (1 - 2.5)

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: GEL443936 GEL Work Order: 443936

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

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

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443936

CONTRACT: CPRCOW18002

METHOD TYPE: SW846

SAMPLE ID: 443936011

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H349

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	21.4	ug/L	B	19.3	50	50	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-38-2	Arsenic	8	ug/L		2	5	5	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-39-3	Barium	53.5	ug/L		0.67	2	2	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-42-8	Boron	50.5	ug/L		15	50	50	1	P	HSC	03/07/18 10:01	030718-1	1739886
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-70-2	Calcium	59800	ug/L		50	200	200	1	P	HSC	03/07/18 10:01	030718-1	1739886
7440-47-3	Chromium	12.9	ug/L		3	10	10	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-50-8	Copper	1.05	ug/L		0.3	1	1	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7439-89-6	Iron	52.5	ug/L	B	30	100	100	1	P	HSC	03/07/18 10:01	030718-1	1739886
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7439-95-4	Magnesium	17000	ug/L		110	300	300	1	P	HSC	03/07/18 10:01	030718-1	1739886
7439-96-5	Manganese	1.58	ug/L	B	1	5	5	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7439-98-7	Molybdenum	6.2	ug/L		0.2	0.5	0.5	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-02-0	Nickel	5.62	ug/L		0.6	2	2	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-09-7	Potassium	7340	ug/L		50	150	150	1	P	HSC	03/07/18 10:01	030718-1	1739886
7782-49-2	Selenium	7.78	ug/L		2	5	5	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-23-5	Sodium	30300	ug/L		100	300	300	1	P	HSC	03/07/18 10:01	030718-1	1739886
7440-24-6	Strontium	323	ug/L		2	10	10	1	MS	BAJ	02/28/18 11:33	180228-3	1739925
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-61-1	Uranium	24.1	ug/L		0.067	0.2	0.2	1	MS	BAJ	02/27/18 23:18	180227-2	1739925
7440-62-2	Vanadium	19.4	ug/L		1	5	5	1	P	HSC	03/07/18 10:01	030718-1	1739886
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	02/27/18 23:18	180227-2	1739925

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739886	1739885	SW846 3005A	50	mL	50	mL	02/16/18	JXM8
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	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: GEL443936

CONTRACT: CPRCOW18002

METHOD TYPE: SW846

SAMPLE ID: 443936012

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H347

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	24.2	ug/L	B	19.3	50	50	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-38-2	Arsenic	7.98	ug/L		2	5	5	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-39-3	Barium	53.3	ug/L		0.67	2	2	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-42-8	Boron	49.6	ug/L	B	15	50	50	1	P	HSC	03/07/18 10:16	030718-1	1739886
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-70-2	Calcium	59700	ug/L		50	200	200	1	P	HSC	03/07/18 10:16	030718-1	1739886
7440-47-3	Chromium	11.6	ug/L		3	10	10	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-50-8	Copper	0.825	ug/L	B	0.3	1	1	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7439-89-6	Iron	70.8	ug/L	B	30	100	100	1	P	HSC	03/07/18 10:16	030718-1	1739886
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7439-95-4	Magnesium	16900	ug/L		110	300	300	1	P	HSC	03/07/18 10:16	030718-1	1739886
7439-96-5	Manganese	1.64	ug/L	B	1	5	5	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7439-98-7	Molybdenum	6.1	ug/L		0.2	0.5	0.5	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-02-0	Nickel	4.8	ug/L		0.6	2	2	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-09-7	Potassium	7300	ug/L		50	150	150	1	P	HSC	03/07/18 10:16	030718-1	1739886
7782-49-2	Selenium	7.17	ug/L		2	5	5	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-22-4	Silver	0.967	ug/L	B	0.3	1	1	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-23-5	Sodium	29300	ug/L		100	300	300	1	P	HSC	03/07/18 10:16	030718-1	1739886
7440-24-6	Strontium	317	ug/L		2	10	10	1	MS	BAJ	02/28/18 11:41	180228-3	1739925
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-61-1	Uranium	24.2	ug/L		0.067	0.2	0.2	1	MS	BAJ	02/27/18 23:34	180227-2	1739925
7440-62-2	Vanadium	19.4	ug/L		1	5	5	1	P	HSC	03/07/18 10:16	030718-1	1739886
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	02/27/18 23:34	180227-2	1739925

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739886	1739885	SW846 3005A	50	mL	50	mL	02/16/18	JXM8
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	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: GEL443936

CONTRACT: CPRCOW18002

METHOD TYPE: SW846

SAMPLE ID: 443936013

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H375

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-38-2	Arsenic	6.54	ug/L		2	5	5	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-39-3	Barium	44	ug/L		0.67	2	2	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-42-8	Boron	42	ug/L	B	15	50	50	1	P	HSC	03/07/18 10:19	030718-1	1739886
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-70-2	Calcium	44800	ug/L		50	200	200	1	P	HSC	03/07/18 10:19	030718-1	1739886
7440-47-3	Chromium	3.34	ug/L	B	3	10	10	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-50-8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7439-89-6	Iron	64.5	ug/L	B	30	100	100	1	P	HSC	03/07/18 10:19	030718-1	1739886
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7439-95-4	Magnesium	13500	ug/L		110	300	300	1	P	HSC	03/07/18 10:19	030718-1	1739886
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7439-98-7	Molybdenum	7.07	ug/L		0.2	0.5	0.5	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-02-0	Nickel	0.694	ug/L	B	0.6	2	2	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-09-7	Potassium	6850	ug/L		50	150	150	1	P	HSC	03/07/18 10:19	030718-1	1739886
7782-49-2	Selenium	3.76	ug/L	B	2	5	5	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-23-5	Sodium	22900	ug/L		100	300	300	1	P	HSC	03/07/18 10:19	030718-1	1739886
7440-24-6	Strontium	227	ug/L		2	10	10	1	MS	BAJ	02/28/18 11:42	180228-3	1739925
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-61-1	Uranium	9.55	ug/L		0.067	0.2	0.2	1	MS	BAJ	02/27/18 23:44	180227-2	1739925
7440-62-2	Vanadium	19.5	ug/L		1	5	5	1	P	HSC	03/07/18 10:19	030718-1	1739886
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	02/27/18 23:44	180227-2	1739925

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739886	1739885	SW846 3005A	50	mL	50	mL	02/16/18	JXM8
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	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: GEL443936

CONTRACT: CPRCOW18002

METHOD TYPE: SW846

SAMPLE ID: 443936014

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H377

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-38-2	Arsenic	7.39	ug/L		2	5	5	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-39-3	Barium	45.7	ug/L		0.67	2	2	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-42-8	Boron	41.9	ug/L	B	15	50	50	1	P	HSC	03/07/18 10:22	030718-1	1739886
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-70-2	Calcium	45000	ug/L		50	200	200	1	P	HSC	03/07/18 10:22	030718-1	1739886
7440-47-3	Chromium	3.7	ug/L	B	3	10	10	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-50-8	Copper	2.15	ug/L		0.3	1	1	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	03/07/18 10:22	030718-1	1739886
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7439-95-4	Magnesium	13600	ug/L		110	300	300	1	P	HSC	03/07/18 10:22	030718-1	1739886
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7439-98-7	Molybdenum	7.13	ug/L		0.2	0.5	0.5	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-02-0	Nickel	0.667	ug/L	B	0.6	2	2	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-09-7	Potassium	6710	ug/L		50	150	150	1	P	HSC	03/07/18 10:22	030718-1	1739886
7782-49-2	Selenium	3.9	ug/L	B	2	5	5	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-23-5	Sodium	23600	ug/L		100	300	300	1	P	HSC	03/07/18 10:22	030718-1	1739886
7440-24-6	Strontium	235	ug/L		2	10	10	1	MS	BAJ	02/28/18 11:44	180228-3	1739925
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-61-1	Uranium	10	ug/L		0.067	0.2	0.2	1	MS	BAJ	02/27/18 23:48	180227-2	1739925
7440-62-2	Vanadium	20	ug/L		1	5	5	1	P	HSC	03/07/18 10:22	030718-1	1739886
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	02/27/18 23:48	180227-2	1739925

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739886	1739885	SW846 3005A	50	mL	50	mL	02/16/18	JXM8
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

METALS

-1-

INORGANICS ANALYSIS DATA PACKAGE

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 15, 2018

Page 1 of 11

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 443936

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739925										
QC1203973649	LCS										
Aluminum	2000			2130	ug/L		107	(80%-120%)	BAJ	02/27/18	23:15
Antimony	50.0			49.0	ug/L		97.9	(80%-120%)			
Arsenic	50.0			49.7	ug/L		99.3	(80%-120%)			
Barium	50.0			49.2	ug/L		98.5	(80%-120%)			
Beryllium	50.0			57.5	ug/L		115	(80%-120%)			
Cadmium	50.0			50.8	ug/L		102	(80%-120%)			
Chromium	50.0			49.3	ug/L		98.7	(80%-120%)			
Cobalt	50.0			54.1	ug/L		108	(80%-120%)			
Copper	50.0			51.8	ug/L		104	(80%-120%)			
Lead	50.0			48.5	ug/L		97.1	(80%-120%)			
Manganese	50.0			47.7	ug/L		95.3	(80%-120%)			
Molybdenum	50.0			51.4	ug/L		103	(80%-120%)			
Nickel	50.0			50.8	ug/L		102	(80%-120%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 2 of 11

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739925										
Selenium	50.0			49.5	ug/L		99.1	(80%-120%)	BAJ	02/27/18	23:15
Silver	50.0			51.7	ug/L		103	(80%-120%)			
Strontium	50.0			49.2	ug/L		98.5	(80%-120%)		02/28/18	11:31
Thallium	50.0			46.6	ug/L		93.1	(80%-120%)		02/27/18	23:15
Thorium	50.0			49.5	ug/L		99	(80%-120%)			
Tin	50.0			49.6	ug/L		99.1	(80%-120%)			
Uranium	50.0			46.3	ug/L		92.7	(80%-120%)			
Zinc	50.0			47.9	ug/L		95.8	(80%-120%)			
QC1203973648	MB										
Aluminum			U	19.3	ug/L					02/27/18	23:11
Antimony			U	1.00	ug/L						
Arsenic			U	2.00	ug/L						
Barium			U	0.670	ug/L						
Beryllium			U	0.200	ug/L						
Cadmium			U	0.300	ug/L						
Chromium			U	3.00	ug/L						

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 3 of 11

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739925										
Cobalt			U	0.300	ug/L				BAJ	02/27/18	23:11
Copper			U	0.300	ug/L						
Lead			U	0.500	ug/L						
Manganese			U	1.00	ug/L						
Molybdenum			U	0.200	ug/L						
Nickel			U	0.600	ug/L						
Selenium			U	2.00	ug/L						
Silver			U	0.300	ug/L						
Strontium			U	2.00	ug/L					02/28/18	11:29
Thallium			U	0.600	ug/L					02/27/18	23:11
Thorium			U	0.700	ug/L						
Tin			B	1.80	ug/L						
Uranium			U	0.067	ug/L						
Zinc			U	3.30	ug/L						
QC1203973650 443936011 MS											
Aluminum	2000	B	21.4	2000	ug/L		98.9	(75%-125%)		02/27/18	23:21

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 4 of 11

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS												
Batch	1739925											
Antimony	50.0	U	1.00		49.4	ug/L		97.5	(75%-125%)	BAJ	02/27/18	23:21
Arsenic	50.0		8.00		58.0	ug/L		100	(75%-125%)			
Barium	50.0		53.5		105	ug/L		103	(75%-125%)			
Beryllium	50.0	U	0.200		52.1	ug/L		104	(75%-125%)			
Cadmium	50.0	U	0.300		50.0	ug/L		100	(75%-125%)			
Chromium	50.0		12.9		64.7	ug/L		104	(75%-125%)			
Cobalt	50.0	U	0.300		47.9	ug/L		95.3	(75%-125%)			
Copper	50.0		1.05		46.6	ug/L		91.1	(75%-125%)			
Lead	50.0	U	0.500		47.6	ug/L		95.1	(75%-125%)			
Manganese	50.0	B	1.58		45.8	ug/L		88.4	(75%-125%)			
Molybdenum	50.0		6.20		57.6	ug/L		103	(75%-125%)			
Nickel	50.0		5.62		53.4	ug/L		95.6	(75%-125%)			
Selenium	50.0		7.78		56.2	ug/L		96.8	(75%-125%)			
Silver	50.0	U	0.300		50.4	ug/L		101	(75%-125%)			
Strontium	50.0		323		367	ug/L		N/A	(75%-125%)		02/28/18	11:34

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 5 of 11

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS												
Batch	1739925											
Thallium	50.0	U	0.600		46.5	ug/L		93	(75%-125%)	BAJ	02/27/18	23:21
Thorium	50.0	U	0.700		50.3	ug/L		99.9	(75%-125%)			
Tin	50.0	U	1.00		50.9	ug/L		101	(75%-125%)			
Uranium	50.0		24.1		72.1	ug/L		95.9	(75%-125%)			
Zinc	50.0	U	3.30		47.1	ug/L		90.4	(75%-125%)			
QC1203973651 443936011 MSD												
Aluminum	2000	B	21.4		2160	ug/L	7.52	107	(0%-20%)		02/27/18	23:25
Antimony	50.0	U	1.00		48.3	ug/L	2.13	95.4	(0%-20%)			
Arsenic	50.0		8.00		56.6	ug/L	2.54	97.1	(0%-20%)			
Barium	50.0		53.5		100	ug/L	4.84	93.4	(0%-20%)			
Beryllium	50.0	U	0.200		54.2	ug/L	3.93	108	(0%-20%)			
Cadmium	50.0	U	0.300		48.9	ug/L	2.31	97.7	(0%-20%)			
Chromium	50.0		12.9		65.3	ug/L	0.877	105	(0%-20%)			
Cobalt	50.0	U	0.300		49.3	ug/L	2.94	98.2	(0%-20%)			
Copper	50.0		1.05		47.7	ug/L	2.29	93.2	(0%-20%)			
Lead	50.0	U	0.500		46.7	ug/L	2.07	93.2	(0%-20%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 6 of 11

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739925										
Manganese	50.0	B	1.58		47.0	ug/L	2.54	90.8	(0%-20%)	BAJ	02/27/18 23:25
Molybdenum	50.0		6.20		57.5	ug/L	0.118	103	(0%-20%)		
Nickel	50.0		5.62		53.3	ug/L	0.283	95.3	(0%-20%)		
Selenium	50.0		7.78		55.3	ug/L	1.69	95	(0%-20%)		
Silver	50.0	U	0.300		48.4	ug/L	4.14	96.5	(0%-20%)		
Strontium	50.0		323		365	ug/L	0.486	N/A	(0%-20%)		02/28/18 11:36
Thallium	50.0	U	0.600		45.5	ug/L	2.2	91	(0%-20%)		02/27/18 23:25
Thorium	50.0	U	0.700		48.7	ug/L	3.4	96.5	(0%-20%)		
Tin	50.0	U	1.00		49.3	ug/L	3.19	97.8	(0%-20%)		
Uranium	50.0		24.1		68.8	ug/L	4.74	89.3	(0%-20%)		
Zinc	50.0	U	3.30		47.2	ug/L	0.234	90.6	(0%-20%)		
QC1203973652 443936011 SDILT											
Aluminum		B	21.4	DU	96.5	ug/L	N/A	(0%-20%)			02/27/18 23:31
Antimony		U	0.647	DU	5.00	ug/L	N/A	(0%-20%)			
Arsenic			8.00	DU	10.0	ug/L	N/A	(0%-20%)			
Barium			53.5	D	11.1	ug/L	3.53	(0%-20%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 7 of 11

Parname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739925										
Beryllium	U	0.007	DU	1.00	ug/L	N/A		(0%-20%)	BAJ	02/27/18	23:31
Cadmium	U	0.032	DU	1.50	ug/L	N/A		(0%-20%)			
Chromium		12.9	DU	15.0	ug/L	N/A		(0%-20%)			
Cobalt	U	0.188	DU	1.50	ug/L	N/A		(0%-20%)			
Copper		1.05	DU	1.50	ug/L	N/A		(0%-20%)			
Lead	U	0.060	DU	2.50	ug/L	N/A		(0%-20%)			
Manganese	B	1.58	DU	5.00	ug/L	N/A		(0%-20%)			
Molybdenum		6.20	D	1.15	ug/L	7.16		(0%-20%)			
Nickel		5.62	BD	1.09	ug/L	2.58		(0%-20%)			
Selenium		7.78	DU	10.0	ug/L	N/A		(0%-20%)			
Silver	U	0.132	DU	1.50	ug/L	N/A		(0%-20%)			
Strontium		323	D	60.6	ug/L	6.25		(0%-20%)		02/28/18	11:39
Thallium	U	0.032	DU	3.00	ug/L	N/A		(0%-20%)		02/27/18	23:31
Thorium	U	0.384	DU	3.50	ug/L	N/A		(0%-20%)			
Tin	U	0.374	DU	5.00	ug/L	N/A		(0%-20%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 8 of 11

Parname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739925										
Uranium		24.1	D	4.84	ug/L	.17		(0%-20%)	BAJ	02/27/18	23:31
Zinc	U	1.88	BD	4.17	ug/L	N/A		(0%-20%)			
Metals Analysis-ICP											
Batch	1739886										
QC1203973540	LCS										
Boron	500			513	ug/L		103	(80%-120%)	HSC	03/07/18	09:58
Calcium	5000			5010	ug/L		100	(80%-120%)			
Iron	5000			5010	ug/L		100	(80%-120%)			
Magnesium	5000			5120	ug/L		102	(80%-120%)			
Potassium	5000			5020	ug/L		100	(80%-120%)			
Sodium	5000			4630	ug/L		92.6	(80%-120%)			
Vanadium	500			497	ug/L		99.5	(80%-120%)			
QC1203973539	MB										
Boron			U	15.0	ug/L					03/07/18	09:55
Calcium			U	50.0	ug/L						
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						
Potassium			B	62.2	ug/L						

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 9 of 11

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1739886										
Sodium			U	100	ug/L				HSC	03/07/18	09:55
Vanadium			U	1.00	ug/L						
QC1203973541 443936011 MS											
Boron	500	50.5		579	ug/L		106	(75%-125%)		03/07/18	10:04
Calcium	5000	59800		65400	ug/L		N/A	(75%-125%)			
Iron	5000	B 52.5		4920	ug/L		97.3	(75%-125%)			
Magnesium	5000	17000		21900	ug/L		98.1	(75%-125%)			
Potassium	5000	7340		12300	ug/L		99.8	(75%-125%)			
Sodium	5000	30300		35200	ug/L		N/A	(75%-125%)			
Vanadium	500	19.4		515	ug/L		99.1	(75%-125%)			
QC1203973542 443936011 MSD											
Boron	500	50.5		562	ug/L	2.89	102	(0%-20%)		03/07/18	10:07
Calcium	5000	59800		64900	ug/L	0.793	N/A	(0%-20%)			
Iron	5000	B 52.5		4850	ug/L	1.45	95.9	(0%-20%)			
Magnesium	5000	17000		21700	ug/L	0.646	95.3	(0%-20%)			
Potassium	5000	7340		12200	ug/L	0.765	97.9	(0%-20%)			
Sodium	5000	30300		34600	ug/L	1.67	N/A	(0%-20%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 10 of 11

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1739886										
Vanadium	500	19.4		506	ug/L	1.8	97.3	(0%-20%)	HSC	03/07/18	10:07
QC1203973543 443936011 SDILT											
Boron		50.5	DU	75.0	ug/L	N/A		(0%-20%)		03/07/18	10:13
Calcium		59800	D	12300	ug/L	3.14		(0%-20%)			
Iron	B	52.5	DU	150	ug/L	N/A		(0%-20%)			
Magnesium		17000	D	3500	ug/L	3.23		(0%-20%)			
Potassium		7340	D	1420	ug/L	3.01		(0%-20%)			
Sodium		30300	D	5800	ug/L	4.17		(0%-20%)			
Vanadium		19.4	BD	4.11	ug/L	6.07		(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

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 11 of 11

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
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 #: GEL443936
 Work Order #: 443936**

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>
443936012	B3H347
443936013	B3H375
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: 1740079 and 1740080

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443936003	B3H3J5
443936004	B3H3I9
443936005	B3H320
443936006	B3H3I3
443936007	B3H3F7
443936008	B3H3H4
443936009	B3H3H5
443936010	B3H3F8
443936011	B3H349
443936012	B3H347
443936013	B3H375
443936014	B3H377
1203974071	Method Blank (MB)
1203974072	Laboratory Control Sample (LCS)
1203974073	443936005(B3H320) Sample Duplicate (DUP)
1203974074	443979016(NonSDG) 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: 1740072, 1740075, 1740071, 1740074, 1740070 and 1740073

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443936003	B3H3J5
443936004	B3H3I9
443936005	B3H320
443936006	B3H3I3
443936007	B3H3F7
443936008	B3H3H4
443936009	B3H3H5
443936010	B3H3F8
443936011	B3H349
443936012	B3H347
443936013	B3H375
443936014	B3H377

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:** 1740060 and 1740059

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443936003	B3H3J5
443936004	B3H319
443936005	B3H320
443936006	B3H313
443936007	B3H3F7
443936008	B3H3H4
443936009	B3H3H5
443936010	B3H3F8
443936011	B3H349
443936012	B3H347
443936013	B3H375
443936014	B3H377
1203974032	Method Blank (MB)
1203974033	Laboratory Control Sample (LCS)
1203974035	443936003(B3H3J5) Sample Duplicate (DUP)
1203974037	443936003(B3H3J5) 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 443936012 (B3H347) 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: 1740071, 1740074, 1740070 and 1740073

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443936003	B3H3J5
443936004	B3H319
443936005	B3H320
443936006	B3H313
443936007	B3H3F7
443936008	B3H3H4
443936009	B3H3H5
443936010	B3H3F8
443936011	B3H349
443936012	B3H347
443936013	B3H375
443936014	B3H377
1203974052	Method Blank (MB)
1203974053	Laboratory Control Sample (LCS)
1203974054	443979004(NonSDG) Sample Duplicate (DUP)
1203974055	443936003(B3H3J5) Sample Duplicate (DUP)
1203974056	Method Blank (MB)
1203974057	Laboratory Control Sample (LCS)
1203974058	443936009(B3H3H5) 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

Sample1203974057 (LCS) 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 Batch:** 1739732

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443936001	B3H348
443936002	B3H376
1203973089	Method Blank (MB)
1203973090	Laboratory Control Sample (LCS)
1203973091	443931003(NonSDG) Sample Duplicate (DUP)
1203973092	443931003(NonSDG) 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 1203973091 (Non SDG 443931003DUP), 1203973092 (Non SDG 443931003PS), 443936001 (B3H348) and 443936002 (B3H376) 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	443936	
	001	002
Chloride	10X	10X
Nitrate	10X	10X
Sulfate	10X	10X

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>
443936012	B3H347
443936013	B3H375
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: GEL443936 GEL Work Order: 443936

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: Kristen Mizzell

Date: 01 MAR 2018

Title: Team Leader

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H348 Project: CPRCOW18002
 Sample ID: 443936001 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 12:14
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	389	33.0	500	ug/L		1	MAR1	02/16/18	1315	1739732	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	15000	670	2000	ug/L		10	MAR1	02/16/18	2000	1739732	2
Nitrate-N	D	21300	330	1000	ug/L		10					
Sulfate	D	84100	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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H376 Project: CPRCOW18002
 Sample ID: 443936002 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 11:08
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride		515	33.0	500	ug/L		1	MAR1	02/16/18	1344	1739732	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	12600	670	2000	ug/L		10	MAR1	02/16/18	2029	1739732	2
Nitrate-N	D	10000	330	1000	ug/L		10					
Sulfate	D	49300	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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H3J5 Project: CPRCOW18002
 Sample ID: 443936003 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 08:30
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
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	1102	1740060	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	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	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H319 Project: CPRCOW18002
 Sample ID: 443936004 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 08:30
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
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	1109	1740060	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	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	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H320 Project: CPRCOW18002
 Sample ID: 443936005 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 09:26
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		77.0	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1110	1740060	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	B	4.24	3.00	10.0	ug/L		1	AXH3	02/22/18	1039	1740080	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination		12.3	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H313 Project: CPRCOW18002
 Sample ID: 443936006 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 09:26
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		75.4	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1111	1740060	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/22/18	1039	1740080	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination		11.7	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H3F7 Project: CPRCOW18002
 Sample ID: 443936007 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:07
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		34.1	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1112	1740060	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	B	3.86	3.00	10.0	ug/L		1	AXH3	02/22/18	1039	1740080	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	3.80	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H3H4 Project: CPRCOW18002
 Sample ID: 443936008 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:07
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		35.0	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1113	1740060	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/22/18	1039	1740080	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination		5.70	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H3H5 Project: CPRCOW18002
 Sample ID: 443936009 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:07
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		34.8	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1114	1740060	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/22/18	1039	1740080	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	4.90	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740075	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740073

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H3F8 Project: CPRCOW18002
 Sample ID: 443936010 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:07
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		34.7	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1115	1740060	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/22/18	1039	1740080	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	3.50	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740075	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740073

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H349 Project: CPRCOW18002
 Sample ID: 443936011 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 12:14
 Receive Date: 16-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		35.8	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1121	1740060	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/22/18	1039	1740080	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	2.60	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740075	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740073

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H347 Project: CPRCOW18002
 Sample ID: 443936012 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 12:14
 Receive Date: 16-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	02/24/18	0531	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		34.4	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1145	1740060	2
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/22/18	1039	1740080	3
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	3.90	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740075	4
Titration and Ion Analysis												
2320_ALKALINITY: GW 01 "As Received"												
Alkalinity, Total as CaCO3		114000	1450	4000	ug/L			RXB5	02/23/18	1641	1740628	5
Bicarbonate alkalinity (CaCO3)		114000	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	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740073

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:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H347	Project: CPRCOW18002
Sample ID: 443936012	Client ID: CPRC001

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

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H375 Project: CPRCOW18002
 Sample ID: 443936013 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 11:08
 Receive Date: 16-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	B	782	330	1000	ug/L		1	TSM	02/24/18	0610	1740028	1	
Total Organic Carbon #2	B	825	330	1000	ug/L		1						
Total Organic Carbon #3	B	841	330	1000	ug/L		1						
Total Organic Carbon #4	B	858	330	1000	ug/L		1						
Total Organic Carbon Average	B	827	330	1000	ug/L		1						
Flow Injection Analysis													
9012_CYANIDE (TOTAL): COMMON "As Received"													
Cyanide, Total	B	2.69	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1123	1740060	2	
9014_CN (FREE): COMMON "As Received"													
Free Cyanide	U	3.00	3.00	10.0	ug/L			1	AXH3	02/20/18	1147	1740079	3
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	1158	1740075	4
Titration and Ion Analysis													
2320_ALKALINITY: GW 01 "As Received"													
Alkalinity, Total as CaCO3		118000	1450	4000	ug/L				RXB5	02/23/18	1644	1740628	5
Bicarbonate alkalinity (CaCO3)		118000	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	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740073

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:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H375	Project: CPRCOW18002
Sample ID: 443936013	Client ID: CPRC001

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

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: March 1, 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: B3H377 Project: CPRCOW18002
 Sample ID: 443936014 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 11:08
 Receive Date: 16-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	B	2.82	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1124	1740060	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	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	1158	1740075	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1030	1740059
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740073

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

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: March 1, 2018

Page 1 of 5

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 443936

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	1740060										
QC1203974035	443936003	DUP									
Cyanide, Total		U	1.67	U	1.67	ug/L	N/A		AXH3	02/20/18	11:06
QC1203974033	LCS										
Cyanide, Total	50.0				50.8	ug/L	102	(80%-120%)		02/20/18	10:54
QC1203974032	MB										
Cyanide, Total			U		1.67	ug/L				02/20/18	10:52
QC1203974037	443936003	MS									
Cyanide, Total	100	U	1.67		105	ug/L	105	(75%-125%)		02/20/18	11:07
Batch	1740071										
QC1203974054	443979004	DUP									
Cyanide, Chlorinated		U	1.67	U	1.67	ug/L	N/A		AXH3	02/21/18	10:23

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 2 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1740071										
QC1203974055	443936003	DUP									
Cyanide, Chlorinated		U	1.67	U	1.67	ug/L	N/A		AXH3	02/21/18	10:11
QC1203974053	LCS										
Cyanide, Chlorinated	50.0			U	1.67	ug/L		0 (-200%-200%)		02/21/18	10:09
QC1203974052	MB										
Cyanide, Chlorinated				U	1.67	ug/L				02/21/18	10:08
Batch	1740074										
QC1203974058	443936009	DUP									
Cyanide, Chlorinated			29.9		30.6	ug/L	2.31	(0%-20%)	AXH3	02/21/18	10:45
QC1203974057	LCS										
Cyanide, Chlorinated	50.0			U	1.67	ug/L		0 (-200%-200%)		02/21/18	10:52
QC1203974056	MB										
Cyanide, Chlorinated				U	1.67	ug/L				02/21/18	10:42
Batch	1740080										
QC1203974073	443936005	DUP									
Free Cyanide		B	4.24	B	3.12	ug/L	30.5 ^	(+/-10.0)	AXH3	02/22/18	10:39
QC1203974074	443979016	DUP									
Free Cyanide		U	3.00	U	3.00	ug/L	N/A			02/22/18	10:39
QC1203974072	LCS										
Free Cyanide	100				100	ug/L		100 (80%-120%)		02/22/18	10:39
QC1203974071	MB										
Free Cyanide				U	3.00	ug/L				02/22/18	10:39

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 3 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1739732										
QC1203973091	443931003	DUP									
Chloride	D	23400	D	23600	ug/L	0.588		(0%-20%)	MAR1	02/16/18	19:02
Fluoride	B	302	B	308	ug/L	2	^	(+/-500)		02/16/18	17:06
Nitrate-N		423		432	ug/L	2.25	^	(+/-250)			
Nitrite-N	B	95.1	B	102	ug/L	6.81	^	(+/-250)			
Sulfate	D	59300	D	59200	ug/L	0.179		(0%-20%)		02/16/18	19:02
QC1203973090	LCS										
Chloride	5000			4900	ug/L			98.1	(80%-120%)	02/16/18	16:37
Fluoride	2500			2580	ug/L			103	(80%-120%)		
Nitrate-N	2500			2510	ug/L			100	(80%-120%)		
Nitrite-N	2500			2470	ug/L			98.9	(80%-120%)		
Sulfate	10000			10000	ug/L			100	(80%-120%)		
QC1203973089	MB										
Chloride			U	67.0	ug/L					02/16/18	16:09
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						

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 4 of 5

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1739732										
QC1203973092	443931003	PS									
Chloride	5.00	D	2.34	D	7.39	mg/L	101	(75%-125%)	MAR1	02/16/18	19:31
Fluoride	2.50	B	0.302		2.88	mg/L	103	(75%-125%)		02/16/18	17:35
Nitrate-N	2.50		0.423		2.79	mg/L	94.9	(75%-125%)			
Nitrite-N	2.50	B	0.0951		2.38	mg/L	91.4	(75%-125%)			
Sulfate	10.0	D	5.93	D	16.2	mg/L	102	(75%-125%)		02/16/18	19:31

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%)			
Carbonate alkalinity (CaCO3)		U	1450	U	1450	ug/L	N/A				
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				

GEL LABORATORIES LLC

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

QC Summary

Workorder: 443936

Page 5 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1740628										
QC1203975520	LCS										
Alkalinity, Total as CaCO3	100000			108000	ug/L		108	(80%-120%)	RXB5	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 \geq EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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

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

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

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

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