



a member of **The GEL Group** INC



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January 29, 2018

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

Re: CHPRC SAF S18-001
Work Order: 441135
SDG: GEL441135

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 10, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Heather Shaffer
Project Manager

Purchase Order: 300071 - 7H
Chain of Custody: S18-001-114, S18-001-130 and S18-001-131
Enclosures



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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S18-001
SDG: GEL441135**

January 29, 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 January 10, 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>
441135001	B3FWN4
441135002	B3FWN7
441135003	B3FX83
441135004	B3FX77
441135005	B3FX78
441135006	B3FX84

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 #: GEL441135
Work Order #: 441135

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.

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
1203950939 (MB)	Potassium	57.2 between (50 - 75)
	Sodium	142 between (100 - 150)

Determination of Metals by ICP-MS

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

General Chemistry

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

42 LBS

CH2M Hill Plateau Remediation Company		C.O.C.# S18-001-114 Page 1 of 1	
TIM CALLAWAY CHPRC		Telephone No.: 509-376-4650	
Collector:	S18-001	Purchase Order/Charge Code: 300071	
Project Title:	SURV, JANUARY 2018	Ice Chest No.: G605-656	
Shipped To (Lab):	GEL Laboratories, LLC	Bill of Lading/Air Bill No.: 7711 62455680	
Protocol:	SURV	Offsite Property No.: 8916	
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
B3FWN4	N	JAN 03 2018	021
B3FWN7	Y	/	/
No/Type Container	Sample Analysis		
1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)		
1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)		
Holding Time	Preservative		
6 Months	HNO3 to pH <2		
6 Months	HNO3 to pH <2		

Relinquished By:	TIM CALLAWAY	Signature	JAN 03 2018	1050	Received By:	SSU-1	Signature	JAN 03 2018	1050
Print First and Last Name	CHPRC	Date/Time			Print First and Last Name		Date/Time		
Relinquished By:	SSU-1	Signature	JAN 08 2018	0850	Received By:	Jeff Lucas	Signature	JAN 08 2018	0850
Print First and Last Name		Date/Time			Print First and Last Name		Date/Time		
Relinquished By:	Jeff Lucas	Signature	JAN 08 2018	1400	Received By:	FEDEX	Signature		
Print First and Last Name		Date/Time			Print First and Last Name		Date/Time		
Relinquished By:	FEDEX	Signature			Received By:	STACY BOONE	Signature	1/10/18	850
Print First and Last Name		Date/Time			Print First and Last Name		Date/Time		

Disposal Method (e.g., Return to customer, per lab procedure, used in process):

Disposed By: _____ 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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# **S18-001-130**
 Page 1 of 2

CH2M Hill Plateau Remediation Company
 IVAN SCHAEFFER
 ICHPRC

Collector: S18-001
SAF No.: SURV, JANUARY 2018
Project Title: GEL Laboratories, LLC
Shipped To (Lab): GEL Laboratories, LLC
Protocol: SURV

Contact/Requester: Karen Waters-Husted
Sampling Origin: Hanford Site
Logbook No.: HNF-N-506 96 177
Method of Shipment: Commercial Carrier
Priority: 30 Days

Telephone No.: 509-376-4650
Purchase Order/Charge Code: 300071
Ice Chest No.: GWS-156 GWS-656
Bill of Lading/Air Bill No.: 771162455684
Offsite Property No.: 8914

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
B3FX83	Y	W	1-4-18	0700	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3FX77	N	W	1-4-18	0700	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3FX77	N	W	1-4-18	0700	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

Relinquished By: IVAN SCHAEFFER Print First and Last Name: IVAN SCHAEFFER Signature: <i>Ivan Schaeffer</i> Date/Time: JAN 04 2018 1030	Received By: Christina Aguilera Print First and Last Name: Christina Aguilera Signature: <i>Christina Aguilera</i> Date/Time: JAN 04 2018 1030	Matrix* S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquid T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By: Christina Aguilera Print First and Last Name: Christina Aguilera Signature: <i>Christina Aguilera</i> Date/Time: JAN 04 2018 1100	Received By: SSU-1 Print First and Last Name: SSU-1 Signature: <i>SSU-1</i> Date/Time: JAN 04 2018 1100	
Relinquished By: SSU-1 Print First and Last Name: SSU-1 Signature: <i>SSU-1</i> Date/Time: JAN 08 2018 0850	Received By: Jeff Lucas Print First and Last Name: Jeff Lucas Signature: <i>Jeff Lucas</i> Date/Time: JAN 08 2018 0850	
Relinquished By: Jeff Lucas Print First and Last Name: Jeff Lucas Signature: <i>Jeff Lucas</i> Date/Time: JAN 08 2018 1400	Received By: FEDEX Print First and Last Name: FEDEX Signature: <i>FEDEX</i> Date/Time:	
Disposed By:		Date/Time:

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

Printed On: 11/21/2017
 FSR ID = FSR53966
 A-6004-842 (REV 3)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C.# S18-001-131					
		Page 1 of 2 <i>1-5-18</i>					
CH2M Hill Plateau Remediation Company							
Collector: IVAN SCHAEFFER CHERC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650					
SAF No.: S18-001	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071					
Project Title: SURV, JANUARY 2018	Logbook No.: HNF-N-506 914 177	Ice Chest No.: G-05-656					
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 77116245 5684					
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 8916					
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
B3FX78	N	1-4-18	0909	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3FX78	N	1-4-18	0909	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3FX84	Y	1-4-18	0909	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

Relinquished By: IVAN SCHAEFFER CHERC		Signature: <i>Ivan Schaeffer</i>		Date/Time: JAN 04 2018 1030	
Relinquished By: SSU-1		Signature: <i>Jeff Lucas</i>		Date/Time: JAN 04 2018 1100	
Relinquished By: SSU-1		Signature: <i>Jeff Lucas</i>		Date/Time: JAN 08 2018 0850	
Relinquished By: SSU-1		Signature: <i>Jeff Lucas</i>		Date/Time: JAN 08 2018 1400	
Received By: Catherine Aguirre ICPRC		Signature: <i>Catherine Aguirre</i>		Date/Time: JAN 04 2018 1030	
Received By: SSU-1		Signature: <i>Jeff Lucas</i>		Date/Time: JAN 04 2018 1100	
Received By: FEDEX		Signature: <i>FEDEX</i>		Date/Time: 0850	
Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:		Date/Time:	

A-6004-842 (REV 3)

FSR ID = FSR53954

Printed On 11/21/2017



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC		SDG/AR/COC/Work Order: 441135			
Received By: <i>Stacy Boone</i>		Date Received: 10-JAN-18			
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other 7711 6245 5684-			
Suspected Hazard Information		Yes	No		
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
COC/Samples marked or classified as radioactive?		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Is package, COC, and/or Samples marked HAZ?		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. Hazard Class Shipped: _____ UN#: _____ 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 If yes, select Hazards below, and contact the GEL Safety Group. <input checked="" type="checkbox"/> PCB's <input type="checkbox"/> Flammable <input type="checkbox"/> Foreign Soil <input type="checkbox"/> RCRA <input type="checkbox"/> Asbestos <input type="checkbox"/> Beryllium <input type="checkbox"/> 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"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Wet Ice</u> Ice Packs Dry Ice None Other: *all temperatures are recorded in Celsius TEMP: <u>1</u> °C
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>1R3-17</u> Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____ If Yes, Are Encores or Soil Kits present? Yes ___ No ___ (If yes, take to VOA Freezer)
7	Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Do VOA vials contain acid preservation? Yes ___ No ___ N/A ___ (If unknown, select No) VOA vials free of headspace? Yes ___ No ___ N/A ___ Sample ID's and containers affected:
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
12	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Comments (Use Continuation Form if needed):					

PM (or PMA) review: Initials MET Date 1/10/18 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 29 January 2018

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
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 #: GEL441135
Work Order #: 441135

Product: Determination of Metals by ICP**Analytical Method:** SW846 3005A/6010D**Analytical Procedure:** GL-MA-E-013 REV# 30**Analytical Batch:** 1731059**Product: Determination of Metals by ICP-MS****Analytical Method:** SW846 3005A/6020B**Analytical Procedure:** GL-MA-E-014 REV# 32**Analytical Batch:** 1730340**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 14**Preparation Batches:** 1730339 and 1731058

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
441135001	B3FWN4
441135002	B3FWN7
441135003	B3FX83
441135004	B3FX77
441135005	B3FX78
441135006	B3FX84
1203950939	Method Blank (MB) ICP
1203950940	Laboratory Control Sample (LCS)
1203950941	Laboratory Control Sample Duplicate (LCSD)
1203950942	441135003(B3FX83L) Serial Dilution (SD)
1203949063	Method Blank (MB) ICP-MS
1203949064	Laboratory Control Sample (LCS)
1203949067	441136004(NonSDGL) Serial Dilution (SD)
1203949065	441136004(NonSDGS) Matrix Spike (MS)
1203949066	441136004(NonSDGSD) Matrix Spike Duplicate (MSD)

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

Data Summary:

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

Calibration Information**ICSA/ICSAB Statement**

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

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
1203950939 (MB)	Potassium	57.2 between (50 - 75)
	Sodium	142 between (100 - 150)

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: GEL441135 GEL Work Order: 441135

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).
- 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.

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: 29 JAN 2018****Title: Data Validator**

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441135

CONTRACT: CPRC0S18001

METHOD TYPE: SW846

SAMPLE ID:441135001

BASIS: As Received

DATE COLLECTED 03-JAN-18

CLIENT ID: B3FWN4

LEVEL: Low

DATE RECEIVED 10-JAN-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	69.1	ug/L		3	10	10	1	MS	PRB	01/17/18 22:02	180117-2	1730340

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1730340	1730339	SW846 3005A	50	mL	50	mL	01/11/18	SXW1

***Analytical Methods:**

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441135

CONTRACT: CPRC0S18001

METHOD TYPE: SW846

SAMPLE ID:441135002

BASIS: As Received

DATE COLLECTED 03-JAN-18

CLIENT ID: B3FWN7

LEVEL: Low

DATE RECEIVED 10-JAN-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	66.8	ug/L		3	10	10	1	MS	PRB	01/17/18 22:05	180117-2	1730340

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1730340	1730339	SW846 3005A	50	mL	50	mL	01/11/18	SXW1

***Analytical Methods:**

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441135

CONTRACT: CPRC0S18001

METHOD TYPE: SW846

SAMPLE ID:441135003

BASIS: As Received

DATE COLLECTED 04-JAN-18

CLIENT ID: B3FX83

LEVEL: Low

DATE RECEIVED 10-JAN-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	01/23/18 16:43	012318A-1	1731059
7440-70-2	Calcium	50	ug/L	U	50	200	200	1	P	JWJ	01/23/18 16:43	012318A-1	1731059
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	01/18/18 20:30	180118-3	1730340
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	01/23/18 16:43	012318A-1	1731059
7439-95-4	Magnesium	110	ug/L	U	110	300	300	1	P	JWJ	01/23/18 16:43	012318A-1	1731059
7440-09-7	Potassium	55.5	ug/L	CB	50	150	150	1	P	JWJ	01/23/18 16:43	012318A-1	1731059
7440-23-5	Sodium	123	ug/L	CB	100	300	300	1	P	JWJ	01/23/18 16:43	012318A-1	1731059
7440-62-2	Vanadium	1	ug/L	U	1	5	5	1	P	JWJ	01/23/18 16:43	012318A-1	1731059

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1730340	1730339	SW846 3005A	50	mL	50	mL	01/11/18	SXW1
1731059	1731058	SW846 3005A	50	mL	50	mL	01/11/18	JXM8

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441135

CONTRACT: CPCR0S18001

METHOD TYPE: SW846

SAMPLE ID:441135004

BASIS: As Received

DATE COLLECTED 04-JAN-18

CLIENT ID: B3FX77

LEVEL: Low

DATE RECEIVED 10-JAN-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	01/23/18 16:49	012318A-1	1731059
7440-70-2	Calcium	50	ug/L	U	50	200	200	1	P	JWJ	01/23/18 16:49	012318A-1	1731059
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	01/18/18 20:33	180118-3	1730340
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	01/23/18 16:49	012318A-1	1731059
7439-95-4	Magnesium	110	ug/L	U	110	300	300	1	P	JWJ	01/23/18 16:49	012318A-1	1731059
7440-09-7	Potassium	59.4	ug/L	CB	50	150	150	1	P	JWJ	01/23/18 16:49	012318A-1	1731059
7440-23-5	Sodium	197	ug/L	CB	100	300	300	1	P	JWJ	01/23/18 16:49	012318A-1	1731059
7440-62-2	Vanadium	1	ug/L	U	1	5	5	1	P	JWJ	01/23/18 16:49	012318A-1	1731059

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1730340	1730339	SW846 3005A	50	mL	50	mL	01/11/18	SXW1
1731059	1731058	SW846 3005A	50	mL	50	mL	01/11/18	JXM8

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441135

CONTRACT: CPRC0S18001

METHOD TYPE: SW846

SAMPLE ID:441135005

BASIS: As Received

DATE COLLECTED 04-JAN-18

CLIENT ID: B3FX78

LEVEL: Low

DATE RECEIVED 10-JAN-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-42-8	Boron	16.4	ug/L	B	15	50	50	1	P	JWJ	01/23/18 16:51	012318A-1	1731059
7440-70-2	Calcium	44800	ug/L		50	200	200	1	P	JWJ	01/23/18 16:51	012318A-1	1731059
7440-47-3	Chromium	8.06	ug/L	B	3	10	10	1	MS	PRB	01/17/18 22:15	180117-2	1730340
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	01/23/18 16:51	012318A-1	1731059
7439-95-4	Magnesium	17000	ug/L		110	300	300	1	P	JWJ	01/23/18 16:51	012318A-1	1731059
7440-09-7	Potassium	5300	ug/L		50	150	150	1	P	JWJ	01/23/18 16:51	012318A-1	1731059
7440-23-5	Sodium	29500	ug/L		100	300	300	1	P	JWJ	01/23/18 16:51	012318A-1	1731059
7440-62-2	Vanadium	16	ug/L		1	5	5	1	P	JWJ	01/23/18 16:51	012318A-1	1731059

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1730340	1730339	SW846 3005A	50	mL	50	mL	01/11/18	SXW1
1731059	1731058	SW846 3005A	50	mL	50	mL	01/11/18	JXM8

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441135

CONTRACT: CPRC0S18001

METHOD TYPE: SW846

SAMPLE ID: 441135006

BASIS: As Received

DATE COLLECTED 04-JAN-18

CLIENT ID: B3FX84

LEVEL: Low

DATE RECEIVED 10-JAN-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-42-8	Boron	17.2	ug/L	B	15	50	50	1	P	JWJ	01/23/18 16:54	012318A-1	1731059
7440-70-2	Calcium	46300	ug/L		50	200	200	1	P	JWJ	01/23/18 16:54	012318A-1	1731059
7440-47-3	Chromium	6.78	ug/L	B	3	10	10	1	MS	PRB	01/17/18 22:18	180117-2	1730340
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	01/23/18 16:54	012318A-1	1731059
7439-95-4	Magnesium	17500	ug/L		110	300	300	1	P	JWJ	01/23/18 16:54	012318A-1	1731059
7440-09-7	Potassium	5530	ug/L		50	150	150	1	P	JWJ	01/23/18 16:54	012318A-1	1731059
7440-23-5	Sodium	30100	ug/L		100	300	300	1	P	JWJ	01/23/18 16:54	012318A-1	1731059
7440-62-2	Vanadium	16.5	ug/L		1	5	5	1	P	JWJ	01/23/18 16:54	012318A-1	1731059

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1730340	1730339	SW846 3005A	50	mL	50	mL	01/11/18	SXW1
1731059	1731058	SW846 3005A	50	mL	50	mL	01/11/18	JXM8

***Analytical Methods:**

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

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: January 29, 2018

Page 1 of 4

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 441135

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

Batch 1730340

QC1203949064	LCS										
Chromium	50.0			48.8	ug/L		97.7	(80%-120%)	PRB	01/17/18	21:59

QC1203949063	MB										
Chromium			U	3.00	ug/L					01/17/18	21:56

QC1203949065	441136004	MS									
Chromium	50.0	B	4.69	52.0	ug/L		94.6	(75%-125%)		01/17/18	22:41

QC1203949066	441136004	MSD									
Chromium	50.0	B	4.69	51.7	ug/L	0.569	94	(0%-20%)		01/17/18	22:44

QC1203949067	441136004	SDILT									
Chromium		B	4.69	DU	15.0	ug/L	N/A	(0%-20%)		01/17/18	22:50

Metals Analysis-ICP

Batch 1731059

QC1203950940	LCS										
Boron	500			476	ug/L		95.2	(80%-120%)	JWJ	01/23/18	16:39

Calcium	5000			5180	ug/L		104	(80%-120%)			
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Iron	5000			5020	ug/L		100	(80%-120%)			
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Magnesium	5000			5170	ug/L		103	(80%-120%)			
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Potassium	5000			4790	ug/L		95.8	(80%-120%)			
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Sodium	5000			5150	ug/L		103	(80%-120%)			
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GEL LABORATORIES LLC

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QC Summary

Workorder: 441135

Page 2 of 4

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1731059										
Vanadium	500			484	ug/L		96.9	(80%-120%)	JWJ	01/23/18	16:39
QC1203950941	LCSD										
Boron	500			514	ug/L	7.81	103	(0%-20%)		01/23/18	16:41
Calcium	5000			5550	ug/L	6.82	111	(0%-20%)			
Iron	5000			5410	ug/L	7.49	108	(0%-20%)			
Magnesium	5000			5580	ug/L	7.58	112	(0%-20%)			
Potassium	5000			5250	ug/L	9.19	105	(0%-20%)			
Sodium	5000			5520	ug/L	7	110	(0%-20%)			
Vanadium	500			499	ug/L	2.94	99.7	(0%-20%)			
QC1203950939	MB										
Boron			U	15.0	ug/L					01/23/18	16:36
Calcium			U	50.0	ug/L						
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						
Potassium			B	57.2	ug/L						
Sodium			B	142	ug/L						

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QC Summary

Workorder: 441135

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1731059										
Vanadium			U	1.00	ug/L				JWJ	01/23/18	16:36
QC1203950942 441135003 SDILT											
Boron	U	2.18	DU	75.0	ug/L	N/A		(0%-20%)		01/23/18	16:46
Calcium	U	29.7	DU	250	ug/L	N/A		(0%-20%)			
Iron	U	8.92	DU	150	ug/L	N/A		(0%-20%)			
Magnesium	U	-16.2	DU	550	ug/L	N/A		(0%-20%)			
Potassium	BC	55.5	DU	250	ug/L	N/A		(0%-20%)			
Sodium	BC	123	BD	113	ug/L	360		(0%-20%)			
Vanadium	U	0.260	DU	5.00	ug/L	N/A		(0%-20%)			

Notes:

The Qualifiers in this report are defined as follows:

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

GEL LABORATORIES LLC

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

QC Summary

Workorder: 441135

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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 #: GEL441135
Work Order #: 441135**

Product: Alkalinity

Analytical Method: 2320_ALKALINITY

Analytical Procedure: GL-GC-E-033 REV# 13

Analytical Batch: 1730703

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
441135004	B3FX77
441135005	B3FX78
1203949961	Laboratory Control Sample (LCS)
1203949962	440997003(NonSDG) Sample Duplicate (DUP)
1203949963	441136002(NonSDG) 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

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL441135 GEL Work Order: 441135

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Aubrey Kingsbury

Date: 17 JAN 2018

Title: Analyst I

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 17, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-001

Client Sample ID: B3FX77 Project: CPRC0S18001
 Sample ID: 441135004 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 04-JAN-18 07:00
 Receive Date: 10-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis												
2320_ALKALINITY: GW 01 "As Received"												
Alkalinity, Total as CaCO3	U	1450	1450	4000	ug/L			RXB5	01/11/18	1539	1730703	1
Bicarbonate alkalinity (CaCO3)	U	1450	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 Analytical Methods were performed:

Method	Description	Analyst	Comments
1	2320_ALKALINITY		

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 17, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-001

Client Sample ID: B3FX78 Project: CPRC0S18001
 Sample ID: 441135005 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 04-JAN-18 09:09
 Receive Date: 10-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis												
2320_ALKALINITY: GW 01 "As Received"												
Alkalinity, Total as CaCO3		131000	1450	4000	ug/L			RXB5	01/11/18	1541	1730703	1
Bicarbonate alkalinity (CaCO3)		131000	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 Analytical Methods were performed:

Method	Description	Analyst	Comments
1	2320_ALKALINITY		

Notes:

Column headers are defined as follows:

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

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: January 17, 2018

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 441135

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1730703										
QC1203949962	440997003	DUP									
Alkalinity, Total as CaCO3		130000		130000	ug/L	0.154		(0%-20%)	RXB5	01/11/18	15:18
Bicarbonate alkalinity (CaCO3)		130000		130000	ug/L	0.154		(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					
QC1203949963	441136002	DUP									
Alkalinity, Total as CaCO3		164000		162000	ug/L	1.23		(0%-20%)		01/11/18	15:46
Bicarbonate alkalinity (CaCO3)		164000		162000	ug/L	1.23		(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					
QC1203949961	LCS										
Alkalinity, Total as CaCO3	100000			107000	ug/L		107	(80%-120%)		01/11/18	15:14

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.

GEL LABORATORIES LLC

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

QC Summary

Workorder: 441135

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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.