GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

June 21, 2018

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

Re: CHCPRC SAF X18-029
Work Order: 451732
SDG: GEL451732

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 06, 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,

Anna Dupree for
Heather Shaffer
Project Manager

Purchase Order: 300071 7H
Chain of Custody: X18-029-048
Enclosures

Table of Contents

Case Narrative.....1

Chain of Custody and Supporting Documentation.....5

Data Review Qualifier Definitions.....8

Laboratory Certifications.....10

Metals Analysis.....12

- Case Narrative.....13
- Sample Data Summary.....17
- Quality Control Summary.....20

General Chem Analysis.....25

- Case Narrative.....26
- Sample Data Summary.....29
- Quality Control Summary.....31

Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHCPRC SAF X18-029
SDG: GEL451732

June 21, 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 June 06, 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:

Laboratory Identification	Sample Description
451732001	B3JWD5
451732002	B3JWD6

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.

Anna Dupree for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL451732
Work Order #: 451732

Metals

Determination of Metals by ICP

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

Determination of Metals by ICP-MS

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

General Chemistry

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

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 451737	C.O.C. # X18-029-048 Page 1 of 1

Collector: Daniel Klug CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: X18-029	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 304546
Project Title: Uranium Sequestration, May 201	**Logbook No.:** HNF-N-506 97/99	**Ice Chest No.:** 6605-6608
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment:** Commercial Carrier	**Bill of Lading/Air Bill No.:** 772389919931
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9513

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
B3JWD5	Y	W	JUN 0 1 2018	1319	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B3JWD6	N	W	1	1	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3JWD6	N	W	JUN 0 1 2018	1319	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

	Print First and Last Name	Signature	Date/Time
Relinquished By:	Daniel Klug CHPRC	D. Klug	JUN 0 1 2018 1420
Received By:	SSU-1		JUN 0 1 2018 1420
Relinquished By:	SSU-1		JUN 0 4 2018 0810
Received By:	Lesly Wall /CHPRC	Lesly Wall	JUN 0 4 2018 0810
Relinquished By:	Lesly Wall /CHPRC	Lesly Wall	JUN 0 4 2018 1400
Received By:	FEDEX		
Relinquished By:	Fed Ex		
Received By:	Chiakeris Tarplin/ GEL Laboratories		6/4/18 905

Matrix *

S	= Soil	DS	= Drum Solids
SE	= Sediment	DL	= Drum Liquids
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

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

Printed On 5/17/2018 FSR ID = FSR59193 A-6004-842 (REV 3)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC	SDG/AR/COC/Work Order: 457732
Received By: C. TARPLIN	Date Received: 06/06/18 HS
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 772402172633 772389919931 772402173044

Suspected Hazard Information	Yes	No	
			*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
Shipped as a DOT Hazardous?		X	Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?	X		Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 (CPM) / mR/Hr Classified as: (Rad 1) Rad 2 Rad 3
Is package, COC, and/or Samples marked HAZ?		X	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?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	X			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	X			Preservation Method: (Wet Ice) Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: 1°C
4	Daily check performed and passed on IR temperature gun?	X			Temperature Device Serial #: IR4-17 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?			X	Sample ID's and Containers Affected: B3JLB6 Gamma bottle received unpreserved. Preserved upon arrival If Preservation added, Lot#: 180330BP
7	Do any samples require Volatile Analysis?	X			If Yes, Are Encores or Soil Kits present? Yes___ No X (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes X No___ N/A___ (If unknown, select No) VOA vials free of headspace? Yes X No___ N/A___ Sample ID's and containers affected:
8	Samples received within holding time?	X			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	X			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	X			Sample ID's affected:
11	Number of containers received match number indicated on COC?	X			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			X	
13	COC form is properly signed in relinquished/received sections?	X			

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials CST Date 6/6/18 Page 1 of 1

GL-CHL-SR-001 Rev 5

Data Review Qualifier Definitions

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 (843) 556−8171

Report Date: 21−JUN−18

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 (0rganics 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 >/= 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 >= 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 >= 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 21 June 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	SC000122018−26
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL451732
Work Order #: 451732

Product: **Determination of Metals by ICP**
Analytical Method: SW846 3005A/6010D
Analytical Procedure: GL-MA-E-013 REV# 30
Analytical Batch: 1771140

Product: **Determination of Metals by ICP-MS**
Analytical Method: SW846 3005A/6020B
Analytical Procedure: GL-MA-E-014 REV# 32
Analytical Batch: 1771136

Preparation Method: SW846 3005A
Preparation Procedure: GL-MA-E-006 REV# 14
Preparation Batches: 1771135 and 1771138

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

GEL Sample ID#	Client Sample Identification
451732001	B3JWD5
451732002	B3JWD6
1204043958	Method Blank (MB)**ICP**
1204043959	Laboratory Control Sample (LCS)
1204043962	451732001(B3JWD5L) Serial Dilution (SD)
1204043960	451732001(B3JWD5S) Matrix Spike (MS)
1204043961	451732001(B3JWD5SD) Matrix Spike Duplicate (MSD)
1204043941	Method Blank (MB)**ICP-MS**
1204043942	Laboratory Control Sample (LCS)
1204043945	451732001(B3JWD5L) Serial Dilution (SD)
1204043943	451732001(B3JWD5S) Matrix Spike (MS)
1204043944	451732001(B3JWD5SD) Matrix Spike Duplicate (MSD)

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

Data Summary:

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

Calibration Information

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

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL451732 GEL Work Order: 451732

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: Nik-Cole A. Elmore **Name: Nik-Cole Elmore**

Date: 21 JUN 2018 **Title: Data Validator**

Sample Data Summary

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL451732 **CONTRACT:** CPRC0X18029 **METHOD TYPE:** SW846

SAMPLE ID: 451732001 **BASIS:** As Received **DATE COLLECTED** 01−JUN−18

CLIENT ID: B3JWD5 **LEVEL:** Low **DATE RECEIVED** 06−JUN−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	147	ug/L		15	50	50	1	P	JWJ	06/19/18 14:48	061918−1	1771140
7440−70−2	Calcium	36600	ug/L		50	200	200	1	P	JWJ	06/19/18 14:48	061918−1	1771140
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	06/19/18 14:48	061918−1	1771140
7439−95−4	Magnesium	8910	ug/L		110	300	300	1	P	JWJ	06/19/18 14:48	061918−1	1771140
7440−09−7	Potassium	5710	ug/L		50	150	150	1	P	JWJ	06/19/18 14:48	061918−1	1771140
7440−23−5	Sodium	25500	ug/L		100	300	300	1	P	JWJ	06/19/18 14:48	061918−1	1771140
7440−61−1	Uranium	396	ug/L		0.067	0.2	15	1	MS	SKJ	06/12/18 20:04	180612−2	1771136
7440−62−2	Vanadium	11.4	ug/L		1	5	5	1	P	JWJ	06/19/18 14:48	061918−1	1771140

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1771136	1771135	SW846 3005A	50	mL	50	mL	06/06/18	JXM8
1771140	1771138	SW846 3005A	50	mL	50	mL	06/07/18	SXW1

***Analytical Methods:**

P **SW846 3005A/6010D**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL451732 **CONTRACT:** CPRC0X18029 **METHOD TYPE:** SW846

SAMPLE ID: 451732002 **BASIS:** As Received **DATE COLLECTED** 01−JUN−18

CLIENT ID: B3JWD6 **LEVEL:** Low **DATE RECEIVED** 06−JUN−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	143	ug/L		15	50	50	1	P	JWJ	06/19/18 15:05	061918−1	1771140
7440−70−2	Calcium	37800	ug/L		50	200	200	1	P	JWJ	06/19/18 15:05	061918−1	1771140
7439−89−6	Iron	39.2	ug/L	B	30	100	100	1	P	JWJ	06/19/18 15:05	061918−1	1771140
7439−95−4	Magnesium	9160	ug/L		110	300	300	1	P	JWJ	06/19/18 15:05	061918−1	1771140
7440−09−7	Potassium	5750	ug/L		50	150	150	1	P	JWJ	06/19/18 15:05	061918−1	1771140
7440−23−5	Sodium	25600	ug/L		100	300	300	1	P	JWJ	06/19/18 15:05	061918−1	1771140
7440−61−1	Uranium	390	ug/L		0.067	0.2	15	1	MS	SKJ	06/12/18 20:31	180612−2	1771136
7440−62−2	Vanadium	11.4	ug/L		1	5	5	1	P	JWJ	06/19/18 15:05	061918−1	1771140

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1771136	1771135	SW846 3005A	50	mL	50	mL	06/06/18	JXM8
1771140	1771138	SW846 3005A	50	mL	50	mL	06/07/18	SXW1

***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: June 21, 2018

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **451732**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1771136										
QC1204043942 LCS										
Uranium	50.0			51.9	ug/L		104	(80%-120%)	SKJ	06/12/18 20:00
QC1204043941 MB										
Uranium			U	0.067	ug/L					06/12/18 19:56
QC1204043943 451732001 MS										
Uranium	50.0	396		435	ug/L		N/A	(75%-125%)		06/12/18 20:08
QC1204043944 451732001 MSD										
Uranium	50.0	396		436	ug/L	0.256	N/A	(0%-20%)		06/12/18 20:12
QC1204043945 451732001 SDILT										
Uranium		396	D	80.8	ug/L	2.17		(0%-20%)		06/12/18 20:20
Metals Analysis-ICP										
Batch 1771140										
QC1204043959 LCS										
Boron	500			496	ug/L		99.3	(80%-120%)	JWJ	06/19/18 14:46
Calcium	5000			4870	ug/L		97.4	(80%-120%)		
Iron	5000			4900	ug/L		98	(80%-120%)		
Magnesium	5000			4970	ug/L		99.5	(80%-120%)		
Potassium	5000			4680	ug/L		93.7	(80%-120%)		
Sodium	5000			4740	ug/L		94.7	(80%-120%)		

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

QC Summary

Workorder: **451732**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1771140											
Vanadium	500				499	ug/L		99.7	(80%-120%)	JWJ	06/19/18 14:46
QC1204043958 MB											
Boron				U	15.0	ug/L					06/19/18 14:42
Calcium				U	50.0	ug/L					
Iron				U	30.0	ug/L					
Magnesium				U	110	ug/L					
Potassium				U	50.0	ug/L					
Sodium				U	100	ug/L					
Vanadium				U	1.00	ug/L					
QC1204043960 451732001 MS											
Boron	500		147		639	ug/L		98.6	(75%-125%)		06/19/18 14:52
Calcium	5000		36600		41000	ug/L		N/A	(75%-125%)		
Iron	5000	U	30.0		4860	ug/L		96.9	(75%-125%)		
Magnesium	5000		8910		13700	ug/L		96.6	(75%-125%)		
Potassium	5000		5710		10300	ug/L		92.6	(75%-125%)		
Sodium	5000		25500		29700	ug/L		N/A	(75%-125%)		

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

QC Summary

Workorder: **451732**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1771140											
Vanadium	500		11.4		499	ug/L		97.5	(75%-125%)	JWJ	06/19/18 14:52
QC1204043961 451732001 MSD											
Boron	500		147		629	ug/L	1.72	96.4	(0%-20%)		06/19/18 14:54
Calcium	5000		36600		40500	ug/L	1.4	N/A	(0%-20%)		
Iron	5000	U	30.0		4900	ug/L	0.89	97.7	(0%-20%)		
Magnesium	5000		8910		13600	ug/L	1.02	93.9	(0%-20%)		
Potassium	5000		5710		10300	ug/L	0.543	91.5	(0%-20%)		
Sodium	5000		25500		29200	ug/L	1.45	N/A	(0%-20%)		
Vanadium	500		11.4		498	ug/L	0.239	97.3	(0%-20%)		
QC1204043962 451732001 SDILT											
Boron			147	BD	32.2	ug/L	9.88		(0%-20%)		06/19/18 14:56
Calcium			36600	D	8130	ug/L	11.2		(0%-20%)		
Iron		U	13.6	DU	150	ug/L	N/A		(0%-20%)		
Magnesium			8910	D	2000	ug/L	12		(0%-20%)		
Potassium			5710	D	1290	ug/L	12.9		(0%-20%)		
Sodium			25500	D	5750	ug/L	12.8		(0%-20%)		

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

QC Summary

Workorder: **451732**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch 1771140											
Vanadium		11.4	BD	2.58	ug/L	13.3		(0%-20%)	JWJ	06/19/18	14:56

Notes:

The Qualifiers in this report are defined as follows:

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

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL451732
Work Order #: 451732

Product: **Alkalinity**
Analytical Method: 2320_ALKALINITY
Analytical Procedure: GL-GC-E-033 REV# 13
Analytical Batch: 1770795

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

GEL Sample ID#	Client Sample Identification
451732002	B3JWD6
1204043199	Laboratory Control Sample (LCS)
1204043201	451869001(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

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

Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL451732 GEL Work Order: 451732

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: 12 JUN 2018 **Title: Data Validator**

Sample Data Summary

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

Certificate of Analysis

Report Date: June 12, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHCPRC SAF X18-029

Client Sample ID: B3JWD6
Sample ID: 451732002
Matrix: WATER
Collect Date: 01-JUN-18 13:19
Receive Date: 06-JUN-18
Collector: Client

Project: CPRC0X18029
Client ID: CPRC001

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		129000	1450	4000	ug/L			RXB5	06/06/18	1707	1770795	1
Bicarbonate alkalinity (CaCO3)		129000	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

Quality Control Summary

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

QC Summary

Report Date: June 12, 2018

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **451732**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Titration and Ion Analysis										
Batch 1770795										
QC1204043201 451869001 DUP										
Bicarbonate alkalinity (CaCO3)		87400		87600	ug/L	0.229		(0%-20%)	RXB5	06/06/18 17:20
Carbonate alkalinity (CaCO3)		53200		53200	ug/L	0		(0%-20%)		
Hydroxide alkalinity as CaCO3	U	1450	U	1450	ug/L	N/A				
QC1204043199 LCS										
Alkalinity, Total as CaCO3	100000			110000	ug/L		110	(80%-120%)		06/06/18 16:48

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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.