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
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gel.com

June 28, 2017

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

Re: CHPRC SAF S17-007
Work Order: 425100
SDG: GEL425100

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 09, 2017. 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,

B Luthman

Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 300071 - 7H
Chain of Custody: S17-007-125, S17-007-126, S17-007-127, S17-007-335 and S17-007-336
Enclosures

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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S17-007
SDG: GEL425100

June 28, 2017

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 09, 2017, 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
425100001	B3B6T0
425100002	B3B6T8
425100003	B3B6T7
425100004	B3B6V1
425100005	B3B6T5
425100006	B3B6T6
425100007	B3B6V2

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.

B Luthman

Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL425100
Work Order #: 425100

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

CRDL/PQL Requirements
The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 425100004 (B3B6V1), 425100005 (B3B6T5), 425100006 (B3B6T6) and 425100007 (B3B6V2).

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
1203808432 (MB)	Potassium	63.6 betw (50 - 75)

Determination of Metals by ICP-MS

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

General Chemistry

Ion Chromatography

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

Technical Information

Sample Dilutions

The following samples 1203808018 (B3B6T0DUP), 1203808020 (B3B6T0PS), 425100001 (B3B6T0) and 425100002 (B3B6T8) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	425100	
	001	**002**
Chloride	10X	5X
Sulfate	10X	5X

Miscellaneous Information

Manual Integrations

Samples 425100001 (B3B6T0) and 425100003 (B3B6T7) were manually integrated to correctly position the baseline as set in the calibration standards.

Alkalinity

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

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company 425100	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # S17-007-125 Page 1 of 1

Collector	Dan Woehle CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	S17-007	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	SURV, JULY 2017	Logbook No.	HNF-N-506 92 189	Ice Chest No.	GWS-~~590~~ 184
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	7793 3788 7683
Protocol	SURV	Priority:	30 Days PRIORITY	Offsite Property No.	8020

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** 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 **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3B6T0	N	W	JUN 0 8 2017	1209	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dan Woehle CHPRC			JUN 0 8 2017 1310	Lesly Wall ACHPRC			JUN 0 8 2017 1310
Relinquished By	Lesly Wall ACHPRC		JUN 0 8 2017 1400	Received By	FEDEX		Date/Time
Relinquished By			FED EX	Received By	STACY BOONE		6/9/17 8:55
Relinquished By			Date/Time	Received By			Date/Time

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 5/22/2017 FSR ID = FSR25421 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company 425100

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # S17-007-335

Page 1 of 1

Collector	Dan Woehle CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	S17-007	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	SURV, JULY 2017	Logbook No.	HNF-N-506 92/89	Ice Chest No.	GWS-330
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	7793 37056192
Protocol	SURV	Priority:	30 Days PRIORITY	Offsite Property No.	8017

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** 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 **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3B6T8	N	W	JUN 08 2017	0913	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	Dan Woehle CHPRC		JUN 08 2017 1045		Janelle Zunker CHPRC		JUN 08 2017 1045
Relinquished By	Janelle Zunker CHPRC		JUN 08 2017 1400	Received By	FEDEX		Date/Time
Relinquished By			FED EX	Received By	STACY BOONE		6/9/17 8:5
Relinquished By			Date/Time	Received By			Date/Time

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

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CH2MHill Plateau Remediation Company 425100

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # S17-007-336

Page 1 of 1

Collector	Dan Woehle CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	S17-007	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	SURV, JULY 2017	Logbook No.	HNF-N-506 92189	Ice Chest No.	GWS-330
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	7793370 6192
Protocol	SURV	Priority:	30 Days PRIORITY	Offsite Property No.	8017

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** 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 **Hold Time**

N/A

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3B6T7	N	WI	JUN 0 8 2017	0740	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dan Woehle CHPRC			JUN 0 8 2017 1045	Janelle Zunker CHPRC			JUN 0 8 2017 1045
Janelle Zunker CHPRC			JUN 0 8 2017 1400	FEDEX			
			FEDEX	STACY BOONE 6-9-17 8:55			

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 5/23/2017 FSR ID = FSR33102 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company 425100

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # S17-007-126

Page 1 of 1

Collector	Dan Woehle CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	S17-007	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	SURV, JULY 2017	Logbook No.	HNF-N-506 92/89	Ice Chest No.	GWS-330
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	7293 3705 6192
Protocol	SURV	Priority:	30 Days PRIORITY	Offsite Property No.	8017

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** 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 **Hold Time**

N/A

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3B6V1	Y	W	JUN 08 2017	0740	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B3B6T5	N	W	JUN 08 2017	0740	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3B6T5	N	W	JUN 08 2017	0740	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dan Woehle CHPRC			JUN 08 2017 1045	Janelle Zunker CHPRC			JUN 08 2017 1045
Janelle Zunker CHPRC			JUN 08 2017 1400	FEDEX			
			FED EX	STACY BOONS			6/9/17 8:55

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 5/23/2017 FSR ID = FSR33102 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company 425100

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # S17-007-127

Page 1 of 1

Collector	Dan Woehle CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	S17-007	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	SURV, JULY 2017	Logbook No.	HNF-N-506 92/89	Ice Chest No.	GWS 350
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	7793 3705 6192
Protocol	SURV	Priority:	30 Days PRIORITY	Offsite Property No.	8017

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** 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

Hold Time Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3B6T6	N	W	JUN 08 2017	0913	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3B6T6	N	W	JUN 08 2017	0913	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B3B6V2	Y	W	JUN 08 2017	0913	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dan Woehle CHPRC			JUN 08 2017 1045	Janelle Zunker CHPRC			JUN 08 2017 1045
Janelle Zunker CHPRC			JUN 08 2017 1400	FEDEX			
			FED EX	STACY BOONE			6/9/17 8:55

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 5/23/2017 FSR ID = FSR45311 A-6004-842 (REV 2)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC	SDG/AR/COC/Work Order: 425100
Received By: Stacy Boone	Date Received: 9-JUN-17
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 7793 3778 7683-1c 7793 3705 6722-1c 7793 3705 6192-1c 7793 3705 6001-20c

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?		✓	Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): Ø CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3
Is package, COC, and/or Samples marked HAZ?		✓	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?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP:_____
4	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: IR3-17 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	✓			Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?	✓			If Yes, Are Encores or Soil Kits present? Yes___ No ✓ (If yes, take to VOA Freezer) 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?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
11	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials EMR Date 6/12/17 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: 28−JUN−17

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 associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	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 28 June 2017

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	LA170010
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122017−1
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
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−17−12
Utah NELAP	SC000122017−22
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL425100
Work Order #: 425100

Product: **Determination of Metals by ICP**
Analytical Method: SW846 3005A/6010D
Analytical Procedure: GL-MA-E-013 REV# 28
Analytical Batch: 1672797

Product: **Determination of Metals by ICP-MS**
Analytical Method: SW846 3005A/6020B
Analytical Procedure: GL-MA-E-014 REV# 29
Analytical Batch: 1672826

Preparation Method: SW846 3005A
Preparation Procedure: GL-MA-E-006 REV# 13
Preparation Batches: 1672796 and 1672825

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

GEL Sample ID#	Client Sample Identification
425100004	B3B6V1
425100005	B3B6T5
425100006	B3B6T6
425100007	B3B6V2
1203808432	Method Blank (MB)**ICP**
1203808433	Laboratory Control Sample (LCS)
1203808436	425100004(B3B6V1L) Serial Dilution (SD)
1203808434	425100004(B3B6V1S) Matrix Spike (MS)
1203808435	425100004(B3B6V1SD) Matrix Spike Duplicate (MSD)
1203808484	Method Blank (MB)**ICP-MS**
1203808485	Laboratory Control Sample (LCS)
1203808488	425100004(B3B6V1L) Serial Dilution (SD)
1203808486	425100004(B3B6V1S) Matrix Spike (MS)
1203808487	425100004(B3B6V1SD) 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

CRDL/PQL Requirements
The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 425100004 (B3B6V1), 425100005 (B3B6T5), 425100006 (B3B6T6) and

425100007 (B3B6V2)-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
1203808432 (MB)	Potassium	63.6 betw (50 - 75)

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: GEL425100 GEL Work Order: 425100

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.

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: 27 JUN 2017 **Title: Data Validator**

Sample Data Summary

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL425100 **CONTRACT:** CPRC0S17007 **METHOD TYPE:** SW846

SAMPLE ID: 425100004 **BASIS:** As Received **DATE COLLECTED** 08−JUN−17

CLIENT ID: B3B6V1 **LEVEL:** Low **DATE RECEIVED** 09−JUN−17

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	06/21/17 19:55	170621−6	1672826
7440−38−2	Arsenic	2	ug/L	U	2	5	5	1	MS	BAJ	06/22/17 15:56	170622−4	1672826
7440−39−3	Barium	0.670	ug/L	U	0.67	2	2	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	06/22/17 13:20	170622−9	1672826
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	HSC	06/20/17 10:45	062017−1	1672797
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7440−70−2	Calcium	64.8	ug/L	B	50	200	200	1	P	HSC	06/20/17 10:45	062017−1	1672797
7440−47−3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7440−48−4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7440−50−8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	HSC	06/20/17 10:45	062017−1	1672797
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	06/21/17 20:37	170621−7	1672826
7439−95−4	Magnesium	110	ug/L	U	110	300	300	1	P	HSC	06/20/17 10:45	062017−1	1672797
7439−96−5	Manganese	1	ug/L	U	1	5	5	1	MS	SKJ	06/22/17 13:20	170622−9	1672826
7439−98−7	Molybdenum	0.20	ug/L	U	0.2	0.5	0.5	1	MS	PRB	06/22/17 15:22	170622−8	1672826
7440−02−0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7440−09−7	Potassium	50	ug/L	U	50	150	150	1	P	HSC	06/23/17 06:10	062317−3	1672797
7782−49−2	Selenium	2	ug/L	U	2	5	5	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7440−23−5	Sodium	100	ug/L	U	100	300	300	1	P	HSC	06/20/17 10:45	062017−1	1672797
7440−24−6	Strontium	2	ug/L	U	2	10	10	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	PRB	06/21/17 20:37	170621−7	1672826
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	PRB	06/21/17 20:37	170621−7	1672826
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	PRB	06/21/17 18:08	170621−5	1672826
7440−61−1	Uranium	0.067	ug/L	U	0.067	0.2	0.2	1	MS	PRB	06/21/17 20:37	170621−7	1672826
7440−62−2	Vanadium	1	ug/L	U	1	5	5	1	P	HSC	06/20/17 10:45	062017−1	1672797
7440−66−6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	06/21/17 18:08	170621−5	1672826

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1672797	1672796	SW846 3005A	50	mL	50	mL	06/09/17	CXW4
1672826	1672825	SW846 3005A	50	mL	50	mL	06/09/17	CXW4

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL425100 **CONTRACT:** CPRC0S17007 **METHOD TYPE:** SW846

SAMPLE ID: 425100005 **BASIS:** As Received **DATE COLLECTED** 08−JUN−17

CLIENT ID: B3B6T5 **LEVEL:** Low **DATE RECEIVED** 09−JUN−17

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	06/21/17 20:02	170621−6	1672826
7440−38−2	Arsenic	2	ug/L	U	2	5	5	1	MS	BAJ	06/22/17 16:03	170622−4	1672826
7440−39−3	Barium	0.670	ug/L	U	0.67	2	2	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	06/22/17 13:30	170622−9	1672826
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	HSC	06/20/17 10:58	062017−1	1672797
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7440−70−2	Calcium	50	ug/L	U	50	200	200	1	P	HSC	06/20/17 10:58	062017−1	1672797
7440−47−3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7440−48−4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7440−50−8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	HSC	06/20/17 10:58	062017−1	1672797
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	06/21/17 20:46	170621−7	1672826
7439−95−4	Magnesium	110	ug/L	U	110	300	300	1	P	HSC	06/20/17 10:58	062017−1	1672797
7439−96−5	Manganese	1	ug/L	U	1	5	5	1	MS	SKJ	06/22/17 13:30	170622−9	1672826
7439−98−7	Molybdenum	0.20	ug/L	U	0.2	0.5	0.5	1	MS	PRB	06/22/17 15:33	170622−8	1672826
7440−02−0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7440−09−7	Potassium	50	ug/L	U	50	150	150	1	P	HSC	06/22/17 10:59	062217−2	1672797
7782−49−2	Selenium	2	ug/L	U	2	5	5	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7440−23−5	Sodium	100	ug/L	U	100	300	300	1	P	HSC	06/20/17 10:58	062017−1	1672797
7440−24−6	Strontium	2	ug/L	U	2	10	10	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	PRB	06/21/17 20:46	170621−7	1672826
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	PRB	06/21/17 20:46	170621−7	1672826
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	PRB	06/21/17 18:31	170621−5	1672826
7440−61−1	Uranium	0.067	ug/L	U	0.067	0.2	0.2	1	MS	PRB	06/21/17 20:46	170621−7	1672826
7440−62−2	Vanadium	1	ug/L	U	1	5	5	1	P	HSC	06/20/17 10:58	062017−1	1672797
7440−66−6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	06/21/17 18:31	170621−5	1672826

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1672797	1672796	SW846 3005A	50	mL	50	mL	06/09/17	CXW4
1672826	1672825	SW846 3005A	50	mL	50	mL	06/09/17	CXW4

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL425100 **CONTRACT:** CPRC0S17007 **METHOD TYPE:** SW846

SAMPLE ID: 425100006 **BASIS:** As Received **DATE COLLECTED** 08−JUN−17

CLIENT ID: B3B6T6 **LEVEL:** Low **DATE RECEIVED** 09−JUN−17

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	06/21/17 20:03	170621−6	1672826
7440−38−2	Arsenic	3.38	ug/L	B	2	5	5	1	MS	BAJ	06/22/17 16:09	170622−4	1672826
7440−39−3	Barium	68.6	ug/L		0.67	2	2	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	06/22/17 13:32	170622−9	1672826
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	HSC	06/20/17 11:08	062017−1	1672797
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7440−70−2	Calcium	48500	ug/L		50	200	200	1	P	HSC	06/20/17 11:08	062017−1	1672797
7440−47−3	Chromium	30.1	ug/L		3	10	10	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7440−48−4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7440−50−8	Copper	0.547	ug/L	B	0.3	1	1	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	HSC	06/20/17 11:08	062017−1	1672797
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	06/21/17 20:48	170621−7	1672826
7439−95−4	Magnesium	14200	ug/L		110	300	300	1	P	HSC	06/20/17 11:08	062017−1	1672797
7439−96−5	Manganese	1	ug/L	U	1	5	5	1	MS	SKJ	06/22/17 13:32	170622−9	1672826
7439−98−7	Molybdenum	4.3	ug/L		0.2	0.5	0.5	1	MS	PRB	06/22/17 15:35	170622−8	1672826
7440−02−0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7440−09−7	Potassium	5530	ug/L		50	150	150	1	P	HSC	06/22/17 11:09	062217−2	1672797
7782−49−2	Selenium	2	ug/L	U	2	5	5	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7440−23−5	Sodium	19600	ug/L		100	300	300	1	P	HSC	06/20/17 11:08	062017−1	1672797
7440−24−6	Strontium	343	ug/L		2	10	10	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	PRB	06/21/17 20:48	170621−7	1672826
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	PRB	06/21/17 20:48	170621−7	1672826
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	PRB	06/21/17 18:34	170621−5	1672826
7440−61−1	Uranium	3.75	ug/L		0.067	0.2	0.2	1	MS	PRB	06/21/17 20:48	170621−7	1672826
7440−62−2	Vanadium	7.48	ug/L		1	5	5	1	P	HSC	06/20/17 11:08	062017−1	1672797
7440−66−6	Zinc	18.9	ug/L		3.3	10	10	1	MS	PRB	06/21/17 18:34	170621−5	1672826

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1672797	1672796	SW846 3005A	50	mL	50	mL	06/09/17	CXW4
1672826	1672825	SW846 3005A	50	mL	50	mL	06/09/17	CXW4

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL425100 **CONTRACT:** CPRC0S17007 **METHOD TYPE:** SW846

SAMPLE ID: 425100007 **BASIS:** As Received **DATE COLLECTED** 08−JUN−17

CLIENT ID: B3B6V2 **LEVEL:** Low **DATE RECEIVED** 09−JUN−17

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	06/21/17 20:05	170621−6	1672826
7440−38−2	Arsenic	3.5	ug/L	B	2	5	5	1	MS	BAJ	06/22/17 16:11	170622−4	1672826
7440−39−3	Barium	67.2	ug/L		0.67	2	2	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	06/22/17 13:33	170622−9	1672826
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	HSC	06/20/17 11:11	062017−1	1672797
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7440−70−2	Calcium	49400	ug/L		50	200	200	1	P	HSC	06/20/17 11:11	062017−1	1672797
7440−47−3	Chromium	30.3	ug/L		3	10	10	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7440−48−4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7440−50−8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	HSC	06/20/17 11:11	062017−1	1672797
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	06/21/17 20:49	170621−7	1672826
7439−95−4	Magnesium	14500	ug/L		110	300	300	1	P	HSC	06/20/17 11:11	062017−1	1672797
7439−96−5	Manganese	1	ug/L	U	1	5	5	1	MS	SKJ	06/22/17 13:33	170622−9	1672826
7439−98−7	Molybdenum	4.39	ug/L		0.2	0.5	0.5	1	MS	PRB	06/22/17 15:37	170622−8	1672826
7440−02−0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7440−09−7	Potassium	5630	ug/L		50	150	150	1	P	HSC	06/22/17 11:12	062217−2	1672797
7782−49−2	Selenium	2	ug/L	U	2	5	5	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7440−23−5	Sodium	19900	ug/L		100	300	300	1	P	HSC	06/20/17 11:11	062017−1	1672797
7440−24−6	Strontium	330	ug/L		2	10	10	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	PRB	06/21/17 20:49	170621−7	1672826
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	PRB	06/21/17 20:49	170621−7	1672826
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	PRB	06/21/17 18:37	170621−5	1672826
7440−61−1	Uranium	3.71	ug/L		0.067	0.2	0.2	1	MS	PRB	06/21/17 20:49	170621−7	1672826
7440−62−2	Vanadium	7.39	ug/L		1	5	5	1	P	HSC	06/20/17 11:11	062017−1	1672797
7440−66−6	Zinc	6.09	ug/L	B	3.3	10	10	1	MS	PRB	06/21/17 18:37	170621−5	1672826

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1672797	1672796	SW846 3005A	50	mL	50	mL	06/09/17	CXW4
1672826	1672825	SW846 3005A	50	mL	50	mL	06/09/17	CXW4

***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: June 27, 2017

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

Contact: Mr. Scot Fitzgerald

Workorder: 425100

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1672826										
QC1203808485 LCS										
Aluminum	2000			2000	ug/L		100	(80%-120%)	PRB	06/21/17 18:05
Antimony	50.0			48.9	ug/L		97.9	(80%-120%)		06/21/17 19:53
Arsenic	50.0			52.2	ug/L		104	(80%-120%)	BAJ	06/22/17 15:54
Barium	50.0			52.2	ug/L		104	(80%-120%)	PRB	06/21/17 18:05
Beryllium	50.0			56.7	ug/L		113	(80%-120%)	SKJ	06/22/17 13:19
Cadmium	50.0			52.3	ug/L		105	(80%-120%)	PRB	06/21/17 18:05
Chromium	50.0			52.3	ug/L		105	(80%-120%)		
Cobalt	50.0			50.7	ug/L		101	(80%-120%)		
Copper	50.0			51.7	ug/L		103	(80%-120%)		
Lead	50.0			49.5	ug/L		99.1	(80%-120%)		06/21/17 20:35
Manganese	50.0			52.8	ug/L		106	(80%-120%)	SKJ	06/22/17 13:19
Molybdenum	50.0			53.2	ug/L		106	(80%-120%)	PRB	06/22/17 15:20
Nickel	50.0			51.8	ug/L		104	(80%-120%)		06/21/17 18:05

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QC Summary

Workorder: **425100**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1672826										
Selenium	50.0			50.0	ug/L		99.9	(80%-120%)	PRB	06/21/17 18:05
Silver	50.0			52.0	ug/L		104	(80%-120%)		
Strontium	50.0			49.7	ug/L		99.3	(80%-120%)		
Thallium	50.0			44.6	ug/L		89.2	(80%-120%)		06/21/17 20:35
Thorium	50.0			47.5	ug/L		95.1	(80%-120%)		
Tin	50.0			50.2	ug/L		100	(80%-120%)		06/21/17 18:05
Uranium	50.0			48.1	ug/L		96.2	(80%-120%)		06/21/17 20:35
Zinc	50.0			51.2	ug/L		102	(80%-120%)		06/21/17 18:05
QC1203808484 MB										
Aluminum			U	19.3	ug/L					06/21/17 18:02
Antimony			U	1.00	ug/L					06/21/17 19:51
Arsenic			U	2.00	ug/L				BAJ	06/22/17 15:52
Barium			U	0.670	ug/L				PRB	06/21/17 18:02
Beryllium			U	0.200	ug/L				SKJ	06/22/17 13:17
Cadmium			U	0.300	ug/L				PRB	06/21/17 18:02
Chromium			U	3.00	ug/L					

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QC Summary

Workorder: **425100**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1672826											
Cobalt				U	0.300	ug/L				PRB	06/21/17 18:02
Copper				U	0.300	ug/L					
Lead				U	0.500	ug/L					06/21/17 20:33
Manganese				U	1.00	ug/L				SKJ	06/22/17 13:17
Molybdenum				U	0.200	ug/L				PRB	06/22/17 15:19
Nickel				U	0.600	ug/L					06/21/17 18:02
Selenium				U	2.00	ug/L					
Silver				U	0.300	ug/L					
Strontium				U	2.00	ug/L					
Thallium				U	0.600	ug/L					06/21/17 20:33
Thorium				U	0.700	ug/L					
Tin				U	1.00	ug/L					06/21/17 18:02
Uranium				U	0.067	ug/L					06/21/17 20:33
Zinc				U	3.30	ug/L					06/21/17 18:02
QC1203808486 425100004 MS											
Aluminum	2000	U	19.3		2050	ug/L		102	(75%-125%)		06/21/17 18:12

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QC Summary

Workorder: **425100**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1672826											
Antimony	50.0	U	1.00		50.1	ug/L		100	(75%-125%)	PRB	06/21/17 19:56
Arsenic	50.0	U	2.00		51.9	ug/L		102	(75%-125%)	BAJ	06/22/17 15:58
Barium	50.0	U	0.670		50.8	ug/L		102	(75%-125%)	PRB	06/21/17 18:12
Beryllium	50.0	U	0.200		58.0	ug/L		116	(75%-125%)	SKJ	06/22/17 13:22
Cadmium	50.0	U	0.300		52.2	ug/L		104	(75%-125%)	PRB	06/21/17 18:12
Chromium	50.0	U	3.00		52.3	ug/L		104	(75%-125%)		
Cobalt	50.0	U	0.300		50.8	ug/L		101	(75%-125%)		
Copper	50.0	U	0.300		51.5	ug/L		103	(75%-125%)		
Lead	50.0	U	0.500		50.0	ug/L		100	(75%-125%)		06/21/17 20:39
Manganese	50.0	U	1.00		53.5	ug/L		107	(75%-125%)	SKJ	06/22/17 13:22
Molybdenum	50.0	U	0.200		53.0	ug/L		106	(75%-125%)	PRB	06/22/17 15:24
Nickel	50.0	U	0.600		51.8	ug/L		104	(75%-125%)		06/21/17 18:12
Selenium	50.0	U	2.00		49.9	ug/L		99.1	(75%-125%)		
Silver	50.0	U	0.300		52.0	ug/L		104	(75%-125%)		
Strontium	50.0	U	2.00		51.3	ug/L		102	(75%-125%)		

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QC Summary

Workorder: **425100**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1672826											
Thallium	50.0	U	0.600		45.8	ug/L		91.4	(75%-125%)	PRB	06/21/17 20:39
Thorium	50.0	U	0.700		48.2	ug/L		96.3	(75%-125%)		
Tin	50.0	U	1.00		50.4	ug/L		100	(75%-125%)		06/21/17 18:12
Uranium	50.0	U	0.067		48.2	ug/L		96.4	(75%-125%)		06/21/17 20:39
Zinc	50.0	U	3.30		51.2	ug/L		100	(75%-125%)		06/21/17 18:12
QC1203808487 425100004 MSD											
Aluminum	2000	U	19.3		2040	ug/L	0.484	101	(0%-20%)		06/21/17 18:15
Antimony	50.0	U	1.00		49.6	ug/L	1.1	99	(0%-20%)		06/21/17 19:58
Arsenic	50.0	U	2.00		52.2	ug/L	0.497	102	(0%-20%)	BAJ	06/22/17 16:00
Barium	50.0	U	0.670		51.7	ug/L	1.77	103	(0%-20%)	PRB	06/21/17 18:15
Beryllium	50.0	U	0.200		58.2	ug/L	0.442	116	(0%-20%)	SKJ	06/22/17 13:23
Cadmium	50.0	U	0.300		52.9	ug/L	1.34	106	(0%-20%)	PRB	06/21/17 18:15
Chromium	50.0	U	3.00		51.0	ug/L	2.47	101	(0%-20%)		
Cobalt	50.0	U	0.300		50.2	ug/L	1.15	100	(0%-20%)		
Copper	50.0	U	0.300		51.4	ug/L	0.249	103	(0%-20%)		
Lead	50.0	U	0.500		51.4	ug/L	2.73	103	(0%-20%)		06/21/17 20:41

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QC Summary

Workorder: **425100**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1672826											
Manganese	50.0	U	1.00		53.5	ug/L	0.0691	107	(0%-20%)	SKJ	06/22/17 13:23
Molybdenum	50.0	U	0.200		52.4	ug/L	1.17	105	(0%-20%)	PRB	06/22/17 15:26
Nickel	50.0	U	0.600		51.3	ug/L	0.989	103	(0%-20%)		06/21/17 18:15
Selenium	50.0	U	2.00		49.9	ug/L	0.0261	99.1	(0%-20%)		
Silver	50.0	U	0.300		53.1	ug/L	2.14	106	(0%-20%)		
Strontium	50.0	U	2.00		52.0	ug/L	1.36	104	(0%-20%)		
Thallium	50.0	U	0.600		47.1	ug/L	2.65	93.9	(0%-20%)		06/21/17 20:41
Thorium	50.0	U	0.700		49.6	ug/L	2.72	99	(0%-20%)		
Tin	50.0	U	1.00		50.7	ug/L	0.575	101	(0%-20%)		06/21/17 18:15
Uranium	50.0	U	0.067		49.4	ug/L	2.39	98.7	(0%-20%)		06/21/17 20:41
Zinc	50.0	U	3.30		51.5	ug/L	0.528	101	(0%-20%)		06/21/17 18:15
QC1203808488 425100004 SDILT											
Aluminum		U	9.61	DU	96.5	ug/L	N/A		(0%-20%)		06/21/17 18:21
Antimony		U	0.041	DU	5.00	ug/L	N/A		(0%-20%)		06/21/17 20:00
Arsenic		U	1.16	DU	10.0	ug/L	N/A		(0%-20%)	BAJ	06/22/17 16:01
Barium		U	0.030	DU	3.35	ug/L	N/A		(0%-20%)	PRB	06/21/17 18:21

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QC Summary

Workorder: **425100**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1672826										
Beryllium	U	0.008	DU	1.00	ug/L	N/A		(0%-20%)	SKJ	06/22/17 13:26
Cadmium	U	0.026	DU	1.50	ug/L	N/A		(0%-20%)	PRB	06/21/17 18:21
Chromium	U	0.340	DU	15.0	ug/L	N/A		(0%-20%)		
Cobalt	U	0.026	DU	1.50	ug/L	N/A		(0%-20%)		
Copper	U	0.045	DU	1.50	ug/L	N/A		(0%-20%)		
Lead	U	-0.001	DU	2.50	ug/L	N/A		(0%-20%)		06/21/17 20:44
Manganese	U	0.169	DU	5.00	ug/L	N/A		(0%-20%)	SKJ	06/22/17 13:26
Molybdenum	U	0.104	DU	1.00	ug/L	N/A		(0%-20%)	PRB	06/22/17 15:28
Nickel	U	0.057	DU	3.00	ug/L	N/A		(0%-20%)		06/21/17 18:21
Selenium	U	0.346	DU	10.0	ug/L	N/A		(0%-20%)		
Silver	U	0.014	DU	1.50	ug/L	N/A		(0%-20%)		
Strontium	U	0.275	DU	10.0	ug/L	N/A		(0%-20%)		
Thallium	U	0.118	DU	3.00	ug/L	N/A		(0%-20%)		06/21/17 20:44
Thorium	U	0.095	DU	3.50	ug/L	N/A		(0%-20%)		
Tin	U	0.291	DU	5.00	ug/L	N/A		(0%-20%)		06/21/17 18:21

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QC Summary

Workorder: **425100**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1672826											
Uranium		U	-0.005	DU	0.335	ug/L	N/A		(0%-20%)	PRB	06/21/17 20:44
Zinc		U	1.07	DU	16.5	ug/L	N/A		(0%-20%)		06/21/17 18:21
Metals Analysis-ICP											
Batch 1672797											
QC1203808433 LCS											
Boron	500				466	ug/L		93.1	(80%-120%)	HSC	06/20/17 10:42
Calcium	5000				4620	ug/L		92.4	(80%-120%)		
Iron	5000				4770	ug/L		95.3	(80%-120%)		
Magnesium	5000				4720	ug/L		94.4	(80%-120%)		
Potassium	5000				4980	ug/L		99.5	(80%-120%)		06/22/17 10:44
Sodium	5000				4710	ug/L		94.1	(80%-120%)		06/20/17 10:42
Vanadium	500				458	ug/L		91.5	(80%-120%)		
QC1203808432 MB											
Boron				U	15.0	ug/L					06/20/17 10:39
Calcium				U	50.0	ug/L					
Iron				U	30.0	ug/L					
Magnesium				U	110	ug/L					
Potassium				B	63.6	ug/L					06/22/17 10:40

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QC Summary

Workorder: **425100**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1672797											
Sodium				U	100	ug/L				HSC	06/20/17 10:39
Vanadium				U	1.00	ug/L					
QC1203808434 425100004 MS											
Boron	500	U	15.0		460	ug/L		91.7	(75%-125%)		06/20/17 10:49
Calcium	5000	B	64.8		4510	ug/L		89	(75%-125%)		
Iron	5000	U	30.0		4660	ug/L		93	(75%-125%)		
Magnesium	5000	U	110		4640	ug/L		92.7	(75%-125%)		
Potassium	5000	U	50.0		4860	ug/L		96.3	(75%-125%)		06/23/17 06:13
Sodium	5000	B	-100		4720	ug/L		94.3	(75%-125%)		06/20/17 10:49
Vanadium	500	U	1.00		450	ug/L		89.9	(75%-125%)		
QC1203808435 425100004 MSD											
Boron	500	U	15.0		476	ug/L	3.46	94.9	(0%-20%)		06/20/17 10:52
Calcium	5000	B	64.8		4660	ug/L	3.1	91.8	(0%-20%)		
Iron	5000	U	30.0		4790	ug/L	2.86	95.7	(0%-20%)		
Magnesium	5000	U	110		4750	ug/L	2.35	94.9	(0%-20%)		
Potassium	5000	U	50.0		5060	ug/L	4.05	100	(0%-20%)		06/23/17 06:16
Sodium	5000	B	-100		4780	ug/L	1.24	95.5	(0%-20%)		06/20/17 10:52

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QC Summary

Workorder: **425100**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1672797											
Vanadium	500	U	1.00		468	ug/L	4.07	93.7	(0%-20%)	HSC	06/20/17 10:52
QC1203808436 425100004 SDILT											
Boron		U	1.41	DU	75.0	ug/L	N/A		(0%-20%)		06/20/17 10:55
Calcium		B	64.8	DU	250	ug/L	N/A		(0%-20%)		
Iron		U	4.26	DU	150	ug/L	N/A		(0%-20%)		
Magnesium		U	-14.2	DU	550	ug/L	N/A		(0%-20%)		
Potassium		U	43.1	DU	250	ug/L	N/A		(0%-20%)		06/23/17 06:19
Sodium		B	-100	BD	-288	ug/L	-1340		(0%-20%)		06/20/17 10:55
Vanadium		U	-0.70	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

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QC Summary

Workorder: **425100**

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 #: GEL425100
Work Order #: 425100

Product: **Ion Chromatography**
Analytical Method: 9056_ANIONS_IC
Analytical Procedure: GL-GC-E-086 REV# 25
Analytical Batch: 1672653

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

GEL Sample ID#	Client Sample Identification
425100001	B3B6T0
425100002	B3B6T8
425100003	B3B6T7
1203808016	Method Blank (MB)
1203808017	Laboratory Control Sample (LCS)
1203808018	425100001(B3B6T0) Sample Duplicate (DUP)
1203808020	425100001(B3B6T0) 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 1203808018 (B3B6T0DUP), 1203808020 (B3B6T0PS), 425100001 (B3B6T0) and 425100002 (B3B6T8) 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	425100	
	001	002
Chloride	10X	5X
Sulfate	10X	5X

Miscellaneous Information

Manual Integrations
Samples 425100001 (B3B6T0) and 425100003 (B3B6T7) were manually integrated to correctly position the baseline as set in the calibration standards.

Product: **Alkalinity**
Analytical Method: 2320_ALKALINITY
Analytical Procedure: GL-GC-E-033 REV# 13
Analytical Batch: 1675815

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

GEL Sample ID#	Client Sample Identification
425100005	B3B6T5
425100006	B3B6T6
1203815591	Laboratory Control Sample (LCS)
1203815592	425100005(B3B6T5) 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: GEL425100 GEL Work Order: 425100

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: Kristen Mizzell **Name: Kristen Mizzell**

Date: 26 JUN 2017 **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: June 26, 2017

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF S17-007

Client Sample ID:	B3B6T0	Project:	CPRC0S17007
Sample ID:	425100001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	08-JUN-17 12:09		
Receive Date:	09-JUN-17		
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	259	33.0	500	ug/L		1	MXL2	06/09/17	1047	1672653	1
Nitrate-N		3430	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	10300	670	2000	ug/L		10	MXL2	06/09/17	1936	1672653	2
Sulfate	D	99900	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
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Certificate of Analysis

Report Date: June 26, 2017

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF S17-007

Client Sample ID:	B3B6T8	Project:	CPRC0S17007
Sample ID:	425100002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	08-JUN-17 09:13		
Receive Date:	09-JUN-17		
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	226	33.0	500	ug/L		1	MXL2	06/09/17	1116	1672653	1
Nitrate-N		4380	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	14200	335	1000	ug/L		5	MXL2	06/09/17	2104	1672653	2
Sulfate	D	80100	665	2000	ug/L		5					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

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

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Certificate of Analysis

Report Date: June 26, 2017

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF S17-007

Client Sample ID:	B3B6T7	Project:	CPRC0S17007
Sample ID:	425100003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	08-JUN-17 07:40		
Receive Date:	09-JUN-17		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride	B	188	67.0	200	ug/L		1	MXL2	06/09/17	1145	1672653	1
Fluoride	U	33.0	33.0	500	ug/L		1					
Nitrate-N	U	33.0	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Sulfate	U	133	133	500	ug/L		1					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

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

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Certificate of Analysis

Report Date: June 26, 2017

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF S17-007

Client Sample ID:	B3B6T5	Project:	CPRC0S17007
Sample ID:	425100005	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	08-JUN-17 07:40		
Receive Date:	09-JUN-17		
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	06/22/17	1805	1675815	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	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 26, 2017

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF S17-007

Client Sample ID:	B3B6T6	Project:	CPRC0S17007
Sample ID:	425100006	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	08-JUN-17 09:13		
Receive Date:	09-JUN-17		
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		123000	1450	4000	ug/L			RXB5	06/22/17	1809	1675815	1
Bicarbonate alkalinity (CaCO3)		123000	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: June 26, 2017

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **425100**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography										
Batch 1672653										
QC1203808018 425100001 DUP										
Chloride	D	10300	D	10200	ug/L	0.594		(0%-20%)	MXL2	06/09/17 20:05
Fluoride	B	259	B	260	ug/L	0.501 ^		(+/-500)		06/09/17 16:40
Nitrate-N		3430		3460	ug/L	0.888		(0%-20%)		
Nitrite-N	U	33.0	U	33.0	ug/L	N/A				
Sulfate	D	99900	D	99900	ug/L	0.00801		(0%-20%)		06/09/17 20:05
QC1203808017 LCS										
Chloride	5000			4690	ug/L		93.8	(80%-120%)		06/09/17 18:08
Fluoride	2500			2400	ug/L		96.1	(80%-120%)		
Nitrate-N	2500			2350	ug/L		94.1	(80%-120%)		
Nitrite-N	2500			2410	ug/L		96.4	(80%-120%)		
Sulfate	10000			9730	ug/L		97.3	(80%-120%)		
QC1203808016 MB										
Chloride			U	67.0	ug/L					06/09/17 17:38
Fluoride			U	33.0	ug/L					
Nitrate-N			U	33.0	ug/L					

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QC Summary

Workorder: **425100**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography											
Batch 1672653											
Nitrite-N				U	33.0	ug/L				MXL2	06/09/17 17:38
Sulfate				U	133	ug/L					
QC1203808020 425100001 PS											
Chloride	5.00	D	1.03	D	5.68	mg/L		93.1	(75%-125%)		06/09/17 20:35
Fluoride	2.50	B	0.259		2.59	mg/L		93.1	(75%-125%)		06/09/17 17:09
Nitrate-N	2.50		3.43		6.04	mg/L		105	(75%-125%)		
Nitrite-N	2.50	U	0.00		2.35	mg/L		93.9	(75%-125%)		
Sulfate	10.0	D	9.99	D	20.3	mg/L		103	(75%-125%)		06/09/17 20:35
Titration and Ion Analysis											
Batch 1675815											
QC1203815592 425100005 DUP											
Alkalinity, Total as CaCO3		U	1450	U	1450	ug/L	N/A			RXB5	06/22/17 18:06
Bicarbonate alkalinity (CaCO3)		U	1450	U	1450	ug/L	N/A				
Carbonate alkalinity (CaCO3)		U	1450	U	1450	ug/L	N/A				
Hydroxide alkalinity as CaCO3		U	1450	U	1450	ug/L	N/A				
QC1203815591 LCS											
Alkalinity, Total as CaCO3	100000				107000	ug/L		107	(80%-120%)		06/22/17 18:02

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

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QC Summary

Workorder: **425100**

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

>	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.