

8/17/2016



August 17, 2016

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

Re: CHPRC SAF S16-007
Work Order: 402049
SDG: GEL402049

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 21, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Heather Shaffer
Project Manager

Purchase Order: 300072 - 7H
Chain of Custody: S16-007-124
Enclosures

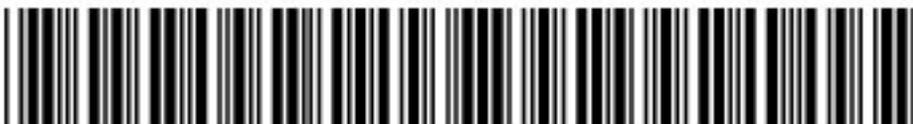


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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S16-007
SDG: GEL402049**

August 17, 2016

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 July 21, 2016, 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 and DER.

Sample Identification

The laboratory received the following samples:

Laboratory Identification	Sample Description
402049001	B35T40
402049002	B35T37

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.

8/17/2016

Heather Shaffer

Heather Shaffer
Project Manager

Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL402049
Work Order #: 402049

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 sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 402049001 (B35T40) and 402049002 (B35T37).

Determination of Metals by ICP-MS

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

Calibration Information

CRDL/PQL Requirements

The CRDL standard recoveries for SW846 6020A/6020B met the advisory control limits with the exception of beryllium. Client sample concentrations were less than the MDL; therefore the data were not adversely affected.

Quality Control (QC) Information

Matrix Spike (MS/MSD) Recovery Statement

The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike also did not meet the required control limits; thus, confirming matrix interferences and/or sample non-homogeneity.

Sample	Analyte	Value
1203590336 (Non SDG 402046001MS)	Strontium	68.1* (75%-125%)

Post Spike (PS) Recovery Statement

The PS did not meet the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the presence of matrix interferences.

Sample	Analyte	Value
1203604201 (Non SDG 402046001PS)	Strontium	67.8* (80%-120%)

General Chemistry

Alkalinity

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB 1203593627 (MB) analyzed with this SDG met the acceptance criteria. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2M Hill Plateau Remediation Company **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** C.O.C.# **S16-007-124**
 Page 1 of 1

Collector: Dan Weehle CHPRC Telephone No. 509-376-4650
 SAF No. S16-007 Purchase Order/Charge Code 300071
 Project Title: SURV, JULY 2016 Ice Chest No. 6WS-453
 Shipped To (Lab): GEL Laboratories, LLC Bill of Lading/Air Bill No. 776802536871
 Protocol: SURV Priority: 30 Days Offsite Property No. 6845

POSSIBLE SAMPLE HAZARDS/REMARKS Hold Time: Yes No
 *** 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
 Total Activity Exemption: Yes No
 Special Handling: N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35T40	Y	W	7-20-16	1014	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B35T40	Y	W			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B35T37	N	W			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
Dan Weehle CHPRC	<i>[Signature]</i>	<i>[Signature]</i>	JUL 20 2016 1059	Janelle Zunker CHPRC	<i>[Signature]</i>	<i>[Signature]</i>	JUL 20 2016	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
Janelle Zunker CHPRC	<i>[Signature]</i>	<i>[Signature]</i>	JUL 20 2016 1500	FEDEX				
				M. Koster	<i>[Signature]</i>	<i>[Signature]</i>	7-21-16 0850	

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time
 PRINTED ON 5/26/2016 FSR ID = FSR32781 A-6004-842 (REV 2)

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPR</u>		SDG/AR/COC/Work Order:	
Received By: <u>MS</u>		Date Received: <u>7-21-16</u>	
Suspected Hazard Information		Yes	No
COC/Samples marked as radioactive?		*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Classified Radioactive II or III by RSO?		Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>CPMD</u>	
COC/Samples marked containing PCBs?		If yes, Were swipes taken of sample containers < action levels?	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.	
Shipped as a DOT Hazardous?		Hazard Class Shipped: UN#:	
Samples identified as Foreign Soil?			

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>3046146L</u> Secondary Temperature Device Serial # (if Applicable):
3	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7	VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9	Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16	Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>7768 0253 6871 1c</u> <u>7768 0465 7496 2c</u>

Comments (Use Continuation Form if needed):

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol-condensation product	Organics	Semi-Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (Organics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq 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 \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy--Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 17 August 2016

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	LA160006
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
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	T104704235-16-11
Utah NELAP	SC000122016-20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL402049
Work Order #: 402049

Product: Determination of Metals by ICP**Analytical Method:** 6010_METALS_ICP**Analytical Procedure:** GL-MA-E-013 REV# 26**Analytical Batch:** 1583854**Product: Determination of Metals by ICP-MS****Analytical Method:** 6020_METALS_ICPMS**Analytical Procedure:** GL-MA-E-014 REV# 28**Analytical Batch:** 1583988**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 13**Preparation Batches:** 1583853 and 1583987

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402049001	B35T40
402049002	B35T37
1203590048	Method Blank (MB) ICP
1203590049	Laboratory Control Sample (LCS)
1203590052	402046001(NonSDGL) Serial Dilution (SD)
1203590050	402046001(NonSDGS) Matrix Spike (MS)
1203590051	402046001(NonSDGSD) Matrix Spike Duplicate (MSD)
1203590334	Method Blank (MB) ICP-MS
1203590335	Laboratory Control Sample (LCS)
1203590338	402046001(NonSDGL) Serial Dilution (SD)
1203590336	402046001(NonSDGS) Matrix Spike (MS)
1203590337	402046001(NonSDGSD) Matrix Spike Duplicate (MSD)
1203604201	402046001(NonSDGPS) 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.

Calibration Information**CRDL/PQL Requirements**

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 402049001 (B35T40) and 402049002 (B35T37)-ICP. The CRDL standard recoveries for SW846 6020A/6020B met the advisory control limits with the exception of beryllium. Client sample

concentrations were less than the MDL; therefore the data were not adversely affected. ICP-MS.

Quality Control (QC) Information

Matrix Spike (MS/MSD) Recovery Statement

The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike also did not meet the required control limits; thus, confirming matrix interferences and/or sample non-homogeneity.

Sample	Analyte	Value
1203590336 (Non SDG 402046001MS)	Strontium	68.1* (75%-125%)

Post Spike (PS) Recovery Statement

The percent recoveries (%R) obtained from the PS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The PS did not meet the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the presence of matrix interferences.

Sample	Analyte	Value
1203604201 (Non SDG 402046001PS)	Strontium	67.8* (80%-120%)

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: GEL402049 GEL Work Order: 402049

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Nik-Cole Elmore

Date: 17 AUG 2016

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL402049

CONTRACT: CPCR0S16007

METHOD TYPE: SW846

SAMPLE ID: 402049001

BASIS: As Received

DATE COLLECTED 20-JUL-16

CLIENT ID: B35T40

LEVEL: Low

DATE RECEIVED 21-JUL-16

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	15	ug/L	U	15	50	50	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	SKJ	08/11/16 04:05	160810-4	1583988
7440-38-2	Arsenic	1.7	ug/L	U	1.7	5	5	1	MS	PRB	08/15/16 12:47	160815-2	1583988
7440-39-3	Barium	87.6	ug/L		0.6	2	2	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	08/15/16 15:29	160815-6	1583988
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	08/01/16 17:54	080116B-1	1583854
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7440-70-2	Calcium	77600	ug/L		50	200	200	1	P	HSC	08/01/16 17:54	080116B-1	1583854
7440-47-3	Chromium	2.29	ug/L	B	2	10	10	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7440-48-4	Cobalt	0.357	ug/L	B	0.1	1	1	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7440-50-8	Copper	6.89	ug/L		0.35	1	1	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	08/01/16 17:54	080116B-1	1583854
7439-92-1	Lead	0.568	ug/L	B	0.5	2	2	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7439-95-4	Magnesium	17400	ug/L		110	300	300	1	P	HSC	08/01/16 17:54	080116B-1	1583854
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7439-98-7	Molybdenum	0.497	ug/L	B	0.165	0.5	0.5	1	MS	SKJ	08/11/16 13:20	160811-5	1583988
7440-02-0	Nickel	2.63	ug/L		0.5	2	2	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7440-09-7	Potassium	4210	ug/L		50	150	150	1	P	HSC	08/01/16 17:54	080116B-1	1583854
7782-49-2	Selenium	2.07	ug/L	B	1.5	5	5	1	MS	PRB	08/15/16 12:47	160815-2	1583988
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7440-23-5	Sodium	23700	ug/L		100	300	300	1	P	HSC	08/01/16 17:54	080116B-1	1583854
7440-24-6	Strontium	411	ug/L		2	10	10	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7440-29-1	Thorium	0.383	ug/L	U	0.383	2	2	1	MS	SKJ	08/11/16 13:20	160811-5	1583988
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	SKJ	08/11/16 02:28	160810-3	1583988
7440-61-1	Uranium	2.13	ug/L		0.067	0.2	0.2	1	MS	SKJ	08/11/16 13:20	160811-5	1583988
7440-62-2	Vanadium	5.35	ug/L		1	5	5	1	P	HSC	08/01/16 17:54	080116B-1	1583854
7440-66-6	Zinc	74.1	ug/L		3.5	10	10	1	MS	SKJ	08/11/16 02:28	160810-3	1583988

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1583854	1583853	SW846 3005A	50	mL	50	mL	07/22/16	SXW1
1583988	1583987	SW846 3005A	50	mL	50	mL	07/22/16	SXW1

***Analytical Methods:**

METALS

-1-

INORGANICS ANALYSIS DATA PACKAGE

P SW846 3005A/6010C
MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL402049

CONTRACT: CPRC0S16007

METHOD TYPE: SW846

SAMPLE ID: 402049002

BASIS: As Received

DATE COLLECTED 20-JUL-16

CLIENT ID: B35T37

LEVEL: Low

DATE RECEIVED 21-JUL-16

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	15	ug/L	U	15	50	50	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	SKJ	08/11/16 04:06	160810-4	1583988
7440-38-2	Arsenic	1.89	ug/L	B	1.7	5	5	1	MS	PRB	08/15/16 12:49	160815-2	1583988
7440-39-3	Barium	89.1	ug/L		0.6	2	2	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	08/15/16 15:31	160815-6	1583988
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	08/01/16 17:57	080116B-1	1583854
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7440-70-2	Calcium	77900	ug/L		50	200	200	1	P	HSC	08/01/16 17:57	080116B-1	1583854
7440-47-3	Chromium	2.19	ug/L	B	2	10	10	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7440-48-4	Cobalt	0.377	ug/L	B	0.1	1	1	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7440-50-8	Copper	8.73	ug/L		0.35	1	1	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	08/01/16 17:57	080116B-1	1583854
7439-92-1	Lead	0.624	ug/L	B	0.5	2	2	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7439-95-4	Magnesium	17400	ug/L		110	300	300	1	P	HSC	08/01/16 17:57	080116B-1	1583854
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7439-98-7	Molybdenum	0.448	ug/L	B	0.165	0.5	0.5	1	MS	SKJ	08/11/16 13:22	160811-5	1583988
7440-02-0	Nickel	2.68	ug/L		0.5	2	2	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7440-09-7	Potassium	4210	ug/L		50	150	150	1	P	HSC	08/01/16 17:57	080116B-1	1583854
7782-49-2	Selenium	2.42	ug/L	B	1.5	5	5	1	MS	PRB	08/15/16 12:49	160815-2	1583988
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7440-23-5	Sodium	23700	ug/L		100	300	300	1	P	HSC	08/01/16 17:57	080116B-1	1583854
7440-24-6	Strontium	409	ug/L		2	10	10	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7440-29-1	Thorium	0.383	ug/L	U	0.383	2	2	1	MS	SKJ	08/11/16 13:22	160811-5	1583988
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	SKJ	08/11/16 02:32	160810-3	1583988
7440-61-1	Uranium	2.18	ug/L		0.067	0.2	0.2	1	MS	SKJ	08/11/16 13:22	160811-5	1583988
7440-62-2	Vanadium	5.58	ug/L		1	5	5	1	P	HSC	08/01/16 17:57	080116B-1	1583854
7440-66-6	Zinc	76.6	ug/L		3.5	10	10	1	MS	SKJ	08/11/16 02:32	160810-3	1583988

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1583854	1583853	SW846 3005A	50	mL	50	mL	07/22/16	SXW1
1583988	1583987	SW846 3005A	50	mL	50	mL	07/22/16	SXW1

***Analytical Methods:**

METALS

-1-

INORGANICS ANALYSIS DATA PACKAGE

P SW846 3005A/6010C
MS SW846 3005A/6020A

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: August 17, 2016

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 402049

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1583988										
QC1203590335	LCS										
Aluminum	2000			1890	ug/L		94.5	(80%-120%)	SKJ	08/11/16	01:45
Antimony	50.0			53.9	ug/L		108	(80%-120%)		08/11/16	03:52
Arsenic	50.0			50.1	ug/L		100	(80%-120%)	PRB	08/15/16	12:35
Barium	50.0			49.4	ug/L		98.7	(80%-120%)	SKJ	08/11/16	01:45
Beryllium	50.0			51.9	ug/L		104	(80%-120%)		08/15/16	15:19
Cadmium	50.0			53.1	ug/L		106	(80%-120%)		08/11/16	01:45
Chromium	50.0			51.2	ug/L		102	(80%-120%)			
Cobalt	50.0			53.5	ug/L		107	(80%-120%)			
Copper	50.0			57.8	ug/L		116	(80%-120%)			
Lead	50.0			53.0	ug/L		106	(80%-120%)			
Manganese	50.0			52.2	ug/L		104	(80%-120%)			
Molybdenum	50.0			49.4	ug/L		98.8	(80%-120%)		08/11/16	12:58
Nickel	50.0			54.6	ug/L		109	(80%-120%)		08/11/16	01:45
Selenium	50.0			49.1	ug/L		98.2	(80%-120%)	PRB	08/15/16	12:35
Silver	50.0			54.5	ug/L		109	(80%-120%)	SKJ	08/11/16	01:45
Strontium	50.0			53.1	ug/L		106	(80%-120%)			
Thallium	50.0			48.5	ug/L		96.9	(80%-120%)			
Thorium	50.0			54.7	ug/L		109	(80%-120%)		08/11/16	12:58
Tin	50.0			50.8	ug/L		102	(80%-120%)		08/11/16	01:45
Uranium	50.0			53.1	ug/L		106	(80%-120%)		08/11/16	12:58

8/17/2016

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QC Summary

Workorder: 402049

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1583988										
Zinc	50.0			54.7	ug/L		109	(80%-120%)	SKJ	08/11/16	01:45
QC1203590334	MB										
Aluminum			U	15.0	ug/L					08/11/16	01:41
Antimony			U	1.00	ug/L					08/11/16	03:51
Arsenic			U	1.70	ug/L				PRB	08/15/16	12:33
Barium			U	0.600	ug/L				SKJ	08/11/16	01:41
Beryllium			U	0.200	ug/L					08/15/16	15:17
Cadmium			U	0.110	ug/L					08/11/16	01:41
Chromium			U	2.00	ug/L						
Cobalt			U	0.100	ug/L						
Copper			U	0.350	ug/L						
Lead			U	0.500	ug/L						
Manganese			U	1.00	ug/L						
Molybdenum			U	0.165	ug/L					08/11/16	12:56
Nickel			U	0.500	ug/L					08/11/16	01:41
Selenium			U	1.50	ug/L				PRB	08/15/16	12:33
Silver			U	0.200	ug/L				SKJ	08/11/16	01:41
Strontium			U	2.00	ug/L						
Thallium			U	0.450	ug/L						
Thorium			U	0.383	ug/L					08/11/16	12:56
Tin			U	1.00	ug/L					08/11/16	01:41
Uranium			U	0.067	ug/L					08/11/16	12:56

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QC Summary

Workorder: 402049

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1583988										
Zinc			U	3.50	ug/L				SKJ	08/11/16	01:41
QC1203590336 402046001 MS											
Aluminum	2000	95.9		2010	ug/L		95.7	(75%-125%)		08/11/16	02:01
Antimony	50.0	U	1.00	55.2	ug/L		110	(75%-125%)		08/11/16	03:55
Arsenic	50.0		5.68	53.8	ug/L		96.2	(75%-125%)	PRB	08/15/16	12:39
Barium	50.0		45.3	93.4	ug/L		96.3	(75%-125%)	SKJ	08/11/16	02:01
Beryllium	50.0	U	0.200	52.3	ug/L		104	(75%-125%)		08/15/16	15:25
Cadmium	50.0	U	0.110	52.1	ug/L		104	(75%-125%)		08/11/16	02:01
Chromium	50.0	B	4.03	55.0	ug/L		102	(75%-125%)			
Cobalt	50.0	B	0.311	54.1	ug/L		108	(75%-125%)			
Copper	50.0		58.8	121	ug/L		124	(75%-125%)			
Lead	50.0		3.27	55.0	ug/L		103	(75%-125%)			
Manganese	50.0		118	173	ug/L		110	(75%-125%)			
Molybdenum	50.0		5.80	56.4	ug/L		101	(75%-125%)		08/11/16	13:03
Nickel	50.0	B	1.61	55.6	ug/L		108	(75%-125%)		08/11/16	02:01
Selenium	50.0	U	1.50	50.2	ug/L		99.1	(75%-125%)	PRB	08/15/16	12:39
Silver	50.0	U	0.200	50.9	ug/L		102	(75%-125%)	SKJ	08/11/16	02:01
Strontium	50.0	N	178 N	212	ug/L		68.1 *	(75%-125%)			
Thallium	50.0	U	0.450	48.2	ug/L		96.1	(75%-125%)			
Thorium	50.0	U	0.383	54.4	ug/L		108	(75%-125%)		08/11/16	13:03
Tin	50.0	B	1.08	52.1	ug/L		102	(75%-125%)		08/11/16	02:01
Uranium	50.0		2.12	55.6	ug/L		107	(75%-125%)		08/11/16	13:03

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QC Summary

Workorder: 402049

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1583988										
Zinc	50.0	45.3		101	ug/L		112	(75%-125%)	SKJ	08/11/16	02:01
QC1203590337 402046001 MSD											
Aluminum	2000	95.9		1950	ug/L	3.07	92.6	(0%-20%)		08/11/16	02:04
Antimony	50.0	U	1.00	56.0	ug/L	1.41	111	(0%-20%)		08/11/16	03:57
Arsenic	50.0		5.68	54.5	ug/L	1.37	97.7	(0%-20%)	PRB	08/15/16	12:41
Barium	50.0		45.3	94.0	ug/L	0.693	97.6	(0%-20%)	SKJ	08/11/16	02:04
Beryllium	50.0	U	0.200	54.1	ug/L	3.46	108	(0%-20%)		08/15/16	15:26
Cadmium	50.0	U	0.110	50.4	ug/L	3.46	101	(0%-20%)		08/11/16	02:04
Chromium	50.0	B	4.03	55.6	ug/L	1.07	103	(0%-20%)			
Cobalt	50.0	B	0.311	52.5	ug/L	2.91	104	(0%-20%)			
Copper	50.0		58.8	114	ug/L	5.91	110	(0%-20%)			
Lead	50.0		3.27	54.2	ug/L	1.48	102	(0%-20%)			
Manganese	50.0		118	173	ug/L	0.062	110	(0%-20%)			
Molybdenum	50.0		5.80	57.6	ug/L	2.06	104	(0%-20%)		08/11/16	13:05
Nickel	50.0	B	1.61	53.4	ug/L	4.06	104	(0%-20%)		08/11/16	02:04
Selenium	50.0	U	1.50	50.3	ug/L	0.303	99.4	(0%-20%)	PRB	08/15/16	12:41
Silver	50.0	U	0.200	49.5	ug/L	2.84	98.8	(0%-20%)	SKJ	08/11/16	02:04
Strontium	50.0	N	178	220	ug/L	3.51	83.2	(0%-20%)			
Thallium	50.0	U	0.450	47.8	ug/L	0.74	95.4	(0%-20%)			
Thorium	50.0	U	0.383	54.8	ug/L	0.756	109	(0%-20%)		08/11/16	13:05
Tin	50.0	B	1.08	51.1	ug/L	1.95	99.9	(0%-20%)		08/11/16	02:04
Uranium	50.0		2.12	54.9	ug/L	1.38	105	(0%-20%)		08/11/16	13:05

GEL LABORATORIES LLC

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QC Summary

Workorder: 402049

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1583988										
Zinc	50.0	45.3		98.6	ug/L	2.48	107	(0%-20%)	SKJ	08/11/16	02:04
QC1203604201 402046001 PS											
Strontium	50.0	N	178	212	ug/L		67.8*	(80%-120%)		08/11/16	02:08
QC1203590338 402046001 SDILT											
Aluminum		95.9	BD	23.1	ug/L	20.4		(0%-10%)		08/11/16	02:12
Antimony		U	0.392	DU	5.00	ug/L	N/A	(0%-10%)		08/11/16	03:58
Arsenic			5.68	DU	8.50	ug/L	N/A	(0%-10%)	PRB	08/15/16	12:43
Barium			45.3	D	8.99	ug/L	.696	(0%-10%)	SKJ	08/11/16	02:12
Beryllium		U	0.190	DU	1.00	ug/L	N/A	(0%-10%)		08/15/16	15:28
Cadmium		U	0.003	DU	0.550	ug/L	N/A	(0%-10%)		08/11/16	02:12
Chromium		B	4.03	DU	10.0	ug/L	N/A	(0%-10%)			
Cobalt		B	0.311	BD	0.119	ug/L	91.3	(0%-10%)			
Copper			58.8	D	12.8	ug/L	9.08	(0%-10%)			
Lead			3.27	BD	0.688	ug/L	5.33	(0%-10%)			
Manganese			118	D	24.8	ug/L	5.59	(0%-10%)			
Molybdenum			5.80	D	1.27	ug/L	9.33	(0%-10%)		08/11/16	13:10
Nickel		B	1.61	BD	0.587	ug/L	82.2	(0%-10%)		08/11/16	02:12
Selenium		U	0.618	DU	7.50	ug/L	N/A	(0%-10%)	PRB	08/15/16	12:43
Silver		U	0.049	DU	1.00	ug/L	N/A	(0%-10%)	SKJ	08/11/16	02:12
Strontium		N	178	D	31.8	ug/L	10.7	(0%-10%)			
Thallium		U	0.132	DU	2.25	ug/L	N/A	(0%-10%)			
Thorium		U	0.335	DU	1.92	ug/L	N/A	(0%-10%)		08/11/16	13:10
Tin		B	1.08	DU	5.00	ug/L	N/A	(0%-10%)		08/11/16	02:12

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1583988										
Uranium		2.12	D	0.455	ug/L	7.31		(0%-10%)	SKJ	08/11/16	13:10
Zinc		45.3	D	11.5	ug/L	26.8		(0%-10%)		08/11/16	02:12
Metals Analysis-ICP											
Batch	1583854										
QC1203590049	LCS										
Boron	500			505	ug/L		101	(80%-120%)	HSC	08/01/16	17:31
Calcium	5000			5040	ug/L		101	(80%-120%)			
Iron	5000			4860	ug/L		97.1	(80%-120%)			
Magnesium	5000			5090	ug/L		102	(80%-120%)			
Potassium	5000			5040	ug/L		101	(80%-120%)			
Sodium	5000			4990	ug/L		99.8	(80%-120%)			
Vanadium	500			503	ug/L		101	(80%-120%)			
QC1203590048	MB										
Boron			U	15.0	ug/L					08/01/16	17:28
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						
QC1203590050	402046001 MS										
Boron	500	U	15.0	533	ug/L		105	(75%-125%)		08/01/16	17:37
Calcium	5000		27500	32900	ug/L		N/A	(75%-125%)			
Iron	5000		134	4990	ug/L		97.1	(75%-125%)			

GEL LABORATORIES LLC

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1583854										
Magnesium	5000	6270		11200	ug/L		99.2	(75%-125%)			
Potassium	5000	4760		9920	ug/L		103	(75%-125%)	HSC	08/01/16	17:37
Sodium	5000	85000		89500	ug/L		N/A	(75%-125%)			
Vanadium	500	12.3		525	ug/L		102	(75%-125%)			
QC1203590051	402046001	MSD									
Boron	500	U	15.0	523	ug/L	1.94	103	(0%-20%)		08/01/16	17:39
Calcium	5000	27500		32100	ug/L	2.34	N/A	(0%-20%)			
Iron	5000	134		4970	ug/L	0.41	96.7	(0%-20%)			
Magnesium	5000	6270		11200	ug/L	0.688	97.7	(0%-20%)			
Potassium	5000	4760		9720	ug/L	2.05	99.2	(0%-20%)			
Sodium	5000	85000		88800	ug/L	0.857	N/A	(0%-20%)			
Vanadium	500	12.3		520	ug/L	0.988	101	(0%-20%)			
QC1203590052	402046001	SDILT									
Boron		U	9.14	DU	75.0	ug/L	N/A	(0%-10%)		08/01/16	17:42
Calcium			27500	D	5590	ug/L	1.54	(0%-10%)			
Iron			134	BD	51.6	ug/L	92.3	(0%-10%)			
Magnesium			6270	D	1320	ug/L	5.68	(0%-10%)			
Potassium			4760	D	941	ug/L	1.2	(0%-10%)			
Sodium			85000	D	17300	ug/L	1.52	(0%-10%)			
Vanadium			12.3	BD	2.67	ug/L	8.71	(0%-10%)			

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

GEL LABORATORIES LLC

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).										
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples.										
D	Results are reported from a diluted aliquot of sample.										
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 #: GEL402049
 Work Order #: 402049**

Product: Alkalinity**Analytical Method:** 2320_ALKALINITY**Analytical Procedure:** GL-GC-E-033 REV# 12**Analytical Batch:** 1585315

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402049001	B35T40
1203593627	Method Blank (MB)
1203593628	Laboratory Control Sample (LCS)
1203593629	402046001(NonSDG) Sample Duplicate (DUP)

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

Data Summary:

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

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

The MB 1203593627 (MB) analyzed with this SDG met the acceptance criteria. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

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: GEL402049 GEL Work Order: 402049

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).

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: 02 AUG 2016

Title: Analyst I

Sample Data Summary

8/17/2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: August 2, 2016

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S16-007

Client Sample ID:	B35T40	Project:	CPRC0S16007
Sample ID:	402049001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	20-JUL-16 10:14		
Receive Date:	21-JUL-16		
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		102000	330	1000	ug/L		1	RXB5	07/27/16	2200	1585315	1
Bicarbonate alkalinity (CaCO3)		102000	330	1000	ug/L		1					
Carbonate alkalinity (CaCO3)	U	330	330	1000	ug/L		1					
Hydroxide alkalinity as CaCO3	U	330	330	1000	ug/L		1					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Column headers are defined as follows:

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

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: August 2, 2016

Page 1 of 1

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 402049

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1585315										
QC1203593629	402046001	DUP									
Alkalinity, Total as CaCO3		135000		136000	ug/L	0.471		(0%-20%)	RXB5	07/27/16	21:54
QC1203593628	LCS										
Alkalinity, Total as CaCO3	50000			51000	ug/L		102	(80%-120%)		07/27/16	21:42
QC1203593627	MB										
Alkalinity, Total as CaCO3			B	475	ug/L					07/27/16	21:36
Bicarbonate alkalinity (CaCO3)			B	475	ug/L						
Carbonate alkalinity (CaCO3)			U	330	ug/L						
Hydroxide alkalinity as CaCO3			U	330	ug/L						

Notes:

The Qualifiers in this report are defined as follows:

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

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

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

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

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

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