

June 23, 2016



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June 23, 2016

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

Re: CHPRC SAF F16-043
Work Order: 399107
SDG: GEL399107

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 10, 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,

B Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 304070 - 8C
Chain of Custody: F16-043-033 and F16-043-037
Enclosures



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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-043
SDG: GEL399107

June 23, 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 June 10, 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
399107001	B35VP1
399107002	B35VP6

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, Metals and Radiochemistry.

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.

June 23, 2016

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

**Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399107
Work Order #: 399107**

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 antimony. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 399107001 (B35VP1) and 399107002 (B35VP6).

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of antimony. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203566285 (MB).

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 recovery was within the required control limits. This verifies the absence of a matrix interference in the post-spike digested sample. The recovery may be attributed to possible sample matrix interference and/or non-homogeneity.

Sample	Analyte	Value
1203566288 (B35VP1MS)	Calcium	320* (75%-125%)
	Magnesium	376* (75%-125%)
	Potassium	132* (75%-125%)

Duplicate Relative Percent Difference (RPD) Statement

Not all the applicable analyte RPD values were within the acceptance criteria.

Sample	Analyte	Value
1203566287 (B35VP1DUP)	Calcium	46.9* (0%-20%)
	Iron	64.5* (0%-20%)
	Magnesium	51.2* (0%-20%)
	Phosphorous	78.4* (0%-20%)
	Potassium	30.2* (0%-20%)

Serial Dilution % Difference Statement

Not all the applicable analytes were within the established acceptance criteria. Matrix suppression may be suspected. The data has been qualified.

Sample	Analyte	Value
1203566289 (B35VP1SDILT)	Calcium	12.2 *(0%-10%)
	Magnesium	11.4 *(0%-10%)
	Potassium	12.3 *(0%-10%)

Technical Information

Sample Dilutions

Samples required dilutions for antimony in order to minimize suppression due to matrix interferences. 399107001 (B35VP1) and 399107002 (B35VP6).

Analyte	399107	
	001	002
Antimony	5X	5X

Determination of Metals by ICP-MS

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

Quality Control (QC) Information

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 analytes. The post spike recoveries were within the required control limits. This verifies the absence of a matrix interference in the post-spike digested sample. The recoveries may be attributed to possible sample matrix interference and/or non-homogeneity.

Sample	Analyte	Value
1203566163 (B35VP1MS)	Strontium	415* (75%-125%)
	Vanadium	143* (75%-125%)

Serial Dilution % Difference Statement

Not all the applicable analytes were within the established acceptance criteria. Matrix suppression may be suspected. The data has been qualified.

Sample	Analyte	Value
1203566164 (B35VP1SDILT)	Copper	13.4 *(0%-10%)

Technical Information

Sample Dilutions

Samples 399107001 (B35VP1) and 399107002 (B35VP6) were diluted to ensure that the analyte concentrations were within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times.

Analyte	399107	
	001	002
Several	2X 10X	2X 10X

General Chemistry

pH

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

Holding Times

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203565526 (B35VN3DUP)	pH	Received 08-JUN-16, out of holding 07-JUN-16
399107001 (B35VP1)	pH	Received 10-JUN-16, out of holding 07-JUN-16
399107002 (B35VP6)	pH	Received 10-JUN-16, out of holding 09-JUN-16

Radiochemistry

Dry Weight

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

June 23, 2016

requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Chain of Custody and Supporting Documentation

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>399107</u>
Received By: <u>Sena Inball</u>		Date Received: <u>6/10/16</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0cpm</u>
Classified Radioactive II or III by RSO?	<input type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<input type="checkbox"/>	

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: <u>Ice bags</u> 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 #: Secondary Temperature Device Serial # (If Applicable): <u>ES162009184</u>
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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other 7764 8629 0184 3°C 7764 8181 8285 2°C

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DS Date 6/10/16 Page 1 of 1

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 >= 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 23 June 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 #: GEL399107
Work Order #: 399107

Product: Determination of Metals by ICP-MS
Analytical Method: 6020_METALS_ICPMS
Analytical Procedure: GL-MA-E-014 REV# 28
Analytical Batch: 1574058

Product: Determination of Metals by ICP
Analytical Method: 6010_METALS_ICP
Analytical Procedure: GL-MA-E-013 REV# 26
Analytical Batch: 1574096

Preparation Method: SW846 3050B
Preparation Procedure: GL-MA-E-009 REV# 26
Preparation Batches: 1574056 and 1574095

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399107001	B35VP1
399107002	B35VP6
1203566285	Method Blank (MB) ICP
1203566286	Laboratory Control Sample (LCS)
1203566289	399107001(B35VP1L) Serial Dilution (SD)
1203566287	399107001(B35VP1D) Sample Duplicate (DUP)
1203566288	399107001(B35VP1S) Matrix Spike (MS)
1203568624	399107001(B35VP1PS) Post Spike (PS)
1203566160	Method Blank (MB) ICP-MS
1203566161	Laboratory Control Sample (LCS)
1203566164	399107001(B35VP1L) Serial Dilution (SD)
1203566162	399107001(B35VP1D) Sample Duplicate (DUP)
1203566163	399107001(B35VP1S) Matrix Spike (MS)
1203570428	399107001(B35VP1PS) Post Spike (PS)

The samples in this SDG were analyzed on a "dry weight" 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 antimony. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 399107001 (B35VP1) and 399107002 (B35VP6)-ICP.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of antimony. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203566285 (MB)-ICP.

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 analytes. The post spike recoveries were within the required control limits. This verifies the absence of a matrix interference in the post-spike digested sample. The recoveries may be attributed to possible sample matrix interference and/or non-homogeneity.

Sample	Analyte	Value
1203566163 (B35VP1MS)	Strontium	415* (75%-125%)
	Vanadium	143* (75%-125%)
1203566288 (B35VP1MS)	Calcium	320* (75%-125%)
	Magnesium	376* (75%-125%)
	Potassium	132* (75%-125%)

Duplicate Relative Percent Difference (RPD) Statement

The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. Not all the applicable analyte RPD values were within the acceptance criteria.

Sample	Analyte	Value
1203566287 (B35VP1DUP)	Calcium	46.9* (0%-20%)
	Iron	64.5* (0%-20%)
	Magnesium	51.2* (0%-20%)
	Phosphorous	78.4* (0%-20%)
	Potassium	30.2* (0%-20%)

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. Not all the applicable analytes were within the established acceptance criteria. Matrix suppression may be suspected. The data has been qualified.

Sample	Analyte	Value
1203566164 (B35VP1SDILT)	Copper	13.4 *(0%-10%)
1203566289 (B35VP1SDILT)	Calcium	12.2 *(0%-10%)
	Magnesium	11.4 *(0%-10%)

	Potassium	12.3 *(0%-10%)
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Technical Information

Preparation/Analytical Method Verification

Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Samples required dilutions for antimony in order to minimize suppression due to matrix interferences. 399107001 (B35VP1) and 399107002 (B35VP6)-ICP. Samples 399107001 (B35VP1) and 399107002 (B35VP6)-ICP-MS were diluted to ensure that the analyte concentrations were within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times. ICP-MS.

Analyte	399107	
	001	002
Several	5X 2X 10X 1X	5X 2X 10X 1X

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: GEL399107 GEL Work Order: 399107

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.
- M Duplicate precision not met.
- 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: 23 JUN 2016

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL399107

CONTRACT: CPRC0F16043

METHOD TYPE: SW846

SAMPLE ID:399107001

BASIS: Dry Weight

DATE COLLECTED 07-JUN-16

CLIENT ID: B35VP1

LEVEL: Low

DATE RECEIVED 10-JUN-16

MATRIX: SOIL

%SOLIDS: 91.4

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	5890000	ug/kg	D	3260	10900	50	2	MS	SKJ	06/20/16 16:12	160620-4	1574058
7440-36-0	Antimony	1680	ug/kg	UD	1680	5100	5100	5	P	HSC	06/17/16 09:26	061716-1	1574096
7440-38-2	Arsenic	1270	ug/kg	D	217	1090	10	2	MS	BCD1	06/20/16 23:25	160620-2	1574058
7440-39-3	Barium	42500	ug/kg	D	109	435	20	2	MS	PRB	06/21/16 13:46	160621-3	1574058
7440-43-9	Cadmium	87.2	ug/kg	BD	21.7	217	5	2	MS	SKJ	06/20/16 16:12	160620-4	1574058
7440-70-2	Calcium	1360000	ug/kg	*MN	8160	25500	25500	1	P	HSC	06/17/16 09:05	061716-1	1574096
7440-47-3	Chromium	11600	ug/kg	D	217	652	10	2	MS	SKJ	06/20/16 16:12	160620-4	1574058
7440-48-4	Cobalt	4330	ug/kg	D	65.2	217	20	2	MS	SKJ	06/20/16 16:12	160620-4	1574058
7440-50-8	Copper	9950	ug/kg	DM	71.8	217	8	2	MS	SKJ	06/20/16 16:12	160620-4	1574058
7439-89-6	Iron	7000000	ug/kg	*	8160	25500	25500	1	P	HSC	06/17/16 09:05	061716-1	1574096
7439-92-1	Lead	3890	ug/kg	D	109	435	15	2	MS	SKJ	06/20/16 16:12	160620-4	1574058
7439-95-4	Magnesium	1920000	ug/kg	*MN	8670	30600	30600	1	P	HSC	06/17/16 09:05	061716-1	1574096
7439-96-5	Manganese	212000	ug/kg	D	1090	5440	5	10	MS	PRB	06/21/16 14:39	160621-3	1574058
7439-98-7	Molybdenum	239	ug/kg	D	65.2	217	20	2	MS	BCD1	06/20/16 23:25	160620-2	1574058
7440-02-0	Nickel	13000	ug/kg	D	109	435	40	2	MS	SKJ	06/20/16 16:12	160620-4	1574058
7723-14-0	Phosphorous	240000	ug/kg	*	5100	15300	15300	1	P	HSC	06/17/16 09:05	061716-1	1574096
7440-09-7	Potassium	575000	ug/kg	*MN	6530	25500	25500	1	P	HSC	06/17/16 09:05	061716-1	1574096
7782-49-2	Selenium	359	ug/kg	UD	359	1090	50	2	MS	BCD1	06/20/16 23:25	160620-2	1574058
7440-22-4	Silver	102	ug/kg	U	102	510	510	1	P	HSC	06/17/16 09:05	061716-1	1574096
7440-23-5	Sodium	130000	ug/kg		7140	25500	25500	1	P	HSC	06/17/16 09:05	061716-1	1574096
7440-24-6	Strontium	19300	ug/kg	DN	435	2170	10	2	MS	SKJ	06/20/16 16:12	160620-4	1574058
7440-62-2	Vanadium	18300	ug/kg	DN	326	1090	1090	2	MS	PRB	06/21/16 13:46	160621-3	1574058
7440-66-6	Zinc	24600	ug/kg	D	435	2170	25	2	MS	SKJ	06/20/16 16:12	160620-4	1574058

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1574058	1574056	SW846 3050B	0.503	g	50	mL	06/13/16	JP1
1574096	1574095	SW846 3050B	0.536	g	50	mL	06/13/16	JP1

***Analytical Methods:**

P SW846 3050B/6010C
MS SW846 3050B/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL399107

CONTRACT: CPRC0F16043

METHOD TYPE: SW846

SAMPLE ID:399107002

BASIS: Dry Weight

DATE COLLECTED 09-JUN-16

CLIENT ID: B35VP6

LEVEL: Low

DATE RECEIVED 10-JUN-16

MATRIX: SOIL

%SOLIDS: 86

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	6330000	ug/kg	D	3160	10500	50	2	MS	SKJ	06/20/16 16:32	160620-4	1574058
7440-36-0	Antimony	1820	ug/kg	UD	1820	5500	5500	5	P	HSC	06/17/16 09:23	061716-1	1574096
7440-38-2	Arsenic	901	ug/kg	BD	210	1050	10	2	MS	BCD1	06/20/16 23:58	160620-2	1574058
7440-39-3	Barium	75900	ug/kg	D	105	421	20	2	MS	PRB	06/21/16 13:55	160621-3	1574058
7440-43-9	Cadmium	168	ug/kg	BD	21	210	5	2	MS	SKJ	06/20/16 16:32	160620-4	1574058
7440-70-2	Calcium	2380000	ug/kg	*MN	8800	27500	27500	1	P	HSC	06/17/16 09:03	061716-1	1574096
7440-47-3	Chromium	8590	ug/kg	D	210	631	10	2	MS	SKJ	06/20/16 16:32	160620-4	1574058
7440-48-4	Cobalt	4630	ug/kg	D	63.1	210	20	2	MS	SKJ	06/20/16 16:32	160620-4	1574058
7440-50-8	Copper	17100	ug/kg	DM	69.5	210	8	2	MS	SKJ	06/20/16 16:32	160620-4	1574058
7439-89-6	Iron	15000000	ug/kg	*	8800	27500	27500	1	P	HSC	06/17/16 09:03	061716-1	1574096
7439-92-1	Lead	3560	ug/kg	D	105	421	15	2	MS	SKJ	06/20/16 16:32	160620-4	1574058
7439-95-4	Magnesium	3480000	ug/kg	*MN	9350	33000	33000	1	P	HSC	06/17/16 09:03	061716-1	1574096
7439-96-5	Manganese	237000	ug/kg	D	1050	5260	5	10	MS	PRB	06/21/16 14:47	160621-3	1574058
7439-98-7	Molybdenum	443	ug/kg	D	63.1	210	20	2	MS	BCD1	06/20/16 23:58	160620-2	1574058
7440-02-0	Nickel	8780	ug/kg	D	105	421	40	2	MS	SKJ	06/20/16 16:32	160620-4	1574058
7723-14-0	Phosphorous	616000	ug/kg	*	5500	16500	16500	1	P	HSC	06/17/16 09:03	061716-1	1574096
7440-09-7	Potassium	910000	ug/kg	*MN	7040	27500	27500	1	P	HSC	06/17/16 09:03	061716-1	1574096
7782-49-2	Selenium	347	ug/kg	UD	347	1050	50	2	MS	BCD1	06/20/16 23:58	160620-2	1574058
7440-22-4	Silver	110	ug/kg	U	110	550	550	1	P	HSC	06/17/16 09:03	061716-1	1574096
7440-23-5	Sodium	125000	ug/kg		7700	27500	27500	1	P	HSC	06/17/16 09:03	061716-1	1574096
7440-24-6	Strontium	22000	ug/kg	DN	421	2100	10	2	MS	SKJ	06/20/16 16:32	160620-4	1574058
7440-62-2	Vanadium	26300	ug/kg	DN	316	1050	1050	2	MS	PRB	06/21/16 13:55	160621-3	1574058
7440-66-6	Zinc	27000	ug/kg	D	421	2100	25	2	MS	SKJ	06/20/16 16:32	160620-4	1574058

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1574058	1574056	SW846 3050B	0.552	g	50	mL	06/13/16	JP1
1574096	1574095	SW846 3050B	0.528	g	50	mL	06/13/16	JP1

***Analytical Methods:**

P SW846 3050B/6010C
MS SW846 3050B/6020A

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 23, 2016

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399107

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1574058										
QC1203566162 399107001 DUP											
Aluminum	D	5890000	D	6240000	ug/kg	5.82		(0%-20%)	SKJ	06/20/16	16:16
Arsenic	D	1270	D	1300	ug/kg	2.86	^	(+/-1020)	BCD1	06/20/16	23:31
Barium	D	42500	D	47600	ug/kg	11.2		(0%-20%)	PRB	06/21/16	13:47
Cadmium	BD	87.2	BD	98.0	ug/kg	11.6	^	(+/-204)	SKJ	06/20/16	16:16
Chromium	D	11600	D	12000	ug/kg	3.49		(0%-20%)			
Cobalt	D	4330	D	4630	ug/kg	6.63		(0%-20%)			
Copper	DM	9950	D	10200	ug/kg	2.45		(0%-20%)			
Lead	D	3890	D	3900	ug/kg	0.359		(0%-20%)			
Manganese	D	212000	D	242000	ug/kg	12.9		(0%-20%)	PRB	06/21/16	14:41
Molybdenum	D	239	BD	189	ug/kg	23.2	^	(+/-204)	BCD1	06/20/16	23:31
Nickel	D	13000	D	13300	ug/kg	2.5		(0%-20%)	SKJ	06/20/16	16:16
Selenium	DU	359	DU	336	ug/kg	N/A			BCD1	06/20/16	23:31
Strontium	DN	19300	D	18500	ug/kg	3.87		(0%-20%)	SKJ	06/20/16	16:16
Vanadium	DN	18300	D	18900	ug/kg	3.5		(0%-20%)	PRB	06/21/16	13:47
Zinc	D	24600	D	26100	ug/kg	5.91		(0%-20%)	SKJ	06/20/16	16:16
QC1203566161 LCS											
Aluminum		185000	D	194000	ug/kg			105 (80%-120%)		06/20/16	16:00
Arsenic		4630	D	4630	ug/kg			100 (80%-120%)	BCD1	06/20/16	23:18
Barium		4630	D	4910	ug/kg			106 (80%-120%)	PRB	06/21/16	13:44
Cadmium		4630	D	4540	ug/kg			98.1 (80%-120%)	SKJ	06/20/16	16:00

GEL LABORATORIES LLC

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

QC Summary

Workorder: 399107

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1574058										
Chromium	4630		D	4480	ug/kg		96.8	(80%-120%)			
Cobalt	4630		D	4440	ug/kg		96	(80%-120%)	SKJ	06/20/16	16:00
Copper	4630		D	4600	ug/kg		99.5	(80%-120%)			
Lead	4630		D	4710	ug/kg		102	(80%-120%)			
Manganese	4630		D	4900	ug/kg		106	(80%-120%)	PRB	06/21/16	13:44
Molybdenum	4630		D	4720	ug/kg		102	(80%-120%)	BCD1	06/20/16	23:18
Nickel	4630		D	4540	ug/kg		98	(80%-120%)	SKJ	06/20/16	16:00
Selenium	4630		D	4300	ug/kg		92.8	(80%-120%)	BCD1	06/20/16	23:18
Strontium	4630		D	4620	ug/kg		99.8	(80%-120%)	SKJ	06/20/16	16:00
Vanadium	4630		D	4940	ug/kg		107	(80%-120%)	PRB	06/21/16	13:44
Zinc	4630		D	4420	ug/kg		95.5	(80%-120%)	SKJ	06/20/16	16:00
QC1203566160 MB											
Aluminum			DU	2940	ug/kg					06/20/16	15:56
Arsenic			DU	196	ug/kg				BCD1	06/20/16	23:11
Barium			DU	98.0	ug/kg				PRB	06/21/16	13:42
Cadmium			DU	19.6	ug/kg				SKJ	06/20/16	15:56
Chromium			DU	196	ug/kg						
Cobalt			DU	58.8	ug/kg						
Copper			DU	64.7	ug/kg						
Lead			DU	98.0	ug/kg						
Manganese			DU	196	ug/kg				PRB	06/21/16	13:42
Molybdenum			DU	58.8	ug/kg				BCD1	06/20/16	23:11
Nickel			DU	98.0	ug/kg				SKJ	06/20/16	15:56

GEL LABORATORIES LLC

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QC Summary

Workorder: 399107

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1574058										
Selenium			DU	324	ug/kg				BCD1	06/20/16	23:11
Strontium			DU	392	ug/kg				SKJ	06/20/16	15:56
Vanadium			DU	294	ug/kg				PRB	06/21/16	13:42
Zinc			DU	392	ug/kg				SKJ	06/20/16	15:56
QC1203566163 399107001 MS											
Aluminum	219000	D	5890000	D	6720000	ug/kg	N/A	(75%-125%)		06/20/16	16:20
Arsenic	5470	D	1270	D	6390	ug/kg	93.7	(75%-125%)	BCD1	06/20/16	23:38
Barium	5470	D	42500	D	61200	ug/kg	N/A	(75%-125%)	PRB	06/21/16	13:49
Cadmium	5470	BD	87.2	D	5280	ug/kg	95	(75%-125%)	SKJ	06/20/16	16:20
Chromium	5470	D	11600	D	17700	ug/kg	111	(75%-125%)			
Cobalt	5470	D	4330	D	9890	ug/kg	102	(75%-125%)			
Copper	5470	DM	9950	D	15600	ug/kg	103	(75%-125%)			
Lead	5470	D	3890	D	9090	ug/kg	95.2	(75%-125%)			
Manganese	5470	D	212000	D	253000	ug/kg	N/A	(75%-125%)	PRB	06/21/16	14:43
Molybdenum	5470	D	239	D	5590	ug/kg	97.9	(75%-125%)	BCD1	06/20/16	23:38
Nickel	5470	D	13000	D	19500	ug/kg	119	(75%-125%)	SKJ	06/20/16	16:20
Selenium	5470	DU	359	D	4540	ug/kg	83	(75%-125%)	BCD1	06/20/16	23:38
Strontium	5470	DN	19300	DN	42000	ug/kg	415 *	(75%-125%)	SKJ	06/20/16	16:20
Vanadium	5470	DN	18300	DN	26100	ug/kg	143 *	(75%-125%)	PRB	06/21/16	13:49
Zinc	5470	D	24600	D	31000	ug/kg	N/A	(75%-125%)	SKJ	06/20/16	16:20
QC1203570428 399107001 PS											
Strontium	25.0	DN	88.6	D	114	ug/L	101	(80%-120%)		06/20/16	16:24
Vanadium	25.0	DN	84.1	D	104	ug/L	81.2	(80%-120%)	PRB	06/21/16	13:51

GEL LABORATORIES LLC

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

QC Summary

Workorder: 399107

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1574058										
QC1203566164	399107001	SDILT									
Aluminum	D	27100	D	5460	ug/L	.786		(0%-10%)	SKJ	06/20/16	16:28
Arsenic	D	5.82	BD	1.31	ug/L	12.5		(0%-10%)	BCD1	06/20/16	23:51
Barium	D	196	D	36.5	ug/L	6.63		(0%-10%)	PRB	06/21/16	13:53
Cadmium	BD	0.401	DU	109	ug/L	N/A		(0%-10%)	SKJ	06/20/16	16:28
Chromium	D	53.4	D	9.92	ug/L	7.18		(0%-10%)			
Cobalt	D	19.9	D	4.29	ug/L	7.62		(0%-10%)			
Copper	DM	45.8	DM	10.4	ug/L	13.4*		(0%-10%)			
Lead	D	17.9	D	3.53	ug/L	1.21		(0%-10%)			
Manganese	D	195	D	37.8	ug/L	3.21		(0%-10%)	PRB	06/21/16	14:45
Molybdenum	D	1.10	DU	326	ug/L	N/A		(0%-10%)	BCD1	06/20/16	23:51
Nickel	D	59.8	D	12.8	ug/L	6.65		(0%-10%)	SKJ	06/20/16	16:28
Selenium	DU	-0.812	DU	1790	ug/L	N/A		(0%-10%)	BCD1	06/20/16	23:51
Strontium	DN	88.6	D	17.6	ug/L	.831		(0%-10%)	SKJ	06/20/16	16:28
Vanadium	DN	84.1	D	16.3	ug/L	2.98		(0%-10%)	PRB	06/21/16	13:53
Zinc	D	113	D	25.3	ug/L	11.9		(0%-10%)	SKJ	06/20/16	16:28

Metals Analysis-ICP

Batch 1574096

QC1203566287	399107001	DUP									
Antimony	DU	1680	DU	1730	ug/kg	N/A			HSC	06/17/16	09:29
Calcium	*MN	1360000	*	2190000	ug/kg	46.9*		(0%-20%)		06/17/16	09:08
Iron	*	7000000	*	13700000	ug/kg	64.5*		(0%-20%)			
Magnesium	*MN	1920000	*	3250000	ug/kg	51.2*		(0%-20%)			

GEL LABORATORIES LLC

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QC Summary

Workorder: 399107

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1574096										
Phosphorous	*	240000	*	549000	ug/kg	78.4*		(0%-20%)			
Potassium	*MN	575000	*	779000	ug/kg	30.2*		(0%-20%)	HSC	06/17/16	09:08
Silver	U	102	U	105	ug/kg	N/A					
Sodium		130000		106000	ug/kg	21.1 ^		(+/-26200)			
QC1203566286	LCS										
Antimony	47700			48600	ug/kg		102	(80%-120%)		06/17/16	09:00
Calcium	477000			493000	ug/kg		103	(80%-120%)			
Iron	477000			478000	ug/kg		100	(80%-120%)			
Magnesium	477000			498000	ug/kg		104	(80%-120%)			
Phosphorous	47700			48600	ug/kg		102	(80%-120%)			
Potassium	477000			468000	ug/kg		98.2	(80%-120%)			
Silver	47700			46500	ug/kg		97.5	(80%-120%)			
Sodium	477000			490000	ug/kg		103	(80%-120%)			
QC1203566285	MB										
Antimony			B	441	ug/kg					06/17/16	08:57
Calcium			U	7710	ug/kg						
Iron			U	7710	ug/kg						
Magnesium			U	8190	ug/kg						
Phosphorous			U	4820	ug/kg						
Potassium			U	6170	ug/kg						
Silver			U	96.3	ug/kg						
Sodium			U	6740	ug/kg						
QC1203566288	399107001	MS									
Antimony	53900	DU	1680	D	47300	ug/kg	87.8	(75%-125%)		06/17/16	09:32

GEL LABORATORIES LLC

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QC Summary

Workorder: 399107

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1574096										
Calcium	539000	*MN	1360000	N	3080000	ug/kg	320*	(75%-125%)		06/17/16	09:10
Iron	539000	*	7000000		14400000	ug/kg	N/A	(75%-125%)	HSC		
Magnesium	539000	*MN	1920000	N	3950000	ug/kg	376*	(75%-125%)			
Phosphorous	53900	*	240000		646000	ug/kg	N/A	(75%-125%)			
Potassium	539000	*MN	575000	N	1290000	ug/kg	132*	(75%-125%)			
Silver	53900	U	102		51300	ug/kg	95	(75%-125%)			
Sodium	539000		130000		650000	ug/kg	96.3	(75%-125%)			
QC1203568624	399107001 PS										
Calcium	5000	*MN	13300		18100	ug/L	97.1	(80%-120%)		06/17/16	09:12
Magnesium	5000	*MN	18900		23600	ug/L	95.5	(80%-120%)			
Potassium	5000	*MN	5630		10300	ug/L	94.1	(80%-120%)			
QC1203566289	399107001 SDILT										
Antimony		DU	-0.905	DU	8420	ug/L	N/A	(0%-10%)		06/17/16	09:38
Calcium		*MN	13300	DM	2980	ug/L	12.2*	(0%-10%)		06/17/16	09:14
Iron		*	68600	D	15000	ug/L	9.57	(0%-10%)			
Magnesium		*MN	18900	DM	4200	ug/L	11.4*	(0%-10%)			
Phosphorous		*	2350	D	520	ug/L	10.8	(0%-10%)			
Potassium		*MN	5630	DM	1270	ug/L	12.3*	(0%-10%)			
Silver		U	-0.0425	DU	510	ug/L	N/A	(0%-10%)			
Sodium			1280	D	276	ug/L	8.07	(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

Workorder: 399107

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 >= 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 #: GEL399107
Work Order #: 399107

Product: pH

Analytical Method: SW846 9045D

Analytical Procedure: GL-GC-E-008 REV# 21

Analytical Batch: 1573817

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399107001	B35VP1
399107002	B35VP6
1203565524	Laboratory Control Sample (LCS)
1203565526	398860001(B35VN3) Sample Duplicate (DUP)

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

Data Summary:

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

Technical Information

Holding Times

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

<u>Sample</u>	<u>Analyte</u>	<u>Value</u>
1203565526 (B35VN3DUP)	pH	Received 08-JUN-16, out of holding 07-JUN-16
399107001 (B35VP1)	pH	Received 10-JUN-16, out of holding 07-JUN-16
399107002 (B35VP6)	pH	Received 10-JUN-16, out of holding 09-JUN-16

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: GEL399107 GEL Work Order: 399107

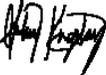
The Qualifiers in this report are defined as follows:

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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: 20 JUN 2016

Title: Analyst I

Sample Data Summary

June 23, 2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: June 20, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F16-043

Client Sample ID: B35VP1
Sample ID: 399107001
Matrix: SOIL
Collect Date: 07-JUN-16 12:40
Receive Date: 10-JUN-16
Collector: Client
Moisture: 8.57%
Project: CPRC0F16043
Client ID: CPRC001

Table with 11 columns: Parameter, Qualifier, Result, DL, RL, Units, DF, Analyst, Date, Time Batch, Method. Row 1: 9045_pH (Non-Aqueous):COMMON "As Received", X, 8.28, 0.010, 0.100, SU, 1, RXB5, 06/15/16, 1822, 1573817, 1.

The following Analytical Methods were performed:

Table with 3 columns: Method, Description, Analyst Comments. Row 1: 1, SW846 9045D, (empty)

Notes:

June 23, 2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: June 20, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F16-043

Client Sample ID: B35VP6
Sample ID: 399107002
Matrix: SOIL
Collect Date: 09-JUN-16 08:30
Receive Date: 10-JUN-16
Collector: Client
Moisture: 13.9%
Project: CPRC0F16043
Client ID: CPRC001

Table with 11 columns: Parameter, Qualifier, Result, DL, RL, Units, DF, Analyst, Date, Time Batch, Method. Row 1: 9045_pH (Non-Aqueous):COMMON "As Received", X, 8.50, 0.010, 0.100, SU, 1, RXB5, 06/15/16, 1823, 1573817, 1

The following Analytical Methods were performed:

Table with 3 columns: Method, Description, Analyst Comments. Row 1: 1, SW846 9045D

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 20, 2016

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399107

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1573817										
QC1203565526	398860001	DUP									
pH	X	7.96	X	8.02	SU	0.751		(0%-30%)	RXB5	06/15/16	18:19
QC1203565524	LCS										
pH	7.00			7.00	SU		100	(70%-130%)		06/15/16	18:15

Notes:

The Qualifiers in this report are defined as follows:

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

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

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

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

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

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

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399107
Work Order #: 399107**

Product: Dry Weight

Analytical Method: ASTM D 2216 (Modified)

Analytical Procedure: GL-OA-E-020 REV# 10

Analytical Batch: 1573697

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399107001	B35VP1
399107002	B35VP6
1203565294	399107001(B35VP1) 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.

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL399107 GEL Work Order: 399107

The Qualifiers in this report are defined as follows:

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: Kate Gellatly

Date: 17 JUN 2016

Title: Analyst I

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL399107	Client: CPRC001	Project: CPRC0F16043
Lab Sample ID: 399107001	Date Collected: 06/07/2016 12:40	Matrix: SOIL
	Date Received: 06/10/2016 09:05	%Moisture: 8.6
Client ID: B35VP1		Prep Basis: "As Received"
Batch ID: 1573697	Method: ASTM D 2216 (Modified)	SOP Ref: GL-OA-E-020
Run Date: 06/10/2016 13:25	Analyst: CXC1	Instrument: SP-39020004
Data File:		Count Time:
Prep Batch: 1573697		
Prep Date: 06/10/2016 13:25		

CAS No.	Parmname	Qual	Result	Units	Recovery%	Acceptable Limits	MDC
	Moisture		8.57	percent	+/-		
Surrogate/Tracer recovery							
			Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL399107	Client: CPRC001	Project: CPRC0F16043
Lab Sample ID: 399107002	Date Collected: 06/09/2016 08:30	Matrix: SOIL
	Date Received: 06/10/2016 09:05	%Moisture: 13.9
Client ID: B35VP6		Prep Basis: "As Received"
Batch ID: 1573697	Method: ASTM D 2216 (Modified)	SOP Ref: GL-OA-E-020
Run Date: 06/10/2016 13:25	Analyst: CXC1	Instrument: SP-39020004
Data File:		Count Time:
Prep Batch: 1573697		
Prep Date: 06/10/2016 13:25		

CAS No.	Parmname	Qual	Result	Units	Recovery%	Acceptable Limits	MDC
	Moisture		13.9	percent	+/-		
Surrogate/Tracer recovery			Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Quality Control Summary

June 23, 2016

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 17, 2016

Page 1 of 1

Client : CH2M Hill Plateau Remediation Company
 MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352

Contact: Mr. Scot Fitzgerald

Workorder: 399107

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Gravimetric Solids										
Batch	1573697									
QC1203565294	399107001	DUP								
Moisture		8.57		15.5	percent	RPD: 57	(0%-20%)	CXC1	06/10/16	13:25

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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
- < 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).
- B The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
- 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.
- UX Gamma Spectroscopy--Uncertain identification
- 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.

** Indicates analyte is a surrogate compound.

^ 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.

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.