

7/27/2016



July 26, 2016

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

Re: CHPRC SAF F15-004
Work Order: 400407
SDG: GEL400407

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 30, 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: 301754 - 7H
Chain of Custody: F15-004-028 and F15-004-029
Enclosures

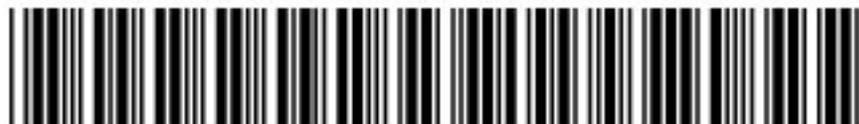


Table of Contents

Sample Issue Resolution.....	1
Case Narrative.....	3
Chain of Custody and Supporting Documentation.....	10
Data Review Qualifier Definitions.....	14
Laboratory Certifications.....	16
Metals Analysis.....	18
Case Narrative.....	19
Sample Data Summary.....	23
Quality Control Summary.....	28
General Chem Analysis.....	37
Case Narrative.....	38
Sample Data Summary.....	49
Quality Control Summary.....	52

Sample Issue Resolution

SAMPLE ISSUE RESOLUTION

SIR NUM SIR16-460
REV NUM 0
DATE INITIATED 7/6/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) F15-004
OPERABLE UNIT(S)
PROJECT(S) CPP 200 Area
SAMPLE EVENT TITLE(S) SWL Monitoring
LABORATORY GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES 2
SAMPLE NUMBERS B31PJ4, B31PJ5
SAMPLE MATRIX WATER
COLLECTION DATE 06/29/2016 – 06/29/2016
SDG NUM GEL400407

ISSUE BACKGROUND

CLASS Field Sampling Issue
TYPE Incorrect Sample Preservation
DESCRIPTION All preserved containers received for samples B31PJ4 and B31PJ5 were received at a pH greater than or equal to 5. Analysis requested are: Metals, TOX, TOC, Ammonia, Metals, COD.

DISPOSITION

DESCRIPTION Proposed Resolution: Preserve with HNO₃ & Sulfuric as needed to the correct pH and proceed with analysis.
JUSTIFICATION Final Disposition: Accept proposed resolution.

SUBMITTED BY: Heather Shaffer DATE: 07/01/2016
ACCEPTED BY: Heather Medley DATE: 07/06/2016

Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F15-004
SDG: GEL400407**

July 26, 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 30, 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. The client was notified of a preservation issue for the containers received. Please see the enclosed SIR for further details.

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
400407001	B31PJ4
400407002	B31PJ5

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.

7/27/2016

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL400407
Work Order #: 400407

Metals

Determination of Metals by ICP

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

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of sodium and zinc. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203577408 (MB).

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

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of selenium, tin, and molybdenum. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203577380 (MB).

Technical Information

Sample Dilutions

Samples 400407001 (B31PJ4) and 400407002 (B31PJ5) were diluted to ensure that the analyte concentrations were within the linear calibration range of the instrument.

Analyte	400407	
	001	002
Barium	5X	5X
Manganese	5X	5X
Strontium	5X	5X

Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer

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

General Chemistry**Carbon, Total Organic**

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

Technical Information**Sample Dilutions**

The following samples 1203578872 (B31PJ4DUP), 1203578873 (B31PJ4PS) and 400407001 (B31PJ4) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	400407
	001
Total Organic Carbon #1	5X
Total Organic Carbon #2	5X
Total Organic Carbon #3	5X
Total Organic Carbon #4	5X
Total Organic Carbon Average	5X

Total Organic Halogens (TOX)

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)/Post Spike (PS) Recovery Statement**

The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Total Organic Halogens	1203579916 (B31PJ4PS)	132* (75%-125%)

The spike recovery falls outside of the client acceptance limits but within the GEL specified limits. 1203579916 (B31PJ4PS).

Technical Information

Sample Dilutions

The following samples 1203579915 (B31PJ4DUP), 1203579916 (B31PJ4PS) and 400407001 (B31PJ4) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	400407
	001
Total Organic Halogens	5X

Ammonia Nitrogen

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

Technical Information

Sample Re-analysis

Sample 1203577190 (LCS) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Solids, Total Dissolved

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.

COD

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 1203577982 (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.

Specific Conductivity

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.

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
1203577774 (B31PJ4DUP)	pH	Received 30-JUN-16, out of holding 29-JUN-16
400407001 (B31PJ4)	pH	Received 30-JUN-16, out of holding 29-JUN-16

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.

Miscellaneous Information**Additional Comments**

50mL was used due to limited sample. 400407001 (B31PJ4).

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F15-004-028		PAGE 1 OF 1	
COLLECTOR CHRIS FULTON CHPRC	COMPANY CONTACT MEDLEY, HA	TELEPHONE NO. 373-6909	PROJECT COORDINATOR MEDLEY, HA	PRICE CODE	7H	DATA TURNAROUND 30 Days / 30 Days	
SAMPLING LOCATION 2nd QUARTER CY2016 SWL LEACHATE	PROJECT DESIGNATION Solid Waste Landfill - Leachate	FIELD LOGBOOK NO. HNF-N-507-34	ACTUAL SAMPLE DEPTH N/A	AIR QUALITY	<input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS	
ICE CHEST NO. 6WS-546	OFFSITE PROPERTY NO. 6784	BILL OF LADING/AIR BILL NO. 7766 5981 0790		ORIGINAL			
SHIPPED TO GEL Laboratories, LLC							
MATRIX* A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	PRESERVATION H2SO4 to pH <2/Cool <=6C 28 Days	HNO3 to pH <2 6 Months	H2SO4 to pH <2/Cool <=6C 28 Days	H2SO4 to pH <2/Cool <=6C 28 Days	H2SO4 to pH <2/Cool <=6C 28 Days	Cool <=6C
	HOLDING TIME	28 Days	28 Days	28 Days	28 Days	28 Days	14 Days
	TYPE OF CONTAINER	aG*	aG	G/P	G/P	G/P	G/P
	NO. OF CONTAINER(S)	1	1	1	1	1	1
	VOLUME	1L	250mL	125mL	125mL	125mL	250mL
	SPECIAL HANDLING AND/OR STORAGE	9970_TOX COMMON; ✓	9960_TOX COMMON; ✓	350_1_AMMONIUM A. COMMON; ✓	410_4_COP. COMMON; ✓	2540C_TDS. COMMON; ✓	SEE ITEM (3) IN SPECIAL INSTRUCTIONS ✓
		✓	✓	✓	✓	✓	✓
SAMPLE NO. B31PJ4	MATRIX*	WATER					
		SAMPLE DATE JUN 29 2016	SAMPLE TIME 1055				
*AIR IN TOX							

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM CHRIS FULTON CHPRC	DATE/TIME JUN 29 2016 1125	RECEIVED BY/STORED IN Christina Aguilera CHPRC	DATE/TIME JUN 29 2016 1125	(1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium, Vanadium}; 6020_METALS_ICPMS: COMMON {Aluminum, Antimony, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Selenium, Silver}; 6020_METALS_ICPMS: COMMON (Add-on) {Arsenic, Manganese, Nickel, Strontium, Thallium, Thorium, Tin, Uranium, Zinc}; 7470_MERCURY_CV: COMMON (AQUEOUS); (2) 9040_pH (AQUEOUS): COMMON; 9050_CONDUCTIVITY: COMMON; (3) 2320_ALKALINITY: COMMON {Alkalinity}; 2320_ALKALINITY: COMMON (Add-on) {Bicarbonate, Carbonate alkalinity, Hydroxylion};	
RELINQUISHED BY/REMOVED FROM CHRIS FULTON CHPRC	DATE/TIME JUN 29 2016 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME JUN 29 2016 0915		
RELINQUISHED BY/REMOVED FROM CHRIS FULTON CHPRC	DATE/TIME JUN 29 2016 1400	RECEIVED BY/STORED IN CHRISTINA AGUILERA CHPRC	DATE/TIME JUN 29 2016 0915		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		
PRINTED ON 5/25/2016	FR ID = FSR32739	TRVL NUM = TRVL-16-156	A-6003-618 (REV 2)		

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST **400407** **PAGE 1 OF 1**

COLLECTOR CHRIS FULTON **PROJECT COORDINATOR** MEDLEY, HA

SAMPLING LOCATION 2nd QUARTER CY2016 SWL LEACHATE **TELEPHONE NO.** 373-6909

ICE CHEST NO. GWS-546 **SAF NO.** F15-004

SHIPPED TO GEL Laboratories, LLC **COA** 301754

BILL OF LADING/AIR BILL NO. 7766 3981 **0790**

PRICE CODE 7H **METHOD OF SHIPMENT** FEDERAL EXPRESS

AIR QUALITY **DATA TURNAROUND** 30 Days / 30 Days

ORIGINAL

COMPANY CONTACT	TELEPHONE NO.	ACTUAL SAMPLE DEPTH
MEDLEY, HA	373-6909	N/A
PROJECT DESIGNATION	FIELD LOGBOOK NO.	OFFSITE PROPERTY NO.
Solid Waste Landfill - Leachate	HNF-N-507-34	6784
PRESERVATION	HOLDING TIME	TYPE OF CONTAINER
HNO3 to pH <2	6 Months	G/P
NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS
1	500ml	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SAMPLE NO.	MATRIX*	SAMPLE DATE
B31PJ5	WATER	JUN 29 2016
		1055

POSSIBLE SAMPLE HAZARDS/ REMARKS
 *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA

SPECIAL HANDLING AND/OR STORAGE

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	DATE/TIME
RELINQUISHED BY/REMOVED FROM CHRIS FULTON	RECEIVED BY/STORED IN Christina Aguilera	JUN 29 2016 1135
RELINQUISHED BY/REMOVED FROM CHRIS FULTON	RECEIVED BY/STORED IN FED EX	JUN 29 2016 1400
RELINQUISHED BY/REMOVED FROM CHRIS FULTON	RECEIVED BY/STORED IN M. Kusobu	JUN 29 2016 6:30 PM
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	

SPECIAL INSTRUCTIONS
 FILTER
 (1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium, Vanadium}; 6020_METALS_ICPMS: COMMON {Aluminum, Antimony, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Selenium, Silver}; 6020_METALS_ICPMS: COMMON (Add-on) {Arsenic, Manganese, Nickel, Strontium, Thallium, Thorium, Tin, Uranium, Zinc}; 7470_MERCURY_CV: COMMON (AQUEOUS);

LABORATORY SECTION RECEIVED BY
FINAL SAMPLE DISPOSITION DISPOSAL METHOD

TRVL NUM = TRVL-16-156 **FSR ID = FSR32739** **PRINTED ON 5/25/2016** **A-6003-618 (REV 2)**

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC		SDG/AR/COC/Work Order: 400407
Received By: ML		Date Received: 6-30-16
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?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0
Classified Radioactive II or III by RSO?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	Yes <input type="checkbox"/> No <input checked="" 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?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	Yes <input type="checkbox"/> No <input checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: 150462922 Secondary Temperature Device Serial # (If Applicable): 2 C
3	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#: *see Below Sample ID's and containers affected:
6	Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7	VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9	Are Encore containers present?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" 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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
15	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
16	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7766 3981 0790

Comments (Use Continuation Form if needed):
 * All preserved bottles have a pH ≥ 5
 Preserved per P.M.
 HNO3 Lot# = 118139
 SUB-PURIC Lot# = 2015062366

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 26 July 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 #: GEL400407
Work Order #: 400407

Product: Determination of Metals by ICP-MS**Analytical Method:** 6020_METALS_ICPMS**Analytical Procedure:** GL-MA-E-014 REV# 28**Analytical Batch:** 1578532**Product: Determination of Metals by ICP****Analytical Method:** 6010_METALS_ICP**Analytical Procedure:** GL-MA-E-013 REV# 26**Analytical Batch:** 1578541**Product: Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer****Analytical Method:** 7470_HG_CVAA**Analytical Procedure:** GL-MA-E-010 REV# 31**Analytical Batch:** 1580850**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 13**Preparation Batches:** 1578530 and 1578538**Preparation Method:** SW846 7470A Prep**Preparation Procedure:** GL-MA-E-010 REV# 31**Preparation Batch:** 1580843

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
400407001	B31PJ4
400407002	B31PJ5
1203577408	Method Blank (MB) ICP
1203577409	Laboratory Control Sample (LCS)
1203577412	400415001(NonSDGL) Serial Dilution (SD)
1203577410	400415001(NonSDGS) Matrix Spike (MS)
1203577411	400415001(NonSDGSD) Matrix Spike Duplicate (MSD)
1203577380	Method Blank (MB) ICP-MS
1203577381	Laboratory Control Sample (LCS)
1203577384	400390002(NonSDGL) Serial Dilution (SD)
1203577382	400390002(NonSDGS) Matrix Spike (MS)
1203577383	400390002(NonSDGSD) Matrix Spike Duplicate (MSD)
1203582593	Method Blank (MB) CVAA
1203582594	Laboratory Control Sample (LCS)
1203582600	400407001(B31PJ4L) Serial Dilution (SD)
1203582598	400407001(B31PJ4D) Sample Duplicate (DUP)
1203582599	400407001(B31PJ4S) Matrix Spike (MS)

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 method blanks (MB) analyzed with this SDG met the exception criteria with the exception of sodium and zinc. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203577408 (MB)-ICP. The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of selenium, tin, and molybdenum. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203577380 (MB)-ICP-MS.

Technical Information**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 400407001 (B31PJ4) and 400407002 (B31PJ5)-ICP-MS were diluted to ensure that the analyte concentrations were within the linear calibration range of the instrument.

Analyte	400407	
	001	002
Barium	5X	5X
Manganese	5X	5X
Strontium	5X	5X

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: GEL400407 GEL Work Order: 400407

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $> 5\%$ of the measured concentration and/or decision level for associated samples.

D Results are reported from a diluted aliquot of sample.

N Spike Sample recovery is outside control limits.

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

Review/Validation

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

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

Signature:



Name: Nik-Cole Elmore

Date: 26 JUL 2016

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL400407

CONTRACT: CPRC0F15004

METHOD TYPE: SW846

SAMPLE ID:400407001

BASIS: As Received

DATE COLLECTED 29-JUN-16

CLIENT ID: B31PJ4

LEVEL: Low

DATE RECEIVED 30-JUN-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	16.4	ug/L	B	15	50	50	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-36-0	Antimony	1	ug/L	U	1	3	60	1	MS	SKJ	07/22/16 15:05	160722-5	1578532
7440-38-2	Arsenic	30.5	ug/L		1.7	5	10	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-39-3	Barium	461	ug/L	D	3	10	20	5	MS	SKJ	07/21/16 14:23	160721-3	1578532
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	4	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	5	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-70-2	Calcium	196000	ug/L		50	200	1000	1	P	HSC	07/13/16 12:54	071316-1	1578541
7440-47-3	Chromium	2	ug/L	U	2	10	10	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-48-4	Cobalt	2.94	ug/L		0.1	1	20	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-50-8	Copper	14.5	ug/L		0.35	1	8	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7439-89-6	Iron	8250	ug/L		30	100	50	1	P	HSC	07/13/16 12:54	071316-1	1578541
7439-92-1	Lead	0.550	ug/L	B	0.5	2	15	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7439-95-4	Magnesium	115000	ug/L		110	300	750	1	P	HSC	07/13/16 12:54	071316-1	1578541
7439-96-5	Manganese	1920	ug/L	D	5	25	5	5	MS	SKJ	07/21/16 14:23	160721-3	1578532
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	07/13/16 11:42	071316W1-6	1580850
7439-98-7	Molybdenum	9.66	ug/L		0.165	0.5	20	1	MS	SKJ	07/21/16 14:27	160721-3	1578532
7440-02-0	Nickel	69.5	ug/L		0.5	2	40	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-09-7	Potassium	15300	ug/L		50	150	4000	1	P	HSC	07/13/16 12:54	071316-1	1578541
7782-49-2	Selenium	10	ug/L	C	1.5	5	50	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-22-4	Silver	0.20	ug/L	U	0.2	1	10	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-23-5	Sodium	113000	ug/L		100	300	500	1	P	HSC	07/13/16 12:54	071316-1	1578541
7440-24-6	Strontium	1550	ug/L	D	10	50	10	5	MS	SKJ	07/21/16 14:23	160721-3	1578532
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	50	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-29-1	Thorium	0.577	ug/L	B	0.383	2	10	1	MS	SKJ	07/22/16 13:25	160722-4	1578532
7440-31-5	Tin	24.1	ug/L	C	1	5	100	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-61-1	Uranium	1.25	ug/L		0.067	0.2	15	1	MS	SKJ	07/20/16 22:20	160720-2	1578532
7440-62-2	Vanadium	2.32	ug/L	B	1	5	25	1	P	HSC	07/13/16 12:54	071316-1	1578541
7440-66-6	Zinc	130	ug/L		3.5	10	10	1	MS	SKJ	07/20/16 22:20	160720-2	1578532

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1578532	1578530	SW846 3005A	50	mL	50	mL	07/01/16	SXW1
1578541	1578538	SW846 3005A	50	mL	50	mL	07/01/16	SXW1
1580850	1580843	SW846 7470A Prep	20	mL	20	mL	07/12/16	AXS5

METALS

-1-

INORGANICS ANALYSIS DATA PACKAGE

*Analytical Methods:

P	SW846 3005A/6010C
MS	SW846 3005A/6020A
AV	SW846 7470A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL400407

CONTRACT: CPRC0F15004

METHOD TYPE: SW846

SAMPLE ID: 400407002

BASIS: As Received

DATE COLLECTED 29-JUN-16

CLIENT ID: B31PJ5

LEVEL: Low

DATE RECEIVED 30-JUN-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	07/20/16 22:24	160720-2	1578532
7440-36-0	Antimony	1	ug/L	U	1	3	60	1	MS	SKJ	07/22/16 15:07	160722-5	1578532
7440-38-2	Arsenic	29.3	ug/L		1.7	5	10	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-39-3	Barium	444	ug/L	D	3	10	20	5	MS	SKJ	07/21/16 14:25	160721-3	1578532
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	4	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	5	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-70-2	Calcium	198000	ug/L		50	200	1000	1	P	HSC	07/13/16 12:57	071316-1	1578541
7440-47-3	Chromium	2	ug/L	U	2	10	10	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-48-4	Cobalt	3.16	ug/L		0.1	1	20	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-50-8	Copper	5.56	ug/L		0.35	1	8	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7439-89-6	Iron	7130	ug/L		30	100	50	1	P	HSC	07/13/16 12:57	071316-1	1578541
7439-92-1	Lead	0.50	ug/L	U	0.5	2	15	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7439-95-4	Magnesium	116000	ug/L		110	300	750	1	P	HSC	07/13/16 12:57	071316-1	1578541
7439-96-5	Manganese	1880	ug/L	D	5	25	5	5	MS	SKJ	07/21/16 14:25	160721-3	1578532
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	07/13/16 12:47	071316W1-6	1580850
7439-98-7	Molybdenum	9.7	ug/L		0.165	0.5	20	1	MS	SKJ	07/21/16 14:30	160721-3	1578532
7440-02-0	Nickel	70.3	ug/L		0.5	2	40	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-09-7	Potassium	15300	ug/L		50	150	4000	1	P	HSC	07/13/16 12:57	071316-1	1578541
7782-49-2	Selenium	12.8	ug/L	C	1.5	5	50	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-22-4	Silver	0.20	ug/L	U	0.2	1	10	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-23-5	Sodium	116000	ug/L		100	300	500	1	P	HSC	07/13/16 12:57	071316-1	1578541
7440-24-6	Strontium	1520	ug/L	D	10	50	10	5	MS	SKJ	07/21/16 14:25	160721-3	1578532
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	50	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-29-1	Thorium	0.383	ug/L	U	0.383	2	10	1	MS	SKJ	07/22/16 13:27	160722-4	1578532
7440-31-5	Tin	24.8	ug/L	C	1	5	100	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-61-1	Uranium	1.25	ug/L		0.067	0.2	15	1	MS	SKJ	07/20/16 22:24	160720-2	1578532
7440-62-2	Vanadium	1.97	ug/L	B	1	5	25	1	P	HSC	07/13/16 12:57	071316-1	1578541
7440-66-6	Zinc	118	ug/L		3.5	10	10	1	MS	SKJ	07/20/16 22:24	160720-2	1578532

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1578532	1578530	SW846 3005A	50	mL	50	mL	07/01/16	SXW1
1578541	1578538	SW846 3005A	50	mL	50	mL	07/01/16	SXW1
1580850	1580843	SW846 7470A Prep	20	mL	20	mL	07/12/16	AXS5

METALS

-1-

INORGANICS ANALYSIS DATA PACKAGE

*Analytical Methods:

P	SW846 3005A/6010C
MS	SW846 3005A/6020A
AV	SW846 7470A

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 26, 2016

Page 1 of 8

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 400407

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1578532										
QC1203577381	LCS										
Aluminum	2000			2020	ug/L		101	(80%-120%)	SKJ	07/20/16	21:49
Antimony	50.0			57.5	ug/L		115	(80%-120%)		07/22/16	14:57
Arsenic	50.0			52.0	ug/L		104	(80%-120%)		07/20/16	21:49
Barium	50.0			50.6	ug/L		101	(80%-120%)			
Beryllium	50.0			55.3	ug/L		111	(80%-120%)			
Cadmium	50.0			51.8	ug/L		104	(80%-120%)			
Chromium	50.0			50.8	ug/L		102	(80%-120%)			
Cobalt	50.0			51.2	ug/L		102	(80%-120%)			
Copper	50.0			52.5	ug/L		105	(80%-120%)			
Lead	50.0			53.3	ug/L		107	(80%-120%)			
Manganese	50.0			51.3	ug/L		103	(80%-120%)			
Molybdenum	50.0			51.8	ug/L		104	(80%-120%)		07/21/16	14:05
Nickel	50.0			52.0	ug/L		104	(80%-120%)		07/20/16	21:49
Selenium	50.0			53.1	ug/L		106	(80%-120%)			
Silver	50.0			53.2	ug/L		106	(80%-120%)			
Strontium	50.0			53.6	ug/L		107	(80%-120%)		07/21/16	14:05
Thallium	50.0			50.9	ug/L		102	(80%-120%)		07/20/16	21:49
Thorium	50.0			52.0	ug/L		104	(80%-120%)		07/22/16	13:10
Tin	50.0			52.2	ug/L		104	(80%-120%)		07/20/16	21:49
Uranium	50.0			51.9	ug/L		104	(80%-120%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400407

Page 2 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1578532										
Zinc	50.0			51.7	ug/L		103	(80%-120%)	SKJ	07/20/16	21:49
QC1203577380	MB										
Aluminum			U	15.0	ug/L					07/20/16	21:45
Antimony			U	1.00	ug/L					07/22/16	14:56
Arsenic			U	1.70	ug/L					07/20/16	21:45
Barium			U	0.600	ug/L						
Beryllium			U	0.200	ug/L						
Cadmium			U	0.110	ug/L						
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			B	0.179	ug/L					07/21/16	14:03
Nickel			U	0.500	ug/L					07/20/16	21:45
Selenium			B	3.17	ug/L						
Silver			U	0.200	ug/L						
Strontium			U	2.00	ug/L					07/21/16	14:03
Thallium			U	0.450	ug/L					07/20/16	21:45
Thorium			U	0.383	ug/L					07/22/16	13:08
Tin			B	1.38	ug/L					07/20/16	21:45
Uranium			U	0.067	ug/L						

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400407

Page 3 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1578532										
Zinc			U	3.50	ug/L				SKJ	07/20/16	21:45
QC1203577382 400390002 MS											
Aluminum	2000	U	15.0	1980	ug/L		98.5	(75%-125%)		07/20/16	22:05
Antimony	50.0	U	1.00	58.3	ug/L		116	(75%-125%)		07/22/16	15:00
Arsenic	50.0	B	4.43	53.1	ug/L		97.4	(75%-125%)		07/20/16	22:05
Barium	50.0		34.4	84.1	ug/L		99.5	(75%-125%)			
Beryllium	50.0	U	0.200	56.8	ug/L		114	(75%-125%)			
Cadmium	50.0	U	0.110	50.6	ug/L		101	(75%-125%)			
Chromium	50.0		51.6	99.7	ug/L		96.3	(75%-125%)			
Cobalt	50.0	B	0.131	46.9	ug/L		93.5	(75%-125%)			
Copper	50.0	B	0.925	47.8	ug/L		93.7	(75%-125%)			
Lead	50.0	U	0.500	52.5	ug/L		105	(75%-125%)			
Manganese	50.0	B	2.93	50.5	ug/L		95.2	(75%-125%)			
Molybdenum	50.0	C	3.34	55.1	ug/L		104	(75%-125%)		07/21/16	14:15
Nickel	50.0	B	1.51	48.0	ug/L		93.1	(75%-125%)		07/20/16	22:05
Selenium	50.0	BC	4.82	56.9	ug/L		104	(75%-125%)			
Silver	50.0	U	0.200	49.1	ug/L		98.2	(75%-125%)			
Strontium	50.0		240	300	ug/L		N/A	(75%-125%)		07/21/16	14:15
Thallium	50.0	U	0.450	50.3	ug/L		99.8	(75%-125%)		07/20/16	22:05
Thorium	50.0	B	0.863	50.5	ug/L		99.3	(75%-125%)		07/22/16	13:15
Tin	50.0	U	1.00	52.2	ug/L		103	(75%-125%)		07/20/16	22:05
Uranium	50.0		2.89	55.7	ug/L		106	(75%-125%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400407

Page 4 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1578532										
Zinc	50.0	B	4.01	51.6	ug/L		95.1	(75%-125%)	SKJ	07/20/16	22:05
QC1203577383 400390002 MSD											
Aluminum	2000	U	15.0	1930	ug/L	2.18	96.3	(0%-20%)		07/20/16	22:09
Antimony	50.0	U	1.00	58.1	ug/L	0.342	116	(0%-20%)		07/22/16	15:02
Arsenic	50.0	B	4.43	55.4	ug/L	4.11	102	(0%-20%)		07/20/16	22:09
Barium	50.0		34.4	83.4	ug/L	0.82	98.2	(0%-20%)			
Beryllium	50.0	U	0.200	55.3	ug/L	2.72	111	(0%-20%)			
Cadmium	50.0	U	0.110	51.6	ug/L	1.87	103	(0%-20%)			
Chromium	50.0		51.6	99.1	ug/L	0.598	95.1	(0%-20%)			
Cobalt	50.0	B	0.131	49.2	ug/L	4.77	98.1	(0%-20%)			
Copper	50.0	B	0.925	50.1	ug/L	4.64	98.3	(0%-20%)			
Lead	50.0	U	0.500	51.8	ug/L	1.34	104	(0%-20%)			
Manganese	50.0	B	2.93	52.2	ug/L	3.26	98.5	(0%-20%)			
Molybdenum	50.0	C	3.34	55.4	ug/L	0.427	104	(0%-20%)		07/21/16	14:17
Nickel	50.0	B	1.51	50.1	ug/L	4.26	97.3	(0%-20%)		07/20/16	22:09
Selenium	50.0	BC	4.82	55.9	ug/L	1.87	102	(0%-20%)			
Silver	50.0	U	0.200	50.4	ug/L	2.5	101	(0%-20%)			
Strontium	50.0		240	297	ug/L	0.934	N/A	(0%-20%)		07/21/16	14:17
Thallium	50.0	U	0.450	50.3	ug/L	0.111	99.9	(0%-20%)		07/20/16	22:09
Thorium	50.0	B	0.863	51.6	ug/L	2.19	102	(0%-20%)		07/22/16	13:18
Tin	50.0	U	1.00	52.7	ug/L	0.853	104	(0%-20%)		07/20/16	22:09
Uranium	50.0		2.89	56.6	ug/L	1.64	107	(0%-20%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400407

Page 5 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1578532										
Zinc	50.0	B	4.01		53.7	ug/L	3.95	99.3	(0%-20%)	SKJ	07/20/16 22:09
QC1203577384 400390002 SDILT											
Aluminum		U	6.33	DU	75.0	ug/L	N/A		(0%-10%)		07/20/16 22:17
Antimony		U	0.204	DU	5.00	ug/L	N/A		(0%-10%)		07/22/16 15:04
Arsenic		B	4.43	DU	8.50	ug/L	N/A		(0%-10%)		07/20/16 22:17
Barium			34.4	D	6.93	ug/L	.865		(0%-10%)		
Beryllium		U	0.048	DU	1.00	ug/L	N/A		(0%-10%)		
Cadmium		U	-0.007	DU	0.550	ug/L	N/A		(0%-10%)		
Chromium			51.6	BD	9.69	ug/L	6.03		(0%-10%)		
Cobalt		B	0.131	DU	0.500	ug/L	N/A		(0%-10%)		
Copper		B	0.925	DU	1.75	ug/L	N/A		(0%-10%)		
Lead		U	0.058	DU	2.50	ug/L	N/A		(0%-10%)		
Manganese		B	2.93	DU	5.00	ug/L	N/A		(0%-10%)		
Molybdenum		C	3.34	D	0.744	ug/L	11.4		(0%-10%)		07/21/16 14:20
Nickel		B	1.51	DU	2.50	ug/L	N/A		(0%-10%)		07/20/16 22:17
Selenium		BC	4.82	DU	7.50	ug/L	N/A		(0%-10%)		
Silver		U	0.010	DU	1.00	ug/L	N/A		(0%-10%)		
Strontium			240	D	49.8	ug/L	3.63		(0%-10%)		07/21/16 14:20
Thallium		U	0.365	BD	0.471	ug/L	N/A		(0%-10%)		07/20/16 22:17
Thorium		B	0.863	BD	0.588	ug/L	241		(0%-10%)		07/22/16 13:23
Tin		U	0.653	DU	5.00	ug/L	N/A		(0%-10%)		07/20/16 22:17
Uranium			2.89	D	0.623	ug/L	7.82		(0%-10%)		

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400407

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1578532										
Zinc		B	4.01	DU	17.5	ug/L	N/A	(0%-10%)	SKJ	07/20/16	22:17
Metals Analysis-ICP											
Batch	1578541										
QC1203577409	LCS										
Calcium	5000				5250	ug/L	105	(80%-120%)	HSC	07/13/16	12:50
Iron	5000				5370	ug/L	107	(80%-120%)			
Magnesium	5000				5360	ug/L	107	(80%-120%)			
Potassium	5000				5010	ug/L	100	(80%-120%)			
Sodium	5000				5100	ug/L	102	(80%-120%)			
Vanadium	500				525	ug/L	105	(80%-120%)			
QC1203577408	MB										
Calcium			U		50.0	ug/L				07/13/16	12:47
Iron			U		30.0	ug/L					
Magnesium			U		110	ug/L					
Potassium			U		50.0	ug/L					
Sodium			B		120	ug/L					
Vanadium			U		1.00	ug/L					
QC1203577410	400415001	MS									
Calcium	5000		51800		57300	ug/L	N/A	(75%-125%)		07/13/16	13:06
Iron	5000	B	33.7		5210	ug/L	104	(75%-125%)			
Magnesium	5000		15400		20600	ug/L	105	(75%-125%)			
Potassium	5000		5640		10700	ug/L	101	(75%-125%)			
Sodium	5000		13400		18600	ug/L	103	(75%-125%)			
Vanadium	500		13.1		527	ug/L	103	(75%-125%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400407

Page 7 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1578541										
QC1203577411	400415001	MSD									
Calcium	5000	51800		58700	ug/L	2.27	N/A	(0%-20%)	HSC	07/13/16	13:09
Iron	5000	B 33.7		5320	ug/L	2.01	106	(0%-20%)			
Magnesium	5000	15400		21000	ug/L	1.75	112	(0%-20%)			
Potassium	5000	5640		10900	ug/L	1.79	105	(0%-20%)			
Sodium	5000	13400		18800	ug/L	1.24	108	(0%-20%)			
Vanadium	500	13.1		537	ug/L	1.88	105	(0%-20%)			
QC1203577412	400415001	SDILT									
Calcium		51800	D	10600	ug/L	2.18		(0%-10%)		07/13/16	13:12
Iron		B 33.7	DU	150	ug/L	N/A		(0%-10%)			
Magnesium		15400	D	3150	ug/L	2.39		(0%-10%)			
Potassium		5640	D	1120	ug/L	1.07		(0%-10%)			
Sodium		13400	D	2740	ug/L	2.02		(0%-10%)			
Vanadium		13.1	BD	2.68	ug/L	2.33		(0%-10%)			
Metals Analysis-Mercury											
Batch	1580850										
QC1203582598	400407001	DUP									
Mercury		U 0.067	U	0.067	ug/L	N/A			MTM1	07/13/16	12:41
QC1203582594	LCS										
Mercury	2.00			1.99	ug/L		99.5	(80%-120%)		07/13/16	11:27
QC1203582593	MB										
Mercury			U	0.067	ug/L					07/13/16	11:26
QC1203582599	400407001	MS									
Mercury	2.00	U 0.067		1.88	ug/L		93.6	(75%-125%)		07/13/16	12:42
QC1203582600	400407001	SDILT									
Mercury		U 0.003	DU	0.335	ug/L	N/A		(0%-10%)		07/13/16	12:44

Notes:

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400407

Page 8 of 8

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

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \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 #: GEL400407
 Work Order #: 400407**

Product: Carbon, Total Organic

Analytical Method: SW846 9060A

Analytical Procedure: GL-GC-E-093 REV# 14

Analytical Batch: 1579149

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
400407001	B31PJ4
1203578869	Method Blank (MB)
1203578870	Laboratory Control Sample (LCS)
1203578871	Laboratory Control Sample Duplicate (LCSD)
1203578872	400407001(B31PJ4) Sample Duplicate (DUP)
1203578873	400407001(B31PJ4) Post Spike (PS)

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

Data Summary:

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

Technical Information

Sample Dilutions

The following samples 1203578872 (B31PJ4DUP), 1203578873 (B31PJ4PS) and 400407001 (B31PJ4) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	400407
	001
Total Organic Carbon #1	5X
Total Organic Carbon #2	5X
Total Organic Carbon #3	5X
Total Organic Carbon #4	5X
Total Organic Carbon Average	5X

Product: Total Organic Halogens (TOX)

Analytical Method: 9020_TOX

Analytical Procedure: GL-GC-E-007 REV# 14

Analytical Batch: 1579657

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
400407001	B31PJ4
1203579913	Method Blank (MB)
1203579914	Laboratory Control Sample (LCS)
1203579915	400407001(B31PJ4) Sample Duplicate (DUP)
1203579916	400407001(B31PJ4) 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.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Total Organic Halogens	1203579916 (B31PJ4PS)	132* (75%-125%)

The spike recovery falls outside of the client acceptance limits but within the GEL specified limits. 1203579916 (B31PJ4PS).

Technical Information

Sample Dilutions

The following samples 1203579915 (B31PJ4DUP), 1203579916 (B31PJ4PS) and 400407001 (B31PJ4) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	400407
	001
Total Organic Halogens	5X

Miscellaneous Information

Additional Comments

A pair of nitrate wash blanks is analyzed at the start of the batch. Although they are designated as ICB, they are performed for calculating purposes only. The value of the nitrate wash blanks are averaged and subtracted from all samples. Neither of these values should exceed 0.6 ug Cl. The PQL limit typically applied to ICB results does not apply in this application, since the results are used only to determine background concentrations and are subtracted from all calculated results.

Breakthrough effect

Breakthrough effect: If the value for a sample is greater than the reporting limit (10 ug/L), the result for the second slug should not be greater than 25% of the combined value of the first and second slug. Results which do not meet these criteria are designated with a "Fail" comment in the Breakthrough effect column on the Logbook page; however, the "fail" designation is not applicable for samples with a result of less than 10 ug/L.

Product: Ammonia Nitrogen**Analytical Method:** EPA 350.1**Analytical Procedure:** GL-GC-E-106 REV# 9**Analytical Batch:** 1578464**Preparation Method:** EPA 350.1 Prep**Preparation Procedure:** GL-GC-E-072 REV# 17**Preparation Batch:** 1578463

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
400407001	B31PJ4
1203577189	Method Blank (MB)
1203577190	Laboratory Control Sample (LCS)
1203577642	400407001(B31PJ4) Sample Duplicate (DUP)
1203577643	400407001(B31PJ4) Matrix Spike (MS)

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

Data Summary:

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

Technical Information**Sample Re-analysis**

Sample 1203577190 (LCS) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Product: Solids, Total Dissolved

Analytical Method: 160.1_TDS

Analytical Procedure: GL-GC-E-001 REV# 15

Analytical Batch: 1578916

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
400407001	B31PJ4
1203578282	Method Blank (MB)
1203578283	Laboratory Control Sample (LCS)
1203578286	400407001(B31PJ4) 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.

Product: COD**Analytical Method:** EPA 410.4**Analytical Procedure:** GL-GC-E-061 REV# 19**Analytical Batch:** 1578786

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
400407001	B31PJ4
1203577982	Method Blank (MB)
1203577983	Laboratory Control Sample (LCS)
1203577985	400407001(B31PJ4) Sample Duplicate (DUP)
1203577987	400407001(B31PJ4) Matrix Spike (MS)

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 1203577982 (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.

Product: Specific Conductivity

Analytical Method: EPA 120.1

Analytical Procedure: GL-GC-E-009 REV# 12

Analytical Batch: 1578609

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
400407001	B31PJ4
1203577571	Laboratory Control Sample (LCS)
1203577574	400407001(B31PJ4) 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.

Product: Alkalinity**Analytical Method:** 2320_ALKALINITY**Analytical Procedure:** GL-GC-E-033 REV# 12**Analytical Batch:** 1578692

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
400407001	B31PJ4
1203577779	400390001(NonSDG) Sample Duplicate (DUP)
1203577781	Method Blank (MB)
1203577782	Laboratory Control Sample (LCS)

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.

Miscellaneous Information**Additional Comments**

50mL was used due to limited sample. 400407001 (B31PJ4).

Product: pH**Analytical Method:** SW846 9040C**Analytical Procedure:** GL-GC-E-008 REV# 21**Analytical Batch:** 1578691

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
400407001	B31PJ4
1203577772	Laboratory Control Sample (LCS)
1203577774	400407001(B31PJ4) 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.

Sample	Analyte	Value
1203577774 (B31PJ4DUP)	pH	Received 30-JUN-16, out of holding 29-JUN-16
400407001 (B31PJ4)	pH	Received 30-JUN-16, out of holding 29-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: GEL400407 GEL Work Order: 400407

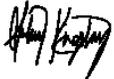
The Qualifiers in this report are defined as follows:

- 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).
- 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

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 JUL 2016

Title: Analyst I

Sample Data Summary

7/27/2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: July 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 F15-004

Client Sample ID: B31PJ4 Project: CPRC0F15004
 Sample ID: 400407001 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 29-JUN-16 10:55
 Receive Date: 30-JUN-16
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	D	47500	1650	5000	ug/L		5	TSM	07/06/16	1246	1579149	1
Total Organic Carbon #2	D	47400	1650	5000	ug/L		5					
Total Organic Carbon #3	D	48200	1650	5000	ug/L		5					
Total Organic Carbon #4	D	48600	1650	5000	ug/L		5					
Total Organic Carbon Average	D	47900	1650	5000	ug/L		5					
Halogen Analysis												
9020_TOX: COMMON "As Received"												
Total Organic Halogens	D	459	16.7	50.0	ug/L		5	RMJ	07/18/16	2028	1579657	2
Nutrient Analysis												
350.1_AMMONIA: COMMON "As Received"												
Nitrogen in Ammonia	N	837	17.0	50.0	ug/L	1.00	1	KLP1	07/05/16	1325	1578464	3
Solids Analysis												
160.1_TDS:COMMON "As Received"												
Total Dissolved Solids		1440000	3400	14300	ug/L			VH1	07/05/16	1252	1578916	4
Spectrometric Analysis												
410.4_COD: COMMON "As Received"												
COD	C	173000	8950	20000	ug/L		1	VH1	07/05/16	1542	1578786	5
Titration and Ion Analysis												
120.1_CONDUCTIVITY: COMMON "As Received"												
Conductivity		20200	1.00	1.00	umhos/cm		1	RXB5	06/30/16	1530	1578609	6
2320_ALKALINITY: COMMON + (ADD ON) "As Received"												
Alkalinity, Total as CaCO3		838000	1450	2000	ug/L			RXB5	06/30/16	1843	1578692	7
Bicarbonate alkalinity (CaCO3)		838000	1450	2000	ug/L							
Carbonate alkalinity (CaCO3)	U	1450	1450	2000	ug/L							
Hydroxide alkalinity as CaCO3	U	1450	1450	2000	ug/L							
9040_pH (AQUEOUS): COMMON "As Received"												
pH at Temp 20.0C	X	7.44	0.010	0.100	SU		1	RXB5	06/30/16	1824	1578691	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	07/05/16	1117	1578463

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 20, 2016

Page 1 of 3

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 400407

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1579149										
QC1203578872	400407001	DUP									
Total Organic Carbon Average		D	47900	D	47700	ug/L	0.481	(0%-20%)	TSM	07/06/16	13:27
QC1203578870	LCS										
Total Organic Carbon Average	10000				9530	ug/L		95.3	(80%-120%)		07/05/16 22:36
QC1203578871	LCSD										
Total Organic Carbon Average	10000				9550	ug/L	0.231	95.5	(0%-20%)		07/05/16 22:48
QC1203578869	MB										
Total Organic Carbon Average				U	330	ug/L					07/05/16 22:25
QC1203578873	400407001	PS									
Total Organic Carbon Average	10.0	D	9.58	D	20.3	mg/L		107	(75%-125%)		07/06/16 14:08
Halogen Analysis											
Batch	1579657										
QC1203579915	400407001	DUP									
Total Organic Halogens		D	459	D	398	ug/L	14.2		(0%-20%)	RMJ	07/18/16 20:47
QC1203579914	LCS										
Total Organic Halogens	100				83.0	ug/L		83	(80%-120%)		07/18/16 20:06
QC1203579913	MB										
Total Organic Halogens				U	3.33	ug/L					07/18/16 19:21
QC1203579916	400407001	PS									
Total Organic Halogens	100	D	91.7	D	224	ug/L		132*	(75%-125%)		07/18/16 21:26
Nutrient Analysis											
Batch	1578464										
QC1203577642	400407001	DUP									
Nitrogen in Ammonia		N	837		773	ug/L	7.95		(0%-20%)	KLP1	07/05/16 13:26
QC1203577190	LCS										
Nitrogen in Ammonia	1000				1040	ug/L		104	(80%-120%)		07/05/16 13:08
QC1203577189	MB										
Nitrogen in Ammonia				U	17.0	ug/L					07/05/16 13:00
QC1203577643	400407001	MS									
Nitrogen in Ammonia	1000	N	837	N	1680	ug/L		84.3	(75%-125%)		07/05/16 13:27

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400407

Page 2 of 3

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1578464										
Solids Analysis											
Batch	1578916										
QC1203578286	400407001	DUP									
Total Dissolved Solids				1440000	1440000	ug/L	0.396	(0%-20%)	VH1	07/05/16	12:52
QC1203578283	LCS										
Total Dissolved Solids	300000				301000	ug/L		100	(80%-120%)		07/05/16 12:52
QC1203578282	MB										
Total Dissolved Solids			U		3400	ug/L					07/05/16 12:52
Spectrometric Analysis											
Batch	1578786										
QC1203577985	400407001	DUP									
COD			C	173000	183000	ug/L	5.61	(0%-20%)	VH1	07/05/16	15:42
QC1203577983	LCS										
COD	500000				457000	ug/L		91.3	(80%-120%)		07/05/16 15:42
QC1203577982	MB										
COD			B		13200	ug/L					07/05/16 15:42
QC1203577987	400407001	MS									
COD	500000		C	173000	645000	ug/L		94.3	(75%-125%)		07/05/16 15:42
Titration and Ion Analysis											
Batch	1578609										
QC1203577574	400407001	DUP									
Conductivity				20200	20200	umhos/cm	0	(0%-20%)	RXB5	06/30/16	15:32
QC1203577571	LCS										
Conductivity	1410				1390	umhos/cm		98.1	(80%-120%)		06/30/16 15:21
Batch	1578691										
QC1203577774	400407001	DUP									
pH			X	7.44	X	7.43	SU	0.134	(0%-5%)	RXB5	06/30/16 18:25
QC1203577772	LCS										
pH	7.00				7.00	SU		100	(80%-120%)		06/30/16 18:14
Batch	1578692										
QC1203577779	400390001	DUP									
Alkalinity, Total as CaCO3				124000	123000	ug/L	0.409	(0%-20%)	RXB5	06/30/16	18:09

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400407

Page 3 of 3

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1578692										
Bicarbonate alkalinity (CaCO3)		124000		123000	ug/L	0.409		(0%-20%)			
Carbonate alkalinity (CaCO3)	U	725	U	725	ug/L	N/A			RXB5	06/30/16	18:09
Hydroxide alkalinity as CaCO3	U	725	U	725	ug/L	N/A					
QC1203577782 LCS											
Alkalinity, Total as CaCO3	50000			45200	ug/L		90.4	(80%-120%)		06/30/16	18:41
QC1203577781 MB											
Alkalinity, Total as CaCO3			U	725	ug/L					06/30/16	18:39
Bicarbonate alkalinity (CaCO3)			U	725	ug/L						
Carbonate alkalinity (CaCO3)			U	725	ug/L						
Hydroxide alkalinity as CaCO3			U	725	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.