

MARCH 1, 2017

REV 0



a member of **The GEL Group** INC



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February 28, 2017

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

Re: CHPRC SAF W17-002
Work Order: 417161
SDG: GEL417161

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 23, 2017. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,


Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 300071 - 7H
Chain of Custody: W17-002-150, W17-002-152, W17-002-153 and W17-002-154
Enclosures

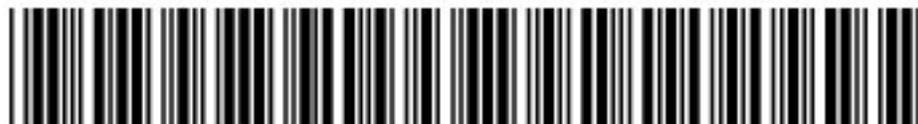


Table of Contents

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	6
Data Review Qualifier Definitions.....	12
Laboratory Certifications.....	14
General Chem Analysis.....	16
Case Narrative.....	17
Sample Data Summary.....	23
Quality Control Summary.....	28

Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF W17-002
SDG: GEL417161**

February 28, 2017

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on February 23, 2017, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative.

Sample Identification

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
417161001	B394J9
417161002	B394K1
417161003	B394K2
417161004	B394K3

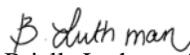
Case Narrative

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.

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.


Brielle Luthman for
Heather Shaffer
Project Manager

**General Chemistry
 Technical Case Narrative
 CH2MHill Plateau Remediation Company (CPRC)
 SDG #: GEL417161
 Work Order #: 417161**

Cyanide, Total

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 sample 417161004 (B394K3) was diluted because target analyte concentrations exceeded the calibration range.

Analyte	417161
	004
Cyanide, Total	2X

Cyanide, Amenable to Chlorination

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

Negative Bias

The Chlorinated Cyanide result for the following sample exceed the Total Cyanide result by more than three times the PQL, causing significantly negative bias in the Amenable Cyanide result. 417161004 (B394K3).

Cyanide, Free

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

Total CN levels above the MDL for Free CN were detected in samples . Free CN was performed per SOP (GL-GC-E-073).

Cyanide, Free

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

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2M Hill Plateau Remediation Company		C.O.C. # W17-002-150	
417161		Page 1 of 1	
Collector Roger Friess Jr. /CHPRC	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650	
SAF No. W17-002	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071	
Project Title RCRA, FEBRUARY 2017	Logbook No. HNF-N-506 8812	Ice Chest No. 6w5643 605	
Shipped To (Lab) GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 778492119352	
Protocol RCRA	Priority: 7 Days	Offsite Property No. 7560	
POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1		SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Sample No. B394J9	Filter N	No/Type Container 1x500-mL aG	Sample Analysis 9012_CYANIDE: COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON
Date 2/21/17	Time 1450	Holding Time 14 Days	Preservative NaOH to pH >=12/Cool <=6C

Relinquished By Roger Friess Jr. CHPRC	Print 	Sign	Received By SSU-1	Print 	Sign	Date/Time FEB 21 2017 1525	Matrix *
Relinquished By SSU-1	Print 	Sign	Received By Lacey Wall CHPRC	Print 	Sign	Date/Time FEB 22 2017 0800	S = Soil SE = Sediment SO = Solid SL = Sludge SW = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By SSU-1	Print 	Sign	Received By Ashley foodman CHPRC	Print 	Sign	Date/Time FEB 22 2017 1400	
Relinquished By SSU-1	Print 	Sign	Received By	Print 	Sign	Date/Time FEB 22 2017 1400	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process)							Date/Time 2/23/17 0910

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. # W17-002-152
Collector Dave Floyd CHPRC		Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650	Page 1 of 1
SAF No. W17-002	Sampling Origin Hanford Site	Logbook No. HNF-N-506 92145	Purchase Order/Charge Code 300071	
Project Title RCRA, FEBRUARY 2017	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 7178492119352	Ice Chest No. 6WS-605	
Shipped To (Lab) GEL Laboratories, LLC	Priority: 7 Days	Offsite Property No. 7560		
Protocol RCRA	PRIORITY			
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS		
** ** 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		Hold Time		
N/A		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B394K1	N	FEB 22 2017	1133	1x500-mL aG	9012_CYANIDE: COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON	14 Days	NaOH to pH >=12/Cool <=6C

Relinquished By Dave Floyd CHPRC	Print <i>[Signature]</i>	Sign	Date/Time FEB 22 2017 1240	Received By Lesly Ward CHPRC	Print <i>[Signature]</i>	Sign	Date/Time FEB 22 2017 1240	Matrix * S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By Lesly Ward CHPRC	Print <i>[Signature]</i>	Sign	Date/Time FEB 22 2017 1400	Received By FEDEX	Print FEDEX	Sign	Date/Time	
Relinquished By	Print <i>[Signature]</i>	Sign	Date/Time	Received By Ashley Rudman Angstrom	Print <i>[Signature]</i>	Sign	Date/Time 2/23/17 0910	
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
PRINTED ON 2/21/2017			

FSR ID = FSR40645

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # W17-002-153
Collector Dave Floyd CHPRC		Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650	Page 1 of 1		
SAF No. W17-002	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071	Ice Chest No. 605-605			
Project Title RCRA, FEBRUARY 2017	Logbook No. HNF-N-506 22/45	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 7784 92119352			
Shipped To (Lab) GEL Laboratories, LLC	Priority: 7 Days	Special Instructions N/A	Offsite Property No. 7560	Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Protocol RCRA	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	Sample Analysis 9012_CYANIDE: COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON	Holding Time 14 Days	Preservative NaOH to pH >=12/Cool <=6C		
Sample No. B394K2	Filter N	No/Type Container 1x500-mL aG	Date FEB 22 2017	Time 1001		

Relinquished By CHPRC	Print <i>[Signature]</i>	Sign	Date/Time FEB 22 2017 1115	Received By Lesly Wald CHPRC	Print <i>[Signature]</i>	Sign	Date/Time FEB 22 2017	Matrix *
Relinquished By CHPRC	Print <i>[Signature]</i>	Sign	Date/Time FEB 22 2017 1400	Received By Lesly Wald CHPRC	Print <i>[Signature]</i>	Sign	Date/Time FEB 22 2017	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By CHPRC	Print <i>[Signature]</i>	Sign	Date/Time FEB 22 2017	Received By Ashley Goodman CHPRC	Print <i>[Signature]</i>	Sign	Date/Time 2/23/17 0910	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By CHPRC	Print <i>[Signature]</i>	Sign	Date/Time FEB 22 2017	Received By Ashley Goodman CHPRC	Print <i>[Signature]</i>	Sign	Date/Time 2/23/17 0910	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By		Date/Time	

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **W17-002-154** Page 1 of 1

417161

Collector: Dave Floyd CHPRC
 Contact/Requester: Karen Waters-Husted
 Telephone No. 509-376-4650

SAF No. W17-002
 Purchase Order/Charge Code 300071

Project Title: RCRA, FEBRUARY 2017
 Sampling Origin: Hanford Site

Shipped To (Lab): GEL Laboratories, LLC
 Logbook No. HNF-N-50692145
 Ice Chest No. 605-605

Protocol: RCRA
 Method of Shipment: Commercial Carrier
 Bill of Lading/Air Bill No. 778492119352

Priority: 7 Days
 OFFSITE PROPERTY No. 7560

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

SPECIAL INSTRUCTIONS
 Hold Time: N/A
 Total Activity Exemption: Yes No

Sample No.	Filter *	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B394K3	N	FEB 22 2017	0816	1x500-mL aG	9012_CYANIDE: COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON	14 Days	NaOH to pH >=12/Cool <=6C

Relinquished By Dave Floyd CHPRC	Print [Signature]	Sign	Date/Time FEB 22 2017 1115	Received By Lesly Wald CHPRC	Print [Signature]	Sign	Date/Time FEB 22 2017 1115	Matrix *
Relinquished By Lesly Wald CHPRC	Print [Signature]	Sign	Date/Time FEB 22 2017 1400	Received By FEDEX	Print [Signature]	Sign	Date/Time FEB 22 2017 1115	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By [Signature]	Print [Signature]	Sign	Date/Time FEB 22 2017 1400	Received By Ashley Goodman CHPRC	Print [Signature]	Sign	Date/Time FEB 22 2017 0910	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By [Signature]	Print [Signature]	Sign	Date/Time FEB 22 2017 1400	Received By [Signature]	Print [Signature]	Sign	Date/Time FEB 22 2017 0910	

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: [Signature]

Date/Time: [Signature]

PRINTED ON 2/21/2017

FSR ID = FSR40795

A-6004-842 (REV 2)



SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>417161</u>
Received By: <u>AG</u>		Date Received: <u>02/23/17</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input 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 checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0cpm</u>
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<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?	<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<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"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>1°C</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>IR2-17</u>
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" 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"/>			Sample ID's and containers affected:
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>			(If unknown, select No)
8 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
9 Are Encore containers present?	<input checked="" type="checkbox"/>			(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
11 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
14 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>			
15 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Circle Applicable:

FedEx Air FedEx Ground UPS Field Services Courier Other

16 Carrier and tracking number.

7784 9211 9352

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DS Date 2/23/17 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 $\geq 2X$ 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 28 February 2017

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	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	T104704235-17-12
Utah NELAP	SC000122016-21
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL417161
Work Order #: 417161**

Product: Cyanide, Free

Analytical Method: 9014_CYANIDE

Analytical Procedure: GL-GC-E-073 REV# 6

Analytical Batches: 1642786 and 1642991

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
417161001	B394J9
417161002	B394K1
417161003	B394K2
417161004	B394K3
1203736338	Method Blank (MB)
1203736339	Laboratory Control Sample (LCS)
1203736340	417161003(B394K2) 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.

Miscellaneous Information

Additional Comments

Total CN levels above the MDL for Free CN were detected in samples . Free CN was performed per SOP (GL-GC-E-073).

Product: Cyanide, Amenable to Chlorination

Analytical Method: 9012_CYANIDE

Analytical Procedure: GL-GC-E-107 REV# 10

Analytical Batches: 1642785, 1642784 and 1642783

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
417161001	B394J9
417161002	B394K1
417161003	B394K2
417161004	B394K3

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

Negative Bias

The Chlorinated Cyanide result for the following sample exceed the Total Cyanide result by more than three times the PQL, causing significantly negative bias in the Amenable Cyanide result. 417161004 (B394K3).

Product: Cyanide, Total**Analytical Method:** 9012_CYANIDE**Analytical Procedure:** GL-GC-E-095 REV# 18**Analytical Batches:** 1642782 and 1642781

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
417161001	B394J9
417161002	B394K1
417161003	B394K2
417161004	B394K3
1203736325	Method Blank (MB)
1203736326	Laboratory Control Sample (LCS)
1203736327	417161001(B394J9) Sample Duplicate (DUP)
1203736331	417161001(B394J9) 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 Dilutions**

The following sample 417161004 (B394K3) was diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	417161
	004
Cyanide, Total	2X

Product: Cyanide, Chlorinated

Analytical Method: 9012_CYANIDE

Analytical Procedure: GL-GC-E-095 REV# 18

Analytical Batches: 1642784 and 1642783

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
417161001	B394J9
417161002	B394K1
417161003	B394K2
417161004	B394K3
1203736335	Method Blank (MB)
1203736336	Laboratory Control Sample (LCS)
1203736337	417161001(B394J9) 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

Sample Dilutions

The following sample 417161004 (B394K3) was diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

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: GEL417161 GEL Work Order: 417161

The Qualifiers in this report are defined as follows:

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

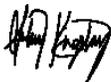
D Results are reported from a diluted aliquot of sample.

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

Review/Validation

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

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

Signature:**Name: Aubrey Kingsbury****Date: 28 FEB 2017****Title: Analyst I**

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 28, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W17-002

Client Sample ID: B394J9 Project: CPRCOW17002
 Sample ID: 417161001 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 21-FEB-17 14:50
 Receive Date: 23-FEB-17
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	U	1.67	1.67	5.00	ug/L	1.00	1	AXH3	02/27/17	1335	1642782	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/27/17	1353	1642991	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/27/17	1448	1642785	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/27/17	1100	1642781
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/27/17	1100	1642783

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: February 28, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W17-002

Client Sample ID: B394K1 Project: CPRCOW17002
 Sample ID: 417161002 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 22-FEB-17 11:33
 Receive Date: 23-FEB-17
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	1.69	1.67	5.00	ug/L	1.00	1	AXH3	02/27/17	1338	1642782	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/27/17	1353	1642991	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	1.69	1.67	5.00	ug/L		1	AXH3	02/27/17	1448	1642785	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/27/17	1100	1642781
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/27/17	1100	1642783

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

Notes:

Column headers are defined as follows:

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

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Certificate of Analysis

Report Date: February 28, 2017

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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W17-002

Client Sample ID: B394K2 Project: CPRCOW17002
 Sample ID: 417161003 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 22-FEB-17 10:01
 Receive Date: 23-FEB-17
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		123	1.67	5.00	ug/L	1.00	1	AXH3	02/27/17	1344	1642782	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	B	5.46	3.00	10.0	ug/L		1	AXH3	02/28/17	1215	1642786	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	3.00	1.67	5.00	ug/L		1	AXH3	02/27/17	1448	1642785	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/27/17	1100	1642781
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/27/17	1100	1642783

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: February 28, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W17-002

Client Sample ID: B394K3 Project: CPRCOW17002
 Sample ID: 417161004 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 22-FEB-17 08:16
 Receive Date: 23-FEB-17
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	D	298	3.34	10.0	ug/L	1.00	2	AXH3	02/27/17	1405	1642782	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	B	6.07	3.00	10.0	ug/L		1	AXH3	02/28/17	1215	1642786	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination		10.0	3.34	10.0	ug/L		1	AXH3	02/27/17	1448	1642785	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/27/17	1100	1642781
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/27/17	1100	1642783

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

Notes:

Column headers are defined as follows:

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

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: February 28, 2017

Page 1 of 2

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 417161

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1642782										
QC1203736327	417161001	DUP									
Cyanide, Total		U	1.67	U	1.67	ug/L	N/A		AXH3	02/27/17	13:36
QC1203736326	LCS										
Cyanide, Total	50.0				50.4	ug/L	101	(80%-120%)		02/27/17	13:30
QC1203736325	MB										
Cyanide, Total			U		1.67	ug/L				02/27/17	13:29
QC1203736331	417161001	MS									
Cyanide, Total	100	U	1.67		101	ug/L	101	(75%-125%)		02/27/17	13:37
Batch	1642786										
QC1203736340	417161003	DUP									
Free Cyanide		B	5.46	B	4.43	ug/L	20.7 ^	(+/-10.0)	AXH3	02/28/17	12:15
QC1203736339	LCS										
Free Cyanide	100				100	ug/L	100	(80%-120%)		02/28/17	12:15
QC1203736338	MB										
Free Cyanide			U		3.00	ug/L				02/28/17	12:15

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.

GEL LABORATORIES LLC

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QC Summary

Workorder: 417161

Page 2 of 2

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