

June 27, 2017



PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

June 27, 2017

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

Re: CHPRC SAF F16-045
Work Order: 425282
SDG: GEL425282

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 13, 2017. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

B Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 304235 - 7C
Chain of Custody: F16-045-610, F16-045-611 and F16-045-612
Enclosures



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June 27, 2017

Case Narrative

June 27, 2017

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-045
SDG: GEL425282

June 27, 2017

Laboratory Identification:

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

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on June 13, 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>
425282001	B3B236
425282002	B3B237
425282003	B3B334

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.

June 27, 2017

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: GC/MS Volatile, General Chemistry, Metals and Radiochemistry.

We certify that this package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.


Brielle Luthman for
Heather Shaffer
Project Manager

June 27, 2017

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL425282
Work Order #: 425282

GC/MS Volatile

Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

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.

Metals

Determination of Metals by ICP

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

Calibration Information

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 425282002 (B3B237).

Determination of Metals by ICP-MS

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

General Chemistry

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, 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 samples 1203810626 (B3B237DUP), 1203810628 (B3B237MS), 425282002 (B3B237) and 425282003 (B3B334) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	425282	
	002	003
Cyanide, Total	5X	5X

Sample Re-analysis

Sample 1203810624 (LCS) was re-analyzed to verify the result.

Cyanide, Amenable to Chlorination

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.

Radiochemistry

I129LL_SEP_LEPS_GS: COMMON (low level)

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.

TRITIUM_DIST_LSC: COMMON

June 27, 2017

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.

TC99_EIE_LSC: COMMON

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.

C14_LSC: COMMON

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

June 27, 2017

CH2M Hill Plateau Remediation Company

COLLECTOR
Kevin Patterson
CHPRC

SAMPLING LOCATION
289-TA, 299-E33-268, Valve-V09-YE27
V14
148C 6/14/17

ICE CHEST NO.
605-558

COMPANY CONTACT
SUMNER, LC
376-3922

PROJECT COORDINATOR
SUMNER, LC

PROJECT DESIGNATION
200W Pump & Treat - Extraction Well Water Sampling

FIELD LOGBOOK NO.
HNF-N-491-16

ACTUAL SAMPLE DEPTH
N/A

OFFSITE PROPERTY NO.
8027

SAF NO.
F16-045

PRICE CODE
7C

AIR QUALITY

METHOD OF SHIPMENT
FEDERAL EXPRESS

BILL OF LADING/AIR BILL NO.
7793 6543 5232

PAGE 1 OF 2

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE DATE	MATRIX*	SAMPLE TIME
A=Air DL=Drum L=Liquid S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*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.	HCl or H2SO4 to pH <2 14 Days	6 Months	gGs*	4	40mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	JUN 09 2017	WATER	1335
		HNO3 to pH <2 6 Months			1	500mL	SEE ITEM (2) IN SPECIAL INSTRUCTIONS			
		H2O2 to pH >=12/Cool <=6C 14 Days			1	500mL	SEE ITEM (3) IN SPECIAL INSTRUCTIONS			

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM
Kevin Patterson
CHPRC
DATE/TIME: JUN 09 2017 1440

RECEIVED BY/STORED IN
SSU-1
DATE/TIME: JUN 09 2017 1440

RELINQUISHED BY/REMOVED FROM
Janelle Zunker
CHPRC
DATE/TIME: JUN 12 2017 0800

RECEIVED BY/STORED IN
Janelle Zunker
CHPRC
DATE/TIME: JUN 12 2017 0800

RELINQUISHED BY/REMOVED FROM
Janelle Zunker
CHPRC
DATE/TIME: JUN 12 2017 1400

RECEIVED BY/STORED IN
FEDEX
DATE/TIME: JUN 12 2017 1400

RELINQUISHED BY/REMOVED FROM
DATE/TIME: FEB 6'

RECEIVED BY/STORED IN
LZ R STAC 1 BOON C
DATE/TIME: 6/19/17 9:10

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

FINAL SAMPLE DISPOSITION
DISPOSAL METHOD

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

TRVL NUM = TRVL-17-129

FRS ID = FSR45118

PRINTED ON 5/11/2017

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company COLLECTOR: Kevin Patterson CHPRC		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-045-611	PAGE 2 OF 2
COMPANY CONTACT: SUMNER, LC		TELEPHONE NO.: 376-3922		PROJECT COORDINATOR: SUMNER, LC	
PROJECT DESIGNATION: 200W Pump & Treat - Extraction Well Water Sampling		SAF NO.: F16-045		PRICE CODE: 7C	
FIELD LOGBOOK NO.: HNF-N-491-16		ACTUAL SAMPLE DEPTH: N/A		AIR QUALITY: <input type="checkbox"/>	
OFFSITE PROPERTY NO.: 8027		COA: 304235		METHOD OF SHIPMENT: FEDERAL EXPRESS	
SHIPPED TO: GEL Laboratories, LLC		BILL OF LADING/AIR BILL NO.: 7793		DATA TURNAROUND: 15 Days / 15 Days	
SPECIAL INSTRUCTIONS TRVL-17-129 (1) 8260_VOA_GCMS: COMMON {Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {cis-1,2-Dichloroethylene}; (2) 6020_METALS_ICPMS: COMMON {Aluminum, Cadmium, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Arsenic, Manganese, Nickel, Uranium, Zinc}; 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron}; (3) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;					

June 27, 2017

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CH2M Hill Plateau Remediation Company **58105** F16-045-612 PAGE 1 OF 1

COLLECTOR attention: CHPRC PROJECT COORDINATOR SUMNER, LC

COMPANY CONTACT SUMNER, LC TELEPHONE NO. 376-3922

PROJECT DESIGNATION 200W Pump & Treat - Extraction Well Water Sampling

SAF NO. F16-045

PRICE CODE 7C DATA TURNAROUND 15 Days / 15 Days

AIR QUALITY METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL

ICE CHEST NO. **606-558** COA 304235

FIELD LOGBOOK NO. **HNF-N-491-16** ACTUAL SAMPLE DEPTH N/A

OFFSITE PROPERTY NO. **8007** BILL OF LADING/AIR BILL NO. **7793 60543 5232**

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B3B334	WATER	NaOH to pH >=12/Cool <=6C 14 Days		ag	1	500mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS			JUN 09 2007	1335

425282

FILTER

CHAIN OF POSSESSION

SIGN/ PRINT NAMES RECEIVED BY/STORED IN DATE/TIME

RELINQUISHED BY/REMOVED FROM CHPRC JUN 09 2007 1441

RELINQUISHED BY/REMOVED FROM SSU-1 Janelle Zunker CHPRC JUN 12 2007 0800

RELINQUISHED BY/REMOVED FROM SSU-1 Janelle Zunker CHPRC JUN 12 2007 1400

RELINQUISHED BY/REMOVED FROM FEDEX JUN 12 2007 0800

RELINQUISHED BY/REMOVED FROM *Stacy Boone* JUN 13 2007 9:10

RELINQUISHED BY/REMOVED FROM RECEIVED BY/STORED IN DATE/TIME

LABORATORY SECTION RECEIVED BY TITLE DATE/TIME

FINAL SAMPLE DISPOSITION DISPOSAL METHOD DATE/TIME

PRINTED ON 5/11/2017 FSR ID = FSR45118 TRVL NUM = TRVL-17-129 A-6003-618 (REV 2)

FILTER

13073

June 27, 2017



SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>425282</u>			
Received By: <u>Stacy Bourn</u>		Date Received: <u>6-13-17</u>			
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>7793 6543 5232 -1c</u> <u>7793 7884 5278 -1c</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.			
Shipped as a DOT Hazardous?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____			
COC/Samples marked or classified as radioactive?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3			
Is package, COC, and/or Samples marked HAZ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. <input checked="" type="checkbox"/> PCB's <input type="checkbox"/> Flammable <input type="checkbox"/> Foreign Soil <input type="checkbox"/> RCRA <input type="checkbox"/> Asbestos <input type="checkbox"/> Beryllium <input type="checkbox"/> Other:			
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	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Wet Ice</u> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: _____
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: <u>IR3-17</u> Secondary Temperature Device Serial # (If Applicable): _____
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7	Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>			If Yes, Are Encores or Soil Kits present? Yes ___ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No ___ N/A (If unknown, select No) VOA vials free of headspace? Yes <input checked="" type="checkbox"/> No ___ N/A Sample ID's and containers affected:
8	Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
Comments (Use Continuation Form if needed):					

PM (or PMA) review: Initials BL Date 6.14.17 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	

June 27, 2017

Laboratory Certifications

List of current GEL Certifications as of 27 June 2017

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122017-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-22
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Volatile Analysis

June 27, 2017

Case Narrative

June 27, 2017

GC/MS Volatile

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL425282

Work Order #: 425282

Product: Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

Analytical Method: SW846 8260C

Analytical Procedure: GL-OA-E-038 REV# 26

Analytical Batch: 1676331

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425282002	B3B237
1203816750	Method Blank (MB)
1203816751	Laboratory Control Sample (LCS)
1203816752	425232001(NonSDG) Post Spike (PS)
1203816753	425232001(NonSDG) Post Spike Duplicate (PSD)

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

Data Summary:

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

Certification Statement

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

June 27, 2017

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: GEL425282 GEL Work Order: 425282

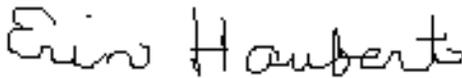
The Qualifiers in this report are defined as follows:

- E Concentration exceeds the calibration range of the instrument
- T Spike and/or spike duplicate 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.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

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.

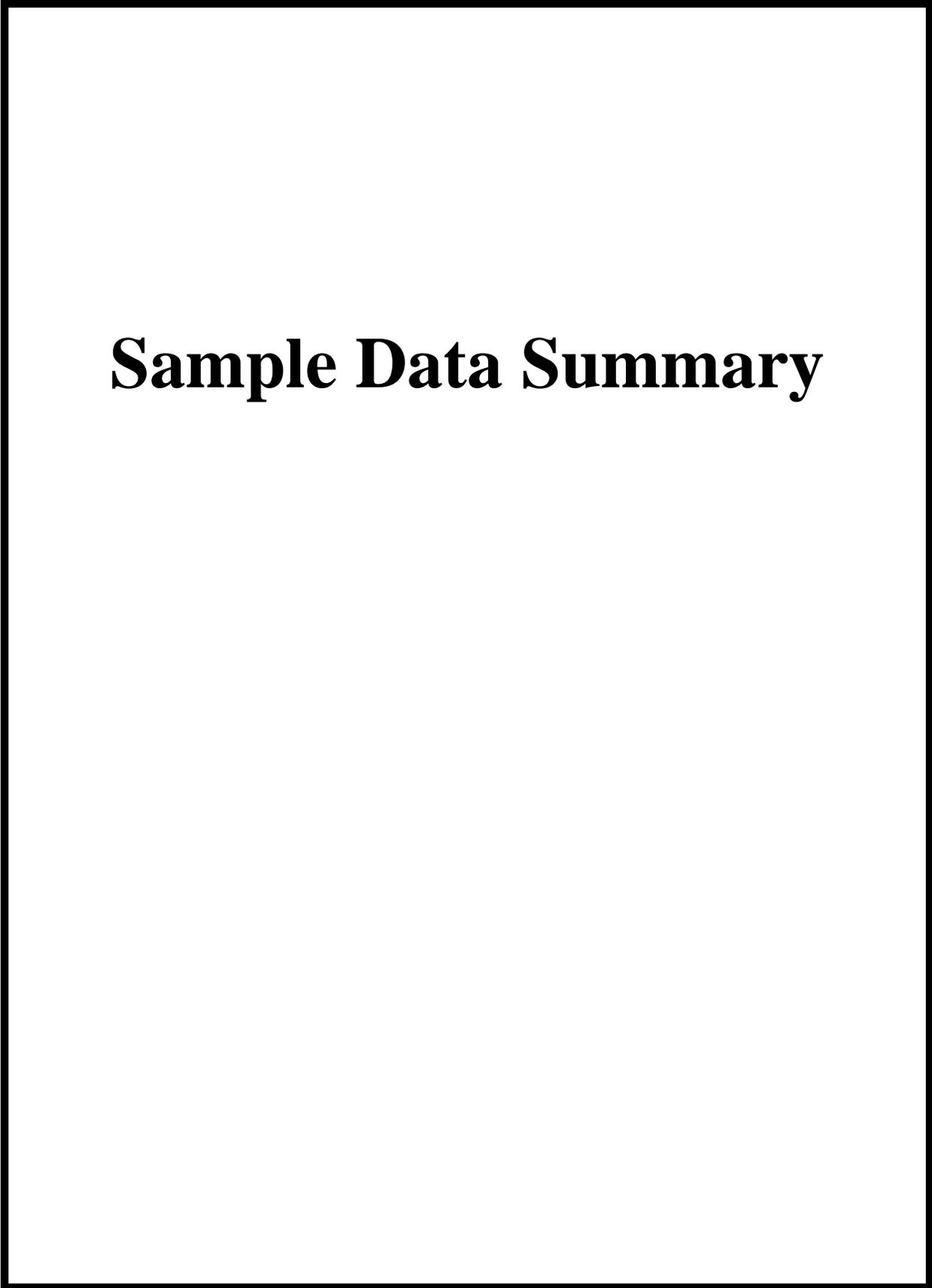
The following data validator verified the information presented in this data report:

Signature: 

Name: Erin Haubert

Date: 26 JUN 2017

Title: Data Validator



Sample Data Summary

June 27, 2017

Page 1 of 1

Volatile
Certificate of Analysis
Sample Summary

SDG Number: GEL425282	Date Collected: 06/09/2017 13:35	Matrix: WATER
Lab Sample ID: 425282002	Date Received: 06/13/2017 09:10	
Client ID: B3B237	Client: CPRC001	Project: CPRC0F16045
Batch ID: 1676331	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 06/22/2017 19:53	Inst: VOA3.I	Dilution: 1
Prep Date: 06/22/2017 19:53	Analyst: VXY1	Purge Vol: 5 mL
Data File: 062217V3\3I420.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	

June 27, 2017

Quality Control Summary

June 27, 2017

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 26, 2017

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

Contact: Mr. Scot Fitzgerald

Workorder: 425282

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1676331										
QC1203816751	LCS										
Carbon tetrachloride	50.0			46.0	ug/L		92	(70%-130%)	VXY1	06/22/17	11:09
Chloroform	50.0			44.0	ug/L		88	(70%-130%)			
Chloromethane	50.0			48.1	ug/L		96	(70%-130%)			
Methylene chloride	50.0			43.3	ug/L		87	(70%-130%)			
Trichloroethylene	50.0			46.5	ug/L		93	(70%-130%)			
Vinyl chloride	50.0			50.6	ug/L		101	(70%-130%)			
cis-1,2-Dichloroethylene	50.0			44.7	ug/L		89	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			47.8	ug/L		96	(70%-130%)			
**Bromofluorobenzene	50.0			49.8	ug/L		100	(70%-130%)			
**Toluene-d8	50.0			48.6	ug/L		97	(70%-130%)			
QC1203816750	MB										
Carbon tetrachloride			U	0.300	ug/L					06/22/17	12:41
Chloroform			U	0.300	ug/L						
Chloromethane			U	0.300	ug/L						

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QC Summary

Workorder: 425282

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1676331										
Methylene chloride			U	1.60	ug/L				VXY1	06/22/17	12:41
Trichloroethylene			U	0.300	ug/L						
Vinyl chloride			U	0.300	ug/L						
cis-1,2-Dichloroethylene			U	0.300	ug/L						
**1,2-Dichloroethane-d4	50.0			51.8	ug/L		104	(70%-130%)			
**Bromofluorobenzene	50.0			47.8	ug/L		96	(70%-130%)			
**Toluene-d8	50.0			51.3	ug/L		103	(70%-130%)			
QC1203816752 425232001 PS											
Carbon tetrachloride	50.0	U	0.00	46.9	ug/L		94	(70%-130%)		06/22/17	20:23
Chloroform	50.0	U	0.00	46.5	ug/L		93	(70%-130%)			
Chloromethane	50.0	U	0.00	53.7	ug/L		107	(70%-130%)			
Methylene chloride	50.0	J	3.08	50.0	ug/L		94	(70%-130%)			
Trichloroethylene	50.0	U	0.00	48.5	ug/L		97	(70%-130%)			
Vinyl chloride	50.0	U	0.00	58.3	ug/L		117	(70%-130%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	51.4	ug/L		103	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		48.3	45.5	ug/L		91	(70%-130%)			

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QC Summary

Workorder: 425282

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1676331										
**Bromofluorobenzene	50.0	43.0		45.4	ug/L		91	(70%-130%)	VXY1	06/22/17	20:23
**Toluene-d8	50.0	50.1		48.8	ug/L		98	(70%-130%)			
QC1203816753 425232001 PSD											
Carbon tetrachloride	50.0	U	0.00	48.8	ug/L	4	98	(0%-20%)		06/22/17	20:54
Chloroform	50.0	U	0.00	47.5	ug/L	2	95	(0%-20%)			
Chloromethane	50.0	U	0.00	54.0	ug/L	1	108	(0%-20%)			
Methylene chloride	50.0	J	3.08	49.8	ug/L	1	93	(0%-20%)			
Trichloroethylene	50.0	U	0.00	51.2	ug/L	5	102	(0%-20%)			
Vinyl chloride	50.0	U	0.00	56.8	ug/L	3	114	(0%-20%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	52.2	ug/L	2	104	(0%-20%)			
**1,2-Dichloroethane-d4	50.0	48.3		47.3	ug/L		95	(70%-130%)			
**Bromofluorobenzene	50.0	43.0		47.8	ug/L		96	(70%-130%)			
**Toluene-d8	50.0	50.1		47.6	ug/L		95	(70%-130%)			

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
E	Concentration exceeds the calibration range of the instrument										
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										
N	Spike Sample recovery is outside control limits.										
P	Aroclor target analyte with greater than 25% difference between column analyses.										
T	Spike and/or spike duplicate 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										
o	Analyte failed to recover within LCS limits (Organics only)										

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.

June 27, 2017
 Volatile
 Surrogate Recovery Report

SDG Number: GEL425282

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203816751	LCS for batch 1676331	96	97	100
1203816750	MB for batch 1676331	104	103	96
425282002	B3B237	99	104	81
1203816752	B3B940PS	91	98	91
1203816753	B3B940PSD	95	95	96

Surrogate

DCED4 = 1,2-Dichloroethane-d4

TOL = Toluene-d8

BFB = Bromofluorobenzene

Acceptance Limits

(70%-130%)

(70%-130%)

(70%-130%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Metals Analysis

Case Narrative

June 27, 2017

Metals

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL425282

Work Order #: 425282

Product: Determination of Metals by ICP-MS

Analytical Method: SW846 3005A/6020B

Analytical Procedure: GL-MA-E-014 REV# 29

Analytical Batch: 1673773

Product: Determination of Metals by ICP

Analytical Method: SW846 3005A/6010D

Analytical Procedure: GL-MA-E-013 REV# 28

Analytical Batch: 1673788

Preparation Method: SW846 3005A

Preparation Procedure: GL-MA-E-006 REV# 13

Preparation Batches: 1673772 and 1673787

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425282002	B3B237
1203810853	Method Blank (MB)ICP
1203810854	Laboratory Control Sample (LCS)
1203810857	425282002(B3B237L) Serial Dilution (SD)
1203810855	425282002(B3B237S) Matrix Spike (MS)
1203810856	425282002(B3B237SD) Matrix Spike Duplicate (MSD)
1203810816	Method Blank (MB)ICP-MS
1203810817	Laboratory Control Sample (LCS)
1203810820	425280003(NonSDGL) Serial Dilution (SD)
1203810818	425280003(NonSDGS) Matrix Spike (MS)
1203810819	425280003(NonSDGSD) Matrix Spike Duplicate (MSD)

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

Data Summary:

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

Calibration Information

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 425282002 (B3B237)-ICP.

ICSA/ICSAB Statement

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities

June 27, 2017

indigenous to the purchased standard.

Certification Statement

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

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL425282 GEL Work Order: 425282

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

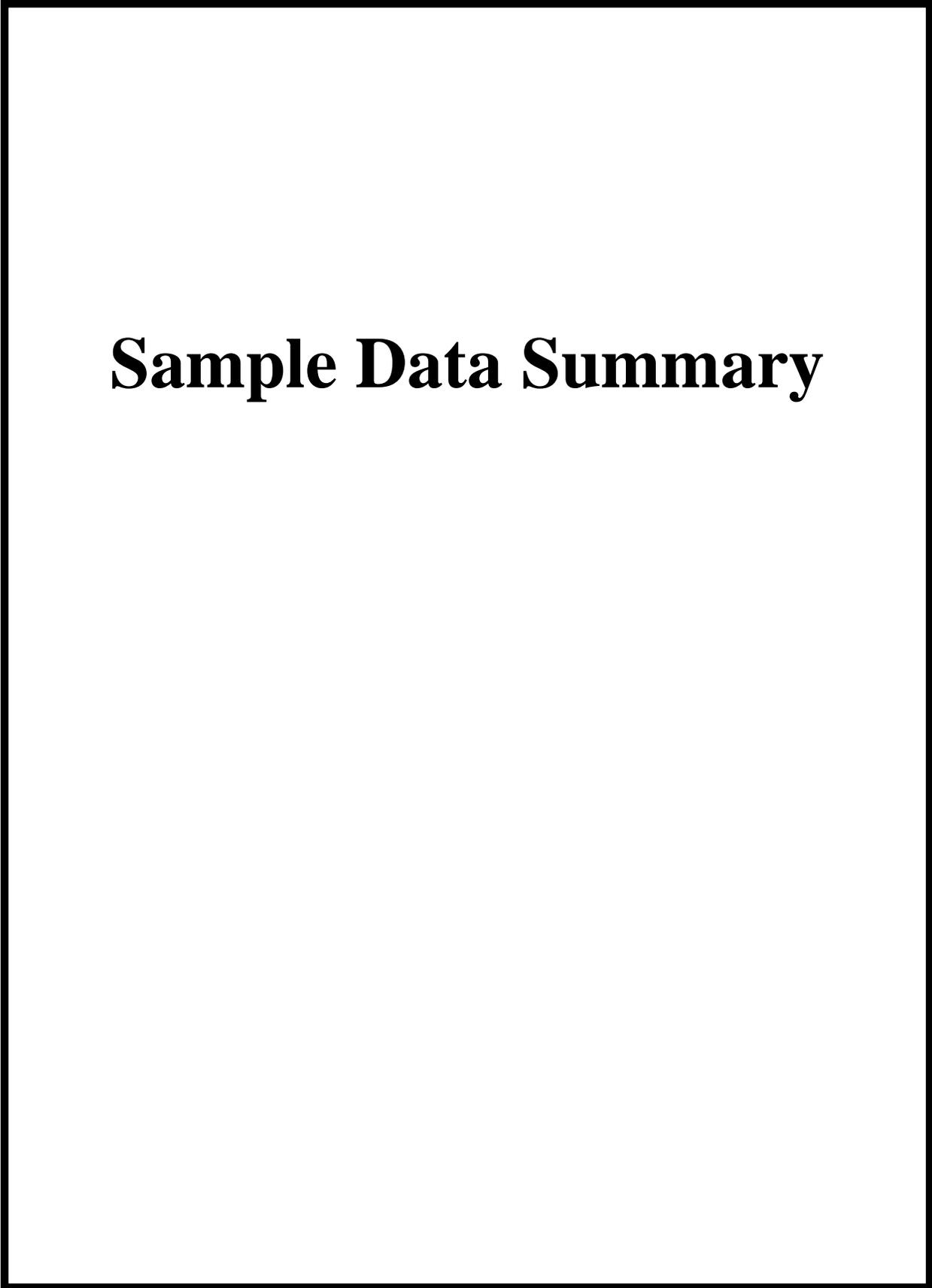
The following data validator verified the information presented in this data report:

Signature: 

Name: Nik-Cole Elmore

Date: 26 JUN 2017

Title: Data Validator



Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL425282

CONTRACT: CPRC0F16045

METHOD TYPE: SW846

SAMPLE ID: 425282002

BASIS: As Received

DATE COLLECTED 09-JUN-17

CLIENT ID: B3B237

LEVEL: Low

DATE RECEIVED 13-JUN-17

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	06/22/17 23:35	170622-2	1673773
7440-38-2	Arsenic	8.1	ug/L		2	5	5	1	MS	BAJ	06/22/17 23:35	170622-2	1673773
7440-42-8	Boron	44.2	ug/L	B	15	50	50	1	P	HSC	06/20/17 14:22	062017-1	1673788
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/22/17 23:35	170622-2	1673773
7440-70-2	Calcium	80200	ug/L		50	200	200	1	P	HSC	06/20/17 14:22	062017-1	1673788
7440-47-3	Chromium	5.21	ug/L	B	3	10	10	1	MS	BAJ	06/22/17 23:35	170622-2	1673773
7440-48-4	Cobalt	0.404	ug/L	B	0.3	1	1	1	MS	BAJ	06/22/17 23:35	170622-2	1673773
7440-50-8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/23/17 12:38	170623-10	1673773
7439-89-6	Iron	115	ug/L		30	100	100	1	P	HSC	06/20/17 14:22	062017-1	1673788
7439-95-4	Magnesium	22500	ug/L		110	300	300	1	P	HSC	06/20/17 14:22	062017-1	1673788
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	06/23/17 12:38	170623-10	1673773
7439-98-7	Molybdenum	6.41	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/22/17 23:35	170622-2	1673773
7440-02-0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	06/22/17 23:35	170622-2	1673773
7440-09-7	Potassium	8910	ug/L		50	150	150	1	P	HSC	06/20/17 14:22	062017-1	1673788
7782-49-2	Selenium	8.19	ug/L		2	5	5	1	MS	BAJ	06/23/17 01:36	170622-3	1673773
7440-23-5	Sodium	86300	ug/L		100	300	300	1	P	HSC	06/20/17 14:22	062017-1	1673788
7440-61-1	Uranium	44.5	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/23/17 01:36	170622-3	1673773
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	06/22/17 23:35	170622-2	1673773

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1673773	1673772	SW846 3005A	50	mL	50	mL	06/15/17	SXW1
1673788	1673787	SW846 3005A	50	mL	50	mL	06/15/17	SXW1

***Analytical Methods:**

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

Quality Control Summary

June 27, 2017 GEL LABORATORIES LLC

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QC Summary

Report Date: June 26, 2017

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 425282

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1673773										
QC1203810817	LCS										
Aluminum	2000			2150	ug/L		107	(80%-120%)	BAJ	06/22/17	22:47
Arsenic	50.0			53.4	ug/L		107	(80%-120%)			
Cadmium	50.0			52.5	ug/L		105	(80%-120%)			
Chromium	50.0			53.5	ug/L		107	(80%-120%)			
Cobalt	50.0			52.6	ug/L		105	(80%-120%)			
Copper	50.0			47.1	ug/L		94.1	(80%-120%)		06/23/17	12:18
Manganese	50.0			46.3	ug/L		92.6	(80%-120%)			
Molybdenum	50.0			52.3	ug/L		105	(80%-120%)		06/22/17	22:47
Nickel	50.0			52.0	ug/L		104	(80%-120%)			
Selenium	50.0			54.1	ug/L		108	(80%-120%)		06/23/17	00:47
Uranium	50.0			50.1	ug/L		100	(80%-120%)			
Zinc	50.0			52.1	ug/L		104	(80%-120%)		06/22/17	22:47
QC1203810816	MB										
Aluminum			U	19.3	ug/L					06/22/17	22:43

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QC Summary

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Parname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1673773										
Arsenic			U	2.00	ug/L				BAJ	06/22/17	22:43
Cadmium			U	0.300	ug/L						
Chromium			U	3.00	ug/L						
Cobalt			U	0.300	ug/L						
Copper			U	0.300	ug/L					06/23/17	12:16
Manganese			U	1.00	ug/L						
Molybdenum			U	0.200	ug/L					06/22/17	22:43
Nickel			U	0.600	ug/L						
Selenium			U	2.00	ug/L					06/23/17	00:44
Uranium			U	0.067	ug/L						
Zinc			U	3.30	ug/L					06/22/17	22:43
QC1203810818 425280003 MS											
Aluminum	2000	B	37.3	2060	ug/L		101	(75%-125%)		06/22/17	22:53
Arsenic	50.0	B	3.87	56.6	ug/L		106	(75%-125%)			
Cadmium	50.0	U	0.300	50.6	ug/L		101	(75%-125%)			
Chromium	50.0		30.9	81.9	ug/L		102	(75%-125%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1673773										
Cobalt	50.0	U	0.300	49.7	ug/L		99.2	(75%-125%)	BAJ	06/22/17	22:53
Copper	50.0	U	0.300	46.5	ug/L		92.4	(75%-125%)		06/23/17	12:21
Manganese	50.0	B	1.36	46.6	ug/L		90.5	(75%-125%)			
Molybdenum	50.0		12.4	65.0	ug/L		105	(75%-125%)		06/22/17	22:53
Nickel	50.0		2.34	53.4	ug/L		102	(75%-125%)			
Selenium	50.0	B	3.67	56.3	ug/L		105	(75%-125%)		06/23/17	00:53
Uranium	50.0		1.30	50.7	ug/L		98.7	(75%-125%)			
Zinc	50.0	B	3.33	51.6	ug/L		96.4	(75%-125%)		06/22/17	22:53
QC1203810819 425280003 MSD											
Aluminum	2000	B	37.3	2130	ug/L	3.59	105	(0%-20%)		06/22/17	22:56
Arsenic	50.0	B	3.87	56.4	ug/L	0.338	105	(0%-20%)			
Cadmium	50.0	U	0.300	52.1	ug/L	2.86	104	(0%-20%)			
Chromium	50.0		30.9	86.5	ug/L	5.54	111	(0%-20%)			
Cobalt	50.0	U	0.300	53.9	ug/L	8.1	108	(0%-20%)			
Copper	50.0	U	0.300	45.2	ug/L	2.8	89.8	(0%-20%)		06/23/17	12:22
Manganese	50.0	B	1.36	47.2	ug/L	1.19	91.6	(0%-20%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1673773										
Molybdenum	50.0	12.4		66.8	ug/L	2.83	109	(0%-20%)	BAJ	06/22/17	22:56
Nickel	50.0	2.34		54.4	ug/L	1.82	104	(0%-20%)			
Selenium	50.0	B	3.67	55.3	ug/L	1.78	103	(0%-20%)		06/23/17	00:57
Uranium	50.0	1.30		51.6	ug/L	1.86	101	(0%-20%)			
Zinc	50.0	B	3.33	53.0	ug/L	2.75	99.3	(0%-20%)		06/22/17	22:56
QC1203810820 425280003 SDILT											
Aluminum		B	37.3	DU	96.5	ug/L	N/A	(0%-20%)		06/22/17	23:03
Arsenic		B	3.87	DU	10.0	ug/L	N/A	(0%-20%)			
Cadmium		U	0.028	DU	1.50	ug/L	N/A	(0%-20%)			
Chromium			30.9	BD	6.34	ug/L	2.44	(0%-20%)			
Cobalt		U	0.077	DU	1.50	ug/L	N/A	(0%-20%)			
Copper		U	0.269	DU	1.50	ug/L	N/A	(0%-20%)		06/23/17	12:24
Manganese		B	1.36	DU	5.00	ug/L	N/A	(0%-20%)			
Molybdenum			12.4	D	2.39	ug/L	4.18	(0%-20%)		06/22/17	23:03
Nickel			2.34	DU	3.00	ug/L	N/A	(0%-20%)			
Selenium		B	3.67	DU	10.0	ug/L	N/A	(0%-20%)		06/23/17	01:03

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1673773										
Uranium		1.30	D	0.264	ug/L	1.38		(0%-20%)	BAJ	06/23/17	01:03
Zinc	B	3.33	DU	16.5	ug/L	N/A		(0%-20%)		06/22/17	23:03
Metals Analysis-ICP											
Batch	1673788										
QC1203810854	LCS										
Boron	500			509	ug/L		102	(80%-120%)	HSC	06/20/17	14:19
Calcium	5000			5020	ug/L		100	(80%-120%)			
Iron	5000			5270	ug/L		105	(80%-120%)			
Magnesium	5000			5210	ug/L		104	(80%-120%)			
Potassium	5000			4770	ug/L		95.5	(80%-120%)			
Sodium	5000			5340	ug/L		107	(80%-120%)			
QC1203810853	MB										
Boron			U	15.0	ug/L					06/20/17	14:15
Calcium			U	50.0	ug/L						
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						
Potassium			U	50.0	ug/L						
Sodium			U	100	ug/L						

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch 1673788											
QC1203810855 425282002 MS											
Boron	500	B	44.2	570	ug/L		105	(75%-125%)	HSC	06/20/17	14:25
Calcium	5000		80200	84400	ug/L		N/A	(75%-125%)			
Iron	5000		115	5250	ug/L		103	(75%-125%)			
Magnesium	5000		22500	27700	ug/L		N/A	(75%-125%)			
Potassium	5000		8910	13800	ug/L		98.3	(75%-125%)			
Sodium	5000		86300	89400	ug/L		N/A	(75%-125%)			
QC1203810856 425282002 MSD											
Boron	500	B	44.2	574	ug/L	0.853	106	(0%-20%)		06/20/17	14:28
Calcium	5000		80200	84400	ug/L	0.0663	N/A	(0%-20%)			
Iron	5000		115	5370	ug/L	2.2	105	(0%-20%)			
Magnesium	5000		22500	27800	ug/L	0.299	N/A	(0%-20%)			
Potassium	5000		8910	13700	ug/L	0.53	96.8	(0%-20%)			
Sodium	5000		86300	92000	ug/L	2.87	N/A	(0%-20%)			
QC1203810857 425282002 SDILT											
Boron		B	44.2 DU	75.0	ug/L	N/A		(0%-20%)		06/20/17	14:31
Calcium			80200 D	16600	ug/L	3.53		(0%-20%)			
Iron			115 DU	150	ug/L	N/A		(0%-20%)			

June 27, 2017

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QC Summary

Workorder: 425282

Page 7 of 7

Table with columns: Parmname, NOM, Sample, Qual, QC, Units, RPD/D%, REC%, Range, Anlst, Date, Time. Rows include Metals Analysis-ICP, Magnesium, Potassium, and Sodium.

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
+ Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
D Results are reported from a diluted aliquot of sample.
E Reported value is estimated due to interferences. See comment in narrative.
M Duplicate precision not met.
N Spike Sample recovery is outside control limits.
S Reported value determined by the Method of Standard Additions (MSA)
U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
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.

June 27, 2017

General Chem Analysis

Case Narrative

June 27, 2017

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL425282
Work Order #: 425282

Product: Cyanide, Free

Analytical Method: 9014_CYANIDE

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

Analytical Batch: 1672865

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425282002	B3B237
425282003	B3B334
1203808592	Method Blank (MB)
1203808593	Laboratory Control Sample (LCS)
1203808594	425104004(B3B1P5) 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: 1673693, 1673692 and 1673691

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425282002	B3B237
425282003	B3B334

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: Cyanide, Total

Analytical Method: 9012_CYANIDE

Analytical Procedure: GL-GC-E-095 REV# 19

Analytical Batches: 1673690 and 1673689

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425282002	B3B237
425282003	B3B334
1203810623	Method Blank (MB)
1203810624	Laboratory Control Sample (LCS)
1203810626	425282002(B3B237) Sample Duplicate (DUP)
1203810628	425282002(B3B237) 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 samples 1203810626 (B3B237DUP), 1203810628 (B3B237MS), 425282002 (B3B237) and 425282003 (B3B334) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	425282	
	002	003
Cyanide, Total	5X	5X

Sample Re-analysis

Sample 1203810624 (LCS) was re-analyzed to verify the result.

Product: Cyanide, Chlorinated

Analytical Method: 9012_CYANIDE

Analytical Procedure: GL-GC-E-095 REV# 19

Analytical Batches: 1673692 and 1673691

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425282002	B3B237
425282003	B3B334
1203810629	Method Blank (MB)
1203810630	Laboratory Control Sample (LCS)
1203810631	425282002(B3B237) 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 samples 1203810631 (B3B237DUP), 425282002 (B3B237) and 425282003 (B3B334) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

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.

June 27, 2017

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL425282 GEL Work Order: 425282

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.

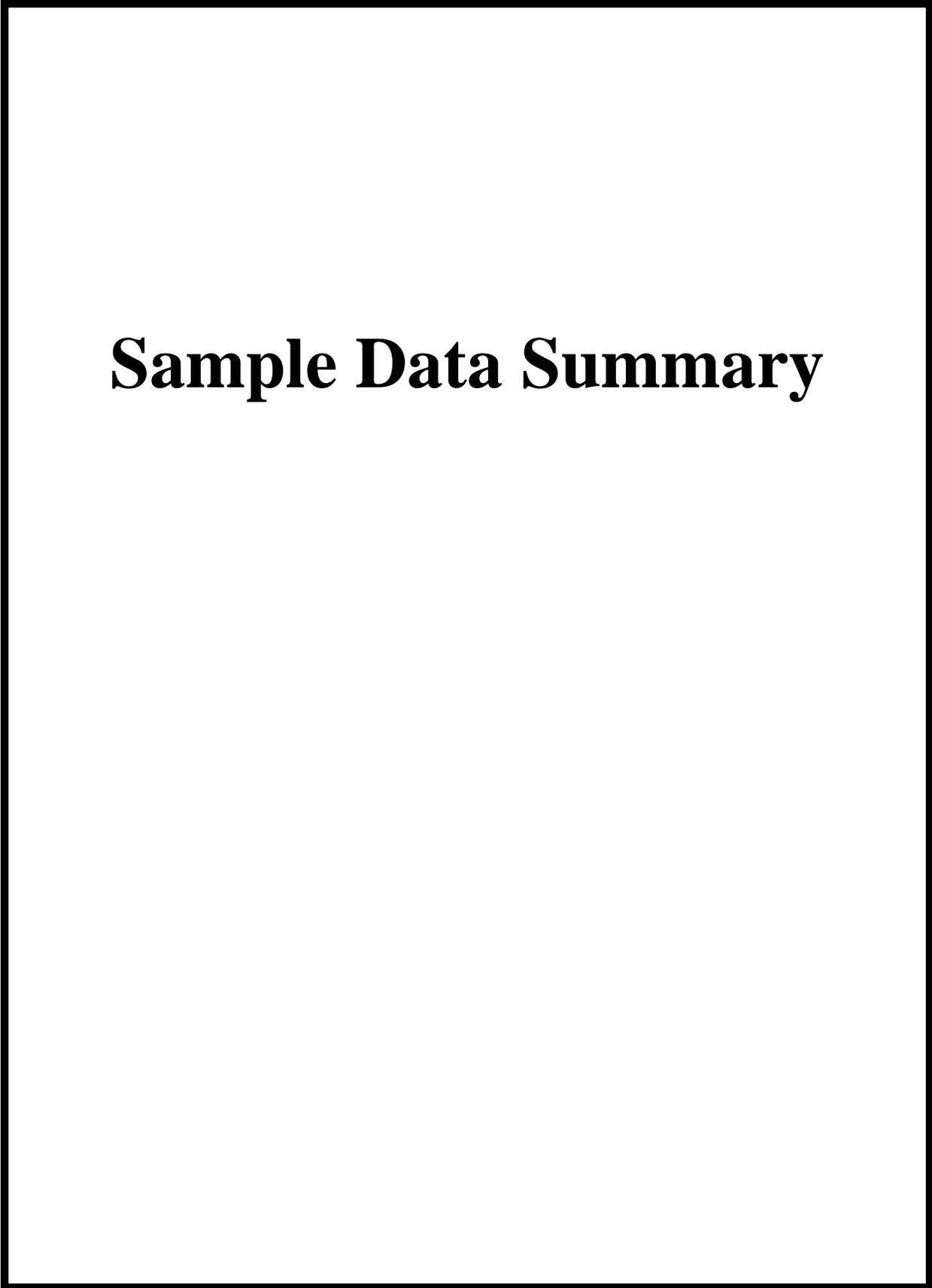
The following data validator verified the information presented in this data report:

Signature: 

Name: **Aubrey Kingsbury**

Date: **21 JUN 2017**

Title: **Analyst I**



Sample Data Summary

Certificate of Analysis

Report Date: June 21, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-045

Client Sample ID: B3B237	Project: CPRC0F16045
Sample ID: 425282002	Client ID: CPRC001
Matrix: WATER	
Collect Date: 09-JUN-17 13:35	
Receive Date: 13-JUN-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	297	8.35	25.0	ug/L	1.00	5	AXH3	06/15/17	1134	1673690	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	B	5.37	3.00	10.0	ug/L		1	AXH3	06/20/17	1309	1672865	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	11.5	8.35	25.0	ug/L		1	AXH3	06/15/17	1311	1673693	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	06/15/17	1041	1673689
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	06/15/17	1041	1673691

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

Certificate of Analysis

Report Date: June 21, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-045

Client Sample ID: B3B334	Project: CPRC0F16045
Sample ID: 425282003	Client ID: CPRC001
Matrix: WATER	
Collect Date: 09-JUN-17 13:35	
Receive Date: 13-JUN-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	306	8.35	25.0	ug/L	1.00	5	AXH3	06/15/17	1141	1673690	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	B	3.37	3.00	10.0	ug/L		1	AXH3	06/20/17	1309	1672865	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	8.35	8.35	25.0	ug/L		1	AXH3	06/15/17	1311	1673693	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	06/15/17	1041	1673689
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	06/15/17	1041	1673691

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

June 27, 2017

Quality Control Summary

June 27, 2017 GEL LABORATORIES LLC

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

QC Summary

Report Date: June 21, 2017

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 425282

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1672865										
QC1203808594	425104004	DUP									
Free Cyanide		U	3.00	U	3.00	ug/L	N/A		AXH3	06/20/17	13:10
QC1203808593	LCS										
Free Cyanide	100				99.8	ug/L	99.8	(80%-120%)		06/20/17	13:10
QC1203808592	MB										
Free Cyanide			U		3.00	ug/L				06/20/17	13:10
<hr/>											
Batch	1673690										
QC1203810626	425282002	DUP									
Cyanide, Total		D	297	D	294	ug/L	0.847	(0%-20%)	AXH3	06/15/17	11:35
QC1203810624	LCS										
Cyanide, Total	50.0				52.8	ug/L	106	(80%-120%)		06/15/17	11:04
QC1203810623	MB										
Cyanide, Total			U		1.67	ug/L				06/15/17	10:57
QC1203810628	425282002	MS									
Cyanide, Total	100	D	297	D	421	ug/L	125	(75%-125%)		06/15/17	11:36

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.

June 27, 2017

GEL LABORATORIES LLC

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QC Summary

Workorder: 425282

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.

Radiological Analysis

Case Narrative

June 27, 2017

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL425282
Work Order #: 425282

Product: I129LL_SEP_LEPS_GS: COMMON (low level)

Analytical Method: DOE EML HASL-300,I-01 Modified

Analytical Procedure: GL-RAD-A-006 REV# 21

Analytical Batch: 1674807

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425282001	B3B236
1203813188	Method Blank (MB)
1203813189	425282001(B3B236) Sample Duplicate (DUP)
1203813190	425282001(B3B236) Matrix Spike (MS)
1203813191	Laboratory Control Sample (LCS)

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: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

Analytical Procedure: GL-RAD-A-002 REV# 22

Analytical Batch: 1674108

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425282001	B3B236
1203811604	Method Blank (MB)
1203811605	425282001(B3B236) Sample Duplicate (DUP)
1203811606	425282001(B3B236) Matrix Spike (MS)
1203811607	Laboratory Control Sample (LCS)

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: TC99_EIE_LSC: COMMON

Analytical Method: TC99_EIE_LSC

Analytical Procedure: GL-RAD-A-059 REV# 5

Analytical Batch: 1674667

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425282001	B3B236
1203812812	Method Blank (MB)
1203812813	425282001(B3B236) Sample Duplicate (DUP)
1203812814	Laboratory Control Sample (LCS)

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: C14_LSC: COMMON

Analytical Method: C14_LSC

Analytical Procedure: GL-RAD-A-003 REV# 15

Analytical Batch: 1674668

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425282001	B3B236
1203812815	Method Blank (MB)
1203812816	425282001(B3B236) Sample Duplicate (DUP)
1203812817	425282001(B3B236) Matrix Spike (MS)
1203812818	Laboratory Control Sample (LCS)

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.

June 27, 2017

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.

June 27, 2017

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL425282 GEL Work Order: 425282

The Qualifiers in this report are defined as follows:

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.

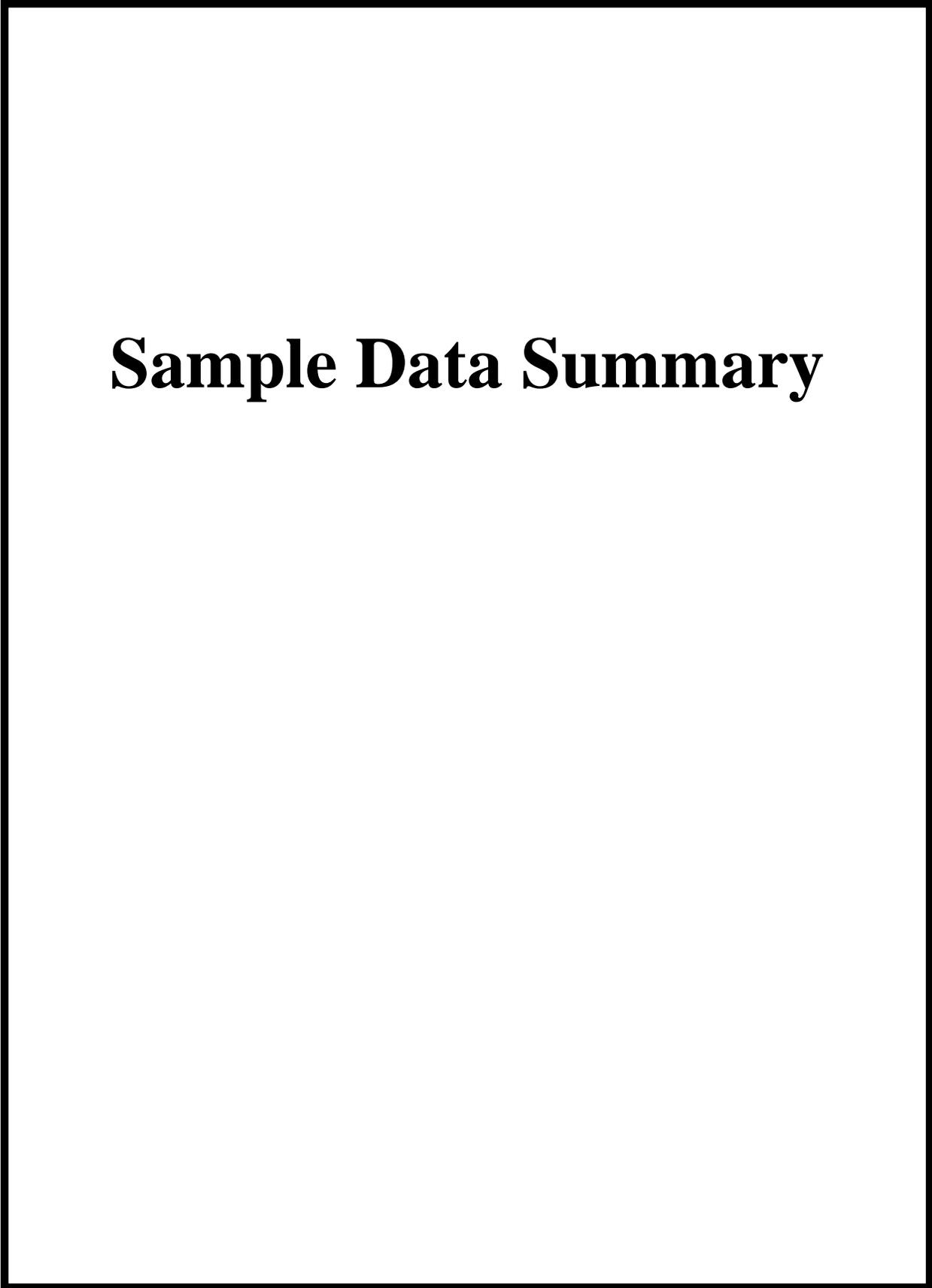
The following data validator verified the information presented in this data report:

Signature: 

Name: Theresa Austin

Date: 27 JUN 2017

Title: Group Leader



Sample Data Summary

June 27, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL425282	Client: CPRC001	Project: CPRC0F16045
Lab Sample ID: 425282001	Date Collected: 06/09/2017 13:35	Matrix: WATER
	Date Received: 06/13/2017 09:10	
Client ID: B3B236	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1674807	Analyst: MJH1	SOP Ref: GL-RAD-A-006
Run Date: 06/22/2017 12:26	Aliquot: 1.3 L	Instrument: XRAY1
Data File: I425282001.CNF;1	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 90 min
Prep Batch: 1674807		
Prep Date: 06/21/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		2.31	pCi/L	+/-1.14	1.16	0.902	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

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

June 27, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL425282	Client: CPRC001	Project: CPRC0F16045
Lab Sample ID: 425282001	Date Collected: 06/09/2017 13:35	Matrix: WATER
	Date Received: 06/13/2017 09:10	
Client ID: B3B236	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1674108	Analyst: BXM4	SOP Ref: GL-RAD-A-002
Run Date: 06/21/2017 22:20	Aliquot: 50 mL	Instrument: LSCBLUE
Data File: T1674108.xls	Prep Method: EPA 906.0 Modified	Count Time: 45 min
Prep Batch: 1674108		
Prep Date: 06/21/2017 09:41		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		5180	pCi/L	+/-410	1080	392	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

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

June 27, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL425282	Client: CPRC001	Project: CPRC0F16045
Lab Sample ID: 425282001	Date Collected: 06/09/2017 13:35	Matrix: WATER
	Date Received: 06/13/2017 09:10	
Client ID: B3B236	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1674667	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 06/27/2017 05:18	Aliquot: 100 mL	Instrument: LSCRED
Data File: E1674667.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 13.1000003814697 min
Prep Batch: 1674667		
Prep Date: 06/22/2017 15:36		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		6210	pCi/L	+/-126	697	43.6	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	5.10E+05	5.31E+05	CPM	96	(30%-105%)

Comments:

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

June 27, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL425282	Client: CPRC001	Project: CPRC0F16045
Lab Sample ID: 425282001	Date Collected: 06/09/2017 13:35	Matrix: WATER
	Date Received: 06/13/2017 09:10	
Client ID: B3B236	Method: C14_LSC	Prep Basis: "As Received"
Batch ID: 1674668	Analyst: BXM4	SOP Ref: GL-RAD-A-003
Run Date: 06/22/2017 23:28	Aliquot: 60.05 mL	Instrument: LSCRED
Data File: C1674668.xls	Prep Method: EPA EERF C-01 Modified	Count Time: 35 min
Prep Batch: 1674668		
Prep Date: 06/22/2017 09:53		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14		65.6	pCi/L	+/-19.6	23.1	30.2	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

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

June 27, 2017

Quality Control Summary

June 27, 2017 GEL LABORATORIES LLC

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

QC Summary

Report Date: June 27, 2017
Page 1 of 3

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 425282

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1674807								
QC1203813188	MB								
Iodine-129			U	-0.125	pCi/L			MJH1	06/22/1714:58
				Uncert: +/-0.259					
				TPU: +/-0.265					
QC1203813189	425282001	DUP							
Iodine-129		2.31		2.38	pCi/L				06/22/1715:13
				Uncert: +/-1.14		RPD: 3 (0% - 100%)			
				TPU: +/-1.16		RER: 0.0916 (0-2)			
QC1203813190	425282001	MS							
Iodine-129		32.0	2.31	30.9	pCi/L	REC: 89 (75%-125%)			06/22/1716:03
				Uncert: +/-1.14					
				TPU: +/-1.16					
QC1203813191	LCS								
Iodine-129		26.0		28.9	pCi/L	REC: 111 (80%-120%)			06/22/1716:42
				Uncert: +/-3.92					
				TPU: +/-4.97					
Rad Liquid Scintillation									
Batch	1674108								
QC1203811604	MB								
Tritium			U	-40.7	pCi/L			BXM4	06/21/1723:07
				Uncert: +/-223					
				TPU: +/-223					
QC1203811605	425282001	DUP							
Tritium		5180		5180	pCi/L				06/21/1723:54
				Uncert: +/-410		RPD: 0 (0% - 20%)			
				TPU: +/-1080		RER: 0.00695 (0-2)			
QC1203811606	425282001	MS							
Tritium		2240	5180	7670	pCi/L	REC: 111 (75%-125%)			06/22/1700:41
				Uncert: +/-410					
				TPU: +/-1080					
QC1203811607	LCS								
Tritium		2240		2300	pCi/L	REC: 103 (80%-120%)			06/22/1701:28
				Uncert: +/-320					
				TPU: +/-548					
Batch	1674667								
QC1203812812	MB								
Technetium-99			U	-21	pCi/L			CXS7	06/27/1705:54
				Uncert: +/-23.2					
				TPU: +/-23.2					
**Technetium-99m Tracer	5.31E+05			4.71E+05	CPM	REC: 89 (30%-105%)			
QC1203812813	425282001	DUP							
Technetium-99		6210		6250	pCi/L				06/27/1706:15
				Uncert: +/-126		RPD: 1 (0% - 20%)			
				TPU: +/-697		RER: 0.0874 (0-2)			
						REC:			

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1674667								
**Technetium-99m Tracer	5.31E+05	5.10E+05		4.52E+05	CPM		85 (30%-105%)		
QC1203812814 LCS									
Technetium-99	861			773	pCi/L	REC:	90 (80%-120%)		06/27/1706:32
	Uncert:			+/-42.7					
	TPU:			+/-95.5					
**Technetium-99m Tracer	5.31E+05			4.93E+05	CPM	REC:	93 (30%-105%)		
Batch	1674668								
QC1203812815 MB									
Carbon-14			U	2.19	pCi/L			BXM4	06/23/1706:45
	Uncert:			+/-17.4					
	TPU:			+/-17.4					
QC1203812816 425282001 DUP									
Carbon-14		65.6		46.9	pCi/L				06/23/1707:22
	Uncert:	+/-19.6		+/-18.9		RPD:	33 (0% - 100%)		
	TPU:	+/-23.1		+/-20.8		RER:	1.18 (0-2)		
QC1203812817 425282001 MS									
Carbon-14	1250	65.6		1210	pCi/L	REC:	92 (75%-125%)		06/23/1707:58
	Uncert:	+/-19.6		+/-62.7					
	TPU:	+/-23.1		+/-234					
QC1203812818 LCS									
Carbon-14	1250			1110	pCi/L	REC:	89 (80%-120%)		06/23/1708:14
	Uncert:			+/-60.3					
	TPU:			+/-215					

Notes:

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

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- A The TIC is a suspected aldol-condensation product
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The analyte was detected in both the associated QC blank and in the sample.
- B The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
- C Analyte has been confirmed by GC/MS analysis
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- E Reported value is estimated due to interferences. See comment in narrative.
- 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
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
S	Reported value determined by the Method of Standard Additions (MSA)									
T	Spike and/or spike duplicate 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.									
UX	Gamma Spectroscopy--Uncertain identification									
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.									
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier									
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier									
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier									
o	Analyte failed to recover within LCS limits (Organics only)									

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

** Indicates analyte is a surrogate compound.

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

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

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