

March 02, 2018

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

Re: CHPRC SAF F16-046
Work Order: 443979
SDG: GEL443979

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 16, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,



Heather Shaffer
Project Manager

Purchase Order: 304235 - 7C
Chain of Custody: F16-046-1523, F16-046-1525, F16-046-1526, F16-046-1529, F16-046-1530, F16-046-1593, F16-046-1594, F16-046-1595, F16-046-1596, F16-046-1597, F16-046-1598, F16-046-1599, F16-046-1600, F16-046-1601, F16-046-1602, F16-046-1604 and F16-046-1605
Enclosures

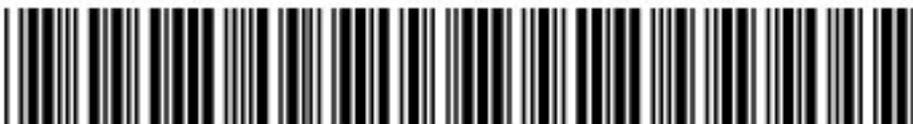


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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-046
SDG: GEL443979**

March 02, 2018

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 16, 2018, 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>
443979001	B3H9R5
443979002	B3HMR2
443979003	B3H9T1
443979004	B3H9T2
443979005	B3HMP1
443979006	B3HMP2
443979007	B3HMP3
443979008	B3HMP4
443979009	B3HMP5
443979010	B3HMP6
443979011	B3HMP7
443979012	B3HMP8
443979013	B3HMP9
443979014	B3HMR0
443979015	B3H9R8
443979016	B3HMR3
443979017	B3H9R7

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

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

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



Heather Shaffer
Project Manager

**Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL443979
Work Order #: 443979**

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.

Quality Control (QC) Information

Method Blank (MB) Statement

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

Sample	Analyte	Value
1203973547 (MB)	Sodium	102 between (100 - 150)

Determination of Metals by ICP-MS

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

Technical Information

Sample Dilutions

Sample 443979016 (B3HMR3) was diluted to ensure that the analyte concentration was within the linear calibration range of the instrument.

	443979
Analyte	016
Copper	50X

General Chemistry

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 Re-analysis

Sample 443979006 (B3HMP2) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Cyanide, Chlorinated

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 1203974050 (Non SDG 443840020DUP) was diluted because target analyte concentrations exceeded the calibration range.

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.

Cyanide, Chlorinated

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.

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. 443979016 (B3HMR3).

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.

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).

Ion Chromatography

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

Quality Control (QC) Information

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

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

Analyte	Sample	Value
Bromide	1203973358 (B3HMR2PS)	139* (75%-125%)
Nitrate	1203973358 (B3HMR2PS)	223* (75%-125%)

Nitrite	1203973358 (B3HMR2PS)	141* (75%-125%)
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Technical Information

Holding Times

Samples (See Below) were initially analyzed within holding; however, the holding times had expired prior to reanalysis of diluted samples. The data is qualified.

Sample	Analyte	Value
1203973357 (B3HMR2DUP)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
1203973358 (B3HMR2PS)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443979001 (B3H9R5)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443979002 (B3HMR2)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18

Sample Dilutions

The following samples 1203973357 (B3HMR2DUP), 1203973358 (B3HMR2PS), 443979001 (B3H9R5) and 443979002 (B3HMR2) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443979	
	001	002
Chloride	10X	25X
Nitrate	10X	25X
Sulfate	10X	25X

Radiochemistry

I129LL_SEP_LEPS_GS: COMMON (low level)

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

Technical Information

Sample Re-prep/Re-analysis

Samples were re-prepped due to high LCS recovery. The re-analysis is being reported.

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.

TRITIUM_DIST_LSC: COMMON

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

Recounts

Sample 1203975831 (LCS) was recounted due to low recovery. The second recount is reported.

Miscellaneous Information

Additional Comments

The matrix spike, 1203975830 (B3HMR3MS), aliquot was reduced to conserve sample volume.

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979			F16-046-1523	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC		REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, Influent Tank, Valve V12-Y30		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. <i>2021518 GWS-734</i>	FIELD LOGBOOK NO. HNF-N-49119	ACTUAL SAMPLE DEPTH N/A		PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT GOVERNMENT VEHICLE	
SHIPPED TO <i>Jul 21/31/18</i> TestAmerica Incorporated, Richland GEL	OFFSITE PROPERTY NO. <i>N/A</i> <i>2021518</i> 9063		BILL OF LADING/AIR BILL NO. <i>N/A</i> 7714945 4512			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION Cool <=6C
	SPECIAL HANDLING AND/OR STORAGE N/A	HOLDING TIME 48 Hours
		TYPE OF CONTAINER P
		NO. OF CONTAINER(S) 1
		VOLUME 250mL
SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS		

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3H9R5	No	WATER	FEB 15 2018	1055	✓

MARCH 02, 2018

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
<i>KATHY TURNER</i> CHPRC DATE/TIME: <i>2/15/18</i>	<i>Lesly Wall</i> CHPRC DATE/TIME: FEB 15 2018 1150 FEDEX	TRVL-18-079 (1) 300.0_ANIONS_IC: COMMON; 300.0_ANIONS_IC: COMMON (Add-on) {Bromide};
<i>Lesly Wall</i> CHPRC DATE/TIME: FEB 15 2018 1400 FedEx	<i>C. Tardin</i> CHPRC DATE/TIME: <i>2/15/18</i> 0845	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 1/30/2018 FSR ID = FSR57451 TRVL NUM = TRVL-18-079 A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979			F16-046-1604	PAGE 1 OF 1
COLLECTOR KATHY TURNER CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC		REQUIRED TAT 15 Days
SAMPLING LOCATION 289-T, Centrate Sample, Valve V11-Y95_* (A,B,C)		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. N/A <i>2/2/18</i> 6WS-734		FIELD LOGBOOK NO. HNF-N-491-19	ACTUAL SAMPLE DEPTH (N/A)	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT GOVERNMENT VEHICLE	
SHIPPED TO <i>2/2/18</i> FestAmerica Incorporated, Richland - BEL		OFFSITE PROPERTY NO. <i>2/2/18</i> 9063		BILL OF LADING/AIR BILL NO. <i>2/15/18</i> 771494454512		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		PRESERVATION Cool <=-6C			
		HOLDING TIME	48 Hours			
		TYPE OF CONTAINER	P			
		NO. OF CONTAINER(S)	1			
		VOLUME	250mL			
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
		SPECIAL HANDLING AND/OR STORAGE	N/A			
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B3HMR2	N/A	WATER	FEB 15 2018	1025	✓	

MARCH 02, 2018

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
KATHY TURNER CHPRC	FEB 15 2018 1150	Lesly Wall CHPRC	FEB 15 2018 1150	TRVL-18-079 (1) 300.0_ANIONS_IC: COMMON; 300.0_ANIONS_IC: COMMON (Add-on) {Bromide};	
Lesly Wall CHPRC	FEB 15 2018 1400	FEDEX			
Fedex		C. Tomlin Ch Tri	2/16/18 0845		

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 2/8/2018 FSR ID = FSR57653 TRVL NUM = TRVL-18-079 A-6003-618 (REV 3)

REV. 0

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979			F16-046-1529	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC		REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, Influent Tank, Valve V12-Y30 DUP		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. 605-734	FIELD LOGBOOK NO. HNF-N-49119	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS		
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063		BILL OF LADING/AIR BILL NO. 7714 9445 4512		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	NaOH to pH >=12/Cool <=6C
		HOLDING TIME	14 Days
		TYPE OF CONTAINER	aG
		NO. OF CONTAINER(S)	1
		VOLUME	500mL
		SPECIAL HANDLING AND/OR STORAGE	N/A
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3H9T1	No	WATER	FEB 15 2018	1055	✓

MARCH 02, 2018

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
	Kevin Patterson CHPRC	FEB 15 2018 1150	Lesly Wall CHPRC	Lesly Wall CHPRC	FEB 15 2018 1150	TRVL-18-079 (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
	Lesly Wall CHPRC	FEB 15 2018 1400	FEDEX	FEDEX		
				C-Tarplin Chris Tarplin	2/16/18 0845	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979		F16-046-1530	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days ORIGINAL	
SAMPLING LOCATION 289-T, Influent Tank, Valve V12-Y30 DUP	PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046		
ICE CHEST NO. GWS-734	FIELD LOGBOOK NO. HNF-N-49119	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063		BILL OF LADING/AIR BILL NO. 7714 9445 4512	

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	NaOH to pH >=12/Cool <=6C
		HOLDING TIME	14 Days
		TYPE OF CONTAINER	aG
		NO. OF CONTAINER(S)	1
		VOLUME	500mL
		SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS
SPECIAL HANDLING AND/OR STORAGE N/A			

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3H9T2	Yes	WATER	FEB 15 2018	1055	✓

MARCH 02, 2018

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
DATE/TIME	DATE/TIME	
Kevin Patterson CHPRC FEB 15 2018 1150	Lesly Wall CHPRC FEB 15 2018 1150	TRVL-18-079; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
Lesly Wall CHPRC FEB 15 2018 1400	FEDEX	
FedEx	C. Tamplin 2/16/18 0845	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979		F16-046-1593	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days
SAMPLING LOCATION 289-T, Air-Stripper Effluent, Valve V05-Y63		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL
ICE CHEST NO. GWS-1734	FIELD LOGBOOK NO. HNF-N-491-19	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063	BILL OF LADING/AIR BILL NO. 7714 9445 4512		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	NaOH to pH >=12/Cool <=6C
		HOLDING TIME	14 Days
		TYPE OF CONTAINER	aG
		NO. OF CONTAINER(S)	1
		VOLUME	500mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMP1	No	WATER	FEB 15 2018	0852	✓

MARCH 02, 2018

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
Kevin Patterson CHPRC	FEB 15 2018 1150	<i>[Signature]</i>	Lesly Wall CHPRC	FEB 15 2018 1150	TRVL-18-079 (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
Lesly Wall CHPRC	FEB 15 2018 1400	<i>[Signature]</i>	FEDEX		
			C. Tarplin Center	2/16/18 0845	

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FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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REV. 0

443979

F16-046-1594 PAGE 1 OF 1

CH2MHill Plateau Remediation Company

COLLECTOR Kevin Patterson CHPRC	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC
SAMPLING LOCATION 289-T, Air-Stripper Effluent, Valve V05-Y63	PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046
ICE CHEST NO. 6005-734	FIELD LOGBOOK NO. HNF-N-451-19	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. 9063		BILL OF LADING/AIR BILL NO. 77149445 4512

REQUIRED TAT
15 Days

ORIGINAL

METHOD OF SHIPMENT
FEDERAL EXPRESS

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION NaOH to pH >=12/Cool <=6C	
		HOLDING TIME 14 Days	
		TYPE OF CONTAINER aG	
		NO. OF CONTAINER(S) 1	
		VOLUME 500mL	
	SPECIAL HANDLING AND/OR STORAGE N/A	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS	

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMP2	Yes	WATER	FEB 15 2018	0852	✓

MARCH 02, 2018

CHAIN OF POSSESSION	SPECIAL INSTRUCTIONS																
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">RELINQUISHED BY/REMOVED FROM</th> <th style="width: 10%;">DATE/TIME</th> <th style="width: 40%;">SIGN/ PRINT NAMES RECEIVED BY/STORED IN</th> <th style="width: 10%;">DATE/TIME</th> </tr> </thead> <tbody> <tr> <td>Kevin Patterson CHPRC</td> <td>FEB 15 2018 1150</td> <td>Lesly Wall CHPRC</td> <td>FEB 15 2018 1150</td> </tr> <tr> <td>Lesly Wall CHPRC</td> <td>FEB 15 2018 1400</td> <td>FEDEX</td> <td></td> </tr> <tr> <td></td> <td></td> <td>C. Tarplin</td> <td>2/16/18 0845</td> </tr> </tbody> </table>	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES RECEIVED BY/STORED IN	DATE/TIME	Kevin Patterson CHPRC	FEB 15 2018 1150	Lesly Wall CHPRC	FEB 15 2018 1150	Lesly Wall CHPRC	FEB 15 2018 1400	FEDEX				C. Tarplin	2/16/18 0845	TRVL-18-079; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES RECEIVED BY/STORED IN	DATE/TIME														
Kevin Patterson CHPRC	FEB 15 2018 1150	Lesly Wall CHPRC	FEB 15 2018 1150														
Lesly Wall CHPRC	FEB 15 2018 1400	FEDEX															
		C. Tarplin	2/16/18 0845														
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD																
DISPOSED BY																	
DATE/TIME																	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448979		F16-046-1595	PAGE 1 OF 1
COLLECTOR KATHY TURNER CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	
SAMPLING LOCATION 289-T, FBR-A Effluent, Valve V25-Y40A1		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	
ICE CHEST NO. 605-734		FIELD LOGBOOK NO. HNF-N-491-19	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063		BILL OF LADING/AIR BILL NO. 7714 9445 4512	

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	NaOH to pH >=12/Cool <=6C
		HOLDING TIME	14 Days
		TYPE OF CONTAINER	aG
		NO. OF CONTAINER(S)	1
		VOLUME	500mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS	

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMP3	No	WATER	FEB 15 2018	0942	✓

MARCH 02, 2018

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
	KATHY TURNER CHPRC	FEB 15 2018 1150		Lesly Wall CHPRC	FEB 15 2018 1150	TRVL-18-079 (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
	Lesly Wall CHPRC	FEB 15 2018 1400		FEDEX		
		FedEx		C. Tarplin CHPRC	2/16/18 0845	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979		F16-046-1596	PAGE 1 OF 1
COLLECTOR KATHY TURNER CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days
SAMPLING LOCATION 289-T, FBR-A Effluent, Valve V25-Y40A1		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL
ICE CHEST NO. GWS-734	FIELD LOGBOOK NO. HNF-N- 491-19	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063		BILL OF LADING/AIR BILL NO. 17714 9445 4512	

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION NaOH to pH >=12/Cool <=6C
	SPECIAL HANDLING AND/OR STORAGE N/A	HOLDING TIME 14 Days
		TYPE OF CONTAINER aG
		NO. OF CONTAINER(S) 1
		VOLUME 500mL
	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS	

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMP4	Yes	WATER	FEB 15 2018	0942	✓

MARCH 02, 2018

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
KATHY TURNER CHPRC	Leesy Wall CHPRC	TRVL-18-079; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
Leesy Wall CHPRC	FEDEX	
Leesy Wall CHPRC	C. Tarplin	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979			F16-046-1597	PAGE 1 OF 1
COLLECTOR KATHY TURNER CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, FBR-B Effluent, Valve V25-Y40B1		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. GWS-734		FIELD LOGBOOK NO. HNF-N-491-19	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063		BILL OF LADING/AIR BILL NO. 7714 9445 4512		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		PRESERVATION NaOH to pH >=12/Cool <=6C	HOLDING TIME 14 Days		
	SPECIAL HANDLING AND/OR STORAGE N/A		TYPE OF CONTAINER aG	NO. OF CONTAINER(S) 1		
			VOLUME 500mL		SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS	
	SAMPLE NO.		FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME
B3HMP5		No	WATER	FEB 15 2018	0920	✓

MARCH 02, 2018

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-18-079 (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;	
KATHY TURNER CHPRC	FEB 15 2018 1150	Lesly Wall CHPRC	FEB 15 2018 1150		
Lesly Wall CHPRC	FEB 15 2018 1400	FEDEX			
	FedEx	G. Tamplin CHPRC	2/16/18 0845		

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979		F16-046-1598	PAGE 1 OF 1
COLLECTOR KATHY TURNER CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days
SAMPLING LOCATION 289-T, FBR-B Effluent, Valve V25-Y40B1		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL
ICE CHEST NO. 6605-734	FIELD LOGBOOK NO. HNF-N-491-19	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063	BILL OF LADING/AIR BILL NO. 7714 9445 4512		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION NaOH to pH >=12/Cool <=6C
		HOLDING TIME 14 Days
		TYPE OF CONTAINER aG
		NO. OF CONTAINER(S) 1
		VOLUME 500mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMP6	Yes	WATER	FEB 15 2018	0920	✓

MARCH 02, 2018

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
DATE/TIME	DATE/TIME	
KATHY TURNER CHPRC <i>Kathy Turner</i>	Lesly Wall CHPRC <i>Lesly Wall</i>	TRVL-18-079; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
FEB 15 2018 1150	FEB 15 2018 1150	
Lesly Wall CHPRC <i>Lesly Wall</i>	FEDEX	
FEB 15 2018 1400		
FedEx	C-Tarplin <i>C-Tarplin</i>	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

REV: 0

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 4439779			F16-046-1599	PAGE 1 OF 1
COLLECTOR KATHY TURNER CHPRC	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC		REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, MBR Effluent, Valve V15-Y50		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. 605-734	FIELD LOGBOOK NO. HNF-N-491 19	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235		METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063		BILL OF LADING/AIR BILL NO. 7714 9445 4512		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION NaOH to pH >=12/Cool <=6C
	SPECIAL HANDLING AND/OR STORAGE N/A	HOLDING TIME 14 Days
		TYPE OF CONTAINER aG
		NO. OF CONTAINER(S) 1
		VOLUME 500mL
SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS		

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMP7	No	WATER	FEB 15 2018	0845	✓

MARCH 02, 2018

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
	KATHY TURNER CHPRC	FEB 15 2018 1150	<i>Kathy Wall</i> CHPRC	<i>Kathy Wall</i> CHPRC	FEB 15 2018 1150	TRVL-18-079 (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
	<i>Lesty Wall</i> CHPRC	FEB 15 2018 1400	<i>Lesty Wall</i> CHPRC	FEDEX		
				<i>C. Tamplin</i> Cl-Tam	2/16/18 0845	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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443979

COLLECTOR KATHY TURNER CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days
SAMPLING LOCATION 289-T, MBR Effluent, Valve V15-Y50		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	
ICE CHEST NO. GWS-734	FIELD LOGBOOK NO. HNF-N-49119	ACTUAL SAMPLE DEPTH N/A		PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063	BILL OF LADING/AIR BILL NO. 771494454512		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	NaOH to pH >=12/Cool <=6C
		HOLDING TIME	14 Days
		TYPE OF CONTAINER	aG
		NO. OF CONTAINER(S)	1
		VOLUME	500mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMP8	Yes	WATER	FEB 15 2018	0845	✓

MARCH 02, 2018

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS TRVL-18-079; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
KATHY TURNER CHPRC	FEB 15 2018 1150	Kathy Turner	Lesly Wall CHPRC	FEB 15 2018 1150	
Lesly Wall CHPRC	FEB 15 2018 1400	Lesly Wall	FEDEX		
	FEDEX	C. Taplin	Ch. Taplin	2/16/18 0845	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979			F16-046-1601	PAGE 1 OF 1
COLLECTOR KATHY TURNER CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, Re-circulation Tank, Valve V02-Y40C		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. GWS-1734		FIELD LOGBOOK NO. HNF-N-49119	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063		BILL OF LADING/AIR BILL NO. 77149445 4512		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	NaOH to pH >=12/Cool <=6C
		HOLDING TIME	14 Days
		TYPE OF CONTAINER	aG
		NO. OF CONTAINER(S)	1
		VOLUME	500mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMP9	No	WATER	FEB 15 2018	1050	✓

MARCH 02, 2018

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
	KATHY TURNER CHPRC	FEB 15 2018 1150		Lesly Wall CHPRC	FEB 15 2018 1150	TRVL-18-079 (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
	Lesly Wall CHPRC	FEB 15 2018 1400		FEDEX		
				C. Tarplin CHPRC	2/16/18 0849	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979		F16-046-1602	PAGE 1 OF 1
COLLECTOR KATHY TURNER CHPRC	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, Re-circulation Tank, Valve V02-Y40C		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL
ICE CHEST NO. 6005-734	FIELD LOGBOOK NO. HNF-N- 49119	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063		BILL OF LADING/AIR BILL NO. 77149445 4512	

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION NaOH to pH >=12/Cool <=6C
		HOLDING TIME 14 Days
		TYPE OF CONTAINER aG
		NO. OF CONTAINER(S) 1
		VOLUME 500mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMRO	Yes	WATER	FEB 15 2018	1050	✓

MARCH 02, 2018

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS TRVL-18-079; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
KATHY TURNER CHPRC	FEB 15 2018 1150	Lesly Wall CHPRC	FEB 15 2018 1150	
Lesly Wall CHPRC	FEB 15 2018 1400	FEDEX		
FedEx		C. Tamplin Chert	2/16/18 0845	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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443979

COLLECTOR Kevin Patterson CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days
SAMPLING LOCATION 289-T, Influent Tank, Valve V12-Y30		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	
ICE CHEST NO. 605-734		FIELD LOGBOOK NO. HNF-N-49119	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063		BILL OF LADING/AIR BILL NO. 771494454512	

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	HNO3 to pH <2	NaOH to pH >=12/Cool <=6C
		HOLDING TIME	6 Months	14 Days
		TYPE OF CONTAINER	G/P	aG
		NO. OF CONTAINER(S)	1	1
		VOLUME	500mL	500mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B3H9R8	Yes	WATER	FEB 15 2018	1055	✓	✓

MARCH 02, 2018

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
DATE/TIME	DATE/TIME	
Kevin Patterson CHPRC FEB 15 2018 1150	Lesly Wall CHPRC FEB 15 2018 1150	TRVL-18-079; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. (1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron}; 6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc}; (2) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
Lesly Wall CHPRC FEB 15 2018 1400	FEDEX	
FedEx	C-Tarplin CHPRC 2/14/18 0845	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443979					F16-046-1605	PAGE 1 OF 1	
COLLECTOR KATHY TURNER CHPRC		COMPANY CONTACT SUMNER, LC		TELEPHONE NO. 376-3922		PROJECT COORDINATOR SUMNER, LC		REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, Centrate Sample, Valve V11-Y95_* (A,B,C)		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water			SAF NO. F16-046		ORIGINAL		
ICE CHEST NO. 605-734		FIELD LOGBOOK NO. HNF-N-491-19		ACTUAL SAMPLE DEPTH (N/A)		PURCHASE ORDER/CHARGE CODE 304235		METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063			BILL OF LADING/AIR BILL NO. 7714 94454512				
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		PRESERVATION		HNO3 to pH <2	NaOH to pH >=12/Cool <=6C	None	None	HNO3 to pH <2
	SPECIAL HANDLING AND/OR STORAGE N/A		HOLDING TIME		6 Months	14 Days	6 Months	6 Months	6 Months
			TYPE OF CONTAINER		G/P	aG	P	G/P	G/P
			NO. OF CONTAINER(S)		1	1	1	1	1
			VOLUME		500mL	500mL	250mL	4L	500mL
		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	906.0_TRITIUM_LSC: COMMON (Tritium);	I129LL_SEP_LE PS_GS: COMMON (Iodine-129);	TC99_EIE_LSC: COMMON (Technetium-99);	
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B3HMR3	N/A	WATER	FEB 15 2018	1025	✓	✓	✓	✓	✓

MARCH 02, 2018

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
KATHY TURNER CHPRC	FEB 15 2018 1150	Lesly Wall CHPRC	FEB 15 2018 1150	TRVL-18-079 (1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron}; 6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc}; (2) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
Lesly Wall CHPRC	FEB 15 2018 1400	FEDEX		
	FedEx	C-Tamplin	2/16/18 0845	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
PRINTED ON 2/8/2018	FSR ID = FSR57653	TRVL NUM = TRVL-18-079	A-6003-618 (REV 3)

443979

COLLECTOR Kevin Patterson CHPRC		COMPANY CONTACT SUMNER, LC		TELEPHONE NO. 376-3922		PROJECT COORDINATOR SUMNER, LC		REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, Influent Tank, Valve V12-Y30		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water				SAF NO. F16-046		ORIGINAL	
ICE CHEST NO. 6005-1734		FIELD LOGBOOK NO. MNF-N- 49119		ACTUAL SAMPLE DEPTH N/A		PURCHASE ORDER/CHARGE CODE 304235		METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 9063				BILL OF LADING/AIR BILL NO. 77149445 4512			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION		HNO3 to pH <2	NaOH to pH >=12/Cool <=6C	None	None	HNO3 to pH <2
		HOLDING TIME		6 Months	14 Days	6 Months	6 Months	6 Months
		TYPE OF CONTAINER		G/P	aG	P	G/P	G/P
		NO. OF CONTAINER(S)		1	1	1	1	1
		VOLUME		500mL	500mL	250mL	4L	500mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	906.0 TRITIUM .LSC: COMMON {Tritium};	I129LL_SEP_LE PS_GS: COMMON {Iodine-129};	TC99_EIE_LSC: COMMON {Technetium-99};

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	HNO3 to pH <2	NaOH to pH >=12/Cool <=6C	None	None	HNO3 to pH <2
B3H9R7	No	WATER	FEB 15 2018	1055	✓	✓	✓	✓	✓

MARCH 02, 2018

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS TRVL-18-079 (1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron}; 6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc}; (2) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
Kevin Patterson CHPRC	FEB 15 2018 1130	Lesly Wall CHPRC	Lesly Wall CHPRC	FEB 15 2018 1150	
Lesly Wall CHPRC	FEB 15 2018 1400	FEDEX	FEDEX		
		C. Tomlin	C. Tomlin	2/14/18 0845	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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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 analyte was detected in the associated method blank \geq MDC or $>$ 5% sample activity.	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 02 March 2018

State	Certification
Alaska	17-018
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	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
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
Puerto Rico	SC00012
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122017-25
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443979
Work Order #: 443979

Product: Determination of Metals by ICP

Analytical Method: SW846 3005A/6010D

Analytical Procedure: GL-MA-E-013 REV# 30

Analytical Batch: 1739890

Product: Determination of Metals by ICP-MS

Analytical Method: SW846 3005A/6020B

Analytical Procedure: GL-MA-E-014 REV# 32

Analytical Batch: 1739931

Preparation Method: SW846 3005A

Preparation Procedure: GL-MA-E-006 REV# 14

Preparation Batches: 1739888 and 1739929

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443979015	B3H9R8
443979016	B3HMR3
443979017	B3H9R7
1203973547	Method Blank (MB) ICP
1203973548	Laboratory Control Sample (LCS)
1203973551	443979015(B3H9R8L) Serial Dilution (SD)
1203973549	443979015(B3H9R8S) Matrix Spike (MS)
1203973550	443979015(B3H9R8SD) Matrix Spike Duplicate (MSD)
1203973662	Method Blank (MB) ICP-MS
1203973663	Laboratory Control Sample (LCS)
1203973666	443979015(B3H9R8L) Serial Dilution (SD)
1203973664	443979015(B3H9R8S) Matrix Spike (MS)
1203973665	443979015(B3H9R8SD) 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. ICP.

ICSA/ICSAB Statement

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

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

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

Sample	Analyte	Value
1203973547 (MB)	Sodium	102 between (100 - 150)

Technical Information**Sample Dilutions**

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. Sample 443979016 (B3HMR3)-ICP-MS was diluted to ensure that the analyte concentration was within the linear calibration range of the instrument.

	443979
Analyte	016
Copper	50X

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: GEL443979 GEL Work Order: 443979

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: 02 MAR 2018

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443979

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID: 443979015

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H9R8

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	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	02/22/18 20:18	180222-2	1739931
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	TXT1	03/01/18 15:31	030118-1	1739890
7440-70-2	Calcium	60000	ug/L		50	200	200	1	P	TXT1	03/01/18 15:31	030118-1	1739890
7440-47-3	Chromium	29.1	ug/L		3	10	10	1	MS	BAJ	02/22/18 20:18	180222-2	1739931
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/23/18 18:31	180223-3	1739931
7440-50-8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/23/18 18:31	180223-3	1739931
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	TXT1	03/01/18 15:31	030118-1	1739890
7439-95-4	Magnesium	20900	ug/L		110	300	300	1	P	TXT1	03/01/18 15:31	030118-1	1739890
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	02/22/18 20:18	180222-2	1739931
7439-98-7	Molybdenum	3.74	ug/L		0.2	0.5	0.5	1	MS	BAJ	02/22/18 20:18	180222-2	1739931
7440-02-0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	02/22/18 20:18	180222-2	1739931
7440-09-7	Potassium	5530	ug/L		50	150	150	1	P	TXT1	03/01/18 15:31	030118-1	1739890
7782-49-2	Selenium	3.26	ug/L	B	2	5	5	1	MS	BAJ	02/22/18 20:18	180222-2	1739931
7440-23-5	Sodium	21100	ug/L		100	300	300	1	P	TXT1	03/01/18 15:31	030118-1	1739890
7440-61-1	Uranium	1.01	ug/L		0.067	0.2	0.2	1	MS	BAJ	02/22/18 20:18	180222-2	1739931
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	02/23/18 18:31	180223-3	1739931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739890	1739888	SW846 3005A	50	mL	50	mL	02/16/18	JXM8
1739931	1739929	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443979

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID:443979016

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3HMR3

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	1950	ug/L		19.3	50	50	1	MS	BAJ	02/22/18 20:35	180222-2	1739931
7440-42-8	Boron	78.1	ug/L		15	50	50	1	P	TXT1	03/01/18 15:42	030118-1	1739890
7440-70-2	Calcium	88100	ug/L		50	200	200	1	P	TXT1	03/01/18 15:42	030118-1	1739890
7440-47-3	Chromium	562	ug/L		3	10	10	1	MS	BAJ	02/22/18 20:35	180222-2	1739931
7440-48-4	Cobalt	197	ug/L		0.3	1	1	1	MS	BAJ	02/23/18 18:43	180223-3	1739931
7440-50-8	Copper	2610	ug/L	D	15	50	50	50	MS	BAJ	02/23/18 18:48	180223-3	1739931
7439-89-6	Iron	288000	ug/L		30	100	100	1	P	TXT1	03/01/18 15:42	030118-1	1739890
7439-95-4	Magnesium	24700	ug/L		110	300	300	1	P	TXT1	03/01/18 15:42	030118-1	1739890
7439-96-5	Manganese	513	ug/L		1	5	5	1	MS	BAJ	02/22/18 20:35	180222-2	1739931
7439-98-7	Molybdenum	220	ug/L		0.2	0.5	0.5	1	MS	BAJ	02/22/18 20:35	180222-2	1739931
7440-02-0	Nickel	174	ug/L		0.6	2	2	1	MS	BAJ	02/22/18 20:35	180222-2	1739931
7440-09-7	Potassium	41700	ug/L		50	150	150	1	P	TXT1	03/01/18 15:42	030118-1	1739890
7782-49-2	Selenium	6.33	ug/L		2	5	5	1	MS	BAJ	02/22/18 20:35	180222-2	1739931
7440-23-5	Sodium	16900	ug/L		100	300	300	1	P	TXT1	03/01/18 15:42	030118-1	1739890
7440-61-1	Uranium	6.15	ug/L		0.067	0.2	0.2	1	MS	BAJ	02/22/18 20:35	180222-2	1739931
7440-66-6	Zinc	1020	ug/L		3.3	10	10	1	MS	BAJ	02/23/18 18:43	180223-3	1739931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739890	1739888	SW846 3005A	50	mL	50	mL	02/16/18	JXM8
1739931	1739929	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443979

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID: 443979017

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H9R7

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	24	ug/L	B	19.3	50	50	1	MS	BAJ	02/22/18 20:38	180222-2	1739931
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	TXT1	03/01/18 15:44	030118-1	1739890
7440-70-2	Calcium	59400	ug/L		50	200	200	1	P	TXT1	03/01/18 15:44	030118-1	1739890
7440-47-3	Chromium	27.8	ug/L		3	10	10	1	MS	BAJ	02/22/18 20:38	180222-2	1739931
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	02/23/18 18:46	180223-3	1739931
7440-50-8	Copper	0.329	ug/L	B	0.3	1	1	1	MS	BAJ	02/23/18 18:46	180223-3	1739931
7439-89-6	Iron	45	ug/L	B	30	100	100	1	P	TXT1	03/01/18 15:44	030118-1	1739890
7439-95-4	Magnesium	20500	ug/L		110	300	300	1	P	TXT1	03/01/18 15:44	030118-1	1739890
7439-96-5	Manganese	1.15	ug/L	B	1	5	5	1	MS	BAJ	02/22/18 20:38	180222-2	1739931
7439-98-7	Molybdenum	4.02	ug/L		0.2	0.5	0.5	1	MS	BAJ	02/22/18 20:38	180222-2	1739931
7440-02-0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	02/22/18 20:38	180222-2	1739931
7440-09-7	Potassium	5500	ug/L		50	150	150	1	P	TXT1	03/01/18 15:44	030118-1	1739890
7782-49-2	Selenium	3.41	ug/L	B	2	5	5	1	MS	BAJ	02/22/18 20:38	180222-2	1739931
7440-23-5	Sodium	20600	ug/L		100	300	300	1	P	TXT1	03/01/18 15:44	030118-1	1739890
7440-61-1	Uranium	1.04	ug/L		0.067	0.2	0.2	1	MS	BAJ	02/22/18 20:38	180222-2	1739931
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	02/23/18 18:46	180223-3	1739931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739890	1739888	SW846 3005A	50	mL	50	mL	02/16/18	JXM8
1739931	1739929	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: March 2, 2018

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 443979

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739931										
QC1203973663	LCS										
Aluminum	2000			2010	ug/L		100	(80%-120%)	BAJ	02/22/18	20:14
Chromium	50.0			51.7	ug/L		103	(80%-120%)			
Cobalt	50.0			49.7	ug/L		99.4	(80%-120%)		02/23/18	18:28
Copper	50.0			50.1	ug/L		100	(80%-120%)			
Manganese	50.0			55.2	ug/L		110	(80%-120%)		02/22/18	20:14
Molybdenum	50.0			51.2	ug/L		102	(80%-120%)			
Nickel	50.0			54.7	ug/L		109	(80%-120%)			
Selenium	50.0			50.4	ug/L		101	(80%-120%)			
Uranium	50.0			49.0	ug/L		97.9	(80%-120%)			
Zinc	50.0			48.9	ug/L		97.7	(80%-120%)		02/23/18	18:28
QC1203973662	MB										
Aluminum			U	19.3	ug/L					02/22/18	20:11
Chromium			U	3.00	ug/L						
Cobalt			U	0.300	ug/L					02/23/18	18:26

GEL LABORATORIES LLC

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QC Summary

Workorder: 443979

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739931										
Copper			U	0.300	ug/L				BAJ	02/23/18	18:26
Manganese			U	1.00	ug/L					02/22/18	20:11
Molybdenum			U	0.200	ug/L						
Nickel			U	0.600	ug/L						
Selenium			U	2.00	ug/L						
Uranium			U	0.067	ug/L						
Zinc			U	3.30	ug/L					02/23/18	18:26
QC1203973664 443979015 MS											
Aluminum	2000	U	19.3	1890	ug/L		94.6	(75%-125%)		02/22/18	20:21
Chromium	50.0		29.1	78.2	ug/L		98.1	(75%-125%)			
Cobalt	50.0	U	0.300	46.9	ug/L		93.8	(75%-125%)		02/23/18	18:33
Copper	50.0	U	0.300	45.7	ug/L		91.2	(75%-125%)			
Manganese	50.0	U	1.00	53.8	ug/L		107	(75%-125%)		02/22/18	20:21
Molybdenum	50.0		3.74	56.5	ug/L		106	(75%-125%)			
Nickel	50.0	U	0.600	49.8	ug/L		98.7	(75%-125%)			
Selenium	50.0	B	3.26	54.6	ug/L		103	(75%-125%)			

GEL LABORATORIES LLC

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QC Summary

Workorder: 443979

Page 3 of 7

Parname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739931										
Uranium	50.0	1.01		48.8	ug/L		95.7	(75%-125%)	BAJ	02/22/18	20:21
Zinc	50.0	U	3.30	49.3	ug/L		97.5	(75%-125%)		02/23/18	18:33
QC1203973665 443979015 MSD											
Aluminum	2000	U	19.3	1850	ug/L	2.24	92.6	(0%-20%)		02/22/18	20:25
Chromium	50.0		29.1	73.8	ug/L	5.77	89.4	(0%-20%)			
Cobalt	50.0	U	0.300	45.7	ug/L	2.77	91.2	(0%-20%)		02/23/18	18:36
Copper	50.0	U	0.300	47.9	ug/L	4.75	95.7	(0%-20%)			
Manganese	50.0	U	1.00	52.6	ug/L	2.43	105	(0%-20%)		02/22/18	20:25
Molybdenum	50.0		3.74	54.1	ug/L	4.31	101	(0%-20%)			
Nickel	50.0	U	0.600	46.8	ug/L	6.24	92.7	(0%-20%)			
Selenium	50.0	B	3.26	52.1	ug/L	4.6	97.8	(0%-20%)			
Uranium	50.0		1.01	47.5	ug/L	2.85	92.9	(0%-20%)			
Zinc	50.0	U	3.30	47.0	ug/L	4.72	93	(0%-20%)		02/23/18	18:36
QC1203973666 443979015 SDILT											
Aluminum		U	1.79	DU	ug/L	N/A		(0%-20%)		02/22/18	20:31
Chromium			29.1	BD	ug/L	2.2		(0%-20%)			
Cobalt		U	0.049	DU	ug/L	N/A		(0%-20%)		02/23/18	18:41

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QC Summary

Workorder: 443979

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1739931										
Copper	U	0.104	DU	1.50	ug/L	N/A		(0%-20%)	BAJ	02/23/18	18:41
Manganese	U	0.155	DU	5.00	ug/L	N/A		(0%-20%)		02/22/18	20:31
Molybdenum		3.74	D	0.763	ug/L	1.98		(0%-20%)			
Nickel	U	0.490	DU	3.00	ug/L	N/A		(0%-20%)			
Selenium	B	3.26	DU	10.0	ug/L	N/A		(0%-20%)			
Uranium		1.01	BD	0.198	ug/L	1.88		(0%-20%)			
Zinc	U	0.523	DU	16.5	ug/L	N/A		(0%-20%)		02/23/18	18:41
Metals Analysis-ICP											
Batch	1739890										
QC1203973548	LCS										
Boron	500			464	ug/L		92.7	(80%-120%)	TXT1	03/01/18	15:29
Calcium	5000			4730	ug/L		94.6	(80%-120%)			
Iron	5000			4960	ug/L		99.2	(80%-120%)			
Magnesium	5000			4820	ug/L		96.4	(80%-120%)			
Potassium	5000			5080	ug/L		102	(80%-120%)			
Sodium	5000			4720	ug/L		94.5	(80%-120%)			
QC1203973547	MB										
Boron			U	15.0	ug/L					03/01/18	15:26

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QC Summary

Workorder: 443979

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1739890										
Calcium			U	50.0	ug/L				TXT1	03/01/18	15:26
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						
Potassium			U	50.0	ug/L						
Sodium			B	102	ug/L						
QC1203973549 443979015 MS											
Boron	500	U	15.0	494	ug/L		97.4	(75%-125%)		03/01/18	15:34
Calcium	5000		60000	65100	ug/L		N/A	(75%-125%)			
Iron	5000	U	30.0	5010	ug/L		100	(75%-125%)			
Magnesium	5000		20900	25600	ug/L		N/A	(75%-125%)			
Potassium	5000		5530	10700	ug/L		104	(75%-125%)			
Sodium	5000		21100	25900	ug/L		N/A	(75%-125%)			
QC1203973550 443979015 MSD											
Boron	500	U	15.0	498	ug/L	0.768	98.2	(0%-20%)		03/01/18	15:37
Calcium	5000		60000	66900	ug/L	2.78	N/A	(0%-20%)			
Iron	5000	U	30.0	5040	ug/L	0.663	101	(0%-20%)			
Magnesium	5000		20900	26200	ug/L	1.96	N/A	(0%-20%)			

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QC Summary

Workorder: 443979

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1739890										
Potassium	5000	5530		10900	ug/L	2.02	108	(0%-20%)	TXT1	03/01/18	15:37
Sodium	5000	21100		26500	ug/L	2.46	N/A	(0%-20%)			
QC1203973551 443979015 SDILT											
Boron	U	7.05	DU	75.0	ug/L	N/A		(0%-20%)		03/01/18	15:39
Calcium		60000	D	12600	ug/L	5.16		(0%-20%)			
Iron	U	5.12	DU	150	ug/L	N/A		(0%-20%)			
Magnesium		20900	D	4470	ug/L	6.91		(0%-20%)			
Potassium		5530	D	1090	ug/L	1.13		(0%-20%)			
Sodium		21100	D	4450	ug/L	5.25		(0%-20%)			

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

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QC Summary

Workorder: 443979

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
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Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
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N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
 ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.
 For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

General Chem Analysis

Case Narrative

**General Chemistry
 Technical Case Narrative
 CH2MHill Plateau Remediation Company (CPRC)
 SDG #: GEL443979
 Work Order #: 443979**

Product: Cyanide, Free**Analytical Method:** 9014_CYANIDE**Analytical Procedure:** GL-GC-E-073 REV# 8**Analytical Batches:** 1740079 and 1740080

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443979003	B3H9T1
443979004	B3H9T2
443979005	B3HMP1
443979006	B3HMP2
443979007	B3HMP3
443979008	B3HMP4
443979009	B3HMP5
443979010	B3HMP6
443979011	B3HMP7
443979012	B3HMP8
443979013	B3HMP9
443979014	B3HMR0
443979015	B3H9R8
443979016	B3HMR3
443979017	B3H9R7
1203974071	Method Blank (MB)
1203974072	Laboratory Control Sample (LCS)
1203974073	443936005(NonSDG) Sample Duplicate (DUP)
1203974074	443979016(B3HMR3) 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: 1740069, 1740072, 1740068, 1740071, 1740067 and 1740070

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443979003	B3H9T1
443979004	B3H9T2
443979005	B3HMP1
443979006	B3HMP2
443979007	B3HMP3
443979008	B3HMP4
443979009	B3HMP5
443979010	B3HMP6
443979011	B3HMP7
443979012	B3HMP8
443979013	B3HMP9
443979014	B3HMR0
443979015	B3H9R8
443979016	B3HMR3
443979017	B3H9R7

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. 443979016 (B3HMR3).

Product: Cyanide, Total**Analytical Method:** 9012_CYANIDE**Analytical Procedure:** GL-GC-E-095 REV# 21**Analytical Batches:** 1740058 and 1740057

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443979003	B3H9T1
443979004	B3H9T2
443979005	B3HMP1
443979006	B3HMP2
443979007	B3HMP3
443979008	B3HMP4
443979009	B3HMP5
443979010	B3HMP6
443979011	B3HMP7
443979012	B3HMP8
443979013	B3HMP9
443979014	B3HMR0
443979015	B3H9R8
443979016	B3HMR3
443979017	B3H9R7
1203974026	Method Blank (MB)
1203974027	Laboratory Control Sample (LCS)
1203974029	443979003(B3H9T1) Sample Duplicate (DUP)
1203974031	443979003(B3H9T1) Matrix Spike (MS)

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

Data Summary:

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

Technical Information**Sample Re-analysis**

Sample 443979006 (B3HMP2) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Product: Cyanide, Chlorinated

Analytical Method: 9012_CYANIDE

Analytical Procedure: GL-GC-E-095 REV# 21

Analytical Batches: 1740068, 1740071, 1740067 and 1740070

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443979003	B3H9T1
443979004	B3H9T2
443979005	B3HMP1
443979006	B3HMP2
443979007	B3HMP3
443979008	B3HMP4
443979009	B3HMP5
443979010	B3HMP6
443979011	B3HMP7
443979012	B3HMP8
443979013	B3HMP9
443979014	B3HMR0
443979015	B3H9R8
443979016	B3HMR3
443979017	B3H9R7
1203974048	Method Blank (MB)
1203974049	Laboratory Control Sample (LCS)
1203974050	443840020(NonSDG) Sample Duplicate (DUP)
1203974051	443871007(B3HML3) Sample Duplicate (DUP)
1203974052	Method Blank (MB)
1203974053	Laboratory Control Sample (LCS)
1203974054	443979004(B3H9T2) Sample Duplicate (DUP)
1203974055	443936003(NonSDG) Sample Duplicate (DUP)

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

Data Summary:

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

Technical Information

Sample Dilutions

The following sample 1203974050 (Non SDG 443840020DUP) 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.

Product: Ion Chromatography

Analytical Method: 9056_ANIONS_IC

Analytical Procedure: GL-GC-E-086 REV# 25

Analytical Batch: 1739844

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443979001	B3H9R5
443979002	B3HMR2
1203973355	Method Blank (MB)
1203973356	Laboratory Control Sample (LCS)
1203973357	443979002(B3HMR2) Sample Duplicate (DUP)
1203973358	443979002(B3HMR2) Post Spike (PS)

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

Data Summary:

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

Quality Control (QC) Information

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

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

Analyte	Sample	Value
Bromide	1203973358 (B3HMR2PS)	139* (75%-125%)
Nitrate	1203973358 (B3HMR2PS)	223* (75%-125%)
Nitrite	1203973358 (B3HMR2PS)	141* (75%-125%)

Technical Information

Holding Times

Samples (See Below) were initially analyzed within holding; however, the holding times had expired prior to reanalysis of diluted samples. The data is qualified.

Sample	Analyte	Value
1203973357 (B3HMR2DUP)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
1203973358 (B3HMR2PS)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443979001 (B3H9R5)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443979002 (B3HMR2)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18

Sample Dilutions

The following samples 1203973357 (B3HMR2DUP), 1203973358 (B3HMR2PS), 443979001 (B3H9R5) and 443979002 (B3HMR2) 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	443979	
	001	002
Chloride	10X	25X
Nitrate	10X	25X
Sulfate	10X	25X

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: GEL443979 GEL Work Order: 443979

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

Review/Validation

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

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

Signature: 

Name: Kristen Mizzell

Date: 26 FEB 2018

Title: Team Leader

Sample Data Summary

Certificate of Analysis

Report Date: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3H9R5 Project: CPRC0F16046
 Sample ID: 443979001 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:55
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "As Received"												
Bromide	B	161	67.0	250	ug/L		1	JXH5	02/16/18	1412	1739844	1
Fluoride	B	371	33.0	500	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	22500	670	2000	ug/L		10	JXH5	02/19/18	1247	1739844	2
Nitrate-N	DX	29200	330	1000	ug/L		10					
Sulfate	D	56900	1330	4000	ug/L		10					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

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

Certificate of Analysis

Report Date: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMR2 Project: CPRC0F16046
 Sample ID: 443979002 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:25
 Receive Date: 16-FEB-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "As Received"												
Bromide	U	67.0	67.0	250	ug/L		1	JXH5	02/16/18	1443	1739844	1
Fluoride	B	160	33.0	500	ug/L		1					
Nitrite-N		8880	33.0	250	ug/L		1					
Chloride	D	61000	1680	5000	ug/L		25	JXH5	02/19/18	1318	1739844	2
Nitrate-N	DX	90200	825	2500	ug/L		25					
Sulfate	D	87300	3330	10000	ug/L		25					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

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

Certificate of Analysis

Report Date: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3H9T1 Project: CPRC0F16046
 Sample ID: 443979003 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:55
 Receive Date: 16-FEB-18
 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	02/20/18	1025	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1157	1740069	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0750	1740067

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3H9T2 Project: CPRC0F16046
 Sample ID: 443979004 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:55
 Receive Date: 16-FEB-18
 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	02/20/18	1028	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMP1 Project: CPRC0F16046
 Sample ID: 443979005 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 08:52
 Receive Date: 16-FEB-18
 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	02/20/18	1029	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMP2 Project: CPRC0F16046
 Sample ID: 443979006 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 08:52
 Receive Date: 16-FEB-18
 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	02/20/18	1038	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMP3 Project: CPRC0F16046
 Sample ID: 443979007 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 09:42
 Receive Date: 16-FEB-18
 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	02/20/18	1031	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMP4 Project: CPRC0F16046
 Sample ID: 443979008 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 09:42
 Receive Date: 16-FEB-18
 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	02/20/18	1032	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMP5 Project: CPRC0F16046
 Sample ID: 443979009 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 09:20
 Receive Date: 16-FEB-18
 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	02/20/18	1039	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMP6 Project: CPRC0F16046
 Sample ID: 443979010 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 09:20
 Receive Date: 16-FEB-18
 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	02/20/18	1040	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMP7 Project: CPRC0F16046
 Sample ID: 443979011 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 08:45
 Receive Date: 16-FEB-18
 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	02/20/18	1041	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMP8 Project: CPRC0F16046
 Sample ID: 443979012 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 08:45
 Receive Date: 16-FEB-18
 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	02/20/18	1042	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMP9 Project: CPRC0F16046
 Sample ID: 443979013 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:50
 Receive Date: 16-FEB-18
 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	02/20/18	1043	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMR0 Project: CPRC0F16046
 Sample ID: 443979014 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:50
 Receive Date: 16-FEB-18
 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	02/20/18	1044	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3H9R8 Project: CPRC0F16046
 Sample ID: 443979015 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:55
 Receive Date: 16-FEB-18
 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	02/20/18	1045	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3HMR3 Project: CPRC0F16046
 Sample ID: 443979016 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:25
 Receive Date: 16-FEB-18
 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		12.0	1.67	5.00	ug/L	1.00	1	AXH3	02/20/18	1046	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/22/18	1039	1740080	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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: February 26, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3H9R7 Project: CPRC0F16046
 Sample ID: 443979017 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-FEB-18 10:55
 Receive Date: 16-FEB-18
 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	02/20/18	1047	1740058	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	3.00	3.00	10.0	ug/L		1	AXH3	02/20/18	1147	1740079	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	02/21/18	1158	1740072	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	02/20/18	1010	1740057
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	02/21/18	0855	1740070

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 26, 2018

Page 1 of 4

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 443979

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1740058										
QC1203974029	443979003	DUP									
Cyanide, Total		U	1.67	U	1.67	ug/L	N/A		AXH3	02/20/18	10:26
QC1203974027	LCS										
Cyanide, Total	50.0				50.6	ug/L	101	(80%-120%)		02/20/18	10:12
QC1203974026	MB										
Cyanide, Total			U		1.67	ug/L				02/20/18	10:11
QC1203974031	443979003	MS									
Cyanide, Total	100	U	1.67		107	ug/L	107	(75%-125%)		02/20/18	10:27
Batch	1740068										
QC1203974050	443840020	DUP									
Cyanide, Chlorinated		D	555	D	585	ug/L	5.26	(0%-20%)	AXH3	02/21/18	09:44
QC1203974051	443871007	DUP									
Cyanide, Chlorinated		B	2.57	B	2.20	ug/L	15.5 ^	(+/-5.00)		02/21/18	09:49
QC1203974049	LCS										
Cyanide, Chlorinated	50.0			U	1.67	ug/L	0	(-200%-200%)		02/21/18	09:31
QC1203974048	MB										
Cyanide, Chlorinated				U	1.67	ug/L				02/21/18	09:30
Batch	1740071										
QC1203974054	443979004	DUP									
Cyanide, Chlorinated		U	1.67	U	1.67	ug/L	N/A		AXH3	02/21/18	10:23

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QC Summary

Workorder: 443979

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch 1740071											
QC1203974055 443936003 DUP Cyanide, Chlorinated		U	1.67	U	1.67	ug/L	N/A		AXH3	02/21/18	10:11
QC1203974053 LCS Cyanide, Chlorinated	50.0			U	1.67	ug/L		0 (-200%-200%)		02/21/18	10:09
QC1203974052 MB Cyanide, Chlorinated				U	1.67	ug/L				02/21/18	10:08
Batch 1740080											
QC1203974073 443936005 DUP Free Cyanide		B	4.24	B	3.12	ug/L	30.5 ^	(+/-10.0)	AXH3	02/22/18	10:39
QC1203974074 443979016 DUP Free Cyanide		U	3.00	U	3.00	ug/L	N/A			02/22/18	10:39
QC1203974072 LCS Free Cyanide	100				100	ug/L		100 (80%-120%)		02/22/18	10:39
QC1203974071 MB Free Cyanide				U	3.00	ug/L				02/22/18	10:39
Ion Chromatography											
Batch 1739844											
QC1203973357 443979002 DUP Bromide		U	67.0	U	67.0	ug/L	N/A		JXH5	02/16/18	19:21
Chloride		D	61000	D	61000	ug/L	0.0779	(0%-20%)		02/19/18	13:49
Fluoride		B	160	B	163	ug/L	2.05 ^	(+/-500)		02/16/18	19:21
Nitrate-N		DX	90200	DX	90200	ug/L	0.0222	(0%-20%)		02/19/18	13:49
Nitrite-N			8880		8980	ug/L	1.18	(0%-20%)		02/16/18	19:21

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QC Summary

Workorder: 443979

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1739844										
Sulfate		D	87300	D	87300	ug/L	0.0258	(0%-20%)	JXH5	02/19/18	13:49
QC1203973356	LCS										
Bromide	1250				1170	ug/L	93.9	(80%-120%)		02/16/18	17:48
Chloride	5000				4800	ug/L	96	(80%-120%)			
Fluoride	2500				2510	ug/L	101	(80%-120%)			
Nitrate-N	2500				2440	ug/L	97.7	(80%-120%)			
Nitrite-N	2500				2440	ug/L	97.7	(80%-120%)			
Sulfate	10000				9950	ug/L	99.5	(80%-120%)			
QC1203973355	MB										
Bromide			U		67.0	ug/L				02/16/18	17:18
Chloride			U		67.0	ug/L					
Fluoride			U		33.0	ug/L					
Nitrate-N			U		33.0	ug/L					
Nitrite-N			U		33.0	ug/L					
Sulfate			U		133	ug/L					
QC1203973358	443979002	PS									
Bromide	1.25	U	0.00		1.74	mg/L	139*	(75%-125%)		02/16/18	19:52

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QC Summary

Workorder: 443979

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography												
Batch	1739844											
Chloride	5.00	D	2.44	D	7.47	mg/L		101	(75%-125%)	JXH5	02/19/18	14:20
Fluoride	2.50	B	0.160		2.81	mg/L		106	(75%-125%)		02/16/18	19:52
Nitrate-N	2.50	DX	3.61	DX	9.18	mg/L		223 *	(75%-125%)		02/19/18	14:20
Nitrite-N	2.50		8.88		12.4	mg/L		141 *	(75%-125%)		02/16/18	19:52
Sulfate	10.0	D	3.49	D	13.4	mg/L		99.4	(75%-125%)		02/19/18	14:20

Notes:

The Qualifiers in this report are defined as follows:

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

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
 ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.
 For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

Radiological Analysis

Case Narrative

**Radiochemistry
 Technical Case Narrative
 CH2MHill Plateau Remediation Company (CPRC)
 SDG #: GEL443979
 Work Order #: 443979**

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: 1741322

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443979016	B3HMR3
443979017	B3H9R7
1203976948	Method Blank (MB)
1203976949	443944020(NonSDG) Sample Duplicate (DUP)
1203976950	443944020(NonSDG) Matrix Spike (MS)
1203976951	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information

Sample Re-prep/Re-analysis

Samples were re-prepped due to high LCS recovery. The re-analysis is being reported.

Product: TC99_EIE_LSC: COMMON
Analytical Method: TC99_EIE_LSC
Analytical Procedure: GL-RAD-A-059 REV# 5
Analytical Batch: 1739980

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443979016	B3HMR3
443979017	B3H9R7
1203973816	Method Blank (MB)
1203973817	443979016(B3HMR3) Sample Duplicate (DUP)
1203973818	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: 1740742

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443979016	B3HMR3
443979017	B3H9R7
1203975828	Method Blank (MB)
1203975829	443979016(B3HMR3) Sample Duplicate (DUP)
1203975830	443979016(B3HMR3) Matrix Spike (MS)
1203975831	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information**Recounts**

Sample 1203975831 (LCS) was recounted due to low recovery. The second recount is reported.

Miscellaneous Information**Additional Comments**

The matrix spike, 1203975830 (B3HMR3MS), aliquot was reduced to conserve sample volume.

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: GEL443979 GEL Work Order: 443979

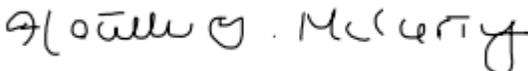
The Qualifiers in this report are defined as follows:

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: Heather McCarty

Date: 27 FEB 2018

Title: Analyst II

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443979	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 443979016	Date Collected: 02/15/2018 10:25	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3HMR3	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1741322	Analyst: BSW1	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 13:40	Aliquot: 1.2 L	Instrument: XRAY5
Data File: I443979016.CNF;2	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 120 min
Prep Batch: 1741322		
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		1.75	pCi/L	+/-0.910	0.927	0.641	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.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443979	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 443979016	Date Collected: 02/15/2018 10:25	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3HMR3	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1739980	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 02/25/2018 12:09	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1739980.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1739980		
Prep Date: 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		228	pCi/L	+/-30.6	40.1	41.3	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2340	3070	CPM	76.3	(30%-105%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443979	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 443979016	Date Collected: 02/15/2018 10:25	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3HMR3	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1740742	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 02/21/2018 12:14	Aliquot: 50 mL	Instrument: LSCSILVER
Data File: T1740742R2.xls	Prep Method: EPA 906.0 Modified	Count Time: 50 min
Prep Batch: 1740742		
Prep Date: 02/21/2018 08:27		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		857	pCi/L	+/-190	252	268	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.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL443979	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 443979017	Date Collected: 02/15/2018 10:55	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H9R7	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1741322	Analyst: BSW1	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 13:40	Aliquot: 0.31 L	Instrument: XRAY6
Data File: I443979017.CNF;3	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 1000 min
Prep Batch: 1741322		
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.142	pCi/L	+/-0.431	0.436	0.762	1.00

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

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL443979	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 443979017	Date Collected: 02/15/2018 10:55	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H9R7	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1739980	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 02/25/2018 12:36	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1739980.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1739980		
Prep Date: 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		146	pCi/L	+/-25.7	30.6	36.8	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2620	3070	CPM	85.3	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL443979	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 443979017	Date Collected: 02/15/2018 10:55	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H9R7	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1740742	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 02/21/2018 13:06	Aliquot: 50 mL	Instrument: LSCSILVER
Data File: T1740742R2.xls	Prep Method: EPA 906.0 Modified	Count Time: 50 min
Prep Batch: 1740742		
Prep Date: 02/21/2018 08:27		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1950	pCi/L	+/-228	440	267	400

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

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Quality Control Summary

QC Summary

Report Date: February 27, 2018
Page 1 of 2

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 443979

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1741322								
QC1203976948	MB								
Iodine-129			U	0.0887	pCi/L			BSW1	02/23/1813:41
				Uncert: +/-0.411					
				TPU: +/-0.413					
QC1203976949	443944020	DUP							
Iodine-129		2.02		2.81	pCi/L				02/23/1813:41
				Uncert: +/-0.960		RPD: 65 (0% - 100%)			
				TPU: +/-0.982		RER: 1.91 (0-2)			
QC1203976950	443944020	MS							
Iodine-129		52.0	2.02	53.1	pCi/L	REC: 100 (75%-125%)			02/23/1815:53
				Uncert: +/-0.960					
				TPU: +/-0.982					
QC1203976951	LCS								
Iodine-129		34.7		35.5	pCi/L	REC: 102 (80%-120%)			02/23/1815:54
				Uncert: +/-3.84					
				TPU: +/-5.22					
Rad Liquid Scintillation									
Batch	1739980								
QC1203973816	MB								
Technetium-99			U	-11.6	pCi/L			CXS7	02/25/1813:03
				Uncert: +/-20.9					
				TPU: +/-20.9					
**Technetium-99m Tracer		3070		2590	CPM	REC: 84 (30%-105%)			
QC1203973817	443979016	DUP							
Technetium-99		228		261	pCi/L				02/25/1813:31
				Uncert: +/-30.6		RPD: 13 (0%-20%)			
				TPU: +/-40.1		RER: 1.05 (0-2)			
**Technetium-99m Tracer		3070	2340	2240	CPM	REC: 73 (30%-105%)			
QC1203973818	LCS								
Technetium-99		888		828	pCi/L	REC: 93 (80%-120%)			02/25/1813:58
				Uncert: +/-40.4					
				TPU: +/-102					
**Technetium-99m Tracer		3070		2610	CPM	REC: 85 (30%-105%)			
Batch	1740742								
QC1203975828	MB								
Tritium			U	-93.5	pCi/L			MXH8	02/21/1813:58
				Uncert: +/-148					
				TPU: +/-148					
QC1203975829	443979016	DUP							
Tritium		857		1020	pCi/L				02/21/1814:50
				Uncert: +/-190		RPD: 17 (0% - 100%)			
				TPU: +/-252		RER: 0.835 (0-2)			
QC1203975830	443979016	MS							
Tritium		5160	857	5260	pCi/L	REC: 85 (75%-125%)			02/21/1815:43

QC Summary

Workorder: 443979

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Liquid Scintillation										
Batch										
				Uncert:						
				TPU:						
QC1203975831	LCS									
Tritium	2580				2140	pCi/L	REC: 83 (80%-120%)		02/22/18	11:50
				Uncert:						
				TPU:						

Notes:

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

The Qualifiers in this report are defined as follows:

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

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

** Indicates analyte is a surrogate compound.

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

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

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