GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
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gel.com

June 29, 2017

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

Re: CHPRC SAF W17-006
Work Order: 424705
SDG: GEL424705

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 06, 2017. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

B Luthman

Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 300071-7H
Chain of Custody: W17-006-062, W17-006-063, W17-006-082, W17-006-116, W17-006-120, W17-006-121 and W17-006-122
Enclosures

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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF W17-006
SDG: GEL424705

June 29, 2017

Laboratory Identification:

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

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on June 06, 2017, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

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

Sample Identification
The laboratory received the following samples:

Laboratory Identification	Sample Description
424705001	B39NT3
424705002	B39NV9
424705003	B39NW4
424705004	B39NW5
424705005	B39NW2
424705006	B39NW6
424705007	B39NW3
424705008	B39NW7
424705009	B39P78

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: GC/MS Volatile, General Chemistry and Metals.

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

B Luthman

Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL424705
Work Order #: 424705

GC/MS Volatile

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

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/Matrix Spike Duplicate Recovery Statement
The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203806007 (Non SDG 424245003PS)	2-Butanone	62* (70%-130%)
	Acetone	40* (70%-130%)
1203806008 (Non SDG 424245003PSD)	2-Butanone	59* (70%-130%)
	Acetone	43* (70%-130%)

Technical Information

Sample Dilutions/Methanol Dilutions
Sample 424705009 (B39P78) was diluted because target analyte concentrations exceeded the calibration range.

Analyte	424705
	009
cis-1,2-Dichloroethylene	2X

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. 424705005 (B39NW2), 424705006 (B39NW6), 424705007 (B39NW3) and 424705008 (B39NW7).

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
1203805088 (MB)	Sodium	120 betw (100 - 150)

Determination of Metals by ICP-MS

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

General Chemistry

Cyanide, Total

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.

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.

Technical Information

Sample Dilutions
The following samples 1203804651 (B39NW5DUP), 1203804652 (B39NW5PS), 424705001 (B39NT3), 424705002 (B39NV9), 424705003 (B39NW4) and 424705004 (B39NW5) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	424705			
	001	**002**	**003**	**004**
Several	20X 1X	20X 1X	20X 1X	20X 1X

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

424705

C.O.C. # **W17-006-116**

Page 1 of 1

Collector	Juan Aguilar /CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W17-006	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JUNE 2017	**Logbook No.**	HNF-N-506 88/69	**Ice Chest No.**	GWS-324
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7793 0523 3754
Protocol	RCRA	**Priority:**	**30 Days** PRIORITY	**Offsite Property No.**	7986

POSSIBLE SAMPLE HAZARDS/REMARKS

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

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39NT3	N	W	6-5-17	1038	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Juan Aguilar /CHPRC			JUN 05 2017 1052	Lesly Wall /CHPRC			JUN 05 2017 1052
Lesly Wall /CHPRC			JUN 05 2027 1400			FEDEX	
			FED EX		STACY BOONE		6/6/17 9:05

Matrix *

S	= Soil	DS	= Drum Solids		
SE	= Sediment	DL	= Drum Liquids		
SO	= Solid	T	= Tissue		
SL	= Sludge	WI	= Wipe		
W	= Water	L	= Liquid		
O	= Oil	V	= Vegetation		
A	= Air	X	= Other		

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

PRINTED ON 5/15/2017 FSR ID = FSR34767 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 424705	C.O.C. # W17-006-120 Page 1 of 1

Collector	Juan Aguilar /CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W17-006	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JUNE 2017	**Logbook No.**	HNF-N-506 88 / 69	**Ice Chest No.**	GWS-324
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7179305233754
Protocol	RCRA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	79866

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

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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39NV9	N	W	6-5-17	0853	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Juan Aguilar /CHPRC			JUN 05 2017 1052	Lesly Wall /CHPRC			JUN 05 2017 1052
Lesly Wall /CHPRC			JUN 05 2027 1400		FEDEX		
			FED EX	STACY BOONE			6-6-17 9:05

Matrix *			
S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

Relinquished By	Date/Time	Received By	Date/Time

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

PRINTED ON 5/15/2017 FSR ID = FSR45150 A-6004-842 (REV 2)

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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 424705	C.O.C. # W17-006-121 Page 1 of 1

Collector	Juan Aguilar /CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W17-006	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JUNE 2017	**Logbook No.**	HNF-N-506 88/69	**Ice Chest No.**	GWS-324
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	779305233754
Protocol	RCRA	**Priority:**	**30 Days** PRIORITY	**Offsite Property No.**	79866

POSSIBLE SAMPLE HAZARDS/REMARKS

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

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39NW4	N	W	6-5-17	0953	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Juan Aguilar /CHPRC			JUN 05 2017 1052	Lesly Wall /CHPRC			JUN 05 2017 1052
Lesly Wall /CHPRC			JUN 05 2027 1400				
				FEDEX			
			FED EX	STACY BOONE			6/6/17 9:05

Matrix *

S	= Soil	DS	= Drum Solids		
SE	= Sediment	DL	= Drum Liquids		
SO	= Solid	T	= Tissue		
SL	= Sludge	WI	= Wipe		
W	= Water	L	= Liquid		
O	= Oil	V	= Vegetation		
A	= Air	X	= Other		

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

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 424705	C.O.C. # W17-006-122 Page 1 of 1

Collector	Juan Aguilar /CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W17-006	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JUNE 2017	**Logbook No.**	HNF-N-506 88/69	**Ice Chest No.**	GWS-324
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7793 0523 3754
Protocol	RCRA	**Priority:**	**30 Days** PRIORITY	**Offsite Property No.**	7986

POSSIBLE SAMPLE HAZARDS/REMARKS

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

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39NW5	N	W	6-5-17	0953	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	Juan Aguilar /CHPRC		JUN 05 2017 1052		Lesly Wall /CHPRC		JUN 05 2017 1052
Relinquished By	Lesly Wall /CHPRC		JUN 05 2027 1400	Received By	FEDEX		
Relinquished By			FED EX	Received By	STACY BOONE		6-6-17 9:05
Relinquished By				Received By			

Matrix *

S	= Soil	DS	= Drum Solids		
SE	= Sediment	DL	= Drum Liquids		
SO	= Solid	T	= Tissue		
SL	= Sludge	WI	= Wipe		
W	= Water	L	= Liquid		
O	= Oil	V	= Vegetation		
A	= Air	X	= Other		

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

PRINTED ON 5/15/2017 **FSR ID = FSR22287** A-6004-842 (REV 2)

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June 29, 2017

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 424705	C.O.C. # W17-006-062 Page 1 of 1

Collector	Juan Aguilar /CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W17-006	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JUNE 2017	**Logbook No.**	HNF-N-506 88/69	**Ice Chest No.**	GWS-324
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	779305233754
Protocol	RCRA	**Priority:**	**30 Days** PRIORITY	**Offsite Property No.**	7986

POSSIBLE SAMPLE HAZARDS/REMARKS

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

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39NW2	N	W	6-5-17	0953	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B39NW2	N	W	6-5-17	0953	1x250-mL aG	9012_CYANIDE (TOTAL): COMMON	14 Days	NaOH to pH >=12/Cool <=6C
B39NW6	Y	W	6-5-17	0953	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
~~Relinquished By~~	Juan Aguilar /CHPRC		JUN 05 2017 1052	Received By	Lesly Wall /CHPRC		JUN 05 2017 1052
Relinquished By	Lesly Wall /CHPRC		JUN 05 2027 1400	Received By	FEDEX		Date/Time
Relinquished By			FEDEX	Received By	STACY BOONE		6-6-17 9:05
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S	= Soil	DS	=	Drum Solids	
SE	= Sediment	DL	=	Drum Liquids	
SO	= Solid	T	=	Tissue	
SL	= Sludge	WI	=	Wipe	
W	= Water	L	=	Liquid	
O	= Oil	V	=	Vegetation	
A	= Air	X	=	Other	

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

PRINTED ON 5/15/2017 FSR ID = FSR22287 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

424705

C.O.C. # **W17-006-063**

Page 1 of 1

Collector	Juan Aguilar ICHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W17-006	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JUNE 2017	**Logbook No.**	HNF-N-506 88/69	**Ice Chest No.**	GWS-324
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7793 0523 3754
Protocol	RCRA	**Priority:**	**30 Days** **PRIORITY**	**Offsite Property No.**	17986

POSSIBLE SAMPLE HAZARDS/REMARKS

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

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39NW3	N	W	6-5-17	0953	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B39NW3	N	W	6-5-17	0953	1x250-mL aG	9012_CYANIDE (TOTAL): COMMON	14 Days	NaOH to pH >=12/Cool <=6C
B39NW7	Y	W	6-5-17	0953	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Juan Aguilar ICHPRC			JUN 05 2017 1052	Lesly Wall ICHPRC			JUN 05 2017 1052
Lesly Wall ICHPRC			JUN 05 2027 1400				Date/Time
Relinquished By			Date/Time	Received By			Date/Time
			FEDEX				
Relinquished By			Date/Time	Received By			Date/Time
			FEDEX	STACY BOONE 6-6-17 9:05			
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S	= Soil	DS	= Drum Solids		
SE	= Sediment	DL	= Drum Liquids		
SO	= Solid	T	= Tissue		
SL	= Sludge	WI	= Wipe		
W	= Water	L	= Liquid		
O	= Oil	V	= Vegetation		
A	= Air	X	= Other		

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

PRINTED ON 5/15/2017 FSR ID = FSR22287 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

424705

C.O.C. # W17-006-082

Page 1 of 1

Collector	Dave Wight CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W17-006	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JUNE 2017	**Logbook No.**	HNF-N-506 93145	**Ice Chest No.**	GWS-324
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7793 0523 3754
Protocol	RCRA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	7986

POSSIBLE SAMPLE HAZARDS/REMARKS

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

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39P78	N	W	JUN 0 2 2017	1247	5x40-mL aGs*	8260_VOA_GCMS: COMMON; 8260_VOA_GCMS: GW 01	14 Days	HCl or H2SO4 to pH <2/Cool <=6C

June 29, 2017

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	Dave Wight CHPRC		JUN 0 2 2017 1320	SSU-1			JUN 0 2 2017 1320
SSU-1			JUN 0 5 2017 0730		Frank Hall /CHPRC		JUN 0 5 2017 0730
	Frank Hall /CHPRC		JUN 0 5 2017 1400	FEDEX			
			FED X	STACY BOONE			6-6-17 9:01

Matrix *

S	= Soil		DS	=	Drum Solids
SE	= Sediment		DL	=	Drum Liquids
SO	= Solid		T	=	Tissue
SL	= Sludge		WI	=	Wipe
W	= Water		L	=	Liquid
O	= Oil		V	=	Vegetation
A	= Air		X	=	Other

16-0-85

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

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC	SDG/AR/COC/Work Order: 424705
Received By: Stacey Boone	Date Received: 6-JUNE-17
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 7793 0523 3548-1c 7793 0523 3754-1c

Suspected Hazard Information	Yes	No	
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): Ø CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3
Is package, COC, and/or Samples marked HAZ?		✓	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP:_____
4	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: IR3-17 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	✓			Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?	✓			If Yes, Are Encores or Soil Kits present? Yes___ No✓ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes✓ No___ N/A (If unknown, select No) VOA vials free of headspace? Yes✓ No___ N/A Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
11	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials BL Date 6/7/17 Page 1 of 1

GL-CHL-SR-001 Rev 5

Data Review Qualifier Definitions

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 (843) 556−8171

Report Date: 29−JUN−17

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 (0rganics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post−digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy−−Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 29 June 2017

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

Volatile Analysis

Case Narrative

GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL424705
Work Order #: 424705

Product: **Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method: SW846 8260C
Analytical Procedure: GL-OA-E-038 REV# 26
Analytical Batch: 1671888

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

GEL Sample ID#	Client Sample Identification
424705009	B39P78
1203806005	Method Blank (MB)
1203806006	Laboratory Control Sample (LCS)
1203806007	424245003(NonSDG) Post Spike (PS)
1203806008	424245003(NonSDG) Post Spike Duplicate (PSD)
1203806060	Method Blank (MB)
1203806061	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.

Calibration Information

Continuing Calibration Verification Requirements
The calibration verification standard requirements were not all met for samples . Tetrahydrofuran recovered at -20.4%D/drift in the daily CCV analyzed on 6/7/17. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

Quality Control (QC) Information

Matrix Spike/Matrix Spike Duplicate Recovery Statement
The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203806007 (Non SDG 424245003PS)	2-Butanone	62* (70%-130%)
	Acetone	40* (70%-130%)
1203806008 (Non SDG 424245003PSD)	2-Butanone	59* (70%-130%)
	Acetone	43* (70%-130%)

Technical Information

Sample Dilutions/Methanol Dilutions

Sample 424705009 (B39P78) was diluted because target analyte concentrations exceeded the calibration range.

Analyte	**424705**
	009
cis-1,2-Dichloroethylene	2X

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: GEL424705 GEL Work Order: 424705

The Qualifiers in this report are defined as follows:

D Results are reported from a diluted aliquot of sample.
E Concentration exceeds the calibration range of the instrument
J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated
T Spike and/or spike duplicate sample recovery is outside control limits.
U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: Erin Haubert **Name: Erin Haubert**

Date: 25 JUN 2017 **Title: Data Validator**

Sample Data Summary

Volatile

Certificate of Analysis
Sample Summary

SDG Number:	**GEL424705**	**Date Collected:**	**06/02/2017 12:47**	**Matrix:**	**WATER**
Lab Sample ID:	**424705009**	**Date Received:**	**06/06/2017 09:00**		
		Client:	**CPRC001**	**Project:**	**CPRC0W17006**
Client ID:	**B39P78**	**Method:**	**SW846 8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1671888**	**Inst:**	**VOA3.I**	**Dilution:**	**1**
Run Date:	**06/07/2017 19:07**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/07/2017 19:07**				
Data File:	**060717V3\3G319.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	J	1.73	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
109-99-9	Tetrahydrofuran	U	1.50	ug/L	1.50	10.0	50.0
71-36-3	n-Butyl alcohol	U	83.3	ug/L	83.3	250	100

Volatile

Certificate of Analysis
Sample Summary

SDG Number:	**GEL424705**	**Date Collected:**	**06/02/2017 12:47**	**Matrix:**	**WATER**
Lab Sample ID:	**424705009**	**Date Received:**	**06/06/2017 09:00**		
		Client:	**CPRC001**	**Project:**	**CPRC0W17006**
Client ID:	**B39P78DL**	**Method:**	**SW846 8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1671888**	**Inst:**	**VOA3.I**	**Dilution:**	**2**
Run Date:	**06/08/2017 15:23**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/08/2017 15:23**				
Data File:	**060817V3\3G414.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
156-59-2	cis-1,2-Dichloroethylene	D	136	ug/L	0.600	4.00	5.00

Quality Control Summary

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QC Summary

Report Date: June 25, 2017

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1671888											
QC1203806006 LCS											
1,1,1-Trichloroethane	50.0			48.3	ug/L		97	(70%-130%)	VXY1	06/07/17	10:56
1,1,2-Trichloroethane	50.0			48.6	ug/L		97	(70%-130%)			
1,1-Dichloroethane	50.0			51.1	ug/L		102	(70%-130%)			
1,1-Dichloroethylene	50.0			46.5	ug/L		93	(70%-130%)			
1,2-Dichloroethane	50.0			46.9	ug/L		94	(70%-130%)			
1,4-Dichlorobenzene	50.0			47.5	ug/L		95	(70%-130%)			
2-Butanone	250			264	ug/L		106	(70%-130%)			
4-Methyl-2-pentanone	250			233	ug/L		93	(70%-130%)			
Acetone	250			273	ug/L		109	(70%-130%)			
Benzene	50.0			46.1	ug/L		92	(70%-130%)			
Carbon disulfide	250			231	ug/L		92	(70%-130%)			
Carbon tetrachloride	50.0			48.2	ug/L		96	(70%-130%)			
Chlorobenzene	50.0			47.4	ug/L		95	(70%-130%)			

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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1671888										
Chloroform	50.0			46.2	ug/L		92	(70%-130%)	VXY1	06/07/17 10:56
Ethylbenzene	50.0			45.1	ug/L		90	(70%-130%)		
Methylene chloride	50.0			44.4	ug/L		89	(70%-130%)		
Tetrachloroethylene	50.0			46.0	ug/L		92	(70%-130%)		
Toluene	50.0			48.1	ug/L		96	(70%-130%)		
Trichloroethylene	50.0			49.1	ug/L		98	(70%-130%)		
Vinyl chloride	50.0			45.7	ug/L		91	(70%-130%)		
Xylenes (total)	150			141	ug/L		94	(70%-130%)		
cis-1,2-Dichloroethylene	50.0			45.8	ug/L		92	(70%-130%)		
n-Butyl alcohol	5000			5250	ug/L		105	(70%-130%)		
trans-1,2-Dichloroethylene	50.0			48.7	ug/L		97	(70%-130%)		
**1,2-Dichloroethane-d4	50.0			44.1	ug/L		88	(70%-130%)		
**Bromofluorobenzene	50.0			53.7	ug/L		107	(70%-130%)		
**Toluene-d8	50.0			46.9	ug/L		94	(70%-130%)		
QC1203806061 LCS										
1,1,1-Trichloroethane	50.0			48.7	ug/L		97	(70%-130%)		06/08/17 09:48

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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1671888										
1,1,2-Trichloroethane	50.0			47.4	ug/L		95	(70%-130%)	VXY1	06/08/17 09:48
1,1-Dichloroethane	50.0			49.7	ug/L		99	(70%-130%)		
1,1-Dichloroethylene	50.0			48.6	ug/L		97	(70%-130%)		
1,2-Dichloroethane	50.0			46.2	ug/L		92	(70%-130%)		
1,4-Dichlorobenzene	50.0			49.0	ug/L		98	(70%-130%)		
2-Butanone	250			246	ug/L		98	(70%-130%)		
4-Methyl-2-pentanone	250			217	ug/L		87	(70%-130%)		
Acetone	250			240	ug/L		96	(70%-130%)		
Benzene	50.0			46.7	ug/L		93	(70%-130%)		
Carbon disulfide	250			239	ug/L		95	(70%-130%)		
Carbon tetrachloride	50.0			48.4	ug/L		97	(70%-130%)		
Chlorobenzene	50.0			47.6	ug/L		95	(70%-130%)		
Chloroform	50.0			46.5	ug/L		93	(70%-130%)		
Ethylbenzene	50.0			46.7	ug/L		93	(70%-130%)		
Methylene chloride	50.0			43.5	ug/L		87	(70%-130%)		

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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1671888										
Tetrachloroethylene	50.0			46.4	ug/L		93	(70%-130%)	VXY1	06/08/17 09:48
Toluene	50.0			48.9	ug/L		98	(70%-130%)		
Trichloroethylene	50.0			49.0	ug/L		98	(70%-130%)		
Vinyl chloride	50.0			42.8	ug/L		86	(70%-130%)		
Xylenes (total)	150			135	ug/L		90	(70%-130%)		
cis-1,2-Dichloroethylene	50.0			46.9	ug/L		94	(70%-130%)		
n-Butyl alcohol	5000			4640	ug/L		93	(70%-130%)		
trans-1,2-Dichloroethylene	50.0			48.7	ug/L		97	(70%-130%)		
**1,2-Dichloroethane-d4	50.0			41.2	ug/L		82	(70%-130%)		
**Bromofluorobenzene	50.0			53.8	ug/L		108	(70%-130%)		
**Toluene-d8	50.0			45.1	ug/L		90	(70%-130%)		
QC1203806005 MB										
1,1,1-Trichloroethane			U	0.300	ug/L					06/07/17 12:28
1,1,2-Trichloroethane			U	0.300	ug/L					
1,1-Dichloroethane			U	0.300	ug/L					
1,1-Dichloroethylene			U	0.300	ug/L					

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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1671888											
1,2-Dichloroethane			U	0.300	ug/L				VXY1	06/07/17	12:28
1,4-Dichlorobenzene			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Ethylbenzene			U	0.300	ug/L						
Methylene chloride			U	1.60	ug/L						
Propionitrile			U	3.00	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Tetrahydrofuran			U	1.50	ug/L						

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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1671888										
Toluene			U	0.300	ug/L				VXY1	06/07/17 12:28
Trichloroethylene			U	0.300	ug/L					
Vinyl chloride			U	0.300	ug/L					
Xylenes (total)			U	0.300	ug/L					
cis-1,2-Dichloroethylene			U	0.300	ug/L					
n-Butyl alcohol			U	83.3	ug/L					
trans-1,2-Dichloroethylene			U	0.300	ug/L					
**1,2-Dichloroethane-d4	50.0			46.7	ug/L		93	(70%-130%)		
**Bromofluorobenzene	50.0			49.7	ug/L		99	(70%-130%)		
**Toluene-d8	50.0			50.9	ug/L		102	(70%-130%)		
QC1203806060 MB										
1,1,1-Trichloroethane			U	0.300	ug/L					06/08/17 11:19
1,1,2-Trichloroethane			U	0.300	ug/L					
1,1-Dichloroethane			U	0.300	ug/L					
1,1-Dichloroethylene			U	0.300	ug/L					
1,2-Dichloroethane			U	0.300	ug/L					

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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1671888											
1,4-Dichlorobenzene			U	0.300	ug/L				VXY1	06/08/17	11:19
2-Butanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Ethylbenzene			U	0.300	ug/L						
Methylene chloride			U	1.60	ug/L						
Propionitrile			U	3.00	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Tetrahydrofuran			U	1.50	ug/L						
Toluene			U	0.300	ug/L						

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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1671888										
Trichloroethylene			U	0.300	ug/L				VXY1	06/08/17 11:19
Vinyl chloride			U	0.300	ug/L					
Xylenes (total)			U	0.300	ug/L					
cis-1,2-Dichloroethylene			U	0.300	ug/L					
n-Butyl alcohol			U	83.3	ug/L					
trans-1,2-Dichloroethylene			U	0.300	ug/L					
**1,2-Dichloroethane-d4	50.0			43.0	ug/L		86	(70%-130%)		
**Bromofluorobenzene	50.0			50.8	ug/L		102	(70%-130%)		
**Toluene-d8	50.0			45.3	ug/L		91	(70%-130%)		
QC1203806007 424245003 PS										
1,1,1-Trichloroethane	50.0	U	0.00	40.5	ug/L		81	(70%-130%)		06/07/17 20:08
1,1,2-Trichloroethane	50.0	U	0.00	49.5	ug/L		99	(70%-130%)		
1,1-Dichloroethane	50.0	U	0.00	46.8	ug/L		94	(70%-130%)		
1,1-Dichloroethylene	50.0	U	0.00	41.6	ug/L		83	(70%-130%)		
1,2-Dichloroethane	50.0	U	0.00	44.5	ug/L		89	(70%-130%)		
1,4-Dichlorobenzene	50.0	U	0.00	44.1	ug/L		88	(70%-130%)		

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QC Summary

Workorder: **424705**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS												
Batch 1671888												
2-Butanone	250	TU	0.00	T	154	ug/L		62*	(70%-130%)	VXY1	06/07/17	20:08
4-Methyl-2-pentanone	250	U	0.00		224	ug/L		89	(70%-130%)			
Acetone	250	TU	0.00	T	101	ug/L		40*	(70%-130%)			
Benzene	50.0	U	0.00		44.4	ug/L		89	(70%-130%)			
Carbon disulfide	250	U	0.00		224	ug/L		89	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00		41.6	ug/L		83	(70%-130%)			
Chlorobenzene	50.0	U	0.00		46.6	ug/L		93	(70%-130%)			
Chloroform	50.0	J	0.310		42.6	ug/L		85	(70%-130%)			
Ethylbenzene	50.0	U	0.00		47.1	ug/L		94	(70%-130%)			
Methylene chloride	50.0	U	0.00		43.1	ug/L		86	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00		42.9	ug/L		86	(70%-130%)			
Toluene	50.0	U	0.00		46.8	ug/L		94	(70%-130%)			
Trichloroethylene	50.0	J	3.88		47.4	ug/L		87	(70%-130%)			
Vinyl chloride	50.0	U	0.00		42.7	ug/L		85	(70%-130%)			
Xylenes (total)	150	U	0.00		136	ug/L		91	(70%-130%)			

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QC Summary

Workorder: **424705**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1671888											
cis-1,2-Dichloroethylene	50.0	U	0.00		46.6	ug/L		93	(70%-130%)	VXY1	06/07/17 20:08
n-Butyl alcohol	5000	U	0.00		4770	ug/L		95	(70%-130%)		
trans-1,2-Dichloroethylene	50.0	U	0.00		44.1	ug/L		88	(70%-130%)		
**1,2-Dichloroethane-d4	50.0		44.3		38.5	ug/L		77	(70%-130%)		
**Bromofluorobenzene	50.0		48.8		49.3	ug/L		99	(70%-130%)		
**Toluene-d8	50.0		46.7		47.2	ug/L		94	(70%-130%)		
QC1203806008 424245003 PSD											
1,1,1-Trichloroethane	50.0	U	0.00		43.7	ug/L	8	87	(0%-20%)		06/07/17 20:38
1,1,2-Trichloroethane	50.0	U	0.00		48.0	ug/L	3	96	(0%-20%)		
1,1-Dichloroethane	50.0	U	0.00		46.5	ug/L	1	93	(0%-20%)		
1,1-Dichloroethylene	50.0	U	0.00		42.9	ug/L	3	86	(0%-20%)		
1,2-Dichloroethane	50.0	U	0.00		45.0	ug/L	1	90	(0%-20%)		
1,4-Dichlorobenzene	50.0	U	0.00		44.1	ug/L	0	88	(0%-20%)		
2-Butanone	250	TU	0.00	T	148	ug/L	4	59*	(0%-20%)		
4-Methyl-2-pentanone	250	U	0.00		214	ug/L	4	86	(0%-20%)		
Acetone	250	TU	0.00	T	108	ug/L	7	43*	(0%-20%)		

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QC Summary

Workorder: **424705**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1671888											
Benzene	50.0	U	0.00		44.4	ug/L	0	89	(0%-20%)	VXY1	06/07/17 20:38
Carbon disulfide	250	U	0.00		218	ug/L	3	87	(0%-20%)		
Carbon tetrachloride	50.0	U	0.00		43.1	ug/L	4	86	(0%-20%)		
Chlorobenzene	50.0	U	0.00		44.4	ug/L	5	89	(0%-20%)		
Chloroform	50.0	J	0.310		44.6	ug/L	4	89	(0%-20%)		
Ethylbenzene	50.0	U	0.00		42.1	ug/L	11	84	(0%-20%)		
Methylene chloride	50.0	U	0.00		43.0	ug/L	0	86	(0%-20%)		
Tetrachloroethylene	50.0	U	0.00		42.0	ug/L	2	84	(0%-20%)		
Toluene	50.0	U	0.00		44.7	ug/L	4	89	(0%-20%)		
Trichloroethylene	50.0	J	3.88		47.3	ug/L	0	87	(0%-20%)		
Vinyl chloride	50.0	U	0.00		43.7	ug/L	2	87	(0%-20%)		
Xylenes (total)	150	U	0.00		126	ug/L	7	84	(0%-20%)		
cis-1,2-Dichloroethylene	50.0	U	0.00		44.9	ug/L	4	90	(0%-20%)		
n-Butyl alcohol	5000	U	0.00		5130	ug/L	7	103	(0%-20%)		
trans-1,2-Dichloroethylene	50.0	U	0.00		44.1	ug/L	0	88	(0%-20%)		

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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1671888										
**1,2-Dichloroethane-d4	50.0	44.3		39.9	ug/L		80	(70%-130%)	VXY1	06/07/17 20:38
**Bromofluorobenzene	50.0	48.8		50.6	ug/L		101	(70%-130%)		
**Toluene-d8	50.0	46.7		45.2	ug/L		90	(70%-130%)		

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (0rganics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

Volatile

Surrogate Recovery Report

SDG Number: **GEL424705**

Matrix Type: **LIQUID**

Sample ID	Client ID	DCED4 %REC		TOL %REC		BFB %REC	
1203806006	LCS for batch 1671888	88		94		107	
1203806005	MB for batch 1671888	93		102		99	
424705009	B39P78	83		91		85	
1203806007	B39FH3PS	77		94		99	
1203806008	B39FH3PSD	80		90		101	
1203806061	LCS for batch 1671888	82		90		108	
1203806060	MB for batch 1671888	86		91		102	
424705009	B39P78DL	79	D	89	D	91	D

Surrogate		Acceptance Limits
DCED4	= 1,2-Dichloroethane-d4	(70%-130%)
TOL	= Toluene-d8	(70%-130%)
BFB	= Bromofluorobenzene	(70%-130%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL424705
Work Order #: 424705

Product: **Determination of Metals by ICP**
Analytical Method: SW846 3005A/6010D
Analytical Procedure: GL-MA-E-013 REV# 28
Analytical Batch: 1671573

Product: **Determination of Metals by ICP-MS**
Analytical Method: SW846 3005A/6020B
Analytical Procedure: GL-MA-E-014 REV# 30
Analytical Batch: 1671607

Preparation Method: SW846 3005A
Preparation Procedure: GL-MA-E-006 REV# 13
Preparation Batches: 1671572 and 1671606

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

GEL Sample ID#	Client Sample Identification
424705005	B39NW2
424705006	B39NW6
424705007	B39NW3
424705008	B39NW7
1203805088	Method Blank (MB)**ICP**
1203805089	Laboratory Control Sample (LCS)
1203805092	424705005(B39NW2L) Serial Dilution (SD)
1203805090	424705005(B39NW2S) Matrix Spike (MS)
1203805091	424705005(B39NW2SD) Matrix Spike Duplicate (MSD)
1203805188	Method Blank (MB)**ICP-MS**
1203805189	Laboratory Control Sample (LCS)
1203805192	424705005(B39NW2L) Serial Dilution (SD)
1203805190	424705005(B39NW2S) Matrix Spike (MS)
1203805191	424705005(B39NW2SD) 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. 424705005 (B39NW2), 424705006 (B39NW6), 424705007 (B39NW3) and

424705008 (B39NW7)-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
1203805088 (MB)	Sodium	120 betw (100 - 150)

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: GEL424705 GEL Work Order: 424705

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: 29 JUN 2017 **Title: Data Validator**

Sample Data Summary

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL424705 **CONTRACT:** CPRC0W17006 **METHOD TYPE:** SW846

SAMPLE ID: 424705005 **BASIS:** As Received **DATE COLLECTED** 05−JUN−17

CLIENT ID: B39NW2 **LEVEL:** Low **DATE RECEIVED** 06−JUN−17

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	06/24/17 12:05	170624−3	1671607
7440−38−2	Arsenic	6.36	ug/L		2	5	5	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−39−3	Barium	59.5	ug/L		0.67	2	2	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	06/22/17 23:15	062217−1	1671573
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−70−2	Calcium	98000	ug/L		50	200	200	1	P	JWJ	06/22/17 23:15	062217−1	1671573
7440−47−3	Chromium	14.8	ug/L		3	10	10	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−48−4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−50−8	Copper	0.609	ug/L	B	0.3	1	1	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7439−89−6	Iron	256	ug/L		30	100	100	1	P	JWJ	06/22/17 23:15	062217−1	1671573
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7439−95−4	Magnesium	26800	ug/L		110	300	300	1	P	JWJ	06/22/17 23:15	062217−1	1671573
7439−96−5	Manganese	2.76	ug/L	B	1	5	5	1	MS	BAJ	06/24/17 14:15	170624−6	1671607
7439−98−7	Molybdenum	2.33	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−02−0	Nickel	5.86	ug/L		0.6	2	2	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−09−7	Potassium	9570	ug/L		50	150	150	1	P	JWJ	06/22/17 23:15	062217−1	1671573
7782−49−2	Selenium	15.6	ug/L		2	5	5	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−23−5	Sodium	18200	ug/L		100	300	300	1	P	JWJ	06/22/17 23:15	062217−1	1671573
7440−24−6	Strontium	555	ug/L		2	10	10	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	06/23/17 23:51	170623−2	1671607
7440−61−1	Uranium	3.7	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/24/17 12:05	170624−3	1671607
7440−62−2	Vanadium	15.6	ug/L		1	5	5	1	P	JWJ	06/22/17 23:15	062217−1	1671573
7440−66−6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	06/23/17 23:51	170623−2	1671607

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1671573	1671572	SW846 3005A	50	mL	50	mL	06/06/17	CXW4
1671607	1671606	SW846 3005A	50	mL	50	mL	06/06/17	CXW4

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL424705 **CONTRACT:** CPRC0W17006 **METHOD TYPE:** SW846

SAMPLE ID: 424705006 **BASIS:** As Received **DATE COLLECTED** 05−JUN−17

CLIENT ID: B39NW6 **LEVEL:** Low **DATE RECEIVED** 06−JUN−17

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	06/24/17 12:15	170624−3	1671607
7440−38−2	Arsenic	6.61	ug/L		2	5	5	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−39−3	Barium	63.1	ug/L		0.67	2	2	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	06/22/17 23:25	062217−1	1671573
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−70−2	Calcium	99500	ug/L		50	200	200	1	P	JWJ	06/22/17 23:25	062217−1	1671573
7440−47−3	Chromium	3.66	ug/L	B	3	10	10	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−48−4	Cobalt	0.404	ug/L	B	0.3	1	1	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−50−8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	06/22/17 23:25	062217−1	1671573
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7439−95−4	Magnesium	27700	ug/L		110	300	300	1	P	JWJ	06/22/17 23:25	062217−1	1671573
7439−96−5	Manganese	1.09	ug/L	B	1	5	5	1	MS	BAJ	06/24/17 14:20	170624−6	1671607
7439−98−7	Molybdenum	2.35	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−02−0	Nickel	1.96	ug/L	B	0.6	2	2	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−09−7	Potassium	9730	ug/L		50	150	150	1	P	JWJ	06/22/17 23:25	062217−1	1671573
7782−49−2	Selenium	16	ug/L		2	5	5	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−23−5	Sodium	18500	ug/L		100	300	300	1	P	JWJ	06/22/17 23:25	062217−1	1671573
7440−24−6	Strontium	585	ug/L		2	10	10	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	06/24/17 00:13	170623−2	1671607
7440−61−1	Uranium	3.75	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/24/17 12:15	170624−3	1671607
7440−62−2	Vanadium	14.2	ug/L		1	5	5	1	P	JWJ	06/22/17 23:25	062217−1	1671573
7440−66−6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	06/24/17 00:13	170623−2	1671607

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1671573	1671572	SW846 3005A	50	mL	50	mL	06/06/17	CXW4
1671607	1671606	SW846 3005A	50	mL	50	mL	06/06/17	CXW4

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL424705 **CONTRACT:** CPRC0W17006 **METHOD TYPE:** SW846

SAMPLE ID: 424705007 **BASIS:** As Received **DATE COLLECTED** 05−JUN−17

CLIENT ID: B39NW3 **LEVEL:** Low **DATE RECEIVED** 06−JUN−17

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	06/24/17 12:17	170624−3	1671607
7440−38−2	Arsenic	6.24	ug/L		2	5	5	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−39−3	Barium	61.3	ug/L		0.67	2	2	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	06/22/17 23:28	062217−1	1671573
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−70−2	Calcium	98200	ug/L		50	200	200	1	P	JWJ	06/22/17 23:28	062217−1	1671573
7440−47−3	Chromium	9.96	ug/L	B	3	10	10	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−48−4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−50−8	Copper	0.440	ug/L	B	0.3	1	1	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7439−89−6	Iron	241	ug/L		30	100	100	1	P	JWJ	06/22/17 23:28	062217−1	1671573
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7439−95−4	Magnesium	27300	ug/L		110	300	300	1	P	JWJ	06/22/17 23:28	062217−1	1671573
7439−96−5	Manganese	2.06	ug/L	B	1	5	5	1	MS	BAJ	06/24/17 14:22	170624−6	1671607
7439−98−7	Molybdenum	2.41	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−02−0	Nickel	3.8	ug/L		0.6	2	2	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−09−7	Potassium	9790	ug/L		50	150	150	1	P	JWJ	06/22/17 23:28	062217−1	1671573
7782−49−2	Selenium	16.4	ug/L		2	5	5	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−23−5	Sodium	18600	ug/L		100	300	300	1	P	JWJ	06/22/17 23:28	062217−1	1671573
7440−24−6	Strontium	583	ug/L		2	10	10	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	06/24/17 00:17	170623−2	1671607
7440−61−1	Uranium	3.83	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/24/17 12:17	170624−3	1671607
7440−62−2	Vanadium	14.9	ug/L		1	5	5	1	P	JWJ	06/22/17 23:28	062217−1	1671573
7440−66−6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	06/24/17 00:17	170623−2	1671607

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1671573	1671572	SW846 3005A	50	mL	50	mL	06/06/17	CXW4
1671607	1671606	SW846 3005A	50	mL	50	mL	06/06/17	CXW4

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL424705 **CONTRACT:** CPRC0W17006 **METHOD TYPE:** SW846

SAMPLE ID: 424705008 **BASIS:** As Received **DATE COLLECTED** 05−JUN−17

CLIENT ID: B39NW7 **LEVEL:** Low **DATE RECEIVED** 06−JUN−17

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	06/24/17 12:18	170624−3	1671607
7440−38−2	Arsenic	6.26	ug/L		2	5	5	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−39−3	Barium	62.3	ug/L		0.67	2	2	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	06/22/17 23:30	062217−1	1671573
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−70−2	Calcium	98700	ug/L		50	200	200	1	P	JWJ	06/22/17 23:30	062217−1	1671573
7440−47−3	Chromium	3.62	ug/L	B	3	10	10	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−48−4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−50−8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7439−89−6	Iron	30.1	ug/L	B	30	100	100	1	P	JWJ	06/22/17 23:30	062217−1	1671573
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7439−95−4	Magnesium	28000	ug/L		110	300	300	1	P	JWJ	06/22/17 23:30	062217−1	1671573
7439−96−5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	06/24/17 14:23	170624−6	1671607
7439−98−7	Molybdenum	2.31	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−02−0	Nickel	1.79	ug/L	B	0.6	2	2	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−09−7	Potassium	9680	ug/L		50	150	150	1	P	JWJ	06/22/17 23:30	062217−1	1671573
7782−49−2	Selenium	15.9	ug/L		2	5	5	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−23−5	Sodium	18500	ug/L		100	300	300	1	P	JWJ	06/22/17 23:30	062217−1	1671573
7440−24−6	Strontium	583	ug/L		2	10	10	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	06/24/17 00:20	170623−2	1671607
7440−61−1	Uranium	3.8	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/24/17 12:18	170624−3	1671607
7440−62−2	Vanadium	14.8	ug/L		1	5	5	1	P	JWJ	06/22/17 23:30	062217−1	1671573
7440−66−6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	06/24/17 00:20	170623−2	1671607

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1671573	1671572	SW846 3005A	50	mL	50	mL	06/06/17	CXW4
1671607	1671606	SW846 3005A	50	mL	50	mL	06/06/17	CXW4

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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: June 29, 2017

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1671607										
QC1203805189 LCS										
Aluminum	2000			2180	ug/L		109	(80%-120%)	BAJ	06/23/17 23:47
Antimony	50.0			50.3	ug/L		101	(80%-120%)		06/24/17 12:04
Arsenic	50.0			53.6	ug/L		107	(80%-120%)		06/23/17 23:47
Barium	50.0			51.9	ug/L		104	(80%-120%)		
Beryllium	50.0			59.6	ug/L		119	(80%-120%)		
Cadmium	50.0			53.2	ug/L		106	(80%-120%)		
Chromium	50.0			51.8	ug/L		104	(80%-120%)		
Cobalt	50.0			51.3	ug/L		103	(80%-120%)		
Copper	50.0			51.8	ug/L		104	(80%-120%)		
Lead	50.0			51.5	ug/L		103	(80%-120%)		
Manganese	50.0			49.3	ug/L		98.7	(80%-120%)		06/24/17 14:13
Molybdenum	50.0			51.6	ug/L		103	(80%-120%)		06/23/17 23:47
Nickel	50.0			52.2	ug/L		104	(80%-120%)		

GEL LABORATORIES LLC
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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1671607										
Selenium	50.0			52.8	ug/L		106	(80%-120%)	BAJ	06/23/17 23:47
Silver	50.0			52.9	ug/L		106	(80%-120%)		
Strontium	50.0			53.4	ug/L		107	(80%-120%)		
Thallium	50.0			49.3	ug/L		98.6	(80%-120%)		
Thorium	50.0			49.8	ug/L		99.6	(80%-120%)		
Tin	50.0			52.7	ug/L		105	(80%-120%)		
Uranium	50.0			51.6	ug/L		103	(80%-120%)		06/24/17 12:04
Zinc	50.0			53.0	ug/L		106	(80%-120%)		06/23/17 23:47
QC1203805188 MB										
Aluminum			U	19.3	ug/L					06/23/17 23:44
Antimony			U	1.00	ug/L					06/24/17 12:02
Arsenic			U	2.00	ug/L					06/23/17 23:44
Barium			U	0.670	ug/L					
Beryllium			U	0.200	ug/L					
Cadmium			U	0.300	ug/L					
Chromium			U	3.00	ug/L					

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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1671607										
Cobalt			U	0.300	ug/L				BAJ	06/23/17 23:44
Copper			U	0.300	ug/L					
Lead			U	0.500	ug/L					
Manganese			U	1.00	ug/L					06/24/17 14:12
Molybdenum			U	0.200	ug/L					06/23/17 23:44
Nickel			U	0.600	ug/L					
Selenium			U	2.00	ug/L					
Silver			U	0.300	ug/L					
Strontium			U	2.00	ug/L					
Thallium			U	0.600	ug/L					
Thorium			U	0.700	ug/L					
Tin			U	1.00	ug/L					
Uranium			U	0.067	ug/L					06/24/17 12:02
Zinc			U	3.30	ug/L					06/23/17 23:44
QC1203805190 424705005 MS										
Aluminum	2000	U	19.3	2110	ug/L		105	(75%-125%)		06/23/17 23:54

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QC Summary

Workorder: **424705**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1671607											
Antimony	50.0	U	1.00		52.3	ug/L		104	(75%-125%)	BAJ	06/24/17 12:07
Arsenic	50.0		6.36		60.4	ug/L		108	(75%-125%)		06/23/17 23:54
Barium	50.0		59.5		112	ug/L		106	(75%-125%)		
Beryllium	50.0	U	0.200		56.8	ug/L		114	(75%-125%)		
Cadmium	50.0	U	0.300		50.5	ug/L		101	(75%-125%)		
Chromium	50.0		14.8		68.7	ug/L		108	(75%-125%)		
Cobalt	50.0	U	0.300		49.4	ug/L		98.5	(75%-125%)		
Copper	50.0	B	0.609		49.6	ug/L		98	(75%-125%)		
Lead	50.0	U	0.500		48.3	ug/L		96.6	(75%-125%)		
Manganese	50.0	B	2.76		49.6	ug/L		93.6	(75%-125%)		06/24/17 14:16
Molybdenum	50.0		2.33		54.4	ug/L		104	(75%-125%)		06/23/17 23:54
Nickel	50.0		5.86		56.1	ug/L		100	(75%-125%)		
Selenium	50.0		15.6		68.3	ug/L		105	(75%-125%)		
Silver	50.0	U	0.300		50.2	ug/L		100	(75%-125%)		
Strontium	50.0		555		641	ug/L		N/A	(75%-125%)		

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QC Summary

Workorder: **424705**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1671607											
Thallium	50.0	U	0.600		46.9	ug/L		93.4	(75%-125%)	BAJ	06/23/17 23:54
Thorium	50.0	U	0.700		50.0	ug/L		99.1	(75%-125%)		
Tin	50.0	U	1.00		51.3	ug/L		102	(75%-125%)		
Uranium	50.0		3.70		55.4	ug/L		103	(75%-125%)		06/24/17 12:07
Zinc	50.0	U	3.30		50.0	ug/L		97.3	(75%-125%)		06/23/17 23:54
QC1203805191 424705005 MSD											
Aluminum	2000	U	19.3		2070	ug/L	1.95	103	(0%-20%)		06/23/17 23:57
Antimony	50.0	U	1.00		51.6	ug/L	1.27	103	(0%-20%)		06/24/17 12:08
Arsenic	50.0		6.36		59.2	ug/L	1.94	106	(0%-20%)		06/23/17 23:57
Barium	50.0		59.5		113	ug/L	0.489	107	(0%-20%)		
Beryllium	50.0	U	0.200		56.4	ug/L	0.723	113	(0%-20%)		
Cadmium	50.0	U	0.300		50.7	ug/L	0.316	101	(0%-20%)		
Chromium	50.0		14.8		74.1	ug/L	7.63	119	(0%-20%)		
Cobalt	50.0	U	0.300		48.1	ug/L	2.64	95.9	(0%-20%)		
Copper	50.0	B	0.609		49.7	ug/L	0.155	98.1	(0%-20%)		
Lead	50.0	U	0.500		48.9	ug/L	1.1	97.6	(0%-20%)		

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QC Summary

Workorder: **424705**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1671607											
Manganese	50.0	B	2.76		52.1	ug/L	4.9	98.6	(0%-20%)	BAJ	06/24/17 14:18
Molybdenum	50.0		2.33		55.5	ug/L	2.02	106	(0%-20%)		06/23/17 23:57
Nickel	50.0		5.86		56.7	ug/L	1.12	102	(0%-20%)		
Selenium	50.0		15.6		66.5	ug/L	2.67	102	(0%-20%)		
Silver	50.0	U	0.300		50.7	ug/L	1.01	101	(0%-20%)		
Strontium	50.0		555		620	ug/L	3.24	N/A	(0%-20%)		
Thallium	50.0	U	0.600		48.4	ug/L	3.28	96.6	(0%-20%)		
Thorium	50.0	U	0.700		50.2	ug/L	0.533	99.6	(0%-20%)		
Tin	50.0	U	1.00		51.0	ug/L	0.6	102	(0%-20%)		
Uranium	50.0		3.70		54.4	ug/L	1.76	101	(0%-20%)		06/24/17 12:08
Zinc	50.0	U	3.30		49.7	ug/L	0.618	96.6	(0%-20%)		06/23/17 23:57
QC1203805192 424705005 SDILT											
Aluminum		U	12.1	DU	96.5	ug/L	N/A		(0%-20%)		06/24/17 00:04
Antimony		U	0.261	DU	5.00	ug/L	N/A		(0%-20%)		06/24/17 12:11
Arsenic			6.36	DU	10.0	ug/L	N/A		(0%-20%)		06/24/17 00:04
Barium			59.5	D	12.2	ug/L	2.75		(0%-20%)		

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QC Summary

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1671607										
Beryllium	U	0.005	DU	1.00	ug/L	N/A		(0%-20%)	BAJ	06/24/17 00:04
Cadmium	U	0.008	DU	1.50	ug/L	N/A		(0%-20%)		
Chromium		14.8	BD	3.06	ug/L	3.58		(0%-20%)		
Cobalt	U	0.161	DU	1.50	ug/L	N/A		(0%-20%)		
Copper	B	0.609	DU	1.50	ug/L	N/A		(0%-20%)		
Lead	U	0.058	DU	2.50	ug/L	N/A		(0%-20%)		
Manganese	B	2.76	DU	5.00	ug/L	N/A		(0%-20%)		06/24/17 14:19
Molybdenum		2.33	BD	0.486	ug/L	4.11		(0%-20%)		06/24/17 00:04
Nickel		5.86	BD	1.25	ug/L	6.64		(0%-20%)		
Selenium		15.6	BD	2.93	ug/L	5.95		(0%-20%)		
Silver	U	0.023	DU	1.50	ug/L	N/A		(0%-20%)		
Strontium		555	D	104	ug/L	6.47		(0%-20%)		
Thallium	U	0.144	DU	3.00	ug/L	N/A		(0%-20%)		
Thorium	U	0.419	DU	3.50	ug/L	N/A		(0%-20%)		
Tin	U	0.167	DU	5.00	ug/L	N/A		(0%-20%)		

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

QC Summary

Workorder: **424705**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1671607											
Uranium			3.70	D	0.750	ug/L	1.49		(0%-20%)	BAJ	06/24/17 12:11
Zinc		U	1.36	DU	16.5	ug/L	N/A		(0%-20%)		06/24/17 00:04
Metals Analysis-ICP											
Batch 1671573											
QC1203805089 LCS											
Boron	500				478	ug/L		95.6	(80%-120%)	JWJ	06/22/17 23:12
Calcium	5000				5010	ug/L		100	(80%-120%)		
Iron	5000				5040	ug/L		101	(80%-120%)		
Magnesium	5000				5140	ug/L		103	(80%-120%)		
Potassium	5000				5250	ug/L		105	(80%-120%)		
Sodium	5000				5360	ug/L		107	(80%-120%)		
Vanadium	500				495	ug/L		99	(80%-120%)		
QC1203805088 MB											
Boron				U	15.0	ug/L					06/22/17 23:08
Calcium				U	50.0	ug/L					
Iron				U	30.0	ug/L					
Magnesium				U	110	ug/L					
Potassium				U	50.0	ug/L					

GEL LABORATORIES LLC
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QC Summary

Workorder: **424705**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1671573											
Sodium				B	120	ug/L				JWJ	06/22/17 23:08
Vanadium				U	1.00	ug/L					
QC1203805090 424705005 MS											
Boron	500	U	15.0		502	ug/L		98	(75%-125%)		06/22/17 23:18
Calcium	5000		98000		103000	ug/L		N/A	(75%-125%)		
Iron	5000		256		5230	ug/L		99.5	(75%-125%)		
Magnesium	5000		26800		32100	ug/L		N/A	(75%-125%)		
Potassium	5000		9570		14400	ug/L		95.9	(75%-125%)		
Sodium	5000		18200		22500	ug/L		86.6	(75%-125%)		
Vanadium	500		15.6		508	ug/L		98.5	(75%-125%)		
QC1203805091 424705005 MSD											
Boron	500	U	15.0		505	ug/L	0.624	98.6	(0%-20%)		06/22/17 23:20
Calcium	5000		98000		103000	ug/L	0.00975	N/A	(0%-20%)		
Iron	5000		256		5160	ug/L	1.26	98.2	(0%-20%)		
Magnesium	5000		26800		32400	ug/L	1.05	N/A	(0%-20%)		
Potassium	5000		9570		14400	ug/L	0.257	96.7	(0%-20%)		
Sodium	5000		18200		22600	ug/L	0.341	88.1	(0%-20%)		

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QC Summary

Workorder: **424705**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1671573											
Vanadium	500		15.6		520	ug/L	2.39	101	(0%-20%)	JWJ	06/22/17 23:20
QC1203805092 424705005 SDILT											
Boron		U	11.8	DU	75.0	ug/L	N/A		(0%-20%)		06/22/17 23:22
Calcium			98000	D	19500	ug/L	.608		(0%-20%)		
Iron			256	BD	55.9	ug/L	9.39		(0%-20%)		
Magnesium			26800	D	5560	ug/L	3.65		(0%-20%)		
Potassium			9570	D	1960	ug/L	2.15		(0%-20%)		
Sodium			18200	D	3730	ug/L	2.48		(0%-20%)		
Vanadium			15.6	BD	4.33	ug/L	39.3		(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

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QC Summary

Workorder: **424705**

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

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

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

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL424705
Work Order #: 424705

Product: **Cyanide, Total**
Analytical Method: 9012_CYANIDE
Analytical Procedure: GL-GC-E-095 REV# 19
Analytical Batches: 1671534 and 1671533

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

GEL Sample ID#	Client Sample Identification
424705005	B39NW2
424705007	B39NW3
1203805008	Method Blank (MB)
1203805009	Laboratory Control Sample (LCS)
1203805011	424705005(B39NW2) Sample Duplicate (DUP)
1203805013	424705005(B39NW2) Matrix Spike (MS)

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: **Ion Chromatography**
Analytical Method: 9056_ANIONS_IC
Analytical Procedure: GL-GC-E-086 REV# 25
Analytical Batch: 1671360

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

GEL Sample ID#	Client Sample Identification
424705001	B39NT3
424705002	B39NV9
424705003	B39NW4
424705004	B39NW5
1203804649	Method Blank (MB)
1203804650	Laboratory Control Sample (LCS)
1203804651	424705004(B39NW5) Sample Duplicate (DUP)
1203804652	424705004(B39NW5) Post Spike (PS)

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

Data Summary:

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

Technical Information

Sample Dilutions
The following samples 1203804651 (B39NW5DUP), 1203804652 (B39NW5PS), 424705001 (B39NT3), 424705002 (B39NV9), 424705003 (B39NW4) and 424705004 (B39NW5) 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	424705			
	001	002	003	004
Several	20X 1X	20X 1X	20X 1X	20X 1X

Certification Statement

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

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL424705 GEL Work Order: 424705

The Qualifiers in this report are defined as follows:

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

D Results are reported from a diluted aliquot of sample.

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

Review/Validation

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

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

Signature:  **Name: Aubrey Kingsbury**

Date: 22 JUN 2017 **Title: Analyst I**

Sample Data Summary

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Certificate of Analysis

Report Date: June 22, 2017

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF W17-006

Client Sample ID: B39NT3
Sample ID: 424705001
Matrix: WATER
Collect Date: 05-JUN-17 10:38
Receive Date: 06-JUN-17
Collector: Client

Project: CPRC0W17006
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	223	33.0	500	ug/L		1	MXL2	06/06/17	1134	1671360	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	51300	1340	4000	ug/L		20	MXL2	06/06/17	1525	1671360	2
Nitrate-N	D	10100	660	2000	ug/L		20					
Sulfate	D	245000	2660	8000	ug/L		20					

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

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Certificate of Analysis

Report Date: June 22, 2017

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF W17-006

Client Sample ID: B39NV9
Sample ID: 424705002
Matrix: WATER
Collect Date: 05-JUN-17 08:53
Receive Date: 06-JUN-17
Collector: Client

Project: CPRC0W17006
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	226	33.0	500	ug/L		1	MXL2	06/06/17	1203	1671360	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	40200	1340	4000	ug/L		20	MXL2	06/06/17	1554	1671360	2
Nitrate-N	D	9040	660	2000	ug/L		20					
Sulfate	D	228000	2660	8000	ug/L		20					

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

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Certificate of Analysis

Report Date: June 22, 2017

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF W17-006

Client Sample ID: B39NW4
Sample ID: 424705003
Matrix: WATER
Collect Date: 05-JUN-17 09:53
Receive Date: 06-JUN-17
Collector: Client

Project: CPRC0W17006
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	219	33.0	500	ug/L		1	MXL2	06/06/17	1232	1671360	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	40300	1340	4000	ug/L		20	MXL2	06/06/17	1623	1671360	2
Nitrate-N	D	8780	660	2000	ug/L		20					
Sulfate	D	223000	2660	8000	ug/L		20					

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

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Certificate of Analysis

Report Date: June 22, 2017

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF W17-006

Client Sample ID: B39NW5
Sample ID: 424705004
Matrix: WATER
Collect Date: 05-JUN-17 09:53
Receive Date: 06-JUN-17
Collector: Client

Project: CPRC0W17006
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	217	33.0	500	ug/L		1	MXL2	06/06/17	1301	1671360	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	40200	1340	4000	ug/L		20	MXL2	06/06/17	1652	1671360	2
Nitrate-N	D	8780	660	2000	ug/L		20					
Sulfate	D	223000	2660	8000	ug/L		20					

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

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Certificate of Analysis

Report Date: June 22, 2017

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF W17-006

Client Sample ID: B39NW2
Sample ID: 424705005
Matrix: WATER
Collect Date: 05-JUN-17 09:53
Receive Date: 06-JUN-17
Collector: Client

Project: CPRC0W17006
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		5.35	1.67	5.00	ug/L	1.00	1	AXH3	06/07/17	0949	1671534	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	06/07/17	0842	1671533

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: June 22, 2017

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF W17-006

Client Sample ID: B39NW3
Sample ID: 424705007
Matrix: WATER
Collect Date: 05-JUN-17 09:53
Receive Date: 06-JUN-17
Collector: Client

Project: CPRC0W17006
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	4.79	1.67	5.00	ug/L	1.00	1	AXH3	06/07/17	0957	1671534	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	06/07/17	0842	1671533

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	

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

Quality Control Summary

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

QC Summary

Report Date: June 22, 2017

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **424705**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Flow Injection Analysis										
Batch 1671534										
QC1203805011 424705005 DUP										
Cyanide, Total		5.35		5.47	ug/L	2.22 ^		(+/-5.00)	AXH3	06/07/17 09:54
QC1203805009 LCS										
Cyanide, Total	50.0			51.6	ug/L		103	(80%-120%)		06/07/17 09:48
QC1203805008 MB										
Cyanide, Total			U	1.67	ug/L					06/07/17 09:47
QC1203805013 424705005 MS										
Cyanide, Total	100	5.35		110	ug/L		105	(75%-125%)		06/07/17 09:55
Ion Chromatography										
Batch 1671360										
QC1203804651 424705004 DUP										
Chloride	D	40200	D	40300	ug/L	0.104		(0%-20%)	MXL2	06/06/17 17:21
Fluoride	B	217	B	219	ug/L	0.733 ^		(+/-500)		06/06/17 13:30
Nitrate-N	D	8780	D	8760	ug/L	0.251		(0%-20%)		06/06/17 17:21
Nitrite-N	U	33.0	U	33.0	ug/L	N/A				06/06/17 13:30
Sulfate	D	223000	D	223000	ug/L	0.0752		(0%-20%)		06/06/17 17:21
QC1203804650 LCS										
Chloride	5000			4610	ug/L		92.2	(80%-120%)		06/06/17 11:05
Fluoride	2500			2340	ug/L		93.7	(80%-120%)		

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QC Summary

Workorder: **424705**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography											
Batch 1671360											
Nitrate-N	2500				2330	ug/L		93.3	(80%-120%)	MXL2	06/06/17 11:05
Nitrite-N	2500				2370	ug/L		94.8	(80%-120%)		
Sulfate	10000				9510	ug/L		95.1	(80%-120%)		
QC1203804649 MB											
Chloride				U	67.0	ug/L					06/06/17 10:36
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					
QC1203804652 424705004 PS											
Chloride	5.00	D	2.01	D	6.85	mg/L		96.8	(75%-125%)		06/06/17 17:50
Fluoride	2.50	B	0.217		2.48	mg/L		90.5	(75%-125%)		06/06/17 13:58
Nitrate-N	2.50	D	0.439	D	2.77	mg/L		93.3	(75%-125%)		06/06/17 17:50
Nitrite-N	2.50	U	0.00		2.32	mg/L		92.6	(75%-125%)		06/06/17 13:58
Sulfate	10.0	D	11.2	D	21.6	mg/L		105	(75%-125%)		06/06/17 17:50

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

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QC Summary

Workorder: **424705**

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

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

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

D Results are reported from a diluted aliquot of sample.

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.