

November 09, 2015

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

Re: CHPRC SAF I15-038
Work Order: 381291
SDG: GEL381291

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on September 17, 2015. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. Per client P&D, this package was revised to correct the 6020 reporting list.

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: 300071JDBA 7H
Chain of Custody: I15-038-097, I15-038-098, I15-038-099, I15-038-106, I15-038-159, I15-038-160,
I15-038-161, I15-038-168 and I15-038-169
Enclosures



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Problem and Discrepancy Report

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Problem and Discrepancy Report**GEL****SDG GEL381291****10/19/15**

The data package has the following issues:

Phosphorus was not requested for 6020 on samples B32934, B32936, B32949, B32951, B32BB7, B32BB8, B32BD4 and B32BD0. Please remove the results.

Resolution: *Provide correction.*

Lab Response:

The lab will correct and re-submit the hard copy to remove Phosphorus from the above listed samples.

Provide a resolution to each issue noted on the report

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Case Narrative

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Per client P&D, this package was revised to correct the 6020 reporting list.

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF I15-038
SDG: GEL381291**

November 09, 2015

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 September 17, 2015, 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 and DER.

Sample Identification

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
381291001	B32BK2
381291002	B32935
381291003	B32BD2
381291004	B32BK3
381291005	B32934
381291006	B32936
381291007	B32949
381291008	B32951
381291009	B329C9
381291010	B329C8
381291011	B32BB7
381291012	B32BB8
381291013	B32BD4
381291014	B32BD0

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.

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Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: Alcohols, Diesel Range Organics, GC Semivolatile PCB, GC Semivolatile Pesticide, GC Volatiles (GRO), GC/MS Semivolatile, GC/MS Volatile, General Chemistry, Glycols, Metals, Radiochemistry and Solvent Scan.

This package, to the best of my knowledge, 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

Chain of Custody and Supporting Documentation

November 16, 2015

Rev 1

CH2M Hill Plateau Remediation Company		C.O.C. # I15-038-169	
381291		Page 1 of 1	
Collector	D.J. Woehle/CHPRC	Contact/Requester	Karen Waters-Husted
SAF No.	I15-038	Sampling Origin	Hanford Site
Project Title	100NR2, SEPTEMBER 2015	Logbook No.	HNF-N-506 76/41
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier
Protocol	CERCLA	Priority:	30 Days PRIORITY
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
Sample No.	Filter	Date	Time
B32BK2	N	W 9.16.15	1258
No/Type Container	1x500-mL aG	7196_CR6: COMMON	
Sample Analysis	Holding Time	Preservative	
	24 Hours	Cool <=6C	
Offsite Property No.	5967	Bill of Lading/Air Bill No.	7745 2737 8923
Ice Chest No.	GWS 485	Purchase Order/Charge Code	300071
Telephone No.	509-376-4650		
Total Activity Exemption:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D.J. Woehle/CHPRC			SEP 16 2015 1300	B.E. Briggs/CHPRC			SEP 16 2015 1350
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
B.E. Briggs/CHPRC			9/16/15 1400	FEDEX			
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Fedex				Chelsea Seale/CHPRC			09/17/15 0845
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time

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

Disposed By

Date/Time

November 16, 2015

Rev 1

CH2M Hill Plateau Remediation Company		C.O.C. # 115-038-098	
381291		Page 1 of 1	
Collector S.W. King/CHPRC	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650	
SAF No. 115-038	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071	
Project Title 100NR2, SEPTEMBER 2015	Logbook No. HNF-N-506 77.53	Ice Chest No. GWS-362	
Shipped To (Lab) GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 7745 2737 8603	
Protocol CERCLA	Priority: 30 Days	Offsite Property No. 5967	
POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1		SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Sample No. B32935	Filter N	No/Type Container 1x250-mL G/P	Sample Analysis 9056_ANIONS_IC: COMMON
Date SEP 16 2015 1028	Time 1028	Holding Time 28 Days/48 Hours	Preservative Cool <=6C

Relinquished By S.W. King/CHPRC	Date/Time SEP 16 2015 1210	Received By B.E. Briggs CHPRC	Sign <i>B.E. Briggs</i>	Date/Time SEP 16 2015 1210	Matrix *
Relinquished By B.E. Briggs CHPRC	Date/Time SEP 16 2015 1400	Received By FEDEX	Sign	Date/Time 9-17-15 0845	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By	Date/Time	Received By	Sign	Date/Time	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process)					Date/Time
PRINTED ON 8/3/2015 FSR ID = FSR3369					

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C.# I15-038-161	Page 1 of 1
Collector S.W. King/CHPRC	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650			
SAF No. I15-038	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071			
Project Title 100NR2, SEPTEMBER 2015	Logbook No. HNF-N-506 77153	Ice Chest No. GWS332			
Shipped To (Lab) GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 7745 2497 8482			
Protocol CERCLA	Priority: 30 Days	Offsite Property No. 5965			
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 N/A	Hold Time	Total Activity Exemption: Yes <input type="checkbox"/> No <input type="checkbox"/>	
Sample No. B32BD2	Filter N	Date 0850 16 SEP 2015	No/Type Container 1x250-mL G/P	Sample Analysis COMMON	Holding Time 28 Days/48 Hours
				Preservative Cool <=6C	

Relinquished By S.W. King/CHPRC	Date/Time SEP 16 2015 1000	Sign [Signature]	Received By B.E. Briggs CHPRC	Date/Time SEP 16 2015 1000	Matrix * S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By B.E. Briggs CHPRC	Date/Time SEP 16 2015 1400	Sign [Signature]	Received By FEDEX	Date/Time SEP 16 2015 1000	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By [Signature]	Date/Time 1024	Sign [Signature]	Received By M. Kinison/CHPRC	Date/Time 9-17-15 0855	
Relinquished By [Signature]	Date/Time [Signature]	Sign [Signature]	Received By [Signature]	Date/Time [Signature]	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time	

A-6004-842 (REV 2)

FSR ID = FSR3605

PRINTED ON 8/12/2015

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Rev 1

CH2M Hill Plateau Remediation Company		C.O.C.# 115-038-168	
381291		Page 1 of 1	
Collector D.J. Woethe/CHPRC	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650	
SAF No. 115-038	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071	
Project Title 100NR2, SEPTEMBER 2015	Logbook No. HNF-N-506 76 / 61	Ice Chest No. 6W5-485	
Shipped To (Lab) GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 7745 2737 8923	
Protocol CERCLA	Priority: 30 Days	Offsite Property No. 5967	
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		Hold Time	Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Sample No. B32BK3	Filter N	No/Type Container 1x250-mL G/P	Sample Analysis 9056_ANIONS_IC: COMMON
Date 9/16/15 1258	Time	Holding Time 28 Days/48 Hours	Preservative Cool <=6C
SPECIAL INSTRUCTIONS PRIORITY			

Relinquished By D.J. Woethe/CHPRC	Print D.J. Woethe	Sign [Signature]	Date/Time SEP 16 2015 1350	Received By E.E. Briggs/CHPRC	Print E.E. Briggs	Sign [Signature]	Date/Time SEP 16 2015 1350	Matrix *
Relinquished By E.E. Briggs/CHPRC	Print E.E. Briggs	Sign [Signature]	Date/Time 9/16/15 1400	Received By FEDEX	Print FEDEX	Sign [Signature]	Date/Time [Signature]	S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge W1 = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By Fedex	Print Fedex	Sign [Signature]	Date/Time [Signature]	Received By Chelsea Seal	Print Chelsea Seal	Sign [Signature]	Date/Time 9/15/15	
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time		
PRINTED ON 8/3/2015		FSR ID = FSR2722		A-6004-842 (REV 2)				

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CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# **I15-038-097**

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381291

Telephone No. 509-376-4650

Contact/Requester Karen Waters-Husted

Purchase Order/Charge Code 300071

SAF No. I15-038

Sampling Origin Hanford Site

Project Title 100NR2, SEPTEMBER 2015

Logbook No. HNF-N-50677/53

Ice Chest No. GWS-362

Shipped To (Lab) GEL Laboratories, LLC

Method of Shipment Commercial Carrier

Bill of Lading/Air Bill No. 7745 2737 8603

Protocol CERCLA

Priority: 30 Days

Offsite Property No. 5967

PRIORITY

SPECIAL INSTRUCTIONS

Total Activity Exemption: Yes No

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

Sample No.	Filter	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32934	N	SEP 16 2015	1028	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B32934	N			1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B32934	N			2x1-L P	9310_ALPHABETA_GPC: Gross Beta	6 Months	HNO3 to pH <2
B32934	N			3x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B32934	N			1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None
B32936	Y	SEP 16 2015	1028	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2

Relinquished By S.W. King/CHPRC	Print <i>[Signature]</i>	Date/Time SEP 16 2015 1245	Sign <i>[Signature]</i>	Received By B.E. Briggs CHPRC	Print <i>[Signature]</i>	Date/Time SEP 16 2015 1245	Matrix *
Relinquished By B.E. Briggs CHPRC	Print <i>[Signature]</i>	Date/Time SEP 16 2015 1400	Sign <i>[Signature]</i>	Received By PEDEX	Print <i>[Signature]</i>	Date/Time SEP 16 2015 1400	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 <i>[Signature]</i>	Print <i>[Signature]</i>	Date/Time <i>[Signature]</i>	Sign <i>[Signature]</i>	Received By <i>[Signature]</i>	Print <i>[Signature]</i>	Date/Time 9-17-15 0845	
Relinquished By <i>[Signature]</i>	Print <i>[Signature]</i>	Date/Time <i>[Signature]</i>	Sign <i>[Signature]</i>	Received By <i>[Signature]</i>	Print <i>[Signature]</i>	Date/Time <i>[Signature]</i>	
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)			
PRINTED ON 8/27/2015				FSR ID = FSR3369			
				A-6004-842 (REV 2)			

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CH2M Hill Plateau Remediation Company S.W. King/CHPRC		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 386291		C.O.C. # I15-038-099 Page 1 of 2	
Collector I15-038	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650	Purchase Order/Charge Code 300071	Ice Chest No. GW5-465 Bill of Lading/Air Bill No. 7745 2737 9492 Offsite Property No. 5967	
Project Title 100NR2, SEPTEMBER 2015	Sampling Origin Hanford Site	Logbook No. HNF-N-506 1153	Method of Shipment Commercial Carrier	Priority: 30 Days	SPECIAL INSTRUCTIONS N/A
Shipped To (Lab) GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Priority: 30 Days	SPECIAL INSTRUCTIONS N/A	Hold Time	Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Protocol CERCLA	POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	Sample Analysis 6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01; 7470_MERCURY_CV: COMMON (AQUEOUS) 8015_VOA_GS: COMMON 8081_PEST_GC: COMMON; 8082_PCB_GC: COMMON 8260_VOA_GCMS_IX: COMMON 8270_SVOA_GCMS_IX: COMMON REV 1 9012_CYANIDE: COMMON 9310_ALPHABETA_GPC: COMMON GAMMA_GS: COMMON PUIISO_PLATE_AEA: COMMON SRISO_SEP_PRECIP_GPC: COMMON TC99_EIE_LSC: COMMON TRITIUM_DIST_LSC: COMMON	Holding Time 6 Months 14/40 Days 7/40 Days None 14 Days 7/40 Days 14 Days 6 Months 6 Months 6 Months 6 Months 6 Months	Preservative HNO3 to pH <2 Cool <=6C Cool <=6C Cool <=6C HCl or H2SO4 to pH <2/Cool <=6C Cool <=6C NaOH to pH >=12/Cool <=6C HNO3 to pH <2 HNO3 to pH <2 HNO3 to pH <2 HNO3 to pH <2 HNO3 to pH <2 None	

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
S.W. King/CHPRC			SEP 16 2015 1115	B.E. Briggs/CHPRC			SEP 16 2015 1249	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
B.E. Briggs/CHPRC			9/16/15 1400	FEDEX				
S.W. King/CHPRC			SEP 16 2015 1115	M. Karstlow			9-17-15 0345	

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CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# **115-038-099**

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Telephone No. 509-376-4650

Purchase Order/Charge Code 300071

Contact/Requester Karen Waters-Husted

Sampling Origin Hanford Site

Logbook No. HNF-N-506 17153

Method of Shipment Commercial Carrier

Ice Chest No. GWS-362

Bill of Lading/Air Bill No. 7745 2737 8003

Offsite Property No. 5967

Priority: 30 Days **PRIORITY**

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 Hold Time Total Activity Exemption: Yes No

N/A

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32949	N	SEP 16 2015	1115	3x1-L G/P	UIISO_IE_PRECIP_AEA: COMMON	6 Months	HNO3 to pH <2
B32949	N	↓	↓	3x1-L aG	WTPH_DIESEL: COMMON	14/40 Days	HCl to pH <2/Cool <=6C
B32949	N	↓	↓	4x40-mL aGs*	WTPH_GASOLINE: COMMON	14 Days	HCl to pH <2/Cool <=6C
B32951	Y	SEP 16 2015	1115	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01; 7470_MERCURY_CV: COMMON (AQUEOUS)	6 Months	HNO3 to pH <2

Relinquished By	Sign	Date/Time	Received By	Sign	Date/Time	Matrix *
S.W. King/CHPRC	<i>[Signature]</i>	SEP 16 2015 1245	B.E. Briggs CHPRC	<i>[Signature]</i>	SEP 16 2015 1245	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
B.E. Briggs CHPRC	<i>[Signature]</i>	SEP 16 2015 1400	FEDEX		SEP 16 2015 1400	
Relinquished By	<i>[Signature]</i>	SEP 16 2015 1400	Received By	<i>[Signature]</i>	9-17-15 0845	
Relinquished By			Received By			

FINAL SAMPLE DISPOSITION

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

Disposed By

Date/Time

PRINTED ON 8/12/2015

FSR ID = FSR4087

A-6004-842 (REV 2)

November 16, 2015

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CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **I15-038-106**

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Contact/Requester: **Karen Waters-Husted**

Telephone No. **509-376-4650**

Sampling Origin: **Hanford Site**

Purchase Order/Charge Code: **300071**

Logbook No.: **HNF-N-506 17756**

Ice Chest No.: **605-433**

Method of Shipment: **Commercial Carrier**

Bill of Lading/Air Bill No.: **7745 2215 1871**

Priority: **30 Days**

Offsite Property No.: **5964**

Special Instructions: **PRIORITY**

Total Activity Exemption: Yes No

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B329C9	Y	SEP 15 2015	1225	1x500-mL G/P	6010_METALS_ICP: COMMON; 6010_METALS_ICP: GW 05; 6020_METALS_ICPMS: Aluminum (1); 6020_METALS_ICPMS: Phosphorus (1)	6 Months	HNO3 to pH <2
B329C8	N			1x500-mL G/P	6010_METALS_ICP: COMMON; 6010_METALS_ICP: GW 05; 6020_METALS_ICPMS: Aluminum (1); 6020_METALS_ICPMS: Phosphorus (1)	6 Months	HNO3 to pH <2
B329C8	N			2x1-L P	9310_ALPHA_BETA_GPC: COMMON	6 Months	HNO3 to pH <2
B329C8	N			3x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B329C8	N			3x1-L aG	WTPH_DIESEL: COMMON; WTPH_MOTOR OIL: COMMON	14/40 Days	HCl to pH <2/Cool <=6C
B329C8	N	SEP 15 2015	1225	4x40-mL aGs*	WTPH_GASOLINE: COMMON	14 Days	HCl to pH <2/Cool <=6C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
SSU-1			SEP 15 2015 1440	SSU-1			SEP 15 2015 1440	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
FEDEX			SEP 16 2015 1400	F.M. HARRICHPRG			SEP 16 2015 0700	
FEDEX			SEP 16 2015 1400	FEDEX			SEP 16 2015	
FEDEX			SEP 16 2015 1225	Chesebrough/Chesebrough			SEP 16 2015 0745	

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

PRINTED ON 8/3/2015

FSR ID = FSR2756

A-6004-842 (REV 2)

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C.# I15-038-159
		381291		Page 1 of 1
Collector	D.J. Woenne/CHPRC	Contact/Requester	Karen Waters-Husted	
SAF No.	I15-038	Sampling Origin	Hanford Site	
Project Title	100NR2, SEPTEMBER 2015	Logbook No.	HNF-N-50676/61	
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	
Protocol	CERCLA	Priority:	30 Days	PRIORITY
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS		
*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1		Hold Time		
		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Sample No.	Filter	* Date	Time	No/Type Container
B32BB7	N	9.16.15	1123	1x500-mL G/P
B32BB7	N			4x1-L aG
B32BB7	N			2x1-L P
B32BB7	N			1x4-L G/P
B32BB7	N			3x1-L G/P
B32BB7	N			1x500-mL P
B32BB7	N			3x1-L aG
B32BB7	N			4x40-mL aGs*
B32BB8	Y	9.16.15	1123	1x500-mL G/P
Sample Analysis	Sample Analysis	Holding Time	Preservative	
6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2	
8270_SVOA_GCMS_SIM: COMMON	8270_SVOA_GCMS_SIM: COMMON	7/40 Days	Cool <=6C	
9310_ALPHABETA_GPC: COMMON	9310_ALPHABETA_GPC: COMMON	6 Months	HNO3 to pH <2	
GAMMA_GS: COMMON	GAMMA_GS: COMMON	6 Months	HNO3 to pH <2	
SRISO_SEP_PRECIP_GPC: COMMON	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2	
TRITIUM_DIST_LSC: COMMON	TRITIUM_DIST_LSC: COMMON	6 Months	None	
WTPH_DIESEL: COMMON; WTPH_MOTOR OIL: COMMON	WTPH_DIESEL: COMMON; WTPH_MOTOR OIL: COMMON	14/40 Days	HCl to pH <2/Cool <=6C	
WTPH_GASOLINE: COMMON	WTPH_GASOLINE: COMMON	14 Days	HCl to pH <2/Cool <=6C	
6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2	

Relinquished By	Print	Sign	Date/Time	Date/Time	Received By	Sign	Date/Time
D.J. Woenne/CHPRC		<i>D.J. Woenne</i>	SEP 16 2015 1220	SEP 16 2015 1220	B.E. Briggs/CHPRC	<i>B.E. Briggs</i>	SEP 16 2015 1220
Relinquished By	Print	Sign	Date/Time	Date/Time	Received By	Sign	Date/Time
B.E. Briggs/CHPRC		<i>B.E. Briggs</i>	SEP 16 2015 1400	SEP 16 2015 1400	FEDEX		
Relinquished By	Print	Sign	Date/Time	Date/Time	Received By	Sign	Date/Time
FEDEX		<i>Chosen Seagle</i>	09/17/15 off	09/17/15 off	<i>Chosen Seagle</i>		
Relinquished By	Print	Sign	Date/Time	Date/Time	Received By	Sign	Date/Time

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

Disposed By

Date/Time

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CH2MHill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C. # **I15-038-160**
 Page 1 of 1

Collector S.W. King/CHPRC
Contact/Requester Karen Waters-Husted
Telephone No. 509-376-4650
SAF No. I15-038
Sampling Origin Hanford Site
Purchase Order/Charge Code 300071
Project Title 100NR2, SEPTEMBER 2015
Logbook No. HNF-N-506-77, 53
Ice Chest No. GWS-332
Shipped To (Lab) GEL Laboratories, LLC
Method of Shipment Commercial Carrier
Bill of Lading/Air Bill No. T745 2497 8482
Protocol CERCLA
Priority: 30 Days
Method of Shipment Commercial Carrier
Offsite Property No. 5965

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
 N/A
Hold Time
Total Activity Exemption: Yes No

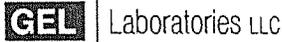
Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32BD4	Y	SEP 16 2015	0850	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B32BD0	N			1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B32BD0	N			1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B32BD0	N			2x1-L P	9310_ALPHABETA_GPC: COMMON	6 Months	HNO3 to pH <2
B32BD0	N			3x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B32BD0	N			1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None
B32BD0	N			1x4-L G/P	GAMMA_GS: COMMON; GAMMA_GS: GW 01	6 Months	HNO3 to pH <2
B32BD0	N	SEP 16 2015	0850	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

Relinquished By	Print/Sign	Date/Time	Received By	Print/Sign	Date/Time	Matrix *
S.W. King/CHPRC	<i>[Signature]</i>	SEP 16 2015 1000	B.E. Briggs CHPRC	<i>[Signature]</i>	SEP 16 2015 1000	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
B.E. Briggs CHPRC	<i>[Signature]</i>	SEP 16 2015 1400	FEDEX			
S.W. King/CHPRC	<i>[Signature]</i>	SEP 16 2015 0850	M. Kuslow M&F	<i>[Signature]</i>	9-17-15 0845	
S.W. King/CHPRC	<i>[Signature]</i>					

FINAL SAMPLE DISPOSITION
 Disposal Method (e.g., Return to customer, per lab procedure, used in process)
 Disposed By
 Date/Time
 FSR ID = FSR3605
 PRINTED ON 8/12/2015
 A-6004-842 (REV 2)

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SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>381291</u>	
Received By: <u>CEJ</u>		Date Received: <u>09/17/15</u>	
Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0pmo</u>
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>(ice bags)</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>ice 2° 3°</u>
2a	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: <u>201404337</u> Secondary Temperature Device Serial # (If Applicable)
3	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4	Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
7	VOA vials contain acid preservation?	<input checked="" type="checkbox"/>			(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
9	Are Encore containers present?	<input checked="" type="checkbox"/>			(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
13	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>			
15	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
16	Carrier and tracking number.	<input checked="" type="checkbox"/>			Circle Applicable: <u>(FedEx Air)</u> FedEx Ground UPS Field Services Courier Other 7745 2737 8923 - 1°C 2737 9448 - 2°C 2215 1871 - 2°C 2737 9492 - 3°C 2497 8482 - 2°C 2737 8603 - 2°C
Comments (Use Continuation Form if needed):					

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Revision #116-NOV-2015

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	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	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol-condensation product	Y	Organics	Semi-Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	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).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (Organics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely performed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	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).	Y	General Chemistry		Replaces J Estimated Value
C	Programmed	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.	Y	Inorganics	Metals	Replaces B Blank Detection
C	Programmed	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.	Y	General Chemistry		Replaces B Blank Detection
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
UX	Manual	Gamma Spectroscopy--Uncertain identification	Y	Radiological		

Revision #1 16-NOV-2015

Laboratory Certifications

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List of current GEL Certifications as of 09 November 2015

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
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	LA150001
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-15-10
Utah NELAP	SC000122015-19
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Volatile Analysis

Case Narrative

November 16, 2015

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**GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL381291
Work Order #: 381291**

Method/Analysis Information

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

Analytical Method: SW846 8260C

Analytical Batch Number: 1508045

Sample Analysis

The following client and quality control samples were analyzed to complete this SDG using the methods referenced in the Analysis Information section:

Sample ID	Client ID
381291007	B32949
1203394326	Method Blank (MB)
1203394327	Laboratory Control Sample (LCS)
1203394328	Laboratory Control Sample (LCS)
1203394329	380763004(B32971) Post Spike (PS)
1203394330	380763004(B32971) Post Spike (PS)
1203394331	380763004(B32971) Post Spike Duplicate (PSD)
1203394332	380763004(B32971) Post Spike Duplicate (PSD)
1203396881	Method Blank (MB)
1203396882	Laboratory Control Sample (LCS)
1203396883	Laboratory Control Sample (LCS)

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

The data results reported met all SOP and method criteria, unless otherwise discussed below.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV# 21.

Calibration Information

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the Calibration History report located in the Standard Data section of the data package. The surrogate compounds were calibrated using a minimum five-point calibration curve. The surrogates were added by the auto sampler at a concentration of 50 ug/L or 20 ug/L for low level analyses. GEL Laboratories LLC will not have surrogate recoveries reported for Dibromofluoromethane. This is due to increased regulations for this analyte and an industry shortage.

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Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification Requirements

The calibration verification standard requirements were not all met for sample 381291007 (B32949). There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

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

The blanks analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

Surrogate recoveries in all client and quality control samples were within the acceptance limits.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 380763004 (B32971) was designated for spike analysis.

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
1203394329 (B32971PS)	2-Butanone	60* (70%-130%)
	Acetone	45* (70%-130%)
1203394331 (B32971PSD)	2-Butanone	59* (70%-130%)
	2-Hexanone	69* (70%-130%)
	Acetone	44* (70%-130%)

Relative Percent Difference (RPD) Statement

The RPDs between the matrix spike pair met the acceptance limits.

Internal Standard (ISTD) Acceptance

The internal standard responses in all client and quality control samples met the required acceptance criteria.

Technical Information**Holding Time Specifications**

All samples in this SDG met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration.

Sample Preservation and Integrity

Preservation for sample 381291007 (B32949) was indicated on the vial, however the sample pH value was above 2. The sample was analyzed within 7 days from collection.

Sample Dilutions/Methanol Dilutions

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The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-analyses were not required for samples in this SDG.

Miscellaneous Information

Data Exception (DER) Documentation

A data exception report (DER) 1449932 was generated for samples 1203394329 (B32971PS) and 1203394331 (B32971PSD) in this SDG/batch.

Manual Integrations

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

TIC Comment

Tentatively identified compounds (TIC) were not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Residual Chlorine

Residual Chlorine was not detected in any of the samples in this SDG.

System Configuration

The Volatile-GC/MS analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOA2.I	Agilent 7890/5975 GC/MS w/ OI Eclipse/Archon Autosampler	HP7890N/HP5975C	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

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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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: GEL381291 GEL Work Order: 381291

The Qualifiers in this report are defined as follows:

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.

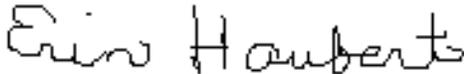
RA Indicates that sample is re-analyzed without re-extraction.

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: 

Name: Erin Haubert

Date: 12 OCT 2015

Title: Data Validator

Sample Data Summary

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Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
	Client: CPRC001	Project: CPRC0115038
Client ID: B32949	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Batch ID: 1508045	Inst: VOA2.I	Dilution: 1
Run Date: 09/17/2015 17:18	Analyst: CDS1	Purge Vol: 5 mL
Prep Date: 09/17/2015 17:18		
Data File: 091715V2.b\2A420.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	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
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	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
78-87-5	1,2-Dichloropropane	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
75-25-2	Bromoform	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	J	1.38	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	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
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	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	U	0.300	ug/L	0.300	2.00	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	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
10061-02-6	trans-1,3-Dichloropropylene	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
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0

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Certificate of Analysis

Sample Summary

SDG Number:	GEL381291	Date Collected:	09/16/2015 11:15	Matrix:	WATER
Lab Sample ID:	381291007	Date Received:	09/17/2015 08:45	Project:	CPRC0115038
Client ID:	B32949	Client:	CPRC001	SOP Ref:	GL-OA-E-038
Batch ID:	1508045	Method:	SW846 8260C	Dilution:	1
Run Date:	09/17/2015 17:18	Inst:	VOA2.I	Purge Vol:	5 mL
Prep Date:	09/17/2015 17:18	Analyst:	CDS1		
Data File:	091715V2.b\2A420.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
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
591-78-6	2-Hexanone	TU	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										
QC1203396882	LCS										
1,1,1,2-Tetrachloroethane	50.0			55.6	ug/L		111	(70%-130%)	CDS1	09/17/15	08:52
1,1,1-Trichloroethane	50.0			58.8	ug/L		118	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0			53.2	ug/L		106	(70%-130%)			
1,1,2-Trichloroethane	50.0			52.4	ug/L		105	(70%-130%)			
1,1-Dichloroethane	50.0			55.4	ug/L		111	(70%-130%)			
1,1-Dichloroethylene	50.0			56.0	ug/L		112	(70%-130%)			
1,2,3-Trichloropropane	50.0			52.0	ug/L		104	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0			56.1	ug/L		112	(70%-130%)			
1,2-Dibromoethane	50.0			53.5	ug/L		107	(70%-130%)			
1,2-Dichloroethane	50.0			52.9	ug/L		106	(70%-130%)			
1,2-Dichloropropane	50.0			55.1	ug/L		110	(70%-130%)			
2-Butanone	250			244	ug/L		98	(70%-130%)			
2-Hexanone	250			254	ug/L		102	(70%-130%)			
4-Methyl-2-pentanone	250			258	ug/L		103	(70%-130%)			
Acetone	250			246	ug/L		98	(70%-130%)			
Acetonitrile	1250			1260	ug/L		101	(70%-130%)			
Benzene	50.0			53.9	ug/L		108	(70%-130%)			
Bromoform	50.0			57.0	ug/L		114	(70%-130%)			
Carbon disulfide	250			296	ug/L		118	(70%-130%)			
Carbon tetrachloride	50.0			57.5	ug/L		115	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										
Chlorobenzene	50.0			53.3	ug/L		107	(70%-130%)	CDS1	09/17/15	08:52
Chloroethane	50.0			49.8	ug/L		100	(70%-130%)			
Chloroform	50.0			55.0	ug/L		110	(70%-130%)			
Chloromethane	50.0			54.6	ug/L		109	(70%-130%)			
Dibromochloromethane	50.0			57.2	ug/L		114	(70%-130%)			
Dibromomethane	50.0			52.0	ug/L		104	(70%-130%)			
Dichlorodifluoromethane	50.0			60.2	ug/L		120	(70%-130%)			
Ethylbenzene	50.0			55.7	ug/L		111	(70%-130%)			
Iodomethane	250			275	ug/L		110	(70%-130%)			
Methylene chloride	50.0			48.7	ug/L		97	(70%-130%)			
Styrene	50.0			56.5	ug/L		113	(70%-130%)			
Tetrachloroethylene	50.0			55.5	ug/L		111	(70%-130%)			
Toluene	50.0			53.9	ug/L		108	(70%-130%)			
Trichloroethylene	50.0			55.3	ug/L		111	(70%-130%)			
Vinyl acetate	250			260	ug/L		104	(70%-130%)			
Vinyl chloride	50.0			55.5	ug/L		111	(70%-130%)			
Xylenes (total)	150			165	ug/L		110	(70%-130%)			
cis-1,3-Dichloropropylene	50.0			56.5	ug/L		113	(70%-130%)			
trans-1,2-Dichloroethylene	50.0			55.1	ug/L		110	(70%-130%)			
trans-1,3-Dichloropropylene	50.0			58.1	ug/L		116	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			53.5	ug/L		107	(71%-134%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										
**Bromofluorobenzene	50.0			51.4	ug/L		103	(70%-131%)			
**Toluene-d8	50.0			51.9	ug/L		104	(74%-124%)	CDS1	09/17/15	08:52
QC1203396883	LCS										
2-Chloro-1,3-butadiene	50.0			64.0	ug/L		128	(70%-130%)		09/17/15	09:22
Acrolein	250			268	ug/L		107	(70%-130%)			
Acrylonitrile	250			256	ug/L		102	(70%-130%)			
Allyl chloride	250			280	ug/L		112	(70%-130%)			
Ethyl methacrylate	250			269	ug/L		108	(70%-130%)			
Isobutyl alcohol	2500			2760	ug/L		111	(70%-130%)			
Methacrylonitrile	250			263	ug/L		105	(70%-130%)			
trans-1,4-Dichloro-2-butene	250			265	ug/L		106	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			51.4	ug/L		103	(71%-134%)			
**Bromofluorobenzene	50.0			51.8	ug/L		104	(70%-131%)			
**Toluene-d8	50.0			50.9	ug/L		102	(74%-124%)			
QC1203396881	MB										
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					09/17/15	09:52
1,1,1-Trichloroethane			U	0.300	ug/L						
1,1,2,2-Tetrachloroethane			U	0.300	ug/L						
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						
1,2,3-Trichloropropane			U	0.300	ug/L						
1,2-Dibromo-3-chloropropane			U	0.500	ug/L						
1,2-Dibromoethane			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										
1,2-Dichloroethane			U	0.300	ug/L				CDS1	09/17/15	09:52
1,2-Dichloropropane			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
2-Chloro-1,3-butadiene			U	0.300	ug/L						
2-Hexanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Acetonitrile			U	16.7	ug/L						
Acrolein			U	3.00	ug/L						
Acrylonitrile			U	3.00	ug/L						
Allyl chloride			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Bromoform			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						
Chloroethane			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Chloromethane			U	0.300	ug/L						
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										
Dichlorodifluoromethane			U	0.300	ug/L						
Ethyl methacrylate			U	3.00	ug/L				CDS1	09/17/15	09:52
Ethylbenzene			U	0.300	ug/L						
Iodomethane			U	3.00	ug/L						
Isobutyl alcohol			U	33.0	ug/L						
Methacrylonitrile			U	3.00	ug/L						
Methylene chloride			U	1.60	ug/L						
Styrene			U	0.300	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Vinyl acetate			U	1.60	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
cis-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,2-Dichloroethylene			U	0.300	ug/L						
trans-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,4-Dichloro-2-butene			U	1.50	ug/L						
**1,2-Dichloroethane-d4	50.0			52.1	ug/L		104	(71%-134%)			
**Bromofluorobenzene	50.0			52.2	ug/L		104	(70%-131%)			
**Toluene-d8	50.0			51.2	ug/L		102	(74%-124%)			
QC1203394329 380763004 PS											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	54.7	ug/L		109	(70%-130%)		09/16/15	14:14

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										
1,1,1-Trichloroethane	50.0	U	0.00	60.1	ug/L		120	(70%-130%)	CDS1	09/16/15	14:14
1,1,2,2-Tetrachloroethane	50.0	U	0.00	51.2	ug/L		102	(70%-130%)			
1,1,2-Trichloroethane	50.0	U	0.00	50.7	ug/L		101	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00	54.5	ug/L		109	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00	56.0	ug/L		112	(70%-130%)			
1,2,3-Trichloropropane	50.0	U	0.00	50.1	ug/L		100	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	54.8	ug/L		110	(70%-130%)			
1,2-Dibromoethane	50.0	U	0.00	52.0	ug/L		104	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	50.6	ug/L		101	(70%-130%)			
1,2-Dichloropropane	50.0	U	0.00	53.1	ug/L		106	(70%-130%)			
2-Butanone	250	TU	0.00	T	149	ug/L	60*	(70%-130%)			
2-Hexanone	250	TU	0.00		175	ug/L	70	(70%-130%)			
4-Methyl-2-pentanone	250	U	0.00		233	ug/L	93	(70%-130%)			
Acetone	250	TU	0.00	T	113	ug/L	45*	(70%-130%)			
Acetonitrile	1250	U	0.00		1200	ug/L	96	(70%-130%)			
Benzene	50.0	U	0.00		53.9	ug/L	108	(70%-130%)			
Bromoform	50.0	U	0.00		55.6	ug/L	111	(70%-130%)			
Carbon disulfide	250	U	0.00		304	ug/L	122	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00		59.2	ug/L	118	(70%-130%)			
Chlorobenzene	50.0	U	0.00		53.6	ug/L	107	(70%-130%)			
Chloroethane	50.0	U	0.00		53.8	ug/L	108	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										
Chloroform	50.0	J	3.95	58.0	ug/L		108	(70%-130%)			
Chloromethane	50.0	U	0.00	55.7	ug/L		111	(70%-130%)	CDS1	09/16/15	14:14
Dibromochloromethane	50.0	U	0.00	55.2	ug/L		110	(70%-130%)			
Dibromomethane	50.0	U	0.00	50.3	ug/L		101	(70%-130%)			
Dichlorodifluoromethane	50.0	U	0.00	57.8	ug/L		116	(70%-130%)			
Ethylbenzene	50.0	U	0.00	56.8	ug/L		114	(70%-130%)			
Iodomethane	250	U	0.00	280	ug/L		112	(70%-130%)			
Methylene chloride	50.0	U	0.00	48.2	ug/L		96	(70%-130%)			
Styrene	50.0	U	0.00	56.4	ug/L		113	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00	58.4	ug/L		117	(70%-130%)			
Toluene	50.0	U	0.00	54.7	ug/L		109	(70%-130%)			
Trichloroethylene	50.0	U	0.00	56.3	ug/L		113	(70%-130%)			
Vinyl acetate	250	U	0.00	245	ug/L		98	(70%-130%)			
Vinyl chloride	50.0	U	0.00	57.0	ug/L		114	(70%-130%)			
Xylenes (total)	150	U	0.00	168	ug/L		112	(70%-130%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	54.5	ug/L		109	(70%-130%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	55.5	ug/L		111	(70%-130%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	55.8	ug/L		112	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		52.7	49.4	ug/L		99	(71%-134%)			
**Bromofluorobenzene	50.0		52.3	49.2	ug/L		98	(70%-131%)			
**Toluene-d8	50.0		50.6	50.1	ug/L		100	(74%-124%)			
QC1203394330 380763004 PS											
2-Chloro-1,3-butadiene	50.0	U	0.00	61.1	ug/L		122	(70%-130%)		09/16/15	15:14

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										
Acrolein	250	U	0.00	278	ug/L		111	(70%-130%)	CDS1	09/16/15	15:14
Acrylonitrile	250	U	0.00	251	ug/L		100	(70%-130%)			
Allyl chloride	250	U	0.00	270	ug/L		108	(70%-130%)			
Ethyl methacrylate	250	U	0.00	259	ug/L		104	(70%-130%)			
Isobutyl alcohol	2500	U	0.00	2630	ug/L		105	(70%-130%)			
Methacrylonitrile	250	U	0.00	257	ug/L		103	(70%-130%)			
trans-1,4-Dichloro-2-butene	250	U	0.00	256	ug/L		103	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		52.7	49.2	ug/L		98	(71%-134%)			
**Bromofluorobenzene	50.0		52.3	49.9	ug/L		100	(70%-131%)			
**Toluene-d8	50.0		50.6	49.3	ug/L		99	(74%-124%)			
QC1203394331 380763004 PSD											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	53.9	ug/L	2	108	(0%-20%)		09/16/15	14:44
1,1,1-Trichloroethane	50.0	U	0.00	57.5	ug/L	4	115	(0%-20%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00	50.7	ug/L	1	101	(0%-20%)			
1,1,2-Trichloroethane	50.0	U	0.00	50.3	ug/L	1	101	(0%-20%)			
1,1-Dichloroethane	50.0	U	0.00	53.0	ug/L	3	106	(0%-20%)			
1,1-Dichloroethylene	50.0	U	0.00	53.2	ug/L	5	106	(0%-20%)			
1,2,3-Trichloropropane	50.0	U	0.00	49.6	ug/L	1	99	(0%-20%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	54.3	ug/L	1	109	(0%-20%)			
1,2-Dibromoethane	50.0	U	0.00	51.2	ug/L	1	102	(0%-20%)			
1,2-Dichloroethane	50.0	U	0.00	49.9	ug/L	1	100	(0%-20%)			
1,2-Dichloropropane	50.0	U	0.00	51.9	ug/L	2	104	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										
2-Butanone	250	TU	0.00	T	148	ug/L	0	59*	(0%-20%)	CDS1	09/16/15 14:44
2-Hexanone	250	TU	0.00	T	173	ug/L	1	69*	(0%-20%)		
4-Methyl-2-pentanone	250	U	0.00		231	ug/L	1	93	(0%-20%)		
Acetone	250	TU	0.00	T	111	ug/L	2	44*	(0%-20%)		
Acetonitrile	1250	U	0.00		1200	ug/L	0	96	(0%-20%)		
Benzene	50.0	U	0.00		52.1	ug/L	3	104	(0%-20%)		
Bromoform	50.0	U	0.00		55.7	ug/L	0	111	(0%-20%)		
Carbon disulfide	250	U	0.00		291	ug/L	4	116	(0%-20%)		
Carbon tetrachloride	50.0	U	0.00		56.1	ug/L	5	112	(0%-20%)		
Chlorobenzene	50.0	U	0.00		51.9	ug/L	3	104	(0%-20%)		
Chloroethane	50.0	U	0.00		52.7	ug/L	2	105	(0%-20%)		
Chloroform	50.0	J	3.95		56.9	ug/L	2	106	(0%-20%)		
Chloromethane	50.0	U	0.00		53.7	ug/L	4	107	(0%-20%)		
Dibromochloromethane	50.0	U	0.00		54.4	ug/L	1	109	(0%-20%)		
Dibromomethane	50.0	U	0.00		50.2	ug/L	0	100	(0%-20%)		
Dichlorodifluoromethane	50.0	U	0.00		55.7	ug/L	4	111	(0%-20%)		
Ethylbenzene	50.0	U	0.00		53.9	ug/L	5	108	(0%-20%)		
Iodomethane	250	U	0.00		272	ug/L	3	109	(0%-20%)		
Methylene chloride	50.0	U	0.00		47.4	ug/L	2	95	(0%-20%)		
Styrene	50.0	U	0.00		54.8	ug/L	3	110	(0%-20%)		
Tetrachloroethylene	50.0	U	0.00		55.3	ug/L	6	111	(0%-20%)		

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										
Toluene	50.0	U	0.00	52.2	ug/L	5	104	(0%-20%)			
Trichloroethylene	50.0	U	0.00	54.1	ug/L	4	108	(0%-20%)	CDS1	09/16/15	14:44
Vinyl acetate	250	U	0.00	242	ug/L	1	97	(0%-20%)			
Vinyl chloride	50.0	U	0.00	55.0	ug/L	4	110	(0%-20%)			
Xylenes (total)	150	U	0.00	161	ug/L	4	108	(0%-20%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	53.6	ug/L	2	107	(0%-20%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	52.8	ug/L	5	106	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	54.7	ug/L	2	109	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		52.7	50.0	ug/L		100	(71%-134%)			
**Bromofluorobenzene	50.0		52.3	49.4	ug/L		99	(70%-131%)			
**Toluene-d8	50.0		50.6	50.0	ug/L		100	(74%-124%)			
QC1203394332 380763004 PSD											
2-Chloro-1,3-butadiene	50.0	U	0.00	60.4	ug/L	1	121	(0%-20%)		09/16/15	15:44
Acrolein	250	U	0.00	307	ug/L	10	123	(0%-20%)			
Acrylonitrile	250	U	0.00	275	ug/L	9	110	(0%-20%)			
Allyl chloride	250	U	0.00	268	ug/L	1	107	(0%-20%)			
Ethyl methacrylate	250	U	0.00	267	ug/L	3	107	(0%-20%)			
Isobutyl alcohol	2500	U	0.00	3040	ug/L	15	122	(0%-20%)			
Methacrylonitrile	250	U	0.00	275	ug/L	7	110	(0%-20%)			
trans-1,4-Dichloro-2-butene	250	U	0.00	270	ug/L	5	108	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		52.7	49.9	ug/L		100	(71%-134%)			
**Bromofluorobenzene	50.0		52.3	50.2	ug/L		100	(70%-131%)			
**Toluene-d8	50.0		50.6	48.9	ug/L		98	(74%-124%)			

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QC Summary

Workorder: 381291

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1508045										

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 (Organics only)

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

November 16, 2015
Surrogate Recovery Report

SDG Number: GEL381291

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203394329	B32971PS	99	100	98
1203394331	B32971PSD	100	100	99
1203394330	B32971PS	98	99	100
1203394332	B32971PSD	100	98	100
1203396882	LCS for batch 1508045	107	104	103
1203396883	LCS for batch 1508045	103	102	104
1203396881	MB for batch 1508045	104	102	104
381291007	B32949	107	104	109

Surrogate

DCED4 = 1,2-Dichloroethane-d4

TOL = Toluene-d8

BFB = Bromofluorobenzene

Acceptance Limits

(71%-134%)

(74%-124%)

(70%-131%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Miscellaneous

November 16, 2015

GEL Laboratories LLC
Form GEL-DERDER Report No.: 1449932
Rev 1

Revision No.: 1

DATA EXCEPTION REPORT

Mo.Day Yr. 21-SEP-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: VOA GC/MS	Test / Method: SW846 8260C	Matrix Type: Liquid	Client Code: CPRC
Batch ID: 1508045	Sample Numbers: See Below		
<p>Potentially affected work order(s)(SDG): 380763(GEL380763),380794(GEL380794),380924(GEL380924),380927(GEL380927),380995(GEL380995),380996(GEL380996),381093(GEL381093),381094(GEL381094),381150(GEL381150),381166(GEL381166),381291(GEL381291),381301(GEL381301)</p> <p>Application Issues:</p> <p>Failed Recovery for MS/MSD, or PS/PSD Other</p>			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed Recovery for MS/MSD, or PS/PSD: QC 1203394329PS,1203394331PSD</p> <p>2. The percent drift for 2-Chloro-1,3-butadiene was outside of the acceptance limits in the calibration verification sample with a high bias. The compound was not detected in the associated sample. The associated SDG was GEL381291</p>		<p>1. 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. 1203394329 (B32971PS) 2-Butanone [60* (70%-130%)], Acetone [45* (70%-130%)]. 1203394331 (B32971PSD) 2-Butanone [59* (70%-130%)], 2-Hexanone [69* (70%-130%)] and Acetone [44* (70%-130%)].</p> <p>2. The data results are reported.</p>	

Originator's Name:

Crystal Stacey 21-SEP-15

Data Validator/Group Leader:

Erin Haubert 06-OCT-15

Semi-Volatile Analysis

Case Narrative

November 16, 2015

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**GC/MS Semivolatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL381291
Work Order #: 381291**

Method/Analysis Information

Procedure: Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry

Analytical Method: SW846 3510C/8270D

Prep Method: SW846 3510C

Analytical Batch Number: 1508538

Prep Batch Number: 1508537

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3510C/8270D:

Sample ID	Client ID
381291007	B32949
381291011	B32BB7
1203395561	Method Blank (MB)
1203395562	Laboratory Control Sample (LCS)
1203395563	381291007(B32949) Matrix Spike (MS)
1203395564	381291007(B32949) Matrix Spike Duplicate (MSD)

Samples 381291 007 and 011 in this SDG were analyzed on an "as received" basis.

Preparation/Analytical Method Verification**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-009 REV# 35.

Raw data reports are processed and reviewed by the analyst using the data analysis software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package. The various calibration mixes may not be calibrated using all of the calibration levels. In addition, not all of the mixes are calibrated using the same levels.

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Diphenylamine has now superseded N-Nitroso-diphenylamine on Quantitation Reports, Initial Calibration Reports, Calibration Check Standard Reports, etc. Previous versions of EPA Methodologies referenced N-Nitroso-diphenylamine. However, as stated in EPA Methodology, "N-Nitroso-diphenylamine decomposes in the gas chromatographic inlet and cannot be separated from Diphenylamine." Studies of these two compounds at GEL, both independent of each other and together, showed that they not only co-elute, but also have similar mass spectra. N-Nitroso-diphenylamine and Diphenylamine will be reported as Diphenylamine on all reports and forms.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG) in this batch. A second source initial calibration verification (ICV) was included in the standard section directly behind the initial calibration.

CCV Requirements

All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D for sample 381291007 (B32949) and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG in this batch met the acceptance criteria.

Surrogate Recoveries

All the surrogate recoveries were within the established acceptance criteria for this SDG in this batch.

Laboratory Control Sample (LCS) Recovery

The LCS and/or LCSD (See Below) did not meet spike recovery acceptance criteria. Since the target analytes were not detected in the associated samples above the reporting limits, the positive bias had no adverse impact on the data.

Sample	Analyte	Value
1203395562 (LCS)	Di-n-octylphthalate	132* (45%-129%)
	bis(2-Ethylhexyl)phthalate	142* (51%-121%)

QC Sample Designation

Sample 381291007 (B32949) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement

The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. Because the recoveries were biased high and the target analytes were not detected in the associated samples above the reporting limit, the data were reported.

Sample	Analyte	Value
1203395563 (B32949MS)	bis(2-Ethylhexyl)phthalate	149* (33%-128%)

MS/MSD Relative Percent Difference (RPD) Statement

The RPD values between the MS and MSD met the acceptance limits.

Internal Standard (ISTD) Acceptance

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The internal standard responses used to quantitate the requested target analytes were within the required acceptance criteria for the SDG associated samples in this batch.

Technical Information:**Holding Time Specifications**

All samples in this SDG in this batch met the specified holding time. GEL assigns holding times based on the associated methodology that assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported compound mass spectra met the detection specifications in the method.

Sample Dilutions

The samples in this SDG in this batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information:**Data Exception (DER) Documentation**

A data exception report (DER) 1450400 was generated for samples 1203395562 (LCS) and 1203395563 (B32949MS) in this SDG/batch.

Manual Integrations

Some initial calibration standards, continuing calibration standards, and/or samples may require manual integrations due to software limitations. Manual integrations, if any, are included with the raw data.

TIC Comment

Tentatively identified compounds (TIC) were not required for the samples in this SDG for this batch.

Additional Comments

Additional comments were not required for the SDG associated samples in this batch.

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the reviewer name associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

System Configuration

The Semi-Volatile-GC/MS analysis was performed on the following instrument configuration:

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Instrument ID	Instrument	System Configuration	Column ID	Column Description
MSD4.I	Agilent 7890A/5975C GC/MS w/ 7683 Autosampler	HP6890/HP5973	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

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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GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL381291 GEL Work Order: 381291

The Qualifiers in this report are defined as follows:

T Spike and/or spike duplicate sample recovery is outside control limits.

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

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: Name: **Barbara Bailey**Date: **13 OCT 2015**Title: **Data Validator**

Sample Data Summary

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Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	GEL381291	Date Collected:	09/16/2015 11:15	Matrix:	WATER
Lab Sample ID:	381291007	Date Received:	09/17/2015 08:45		
Client ID:	B32949	Client:	CPRC001	Project:	CPRC0115038
Batch ID:	1508538	Method:	SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Run Date:	09/21/2015 15:46	Inst:	MSD4.I	Dilution:	1
Prep Date:	09/18/2015 08:15	Analyst:	JMB3	Inj. Vol:	1 uL
Data File:	s092115.B\s4i2115.D	Aliquot:	1120 mL	Final Volume:	1 mL
		Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	2.68	ug/L	2.68	8.93
120-82-1	1,2,4-Trichlorobenzene	U	2.68	ug/L	2.68	8.93
95-50-1	1,2-Dichlorobenzene	U	2.68	ug/L	2.68	8.93
99-35-4	1,3,5-Trinitrobenzene	U	2.68	ug/L	2.68	8.93
541-73-1	1,3-Dichlorobenzene	U	2.68	ug/L	2.68	8.93
106-46-7	1,4-Dichlorobenzene	U	2.68	ug/L	2.68	8.93
123-91-1	1,4-Dioxane	U	2.68	ug/L	2.68	8.93
130-15-4	1,4-Naphthoquinone	U	2.68	ug/L	2.68	8.93
134-32-7	1-Naphthylamine	U	2.68	ug/L	2.68	8.93
58-90-2	2,3,4,6-Tetrachlorophenol	U	2.68	ug/L	2.68	8.93
95-95-4	2,4,5-Trichlorophenol	U	2.68	ug/L	2.68	8.93
88-06-2	2,4,6-Trichlorophenol	U	2.68	ug/L	2.68	8.93
120-83-2	2,4-Dichlorophenol	U	2.68	ug/L	2.68	8.93
105-67-9	2,4-Dimethylphenol	U	2.68	ug/L	2.68	8.93
51-28-5	2,4-Dinitrophenol	U	4.46	ug/L	4.46	17.9
121-14-2	2,4-Dinitrotoluene	U	2.68	ug/L	2.68	8.93
87-65-0	2,6-Dichlorophenol	U	2.68	ug/L	2.68	8.93
606-20-2	2,6-Dinitrotoluene	U	2.68	ug/L	2.68	8.93
53-96-3	2-Acetylaminofluorene	U	2.68	ug/L	2.68	8.93
91-58-7	2-Chloronaphthalene	U	0.366	ug/L	0.366	0.893
95-57-8	2-Chlorophenol	U	2.68	ug/L	2.68	8.93
534-52-1	2-Methyl-4,6-dinitrophenol	U	2.68	ug/L	2.68	8.93
91-57-6	2-Methylnaphthalene	U	0.268	ug/L	0.268	0.893
91-59-8	2-Naphthylamine	U	2.68	ug/L	2.68	8.93
88-75-5	2-Nitrophenol	U	2.68	ug/L	2.68	8.93
109-06-8	2-Picoline	U	2.68	ug/L	2.68	8.93
91-94-1	3,3'-Dichlorobenzidine	U	2.68	ug/L	2.68	8.93
119-93-7	3,3'-Dimethylbenzidine	U	2.95	ug/L	2.95	8.93
56-49-5	3-Methylcholanthrene	U	2.68	ug/L	2.68	8.93
92-67-1	4-Aminobiphenyl	U	2.68	ug/L	2.68	8.93
101-55-3	4-Bromophenylphenylether	U	2.68	ug/L	2.68	8.93
59-50-7	4-Chloro-3-methylphenol	U	2.68	ug/L	2.68	8.93
106-47-8	4-Chloroaniline	U	2.95	ug/L	2.95	8.93
7005-72-3	4-Chlorophenylphenylether	U	2.68	ug/L	2.68	8.93
100-02-7	4-Nitrophenol	U	2.68	ug/L	2.68	8.93
56-57-5	4-Nitroquinoline-1-oxide	U	3.39	ug/L	3.39	8.93
99-55-8	5-Nitro-o-toluidine	U	2.68	ug/L	2.68	8.93
57-97-6	7,12-Dimethylbenz(a)anthracene	U	2.68	ug/L	2.68	8.93
	<i>7,12Dimethylbenz(a)anthracene</i>					

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Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
Client ID: B32949	Client: CPRC001	Project: CPRC0115038
Batch ID: 1508538	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Run Date: 09/21/2015 15:46	Inst: MSD4.I	Dilution: 1
Prep Date: 09/18/2015 08:15	Analyst: JMB3	Inj. Vol: 1 uL
Data File: s092115.B\4i2115.D	Aliquot: 1120 mL	Final Volume: 1 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	0.268	ug/L	0.268	0.893
208-96-8	Acenaphthylene	U	0.268	ug/L	0.268	0.893
98-86-2	Acetophenone	U	2.68	ug/L	2.68	8.93
62-53-3	Aniline	U	3.75	ug/L	3.75	8.93
120-12-7	Anthracene	U	0.268	ug/L	0.268	0.893
140-57-8	Aramite	U	3.30	ug/L	3.30	8.93
56-55-3	Benzo(a)anthracene	U	0.268	ug/L	0.268	0.893
50-32-8	Benzo(a)pyrene	U	0.268	ug/L	0.268	0.893
205-99-2	Benzo(b)fluoranthene	U	0.268	ug/L	0.268	0.893
191-24-2	Benzo(ghi)perylene	U	0.268	ug/L	0.268	0.893
207-08-9	Benzo(k)fluoranthene	U	0.268	ug/L	0.268	0.893
100-51-6	Benzyl alcohol	U	2.68	ug/L	2.68	8.93
85-68-7	Butylbenzylphthalate	U	2.68	ug/L	2.68	8.93
86-74-8	Carbazole	U	0.268	ug/L	0.268	0.893
510-15-6	Chlorobenzilate	U	2.68	ug/L	2.68	8.93
218-01-9	Chrysene	U	0.268	ug/L	0.268	0.893
84-74-2	Di-n-butylphthalate	U	2.68	ug/L	2.68	8.93
117-84-0	Di-n-octylphthalate	U	2.68	ug/L	2.68	8.93
2303-16-4	Diallate	U	2.68	ug/L	2.68	8.93
53-70-3	Dibenzo(a,h)anthracene	U	0.268	ug/L	0.268	0.893
132-64-9	Dibenzofuran	U	2.68	ug/L	2.68	8.93
84-66-2	Diethylphthalate	U	2.68	ug/L	2.68	8.93
60-51-5	Dimethoate	U	2.68	ug/L	2.68	8.93
131-11-3	Dimethylphthalate	U	2.68	ug/L	2.68	8.93
88-85-7	Dinoseb	U	2.68	ug/L	2.68	8.93
298-04-4	Disulfoton	U	2.68	ug/L	2.68	8.93
62-50-0	Ethyl Methanesulfonate	U	2.68	ug/L	2.68	8.93
52-85-7	Famphur	U	4.46	ug/L	4.46	8.93
206-44-0	Fluoranthene	U	0.268	ug/L	0.268	0.893
86-73-7	Fluorene	U	0.268	ug/L	0.268	0.893
118-74-1	Hexachlorobenzene	U	2.68	ug/L	2.68	8.93
87-68-3	Hexachlorobutadiene	U	2.68	ug/L	2.68	8.93
77-47-4	Hexachlorocyclopentadiene	U	2.68	ug/L	2.68	8.93
67-72-1	Hexachloroethane	U	2.68	ug/L	2.68	8.93
70-30-4	Hexachlorophene	U	149	ug/L	149	446
1888-71-7	Hexachloropropene	U	2.68	ug/L	2.68	8.93
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.268	ug/L	0.268	0.893
465-73-6	Isodrin	U	2.68	ug/L	2.68	8.93

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Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
Client ID: B32949	Client: CPRC001	Project: CPRC0115038
Batch ID: 1508538	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Run Date: 09/21/2015 15:46	Inst: MSD4.I	Dilution: 1
Prep Date: 09/18/2015 08:15	Analyst: JMB3	Inj. Vol: 1 uL
Data File: s092115.B\s4i2115.D	Aliquot: 1120 mL	Final Volume: 1 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
78-59-1	Isophorone	U	3.13	ug/L	3.13	8.93
120-58-1	Isosafrole	U	2.68	ug/L	2.68	8.93
143-50-0	Kepone	U	2.68	ug/L	2.68	8.93
91-80-5	Methapyrilene	U	2.68	ug/L	2.68	8.93
66-27-3	Methyl methanesulfonate	U	2.68	ug/L	2.68	8.93
298-00-0	Methyl parathion	U	2.68	ug/L	2.68	8.93
62-75-9	N-Methyl-N-nitrosomethylamine	U	2.68	ug/L	2.68	8.93
924-16-3	N-Nitrosodi-n-butylamine	U	2.68	ug/L	2.68	8.93
55-18-5	N-Nitrosodiethylamine	U	2.68	ug/L	2.68	8.93
621-64-7	N-Nitrosodipropylamine	U	2.68	ug/L	2.68	8.93
10595-95-6	N-Nitrosomethylethylamine	U	2.68	ug/L	2.68	8.93
59-89-2	N-Nitrosomorpholine	U	2.68	ug/L	2.68	8.93
100-75-4	N-Nitrosopiperidine	U	2.68	ug/L	2.68	8.93
930-55-2	N-Nitrosopyrrolidine	U	2.68	ug/L	2.68	8.93
91-20-3	Naphthalene	U	0.268	ug/L	0.268	0.893
98-95-3	Nitrobenzene	U	2.68	ug/L	2.68	8.93
56-38-2	Parathion	U	2.68	ug/L	2.68	8.93
608-93-5	Pentachlorobenzene	U	2.68	ug/L	2.68	8.93
76-01-7	Pentachloroethane	U	2.68	ug/L	2.68	8.93
82-68-8	Pentachloronitrobenzene	U	3.04	ug/L	3.04	8.93
87-86-5	Pentachlorophenol	U	2.68	ug/L	2.68	8.93
62-44-2	Phenacetin	U	2.68	ug/L	2.68	8.93
85-01-8	Phenanthrene	U	0.268	ug/L	0.268	0.893
108-95-2	Phenol	U	2.68	ug/L	2.68	8.93
298-02-2	Phorate	U	2.68	ug/L	2.68	8.93
23950-58-5	Pronamide	U	2.68	ug/L	2.68	8.93
129-00-0	Pyrene	U	0.268	ug/L	0.268	0.893
110-86-1	Pyridine	U	2.68	ug/L	2.68	8.93
94-59-7	Safrole	U	2.68	ug/L	2.68	8.93
3689-24-5	Sulfotepp	U	2.68	ug/L	2.68	8.93
297-97-2	Thionazin	U	2.68	ug/L	2.68	8.93
126-73-8	Tributylphosphate	U	2.68	ug/L	2.68	8.93
126-68-1	Triethylphosphorothioate	U	2.68	ug/L	2.68	8.93
122-09-8	a,a-Dimethylphenethylamine	U	4.82	ug/L	4.82	8.93
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	2.68	ug/L	2.68	8.93
111-91-1	bis(2-Chloroethoxy)methane	U	2.68	ug/L	2.68	8.93
111-44-4	bis(2-Chloroethyl) ether	U	2.68	ug/L	2.68	8.93
117-81-7	bis(2-Ethylhexyl)phthalate	TU	2.68	ug/L	2.68	8.93

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Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
Client ID: B32949	Client: CPRC001	Project: CPRC0115038
Batch ID: 1508538	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Run Date: 09/21/2015 15:46	Inst: MSD4.I	Dilution: 1
Prep Date: 09/18/2015 08:15	Analyst: JMB3	Inj. Vol: 1 uL
Data File: s092115.B\s4i2115.D	Aliquot: 1120 mL	Final Volume: 1 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DPA+NNDPA 122-39-4	diphenylamine+N-nitrosodiphenylan <i>Diphenylamine</i>	U	2.68	ug/L	2.68	8.93
65794-96-9	m,p-Cresols	U	3.30	ug/L	3.30	8.93
99-65-0	m-Dinitrobenzene	U	2.68	ug/L	2.68	8.93
99-09-2	m-Nitroaniline	U	2.68	ug/L	2.68	8.93
95-48-7	o-Cresol	U	2.68	ug/L	2.68	8.93
88-74-4	o-Nitroaniline	U	2.68	ug/L	2.68	8.93
95-53-4	o-Toluidine	U	2.68	ug/L	2.68	8.93
60-11-7	p-(Dimethylamino)azobenzene	U	2.68	ug/L	2.68	8.93
100-01-6	p-Nitroaniline	U	2.68	ug/L	2.68	8.93
106-50-3	p-Phenylenediamine	U	89.3	ug/L	89.3	446

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Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/16/2015 11:23	Matrix: WATER
Lab Sample ID: 381291011	Date Received: 09/17/2015 08:45	
	Client: CPRC001	Project: CPRC0115038
Client ID: B32BB7	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1508538	Inst: MSD4.I	Dilution: 1
Run Date: 09/21/2015 17:13	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/18/2015 08:15	Aliquot: 1060 mL	Final Volume: 1 mL
Data File: s092115.B\s4i2118.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	0.283	ug/L	0.283	0.943
208-96-8	Acenaphthylene	U	0.283	ug/L	0.283	0.943
120-12-7	Anthracene	U	0.283	ug/L	0.283	0.943
56-55-3	Benzo(a)anthracene	U	0.283	ug/L	0.283	0.943
50-32-8	Benzo(a)pyrene	U	0.283	ug/L	0.283	0.943
205-99-2	Benzo(b)fluoranthene	U	0.283	ug/L	0.283	0.943
191-24-2	Benzo(ghi)perylene	U	0.283	ug/L	0.283	0.943
207-08-9	Benzo(k)fluoranthene	U	0.283	ug/L	0.283	0.943
218-01-9	Chrysene	U	0.283	ug/L	0.283	0.943
53-70-3	Dibenzo(a,h)anthracene	U	0.283	ug/L	0.283	0.943
206-44-0	Fluoranthene	U	0.283	ug/L	0.283	0.943
86-73-7	Fluorene	U	0.283	ug/L	0.283	0.943
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.283	ug/L	0.283	0.943
91-20-3	Naphthalene	U	0.283	ug/L	0.283	0.943
85-01-8	Phenanthrene	U	0.283	ug/L	0.283	0.943
129-00-0	Pyrene	U	0.283	ug/L	0.283	0.943

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
QC1203395562	LCS										
1,2,4,5-Tetrachlorobenzene	50.0			32.1	ug/L		64	(38%-93%)	JMB3	09/21/15	15:17
1,2,4-Trichlorobenzene	50.0			32.9	ug/L		66	(35%-88%)			
1,2-Dichlorobenzene	50.0			31.2	ug/L		62	(34%-89%)			
1,3-Dichlorobenzene	50.0			30.8	ug/L		62	(33%-87%)			
1,4-Dichlorobenzene	50.0			31.5	ug/L		63	(32%-89%)			
1,4-Dioxane	50.0			28.3	ug/L		57	(32%-76%)			
2,3,4,6-Tetrachlorophenol	50.0			46.9	ug/L		94	(46%-121%)			
2,4,5-Trichlorophenol	50.0			44.7	ug/L		89	(48%-116%)			
2,4,6-Trichlorophenol	50.0			46.2	ug/L		92	(50%-116%)			
2,4-Dichlorophenol	50.0			40.9	ug/L		82	(48%-111%)			
2,4-Dimethylphenol	50.0			40.3	ug/L		81	(40%-107%)			
2,4-Dinitrophenol	50.0			52.0	ug/L		104	(26%-126%)			
2,4-Dinitrotoluene	50.0			48.8	ug/L		98	(52%-122%)			
2,6-Dichlorophenol	50.0			45.1	ug/L		90	(50%-117%)			
2,6-Dinitrotoluene	50.0			46.6	ug/L		93	(53%-120%)			
2-Chloronaphthalene	50.0			35.8	ug/L		72	(40%-98%)			
2-Chlorophenol	50.0			39.9	ug/L		80	(46%-105%)			
2-Methyl-4,6-dinitrophenol	50.0			55.1	ug/L		110	(36%-127%)			
2-Methylnaphthalene	50.0			32.2	ug/L		64	(38%-96%)			
2-Nitrophenol	50.0			39.6	ug/L		79	(45%-116%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
3,3'-Dichlorobenzidine	50.0			47.2	ug/L		94	(47%-122%)	JMB3	09/21/15	15:17
4-Bromophenylphenylether	50.0			48.4	ug/L		97	(52%-114%)			
4-Chloro-3-methylphenol	50.0			46.2	ug/L		92	(47%-118%)			
4-Chloroaniline	50.0			52.6	ug/L		105	(59%-143%)			
4-Chlorophenylphenylether	50.0			45.2	ug/L		90	(52%-113%)			
4-Nitrophenol	50.0			20.0	ug/L		40	(15%-82%)			
Acenaphthene	50.0			43.8	ug/L		88	(46%-103%)			
Acenaphthylene	50.0			40.7	ug/L		81	(47%-106%)			
Acetophenone	50.0			41.6	ug/L		83	(54%-117%)			
Aniline	50.0			46.6	ug/L		93	(47%-111%)			
Anthracene	50.0			48.4	ug/L		97	(53%-106%)			
Benzo(a)anthracene	50.0			50.3	ug/L		101	(54%-109%)			
Benzo(a)pyrene	50.0			49.9	ug/L		100	(51%-110%)			
Benzo(b)fluoranthene	50.0			49.5	ug/L		99	(52%-115%)			
Benzo(ghi)perylene	50.0			52.2	ug/L		104	(42%-124%)			
Benzo(k)fluoranthene	50.0			41.5	ug/L		83	(52%-117%)			
Benzyl alcohol	50.0			37.4	ug/L		75	(44%-106%)			
Butylbenzylphthalate	50.0			58.9	ug/L		118	(52%-120%)			
Carbazole	50.0			51.0	ug/L		102	(54%-114%)			
Chrysene	50.0			53.6	ug/L		107	(50%-112%)			
Di-n-butylphthalate	50.0			54.1	ug/L		108	(55%-116%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
Di-n-octylphthalate	50.0			65.8	ug/L		132*	(45%-129%)			
Dibenzo(a,h)anthracene	50.0			49.5	ug/L		99	(42%-134%)	JMB3	09/21/15	15:17
Dibenzofuran	50.0			41.7	ug/L		83	(52%-111%)			
Diethylphthalate	50.0			46.5	ug/L		93	(57%-118%)			
Dimethylphthalate	50.0			46.2	ug/L		92	(60%-118%)			
Fluoranthene	50.0			53.4	ug/L		107	(53%-112%)			
Fluorene	50.0			43.8	ug/L		88	(50%-107%)			
Hexachlorobenzene	50.0			47.3	ug/L		95	(47%-113%)			
Hexachlorobutadiene	50.0			29.4	ug/L		59	(29%-90%)			
Hexachlorocyclopentadiene	50.0			24.2	ug/L		48	(24%-75%)			
Hexachloroethane	50.0			30.2	ug/L		60	(28%-89%)			
Indeno(1,2,3-cd)pyrene	50.0			50.5	ug/L		101	(45%-129%)			
Isophorone	50.0			48.1	ug/L		96	(50%-115%)			
N-Methyl-N-nitrosomethylamine	50.0			30.7	ug/L		61	(30%-80%)			
N-Nitrosodipropylamine	50.0			42.5	ug/L		85	(45%-113%)			
N-Nitrosopyrrolidine	50.0			45.2	ug/L		90	(53%-114%)			
Naphthalene	50.0			33.2	ug/L		66	(38%-96%)			
Nitrobenzene	50.0			42.7	ug/L		85	(43%-114%)			
Pentachlorophenol	50.0			53.0	ug/L		106	(33%-120%)			
Phenanthrene	50.0			49.3	ug/L		99	(53%-106%)			
Phenol	50.0			16.3	ug/L		33	(16%-82%)			
Pyrene	50.0			54.9	ug/L		110	(46%-115%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
Pyridine	50.0			30.3	ug/L		61	(28%-76%)			
Tributylphosphate	50.0			44.6	ug/L		89	(51%-124%)	JMB3	09/21/15	15:17
bis(2-Chloro-1-methylethyl)ether	50.0			42.8	ug/L		86	(41%-115%)			
bis(2-Chloroethoxy)methane	50.0			43.3	ug/L		87	(53%-116%)			
bis(2-Chloroethyl) ether	50.0			43.9	ug/L		88	(49%-112%)			
bis(2-Ethylhexyl)phthalate	50.0			71.1	ug/L		142 *	(51%-121%)			
diphenylamine+N-nitrosodiphenylamine	50.0			44.2	ug/L		88	(49%-107%)			
m,p-Cresols	50.0			36.5	ug/L		73	(36%-104%)			
m-Nitroaniline	50.0			49.7	ug/L		99	(57%-149%)			
o-Cresol	50.0			37.6	ug/L		75	(38%-99%)			
o-Nitroaniline	50.0			46.1	ug/L		92	(44%-128%)			
p-Nitroaniline	50.0			47.7	ug/L		95	(45%-140%)			
**2,4,6-Tribromophenol	100			105	ug/L		105	(29%-124%)			
**2-Fluorobiphenyl	50.0			41.2	ug/L		82	(36%-105%)			
**2-Fluorophenol	100			51.3	ug/L		51	(15%-79%)			
**Nitrobenzene-d5	50.0			40.7	ug/L		81	(37%-110%)			
**Phenol-d5	100			31.2	ug/L		31	(15%-78%)			
**p-Terphenyl-d14	50.0			59.5	ug/L		119	(36%-132%)			
QC1203395561 MB											
1,2,4,5-Tetrachlorobenzene			U	3.00	ug/L					09/21/15	14:48
1,2,4-Trichlorobenzene			U	3.00	ug/L						
1,2-Dichlorobenzene			U	3.00	ug/L						
1,3,5-Trinitrobenzene			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
1,3-Dichlorobenzene			U	3.00	ug/L				JMB3	09/21/15	14:48
1,4-Dichlorobenzene			U	3.00	ug/L						
1,4-Dioxane			U	3.00	ug/L						
1,4-Naphthoquinone			U	3.00	ug/L						
1-Naphthylamine			U	3.00	ug/L						
2,3,4,6-Tetrachlorophenol			U	3.00	ug/L						
2,4,5-Trichlorophenol			U	3.00	ug/L						
2,4,6-Trichlorophenol			U	3.00	ug/L						
2,4-Dichlorophenol			U	3.00	ug/L						
2,4-Dimethylphenol			U	3.00	ug/L						
2,4-Dinitrophenol			U	5.00	ug/L						
2,4-Dinitrotoluene			U	3.00	ug/L						
2,6-Dichlorophenol			U	3.00	ug/L						
2,6-Dinitrotoluene			U	3.00	ug/L						
2-Acetylaminofluorene			U	3.00	ug/L						
2-Chloronaphthalene			U	0.410	ug/L						
2-Chlorophenol			U	3.00	ug/L						
2-Methyl-4,6-dinitrophenol			U	3.00	ug/L						
2-Methylnaphthalene			U	0.300	ug/L						
2-Naphthylamine			U	3.00	ug/L						
2-Nitrophenol			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
2-Picoline			U	3.00	ug/L						
3,3'-Dichlorobenzidine			U	3.00	ug/L				JMB3	09/21/15	14:48
3,3'-Dimethylbenzidine			U	3.30	ug/L						
3-Methylcholanthrene			U	3.00	ug/L						
4-Aminobiphenyl			U	3.00	ug/L						
4-Bromophenylphenylether			U	3.00	ug/L						
4-Chloro-3-methylphenol			U	3.00	ug/L						
4-Chloroaniline			U	3.30	ug/L						
4-Chlorophenylphenylether			U	3.00	ug/L						
4-Nitrophenol			U	3.00	ug/L						
4-Nitroquinoline-1-oxide			U	3.80	ug/L						
5-Nitro-o-toluidine			U	3.00	ug/L						
7,12-Dimethylbenz(a)anthracene			U	3.00	ug/L						
Acenaphthene			U	0.300	ug/L						
Acenaphthylene			U	0.300	ug/L						
Acetophenone			U	3.00	ug/L						
Aniline			U	4.20	ug/L						
Anthracene			U	0.300	ug/L						
Aramite			U	3.70	ug/L						
Benzo(a)anthracene			U	0.300	ug/L						
Benzo(a)pyrene			U	0.300	ug/L						
Benzo(b)fluoranthene			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
Benzo(ghi)perylene			U	0.300	ug/L						
Benzo(k)fluoranthene			U	0.300	ug/L				JMB3	09/21/15	14:48
Benzyl alcohol			U	3.00	ug/L						
Butylbenzylphthalate			U	3.00	ug/L						
Carbazole			U	0.300	ug/L						
Chlorobenzilate			U	3.00	ug/L						
Chrysene			U	0.300	ug/L						
Di-n-butylphthalate			U	3.00	ug/L						
Di-n-octylphthalate			U	3.00	ug/L						
Diallate			U	3.00	ug/L						
Dibenzo(a,h)anthracene			U	0.300	ug/L						
Dibenzofuran			U	3.00	ug/L						
Diethylphthalate			U	3.00	ug/L						
Dimethoate			U	3.00	ug/L						
Dimethylphthalate			U	3.00	ug/L						
Dinoseb			U	3.00	ug/L						
Disulfoton			U	3.00	ug/L						
Ethyl Methanesulfonate			U	3.00	ug/L						
Famphur			U	5.00	ug/L						
Fluoranthene			U	0.300	ug/L						
Fluorene			U	0.300	ug/L						
Hexachlorobenzene			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
Hexachlorobutadiene			U	3.00	ug/L						
Hexachlorocyclopentadiene			U	3.00	ug/L				JMB3	09/21/15	14:48
Hexachloroethane			U	3.00	ug/L						
Hexachlorophene			U	167	ug/L						
Hexachloropropene			U	3.00	ug/L						
Indeno(1,2,3-cd)pyrene			U	0.300	ug/L						
Isodrin			U	3.00	ug/L						
Isophorone			U	3.50	ug/L						
Isosafrole			U	3.00	ug/L						
Kepone			U	3.00	ug/L						
Methapyrilene			U	3.00	ug/L						
Methyl methanesulfonate			U	3.00	ug/L						
Methyl parathion			U	3.00	ug/L						
N-Methyl-N-nitrosomethylamine			U	3.00	ug/L						
N-Nitrosodi-n-butylamine			U	3.00	ug/L						
N-Nitrosodiethylamine			U	3.00	ug/L						
N-Nitrosodipropylamine			U	3.00	ug/L						
N-Nitrosomethylethylamine			U	3.00	ug/L						
N-Nitrosomorpholine			U	3.00	ug/L						
N-Nitrosopiperidine			U	3.00	ug/L						
N-Nitrosopyrrolidine			U	3.00	ug/L						
Naphthalene			U	0.300	ug/L						

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
Nitrobenzene			U	3.00	ug/L						
Parathion			U	3.00	ug/L				JMB3	09/21/15	14:48
Pentachlorobenzene			U	3.00	ug/L						
Pentachloroethane			U	3.00	ug/L						
Pentachloronitrobenzene			U	3.40	ug/L						
Pentachlorophenol			U	3.00	ug/L						
Phenacetin			U	3.00	ug/L						
Phenanthrene			U	0.300	ug/L						
Phenol			U	3.00	ug/L						
Phorate			U	3.00	ug/L						
Pronamide			U	3.00	ug/L						
Pyrene			U	0.300	ug/L						
Pyridine			U	3.00	ug/L						
Safrole			U	3.00	ug/L						
Sulfotepp			U	3.00	ug/L						
Thionazin			U	3.00	ug/L						
Tributylphosphate			U	3.00	ug/L						
Triethylphosphorothioate			U	3.00	ug/L						
a,a-Dimethylphenethylamine			U	5.40	ug/L						
bis(2-Chloro-1-methylethyl)ether			U	3.00	ug/L						
bis(2-Chloroethoxy)methane			U	3.00	ug/L						
bis(2-Chloroethyl) ether			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
bis(2-Ethylhexyl)phthalate			U	3.00	ug/L						
diphenylamine+N-nitrosodiphenylamine			U	3.00	ug/L				JMB3	09/21/15	14:48
m,p-Cresols			U	3.70	ug/L						
m-Dinitrobenzene			U	3.00	ug/L						
m-Nitroaniline			U	3.00	ug/L						
o-Cresol			U	3.00	ug/L						
o-Nitroaniline			U	3.00	ug/L						
o-Toluidine			U	3.00	ug/L						
p-(Dimethylamino)azobenzene			U	3.00	ug/L						
p-Nitroaniline			U	3.00	ug/L						
p-Phenylenediamine			U	100	ug/L						
**2,4,6-Tribromophenol	100			102	ug/L		102	(29%-124%)			
**2-Fluorobiphenyl	50.0			35.4	ug/L		71	(36%-105%)			
**2-Fluorophenol	100			50.2	ug/L		50	(15%-79%)			
**Nitrobenzene-d5	50.0			40.5	ug/L		81	(37%-110%)			
**Phenol-d5	100			28.5	ug/L		29	(15%-78%)			
**p-Terphenyl-d14	50.0			60.4	ug/L		121	(36%-132%)			
QC1203395563 381291007 MS											
1,2,4,5-Tetrachlorobenzene	100	U	2.68	67.8	ug/L		68	(26%-100%)		09/21/15	16:15
1,2,4-Trichlorobenzene	100	U	2.68	61.7	ug/L		62	(28%-93%)			
1,2-Dichlorobenzene	100	U	2.68	66.7	ug/L		67	(28%-94%)			
1,3-Dichlorobenzene	100	U	2.68	66.8	ug/L		67	(28%-89%)			
1,4-Dichlorobenzene	100	U	2.68	66.2	ug/L		66	(25%-95%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
1,4-Dioxane	100	U	2.68	69.7	ug/L		70	(25%-103%)	JMB3	09/21/15	16:15
2,3,4,6-Tetrachlorophenol	100	U	2.68	101	ug/L		101	(29%-127%)			
2,4,5-Trichlorophenol	100	U	2.68	91.9	ug/L		92	(32%-124%)			
2,4,6-Trichlorophenol	100	U	2.68	93.0	ug/L		93	(33%-124%)			
2,4-Dichlorophenol	100	U	2.68	75.6	ug/L		76	(31%-121%)			
2,4-Dimethylphenol	100	U	2.68	78.8	ug/L		79	(28%-112%)			
2,4-Dinitrophenol	100	U	4.46	103	ug/L		103	(15%-140%)			
2,4-Dinitrotoluene	100	U	2.68	95.8	ug/L		96	(40%-126%)			
2,6-Dichlorophenol	100	U	2.68	83.2	ug/L		83	(32%-127%)			
2,6-Dinitrotoluene	100	U	2.68	100	ug/L		100	(41%-122%)			
2-Chloronaphthalene	100	U	0.366	78.5	ug/L		78	(31%-103%)			
2-Chlorophenol	100	U	2.68	78.3	ug/L		78	(27%-116%)			
2-Methyl-4,6-dinitrophenol	100	U	2.68	110	ug/L		110	(15%-142%)			
2-Methylnaphthalene	100	U	0.268	63.7	ug/L		64	(30%-103%)			
2-Nitrophenol	100	U	2.68	78.0	ug/L		78	(35%-121%)			
3,3'-Dichlorobenzidine	100	U	2.68	71.0	ug/L		71	(15%-135%)			
4-Bromophenylphenylether	100	U	2.68	99.7	ug/L		100	(37%-117%)			
4-Chloro-3-methylphenol	100	U	2.68	91.5	ug/L		92	(28%-130%)			
4-Chloroaniline	100	U	2.95	95.6	ug/L		96	(23%-158%)			
4-Chlorophenylphenylether	100	U	2.68	95.7	ug/L		96	(38%-116%)			
4-Nitrophenol	100	U	2.68	58.4	ug/L		58	(15%-88%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
Acenaphthene	100	U	0.268	89.6	ug/L		90	(35%-108%)			
Acenaphthylene	100	U	0.268	87.9	ug/L		88	(34%-113%)	JMB3	09/21/15	16:15
Acetophenone	100	U	2.68	83.2	ug/L		83	(42%-121%)			
Aniline	100	U	3.75	89.1	ug/L		89	(25%-123%)			
Anthracene	100	U	0.268	97.5	ug/L		97	(37%-112%)			
Benzo(a)anthracene	100	U	0.268	92.6	ug/L		93	(37%-116%)			
Benzo(a)pyrene	100	U	0.268	96.4	ug/L		96	(35%-117%)			
Benzo(b)fluoranthene	100	U	0.268	103	ug/L		103	(37%-121%)			
Benzo(ghi)perylene	100	U	0.268	87.3	ug/L		87	(22%-122%)			
Benzo(k)fluoranthene	100	U	0.268	83.7	ug/L		84	(37%-125%)			
Benzyl alcohol	100	U	2.68	81.9	ug/L		82	(38%-120%)			
Butylbenzylphthalate	100	U	2.68	127	ug/L		127	(33%-128%)			
Carbazole	100	U	0.268	98.1	ug/L		98	(36%-120%)			
Chrysene	100	U	0.268	106	ug/L		106	(36%-116%)			
Di-n-butylphthalate	100	U	2.68	121	ug/L		120	(37%-121%)			
Di-n-octylphthalate	100	U	2.68	117	ug/L		117	(32%-128%)			
Dibenzo(a,h)anthracene	100	U	0.268	83.7	ug/L		84	(27%-132%)			
Dibenzofuran	100	U	2.68	85.2	ug/L		85	(39%-115%)			
Diethylphthalate	100	U	2.68	95.4	ug/L		95	(39%-124%)			
Dimethylphthalate	100	U	2.68	97.7	ug/L		98	(42%-124%)			
Fluoranthene	100	U	0.268	106	ug/L		106	(35%-117%)			
Fluorene	100	U	0.268	90.4	ug/L		90	(36%-113%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
Hexachlorobenzene	100	U	2.68		97.7	ug/L	98	(36%-116%)			
Hexachlorobutadiene	100	U	2.68		58.7	ug/L	59	(22%-97%)	JMB3	09/21/15	16:15
Hexachlorocyclopentadiene	100	U	2.68		46.1	ug/L	46	(15%-80%)			
Hexachloroethane	100	U	2.68		65.0	ug/L	65	(23%-93%)			
Indeno(1,2,3-cd)pyrene	100	U	0.268		88.2	ug/L	88	(29%-126%)			
Isophorone	100	U	3.13		84.2	ug/L	84	(42%-115%)			
N-Methyl-N-nitrosomethylamine	100	U	2.68		75.0	ug/L	75	(28%-102%)			
N-Nitrosodipropylamine	100	U	2.68		83.2	ug/L	83	(38%-114%)			
N-Nitrosopyrrolidine	100	U	2.68		92.4	ug/L	92	(41%-125%)			
Naphthalene	100	U	0.268		65.6	ug/L	66	(31%-101%)			
Nitrobenzene	100	U	2.68		73.6	ug/L	74	(38%-119%)			
Pentachlorophenol	100	U	2.68		109	ug/L	109	(15%-135%)			
Phenanthrene	100	U	0.268		99.7	ug/L	100	(37%-113%)			
Phenol	100	U	2.68		51.8	ug/L	52	(15%-80%)			
Pyrene	100	U	0.268		106	ug/L	106	(31%-122%)			
Pyridine	100	U	2.68		75.8	ug/L	76	(15%-93%)			
Tributylphosphate	100	U	2.68		101	ug/L	101	(44%-121%)			
bis(2-Chloro-1-methylethyl)ether	100	U	2.68		85.7	ug/L	86	(33%-114%)			
bis(2-Chloroethoxy)methane	100	U	2.68		80.3	ug/L	80	(44%-117%)			
bis(2-Chloroethyl) ether	100	U	2.68		79.3	ug/L	79	(39%-113%)			
bis(2-Ethylhexyl)phthalate	100	TU	2.68	T	149	ug/L	149*	(33%-128%)			
diphenylamine+N-nitrosodiphenylamine	100	U	2.68		99.0	ug/L	99	(35%-108%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
m,p-Cresols	100	U	3.30	84.1	ug/L		84	(31%-118%)			
m-Nitroaniline	100	U	2.68	99.5	ug/L		100	(26%-162%)	JMB3	09/21/15	16:15
o-Cresol	100	U	2.68	78.8	ug/L		79	(32%-108%)			
o-Nitroaniline	100	U	2.68	95.5	ug/L		95	(27%-132%)			
p-Nitroaniline	100	U	2.68	86.9	ug/L		87	(15%-153%)			
**2,4,6-Tribromophenol	200		82.1	205	ug/L		103	(29%-124%)			
**2-Fluorobiphenyl	100		32.5	76.4	ug/L		76	(36%-105%)			
**2-Fluorophenol	200		43.1	133	ug/L		66	(15%-79%)			
**Nitrobenzene-d5	100		32.5	68.8	ug/L		69	(37%-110%)			
**Phenol-d5	200		24.9	103	ug/L		52	(15%-78%)			
**p-Terphenyl-d14	100		43.5	114	ug/L		114	(36%-132%)			
QC1203395564 381291007 MSD											
1,2,4,5-Tetrachlorobenzene	100	U	2.68	69.2	ug/L	2	69	(0%-30%)		09/21/15	16:44
1,2,4-Trichlorobenzene	100	U	2.68	69.3	ug/L	12	69	(0%-30%)			
1,2-Dichlorobenzene	100	U	2.68	66.6	ug/L	0	67	(0%-30%)			
1,3-Dichlorobenzene	100	U	2.68	69.3	ug/L	4	69	(0%-30%)			
1,4-Dichlorobenzene	100	U	2.68	68.1	ug/L	3	68	(0%-30%)			
1,4-Dioxane	100	U	2.68	74.7	ug/L	7	75	(0%-30%)			
2,3,4,6-Tetrachlorophenol	100	U	2.68	101	ug/L	1	101	(0%-30%)			
2,4,5-Trichlorophenol	100	U	2.68	92.5	ug/L	1	92	(0%-30%)			
2,4,6-Trichlorophenol	100	U	2.68	97.1	ug/L	4	97	(0%-30%)			
2,4-Dichlorophenol	100	U	2.68	92.4	ug/L	20	92	(0%-30%)			
2,4-Dimethylphenol	100	U	2.68	83.4	ug/L	6	83	(0%-30%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
2,4-Dinitrophenol	100	U	4.46	99.5	ug/L	4	100	(0%-30%)	JMB3	09/21/15	16:44
2,4-Dinitrotoluene	100	U	2.68	94.5	ug/L	1	95	(0%-30%)			
2,6-Dichlorophenol	100	U	2.68	95.8	ug/L	14	96	(0%-30%)			
2,6-Dinitrotoluene	100	U	2.68	97.7	ug/L	3	98	(0%-30%)			
2-Chloronaphthalene	100	U	0.366	81.9	ug/L	4	82	(0%-30%)			
2-Chlorophenol	100	U	2.68	82.3	ug/L	5	82	(0%-30%)			
2-Methyl-4,6-dinitrophenol	100	U	2.68	104	ug/L	6	104	(0%-30%)			
2-Methylnaphthalene	100	U	0.268	73.3	ug/L	14	73	(0%-30%)			
2-Nitrophenol	100	U	2.68	80.9	ug/L	4	81	(0%-30%)			
3,3'-Dichlorobenzidine	100	U	2.68	75.7	ug/L	6	76	(0%-30%)			
4-Bromophenylphenylether	100	U	2.68	101	ug/L	1	101	(0%-30%)			
4-Chloro-3-methylphenol	100	U	2.68	95.3	ug/L	4	95	(0%-30%)			
4-Chloroaniline	100	U	2.95	109	ug/L	13	109	(0%-30%)			
4-Chlorophenylphenylether	100	U	2.68	104	ug/L	9	104	(0%-30%)			
4-Nitrophenol	100	U	2.68	58.7	ug/L	0	59	(0%-30%)			
Acenaphthene	100	U	0.268	90.0	ug/L	0	90	(0%-30%)			
Acenaphthylene	100	U	0.268	84.5	ug/L	4	85	(0%-30%)			
Acetophenone	100	U	2.68	85.7	ug/L	3	86	(0%-30%)			
Aniline	100	U	3.75	94.7	ug/L	6	95	(0%-30%)			
Anthracene	100	U	0.268	93.1	ug/L	5	93	(0%-30%)			
Benzo(a)anthracene	100	U	0.268	98.2	ug/L	6	98	(0%-30%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
Benzo(a)pyrene	100	U	0.268	92.1	ug/L	5	92	(0%-30%)			
Benzo(b)fluoranthene	100	U	0.268	104	ug/L	1	104	(0%-30%)	JMB3	09/21/15	16:44
Benzo(ghi)perylene	100	U	0.268	89.8	ug/L	3	90	(0%-30%)			
Benzo(k)fluoranthene	100	U	0.268	83.3	ug/L	0	83	(0%-30%)			
Benzyl alcohol	100	U	2.68	85.6	ug/L	4	86	(0%-30%)			
Butylbenzylphthalate	100	U	2.68	122	ug/L	4	122	(0%-30%)			
Carbazole	100	U	0.268	91.0	ug/L	8	91	(0%-30%)			
Chrysene	100	U	0.268	103	ug/L	3	103	(0%-30%)			
Di-n-butylphthalate	100	U	2.68	101	ug/L	18	100	(0%-30%)			
Di-n-octylphthalate	100	U	2.68	120	ug/L	2	120	(0%-30%)			
Dibenzo(a,h)anthracene	100	U	0.268	81.7	ug/L	2	82	(0%-30%)			
Dibenzofuran	100	U	2.68	88.2	ug/L	4	88	(0%-30%)			
Diethylphthalate	100	U	2.68	92.2	ug/L	3	92	(0%-30%)			
Dimethylphthalate	100	U	2.68	99.3	ug/L	2	99	(0%-30%)			
Fluoranthene	100	U	0.268	100	ug/L	6	100	(0%-30%)			
Fluorene	100	U	0.268	98.2	ug/L	8	98	(0%-30%)			
Hexachlorobenzene	100	U	2.68	94.9	ug/L	3	95	(0%-30%)			
Hexachlorobutadiene	100	U	2.68	64.0	ug/L	9	64	(0%-30%)			
Hexachlorocyclopentadiene	100	U	2.68	46.0	ug/L	0	46	(0%-30%)			
Hexachloroethane	100	U	2.68	69.3	ug/L	6	69	(0%-30%)			
Indeno(1,2,3-cd)pyrene	100	U	0.268	83.2	ug/L	6	83	(0%-30%)			
Isophorone	100	U	3.13	90.7	ug/L	7	91	(0%-30%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
N-Methyl-N-nitrosomethylamine	100	U	2.68		77.4	ug/L	3	77	(0%-30%)		
N-Nitrosodipropylamine	100	U	2.68		85.2	ug/L	2	85	(0%-30%)	JMB3	09/21/15 16:44
N-Nitrosopyrrolidine	100	U	2.68		94.1	ug/L	2	94	(0%-30%)		
Naphthalene	100	U	0.268		71.9	ug/L	9	72	(0%-30%)		
Nitrobenzene	100	U	2.68		81.1	ug/L	10	81	(0%-30%)		
Pentachlorophenol	100	U	2.68		104	ug/L	5	104	(0%-30%)		
Phenanthrene	100	U	0.268		96.1	ug/L	4	96	(0%-30%)		
Phenol	100	U	2.68		51.6	ug/L	0	52	(0%-30%)		
Pyrene	100	U	0.268		105	ug/L	1	105	(0%-30%)		
Pyridine	100	U	2.68		81.3	ug/L	7	81	(0%-30%)		
Tributylphosphate	100	U	2.68		99.8	ug/L	2	100	(0%-30%)		
bis(2-Chloro-1-methylethyl)ether	100	U	2.68		88.5	ug/L	3	89	(0%-30%)		
bis(2-Chloroethoxy)methane	100	U	2.68		98.8	ug/L	21	99	(0%-30%)		
bis(2-Chloroethyl) ether	100	U	2.68		83.2	ug/L	5	83	(0%-30%)		
bis(2-Ethylhexyl)phthalate	100	TU	2.68	T	145	ug/L	3	145*	(0%-30%)		
diphenylamine+N-nitrosodiphenylamine	100	U	2.68		91.1	ug/L	8	91	(0%-30%)		
m,p-Cresols	100	U	3.30		85.3	ug/L	1	85	(0%-30%)		
m-Nitroaniline	100	U	2.68		99.8	ug/L	0	100	(0%-30%)		
o-Cresol	100	U	2.68		81.9	ug/L	4	82	(0%-30%)		
o-Nitroaniline	100	U	2.68		99.9	ug/L	5	100	(0%-30%)		
p-Nitroaniline	100	U	2.68		94.9	ug/L	9	95	(0%-30%)		
**2,4,6-Tribromophenol	200		82.1		209	ug/L		105	(29%-124%)		

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1508538										
**2-Fluorobiphenyl	100	32.5		88.9	ug/L		89	(36%-105%)			
**2-Fluorophenol	200	43.1		133	ug/L		67	(15%-79%)	JMB3	09/21/15	16:44
**Nitrobenzene-d5	100	32.5		76.7	ug/L		77	(37%-110%)			
**Phenol-d5	200	24.9		100	ug/L		50	(15%-78%)			
**p-Terphenyl-d14	100	43.5		115	ug/L		115	(36%-132%)			

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 (Organics only)

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

November 16, 2015
Surrogate Recovery Report

SDG Number: GEL381291

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203395561	MB for batch 1508537	50	29	81	71	102	121
1203395562	LCS for batch 1508537	51	31	81	82	105	119
381291007	B32949	48	28	73	73	92	97
1203395563	B32949MS	66	52	69	76	103	114
1203395564	B32949MSD	67	50	77	89	105	115
381291011	B32BB7	49	29	80	80	93	113

Surrogate

2FP = 2-Fluorophenol
 PHL = Phenol-d5
 NBZ = Nitrobenzene-d5
 FBP = 2-Fluorobiphenyl
 TBP = 2,4,6-Tribromophenol
 TPH = p-Terphenyl-d14

Acceptance Limits

(15%-79%)
 (15%-78%)
 (37%-110%)
 (36%-105%)
 (29%-124%)
 (36%-132%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Miscellaneous

November 16, 2015

GEL Laboratories LLC
Form GEL-DERDER Report No.: 1450400
Revision No.: **Rev 1**

DATA EXCEPTION REPORT

Mo.Day Yr. 22-SEP-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: SEMIVOA GC/MS	Test / Method: SW846 3510C/8270D	Matrix Type: Liquid	Client Code: CPRC, DCCI
Batch ID: 1508538	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 381291(GEL381291)			
Application Issues: Failed Recovery for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. The 1203395562LCS failed spike recovery.</p> <p>2. The 1203395563MS failed spike recovery.</p>		<p>1. The LCS and/or LCSD (See Below) did not meet spike recovery acceptance criteria. Since target analytes were not detected in the associated samples above the reporting limits, the positive bias had no adverse impact on the data. 1203395562 (LCS) Di-n-octylphthalate [132* (45%-129%)] and bis(2-Ethylhexyl)phthalate [142* (51%-121%)].</p> <p>2. The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. Because the recoveries were biased high and target analytes were not detected in the associated samples above the reporting limit, the data were reported. 1203395563 (B32949MS) bis(2-Ethylhexyl)phthalate [149* (33%-128%)].</p>	

Originator's Name:

Josh Brooks 22-SEP-15

Data Validator/Group Leader:

Herbert Maier 22-SEP-15

FID Diesel Range Organics Analysis

Case Narrative

November 16, 2015

Rev 1

**Diesel Range Organics
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL381291
Work Order #: 381291**

Method/Analysis Information

Procedure: Analysis of Diesel Range Organics by Flame Ionization Detector

Analytical Method: NWTPH-Dx

Prep Method: SW846 3535A

Analytical Batch Number: 1508695

Prep Batch Number: 1508694

Sample Analysis

The following samples were analyzed using the analytical protocol as established in NWTPH-Dx:

Sample ID	Client ID
381291007	B32949
381291010	B329C8
381291011	B32BB7
1203395940	Method Blank (MB)
1203395941	Laboratory Control Sample (LCS)
1203395942	381150012(B32BB2) Matrix Spike (MS)
1203395943	381150012(B32BB2) Matrix Spike Duplicate (MSD)

Samples 381291 007, 010 and 011 in this SDG were analyzed on an "as received" basis.

Preparation/Analytical Method Verification**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-003 REV# 25.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information**Initial Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria. Analyte peaks eluted within the established retention time windows for this method.

November 16, 2015

Rev 1

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

The MB analyzed with this SDG met the acceptance criteria; however, the MB contained low level (below the PQL) of hydrocarbons within the Motor Oil range.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS/LCSD) Recovery

The LCS/LCSD spike recoveries met the acceptance limits.

QC Sample Designation

Sample 381150012 (B32BB2) was selected for the MS and MSD analyses.

Matrix Spike (MS/MSD) Recovery Statement

The MS/MSD recovery was within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD met the acceptance limits.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. Analyte peaks eluted within the established retention time windows for this method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information**Electronic Package Comment**

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

Data Exception (DER) Documentation

Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

November 16, 2015

Rev 1

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The additional comments were not required.

System Configuration

The Diesel Range Organics analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
FID7.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	DB-5MS	30m x 0.25mm, 0.25um(J&W)

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.

November 16, 2015

Rev 1

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: GEL381291 GEL Work Order: 381291

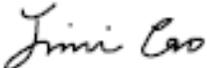
The Qualifiers in this report are defined as follows:

- B The analyte was detected in both the associated QC blank and in the sample.
- 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
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: **Name:** Jimin Cao**Date:** 13 OCT 2015**Title:** Data Validator

Sample Data Summary

November 16, 2015

Page 1 of 1 Rev1

**Certificate of Analysis
 Sample Summary**

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
	Client: CPRC001	Project: CPRC0I15038
Client ID: B32949	Method: NWTPH-Dx	SOP Ref: GL-OA-E-003
Batch ID: 1508695	Inst: FID7.I	Dilution: 1
Run Date: 10/06/2015 11:18	Analyst: LXA1	Inj. Vol: 1 uL
Prep Date: 09/21/2015 09:50	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: 100515KERO\7j0536.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
68334-30-5	Diesel Range Organics	U	50.0	ug/L	50.0	200

November 16, 2015
 FID Diesel Range Organics

**Certificate of Analysis
 Sample Summary**

SDG Number: GEL381291	Date Collected: 09/15/2015 12:25	Matrix: WATER
Lab Sample ID: 381291010	Date Received: 09/17/2015 08:45	
	Client: CPRC001	Project: CPRC0115038
Client ID: B329C8	Method: NWTPH-Dx	SOP Ref: GL-OA-E-003
Batch ID: 1508695	Inst: FID7.I	Dilution: 1
Run Date: 10/06/2015 11:57	Analyst: LXA1	Inj. Vol: 1 uL
Prep Date: 09/21/2015 09:50	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: 100515KERO\7j0537.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
68334-30-5	Diesel Range Organics		827	ug/L	50.0	200
	Motor Oil	B	971	ug/L	50.0	200

November 16, 2015

Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/16/2015 11:23	Matrix: WATER
Lab Sample ID: 381291011	Date Received: 09/17/2015 08:45	
Client ID: B32BB7	Client: CPRC001	Project: CPRC0115038
Batch ID: 1508695	Method: NWTPH-Dx	SOP Ref: GL-OA-E-003
Run Date: 10/06/2015 12:40	Inst: FID7.I	Dilution: 1
Prep Date: 09/21/2015 09:50	Analyst: LXA1	Inj. Vol: 1 uL
Data File: 100515KERO\7j0538.D	Aliquot: 1000 mL	Final Volume: 1 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
68334-30-5	Diesel Range Organics	U	50.0	ug/L	50.0	200
	Motor Oil	BJ	87.2	ug/L	50.0	200

Quality Control Summary

November 16, 2015
GEL LABORATORIES LLC

Rev 1

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QC Summary

Report Date: October 7, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Diesel Range Organics											
Batch	1508695										
QC1203395941	LCS										
Diesel Range Organics	2000			1980	ug/L		99	(70%-130%)	LXA1	10/06/15	08:01
Motor Oil	2000		B	2270	ug/L		114	(70%-130%)			
**o-Terphenyl	20.0			22.1	ug/L		111	(50%-150%)			
QC1203395940	MB										
Diesel Range Organics			U	50.0	ug/L					10/06/15	07:22
Motor Oil			J	101	ug/L						
**o-Terphenyl	20.0			18.8	ug/L		94	(50%-150%)			
QC1203395942	381150012 MS										
Diesel Range Organics	2000	J	162	1960	ug/L		90	(70%-130%)		10/06/15	09:19
Motor Oil	2000	BJ	182 B	2050	ug/L		94	(70%-130%)			
**o-Terphenyl	20.0		19.9	20.1	ug/L		101	(50%-150%)			
QC1203395943	381150012 MSD										
Diesel Range Organics	2000	J	162	1890	ug/L	3	87	(0%-20%)		10/06/15	09:59
Motor Oil	2000	BJ	182 B	2130	ug/L	4	98	(0%-20%)			
**o-Terphenyl	20.0		19.9	20.5	ug/L		103	(50%-150%)			

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

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GEL LABORATORIES LLC

Rev 1

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QC Summary

Workorder: 381291

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
N	Spike Sample recovery is outside control limits.										
P	Aroclor target analyte with greater than 25% difference between column analyses.										
T	Spike and/or spike duplicate sample recovery is outside control limits.										
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
o	Analyte failed to recover within LCS limits (Organics only)										

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

November 16, 2015
Diverse Range Organics

Page Rev 1 of 1

Surrogate Recovery Report

SDG Number: GEL381291

Matrix Type: LIQUID

Sample ID	Client ID	OTP %REC
1203395940	MB for batch 1508694	94
1203395941	LCS for batch 1508694	111
1203395942	B32BB2MS	101
1203395943	B32BB2MSD	103
381291007	B32949	94
381291010	B329C8	94
381291011	B32BB7	83

Surrogate

OTP = o-Terphenyl

Acceptance Limits

(50%-150%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

FID Solvent Scan Analysis

Case Narrative

November 16, 2015

Rev 1

Solvent Scan
Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL381291
Work Order #: 381291

Method/Analysis Information

Procedure: Analysis of Solvent Scan by Flame Ionization Detector

Analytical Method: SW846 8015C

Analytical Batch Number: 1509113

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 8015C:

Sample ID	Client ID
381291007	B32949
1203397034	Method Blank (MB)
1203397035	Laboratory Control Sample (LCS)
1203397041	381291007(B32949) Sample Duplicate (DUP)

Sample 381291 007 in this SDG was analyzed on an "as received" basis.

Preparation/Analytical Method Verification**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-046 REV# 8.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP) section 23.0.

Calibration Information**Initial Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

The calibration verification standards (CVS, ICV, or CCV) requirements have not been met for this SDG. The CCV standards bracketing the samples in this batch failed to meet the recovery acceptance criteria with positive bias due to instrument response increasing after the initial calibration. Since the target analyte was not detected in the associated CPRC sample, the instrument positive bias had no adverse effects on the data.

November 16, 2015

Rev 1

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

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

Surrogate was not added to any samples in this batch.

Laboratory Control Sample (LCS/LCSD) Recovery

The LCS failed to meet the spike recovery acceptance criteria with positive bias due to instrument response increasing after the initial calibration. Since the target analyte was not detected in the associated CPCR sample, the instrument positive bias had no adverse effects on the data.

Sample	Analyte	Value
1203397035 (LCS)	Ethanol	246* (59%-136%)

QC Sample Designation

The matrix spike and matrix spike duplicate analysis was not performed for this SDG.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information**Data Exception (DER) Documentation**

Data exception report (DER) 1450584 was generated for this batch of the samples.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The additional comments were not required for this batch of the samples.

November 16, 2015

Rev 1

System Configuration

The Solvent Scan analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
FID9.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	J&W DB-WAX	30m x 0.53 mm x 1um
FID9.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	J&W DB-624	30m x 0.53 mm x 3.0um

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.

November 16, 2015

Rev 1

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL381291 GEL Work Order: 381291

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.

DL Indicates that sample is diluted.

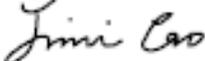
RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Jimin Cao

Date: 23 SEP 2015

Title: Data Validator

Sample Data Summary

November 16, 2015

Page 1 of 1

**Certificate of Analysis
Sample Summary**

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
Client ID: B32949	Client: CPRC001	Project: CPRC0I15038
Batch ID: 1509113	Method: SW846 8015C	SOP Ref: GL-OA-E-046
Run Date: 09/21/2015 14:02	Inst: FID9.I	Dilution: 1
Prep Date: 09/21/2015 14:02	Analyst: LXA1	Inj. Vol: 1 uL
Data File: 092115SS\9i2106.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
64-17-5	Ethanol	U	3000	ug/L	3000	10000

Quality Control Summary

November 16, 2015
GEL LABORATORIES LLC

Rev 1

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

QC Summary

Report Date: September 22, 2015

Page 1 of 1

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Solvent Scan											
Batch	1509113										
QC1203397041	381291007	DUP									
Ethanol	U	3000	U	3000	ug/L	N/A			LXA1	09/21/15	14:28
QC1203397035	LCS										
Ethanol	100000			246000	ug/L		246*	(59%-136%)		09/21/15	13:36
QC1203397034	MB										
Ethanol			U	3000	ug/L					09/21/15	13:09

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 (Organics only)

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

Miscellaneous

November 16, 2015

GEL Laboratories LLC
Form GEL-DER

Rev 1
DER Report No.: 1450584
Revision No.:

DATA EXCEPTION REPORT

Mo.Day Yr. 22-SEP-15	Division: Federal	Quality Criteria: Specifications	Type: Process
Instrument Type: GC/FID	Test / Method: SW846 8015C	Matrix Type: Liquid	Client Code: CPRC
Batch ID: 1509113	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 381291(GEL381291)			
Application Issues: Failed Recovery for LCS/LCSD			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. The CCV standards bracketing the samples in this batch failed to meet the acceptance criteria with positive.</p> <p>2. QC sample 1203397035(LCS) failed to meet the acceptance criteria with positive.</p>		<p>1 & 2. The failures were due to instrument response increasing after the initial calibration. Since the target analyte was not detected in the associated CPRC sample, the instrument positive bias had no adverse effects on the data. The data were reported.</p>	

Originator's Name:

Lindsey Jensen 22-SEP-15

Data Validator/Group Leader:

Jimin Cao 22-SEP-15

FID Alcohols Analysis

Case Narrative

November 16, 2015

Rev 1

Alcohols**Technical Case Narrative****CH2MHill Plateau Remediation Company (CPRC)****SDG #: GEL381291****Work Order #: 381291****Method/Analysis Information****Procedure: Analysis of Alcohol by Flame Ionization Detector**

Analytical Method: SW846 8015C

Analytical Batch Number: 1509344

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 8015C:

Sample ID	Client ID
381291007	B32949
1203398071	Method Blank (MB)
1203398072	Laboratory Control Sample (LCS)
1203398075	381291007(B32949) Sample Duplicate (DUP)

Sample 381291 007 in this SDG was analyzed on an "as received" basis.

Preparation/Analytical Method Verification**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-046 REV# 8.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP) section 23.0.

Calibration Information**Initial Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

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

The MB analyzed with this SDG met the acceptance criteria.

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Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

The matrix spike and matrix spike duplicate analysis was not performed for this SDG in this batch.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information**Data Exception (DER) Documentation**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The additional comments were not required for this SDG.

System Configuration

The Alcohols analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
FID6.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	J&W DB-WAX	30m x 0.53 mm x 1um

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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.

November 16, 2015

Rev 1

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: GEL381291 GEL Work Order: 381291

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.

DL Indicates that sample is diluted.

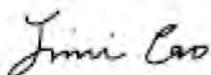
RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Jimin Cao

Date: 23 SEP 2015

Title: Data Validator

Sample Data Summary

FID Alcohols
Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
Client ID: B32949	Client: CPRC001	Project: CPRC0115038
Batch ID: 1509344	Method: SW846 8015C	SOP Ref: GL-OA-E-046
Run Date: 09/23/2015 10:24	Inst: FID6.I	Dilution: 1
Prep Date: 09/23/2015 10:24	Analyst: LXA1	Inj. Vol: 1 uL
Data File: 092315AL\F6i2307.D	Column: DB-WAX	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
67-56-1	Methanol	U	250	ug/L	250	1000

Quality Control Summary

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GEL LABORATORIES LLC

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

QC Summary

Report Date: September 23, 2015

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Alcohols											
Batch	1509344										
QC1203398075	381291007	DUP									
Methanol		U	250	U	250	ug/L	N/A		LXA1	09/23/15	10
**1,4-Dioxane-d8	50000		59900		50100	ug/L		100	(61%–122%)		
QC1203398072	LCS										
Methanol	50000				51100	ug/L		102	(69%–125%)		09/23/15 10
**1,4-Dioxane-d8	50000				50800	ug/L		102	(61%–122%)		
QC1203398071	MB										
Methanol			U		250	ug/L					09/23/15 09
**1,4-Dioxane-d8	50000				50200	ug/L		100	(61%–122%)		

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 (Organics only)

November 16, 2015

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GEL LABORATORIES LLC

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QC Summary

Workorder: 381291

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

FID Alcohols
Surrogate Recovery Report

SDG Number: GEL381291**Matrix Type: LIQUID**

Sample ID	Client ID	1,4-Dio %REC
1203398071	MB for batch 1509344	100
1203398072	LCS for batch 1509344	102
381291007	B32949	120
1203398075	B32949DUP	100

Surrogate**Acceptance Limits**

1,4-Diox = 1,4-Dioxane-d8

(61%–122%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

FID Glycols Analysis

Case Narrative

November 16, 2015

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Glycols
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL381291
Work Order #: 381291

Method/Analysis Information

Procedure: Analysis of Glycol by Flame Ionization Detector

Analytical Method: SW846 8015C Glycol

Analytical Batch Number: 1509338

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 8015C Glycol:

Sample ID	Client ID
381291007	B32949
1203397714	Method Blank (MB)
1203397715	Laboratory Control Sample (LCS)
1203397720	381291007(B32949) Sample Duplicate (DUP)
1203397716	381164003(EMWLT3870) Matrix Spike (MS)
1203397717	381164003(EMWLT3870) Matrix Spike Duplicate (MSD)

Sample 381291 007 in this SDG was analyzed on an "as received" basis.

Preparation/Analytical Method Verification**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-046 REV# 8.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP) section 23.0.

Calibration Information**Initial Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

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

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The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

Surrogate was not added to any samples in this batch.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 381164003 (EMWLT3870) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS/MSD) Recovery Statement

The MS/MSD recovery was within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information**Data Exception (DER) Documentation**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The comments were not required.

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System Configuration

The Glycols analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
FID9.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	J&W DB-WAX	30m x 0.53 mm x 1um
FID9.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	J&W DB-624	30m x 0.53 mm x 3.0um

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.

November 16, 2015

Rev 1

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL381291 GEL Work Order: 381291

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.

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Jimin Cao

Date: 23 SEP 2015

Title: Data Validator

Sample Data Summary

November 16, 2015

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Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
Client ID: B32949	Client: CPRC001	Project: CPRC0I15038
Batch ID: 1509338	Method: SW846 8015C Glycol	SOP Ref: GL-OA-E-046
Run Date: 09/22/2015 10:44	Inst: FID9.I	Dilution: 1
Prep Date: 09/22/2015 10:44	Analyst: LXA1	Inj. Vol: 1 uL
Data File: 092215GL\9i2209.D	Column: DB-WAX	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
107-21-1	Ethylene glycol	U	3000	ug/L	3000	10000

Quality Control Summary

November 16, 2015
GEL LABORATORIES LLC

Rev 1

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

QC Summary

Report Date: September 22, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Glycols											
Batch	1509338										
QC1203397720	381291007	DUP									
Ethylene glycol		U	3000	U	3000	ug/L	N/A		LXA1	09/22/15	10:55
QC1203397715	LCS										
Ethylene glycol	50000				48200	ug/L	96	(73%-121%)		09/22/15	09:52
QC1203397714	MB										
Ethylene glycol			U	3000	ug/L					09/22/15	09:40
QC1203397716	381164003	MS									
Ethylene glycol	50000	22100		60400	ug/L	77	(73%-149%)			09/22/15	10:21
QC1203397717	381164003	MSD									
Ethylene glycol	50000	22100		61800	ug/L	2	80	(0%-30%)		09/22/15	10:32

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 (Organics only)

November 16, 2015
GEL LABORATORIES LLC

Rev 1

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QC Summary

Workorder: 381291

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<u>Parmname</u>	<u>NOM</u>	<u>Sample</u>	<u>Qual</u>	<u>QC</u>	<u>Units</u>	<u>RPD%</u>	<u>REC%</u>	<u>Range</u>	<u>Anlst</u>	<u>Date</u>	<u>Time</u>
-----------------	------------	---------------	-------------	-----------	--------------	-------------	-------------	--------------	--------------	-------------	-------------

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.

GC Volatiles (GRO) Analysis

Case Narrative

November 16, 2015

Rev 1

GC Volatiles (GRO)
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL381291
Work Order #: 381291

Method/Analysis Information

Procedure: Volatile Total Petroleum Hydrocarbons by Flame Ionization Detector

Analytical Method: NWTPH-Gx

Analytical Batch Number: 1509236

Sample Analysis

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

Sample ID	Client ID
381291007	B32949
381291010	B329C8
381291011	B32BB7
1203397446	Method Blank (MB)
1203397447	Laboratory Control Sample (LCS)
1203397448	380993003(B32608) Post Spike (PS)
1203397449	380993003(B32608) Post Spike Duplicate (PSD)

Samples 381291 007, 010 and 011 in this SDG were analyzed on an "as received" basis.

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-004 REV# 25.

Calibration Information**Initial Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG). See the calibration history report for a list of data files that were used to generate the initial calibration curve in the Standard Data Section of this data package.

CCV Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria. Analyte peaks eluted within the established retention time windows for this method.

Quality Control (QC) Information

November 16, 2015

Rev 1

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

Surrogate recoveries, in all samples and quality control samples, were within the acceptance limits.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 380993003 (B32608) was selected for analysis as the matrix spike.

Spike Recovery Statement

The GRO recovery was within the acceptance limits.

Relative Percent Difference (RPD) Statement

The RPD between the matrix spike pair met the acceptance limits.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integrations

Data files associated with the initial calibration, continuing calibration check(s), and samples may have been manually integrated to correct misidentification of peaks by the integration software.

Additional Comments

Additional comments were not required for this SDG.

November 16, 2015

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System Configuration

The GRO Organics analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOC4A.I	Agilent 6890N GC/FID w/ OI 4560/Archon Autosampler	HP6890N GC/FID	DB-624	0.53mm x 3.0u x 15m	OI #10

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.

November 16, 2015

Rev 1

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL381291 GEL Work Order: 381291

The Qualifiers in this report are defined as follows:

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

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

DL Indicates that sample is diluted.

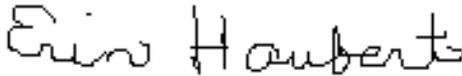
RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Erin Haubert

Date: 12 OCT 2015

Title: Data Validator

Sample Data Summary

November 16, 2015
 Volatiles (GR)

**Certificate of Analysis
 Sample Summary**

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
	Client: CPRC001	Project: CPRC0115038
Client ID: B32949	Method: NWTPH-Gx	SOP Ref: GL-OA-E-004
Batch ID: 1509236	Inst: VOC4A.I	Dilution: 1
Run Date: 09/21/2015 18:48	Analyst: ACJ	Inj. Vol: 1 uL
Prep Date: 09/21/2015 18:48		
Data File: 092115\4B114.D	Column: DB-MTBE	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
TPHGASOLINE 8006-61-9	Gasoline Range Organics	U	16.7	ug/L	16.7	50.0

November 16, 2015

Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/15/2015 12:25	Matrix: WATER
Lab Sample ID: 381291010	Date Received: 09/17/2015 08:45	
	Client: CPRC001	Project: CPRC0115038
Client ID: B329C8	Method: NWTPH-Gx	SOP Ref: GL-OA-E-004
Batch ID: 1509236	Inst: VOC4A.I	Dilution: 1
Run Date: 09/21/2015 19:16	Analyst: ACJ	Inj. Vol: 1 uL
Prep Date: 09/21/2015 19:16		
Data File: 092115\4B115.D	Column: DB-MTBE	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
TPHGASOLINE 8006-61-9	Gasoline Range Organics	U	16.7	ug/L	16.7	50.0

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Volatile (GR)Page 1 of 1
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Certificate of Analysis

Sample Summary

SDG Number:	GEL381291	Date Collected:	09/16/2015 11:23	Matrix:	WATER
Lab Sample ID:	381291011	Date Received:	09/17/2015 08:45	Client:	CPRC001
Client ID:	B32BB7	Method:	NWTPH-Gx	Project:	CPRC0115038
Batch ID:	1509236	Inst:	VOC4A.I	SOP Ref:	GL-OA-E-004
Run Date:	09/21/2015 19:43	Analyst:	ACJ	Dilution:	1
Prep Date:	09/21/2015 19:43	Column:	DB-MTBE	Inj. Vol:	1 uL
Data File:	092115\4B116.D				

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
TPHGASOLINE 8006-61-9	Gasoline Range Organics	J	22.8	ug/L	16.7	50.0

Quality Control Summary

November 16, 2015
GEL LABORATORIES LLC

Rev 1

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

QC Summary

Report Date: October 5, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatiles GRO Organics											
Batch	1509236										
QC1203397447	LCS										
Gasoline Range Organics	500			465	ug/L		93	(70%-130%)	ACJ	09/21/15	11:44
**Bromofluorobenzene	50.0			57.1	ug/L		114	(50%-150%)			
QC1203397446	MB										
Gasoline Range Organics			U	16.7	ug/L					09/21/15	12:11
**Bromofluorobenzene	50.0			51.6	ug/L		103	(50%-150%)			
QC1203397448	380993003 PS										
Gasoline Range Organics	500	U	11.2	455	ug/L		89	(70%-130%)		09/21/15	20:11
**Bromofluorobenzene	50.0		47.8	50.4	ug/L		101	(50%-150%)			
QC1203397449	380993003 PSD										
Gasoline Range Organics	500	U	11.2	458	ug/L	1	89	(0%-20%)		09/21/15	20:39
**Bromofluorobenzene	50.0		47.8	43.7	ug/L		87	(50%-150%)			

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

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QC Summary

Workorder: 381291

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

- o Analyte failed to recover within LCS limits (Organics only)

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

November 16, 2015
Surrogate Recovery Report

SDG Number: GEL381291

Matrix Type: LIQUID

Sample ID	Client ID	BFB %REC
1203397447	LCS for batch 1509236	114
1203397446	MB for batch 1509236	103
381291007	B32949	88
381291010	B329C8	97
381291011	B32BB7	103
1203397448	B32608PS	101
1203397449	B32608PSD	87

Surrogate

BFB = Bromofluorobenzene

Acceptance Limits

(50%-150%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Pesticide Analysis

Case Narrative

November 16, 2015

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**GC Semivolatile Pesticide
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL381291
Work Order #: 381291**

Method/Analysis Information

Procedure: Organochlorine Pesticides and Chlorinated Hydrocarbons

Analytical Method: SW846 3535A/8081B

Prep Method: SW846 3535A

Analytical Batch Number: 1509101

Prep Batch Number: 1509100

Sample Analysis

Sample ID	Client ID
381291007	B32949
1203396988	Method Blank (MB)
1203396989	Laboratory Control Sample (LCS)
1203396990	381291007(B32949) Matrix Spike (MS)
1203396991	381291007(B32949) Matrix Spike Duplicate (MSD)

Sample 381291 007 in this SDG was analyzed on an "as received" basis.

Preparation/Analytical Method Verification**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-041 REV# 13.

Raw data reports are processed and reviewed by the analyst using ChemStation software. False positives have been removed from the ChemStation quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria. All analytes were within the established retention time windows for this method.

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

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this analytical batch for this SDG.

Laboratory Control Sample (LCS/LCSD) Recovery

The laboratory control sample (LCS/LCSD) spike recoveries met the acceptance limits.

QC Sample Designation

Sample 381291007 (B32949) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS/MSD) Recovery Statement

The MS/MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD values between the MS and MSD were within the acceptance limits.

Technical Information:**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG in this analytical batch met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported analyte detections in client and quality control samples were within the established retention time windows.

Sample Dilutions

The samples in this SDG in this analytical batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Florisil

Florisil clean-up was not performed on client and quality control samples in this batch.

Miscellaneous Information:**Electronic Package Comment**

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

Data Exception (DER) Documentation

Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A DER was not required for the samples in this batch for this SDG.

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Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this pesticide fraction if applicable.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments were required:

Detected target analytes were reported from the analytical column with the higher concentration. Results below the method detection limit (non-detects) were reported from column one.

Due to software issue, the surrogate recovery range was not indicated or possibly indicated incorrectly in Quantitation Report. Please see Surrogate Recovery Report for correct surrogate recovery acceptance limits.

The Toxaphene and/or Chlordane standards were analyzed for this SDG as a retention time marker and pattern reference. A five-point calibration curve and calibration verification standard forms were not submitted in the data package since Toxaphene and/or Chlordane were not detected in the client samples.

System Configuration

The Semi-Volatiles-Pesticide analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD5A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide)
ECD5A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticide II)

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: GEL381291 GEL Work Order: 381291

The Qualifiers in this report are defined as follows:

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

P Aroclor target analyte with greater than 25% difference between column analyses.

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

DL Indicates that sample is diluted.

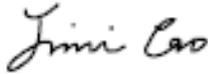
RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature:**Name: Jimin Cao****Date: 29 SEP 2015****Title: Data Validator**

Sample Data Summary

November 16, 2015

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Pesticide
Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
Client ID: B32949	Client: CPRC001	Project: CPRC0115038
Batch ID: 1509101	Method: SW846 3535A/8081B	SOP Ref: GL-OA-E-041
Run Date: 09/23/2015 20:31	Inst: ECD5A.I	Dilution: 1
Prep Date: 09/22/2015 09:55	Analyst: RXE1	Inj. Vol: 1 uL
Data File: 092315.S\e5I2334.D	Aliquot: 1000 mL	Final Volume: 5 mL
	Column: 1 Rtx-CLPesticides	
	2 Rtx-CLPesticides2	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL	Column
309-00-2	Aldrin	U	0.00665	ug/L	0.00665	0.020	0.050	1
60-57-1	Dieldrin	U	0.010	ug/L	0.010	0.040	0.050	1
959-98-8	Endosulfan I	U	0.00665	ug/L	0.00665	0.020	0.050	1
76-44-8	Heptachlor	U	0.00665	ug/L	0.00665	0.020	0.050	1
1024-57-3	Heptachlor epoxide	U	0.00665	ug/L	0.00665	0.020	0.050	1
319-84-6	alpha-BHC	U	0.00665	ug/L	0.00665	0.020	0.050	1
5103-71-9	alpha-Chlordane	U	0.00665	ug/L	0.00665	0.020	0.050	1
319-85-7	beta-BHC	U	0.00665	ug/L	0.00665	0.020	0.050	1
319-86-8	delta-BHC	U	0.00665	ug/L	0.00665	0.020	0.050	1
58-89-9	gamma-BHC (Lindane)	U	0.00665	ug/L	0.00665	0.020	0.050	1
72-54-8	4,4'-DDD	U	0.010	ug/L	0.010	0.040	0.100	1
72-55-9	4,4'-DDE	U	0.010	ug/L	0.010	0.040	0.100	1
50-29-3	4,4'-DDT	U	0.010	ug/L	0.010	0.040	0.100	1
33213-65-9	Endosulfan II	U	0.010	ug/L	0.010	0.040	0.100	1
1031-07-8	Endosulfan sulfate	U	0.010	ug/L	0.010	0.040	0.100	1
72-20-8	Endrin	U	0.010	ug/L	0.010	0.040	0.100	1
7421-93-4	Endrin aldehyde	U	0.00665	ug/L	0.00665	0.040	0.100	1
53494-70-5	Endrin ketone	U	0.010	ug/L	0.010	0.040	0.100	1
72-43-5	Methoxychlor	U	0.050	ug/L	0.050	0.200	0.500	1
5103-74-2	gamma-Chlordane	U	0.00665	ug/L	0.00665	0.020	0.500	1
8001-35-2	Toxaphene	U	0.150	ug/L	0.150	0.500	2.00	1

Quality Control Summary

Pesticide
November 16, 2015
Surrogate Recovery Report

SDG Number: GEL381291

Matrix Type: LIQUID

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203396988	MB for batch 1509100	66	66	62	61
1203396989	LCS for batch 1509100	84	85	89	85
381291007	B32949	79	79	82	80
1203396990	B32949MS	83	84	85	81
1203396991	B32949MSD	82	81	88	79

Surrogate

4CMX = 4cmx

DCB = Decachlorobiphenyl

Acceptance Limits

(34%-109%)

(34%-133%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

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QC Summary

Report Date: September 24, 2015

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-Pesticide											
Batch	1509101										
QC1203396989	LCS										
4,4'-DDD	1.25			1.44	ug/L		115	(44%-135%)	RXE1	09/23/15	20:16
4,4'-DDE	1.25			1.39	ug/L		111	(47%-115%)			
4,4'-DDT	1.25			1.39	ug/L		112	(36%-125%)			
Aldrin	0.500			0.528	ug/L		106	(20%-115%)			
Dieldrin	1.25			1.50	ug/L		120	(52%-130%)			
Endosulfan I	0.500			0.524	ug/L		105	(43%-120%)			
Endosulfan II	1.25		P	1.26	ug/L		101	(37%-127%)			
Endosulfan sulfate	1.25			1.51	ug/L		121	(55%-136%)			
Endrin	1.25		P	1.46	ug/L		117	(33%-145%)			
Endrin aldehyde	1.25			1.40	ug/L		112	(38%-123%)			
Endrin ketone	1.25			1.51	ug/L		121	(53%-138%)			
Heptachlor	0.500			0.532	ug/L		106	(43%-122%)			
Heptachlor epoxide	0.500			0.570	ug/L		114	(47%-127%)			
Methoxychlor	5.00			5.82	ug/L		116	(49%-136%)			
alpha-BHC	0.500			0.573	ug/L		115	(46%-122%)			
alpha-Chlordane	0.500			0.589	ug/L		118	(48%-120%)			
beta-BHC	0.500			0.560	ug/L		112	(43%-131%)			
delta-BHC	0.500			0.573	ug/L		115	(49%-128%)			
gamma-BHC (Lindane)	0.500			0.567	ug/L		113	(46%-125%)			
gamma-Chlordane	0.500			0.537	ug/L		107	(50%-129%)			

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QC Summary

Workorder: 381291

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-Pesticide											
Batch	1509101										
**4cmx	1.00			0.853	ug/L		85	(34%-109%)	RXE1	09/23/15	20:16
**Decachlorobiphenyl	1.00			0.886	ug/L		89	(34%-133%)			
QC1203396988	MB										
4,4'-DDD			U	0.010	ug/L					09/23/15	20:01
4,4'-DDE			U	0.010	ug/L						
4,4'-DDT			U	0.010	ug/L						
Aldrin			U	0.00665	ug/L						
Dieldrin			U	0.010	ug/L						
Endosulfan I			U	0.00665	ug/L						
Endosulfan II			U	0.010	ug/L						
Endosulfan sulfate			U	0.010	ug/L						
Endrin			U	0.010	ug/L						
Endrin aldehyde			U	0.00665	ug/L						
Endrin ketone			U	0.010	ug/L						
Heptachlor			U	0.00665	ug/L						
Heptachlor epoxide			U	0.00665	ug/L						
Methoxychlor			U	0.050	ug/L						
Toxaphene			U	0.150	ug/L						
alpha-BHC			U	0.00665	ug/L						
alpha-Chlordane			U	0.00665	ug/L						
beta-BHC			U	0.00665	ug/L						
delta-BHC			U	0.00665	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-Pesticide											
Batch	1509101										
gamma-BHC (Lindane)			U	0.00665	ug/L				RXE1	09/23/15	20:01
gamma-Chlordane			U	0.00665	ug/L						
**4cmx	1.00			0.663	ug/L		66	(34%-109%)			
**Decachlorobiphenyl	1.00			0.616	ug/L		62	(34%-133%)			
QC1203396990 381291007 MS											
4,4'-DDD	1.25	U	0.010	1.36	ug/L		109	(25%-151%)		09/23/15	20:46
4,4'-DDE	1.25	U	0.010	1.31	ug/L		105	(32%-126%)			
4,4'-DDT	1.25	U	0.010	1.36	ug/L		109	(24%-139%)			
Aldrin	0.500	U	0.00665	0.385	ug/L		77	(15%-128%)			
Dieldrin	1.25	U	0.010	1.42	ug/L		114	(40%-134%)			
Endosulfan I	0.500	U	0.00665	0.497	ug/L		99	(26%-133%)			
Endosulfan II	1.25	U	0.010	P 1.28	ug/L		102	(29%-133%)			
Endosulfan sulfate	1.25	U	0.010	1.48	ug/L		118	(32%-151%)			
Endrin	1.25	U	0.010	P 1.48	ug/L		119	(15%-151%)			
Endrin aldehyde	1.25	U	0.00665	1.36	ug/L		108	(15%-132%)			
Endrin ketone	1.25	U	0.010	1.45	ug/L		116	(38%-148%)			
Heptachlor	0.500	U	0.00665	0.520	ug/L		104	(27%-131%)			
Heptachlor epoxide	0.500	U	0.00665	0.555	ug/L		111	(33%-134%)			
Methoxychlor	5.00	U	0.050	5.60	ug/L		112	(31%-148%)			
alpha-BHC	0.500	U	0.00665	0.573	ug/L		115	(30%-133%)			
alpha-Chlordane	0.500	U	0.00665	0.565	ug/L		113	(34%-128%)			
beta-BHC	0.500	U	0.00665	0.573	ug/L		115	(29%-138%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-Pesticide											
Batch	1509101										
delta-BHC	0.500	U	0.00665	0.575	ug/L		115	(33%-141%)	RXE1	09/23/15	20:46
gamma-BHC (Lindane)	0.500	U	0.00665	0.571	ug/L		114	(35%-131%)			
gamma-Chlordane	0.500	U	0.00665	J 0.491	ug/L		98	(33%-138%)			
**4cmx	1.00		0.795	0.825	ug/L		83	(34%-109%)			
**Decachlorobiphenyl	1.00		0.821	0.848	ug/L		85	(34%-133%)			
QC1203396991	381291007 MSD										
4,4'-DDD	1.25	U	0.010	1.32	ug/L	3	105	(0%-30%)		09/23/15	21:02
4,4'-DDE	1.25	U	0.010	1.25	ug/L	5	100	(0%-30%)			
4,4'-DDT	1.25	U	0.010	1.32	ug/L	2	106	(0%-30%)			
Aldrin	0.500	U	0.00665	0.453	ug/L	16	91	(0%-30%)			
Dieldrin	1.25	U	0.010	1.45	ug/L	2	116	(0%-30%)			
Endosulfan I	0.500	U	0.00665	0.488	ug/L	2	98	(0%-30%)			
Endosulfan II	1.25	U	0.010	1.27	ug/L	1	101	(0%-30%)			
Endosulfan sulfate	1.25	U	0.010	1.48	ug/L	0	118	(0%-30%)			
Endrin	1.25	U	0.010	1.47	ug/L	1	118	(0%-30%)			
Endrin aldehyde	1.25	U	0.00665	1.33	ug/L	2	107	(0%-30%)			
Endrin ketone	1.25	U	0.010	1.48	ug/L	2	118	(0%-30%)			
Heptachlor	0.500	U	0.00665	0.510	ug/L	2	102	(0%-30%)			
Heptachlor epoxide	0.500	U	0.00665	0.550	ug/L	1	110	(0%-30%)			
Methoxychlor	5.00	U	0.050	5.59	ug/L	0	112	(0%-30%)			
alpha-BHC	0.500	U	0.00665	0.573	ug/L	0	115	(0%-30%)			
alpha-Chlordane	0.500	U	0.00665	0.550	ug/L	3	110	(0%-30%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-Pesticide											
Batch	1509101										
beta-BHC	0.500	U	0.00665		0.575	ug/L	0	115	(0%-30%)	RXE1	09/23/15 21:02
delta-BHC	0.500	U	0.00665		0.575	ug/L	0	115	(0%-30%)		
gamma-BHC (Lindane)	0.500	U	0.00665		0.568	ug/L	0	114	(0%-30%)		
gamma-Chlordane	0.500	U	0.00665	J	0.470	ug/L	4	94	(0%-30%)		
**4cmx	1.00		0.795		0.823	ug/L		82	(34%-109%)		
**Decachlorobiphenyl	1.00		0.821		0.883	ug/L		88	(34%-133%)		

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 (Organics only)

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

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PCB Analysis

Case Narrative

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**GC Semivolatile PCB
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL381291
Work Order #: 381291**

Method/Analysis Information

Procedure: Analysis of Polychlorinated Biphenyls by ECD

Analytical Method: SW846 3535A/8082A

Prep Method: SW846 3535A

Analytical Batch Number: 1508852

Prep Batch Number: 1508851

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3535A/8082A:

Sample ID	Client ID
381291007	B32949
1203396339	Method Blank (MB)
1203396340	Laboratory Control Sample (LCS)
1203396341	381303001(W2K0019-15) Matrix Spike (MS)
1203396342	381303001(W2K0019-15) Matrix Spike Duplicate (MSD)

Sample 381291 007 in this SDG was analyzed on an "as received" basis.

Preparation/Analytical Method Verification**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-040 REV# 20.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standards (ICV or CCV) met the acceptance criteria. All analytes were

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within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for the samples in this SDG in this batch.

Laboratory Control Sample (LCS/LCSD) Recovery

The LCS/LCSD spike recoveries met the acceptance limits.

QC Sample Designation

Sample 381303001 (W2K0019-15) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS/MSD) Recovery Statement

The MS/MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All samples and QC in this batch were cleaned using alumina in order to remove oil and other high molecular weight interferences. All samples and QC in this batch were cleaned with activated copper in order to remove sulfur. All reported analyte detections in client and quality control samples were within the established retention time windows. Reported analyte concentrations were confirmed on dissimilar columns.

Sample Dilutions

The samples in this SDG in this batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this batch.

Miscellaneous Information

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

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Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A DER was not required for the samples in this SDG in this batch.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this PCB fraction.

Additional Comments

The column 1 has been chosen as the primary column. The data are reported from the column 1 for all samples in this batch.

Due to software issue, the surrogate recovery range was not indicated in Quantitation Report. Please see Surrogate Recovery Report for correct surrogate acceptance limits.

Aroclors quantitated on the raw data report by ChemStation data system do not necessarily represent positive Aroclor identification. In order for positive identification to be made, the Aroclor must match in pattern and retention time; as well as quantitate relatively close between the primary and confirmation columns, as specified in SW846 method 8000. When these conditions are not met, the Aroclor is reported as a non-detect on the data report.

System Configuration

The Semi-Volatiles-PCB analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD8A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide I)
ECD8A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticide II)

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: GEL381291 GEL Work Order: 381291

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.

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Jimin Cao

Date: 23 SEP 2015

Title: Data Validator

Sample Data Summary

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Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Date Collected: 09/16/2015 11:15	Matrix: WATER
Lab Sample ID: 381291007	Date Received: 09/17/2015 08:45	
Client ID: B32949	Client: CPRC001	Project: CPRC0115038
Batch ID: 1508852	Method: SW846 3535A/8082A	SOP Ref: GL-OA-E-040
Run Date: 09/22/2015 08:09	Inst: ECD8A.I	Dilution: 1
Prep Date: 09/21/2015 18:30	Analyst: JXM	Inj. Vol: 1 uL
Data File: 092215.B\8i2215.D	Aliquot: 1050 mL	Final Volume: 1 mL
	Column: 1 RTX-CLPEST1	
	2 RTX-CLPEST2	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
12674-11-2	Aroclor-1016	U	0.0317	ug/L	0.0317	0.0952	1
11104-28-2	Aroclor-1221	U	0.0317	ug/L	0.0317	0.0952	1
11141-16-5	Aroclor-1232	U	0.0317	ug/L	0.0317	0.0952	1
53469-21-9	Aroclor-1242	U	0.0317	ug/L	0.0317	0.0952	1
12672-29-6	Aroclor-1248	U	0.0317	ug/L	0.0317	0.0952	1
11097-69-1	Aroclor-1254	U	0.0317	ug/L	0.0317	0.0952	1
11096-82-5	Aroclor-1260	U	0.0317	ug/L	0.0317	0.0952	1

Quality Control Summary

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Surrogate Recovery Report

SDG Number: GEL381291

Matrix Type: LIQUID

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203396339	MB for batch 1508851	77	81	83	92
1203396340	LCS for batch 1508851	78	83	87	96
381291007	B32949	75	79	77	83
1203396341	W2K0019-15MS	68	71	76	81
1203396342	W2K0019-15MSD	61	62	73	79

Surrogate

4CMX = 4cmx

DCB = Decachlorobiphenyl

Acceptance Limits

(33%-122%)

(35%-138%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

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QC Summary

Report Date: September 22, 2015

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1508852										
QC1203396340	LCS										
Aroclor-1016	1.00			0.669	ug/L		67	(45%-101%)	JXM	09/22/15	07:57
Aroclor-1260	1.00			0.722	ug/L		72	(52%-113%)			
**4cmx	0.200			0.156	ug/L		78	(33%-122%)			
**Decachlorobiphenyl	0.200			0.174	ug/L		87	(35%-138%)			
QC1203396339	MB										
Aroclor-1016			U	0.0333	ug/L					09/22/15	07:44
Aroclor-1221			U	0.0333	ug/L						
Aroclor-1232			U	0.0333	ug/L						
Aroclor-1242			U	0.0333	ug/L						
Aroclor-1248			U	0.0333	ug/L						
Aroclor-1254			U	0.0333	ug/L						
Aroclor-1260			U	0.0333	ug/L						
**4cmx	0.200			0.154	ug/L		77	(33%-122%)			
**Decachlorobiphenyl	0.200			0.167	ug/L		83	(35%-138%)			
QC1203396341	381303001 MS										
Aroclor-1016	0.971	U	0.0323	0.543	ug/L		56	(26%-110%)		09/22/15	08:34
Aroclor-1260	0.971	U	0.0323	0.655	ug/L		68	(30%-127%)			
**4cmx	0.194		0.132	0.131	ug/L		68	(33%-122%)			
**Decachlorobiphenyl	0.194		0.145	0.149	ug/L		76	(35%-138%)			
QC1203396342	381303001 MSD										
Aroclor-1016	0.971	U	0.0323	0.523	ug/L	4	54	(0%-27%)		09/22/15	08:46

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QC Summary

Workorder: 381291

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1508852										
Aroclor-1260	0.971	U	0.0323	0.644	ug/L	2	66	(0%-29%)			
**4cmx	0.194		0.132	0.119	ug/L		61	(33%-122%)	JXM	09/22/15	08:46
**Decachlorobiphenyl	0.194		0.145	0.143	ug/L		73	(35%-138%)			

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 (Organics only)

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

Metals Analysis

Case Narrative

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Metals**Technical Case Narrative****CH2MHill Plateau Remediation Company (CPRC)****SDG #: GEL381291****Work Order #: 381291**

Sample ID	Client ID
381291005	B32934
381291006	B32936
381291007	B32949
381291008	B32951
381291009	B329C9
381291010	B329C8
381291011	B32BB7
381291012	B32BB8
381291013	B32BD4
381291014	B32BD0
1203395103	Method Blank (MB)ICP
1203395104	Laboratory Control Sample (LCS)
1203395107	381291005(B32934L) Serial Dilution (SD)
1203395105	381291005(B32934S) Matrix Spike (MS)
1203395106	381291005(B32934SD) Matrix Spike Duplicate (MSD)
1203395141	Method Blank (MB)ICP-MS
1203395142	Laboratory Control Sample (LCS)
1203395145	381291005(B32934L) Serial Dilution (SD)
1203395143	381291005(B32934S) Matrix Spike (MS)
1203395144	381291005(B32934SD) Matrix Spike Duplicate (MSD)
1203397135	Method Blank (MB)CVAA
1203397136	Laboratory Control Sample (LCS)
1203397146	381300001(B32JY6L) Serial Dilution (SD)
1203397144	381300001(B32JY6D) Sample Duplicate (DUP)
1203397145	381300001(B32JY6S) Matrix Spike (MS)

Sample Analysis

Samples 381291 005, 006, 007, 008, 009, 010, 011, 012, 013 and 014 in this SDG were analyzed for metals on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1508352, 1508366 and 1509143
Prep Batch :	1508351, 1508365 and 1509139
Standard Operating Procedures:	GL-MA-E-013 REV# 24, GL-MA-E-006 REV# 12, GL-MA-E-014 REV# 26 and GL-MA-E-010 REV# 30
Analytical Method:	6010_METALS_ICP, 6020_METALS_ICPMS and 7470_HG_CVAA
Prep Method :	SW846 3005A and SW846 7470A Prep

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Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

The Metals analysis-Mercury was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-100) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 253.7 nm.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 300X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 350X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

Calibration Information**Instrument Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

CRDL/PQL Requirements

The CRDL/PQL standard recoveries met the referenced advisory control limits.

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blanks (CCB) Requirements

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

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

The method blanks (MB) analyzed with this SDG met the acceptance criteria with the exception of potassium. However, (analyte) was greater than the MDL. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203395103 (MB)-ICP. The method blanks (MB) analyzed with this SDG met the acceptance criteria. However, beryllium, cobalt, lead, thorium and antimony were greater than the MDL. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203395141 (MB)-ICP-MS.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

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Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 381291005 (B32934)-ICP and ICP-MS and 381300001 (B32JY6)-CVAA.

Matrix Spike (MS/MSD) Recovery Statement

The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes.

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent difference (RPD) obtained from the designated matrix spike duplicate (MSD) is evaluated based on acceptance criteria of 20%. The RPD values between qualifying analyte results in the MS and MSD were within the acceptance limits.

Serial Dilution % Difference Statement

All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Duplicate Relative Percent Difference (RPD) Statement

The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. The relative percent differences (RPD) between the sample and its duplicate (DUP) were within acceptable limits for all applicable analytes.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Preparation Information

The samples in this SDG were not diluted and prepared according to the cited SOP.

Miscellaneous Information**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

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A data exception report was not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

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: GEL381291 GEL Work Order: 381291

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $> 5\%$ of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

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

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

Signature:**Name: Nik-Cole Elmore****Date: 16 NOV 2015****Title: Data Validator**

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291005

CLIENT ID: B32934

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	55.1	ug/L			MS	15	1	ICPMS12	151002-3
7440-36-0	Antimony	1.06	ug/L	CB		MS	1	1	ICPMS12	151001-2
7440-38-2	Arsenic	1.73	ug/L	B		MS	1.7	1	ICPMS12	151005-4
7440-39-3	Barium	53.7	ug/L			MS	0.6	1	ICPMS12	151002-3
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-42-8	Boron	17.3	ug/L	B		P	15	1	OPTIMA3	092815-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	151002-3
7440-70-2	Calcium	64900	ug/L			P	50	1	OPTIMA3	092815-1
7440-47-3	Chromium	5.58	ug/L	B		MS	2	1	ICPMS12	151002-3
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	151002-3
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	151002-3
7439-89-6	Iron	94.2	ug/L	B		P	30	1	OPTIMA3	092815-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151002-3
7439-95-4	Magnesium	11700	ug/L			P	110	1	OPTIMA3	092815-1
7439-96-5	Manganese	2.04	ug/L	B		MS	1	1	ICPMS11	151006-7
7439-98-7	Molybdenum	1.47	ug/L			MS	0.165	1	ICPMS12	151006-6
7440-02-0	Nickel	0.534	ug/L	B		MS	0.5	1	ICPMS12	151002-3
7440-09-7	Potassium	2700	ug/L			P	50	1	OPTIMA3	092815-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151006-5
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-23-5	Sodium	6350	ug/L			P	100	1	OPTIMA3	092815-1
7440-24-6	Strontium	314	ug/L			MS	2	1	ICPMS12	151002-3
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151002-3
7440-29-1	Thorium	0.472	ug/L	CB		MS	0.383	1	ICPMS12	151002-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151005-4
7440-61-1	Uranium	1.99	ug/L			MS	0.067	1	ICPMS12	151005-4

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291005

CLIENT ID: B32934

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	2.41	ug/L	B		P	1	1	OPTIMA3	092815-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	151002-3

*Analytical Methods:

P SW846 3005A/6010C

MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291006

CLIENT ID: B32936

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	151002-3
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	151001-2
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS12	151005-4
7440-39-3	Barium	53.4	ug/L			MS	0.6	1	ICPMS12	151002-3
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-42-8	Boron	17.1	ug/L	B		P	15	1	OPTIMA3	092815-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	151002-3
7440-70-2	Calcium	66500	ug/L			P	50	1	OPTIMA3	092815-1
7440-47-3	Chromium	5.03	ug/L	B		MS	2	1	ICPMS12	151002-3
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	151002-3
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	151002-3
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	092815-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151002-3
7439-95-4	Magnesium	12000	ug/L			P	110	1	OPTIMA3	092815-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS11	151006-7
7439-98-7	Molybdenum	1.33	ug/L			MS	0.165	1	ICPMS12	151006-6
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	151002-3
7440-09-7	Potassium	2790	ug/L			P	50	1	OPTIMA3	092815-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151006-5
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-23-5	Sodium	6180	ug/L			P	100	1	OPTIMA3	092815-1
7440-24-6	Strontium	321	ug/L			MS	2	1	ICPMS12	151002-3
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151002-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151002-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151005-4
7440-61-1	Uranium	1.94	ug/L			MS	0.067	1	ICPMS12	151005-4

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291006

CLIENT ID: B32936

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	2.54	ug/L	B		P	1	1	OPTIMA3	092815-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	151002-3

*Analytical Methods:

P SW846 3005A/6010C

MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291007

CLIENT ID: B32949

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15.5	ug/L	B		MS	15	1	ICPMS12	151002-3
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	151001-2
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS12	151005-4
7440-39-3	Barium	73.2	ug/L			MS	0.6	1	ICPMS12	151002-3
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-42-8	Boron	19.8	ug/L	B		P	15	1	OPTIMA3	092815-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	151002-3
7440-70-2	Calcium	97000	ug/L			P	50	1	OPTIMA3	092815-1
7440-47-3	Chromium	5.48	ug/L	B		MS	2	1	ICPMS12	151002-3
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	151002-3
7440-50-8	Copper	1.97	ug/L			MS	0.35	1	ICPMS12	151002-3
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	092815-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151002-3
7439-95-4	Magnesium	18300	ug/L			P	110	1	OPTIMA3	092815-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS11	151006-7
7439-97-6	Mercury	0.067	ug/L	U		AV	0.067	1	HG4	092215W1-8
7439-98-7	Molybdenum	0.924	ug/L			MS	0.165	1	ICPMS12	151006-6
7440-02-0	Nickel	2.87	ug/L			MS	0.5	1	ICPMS12	151002-3
7440-09-7	Potassium	3630	ug/L			P	50	1	OPTIMA3	092815-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151006-5
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-23-5	Sodium	8530	ug/L			P	100	1	OPTIMA3	092815-1
7440-24-6	Strontium	462	ug/L			MS	2	1	ICPMS12	151002-3
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151002-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151002-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151005-4

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291007

CLIENT ID: B32949

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-61-1	Uranium	3.5	ug/L			MS	0.067	1	ICPMS12	151005-4
7440-62-2	Vanadium	2.28	ug/L	B		P	1	1	OPTIMA3	092815-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	151002-3

*Analytical Methods:

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291008

CLIENT ID: B32951

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	151002-3
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	151001-2
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS12	151005-4
7440-39-3	Barium	71.5	ug/L			MS	0.6	1	ICPMS12	151002-3
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-42-8	Boron	19.6	ug/L	B		P	15	1	OPTIMA3	092815-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	151002-3
7440-70-2	Calcium	93900	ug/L			P	50	1	OPTIMA3	092815-1
7440-47-3	Chromium	5.15	ug/L	B		MS	2	1	ICPMS12	151002-3
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	151002-3
7440-50-8	Copper	1.89	ug/L			MS	0.35	1	ICPMS12	151002-3
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	092815-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151002-3
7439-95-4	Magnesium	17700	ug/L			P	110	1	OPTIMA3	092815-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS11	151006-7
7439-97-6	Mercury	0.067	ug/L	U		AV	0.067	1	HG4	092215W1-8
7439-98-7	Molybdenum	0.934	ug/L			MS	0.165	1	ICPMS12	151006-6
7440-02-0	Nickel	4.98	ug/L			MS	0.5	1	ICPMS12	151002-3
7440-09-7	Potassium	3570	ug/L			P	50	1	OPTIMA3	092815-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151006-5
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-23-5	Sodium	8060	ug/L			P	100	1	OPTIMA3	092815-1
7440-24-6	Strontium	436	ug/L			MS	2	1	ICPMS12	151002-3
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151002-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151002-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151005-4

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291008

CLIENT ID: B32951

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-61-1	Uranium	3.24	ug/L			MS	0.067	1	ICPMS12	151005-4
7440-62-2	Vanadium	2.12	ug/L	B		P	1	1	OPTIMA3	092815-1
7440-66-6	Zinc	3.93	ug/L	B		MS	3.5	1	ICPMS12	151002-3

*Analytical Methods:

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291009

CLIENT ID: B329C9

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	151002-3
7440-36-0	Antimony	3.5	ug/L	U		P	3.5	1	OPTIMA3	092815-1
7440-38-2	Arsenic	6.93	ug/L	B		P	5	1	OPTIMA3	092815-1
7440-39-3	Barium	7.6	ug/L			P	1	1	OPTIMA3	092815-1
7440-43-9	Cadmium	1	ug/L	U		P	1	1	OPTIMA3	092815-1
7440-70-2	Calcium	57800	ug/L			P	50	1	OPTIMA3	092815-1
7440-47-3	Chromium	1	ug/L	U		P	1	1	OPTIMA3	092815-1
7440-48-4	Cobalt	1	ug/L	U		P	1	1	OPTIMA3	092815-1
7440-50-8	Copper	3	ug/L	U		P	3	1	OPTIMA3	092815-1
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	092815-1
7439-92-1	Lead	3.3	ug/L	U		P	3.3	1	OPTIMA3	092815-1
7439-95-4	Magnesium	18000	ug/L			P	110	1	OPTIMA3	092815-1
7439-96-5	Manganese	30	ug/L			P	2	1	OPTIMA3	092815-1
7439-98-7	Molybdenum	5.75	ug/L	B		P	2	1	OPTIMA3	092815-1
7440-02-0	Nickel	1.5	ug/L	U		P	1.5	1	OPTIMA3	092815-1
7723-14-0	Phosphorous	21600	ug/L			MS	15	1	ICPMS12	151002-3
7440-09-7	Potassium	5850	ug/L			P	50	1	OPTIMA3	092815-1
7440-22-4	Silver	1	ug/L	U		P	1	1	OPTIMA3	092815-1
7440-23-5	Sodium	147000	ug/L			P	100	1	OPTIMA3	092815-1
7440-24-6	Strontium	689	ug/L			P	1	1	OPTIMA3	092815-1
7440-62-2	Vanadium	1	ug/L	U		P	1	1	OPTIMA3	092815-1
7440-66-6	Zinc	3.3	ug/L	U		P	3.3	1	OPTIMA3	092815-1

*Analytical Methods:

P SW846 3005A/6010C

MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291010

CLIENT ID: B329C8

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	151002-3
7440-36-0	Antimony	3.5	ug/L	U		P	3.5	1	OPTIMA3	092815-1
7440-38-2	Arsenic	7.27	ug/L	B		P	5	1	OPTIMA3	092815-1
7440-39-3	Barium	6.98	ug/L			P	1	1	OPTIMA3	092815-1
7440-43-9	Cadmium	1	ug/L	U		P	1	1	OPTIMA3	092815-1
7440-70-2	Calcium	53500	ug/L			P	50	1	OPTIMA3	092815-1
7440-47-3	Chromium	1	ug/L	U		P	1	1	OPTIMA3	092815-1
7440-48-4	Cobalt	1	ug/L	U		P	1	1	OPTIMA3	092815-1
7440-50-8	Copper	3	ug/L	U		P	3	1	OPTIMA3	092815-1
7439-89-6	Iron	31.9	ug/L	B		P	30	1	OPTIMA3	092815-1
7439-92-1	Lead	3.3	ug/L	U		P	3.3	1	OPTIMA3	092815-1
7439-95-4	Magnesium	17100	ug/L			P	110	1	OPTIMA3	092815-1
7439-96-5	Manganese	27.4	ug/L			P	2	1	OPTIMA3	092815-1
7439-98-7	Molybdenum	5.59	ug/L	B		P	2	1	OPTIMA3	092815-1
7440-02-0	Nickel	2.05	ug/L	B		P	1.5	1	OPTIMA3	092815-1
7723-14-0	Phosphorous	22000	ug/L			MS	15	1	ICPMS12	151002-3
7440-09-7	Potassium	5580	ug/L			P	50	1	OPTIMA3	092815-1
7440-22-4	Silver	1	ug/L	U		P	1	1	OPTIMA3	092815-1
7440-23-5	Sodium	148000	ug/L			P	100	1	OPTIMA3	092815-1
7440-24-6	Strontium	657	ug/L			P	1	1	OPTIMA3	092815-1
7440-62-2	Vanadium	1	ug/L	U		P	1	1	OPTIMA3	092815-1
7440-66-6	Zinc	4.55	ug/L	B		P	3.3	1	OPTIMA3	092815-1

*Analytical Methods:

P SW846 3005A/6010C

MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291011

CLIENT ID: B32BB7

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	151002-3
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	151001-2
7440-38-2	Arsenic	1.88	ug/L	B		MS	1.7	1	ICPMS12	151005-4
7440-39-3	Barium	84.4	ug/L			MS	0.6	1	ICPMS12	151002-3
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-42-8	Boron	20.3	ug/L	B		P	15	1	OPTIMA3	092815-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	151002-3
7440-70-2	Calcium	96700	ug/L			P	50	1	OPTIMA3	092815-1
7440-47-3	Chromium	25.2	ug/L			MS	2	1	ICPMS12	151002-3
7440-48-4	Cobalt	1.18	ug/L	C		MS	0.1	1	ICPMS12	151002-3
7440-50-8	Copper	0.649	ug/L	B		MS	0.35	1	ICPMS12	151002-3
7439-89-6	Iron	253	ug/L			P	30	1	OPTIMA3	092815-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151002-3
7439-95-4	Magnesium	19500	ug/L			P	110	1	OPTIMA3	092815-1
7439-96-5	Manganese	11.4	ug/L			MS	1	1	ICPMS11	151006-7
7439-98-7	Molybdenum	1.12	ug/L			MS	0.165	1	ICPMS12	151006-6
7440-02-0	Nickel	114	ug/L			MS	0.5	1	ICPMS12	151002-3
7440-09-7	Potassium	6440	ug/L			P	50	1	OPTIMA3	092815-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151006-5
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-23-5	Sodium	62900	ug/L			P	100	1	OPTIMA3	092815-1
7440-24-6	Strontium	495	ug/L			MS	2	1	ICPMS12	151002-3
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151002-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151002-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151005-4
7440-61-1	Uranium	3.56	ug/L			MS	0.067	1	ICPMS12	151005-4

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291011

CLIENT ID: B32BB7

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	5.55	ug/L			P	1	1	OPTIMA3	092815-1
7440-66-6	Zinc	4.93	ug/L	B		MS	3.5	1	ICPMS12	151002-3

*Analytical Methods:

P SW846 3005A/6010C

MS SW846 3005A/6020A

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291012

CLIENT ID: B32BB8

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	151002-3
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	151001-2
7440-38-2	Arsenic	1.76	ug/L	B		MS	1.7	1	ICPMS12	151005-4
7440-39-3	Barium	83.5	ug/L			MS	0.6	1	ICPMS12	151002-3
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-42-8	Boron	20.2	ug/L	B		P	15	1	OPTIMA3	092815-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	151002-3
7440-70-2	Calcium	98300	ug/L			P	50	1	OPTIMA3	092815-1
7440-47-3	Chromium	7.53	ug/L	B		MS	2	1	ICPMS12	151002-3
7440-48-4	Cobalt	1.11	ug/L	C		MS	0.1	1	ICPMS12	151002-3
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	151002-3
7439-89-6	Iron	167	ug/L			P	30	1	OPTIMA3	092815-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151002-3
7439-95-4	Magnesium	19800	ug/L			P	110	1	OPTIMA3	092815-1
7439-96-5	Manganese	10.3	ug/L			MS	1	1	ICPMS11	151006-7
7439-98-7	Molybdenum	0.827	ug/L			MS	0.165	1	ICPMS12	151006-6
7440-02-0	Nickel	109	ug/L			MS	0.5	1	ICPMS12	151002-3
7440-09-7	Potassium	6540	ug/L			P	50	1	OPTIMA3	092815-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151006-5
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-23-5	Sodium	63600	ug/L			P	100	1	OPTIMA3	092815-1
7440-24-6	Strontium	492	ug/L			MS	2	1	ICPMS12	151002-3
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151002-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151002-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151005-4
7440-61-1	Uranium	3.64	ug/L			MS	0.067	1	ICPMS12	151005-4

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291012

CLIENT ID: B32BB8

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	5.12	ug/L			P	1	1	OPTIMA3	092815-1
7440-66-6	Zinc	4.06	ug/L	B		MS	3.5	1	ICPMS12	151002-3

*Analytical Methods:

P SW846 3005A/6010C

MS SW846 3005A/6020A

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291013

CLIENT ID: B32BD4

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	151002-3
7440-36-0	Antimony	1.49	ug/L	CB		MS	1	1	ICPMS12	151001-2
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS12	151005-4
7440-39-3	Barium	145	ug/L			MS	0.6	1	ICPMS12	151002-3
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-42-8	Boron	17.8	ug/L	B		P	15	1	OPTIMA3	092815-1
7440-43-9	Cadmium	0.175	ug/L	B		MS	0.11	1	ICPMS12	151002-3
7440-70-2	Calcium	151000	ug/L			P	50	1	OPTIMA3	092815-1
7440-47-3	Chromium	6.18	ug/L	B		MS	2	1	ICPMS12	151002-3
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	151002-3
7440-50-8	Copper	1.59	ug/L			MS	0.35	1	ICPMS12	151002-3
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	092815-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151002-3
7439-95-4	Magnesium	24800	ug/L			P	110	1	OPTIMA3	092815-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS11	151006-7
7439-98-7	Molybdenum	0.616	ug/L			MS	0.165	1	ICPMS12	151006-6
7440-02-0	Nickel	1.51	ug/L	B		MS	0.5	1	ICPMS12	151002-3
7440-09-7	Potassium	3770	ug/L			P	50	1	OPTIMA3	092815-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151006-5
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-23-5	Sodium	9300	ug/L			P	100	1	OPTIMA3	092815-1
7440-24-6	Strontium	602	ug/L			MS	2	1	ICPMS12	151002-3
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151002-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151002-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151005-4
7440-61-1	Uranium	4.64	ug/L			MS	0.067	1	ICPMS12	151005-4

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291013

CLIENT ID: B32BD4

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	1.19	ug/L	B		P	1	1	OPTIMA3	092815-1
7440-66-6	Zinc	6.82	ug/L	B		MS	3.5	1	ICPMS12	151002-3

*Analytical Methods:

P SW846 3005A/6010C

MS SW846 3005A/6020A

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291014

CLIENT ID: B32BD0

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	93.7	ug/L			MS	15	1	ICPMS12	151002-3
7440-36-0	Antimony	1.22	ug/L	CB		MS	1	1	ICPMS12	151001-2
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS12	151005-4
7440-39-3	Barium	142	ug/L			MS	0.6	1	ICPMS12	151002-3
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-42-8	Boron	17.6	ug/L	B		P	15	1	OPTIMA3	092815-1
7440-43-9	Cadmium	0.126	ug/L	B		MS	0.11	1	ICPMS12	151002-3
7440-70-2	Calcium	148000	ug/L			P	50	1	OPTIMA3	092815-1
7440-47-3	Chromium	7	ug/L	B		MS	2	1	ICPMS12	151002-3
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	151002-3
7440-50-8	Copper	2.57	ug/L			MS	0.35	1	ICPMS12	151002-3
7439-89-6	Iron	157	ug/L			P	30	1	OPTIMA3	092815-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151002-3
7439-95-4	Magnesium	24300	ug/L			P	110	1	OPTIMA3	092815-1
7439-96-5	Manganese	3.1	ug/L	B		MS	1	1	ICPMS11	151006-7
7439-98-7	Molybdenum	0.644	ug/L			MS	0.165	1	ICPMS12	151006-6
7440-02-0	Nickel	2.09	ug/L			MS	0.5	1	ICPMS12	151002-3
7440-09-7	Potassium	3730	ug/L			P	50	1	OPTIMA3	092815-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151006-5
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS12	151002-3
7440-23-5	Sodium	9060	ug/L			P	100	1	OPTIMA3	092815-1
7440-24-6	Strontium	586	ug/L			MS	2	1	ICPMS12	151002-3
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151002-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151002-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151005-4
7440-61-1	Uranium	4.7	ug/L			MS	0.067	1	ICPMS12	151005-4

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL381291

METHOD TYPE: SW846

SAMPLE ID: 381291014

CLIENT ID: B32BD0

CONTRACT: CPRC0115038

MATRIX: WATER

DATE RECEIVED 17-SEP-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	1.58	ug/L	B		P	1	1	OPTIMA3	092815-1
7440-66-6	Zinc	22.9	ug/L			MS	3.5	1	ICPMS12	151002-3

*Analytical Methods:

P SW846 3005A/6010C

MS SW846 3005A/6020A

Quality Control Summary

November 16, 2015
GEL LABORATORIES LLC

Rev 1

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

QC Summary

Report Date: November 13, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1508366										
QC1203395142	LCS										
Aluminum	2000			2030	ug/L		102	(80%-120%)	BAJ	10/02/15	20:26
Antimony	50.0			51.8	ug/L		104	(80%-120%)		10/01/15	22:36
Arsenic	50.0			59.2	ug/L		118	(80%-120%)		10/05/15	13:59
Barium	50.0			51.8	ug/L		104	(80%-120%)		10/02/15	20:26
Beryllium	50.0			59.0	ug/L		118	(80%-120%)			
Cadmium	50.0			53.6	ug/L		107	(80%-120%)			
Chromium	50.0			53.6	ug/L		107	(80%-120%)			
Cobalt	50.0			52.7	ug/L		105	(80%-120%)			
Copper	50.0			54.6	ug/L		109	(80%-120%)			
Lead	50.0			52.6	ug/L		105	(80%-120%)			
Manganese	50.0			51.1	ug/L		102	(80%-120%)	PRB	10/06/15	16:13
Molybdenum	50.0			56.5	ug/L		113	(80%-120%)	BAJ	10/06/15	15:06
Nickel	50.0			53.1	ug/L		106	(80%-120%)		10/02/15	20:26
Phosphorous	2000			2030	ug/L		101	(80%-120%)			
Selenium	50.0			55.2	ug/L		110	(80%-120%)		10/06/15	11:32
Silver	50.0			53.6	ug/L		107	(80%-120%)		10/02/15	20:26
Strontium	50.0			50.9	ug/L		102	(80%-120%)			
Thallium	50.0			52.1	ug/L		104	(80%-120%)			
Thorium	50.0			52.5	ug/L		105	(80%-120%)			
Tin	50.0			56.5	ug/L		113	(80%-120%)		10/05/15	13:59

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1508366										
Uranium	50.0			55.7	ug/L		111	(80%-120%)	BAJ	10/05/15	13:59
Zinc	50.0			55.1	ug/L		110	(80%-120%)		10/02/15	20:26
QC1203395141	MB										
Aluminum			U	15.0	ug/L					10/02/15	20:22
Antimony			B	1.48	ug/L					10/01/15	22:33
Arsenic			U	1.70	ug/L					10/05/15	13:56
Barium			U	0.600	ug/L					10/02/15	20:22
Beryllium			B	0.203	ug/L						
Cadmium			U	0.110	ug/L						
Chromium			U	2.00	ug/L						
Cobalt			B	0.153	ug/L						
Copper			U	0.350	ug/L						
Lead			B	0.822	ug/L						
Manganese			U	1.00	ug/L				PRB	10/06/15	16:11
Molybdenum			U	0.165	ug/L				BAJ	10/06/15	15:05
Nickel			U	0.500	ug/L					10/02/15	20:22
Phosphorous			U	15.0	ug/L						
Selenium			U	1.50	ug/L					10/06/15	11:30
Silver			U	0.200	ug/L					10/02/15	20:22
Strontium			U	2.00	ug/L						
Thallium			U	0.450	ug/L						
Thorium			B	0.594	ug/L						

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1508366										
Tin			U	1.00	ug/L				BAJ	10/05/15	13:56
Uranium			U	0.067	ug/L						
Zinc			U	3.50	ug/L					10/02/15	20:22
QC1203395143	381291005 MS										
Aluminum	2000		55.1	2130	ug/L		104	(75%-125%)		10/02/15	20:32
Antimony	50.0	BC	1.06	52.0	ug/L		102	(75%-125%)		10/01/15	22:42
Arsenic	50.0	B	1.73	60.8	ug/L		118	(75%-125%)		10/05/15	14:03
Barium	50.0		53.7	104	ug/L		100	(75%-125%)		10/02/15	20:32
Beryllium	50.0	U	0.200	55.2	ug/L		110	(75%-125%)			
Cadmium	50.0	U	0.110	53.5	ug/L		107	(75%-125%)			
Chromium	50.0	B	5.58	58.4	ug/L		106	(75%-125%)			
Cobalt	50.0	U	0.100	51.0	ug/L		102	(75%-125%)			
Copper	50.0	U	0.350	51.2	ug/L		102	(75%-125%)			
Lead	50.0	U	0.500	50.9	ug/L		102	(75%-125%)			
Manganese	50.0	B	2.04	52.7	ug/L		101	(75%-125%)	PRB	10/06/15	16:16
Molybdenum	50.0		1.47	59.6	ug/L		116	(75%-125%)	BAJ	10/06/15	15:09
Nickel	50.0	B	0.534	51.1	ug/L		101	(75%-125%)		10/02/15	20:32
Phosphorous	2000		146	2300	ug/L		107	(75%-125%)			
Selenium	50.0	U	1.50	55.8	ug/L		111	(75%-125%)		10/06/15	11:36
Silver	50.0	U	0.200	52.8	ug/L		106	(75%-125%)		10/02/15	20:32
Strontium	50.0		314	369	ug/L		N/A	(75%-125%)			
Thallium	50.0	U	0.450	51.3	ug/L		102	(75%-125%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1508366										
Thorium	50.0	BC	0.472	52.1	ug/L		103	(75%-125%)	BAJ	10/02/15	20:32
Tin	50.0	U	1.00	56.0	ug/L		112	(75%-125%)		10/05/15	14:03
Uranium	50.0		1.99	57.4	ug/L		111	(75%-125%)			
Zinc	50.0	U	3.50	53.5	ug/L		103	(75%-125%)		10/02/15	20:32
QC1203395144	381291005 MSD										
Aluminum	2000		55.1	2100	ug/L	1.58	102	(0%-20%)		10/02/15	20:35
Antimony	50.0	BC	1.06	50.7	ug/L	2.55	99.3	(0%-20%)		10/01/15	22:46
Arsenic	50.0	B	1.73	58.7	ug/L	3.55	114	(0%-20%)		10/05/15	14:05
Barium	50.0		53.7	101	ug/L	2.42	95.2	(0%-20%)		10/02/15	20:35
Beryllium	50.0	U	0.200	54.5	ug/L	1.36	109	(0%-20%)			
Cadmium	50.0	U	0.110	50.8	ug/L	5.18	102	(0%-20%)			
Chromium	50.0	B	5.58	57.4	ug/L	1.79	104	(0%-20%)			
Cobalt	50.0	U	0.100	49.9	ug/L	2.02	99.8	(0%-20%)			
Copper	50.0	U	0.350	49.3	ug/L	3.86	98.1	(0%-20%)			
Lead	50.0	U	0.500	49.2	ug/L	3.42	98.2	(0%-20%)			
Manganese	50.0	B	2.04	53.1	ug/L	0.684	102	(0%-20%)	PRB	10/06/15	16:17
Molybdenum	50.0		1.47	56.1	ug/L	6.09	109	(0%-20%)	BAJ	10/06/15	15:11
Nickel	50.0	B	0.534	49.8	ug/L	2.57	98.6	(0%-20%)		10/02/15	20:35
Phosphorous	2000		146	2230	ug/L	2.83	104	(0%-20%)			
Selenium	50.0	U	1.50	55.3	ug/L	1.04	110	(0%-20%)		10/06/15	11:38
Silver	50.0	U	0.200	51.3	ug/L	3	102	(0%-20%)		10/02/15	20:35
Strontium	50.0		314	355	ug/L	3.68	N/A	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1508366										
Thallium	50.0	U	0.450		49.4	ug/L	3.68	98.7	(0%-20%)	BAJ	10/02/15 20:35
Thorium	50.0	BC	0.472		50.9	ug/L	2.26	101	(0%-20%)		
Tin	50.0	U	1.00		54.5	ug/L	2.63	109	(0%-20%)		10/05/15 14:05
Uranium	50.0		1.99		56.6	ug/L	1.49	109	(0%-20%)		
Zinc	50.0	U	3.50		53.1	ug/L	0.726	103	(0%-20%)		10/02/15 20:35
QC1203395145 381291005 SDILT											
Aluminum			55.1	DU	75.0	ug/L	N/A		(0%-10%)		10/02/15 20:41
Antimony		BC	1.06	DU	5.00	ug/L	N/A		(0%-10%)		10/01/15 22:52
Arsenic		B	1.73	DU	8.50	ug/L	N/A		(0%-10%)		10/05/15 14:08
Barium			53.7	D	11.0	ug/L	2.81		(0%-10%)		10/02/15 20:41
Beryllium		U	0.011	DU	1.00	ug/L	N/A		(0%-10%)		
Cadmium		U	0.010	DU	0.550	ug/L	N/A		(0%-10%)		
Chromium		B	5.58	DU	10.0	ug/L	N/A		(0%-10%)		
Cobalt		U	0.059	DU	0.500	ug/L	N/A		(0%-10%)		
Copper		U	0.192	DU	1.75	ug/L	N/A		(0%-10%)		
Lead		U	0.077	DU	2.50	ug/L	N/A		(0%-10%)		
Manganese		B	2.04	DU	5.00	ug/L	N/A		(0%-10%)	PRB	10/06/15 16:24
Molybdenum			1.47	D	0.289	ug/L	1.9		(0%-10%)	BAJ	10/06/15 15:12
Nickel		B	0.534	DU	2.50	ug/L	N/A		(0%-10%)		10/02/15 20:41
Phosphorous			146	D	29.0	ug/L	.599		(0%-10%)		
Selenium		U	0.337	DU	7.50	ug/L	N/A		(0%-10%)		10/06/15 11:39
Silver		U	0.017	DU	1.00	ug/L	N/A		(0%-10%)		10/02/15 20:41

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1508366										
Strontium		314	D	60.7	ug/L	3.46		(0%-10%)	BAJ	10/02/15	20:41
Thallium	U	0.039	DU	2.25	ug/L	N/A		(0%-10%)			
Thorium	BC	0.472	DU	1.92	ug/L	N/A		(0%-10%)			
Tin	U	0.202	DU	5.00	ug/L	N/A		(0%-10%)		10/05/15	14:08
Uranium		1.99	D	0.390	ug/L	2.06		(0%-10%)			
Zinc	U	1.86	D	4.33	ug/L	N/A		(0%-10%)		10/02/15	20:41
Metals Analysis-ICP											
Batch	1508352										
QC1203395104	LCS										
Antimony	500			507	ug/L		101	(80%-120%)	HSC	09/28/15	10:11
Arsenic	500			514	ug/L		103	(80%-120%)			
Barium	500			521	ug/L		104	(80%-120%)			
Boron	500			527	ug/L		105	(80%-120%)			
Cadmium	500			512	ug/L		102	(80%-120%)			
Calcium	5000			5050	ug/L		101	(80%-120%)			
Chromium	500			518	ug/L		104	(80%-120%)			
Cobalt	500			517	ug/L		103	(80%-120%)			
Copper	500			528	ug/L		106	(80%-120%)			
Iron	5000			5220	ug/L		104	(80%-120%)			
Lead	500			521	ug/L		104	(80%-120%)			
Magnesium	5000			5350	ug/L		107	(80%-120%)			
Manganese	500			516	ug/L		103	(80%-120%)			
Molybdenum	500			509	ug/L		102	(80%-120%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1508352										
Nickel	500			513	ug/L		103	(80%-120%)	HSC	09/28/15	10:11
Potassium	5000			5200	ug/L		104	(80%-120%)			
Silver	500			511	ug/L		102	(80%-120%)			
Sodium	5000			4900	ug/L		98	(80%-120%)			
Strontium	500			517	ug/L		103	(80%-120%)			
Vanadium	500			529	ug/L		106	(80%-120%)			
Zinc	500			496	ug/L		99.2	(80%-120%)			
QC1203395103	MB										
Antimony			U	3.50	ug/L					09/28/15	10:08
Arsenic			U	5.00	ug/L						
Barium			U	1.00	ug/L						
Boron			U	15.0	ug/L						
Cadmium			U	1.00	ug/L						
Calcium			U	50.0	ug/L						
Chromium			U	1.00	ug/L						
Cobalt			U	1.00	ug/L						
Copper			U	3.00	ug/L						
Iron			U	30.0	ug/L						
Lead			U	3.30	ug/L						
Magnesium			U	110	ug/L						
Manganese			U	2.00	ug/L						
Molybdenum			U	2.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1508352										
Nickel			U	1.50	ug/L				HSC	09/28/15	10:08
Potassium			B	57.5	ug/L						
Silver			U	1.00	ug/L						
Sodium			U	100	ug/L						
Strontium			U	1.00	ug/L						
Vanadium			U	1.00	ug/L						
Zinc			U	3.30	ug/L						
QC1203395105 381291005 MS											
Antimony	500	U	3.50	519	ug/L		104	(75%-125%)		09/28/15	10:18
Arsenic	500	U	5.00	534	ug/L		107	(75%-125%)			
Barium	500		54.5	570	ug/L		103	(75%-125%)			
Boron	500	B	17.3	566	ug/L		110	(75%-125%)			
Cadmium	500	U	1.00	502	ug/L		100	(75%-125%)			
Calcium	5000		64900	69900	ug/L		N/A	(75%-125%)			
Chromium	500		5.62	519	ug/L		103	(75%-125%)			
Cobalt	500	U	1.00	488	ug/L		97.5	(75%-125%)			
Copper	500	U	3.00	527	ug/L		105	(75%-125%)			
Iron	5000	B	94.2	5360	ug/L		105	(75%-125%)			
Lead	500	U	3.30	508	ug/L		102	(75%-125%)			
Magnesium	5000		11700	16900	ug/L		103	(75%-125%)			
Manganese	500	U	2.00	507	ug/L		101	(75%-125%)			
Molybdenum	500	B	2.34	521	ug/L		104	(75%-125%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1508352										
Nickel	500	U	1.50	486	ug/L		97.1	(75%-125%)	HSC	09/28/15	10:18
Potassium	5000		2700	7940	ug/L		105	(75%-125%)			
Silver	500	U	1.00	514	ug/L		103	(75%-125%)			
Sodium	5000		6350	11200	ug/L		97.2	(75%-125%)			
Strontium	500		310	811	ug/L		100	(75%-125%)			
Vanadium	500	B	2.41	540	ug/L		108	(75%-125%)			
Zinc	500	U	3.30	493	ug/L		98.2	(75%-125%)			
QC1203395106	381291005	MSD									
Antimony	500	U	3.50	514	ug/L	1.05	103	(0%-20%)		09/28/15	10:21
Arsenic	500	U	5.00	526	ug/L	1.56	105	(0%-20%)			
Barium	500		54.5	558	ug/L	2.16	101	(0%-20%)			
Boron	500	B	17.3	555	ug/L	1.88	108	(0%-20%)			
Cadmium	500	U	1.00	490	ug/L	2.29	98.1	(0%-20%)			
Calcium	5000		64900	70000	ug/L	0.18	N/A	(0%-20%)			
Chromium	500		5.62	508	ug/L	2	101	(0%-20%)			
Cobalt	500	U	1.00	477	ug/L	2.25	95.3	(0%-20%)			
Copper	500	U	3.00	517	ug/L	1.96	103	(0%-20%)			
Iron	5000	B	94.2	5330	ug/L	0.494	105	(0%-20%)			
Lead	500	U	3.30	501	ug/L	1.32	100	(0%-20%)			
Magnesium	5000		11700	16800	ug/L	0.631	101	(0%-20%)			
Manganese	500	U	2.00	496	ug/L	2.13	98.9	(0%-20%)			
Molybdenum	500	B	2.34	515	ug/L	1.07	103	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1508352										
Nickel	500	U	1.50		479	ug/L	1.29	95.9	(0%-20%)	HSC	09/28/15 10:21
Potassium	5000		2700		7920	ug/L	0.29	104	(0%-20%)		
Silver	500	U	1.00		504	ug/L	1.88	101	(0%-20%)		
Sodium	5000		6350		11300	ug/L	0.445	98.2	(0%-20%)		
Strontium	500		310		825	ug/L	1.71	103	(0%-20%)		
Vanadium	500	B	2.41		529	ug/L	2.07	105	(0%-20%)		
Zinc	500	U	3.30		482	ug/L	2.34	95.9	(0%-20%)		
QC1203395107 381291005 SDILT											
Antimony		U	1.09	DU	17.5	ug/L	N/A		(0%-10%)		09/28/15 10:24
Arsenic		U	0.0661	DU	25.0	ug/L	N/A		(0%-10%)		
Barium			54.5	D	11.1	ug/L	1.57		(0%-10%)		
Boron		B	17.3	DU	75.0	ug/L	N/A		(0%-10%)		
Cadmium		U	0.115	DU	5.00	ug/L	N/A		(0%-10%)		
Calcium			64900	D	12800	ug/L	1.35		(0%-10%)		
Chromium			5.62	D	1.05	ug/L	6.79		(0%-10%)		
Cobalt		U	0.348	DU	5.00	ug/L	N/A		(0%-10%)		
Copper		U	0.380	DU	15.0	ug/L	N/A		(0%-10%)		
Iron		B	94.2	DU	150	ug/L	N/A		(0%-10%)		
Lead		U	-6.26	DU	16.5	ug/L	N/A		(0%-10%)		
Magnesium			11700	D	2290	ug/L	2.24		(0%-10%)		
Manganese		U	1.75	DU	10.0	ug/L	N/A		(0%-10%)		
Molybdenum		B	2.34	DU	10.0	ug/L	N/A		(0%-10%)		

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Parname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1508352										
Nickel	U	0.134	DU	7.50	ug/L	N/A		(0%-10%)	HSC	09/28/15	10:24
Potassium		2700	D	565	ug/L	4.75		(0%-10%)			
Silver	U	0.649	DU	5.00	ug/L	N/A		(0%-10%)			
Sodium		6350	D	1310	ug/L	3.04		(0%-10%)			
Strontium		310	D	59.5	ug/L	4.08		(0%-10%)			
Vanadium	B	2.41	DU	5.00	ug/L	N/A		(0%-10%)			
Zinc	U	2.22	D	3.67	ug/L	N/A		(0%-10%)			
Metals Analysis-Mercury											
Batch	1509143										
QC1203397144	381300001	DUP									
Mercury	U	0.067	U	0.067	ug/L	N/A			MTM1	09/22/15	09:09
QC1203397136	LCS										
Mercury	2.00			1.97	ug/L		98.3	(80%-120%)		09/22/15	08:57
QC1203397135	MB										
Mercury			U	0.067	ug/L					09/22/15	08:55
QC1203397145	381300001	MS									
Mercury	2.00	U	0.067	1.96	ug/L		98.2	(75%-125%)		09/22/15	09:14
QC1203397146	381300001	SDILT									
Mercury	U	-0.025	DU	0.335	ug/L	N/A		(0%-10%)		09/22/15	09:15

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 \geq EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
M	Duplicate precision not met.										
N	Spike Sample recovery is outside control limits.										
S	Reported value determined by the Method of Standard Additions (MSA)										
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.										
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

General Chem Analysis

Case Narrative

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**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL381291
Work Order #: 381291**

Method/Analysis Information

Product:	Cyanide and Total		
Analytical Batch:	1509555	Method:	9012_CYANIDE: COMMON
Prep Batch :	1509552	Method:	SW846 9010C Distillation

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9012B:

Sample ID	Client ID
381291007	B32949
1203398234	Method Blank (MB)
1203398235	Laboratory Control Sample (LCS)
1203398236	381291007(B32949) Sample Duplicate (DUP)
1203398238	381291007(B32949) Matrix Spike (MS)

Sample 381291 007 in this SDG was analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-095 REV# 17.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Flow Injection analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

Initial Calibration

All initial calibration requirements have been met for this SDG.

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Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 381291007 (B32949) was selected for QC analysis.

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

The MS/PS recovery for this sample set was within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

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Miscellaneous Information**Data Exception (DER) Documentation**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

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Method/Analysis Information

Product: Ion Chromatography
Analytical Batch: 1508465 **Method:** 9056_ANIONS_IC: COMMON

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9056A:

Sample ID	Client ID
381291002	B32935
381291003	B32BD2
381291004	B32BK3
1203395405	Method Blank (MB)
1203395406	Laboratory Control Sample (LCS)
1203395407	381299001(B327J0) Sample Duplicate (DUP)
1203395408	381299001(B327J0) Post Spike (PS)

Samples 381291 002, 003 and 004 in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 24.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-1600 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

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Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 381299001 (B327J0) was selected for QC analysis.

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

The spike recovery falls outside of the GEL acceptance limits but within the client specified limits.

Analyte	Sample	Value
Chloride	1203395408 (Non SDG 381299001PS)	112* (90%-110%)

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The following samples were diluted because target analyte concentrations exceeded the calibration range. 1203395407 (Non SDG 381299001DUP), 1203395408 (Non SDG 381299001PS), 381291002 (B32935), 381291003 (B32BD2) and 381291004 (B32BK3).

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Analyte	381291		
	002	003	004
Chloride	10X	20X	1X
Nitrate	10X	20X	1X
Sulfate	10X	20X	10X

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation

A data exception report (DER) 1450892 was generated for sample 1203395408 (Non SDG 381299001PS) in this SDG/batch.

Manual Integrations

Samples 1203395407 (Non SDG 381299001DUP), 1203395408 (Non SDG 381299001PS), 381291002 (B32935), 381291003 (B32BD2) and 381291004 (B32BK3) were manually integrated to correctly position the baseline as set in the calibration standards.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

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Method/Analysis Information

Product: Hexavalent Chromium
Analytical Batch: 1508163 **Method:** 7196_CR6: COMMON

Sample Analysis

The following samples were analyzed using the analytical protocol as established in 7196_CR6 :

Sample ID	Client ID
381291001	B32BK2
1203394626	Method Blank (MB)
1203394627	Laboratory Control Sample (LCS)
1203395151	381291001(B32BK2) Sample Duplicate (DUP)
1203395152	381291001(B32BK2) Post Spike (PS)

Sample 381291 001 in this SDG was analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-044 REV# 21.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Spectrometric analysis was performed on a Spectronic 20D+ Digital Spectrophotometer.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

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All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 381291001 (B32BK2) was selected for QC analysis.

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

The matrix spike recovered outside of the established acceptance limits due to matrix interference.

Analyte	Sample	Value
Hexavalent Chromium	1203395152 (B32BK2PS)	123* (85%-115%)

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation

A data exception report (DER) 1449576 was generated for sample 1203395152 (B32BK2PS) in this

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SDG/batch.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

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Method/Analysis Information**Product:** Alkalinity**Analytical Batch:** 1510669 **Method:** 2320_ALKALINITY: GW 01**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in 2320_ALKALINITY:

Sample ID	Client ID
381291005	B32934
381291014	B32BD0
1203401047	Method Blank (MB)
1203401048	Laboratory Control Sample (LCS)
1203403080	381291005(B32934) Sample Duplicate (DUP)

Samples 381291 005 and 014 in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-033 REV# 11.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a manually operated buret.

Initial Standardization

The titrant was properly standardized

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

The MB analyzed with this SDG met the acceptance criteria.

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Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 381291005 (B32934) was selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information**Data Exception (DER) Documentation**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Certification Statement

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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: GEL381291 GEL Work Order: 381291

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: Thomas Lewis****Date: 13 OCT 2015****Title: Data Validator**

Sample Data Summary

Certificate of Analysis

Report Date: October 13, 2015

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF I15-038

Client Sample ID: B32BK2	Project: CPRC0I15038
Sample ID: 381291001	Client ID: CPRC001
Matrix: WATER	
Collect Date: 16-SEP-15 12:58	
Receive Date: 17-SEP-15	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis											
7196_CR6: COMMON "As Received"											
Hexavalent Chromium		0.0314	0.003	0.010	mg/L	1	SXC5	09/17/15	1134	1508163	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	7196_CR6	

Notes:

Certificate of Analysis

Report Date: October 13, 2015

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF I15-038

Client Sample ID: B32935	Project: CPRC0I15038
Sample ID: 381291002	Client ID: CPRC001
Matrix: WATER	
Collect Date: 16-SEP-15 10:28	
Receive Date: 17-SEP-15	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
9056_ANIONS_IC: COMMON "As Received"											
Fluoride	B	69.5	33.0	500	ug/L	1	MXL2	09/17/15	1705	1508465	1
Nitrite-N	U	38.0	38.0	250	ug/L	1					
Chloride	D	11000	670	2000	ug/L	10	MXL2	09/17/15	2202	1508465	2
Nitrate-N	D	11700	330	1000	ug/L	10					
Sulfate	D	57700	1330	4000	ug/L	10					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 9056A	

Notes:

Certificate of Analysis

Report Date: October 13, 2015

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF I15-038

Client Sample ID: B32BD2	Project: CPRC0I15038
Sample ID: 381291003	Client ID: CPRC001
Matrix: WATER	
Collect Date: 16-SEP-15 08:50	
Receive Date: 17-SEP-15	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
9056_ANIONS_IC: COMMON "As Received"											
Fluoride	B	90.8	33.0	500	ug/L	1	MXL2	09/17/15	1738	1508465	1
Nitrite-N	U	38.0	38.0	250	ug/L	1					
Chloride	D	13700	1340	4000	ug/L	20	MXL2	09/17/15	2234	1508465	2
Nitrate-N	D	69600	660	2000	ug/L	20					
Sulfate	D	58700	2660	8000	ug/L	20					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 9056A	

Notes:

Certificate of Analysis

Report Date: October 13, 2015

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF I15-038

Client Sample ID: B32BK3	Project: CPRC015038
Sample ID: 381291004	Client ID: CPRC001
Matrix: WATER	
Collect Date: 16-SEP-15 12:58	
Receive Date: 17-SEP-15	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time Batch	Method
Ion Chromatography										
9056_ANIONS_IC: COMMON "As Received"										
Chloride		4190	67.0	200	ug/L	1	MXL2	09/17/15	1811 1508465	1
Fluoride	B	294	33.0	500	ug/L	1				
Nitrate-N		4620	33.0	250	ug/L	1				
Nitrite-N	U	38.0	38.0	250	ug/L	1				
Sulfate	D	60900	1330	4000	ug/L	10	MXL2	09/17/15	2307 1508465	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 9056A	

Notes:

Certificate of Analysis

Report Date: October 13, 2015

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF I15-038

Client Sample ID: B32934	Project: CPRC0I15038
Sample ID: 381291005	Client ID: CPRC001
Matrix: WATER	
Collect Date: 16-SEP-15 10:28	
Receive Date: 17-SEP-15	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
2320_ALKALINITY: GW 01 "As Received"											
Alkalinity, Total as CaCO3		105000	725	2000	ug/L		AMB	09/30/15	1131	1510669	1
Bicarbonate alkalinity (CaCO3)		105000	725	2000	ug/L						
Carbonate alkalinity (CaCO3)	U	725	725	2000	ug/L						
Hydroxide alkalinity as CaCO3	U	725	725	2000	ug/L						

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Certificate of Analysis

Report Date: October 13, 2015

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF I15-038

Client Sample ID: B32949	Project: CPRC0I15038
Sample ID: 381291007	Client ID: CPRC001
Matrix: WATER	
Collect Date: 16-SEP-15 11:15	
Receive Date: 17-SEP-15	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis											
9012_CYANIDE: COMMON "As Received"											
Cyanide, Total	U	1.67	1.67	5.00	ug/L	1	AXH3	09/22/15	1421	1509555	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	09/22/15	1408	1509552

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9012B	

Notes:

Certificate of Analysis

Report Date: October 13, 2015

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF I15-038

Client Sample ID: B32BD0	Project: CPRC0I15038
Sample ID: 381291014	Client ID: CPRC001
Matrix: WATER	
Collect Date: 16-SEP-15 08:50	
Receive Date: 17-SEP-15	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
2320_ALKALINITY: GW 01 "As Received"											
Alkalinity, Total as CaCO3		153000	725	2000	ug/L		AMB	09/30/15	1136	1510669	1
Bicarbonate alkalinity (CaCO3)		153000	725	2000	ug/L						
Carbonate alkalinity (CaCO3)	U	725	725	2000	ug/L						
Hydroxide alkalinity as CaCO3	U	725	725	2000	ug/L						

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Quality Control Summary

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QC Summary

Report Date: October 13, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1509555										
QC1203398236	381291007	DUP									
Cyanide, Total		U	1.67	U	1.67	ug/L	N/A		AXH3	09/22/15	14:22
QC1203398235	LCS										
Cyanide, Total	50.0				53.9	ug/L	108	(90%-110%)		09/22/15	14:20
QC1203398234	MB										
Cyanide, Total			U		1.67	ug/L				09/22/15	14:20
QC1203398238	381291007	MS									
Cyanide, Total	100	U	1.67		110	ug/L	110	(79%-137%)		09/22/15	14:23
Ion Chromatography											
Batch	1508465										
QC1203395407	381299001	DUP									
Chloride		D	113000	D	113000	ug/L	0.101	(0%-20%)	MXL2	09/18/15	00:46
Fluoride		B	158	B	155	ug/L	1.79 ^	(+/-500)		09/17/15	19:50
Nitrate-N		D	12700	D	12600	ug/L	0.584	(0%-20%)		09/18/15	00:46
Nitrite-N		U	38.0	U	38.0	ug/L	N/A			09/17/15	19:50
Sulfate		D	109000	D	109000	ug/L	0.227	(0%-20%)		09/18/15	00:46
QC1203395406	LCS										
Chloride	5000				5050	ug/L	101	(90%-110%)		09/17/15	16:32
Fluoride	2500				2570	ug/L	103	(90%-110%)			
Nitrate-N	2500				2530	ug/L	101	(90%-110%)			
Nitrite-N	2500				2560	ug/L	102	(90%-110%)			
Sulfate	10000				10200	ug/L	102	(90%-110%)			
QC1203395405	MB										
Chloride			U		67.0	ug/L				09/17/15	16:00
Fluoride			U		33.0	ug/L					

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QC Summary

Workorder: 381291

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1508465										
Nitrate-N			U	33.0	ug/L						
Nitrite-N			U	38.0	ug/L				MXL2	09/17/15	16:00
Sulfate			U	133	ug/L						
QC1203395408	381299001	PS									
Chloride	5.00	D	5.63	D	11.3	mg/L	112*	(90%-110%)		09/18/15	01:19
Fluoride	2.50	B	0.158		2.69	mg/L	101	(90%-110%)		09/17/15	20:23
Nitrate-N	2.50	D	0.636	D	3.21	mg/L	103	(90%-110%)		09/18/15	01:19
Nitrite-N	2.50	U	0.00		2.63	mg/L	105	(90%-110%)		09/17/15	20:23
Sulfate	10.0	D	5.47	D	16.1	mg/L	107	(90%-110%)		09/18/15	01:19
Spectrometric Analysis											
Batch	1508163										
QC1203395151	381291001	DUP									
Hexavalent Chromium			0.0314		0.0324	mg/L	2.96 ^	(+/-0.010)	SXC5	09/17/15	11:35
QC1203394627	LCS										
Hexavalent Chromium	0.050				0.0484	mg/L	96.9	(85%-115%)		09/17/15	11:21
QC1203394626	MB										
Hexavalent Chromium			U	0.003	mg/L					09/17/15	11:20
QC1203395152	381291001	PS									
Hexavalent Chromium	0.050		0.0314		0.0928	mg/L	123*	(85%-115%)		09/17/15	11:35
Titration and Ion Analysis											
Batch	1510669										
QC1203403080	381291005	DUP									
Alkalinity, Total as CaCO3			105000		107000	ug/L	2.43	(0%-20%)	AMB	09/30/15	11:33
Bicarbonate alkalinity (CaCO3)			105000		107000	ug/L	2.43	(0%-20%)			
Carbonate alkalinity (CaCO3)		U	725	U	725	ug/L	N/A				
Hydroxide alkalinity as CaCO3		U	725	U	725	ug/L	N/A				
QC1203401048	LCS										
Alkalinity, Total as CaCO3	50000				53200	ug/L	106	(90%-110%)		09/30/15	11:28
QC1203401047	MB										

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QC Summary

Workorder: 381291

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1510669										
Alkalinity, Total as CaCO3			U	725	ug/L					09/30/15	11:25
Bicarbonate alkalinity (CaCO3)			U	725	ug/L				AMB		
Carbonate alkalinity (CaCO3)			U	725	ug/L						
Hydroxide alkalinity as CaCO3			U	725	ug/L						

Notes:

The Qualifiers in this report are defined as follows:

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

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

Miscellaneous

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DATA EXCEPTION REPORT

Mo.Day Yr. 18-SEP-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: VIS SPECTROMETER	Test / Method: SW846 7196A	Matrix Type: Liquid	Client Code: CPRC, ESHL
Batch ID: 1508163	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 381224(2015-2335),381291(GEL381291)			
Application Issues: Failed Recovery for MS/MSD, or PS/PSD Container scanning event for custody missed Sample received out of holding			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed Recovery for PS: QC 1203395152PS</p> <p>2. Sample received out of holding: 381224 001 QC 1203394628DUP, 1203394629PS</p> <p>3. Container scanning event for custody missed: 381224 001 381291 001</p>		<p>1. The matrix spike recovered outside of the established acceptance limits due to matrix interference. Sample was slightly turbid. Hexavalent Chromium 1203395152 (B32BK2PS) [123* (85%-115%)].</p> <p>2. Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified. 1203394628 (NP160-15-104312DUP) [Received 16-SEP-15, out of holding 15-SEP-15]. 1203394629 (NP160-15-104312PS) [Received 16-SEP-15, out of holding 15-SEP-15]. 381224001 (NP160-15-104312) [Received 16-SEP-15, out of holding 15-SEP-15].</p> <p>3. Container scanning event for custody was missed, however, analyst maintained custody of samples throughout analysis.</p>	

Originator's Name:

Sarah Hodgkiss 18-SEP-15

Data Validator/Group Leader:

Elzbieta Szulc 22-SEP-15

November 16, 2015

GEL Laboratories LLC
Form GEL-DER

Rev 1
DER Report No.: 1450892
Revision No.: 2

DATA EXCEPTION REPORT

Mo.Day Yr. 22-SEP-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: IC	Test / Method: SW846 9056A	Matrix Type: Liquid	Client Code: CPRC
Batch ID: 1508465	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 381291(GEL381291),381296(GEL381296),381299(GEL381299)			
Application Issues: Failed Recovery for MS/MSD, or PS/PSD			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed Recovery for MS/MSD, or PS/PSD:</p> <p style="padding-left: 20px;">QC 1203395408PS</p>		<p>1. The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. Chloride 1203395408 (B327J0PS) [112* (90%-110%)].</p>	

Originator's Name:

Marcy Lamb 22-SEP-15

Data Validator/Group Leader:

Mary Sherwood 09-OCT-15

Radiological Analysis

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Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL381291
Work Order #: 381291

Method/Analysis Information**Product:** PUIISO_PLATE_AEA:COMMON

Analytical Method: PUIISO_PLATE_AEA

Analytical Batch Number: 1508775

Sample ID	Client ID
381291007	B32949
1203396141	Method Blank (MB)
1203396143	Laboratory Control Sample (LCS)
1203396142	381291007(B32949) Sample Duplicate (DUP)

Sample 381291 007 in this SDG was analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:**Calibration Information**

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:**Blank Information**

The blank volume is representative of the sample volume in this batch.

QC Information

All of the QC samples meet the required acceptance limits with the following exceptions: Refer to Data Exception Report (DER).

Designated QC

The following sample was used for QC: 381291007 (B32949).

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Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:**Data Exception (DER) Documentation**

A data exception report (DER) 1453738 was generated for samples 1203396142 (B32949DUP) and 381291007 (B32949) in this SDG/batch. DER 1453738 was generated due to Other. 1. Samples 381291007 and 1203396142 do not meet the resolution requirement of having a full width half maximum of 100 keV or less for the Pu-242 tracer. 1. The samples do meet the tracer yield requirement, the detection limits, and their tracer peaks are within the Pu-242 region of interest. Reporting results.

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: UISO_IE_PRECIP_AEA:COMMON
Analytical Method: UISO_IE_PRECIP_AEA
Analytical Batch Number: 1508776

Sample ID	Client ID
381291007	B32949
1203396144	Method Blank (MB)
1203396146	Laboratory Control Sample (LCS)
1203396145	381291007(B32949) Sample Duplicate (DUP)

Sample 381291 007 in this SDG was analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as

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Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:**Calibration Information**

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:**Blank Information**

The blank volume is representative of the sample volume in this batch.

QC Information

All of the QC samples met the required acceptance limits.

Designated QC

The following sample was used for QC: 381291007 (B32949).

Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:**Data Exception (DER) Documentation**

A data exception report (DER) 1453725 was generated for sample 381291007 (B32949) in this SDG/batch. DER 1453725 was generated due to Peak Centroid Values Off. 1. The U-232 tracer peak for sample 381291007 is greater than 50 keV from the expected energy of 5302 keV. 1. The tracer peak is within the U-232 ROI and the tracer yield recovery does meet the client acceptance criteria. Reporting results.

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

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Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: GAMMA_GS:COMMON

Analytical Method: 901.1_GAMMA_GS

Analytical Batch Number: 1507497

Sample ID	Client ID
381291007	B32949
381291011	B32BB7
381291014	B32BD0
1203392907	Method Blank (MB)
1203392910	Laboratory Control Sample (LCS)
1203392908	380994002(B31TY6) Sample Duplicate (DUP)

Samples 381291 007, 011 and 014 in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 25.

Calibration Information:**Calibration Information**

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:**Blank Information**

The blank volume is representative of the sample volume in this batch.

QC Information

All of the QC samples met the required acceptance limits.

Designated QC

The following sample was used for QC: 380994002 (B31TY6).

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Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:**Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: SRISO_SEP_PRECIP_GPC: COMMON

Analytical Method: SRISO_SEP_PRECIP_GPC

Analytical Batch Number: 1510799

Sample ID	Client ID
381291005	B32934
381291007	B32949
381291010	B329C8
381291011	B32BB7
381291014	B32BD0
1203401362	Method Blank (MB)
1203401364	Laboratory Control Sample (LCS)
1203401363	381291005(B32934) Sample Duplicate (DUP)

Samples 381291 005, 007, 010, 011 and 014 in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with

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GL-RAD-A-004 REV# 17.

Calibration Information:**Calibration Information**

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:**Blank Information**

The blank volume is representative of the sample volume in this batch.

QC Information

All of the QC samples met the required acceptance limits.

Designated QC

The following sample was used for QC: 381291005 (B32934).

Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

All chemical recoveries meet the required acceptance limits for this sample set.

Recounts

Sample 1203401362 (MB) was recounted due to a detector lock out condition. The recount is reported. Samples 1203401363 (B32934DUP), 381291005 (B32934), 381291007 (B32949), 381291011 (B32BB7) and 381291014 (B32BD0) were verified by recounting at least five days from the separation date. The recounts are reported.

Miscellaneous Information:**Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

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Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: 9310_ALPHA BETA_GPC: GROSS BETA
Analytical Method: BETA_GPC
Analytical Batch Number: 1510859

Sample ID	Client ID
381291005	B32934
381291007	B32949
381291010	B329C8
381291011	B32BB7
381291014	B32BD0
1203401597	Method Blank (MB)
1203401601	Laboratory Control Sample (LCS)
1203401598	381659003(B326Y9) Sample Duplicate (DUP)
1203401599	381659003(B326Y9) Matrix Spike (MS)
1203401600	381659003(B326Y9) Matrix Spike Duplicate (MSD)

Samples 381291 005, 007, 010, 011 and 014 in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-001 REV# 18.

Calibration Information:**Calibration Information**

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:**Blank Information**

The blank volume is representative of the sample volume in this batch.

QC Information

All of the QC samples meet the required acceptance limits with the following exceptions: The matrix spike and

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matrix spike duplicate, 1203401599 (Non SDG 381659003MS) and 1203401600 (Non SDG 381659003MSD), do not meet the alpha relative percent difference requirement; however, they do meet the alpha recovery requirement.

Designated QC

The following sample was used for QC: 381659003 (B326Y9).

Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

All chemical recoveries meet the required acceptance limits for this sample set.

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Recounts

Sample 1203401599 (Non SDG 381659003MS) was recounted due to high recovery. The recount is reported. Sample 1203401598 (Non SDG 381659003DUP) was recounted due to high relative percent difference/relative error ratio. The recount is reported.

Miscellaneous Information:**Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The matrix spike and matrix spike duplicate, 1203401599 (Non SDG 381659003MS) and 1203401600 (Non SDG 381659003MSD), aliquots were reduced to conserve sample volume.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

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Analytical Batch Number: 1508992

Sample ID	Client ID
381291005	B32934
381291007	B32949
381291011	B32BB7
381291014	B32BD0
1203396673	Method Blank (MB)
1203396676	Laboratory Control Sample (LCS)
1203396674	381502003(B325X2) Sample Duplicate (DUP)
1203396675	381502003(B325X2) Matrix Spike (MS)

Samples 381291 005, 007, 011 and 014 in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

QC Information

All of the QC samples met the required acceptance limits.

Designated QC

The following sample was used for QC: 381502003 (B325X2).

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Samples 381291005 (B32934), 381291007 (B32949), 381291011 (B32BB7) and 381291014 (B32BD0) were recounted to verify sample results. The recount results are similar to the original results. Original results are

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reported.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: TC99_EIE_LSC: COMMON

Analytical Method: TC99_EIE_LSC

Analytical Batch Number: 1508996

Sample ID	Client ID
381291007	B32949
381291014	B32BD0
1203396689	Method Blank (MB)
1203396691	Laboratory Control Sample (LCS)
1203396690	381501001(B32BN4) Sample Duplicate (DUP)

Samples 381291 007 and 014 in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-059 REV# 3.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

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All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:**Blank Information**

The blank volume is representative of the sample volume in this batch.

QC Information

All of the QC samples met the required acceptance limits.

Designated QC

The following sample was used for QC: 381501001 (B32BN4).

Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Samples 381291007 (B32949) and 381291014 (B32BD0) were recounted to verify sample results. The recount results are similar to the original results. Original results are reported.

Miscellaneous Information:**Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

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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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: GEL381291 GEL Work Order: 381291

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: 14 OCT 2015

Title: Analyst II

November 16, 2015

GEL Laboratories LLC
Form GEL-DER

Rev 1
DER Report No.: 1453725
Revision No.: 1

DATA EXCEPTION REPORT

Mo.Day Yr. 01-OCT-15	Division: Radiochemistry	Quality Criteria: Specifications	Type: Process
Instrument Type: ALPHA SPECTROMETER	Test / Method: DOE EML HASL-300, U-02-RC Modified	Matrix Type: Liquid	Client Code: CPRC
Batch ID: 1508776	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 381291(GEL381291)			
Application Issues: Peak Centroid Values Off			
Specification and Requirements Exception Description:		DER Disposition:	
1. The U-232 tracer peak for sample 381291007 is greater than 50 keV from the expected energy of 5302 keV.		1. The tracer peak is within the U-232 ROI and the tracer yield recovery does meet the client acceptance criteria. Reporting results.	

Originator's Name:

Jessica Downey 01-OCT-15

Data Validator/Group Leader:

Jessica Davis 01-OCT-15

November 16, 2015

GEL Laboratories LLC
Form GEL-DER

Rev 1
DER Report No.: 1453738
Revision No.: 2

DATA EXCEPTION REPORT

Mo.Day Yr. 01-OCT-15	Division: Radiochemistry	Quality Criteria: SOP	Type: Process
Instrument Type: ALPHA SPECTROMETER	Test / Method: DOE EML HASL-300, Pu-11-RC Modified	Matrix Type: Liquid	Client Code: CPRC
Batch ID: 1508775	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 380763(GEL380763),381291(GEL381291)			
Application Issues: Other			
Specification and Requirements Exception Description:		DER Disposition:	
1. Samples 381291007 and 1203396142 do not meet the resolution requirement of having a full width half maximum of 100 keV or less for the Pu-242 tracer.		1. The samples do meet the tracer yield requirement, the detection limits, and their tracer peaks are within the Pu-242 region of interest. Reporting results.	

Originator's Name:

Melanie Aycock 01-OCT-15

Data Validator/Group Leader:

Jessica Davis 01-OCT-15

Sample Data Summary

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**Certificate of Analysis
Sample Summary**

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291005	Date Collected: 09/16/2015 10:28	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32934	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1510799	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 10/06/2015 07:37	Aliquot: 300 mL	Instrument: PIC2B
Data File: S1510799r2.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1510799		
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90		320	pCi/L	+/-6.65	53.2	1.15	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	7.60	8.10	mg	93.8	(25%-125%)

Comments:

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

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**Certificate of Analysis
 Sample Summary**

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291005	Date Collected: 09/16/2015 10:28	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32934		Prep Basis: "As Received"
Batch ID: 1510859	Method: BETA_GPC	SOP Ref: GL-RAD-A-001
Run Date: 10/10/2015 15:17	Analyst: JXB7	Instrument: PIC8B
Data File: AB1510859r.xls	Aliquot: 125 mL	Count Time: 60 min
Prep Batch: 1510859	Prep Method: EPA 900.0/SW846 9310	
Prep Date: 10/09/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-47-2	Beta BETA		901	pCi/L	+/-23.2	152	2.90	4.00

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).

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**Certificate of Analysis
 Sample Summary**

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291005	Date Collected: 09/16/2015 10:28	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32934		Prep Basis: "As Received"
Batch ID: 1508992	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 10/01/2015 12:29	Analyst: GXR1	Instrument: LSCORANGE
Data File: T1508992.xls	Aliquot: 50 mL	Count Time: 120.0297 min
Prep Batch: 1508992	Prep Method: EPA 906.0 Modified	
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		7970	pCi/L	+/-219	1560	80.3	100

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).

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Certificate of Analysis

Sample Summary

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291007	Date Collected: 09/16/2015 11:15	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32949	Method: PUIISO_PLATE_AEA	Prep Basis: "As Received"
Batch ID: 1508775	Analyst: HAKB	SOP Ref: GL-RAD-A-011
Run Date: 09/25/2015 09:52	Aliquot: 0.1 L	Instrument: 1091
Data File: S0381291007_PU.1A.gcnf	Prep Method: DOE EML HASL-300, Pu-11-	Count Time: 240 min
Prep Batch: 1508775		
Prep Date: 09/24/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	-0.0851	pCi/L	+/-0.161	0.161	0.497	1.00
OER-100-70	Plutonium-239/240	U	0.0198	pCi/L	+/-0.207	0.208	0.433	1.00

Surrogate/Tracer recovery

	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	15.6	19.8	pCi/L	78.8	(15%-125%)

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).

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**Certificate of Analysis
 Sample Summary**

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291007	Date Collected: 09/16/2015 11:15	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32949	Method: UIISO_IE_PRECIP_AEA	Prep Basis: "As Received"
Batch ID: 1508776	Analyst: HAKB	SOP Ref: GL-RAD-A-011
Run Date: 09/25/2015 09:50	Aliquot: 0.1 L	Instrument: 1115
Data File: S0381291007_UU.1A.gcnf	Prep Method: DOE EML HASL-300, U-02-R	Count Time: 240 min
Prep Batch: 1508776		
Prep Date: 09/24/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		2.04	pCi/L	+/-0.784	0.849	0.410	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.0915	pCi/L	+/-0.257	0.258	0.275	1.00
7440-61-1	Uranium-238		0.853	pCi/L	+/-0.527	0.544	0.410	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	21.4	21.2	pCi/L	101	(15%-125%)

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).

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Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291007	Date Collected: 09/16/2015 11:15	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32949		Prep Basis: "As Received"
Batch ID: 1510799	Method: SRISO_SEP_PRECIP_GPC	SOP Ref: GL-RAD-A-004
Run Date: 10/06/2015 07:37	Analyst: KSD1	Instrument: PIC1A
Data File: S1510799r2.xls	Aliquot: 300 mL	Count Time: 60 min
Prep Batch: 1510799	Prep Method: EPA 905.0 Modified/DOE RP5	
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90		207	pCi/L	+/-5.47	32.6	0.863	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	7.00	8.10	mg	86.4	(25%-125%)

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).

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Rev 1Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291007	Date Collected: 09/16/2015 11:15	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32949	Method: BETA_GPC	Prep Basis: "As Received"
Batch ID: 1510859	Analyst: JXB7	SOP Ref: GL-RAD-A-001
Run Date: 10/10/2015 15:20	Aliquot: 150 mL	Instrument: PIC13D
Data File: AB1510859r.xls	Prep Method: EPA 900.0/SW846 9310	Count Time: 70 min
Prep Batch: 1510859		
Prep Date: 10/09/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha ALPHA		3.40	pCi/L	+/-2.46	2.54	2.95	3.00
12587-47-2	Beta BETA		509	pCi/L	+/-14.2	84.0	2.57	4.00

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).

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Sample Summary

SDG Number: GEL381291
 Lab Sample ID: 381291007
 Client ID: B32949
 Batch ID: 1507497
 Run Date: 09/18/2015 06:22
 Data File: G381291007.CNF;1
 Prep Batch: 1507497
 Prep Date: 09/17/2015 00:00

Client: CPRC001
 Date Collected: 09/16/2015 11:15
 Date Received: 09/17/2015 08:45
 Method: 901.1_GAMMA_GS
 Analyst: MJH1
 Aliquot: 2 L
 Prep Method: EPA 901.1

Project: CPRC0115038
 Matrix: WATER
 Prep Basis: "As Received"
 SOP Ref: GL-RAD-A-013
 Instrument: GAM32
 Count Time: 120 min

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	-0.122	pCi/L	+/-3.10	3.10	5.06	10.0
10198-40-0	Cobalt-60	U	0.0294	pCi/L	+/-2.86	2.86	5.67	
14683-23-9	Europium-152	U	-2.07	pCi/L	+/-10.5	10.5	18.1	
15585-10-1	Europium-154	U	0.285	pCi/L	+/-12.8	12.8	21.1	
14391-16-3	Europium-155	U	5.92	pCi/L	+/-14.5	14.7	26.5	

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).

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Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291007	Date Collected: 09/16/2015 11:15	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32949		Prep Basis: "As Received"
Batch ID: 1508992	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 10/01/2015 14:32	Analyst: GXR1	Instrument: LSCORANGE
Data File: T1508992.xls	Aliquot: 50 mL	Count Time: 88.67966 min
Prep Batch: 1508992	Prep Method: EPA 906.0 Modified	
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		20800	pCi/L	+/-408	4050	89.0	100

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).

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Certificate of Analysis

Sample Summary

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291007	Date Collected: 09/16/2015 11:15	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32949	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1508996	Analyst: MYM1	SOP Ref: GL-RAD-A-059
Run Date: 10/05/2015 14:28	Aliquot: 300 mL	Instrument: LSCSILVER
Data File: E1508996.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 45 min
Prep Batch: 1508996		
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		12.3	pCi/L	+/-4.94	5.13	7.96	15.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	12400	13400	CPM	92.7	(15%-125%)

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).

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Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291010	Date Collected: 09/15/2015 12:25	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B329C8	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1510799	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 10/02/2015 10:07	Aliquot: 300 mL	Instrument: PIC6A
Data File: S1510799r2.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 80 min
Prep Batch: 1510799		
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	0.143	pCi/L	+/-1.09	1.09	1.95	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.90	8.10	mg	85.2	(25%-125%)

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).

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Sample Summary

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291010	Date Collected: 09/15/2015 12:25	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B329C8	Method: BETA_GPC	Prep Basis: "As Received"
Batch ID: 1510859	Analyst: JXB7	SOP Ref: GL-RAD-A-001
Run Date: 10/10/2015 15:16	Aliquot: 150 mL	Instrument: PIC13B
Data File: AB1510859r.xls	Prep Method: EPA 900.0/SW846 9310	Count Time: 130 min
Prep Batch: 1510859		
Prep Date: 10/09/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha ALPHA	U	0.666	pCi/L	+/-1.53	1.54	2.92	3.00
12587-47-2	Beta BETA	U	1.08	pCi/L	+/-1.70	1.72	2.90	4.00

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).

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Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291011	Date Collected: 09/16/2015 11:23	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32BB7	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1510799	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 10/06/2015 07:37	Aliquot: 300 mL	Instrument: PIC1D
Data File: S1510799r2.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1510799		
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90		6.86	pCi/L	+/-1.11	1.54	1.04	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	7.50	8.10	mg	92.6	(25%-125%)

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).

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**Certificate of Analysis
 Sample Summary**

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291011	Date Collected: 09/16/2015 11:23	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32BB7	Method: BETA_GPC	Prep Basis: "As Received"
Batch ID: 1510859	Analyst: JXB7	SOP Ref: GL-RAD-A-001
Run Date: 10/10/2015 15:16	Aliquot: 150 mL	Instrument: PIC14A
Data File: AB1510859r.xls	Prep Method: EPA 900.0/SW846 9310	Count Time: 110 min
Prep Batch: 1510859		
Prep Date: 10/09/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha ALPHA		5.01	pCi/L	+/-2.69	2.82	2.85	3.00
12587-47-2	Beta BETA		27.1	pCi/L	+/-2.84	5.38	1.65	4.00

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

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Certificate of Analysis

Sample Summary

SDG Number: GEL381291
 Lab Sample ID: 381291011
 Client ID: B32BB7
 Batch ID: 1507497
 Run Date: 09/18/2015 06:29
 Data File: G381291011.CNF;1
 Prep Batch: 1507497
 Prep Date: 09/17/2015 00:00

Client: CPRC001
 Date Collected: 09/16/2015 11:23
 Date Received: 09/17/2015 08:45
 Method: 901.1_GAMMA_GS
 Analyst: MJH1
 Aliquot: 2 L
 Prep Method: EPA 901.1

Project: CPRC0115038
 Matrix: WATER
 Prep Basis: "As Received"
 SOP Ref: GL-RAD-A-013
 Instrument: GAM25
 Count Time: 120 min

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	-1.82	pCi/L	+/-3.91	3.99	6.64	10.0
10198-40-0	Cobalt-60	U	2.86	pCi/L	+/-3.72	3.94	7.88	
14683-23-9	Europium-152	U	4.76	pCi/L	+/-11.2	11.4	19.9	
15585-10-1	Europium-154	U	1.32	pCi/L	+/-11.4	11.5	19.4	
14391-16-3	Europium-155	U	1.22	pCi/L	+/-11.5	11.5	19.5	

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

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

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**Certificate of Analysis
 Sample Summary**

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291011	Date Collected: 09/16/2015 11:23	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32BB7	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1508992	Analyst: GXR1	SOP Ref: GL-RAD-A-002
Run Date: 10/01/2015 16:03	Aliquot: 50 mL	Instrument: LSCORANGE
Data File: T1508992.xls	Prep Method: EPA 906.0 Modified	Count Time: 120.013 min
Prep Batch: 1508992		
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1700	pCi/L	+/-112	348	83.7	100

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).

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**Certificate of Analysis
Sample Summary**

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291014	Date Collected: 09/16/2015 08:50	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32BD0	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1510799	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 10/06/2015 07:37	Aliquot: 300 mL	Instrument: PIC4C
Data File: S1510799r2.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1510799		
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90		10300	pCi/L	+/-37.5	1610	0.779	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	7.40	8.10	mg	91.4	(25%-125%)

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).

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Certificate of Analysis

Sample Summary

SDG Number:	GEL381291	Client:	CPRC001	Project:	CPRC0115038
Lab Sample ID:	381291014	Date Collected:	09/16/2015 08:50	Matrix:	WATER
		Date Received:	09/17/2015 08:45		
Client ID:	B32BD0	Prep Basis:	"As Received"		
Batch ID:	1510859	Method:	BETA_GPC	SOP Ref:	GL-RAD-A-001
Run Date:	10/12/2015 07:56	Analyst:	JXB7	Instrument:	LB4100H1
Data File:	AB1510859r.xls	Aliquot:	40 mL	Count Time:	500 min
Prep Batch:	1510859	Prep Method:	EPA 900.0/SW846 9310		
Prep Date:	10/09/2015 10:16				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha ALPHA		25.1	pCi/L	+/-8.63	11.3	10.8	3.00
12587-47-2	Beta BETA		29500	pCi/L	+/-79.2	4780	5.66	4.00

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).

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**Certificate of Analysis
Sample Summary**

SDG Number: GEL381291
Lab Sample ID: 381291014

Client ID: B32BD0
Batch ID: 1507497
Run Date: 09/18/2015 06:29
Data File: G381291014.CNF;1
Prep Batch: 1507497
Prep Date: 09/17/2015 00:00

Client: CPRC001
Date Collected: 09/16/2015 08:50
Date Received: 09/17/2015 08:45

Method: 901.1_GAMMA_GS
Analyst: MJH1
Aliquot: 2 L
Prep Method: EPA 901.1

Project: CPRC0115038
Matrix: WATER

Prep Basis: "As Received"
SOP Ref: GL-RAD-A-013
Instrument: GAM33
Count Time: 120 min

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14234-35-6	Antimony-125	U	-5.98	pCi/L	+/-8.60	9.02	14.5	
13967-70-9	Cesium-134	U	1.34	pCi/L	+/-3.55	3.60	6.74	
10045-97-3	Cesium-137	U	3.64	pCi/L	+/-3.47	3.48	6.06	10.0
10198-40-0	Cobalt-60	U	0.930	pCi/L	+/-3.60	3.62	7.16	
14683-23-9	Europium-152	U	-5.01	pCi/L	+/-10.1	10.4	17.0	
15585-10-1	Europium-154	U	-3.65	pCi/L	+/-7.72	7.90	14.2	
14391-16-3	Europium-155	U	-4.52	pCi/L	+/-14.3	14.5	24.6	
13966-00-2	Potassium-40	U	5.70	pCi/L	+/-31.5	31.5	66.5	

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).

November 16, 2015

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**Certificate of Analysis
 Sample Summary**

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291014	Date Collected: 09/16/2015 08:50	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32BD0	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1508992	Analyst: GXR1	SOP Ref: GL-RAD-A-002
Run Date: 10/01/2015 18:05	Aliquot: 50 mL	Instrument: LSCORANGE
Data File: T1508992.xls	Prep Method: EPA 906.0 Modified	Count Time: 120.0296 min
Prep Batch: 1508992		
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		7240	pCi/L	+/-212	1420	81.7	100

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).

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Certificate of Analysis
Sample Summary

SDG Number: GEL381291	Client: CPRC001	Project: CPRC0115038
Lab Sample ID: 381291014	Date Collected: 09/16/2015 08:50	Matrix: WATER
	Date Received: 09/17/2015 08:45	
Client ID: B32BD0	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1508996	Analyst: MYM1	SOP Ref: GL-RAD-A-059
Run Date: 10/05/2015 15:17	Aliquot: 300 mL	Instrument: LSCSILVER
Data File: E1508996.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 45 min
Prep Batch: 1508996		
Prep Date: 09/30/2015 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		25.2	pCi/L	+/-5.25	5.95	7.94	15.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	12500	13400	CPM	93.4	(15%-125%)

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).

Quality Control Data

QC Summary

Report Date: October 14, 2015

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Client : CH2MHill Plateau Remediation Company
 MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352

Contact: Mr. Scot Fitzgerald

Workorder: 381291

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1508775								
QC1203396141	MB								
Plutonium-238			U	0.115	pCi/L			HAKB	09/25/1509:52
				Uncert:					
				TPU:					
Plutonium-239/240			U	0.00349	pCi/L				
				Uncert:					
				TPU:					
**Plutonium-242 Tracer	19.8			14.6	pCi/L	REC: 74	(15%-125%)		
				Uncert:					
				TPU:					
QC1203396142	381291007	DUP							
Plutonium-238		U	-0.0851	U	0.0462	pCi/L			
			Uncert:	+/-0.161	+/-0.257		RPD: 0	N/A	
			TPU:	+/-0.161	+/-0.257		RER: 0.847	(0-2)	
Plutonium-239/240		U	0.0198	U	-0.0213	pCi/L			
			Uncert:	+/-0.207	+/-0.184		RPD: 0	N/A	
			TPU:	+/-0.208	+/-0.184		RER: 0.291	(0-2)	
**Plutonium-242 Tracer	19.8	15.6		14.2	pCi/L	REC: 72	(15%-125%)		
				Uncert:	+/-2.33	+/-2.62			
				TPU:	+/-3.47	+/-3.86			
QC1203396143	LCS								
Plutonium-238			U	0.00	pCi/L				
				Uncert:	+/-0.162				
				TPU:	+/-0.162				
Plutonium-239/240	19.7			21.0	pCi/L	REC: 107	(80%-120%)		
				Uncert:	+/-2.55				
				TPU:	+/-3.84				
**Plutonium-242 Tracer	19.8			14.1	pCi/L	REC: 71	(15%-125%)		
				Uncert:	+/-2.48				
				TPU:	+/-3.67				
Batch	1508776								
QC1203396144	MB								
Uranium-233/234			U	0.251	pCi/L			HAKB	09/25/1509:50
				Uncert:	+/-0.571				
				TPU:	+/-0.573				
Uranium-235/236			U	0.304	pCi/L				
				Uncert:	+/-0.597				
				TPU:	+/-0.600				
Uranium-238			U	0.352	pCi/L				
				Uncert:	+/-0.559				
				TPU:	+/-0.563				
**Uranium-232 Tracer	21.2			11.0	pCi/L	REC: 52	(15%-125%)		
				Uncert:	+/-3.39				
				TPU:	+/-5.33				
QC1203396145	381291007	DUP							

GEL LABORATORIES LLC

Rev 1

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

QC Summary

Workorder: 381291

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1508776								
Uranium-233/234		2.04		1.80	pCi/L				
		Uncert:	+/-0.784	+/-0.867		RPD:	13 (0% - 100%)		
		TPU:	+/-0.849	+/-0.922		RER:	0.374 (0-2)		
Uranium-235/236	U	0.0915	U	0.243	pCi/L				
		Uncert:	+/-0.257	+/-0.417		RPD:	0 N/A		
		TPU:	+/-0.258	+/-0.419		RER:	0.605 (0-2)		
Uranium-238		0.853		1.60	pCi/L				
		Uncert:	+/-0.527	+/-0.823		RPD:	61 (0% - 100%)		
		TPU:	+/-0.544	+/-0.869		RER:	1.43 (0-2)		
**Uranium-232 Tracer	21.2	21.4		15.8	pCi/L	REC:	75 (15%-125%)		
		Uncert:	+/-2.47	+/-2.85					
		TPU:	+/-4.20	+/-4.66					
QC1203396146	LCS								
Uranium-233/234				29.2	pCi/L				09/25/1509:50
		Uncert:		+/-3.15					
		TPU:		+/-5.83					
Uranium-235/236				1.41	pCi/L				
		Uncert:		+/-0.799					
		TPU:		+/-0.834					
Uranium-238	27.2			27.5	pCi/L	REC:	101 (80%-120%)		
		Uncert:		+/-3.06					
		TPU:		+/-5.55					
**Uranium-232 Tracer	21.2			17.8	pCi/L	REC:	84 (15%-125%)		
		Uncert:		+/-2.68					
		TPU:		+/-4.46					
Rad Gamma Spec									
Batch	1507497								
QC1203392907	MB								
Antimony-125			U	3.43	pCi/L			MJH1	09/18/1506:32
		Uncert:		+/-6.31					
		TPU:		+/-6.50					
Cesium-134			U	1.62	pCi/L				
		Uncert:		+/-2.35					
		TPU:		+/-2.47					
Cesium-137			U	3.25	pCi/L				
		Uncert:		+/-2.40					
		TPU:		+/-2.82					
Cobalt-60			U	2.28	pCi/L				
		Uncert:		+/-2.54					
		TPU:		+/-2.75					
Europium-152			U	1.95	pCi/L				
		Uncert:		+/-6.75					
		TPU:		+/-6.81					
Europium-154			U	-0.577	pCi/L				
		Uncert:		+/-6.21					
		TPU:		+/-6.21					
Europium-155			U	-1.88	pCi/L				
		Uncert:		+/-7.80					
		TPU:		+/-7.85					
Potassium-40			U	-25.7	pCi/L				

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1507497								
		Uncert:		+/-30.6					
		TPU:		+/-32.8					
QC1203392908 380994002 DUP									
Antimony-125		U	-3.49	U	-0.297	pCi/L			09/18/1508:07
		Uncert:	+/-6.45		+/-7.71	RPD:	0	N/A	
		TPU:	+/-6.64		+/-7.71	RER:	0.615	(0-2)	
Cesium-134		U	0.724	U	-4.26	pCi/L			
		Uncert:	+/-2.89		+/-3.53	RPD:	0	N/A	
		TPU:	+/-2.91		+/-4.05	RER:	1.96	(0-2)	
Cesium-137		U	2.88	U	3.09	pCi/L			
		Uncert:	+/-2.84		+/-3.41	RPD:	0	N/A	
		TPU:	+/-2.85		+/-3.70	RER:	0.089	(0-2)	
Cobalt-60		U	0.719	U	-0.913	pCi/L			
		Uncert:	+/-2.56		+/-3.59	RPD:	0	N/A	
		TPU:	+/-2.58		+/-3.61	RER:	0.721	(0-2)	
Europium-152		U	5.72	U	7.15	pCi/L			
		Uncert:	+/-7.35		+/-9.32	RPD:	0	N/A	
		TPU:	+/-7.80		+/-9.89	RER:	0.223	(0-2)	
Europium-154		U	-1.08	U	8.24	pCi/L			
		Uncert:	+/-6.94		+/-8.31	RPD:	0	N/A	
		TPU:	+/-6.96		+/-9.12	RER:	1.59	(0-2)	
Europium-155		U	-2.7	U	1.49	pCi/L			
		Uncert:	+/-9.22		+/-12.7	RPD:	0	N/A	
		TPU:	+/-9.31		+/-12.7	RER:	0.521	(0-2)	
Potassium-40		U	19.2	U	17.9	pCi/L			
		Uncert:	+/-36.7		+/-45.0	RPD:	0	N/A	
		TPU:	+/-37.8		+/-45.7	RER:	0.0426	(0-2)	
QC1203392910 LCS									
Americium-241	34400				35100	pCi/L	REC:	102 (80%-120%)	09/18/1506:57
		Uncert:			+/-1010				
		TPU:			+/-2840				
Antimony-125				U	7.96	pCi/L			
		Uncert:			+/-228				
		TPU:			+/-228				
Cesium-134				U	-96	pCi/L			
		Uncert:			+/-110				
		TPU:			+/-119				
Cesium-137	13700				13700	pCi/L	REC:	100 (80%-120%)	
		Uncert:			+/-331				
		TPU:			+/-1140				
Cobalt-60	14900				15200	pCi/L	REC:	102 (80%-120%)	
		Uncert:			+/-382				
		TPU:			+/-1290				
Europium-152				U	34.7	pCi/L			
		Uncert:			+/-251				
		TPU:			+/-252				
Europium-154				U	-67.1	pCi/L			
		Uncert:			+/-165				
		TPU:			+/-168				
Europium-155				U	55.7	pCi/L			

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1507497								
				Uncert:		+/-237			
				TPU:		+/-238			
Potassium-40			U	127	pCi/L				
				Uncert:		+/-261			
				TPU:		+/-267			
Rad Gas Flow									
Batch	1510799								
QC1203401362	MB								
Strontium-90			U	0.0212	pCi/L			KSD1	10/06/1512:00
				Uncert:		+/-0.343			
				TPU:		+/-0.343			
**Strontium Carrier		8.10		7.40	mg	REC:	91 (25%-125%)		
QC1203401363	381291005	DUP							
Strontium-90			320	318	pCi/L				10/06/1507:37
			Uncert:	+/-6.65		+/-6.60	RPD:	1 (0% - 20%)	
			TPU:	+/-53.2		+/-51.5	RER:	0.0612 (0-2)	
**Strontium Carrier		8.10	7.60	7.60	mg	REC:	94 (25%-125%)		
QC1203401364	LCS								
Strontium-90		72.4		70.0	pCi/L	REC:	97 (80%-120%)		10/02/1510:08
			Uncert:	+/-3.96					
			TPU:	+/-11.6					
**Strontium Carrier		8.10		7.20	mg	REC:	89 (25%-125%)		
Batch	1510859								
QC1203401597	MB								
Alpha			U	-0.00937	pCi/L			JXB7	10/10/1515:17
				Uncert:		+/-1.21			
				TPU:		+/-1.21			
Beta			U	-1.55	pCi/L				
				Uncert:		+/-1.17			
				TPU:		+/-1.17			
QC1203401598	381659003	DUP							
Alpha		U	-0.27	U	-2.24	pCi/L			10/14/1509:49
			Uncert:	+/-3.60		+/-3.10	RPD:	0 N/A	
			TPU:	+/-4.32		+/-3.49	RER:	0.693 (0-2)	
Beta			457	479	pCi/L				
			Uncert:	+/-13.9		+/-14.4	RPD:	5 (0% - 20%)	
			TPU:	+/-75.3		+/-78.7	RER:	0.386 (0-2)	
QC1203401599	381659003	MS							
Alpha		240	U	-0.27	296	pCi/L	REC:	124 (75%-125%)	10/13/1517:01
			Uncert:	+/-3.60		+/-28.3			
			TPU:	+/-4.32		+/-56.0			
Beta		868		457	1480	pCi/L	REC:	118 (75%-125%)	
			Uncert:	+/-13.9		+/-44.6			
			TPU:	+/-75.3		+/-251			
QC1203401600	381659003	MSD							
Alpha		240	U	-0.27	232	pCi/L	REC:	97 (75%-125%)	10/10/1515:13
			Uncert:	+/-3.60		+/-24.1	RPD:	24* (0%-20%)	
			TPU:	+/-4.32		+/-47.5	RER:	1.71 (0-2)	
Beta		868		457	1530	pCi/L	REC:	124 (75%-125%)	
			Uncert:	+/-13.9		+/-44.9	RPD:	3 (0%-20%)	

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch	1510859								
		TPU:	+/-75.3	+/-260					
						RER:	0.276 (0-2)		
QC1203401601 LCS									
Alpha	79.9			77.4	pCi/L	REC:	97 (80%-120%)		10/10/1515:13
		Uncert:		+/-7.73					
		TPU:		+/-14.9					
Beta	289			342	pCi/L	REC:	118 (80%-120%)		
		Uncert:		+/-12.1					
		TPU:		+/-56.8					
Rad Liquid Scintillation									
Batch	1508992								
QC1203396673 MB									
Tritium			U	-40.2	pCi/L			GXR1	10/02/1515:46
		Uncert:		+/-42.5					
		TPU:		+/-42.5					
QC1203396674 381502003 DUP									
Tritium		U	6.77 U	3.00	pCi/L				10/02/1517:48
		Uncert:	+/-46.0	+/-45.8		RPD:	0 N/A		
		TPU:	+/-46.1	+/-45.8		RER:	0.114 (0-2)		
QC1203396675 381502003 MS									
Tritium	1800	U	6.77	1710	pCi/L	REC:	95 (75%-125%)		10/02/1519:51
		Uncert:	+/-46.0	+/-297					
		TPU:	+/-46.1	+/-444					
QC1203396676 LCS									
Tritium	1800			1610	pCi/L	REC:	90 (80%-120%)		10/02/1520:08
		Uncert:		+/-293					
		TPU:		+/-428					
Batch	1508996								
QC1203396689 MB									
Technetium-99			U	-0.345	pCi/L			MYM1	10/05/1518:30
		Uncert:		+/-4.59					
		TPU:		+/-4.59					
**Technetium-99m Tracer	13400			12400	CPM	REC:	93 (15%-125%)		
QC1203396690 381501001 DUP									
Technetium-99		U	6.97 U	-0.23	pCi/L				10/05/1519:18
		Uncert:	+/-6.84	+/-6.79		RPD:	0 N/A		
		TPU:	+/-6.89	+/-6.79		RER:	1.46 (0-2)		
**Technetium-99m Tracer	13400		12800	12600	CPM	REC:	95 (15%-125%)		
QC1203396691 LCS									
Technetium-99	287			244	pCi/L	REC:	85 (80%-120%)		10/05/1520:06
		Uncert:		+/-8.88					
		TPU:		+/-28.5					
**Technetium-99m Tracer	13400			12800	CPM	REC:	96 (15%-125%)		

Notes:

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

The Qualifiers in this report are defined as follows:

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
*						Duplicate analysis not within control limits				
+						Correlation coefficient for Method of Standard Additions (MSA) is < 0.995				
<						Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide				
>						Result greater than quantifiable range or greater than upper limit of the analysis range				
A						The TIC is a suspected aldol-condensation product				
B						The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).				
B						The analyte was detected in both the associated QC blank and in the sample.				
B						The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample				
C						Analyte has been confirmed by GC/MS analysis				
C						Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.				
D						Results are reported from a diluted aliquot of sample.				
E						Concentration exceeds the calibration range of the instrument				
E						Reported value is estimated due to interferences. See comment in narrative.				
J						The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated				
M						Duplicate precision not met.				
N						Spike Sample recovery is outside control limits.				
P						Aroclor target analyte with greater than 25% difference between column analyses.				
S						Reported value determined by the Method of Standard Additions (MSA)				
T						Spike and/or spike duplicate sample recovery is outside control limits.				
U						Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.				
UX						Gamma Spectroscopy--Uncertain identification				
W						Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.				
X						Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier				
Y						Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier				
Z						Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier				
o						Analyte failed to recover within LCS limits (Organics only)				

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

** Indicates analyte is a surrogate compound.

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

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

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