



June 29, 2017

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

Re: CHPRC SAF S17-006
Work Order: 424707
SDG: GEL424707

Dear Mr. Fitzgerald:

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

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

Sincerely,

B Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 300071 - 7H
Chain of Custody: S17-006-233, S17-006-234, S17-006-262, S17-006-263, S17-006-264, S17-006-551,
S17-006-556, S17-006-572 and S17-006-576
Enclosures



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Case Narrative

June 29, 2017

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S17-006
SDG: GEL424707

June 29, 2017

Laboratory Identification:

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

Summary

Sample receipt

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

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

Sample Identification

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
424707001	B39RR4
424707002	B39RR5
424707003	B39TH1
424707004	B39TH9
424707005	B39TK2
424707006	B39X21
424707007	B39X26
424707008	B39XK6
424707009	B39XK7

Case Narrative

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

June 29, 2017

Data Package

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

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


Brielle Luthman for
Heather Shaffer
Project Manager

June 29, 2017

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL424707
Work Order #: 424707

GC/MS Volatile

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

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

Quality Control (QC) Information

Matrix Spike/Matrix Spike Duplicate Recovery Statement

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

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

Metals

Determination of Metals by ICP-MS

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

Radiochemistry

PUISO_PRECIP_AEA:COMMON

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

Miscellaneous Information

I129LL_SEP_LEPS_GS: COMMON (low level)

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

GAMMA_GS:COMMON + GW 01

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

9310_ALPHABETA_GPC: Gross Beta

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

Technical Information

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.

Miscellaneous Information

Additional Comments

The matrix spike and matrix spike duplicate, 1203806626 (B39TH9MS) and 1203806627 (B39TH9MSD), aliquots were reduced to conserve sample volume.

PU241_IE_LSC: COMMON

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

Miscellaneous Information

SE79_SEP_IE_LSC: COMMON

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

TC99_EIE_LSC: COMMON

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

C14_LSC: COMMON

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

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2M Hill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C. # **S17-006-233**
 Page 1 of 1

424707
 Telephone No. 509-376-4650
 Purchase Order/Charge Code 300071
 Ice Chest No. GWS-324
 Bill of Lading/Air Bill No. 779305233754
 Offsite Property No. 7986

Contact/Requester Karen Waters-Husted
 Sampling Origin Hanford Site
 Logbook No. HNF-N-506 88/65
 Method of Shipment Commercial Carrier
 Priority: 30 Days **PRIORITY**
 SPECIAL INSTRUCTIONS Hold Time
 N/A

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
B39RR4	N	W	6-5-17	0953	1x1-L P	9310_ALPHA BETA_GPC: Gross Beta	6 Months	HNO3 to pH <2
B39RR4	N	W			1x500-mL G/P	C14_LSC: COMMON	6 Months	None
B39RR4	N	W			4x1-L G/P	GAMMA_GS: COMMON; GAMMA_GS: GW 01	6 Months	HNO3 to pH <2
B39RR4	N	W			1x500-mL G/P	SE79_SEP_IE_LSC: COMMON	6 Months	HNO3 to pH <2
B39RR4	N	W	6-5-17	0953	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 *
Juan Aguilar /CHPRC			JUN 05 2017 1052	Leah Wall /CHPRC			JUN 05 2017 1052	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
Juan Aguilar /CHPRC			JUN 05 2017 1400	FEDEX				
Juan Aguilar /CHPRC			JUN 05 2017 1400	Received By	FEDEX		6-6-17 9:05	
Juan Aguilar /CHPRC			JUN 05 2017 1400	Received By	FEDEX		6-6-17 9:05	

Disposal Method (e.g., Return to customer, per lab procedure, used in process)
 Disposed By
 Date/Time
FINAL SAMPLE DISPOSITION
 PRINTED ON 5/15/2017
 FSR ID = FSR22287
 A-6004-842 (REV 2)

June 29, 2017

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 424707		C.O.C. # S17-006-262
Collector Dave Wight CHPRC	S17-006	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650	Page 1 of 1
SAF No.	SURV, JUNE 2017	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071	
Project Title	GEL Laboratories, LLC	Logbook No. HNF-N-506 93/45	Ice Chest No. 665-324	
Shipped To (Lab)	SURV	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 799305233754	
Protocol	SURV	Priority: 30 Days	Offsite Property No. 7986	
POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1		SPECIAL INSTRUCTIONS N/A		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Sample No.	Filter	Date	Time	No./Type Container
B39TH1	N	JUN 02 2017	1351	1x500-mL G/P
				6020_METALS_ICPMS: Uranium (1)
				Sample Analysis
				Holding Time
				6 Months
				Preservative
				HNO3 to pH <2

Relinquished By Dave Wight CHPRC	Print	Sign	Date/Time JUN 02 2017 1440	Received By SSO#1	Print	Sign	Date/Time JUN 02 2017 1440
Relinquished By SSO#1			Date/Time JUN 05 2017 0730	Received By Frank Hill CHPRC			Date/Time JUN 05 2017 0730
Relinquished By Frank Hill CHPRC			Date/Time JUN 05 2017 1400	Received By FEDEX			Date/Time
Relinquished By			Date/Time FED EX	Received By Stacy Boone			Date/Time 6-6-17 9:05
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time	

June 29, 2017

CH2MHHI Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 424707
 C.O.C. # **S17-006-263**
 Page 1 of 1

Collector: CHRIS FULTON
 Contact/Requester: Karen Waters-Husted
 Telephone No. 509-376-4650
 SAF No. S17-006
 Sampling Origin: Hanford Site
 Purchase Order/Charge Code: 300071
 Project Title: SURV, JUNE 2017
 Logbook No. HNF-N-506 92186
 Ice Chest No. 605-324
 Shipped To (Lab): GEL Laboratories, LLC
 Method of Shipment: Commercial Carrier
 Bill of Lading/Air Bill No. 799305233754
 Protocol: SURV
 Priority: 30 Days
 SPECIAL INSTRUCTIONS: **PRIORITY**
 Offsite Property No. 7986
 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
B39TH9	N	6-02-17	1340	1x500-ml G/P	6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B39TH9	N	6-02-17	1340	1x1-LP	9310_ALPHABETA_GPC: Gross Alpha	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
CHRIS FULTON			JUN 02 2017 1525	SSU-1			JUN 02 2017 1525	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			JUN 05 2017 0730	Frank Hill /CHPRC			JUN 05 2017 0730	
Relinquished By			JUN 05 2017 1400	FEDEX			JUN 05 2017 1400	
Relinquished By			JUN 05 2017 1400	FEDEX			JUN 05 2017 1400	
Relinquished By			JUN 05 2017 1400	FEDEX			JUN 05 2017 1400	

FINAL SAMPLE DISPOSITION
 Disposal Method (e.g., Return to customer, per lab procedure, used in process)
 Disposed By: Stacy Boone
 Date/Time: 6-6-17 9:05
 FSR ID = FSR44291
 A-6004-842 (REV 2)

June 29, 2017

CH2M Hill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 424707
 C.O.C. # **S17-006-264**
 Page 1 of 1

Collector: CHRIS FULTON
 SAF No. S17-006
 Project Title: SURV, JUNE 2017
 Shipped To (Lab): GEL Laboratories, LLC
 Protocol: SURV
 Contact/Requester: Karen Waters-Husted
 Sampling Origin: Hanford Site
 Logbook No. HNF-N-506.92.186
 Method of Shipment: Commercial Carrier
 Priority: 30 Days
 Telephone No. 509-376-4650
 Purchase Order/Charge Code: 300071
 Ice Chest No. GWS-324
 Bill of Lading/Air Bill No. 1719305233784
 Offsite Property No. 17986

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

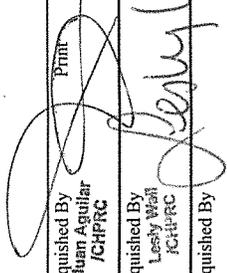
Special Instructions: N/A
 Hold Time: 14 Days
 Holding Time: 14 Days
 Preservative: HCl or H2SO4 to pH <2/Cool <=6C

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Hold Time	Hold Time	Preservative
B39TK2	N	6-02-17	1443	5x40-mL aGs*	8260_VOA_GCMS: COMMON	14 Days	14 Days	HCl or H2SO4 to pH <2/Cool <=6C

Requisitioned By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
CHRIS FULTON CHPRC			JUN 02 2017	SSU-1			JUN 02 2017	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
SSU-1			JUN 05 2017 0730	Frank Hall CHPRC			JUN 05 2017 0730	
SSU-1			JUN 05 2017 1400	FEDEX			JUN 05 2017 1400	
Final Sample Disposition	Disposal Method (e.g., Return to customer, per lab procedure, used in process)						Disposed By	Date/Time
PRINTED ON	4/26/2017						Disposal Method	6/16/17 9:05

June 29, 2017

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 424707		C.O.C.# S17-006-551 Page 1 of 1.
Collector Juan Aguilar /CHPRC	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650		
SAF No. S17-006	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071		
Project Title SURV, JUNE 2017	Logbook No. HNF-N-506 88/69	Ice Chest No. 605-317		
Shipped To (Lab) GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 779305233548		
Protocol SURV	Priority: 30 Days	Offsite Property No. 7986		
POSSIBLE SAMPLE HAZARDS/REMARKS ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1		SPECIAL INSTRUCTIONS N/A	Hold Time	Total Activity Exemption: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Sample No. B39X21	Filter N	Date 6-5-17	Time 1038	No/Type Container 4x1-L G/P
	* W			Sample Analysis 1129LL_SEP_LEPS_GS_LL: COMMON
				Holding Time 6 Months
				Preservative None

Relinquished By Juan Aguilar /CHPRC	Print 	Sign JUN 05 2017	Date/Time 1052	Received By Lesly Wall /CHPRC	Print 	Sign JUN 05 2017	Date/Time 1052	Matrix * S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By Lesly Wall /CHPRC	Print 	Sign JUN 05 2017	Date/Time 1400	Received By FEDEX	Print FEDEX	Sign JUN 05 2017	Date/Time 1400		
Relinquished By Lesly Wall /CHPRC	Print 	Sign JUN 05 2017	Date/Time 1400	Received By STACY BOONE	Print STACY BOONE	Sign JUN 05 2017	Date/Time 9:05		
Relinquished By Lesly Wall /CHPRC	Print 	Sign JUN 05 2017	Date/Time 1400	Received By FEDEX	Print FEDEX	Sign JUN 05 2017	Date/Time 1400		

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # S17-006-556

Page 1 of 1

424707

Collector: Juan Aguilar /CHPRC
 Contact/Requester: Karen Waters-Husted
 Telephone No. 509-376-4650
 SAF No. S17-006
 Sampling Origin: Hanford Site
 Purchase Order/Charge Code: 300071
 Project Title: SURV, JUNE 2017
 Logbook No. HNF-N-506 88/69
 Ice Chest No. GWS-324
 Shipped To (Lab): GEL Laboratories, LLC
 Method of Shipment: Commercial Carrier
 Bill of Lading/Air Bill No. 97930523 3754
 Protocol: SURV
 Priority: 30 Days
 Priority: **PRIORITY**
 Offsite Property No. 7986

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

SPECIAL INSTRUCTIONS: N/A
 Hold Time: 6 Months
 Holding Time: 6 Months
 Preservative: HNO3 to pH <2
 Total Activity Exemption: Yes No

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39X26	N	W	6-5-17	0853	1X1-L GIP	PU241_IE_LSC: COMMON; PUISO_IE_PRECIP_AEA: COMMON	6 Months	HNO3 to pH <2
B39X26	N	W	6-5-17	0853	4X1-L GIP	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None

Relinquished By: Juan Aguilar /CHPRC Signature: [Signature] Date/Time: JUN 05 2017 1052	Received By: Lesly Wall /CHPRC Signature: [Signature] Date/Time: JUN 05 2017 1052	Matrix * S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By: Juan Aguilar /CHPRC Signature: [Signature] Date/Time: JUN 05 2017 1400	Received By: FEDEX Date/Time: JUN 05 2017 9:05	
Relinquished By: Juan Aguilar /CHPRC Signature: [Signature] Date/Time: JUN 05 2017 1400	Received By: Stacy Boome Date/Time: 6-6-17 9:05	
Relinquished By: Juan Aguilar /CHPRC Signature: [Signature] Date/Time: JUN 05 2017 1400	Received By: [Signature] Date/Time: [Signature]	

Disposal Method (e.g., Return to customer, per lab procedure, used in process):
 Disposed By: Stacy Boome
 Date/Time: 6-6-17 9:05

FINAL SAMPLE DISPOSITION: [Signature]
 Date/Time: [Signature]

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

June 29, 2017

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C.# S17-006-572
Larry Rosane FCHPRC		424707				Page 1 of 1
Collector	S17-006	Contact/Requester	Karen Waters-Husted		Telephone No.	509-376-4650
SAF No.	SURV, JUNE 2017	Sampling Origin	Hanford Site		Purchase Order/Charge Code	300071
Project Title	GEL Laboratories, LLC	Logbook No.	HNF-N-506 92187		Ice Chest No.	ESCS-317
Shipped To (Lab)	SURV	Method of Shipment	Commercial Carrier		Bill of Lading/Air Bill No.	7986
Protocol	SURV	Priority:	30 Days		Offsite Property No.	7986
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS		Hold Time		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
*** 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		N/A				
Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time
B39XK6	N	W 6-5-17	1041	1X1-L G/P	PU241_IE_LSC: COMMON; PUISO_IE_PRECIP_AEA: COMMON	6 Months
				Preservative		HNO3 to pH <2

Relinquished By Larry Rosane FCHPRC	Print Larry Rosane	Sign <i>[Signature]</i>	Date/Time JUN 05 2017 1215	Received By Frank Hild FCHPRC	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time JUN 05 2017 1215	Matrix *
Relinquished By Frank Hild FCHPRC	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time JUN 05 2017 1400	Received By FEDEX	Print FEDEX	Sign <i>[Signature]</i>	Date/Time JUN 05 2017 9105	S = Soil
Relinquished By CED EX	Print CED EX	Sign <i>[Signature]</i>	Date/Time JUN 05 2017 9105	Received By 158 STACY BOONE	Print 158 STACY BOONE	Sign <i>[Signature]</i>	Date/Time 6-6-17 9105	SE = Sediment
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	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
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By		Date/Time	
PRINTED ON 4/26/2017		FSR ID = FSR44243			A-6004-842 (REV 2)			

June 29, 2017



SAMPLE RECEIPT & REVIEW FORM

Client: CPRC		SDG/AR/COC/Work Order: 424707		
Received By: <i>Steph Boon</i>		Date Received: 6 JUNE -17		
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other 7793 0523 3548-1c 7793 0523 3754-1c		
Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?		<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?		<input checked="" type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: <u>HAZ</u>	
Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Wet Ice</u> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: _____
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: <u>1R3-17</u> Secondary Temperature Device Serial # (If Applicable):
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's and Containers Affected: If Preservation added, Lot#:
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>			If Yes, Are Encores or Soil Kits present? Yes ___ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No ___ N/A (If unknown, select No) VOA vials free of headspace? Yes <input checked="" type="checkbox"/> No ___ N/A Sample ID's and containers affected:
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
12 Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
Comments (Use Continuation Form if needed):				

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

GL-CHL-SR-001 Rev 5

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol-condensation product	Organics	Semi-Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (Organics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy--Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 29 June 2017

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

Volatile Analysis

Case Narrative

June 29, 2017

GC/MS Volatile

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL424707

Work Order #: 424707

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

Analytical Method: SW846 8260C

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

Analytical Batch: 1671888

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
424707005	B39TK2
1203806005	Method Blank (MB)
1203806006	Laboratory Control Sample (LCS)
1203806007	424245003(NonSDG) Post Spike (PS)
1203806008	424245003(NonSDG) Post Spike Duplicate (PSD)

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

Data Summary:

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

Quality Control (QC) Information

Matrix Spike/Matrix Spike Duplicate Recovery Statement

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

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

Certification Statement

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

June 29, 2017

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL424707 GEL Work Order: 424707

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.

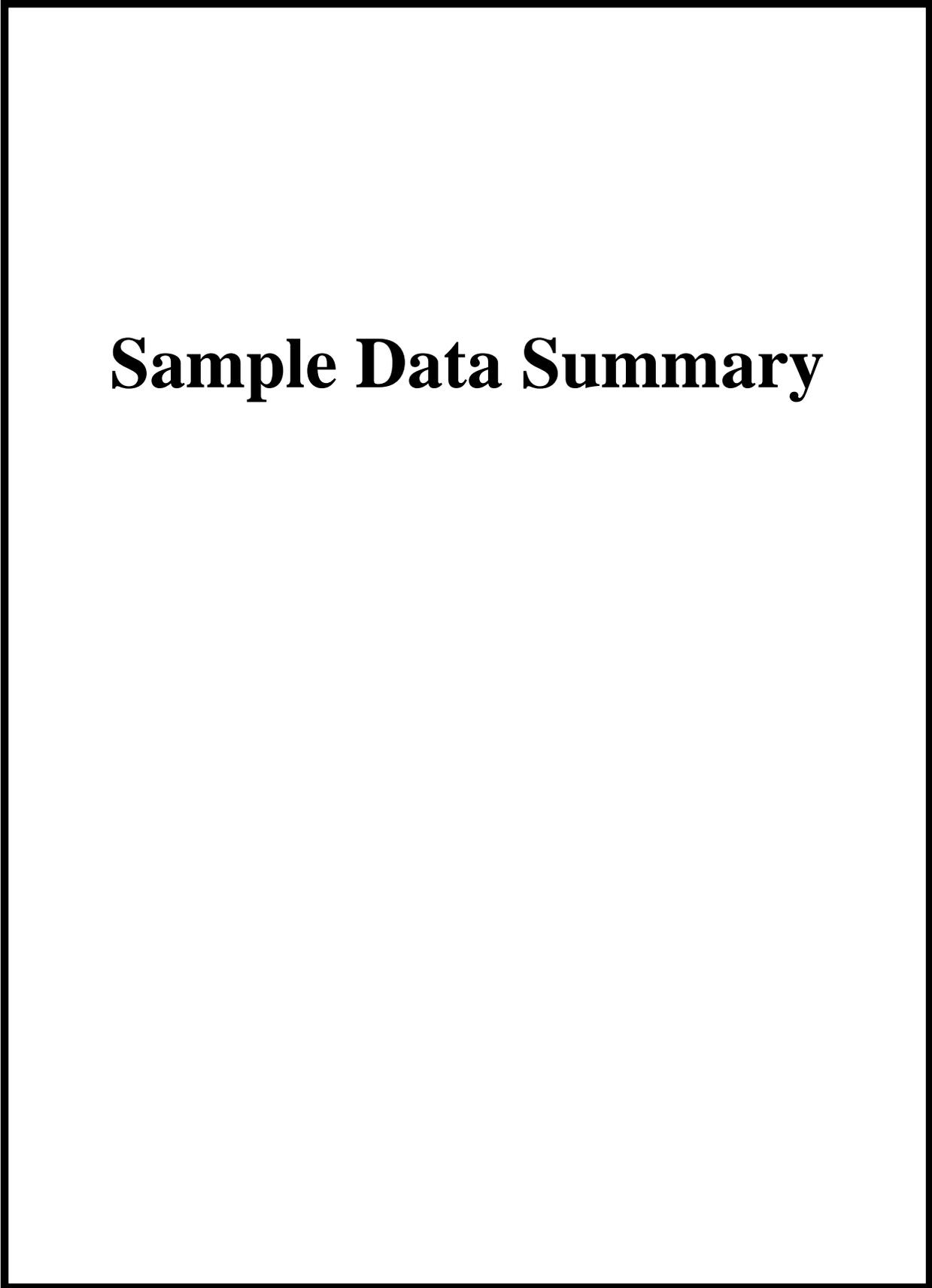
The following data validator verified the information presented in this data report:

Signature: 

Name: Erin Haubert

Date: 25 JUN 2017

Title: Data Validator



Sample Data Summary

June 29, 2017

Volatile

Page 1 of 1

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Date Collected: 06/02/2017 14:43	Matrix: WATER
Lab Sample ID: 424707005	Date Received: 06/06/2017 09:00	
	Client: CPRC001	Project: CPRC0S17006
Client ID: B39TK2	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Batch ID: 1671888	Inst: VOA3.I	Dilution: 1
Run Date: 06/07/2017 19:37	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/07/2017 19:37		
Data File: 060717V3\3G320.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	J	1.00	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0

Quality Control Summary

June 29, 2017

GEL LABORATORIES LLC

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QC Summary

Report Date: June 25, 2017

Page 1 of 7

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 424707

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1671888										
QC1203806006	LCS										
1,1,1-Trichloroethane	50.0			48.3	ug/L		97	(70%-130%)	VXY1	06/07/17	10:56
1,1,2-Trichloroethane	50.0			48.6	ug/L		97	(70%-130%)			
1,1-Dichloroethane	50.0			51.1	ug/L		102	(70%-130%)			
1,1-Dichloroethylene	50.0			46.5	ug/L		93	(70%-130%)			
1,2-Dichloroethane	50.0			46.9	ug/L		94	(70%-130%)			
2-Butanone	250			264	ug/L		106	(70%-130%)			
4-Methyl-2-pentanone	250			233	ug/L		93	(70%-130%)			
Acetone	250			273	ug/L		109	(70%-130%)			
Benzene	50.0			46.1	ug/L		92	(70%-130%)			
Carbon disulfide	250			231	ug/L		92	(70%-130%)			
Carbon tetrachloride	50.0			48.2	ug/L		96	(70%-130%)			
Chlorobenzene	50.0			47.4	ug/L		95	(70%-130%)			
Chloroform	50.0			46.2	ug/L		92	(70%-130%)			

June 29, 2017

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QC Summary

Workorder: 424707

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1671888										
Ethylbenzene	50.0			45.1	ug/L		90	(70%-130%)	VXY1	06/07/17	10:56
Methylene chloride	50.0			44.4	ug/L		89	(70%-130%)			
Tetrachloroethylene	50.0			46.0	ug/L		92	(70%-130%)			
Toluene	50.0			48.1	ug/L		96	(70%-130%)			
Trichloroethylene	50.0			49.1	ug/L		98	(70%-130%)			
Vinyl chloride	50.0			45.7	ug/L		91	(70%-130%)			
Xylenes (total)	150			141	ug/L		94	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			44.1	ug/L		88	(70%-130%)			
**Bromofluorobenzene	50.0			53.7	ug/L		107	(70%-130%)			
**Toluene-d8	50.0			46.9	ug/L		94	(70%-130%)			
QC1203806005	MB										
1,1,1-Trichloroethane			U	0.300	ug/L					06/07/17	12:28
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						

June 29, 2017

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QC Summary

Workorder: 424707

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1671888										
2-Butanone			U	3.00	ug/L				VXY1	06/07/17	12:28
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Ethylbenzene			U	0.300	ug/L						
Methylene chloride			U	1.60	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						

June 29, 2017

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QC Summary

Workorder: 424707

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1671888											
**1,2-Dichloroethane-d4	50.0			46.7	ug/L		93	(70%-130%)	VXY1	06/07/17	12:28
**Bromofluorobenzene	50.0			49.7	ug/L		99	(70%-130%)			
**Toluene-d8	50.0			50.9	ug/L		102	(70%-130%)			
QC1203806007 424245003 PS											
1,1,1-Trichloroethane	50.0	U	0.00	40.5	ug/L		81	(70%-130%)		06/07/17	20:08
1,1,2-Trichloroethane	50.0	U	0.00	49.5	ug/L		99	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00	46.8	ug/L		94	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00	41.6	ug/L		83	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	44.5	ug/L		89	(70%-130%)			
2-Butanone	250	TU	0.00 T	154	ug/L		62*	(70%-130%)			
4-Methyl-2-pentanone	250	U	0.00	224	ug/L		89	(70%-130%)			
Acetone	250	TU	0.00 T	101	ug/L		40*	(70%-130%)			
Benzene	50.0	U	0.00	44.4	ug/L		89	(70%-130%)			
Carbon disulfide	250	U	0.00	224	ug/L		89	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00	41.6	ug/L		83	(70%-130%)			
Chlorobenzene	50.0	U	0.00	46.6	ug/L		93	(70%-130%)			

June 29, 2017

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QC Summary

Workorder: 424707

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1671888										
Chloroform	50.0	J	0.310	42.6	ug/L		85	(70%-130%)	VXY1	06/07/17	20:08
Ethylbenzene	50.0	U	0.00	47.1	ug/L		94	(70%-130%)			
Methylene chloride	50.0	U	0.00	43.1	ug/L		86	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00	42.9	ug/L		86	(70%-130%)			
Toluene	50.0	U	0.00	46.8	ug/L		94	(70%-130%)			
Trichloroethylene	50.0	J	3.88	47.4	ug/L		87	(70%-130%)			
Vinyl chloride	50.0	U	0.00	42.7	ug/L		85	(70%-130%)			
Xylenes (total)	150	U	0.00	136	ug/L		91	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		44.3	38.5	ug/L		77	(70%-130%)			
**Bromofluorobenzene	50.0		48.8	49.3	ug/L		99	(70%-130%)			
**Toluene-d8	50.0		46.7	47.2	ug/L		94	(70%-130%)			
QC1203806008 424245003 PSD											
1,1,1-Trichloroethane	50.0	U	0.00	43.7	ug/L	8	87	(0%-20%)		06/07/17	20:38
1,1,2-Trichloroethane	50.0	U	0.00	48.0	ug/L	3	96	(0%-20%)			
1,1-Dichloroethane	50.0	U	0.00	46.5	ug/L	1	93	(0%-20%)			
1,1-Dichloroethylene	50.0	U	0.00	42.9	ug/L	3	86	(0%-20%)			

June 29, 2017

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QC Summary

Workorder: 424707

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1671888											
1,2-Dichloroethane	50.0	U	0.00		45.0	ug/L	1	90	(0%-20%)	VXY1	06/07/17 20:38
2-Butanone	250	TU	0.00	T	148	ug/L	4	59*	(0%-20%)		
4-Methyl-2-pentanone	250	U	0.00		214	ug/L	4	86	(0%-20%)		
Acetone	250	TU	0.00	T	108	ug/L	7	43*	(0%-20%)		
Benzene	50.0	U	0.00		44.4	ug/L	0	89	(0%-20%)		
Carbon disulfide	250	U	0.00		218	ug/L	3	87	(0%-20%)		
Carbon tetrachloride	50.0	U	0.00		43.1	ug/L	4	86	(0%-20%)		
Chlorobenzene	50.0	U	0.00		44.4	ug/L	5	89	(0%-20%)		
Chloroform	50.0	J	0.310		44.6	ug/L	4	89	(0%-20%)		
Ethylbenzene	50.0	U	0.00		42.1	ug/L	11	84	(0%-20%)		
Methylene chloride	50.0	U	0.00		43.0	ug/L	0	86	(0%-20%)		
Tetrachloroethylene	50.0	U	0.00		42.0	ug/L	2	84	(0%-20%)		
Toluene	50.0	U	0.00		44.7	ug/L	4	89	(0%-20%)		
Trichloroethylene	50.0	J	3.88		47.3	ug/L	0	87	(0%-20%)		
Vinyl chloride	50.0	U	0.00		43.7	ug/L	2	87	(0%-20%)		

June 29, 2017

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QC Summary

Workorder: 424707

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Table with columns: Parmname, NOM, Sample, Qual, QC, Units, RPD%, REC%, Range, Anlst, Date, Time. Rows include Volatile-GC/MS, Xylenes (total), **1,2-Dichloroethane-d4, **Bromofluorobenzene, and **Toluene-d8.

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.

June 29, 2017
 Volatile
 Surrogate Recovery Report

SDG Number: GEL424707

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203806006	LCS for batch 1671888	88	94	107
1203806005	MB for batch 1671888	93	102	99
424707005	B39TK2	84	92	87
1203806007	B39FH3PS	77	94	99
1203806008	B39FH3PSD	80	90	101

Surrogate**Acceptance Limits**

DCED4 = 1,2-Dichloroethane-d4

(70%-130%)

TOL = Toluene-d8

(70%-130%)

BFB = Bromofluorobenzene

(70%-130%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Metals Analysis

Case Narrative

June 29, 2017

Metals

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL424707

Work Order #: 424707

Product: Determination of Metals by ICP-MS

Analytical Method: SW846 3005A/6020B

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

Analytical Batch: 1671607

Preparation Method: SW846 3005A

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

Preparation Batch: 1671606

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
424707003	B39TH1
424707004	B39TH9
1203805188	Method Blank (MB)ICP-MS
1203805189	Laboratory Control Sample (LCS)
1203805192	424705005(NonSDGL) Serial Dilution (SD)
1203805190	424705005(NonSDGS) Matrix Spike (MS)
1203805191	424705005(NonSDGSD) Matrix Spike Duplicate (MSD)

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

Data Summary:

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

Calibration Information

ICSA/ICSAB Statement

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

Certification Statement

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

June 29, 2017

GEL LABORATORIES LLC

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

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL424707 GEL Work Order: 424707

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

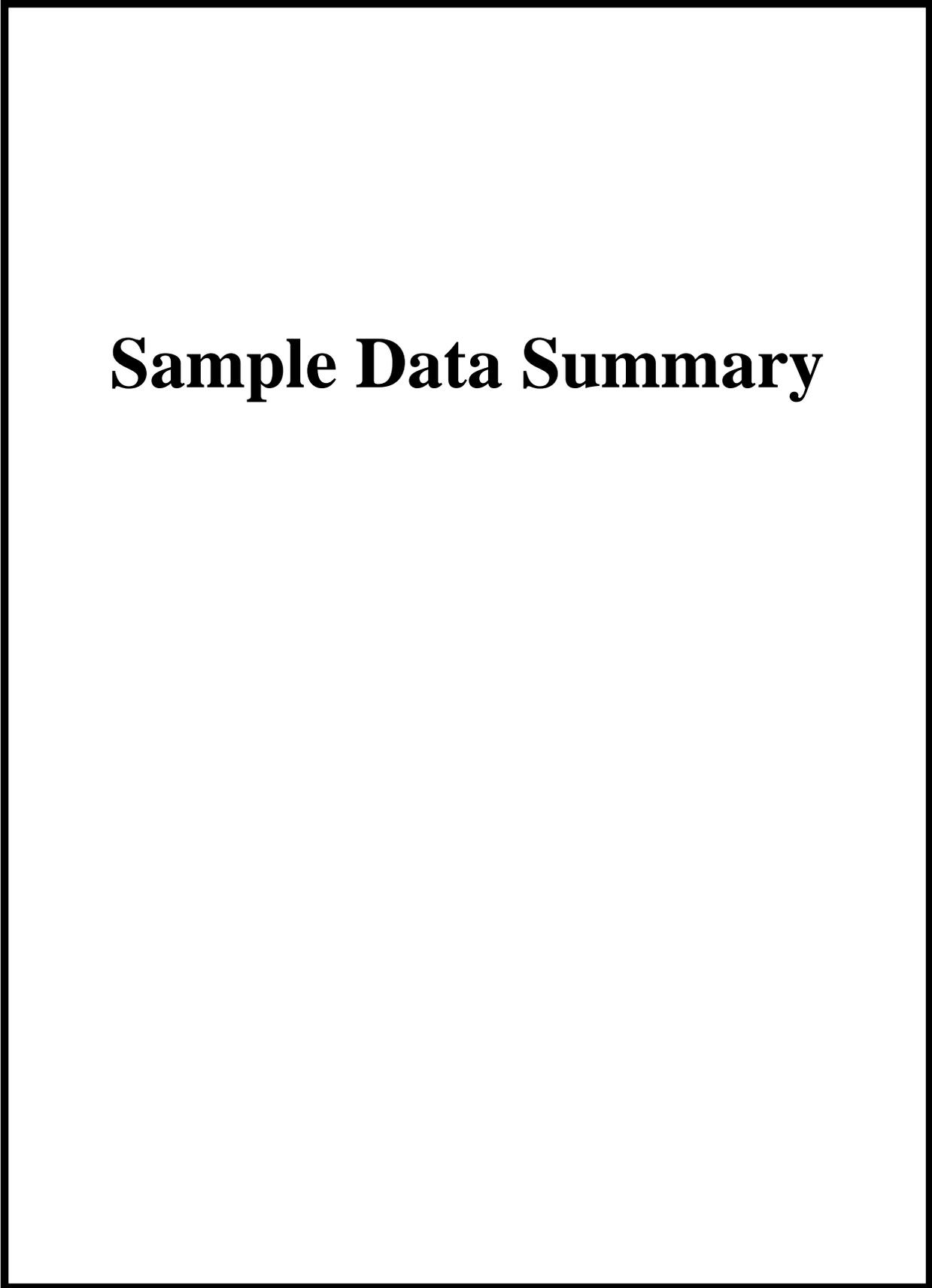
The following data validator verified the information presented in this data report:

Signature: 

Name: Nik-Cole Elmore

Date: 27 JUN 2017

Title: Data Validator



Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL424707

CONTRACT: CPRC0S17006

METHOD TYPE: SW846

SAMPLE ID:424707003

BASIS: As Received

DATE COLLECTED 02-JUN-17

CLIENT ID: B39TH1

LEVEL: Low

DATE RECEIVED 06-JUN-17

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-61-1	Uranium	59.9	ug/L		0.067	0.2	15	1	MS	BAJ	06/24/17 12:20	170624-2	1671607

Prep Information:

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

***Analytical Methods:**

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL424707

CONTRACT: CPRC0S17006

METHOD TYPE: SW846

SAMPLE ID:424707004

BASIS: As Received

DATE COLLECTED 02-JUN-17

CLIENT ID: B39TH9

LEVEL: Low

DATE RECEIVED 06-JUN-17

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-61-1	Uranium	16.8	ug/L		0.067	0.2	15	1	MS	BAJ	06/24/17 12:21	170624-2	1671607

Prep Information:

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

***Analytical Methods:**

MS SW846 3005A/6020B

Quality Control Summary

June 29, 2017 GEL LABORATORIES LLC

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

QC Summary

Report Date: June 27, 2017

Page 1 of 2

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

Contact: Mr. Scot Fitzgerald

Workorder: 424707

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1671607										
QC1203805189	LCS										
Uranium	50.0			51.6	ug/L		103	(80%-120%)	BAJ	06/24/17	12:04
QC1203805188	MB										
Uranium			U	0.067	ug/L					06/24/17	12:02
QC1203805190	424705005	MS									
Uranium	50.0	3.70		55.4	ug/L		103	(75%-125%)		06/24/17	12:07
QC1203805191	424705005	MSD									
Uranium	50.0	3.70		54.4	ug/L	1.76	101	(0%-20%)		06/24/17	12:08
QC1203805192	424705005	SDILT									
Uranium		3.70	D	0.750	ug/L	1.49		(0%-20%)		06/24/17	12:11

Notes:

The Qualifiers in this report are defined as follows:

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

June 29, 2017

GEL LABORATORIES LLC

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QC Summary

Workorder: 424707

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
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Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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

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

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

Radiological Analysis

Case Narrative

June 29, 2017

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL424707
Work Order #: 424707

Product: PUIISO_PRECIP_AEA:COMMON
Analytical Method: PUIISO_PRECIP_AEA
Analytical Procedure: GL-RAD-A-011 REV# 26
Analytical Batch: 1671439

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
424707007	B39X26
424707008	B39XK6
424707009	B39XK7
1203804826	Method Blank (MB)
1203804827	424707007(B39X26) Sample Duplicate (DUP)
1203804828	Laboratory Control Sample (LCS)

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

Data Summary:

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

Miscellaneous Information

1. Sample 424707009 does not meet the resolution requirement of having a full width half maximum of 100 keV or less for the Pu-242 tracer. 1. The sample does meet the tracer yield requirement, the detection limits, and its tracer peak is within the Pu-242 region of interest. Reporting results.

Product: I129LL_SEP_LEPS_GS: COMMON (low level)
Analytical Method: DOE EML HASL-300,I-01 Modified
Analytical Procedure: GL-RAD-A-006 REV# 21
Analytical Batch: 1671427

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
424707006	B39X21
424707007	B39X26
1203804805	Method Blank (MB)
1203804806	424692001(NonSDG) Sample Duplicate (DUP)
1203804807	424692001(NonSDG) Matrix Spike (MS)
1203804808	Laboratory Control Sample (LCS)

June 29, 2017

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

Data Summary:

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

Product: GAMMA_GS:COMMON + GW 01

Analytical Method: 901.1_GAMMA_GS

Analytical Procedure: GL-RAD-A-013 REV# 27

Analytical Batch: 1675360

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
424707001	B39RR4
424707002	B39RR5
1203814555	Method Blank (MB)
1203814556	424516023(NonSDG) Sample Duplicate (DUP)
1203814557	Laboratory Control Sample (LCS)

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

Data Summary:

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

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
X	Results are considered a false positive due to high counting uncertainty.	Cesium-137	424707002	B39RR5

Product: 9310_ALPHABETA_GPC: Gross Beta

Analytical Method: 9310_ALPHABETA_GPC

Analytical Procedure: GL-RAD-A-001 REV# 19

Analytical Batch: 1672138

June 29, 2017

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
424707001	B39RR4
424707002	B39RR5
424707004	B39TH9
1203806624	Method Blank (MB)
1203806625	424707004(B39TH9) Sample Duplicate (DUP)
1203806626	424707004(B39TH9) Matrix Spike (MS)
1203806627	424707004(B39TH9) Matrix Spike Duplicate (MSD)
1203806628	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information

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.

Miscellaneous Information

Additional Comments

The matrix spike and matrix spike duplicate, 1203806626 (B39TH9MS) and 1203806627 (B39TH9MSD), aliquots were reduced to conserve sample volume.

Product: PU241_IE_LSC: COMMON

Analytical Method: PU241_IE_LSC

Analytical Procedure: GL-RAD-A-035 REV# 18

Analytical Batch: 1671440

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
424707007	B39X26
424707008	B39XK6
424707009	B39XK7
1203804829	Method Blank (MB)
1203804830	424707007(B39X26) Sample Duplicate (DUP)
1203804831	Laboratory Control Sample (LCS)

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

Data Summary:

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

Miscellaneous Information

1. Sample 424707009 does not meet the resolution requirement of having a full width half maximum of 100 keV or less for the Pu-242 tracer. 1. The sample does meet the tracer yield requirement, the detection limits, and its tracer peak is within the Pu-242 region of interest. Reporting results.

Product: SE79_SEP_IE_LSC: COMMON

Analytical Method: SE79_SEP_IE_LSC

Analytical Procedure: GL-RAD-A-031 REV# 13

Analytical Batch: 1671431

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
424707001	B39RR4
424707002	B39RR5
1203804812	Method Blank (MB)
1203804813	424658002(B39RN0) Sample Duplicate (DUP)
1203804814	Laboratory Control Sample (LCS)

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

Data Summary:

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

Product: TC99_EIE_LSC: COMMON

Analytical Method: TC99_EIE_LSC

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

Analytical Batch: 1671435

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
424707001	B39RR4
424707002	B39RR5
1203804815	Method Blank (MB)
1203804816	424658001(B39RM1) Sample Duplicate (DUP)
1203804817	Laboratory Control Sample (LCS)

June 29, 2017

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

Data Summary:

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

Product: C14_LSC: COMMON

Analytical Method: C14_LSC

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

Analytical Batch: 1672415

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
424707001	B39RR4
424707002	B39RR5
1203807372	Method Blank (MB)
1203807373	424658001(B39RM1) Sample Duplicate (DUP)
1203807374	424658001(B39RM1) Matrix Spike (MS)
1203807375	Laboratory Control Sample (LCS)

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

Data Summary:

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

Certification Statement

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

June 29, 2017

GEL LABORATORIES LLC

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

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL424707 GEL Work Order: 424707

The Qualifiers in this report are defined as follows:

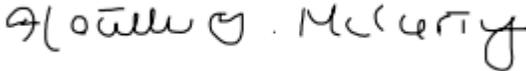
U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

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

Review/Validation

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

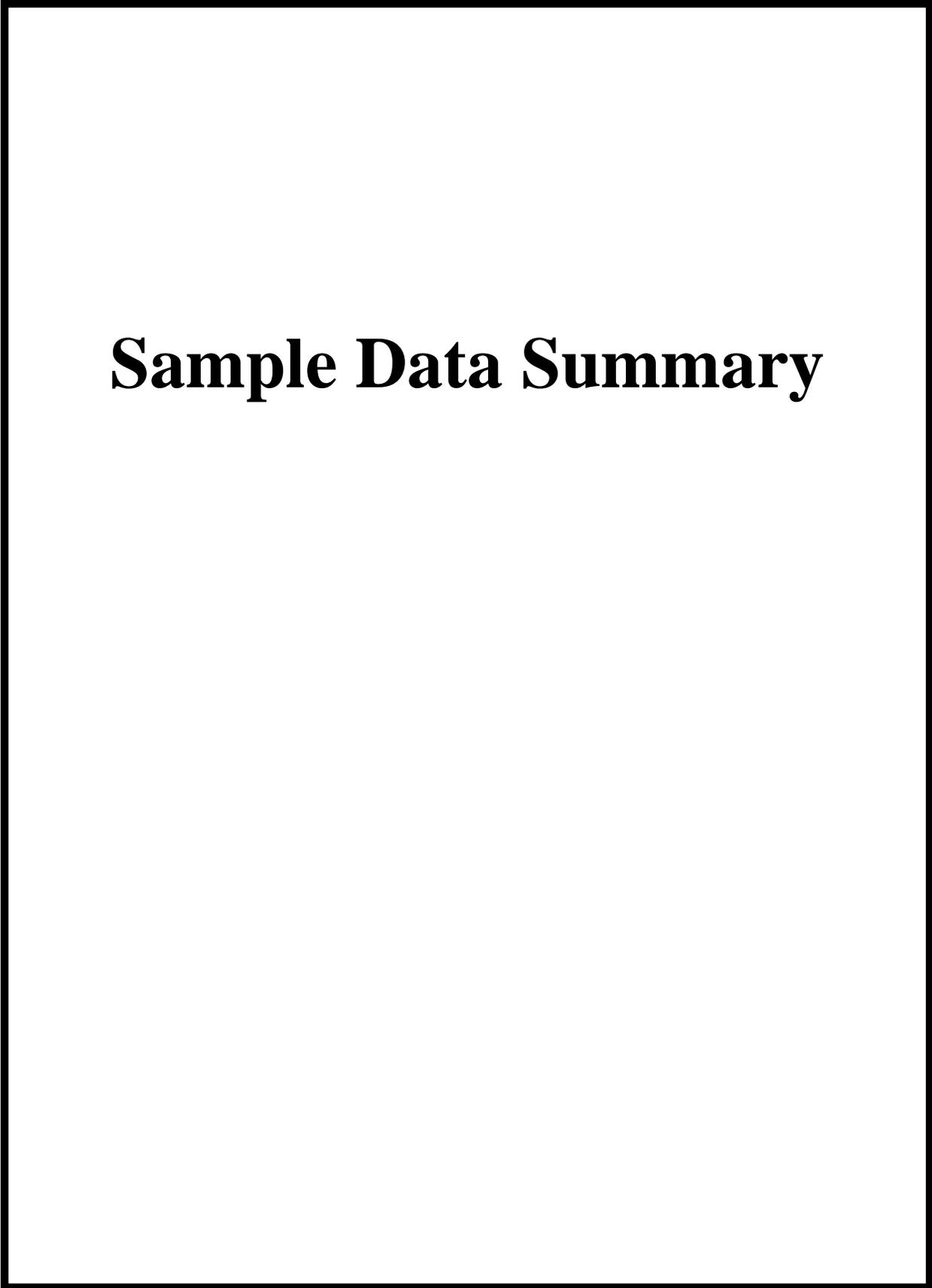
The following data validator verified the information presented in this data report:

Signature: 

Name: Heather McCarty

Date: 29 JUN 2017

Title: Analyst II



Sample Data Summary

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707001	Date Collected: 06/05/2017 09:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39RR4	Method: 9310_ALPHABETA_GPC	Prep Basis: "As Received"
Batch ID: 1672138	Analyst: LXB3	SOP Ref: GL-RAD-A-001
Run Date: 06/10/2017 12:04	Aliquot: 125 mL	Instrument: LB4100I1
Data File: AB1672138.xls	Prep Method: EPA 900.0/SW846 9310	Count Time: 500 min
Prep Batch: 1672138		
Prep Date: 06/09/2017 06:49		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-47-2	Beta BETA		18.3	pCi/L	+/-1.54	3.35	1.93	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). The MDC is a sample specific MDC.

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707
 Lab Sample ID: 424707001

 Client ID: B39RR4
 Batch ID: 1675360
 Run Date: 06/22/2017 07:23
 Data File: G424707001.CNF;1
 Prep Batch: 1675360
 Prep Date: 06/21/2017 00:00

Client: CPRC001
 Date Collected: 06/05/2017 09:53
 Date Received: 06/06/2017 09:00

 Method: 901.1_GAMMA_GS
 Analyst: MXR1
 Aliquot: 0.5 L
 Prep Method: EPA 901.1

Project: CPRC0S17006
 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
14234-35-6	Antimony-125	U	1.28	pCi/L	+/-11.1	11.1	21.2	
13967-70-9	Cesium-134	U	-1.13	pCi/L	+/-4.91	4.94	8.89	
10045-97-3	Cesium-137	U	-1.05	pCi/L	+/-4.46	4.49	8.10	15.0
10198-40-0	Cobalt-60	U	3.84	pCi/L	+/-4.48	4.80	10.8	
14683-23-9	Europium-152	U	4.46	pCi/L	+/-11.2	11.4	22.1	
15585-10-1	Europium-154	U	1.44	pCi/L	+/-10.6	10.6	23.2	
14391-16-3	Europium-155	U	-11.5	pCi/L	+/-15.4	16.2	24.3	
13966-00-2	Potassium-40	U	-13.3	pCi/L	+/-60.8	61.1	132	

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

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

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707001	Date Collected: 06/05/2017 09:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39RR4	Method: SE79_SEP_IE_LSC	Prep Basis: "As Received"
Batch ID: 1671431	Analyst: CXS7	SOP Ref: GL-RAD-A-031
Run Date: 06/27/2017 12:10	Aliquot: 0.08 L	Instrument: LSCBROWN
Data File: SE1671431.xls	Prep Method: NERC ORD	Count Time: 30 min
Prep Batch: 1671431		
Prep Date: 06/26/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15758-45-9	Selenium-79	U	-13	pCi/L	+/-21.5	21.5	37.4	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Selenium Carrier	19.1	20.0	mg	95.5	(40%-110%)

Comments:

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

June 29, 2017
Rad

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707001	Date Collected: 06/05/2017 09:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39RR4	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1671435	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 06/27/2017 06:06	Aliquot: 100 mL	Instrument: LSCBROWN
Data File: E1671435.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 20 min
Prep Batch: 1671435		
Prep Date: 06/22/2017 13:55		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	36.3	pCi/L	+/-25.9	26.2	42.7	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	56000	62500	CPM	89.5	(30%-105%)

Comments:

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

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707001	Date Collected: 06/05/2017 09:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39RR4	Method: C14_LSC	Prep Basis: "As Received"
Batch ID: 1672415	Analyst: TXJ1	SOP Ref: GL-RAD-A-003
Run Date: 06/27/2017 17:26	Aliquot: 100 mL	Instrument: LSCRED
Data File: C1672415.xls	Prep Method: EPA EERF C-01 Modified	Count Time: 15 min
Prep Batch: 1672415		
Prep Date: 06/27/2017 14:50		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	-3.32	pCi/L	+/-16.2	16.2	28.8	50.0

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

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

June 29, 2017
Rad

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707002	Date Collected: 06/05/2017 09:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39RR5		Prep Basis: "As Received"
Batch ID: 1672138	Method: 9310_ALPHABETA_GPC	SOP Ref: GL-RAD-A-001
Run Date: 06/10/2017 12:04	Analyst: LXB3	Instrument: LB4100I3
Data File: AB1672138.xls	Aliquot: 125 mL	Count Time: 500 min
Prep Batch: 1672138	Prep Method: EPA 900.0/SW846 9310	
Prep Date: 06/09/2017 06:49		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-47-2	Beta BETA		18.7	pCi/L	+/-1.53	3.40	1.93	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.
 X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

June 29, 2017
Rad

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707
Lab Sample ID: 424707002

Client ID: B39RR5
Batch ID: 1675360
Run Date: 06/22/2017 07:30
Data File: G424707002.CNF;1
Prep Batch: 1675360
Prep Date: 06/21/2017 00:00

Client: CPRC001
Date Collected: 06/05/2017 09:53
Date Received: 06/06/2017 09:00

Method: 901.1_GAMMA_GS
Analyst: MXR1
Aliquot: 0.5 L
Prep Method: EPA 901.1

Project: CPRC0S17006
Matrix: WATER

Prep Basis: "As Received"
SOP Ref: GL-RAD-A-013
Instrument: GAM11
Count Time: 120 min

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14234-35-6	Antimony-125	U	4.41	pCi/L	+/-11.5	11.6	22.7	
13967-70-9	Cesium-134	U	3.20	pCi/L	+/-5.22	5.42	10.7	
10045-97-3	Cesium-137	UX	0.00	pCi/L	+/-6.79	6.81	6.87	15.0
10198-40-0	Cobalt-60	U	-1.59	pCi/L	+/-4.24	4.30	7.99	
14683-23-9	Europium-152	U	1.04	pCi/L	+/-10.6	10.6	20.6	
15585-10-1	Europium-154	U	3.33	pCi/L	+/-11.4	11.5	23.1	
14391-16-3	Europium-155	U	0.545	pCi/L	+/-12.3	12.3	22.2	
13966-00-2	Potassium-40	U	-35.2	pCi/L	+/-53.0	55.3	102	

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.
 - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707002	Date Collected: 06/05/2017 09:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39RR5	Method: SE79_SEP_IE_LSC	Prep Basis: "As Received"
Batch ID: 1671431	Analyst: CXS7	SOP Ref: GL-RAD-A-031
Run Date: 06/27/2017 12:42	Aliquot: 0.08 L	Instrument: LSCBROWN
Data File: SE1671431.xls	Prep Method: NERC ORD	Count Time: 30 min
Prep Batch: 1671431		
Prep Date: 06/26/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15758-45-9	Selenium-79	U	-18.2	pCi/L	+/-21.3	21.3	37.4	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Selenium Carrier	19.1	20.0	mg	95.5	(40%-110%)

Comments:

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 - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707002	Date Collected: 06/05/2017 09:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39RR5	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1671435	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 06/27/2017 06:27	Aliquot: 100 mL	Instrument: LSCBROWN
Data File: E1671435.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 20 min
Prep Batch: 1671435		
Prep Date: 06/22/2017 13:55		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		49.7	pCi/L	+/-29.1	29.6	47.3	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	50100	62500	CPM	80.1	(30%-105%)

Comments:

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

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707002	Date Collected: 06/05/2017 09:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39RR5	Method: C14_LSC	Prep Basis: "As Received"
Batch ID: 1672415	Analyst: TXJ1	SOP Ref: GL-RAD-A-003
Run Date: 06/27/2017 17:42	Aliquot: 100 mL	Instrument: LSCRED
Data File: C1672415.xls	Prep Method: EPA EERF C-01 Modified	Count Time: 15 min
Prep Batch: 1672415		
Prep Date: 06/27/2017 14:50		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	4.63	pCi/L	+/-16.6	16.6	28.8	50.0

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.
 X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707004	Date Collected: 06/02/2017 13:40	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39TH9		Prep Basis: "As Received"
Batch ID: 1672138	Method: 9310_ALPHABETA_GPC	SOP Ref: GL-RAD-A-001
Run Date: 06/10/2017 12:04	Analyst: LXB3	Instrument: LB4100J1
Data File: AB1672138.xls	Aliquot: 150 mL	Count Time: 500 min
Prep Batch: 1672138	Prep Method: EPA 900.0/SW846 9310	
Prep Date: 06/09/2017 06:49		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha ALPHA		13.2	pCi/L	+/-1.30	2.53	1.07	3.00

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

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

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707006	Date Collected: 06/05/2017 10:38	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39X21	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1671427	Analyst: MJH1	SOP Ref: GL-RAD-A-006
Run Date: 06/08/2017 14:28	Aliquot: 1.6 L	Instrument: XRAY6
Data File: I424707006.CNF;1	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 60 min
Prep Batch: 1671427		
Prep Date: 06/07/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		3.92	pCi/L	+/-1.29	1.34	0.925	1.00

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

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

June 29, 2017

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Certificate of Analysis
Sample Summary

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707007	Date Collected: 06/05/2017 08:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39X26	Method: PUIISO_PRECIP_AEA	Prep Basis: "As Received"
Batch ID: 1671439	Analyst: MXS2	SOP Ref: GL-RAD-A-011
Run Date: 06/24/2017 12:19	Aliquot: 0.4 L	Instrument: 1083
Data File: S0424707007_PU.1A.gcnf	Prep Method: DOE EML HASL-300, Pu-11-	Count Time: 240 min
Prep Batch: 1671439		
Prep Date: 06/22/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.0303	pCi/L	+/-0.0519	0.0521	0.0454	1.00
OER-100-70	Plutonium-239/240	U	-0.0363	pCi/L	+/-0.0379	0.038	0.131	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	4.38	4.92	pCi/L	89	(30%-105%)

Comments:

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

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

The MDC is a sample specific MDC.

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707007	Date Collected: 06/05/2017 08:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39X26	Method: PU241_IE_LSC	Prep Basis: "As Received"
Batch ID: 1671440	Analyst: MXS2	SOP Ref: GL-RAD-A-035
Run Date: 06/28/2017 05:20	Aliquot: 0.4 L	Instrument: LSCRED
Data File: PU1671440.xls	Prep Method: DOE EML HASL-300, Pu-11-	Count Time: 30 min
Prep Batch: 1671440		
Prep Date: 06/22/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14119-32-5	Plutonium-241	U	-13.2	pCi/L	+/-10.9	10.9	19.7	25.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	4.38	4.92	pCi/L	89	(30%-105%)

Comments:

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

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707007	Date Collected: 06/05/2017 08:53	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39X26		Prep Basis: "As Received"
Batch ID: 1671427	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 06/08/2017 14:43	Analyst: MJH1	Instrument: XRAY5
Data File: I424707007.CNF;1	Aliquot: 1.6 L	Count Time: 75 min
Prep Batch: 1671427	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 06/07/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		2.11	pCi/L	+/-1.14	1.17	0.661	1.00

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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June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707008	Date Collected: 06/05/2017 10:41	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39XK6	Method: PUIISO_PRECIP_AEA	Prep Basis: "As Received"
Batch ID: 1671439	Analyst: MXS2	SOP Ref: GL-RAD-A-011
Run Date: 06/24/2017 12:19	Aliquot: 0.4 L	Instrument: 1084
Data File: S0424707008_PU.1A.gcnf	Prep Method: DOE EML HASL-300, Pu-11-	Count Time: 240 min
Prep Batch: 1671439		
Prep Date: 06/22/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.00811	pCi/L	+/-0.0451	0.0451	0.0864	1.00
OER-100-70	Plutonium-239/240		0.801	pCi/L	+/-0.228	0.249	0.140	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	4.29	4.92	pCi/L	87.2	(30%-105%)

Comments:

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

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707008	Date Collected: 06/05/2017 10:41	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39XK6	Method: PU241_IE_LSC	Prep Basis: "As Received"
Batch ID: 1671440	Analyst: MXS2	SOP Ref: GL-RAD-A-035
Run Date: 06/28/2017 05:51	Aliquot: 0.4 L	Instrument: LSCRED
Data File: PU1671440.xls	Prep Method: DOE EML HASL-300, Pu-11-	Count Time: 30 min
Prep Batch: 1671440		
Prep Date: 06/22/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14119-32-5	Plutonium-241	U	-8.51	pCi/L	+/-11.3	11.3	20.1	25.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	4.29	4.92	pCi/L	87.2	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
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June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707009	Date Collected: 06/05/2017 08:15	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39XK7	Method: PUIISO_PRECIP_AEA	Prep Basis: "As Received"
Batch ID: 1671439	Analyst: MXS2	SOP Ref: GL-RAD-A-011
Run Date: 06/24/2017 12:19	Aliquot: 0.4 L	Instrument: 1085
Data File: S0424707009_PU.1A.gcnf	Prep Method: DOE EML HASL-300, Pu-11-	Count Time: 240 min
Prep Batch: 1671439		
Prep Date: 06/22/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	-0.0152	pCi/L	+/-0.0654	0.0655	0.159	1.00
OER-100-70	Plutonium-239/240	U	-0.0248	pCi/L	+/-0.040	0.0401	0.127	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	3.77	4.92	pCi/L	76.5	(30%-105%)

Comments:

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

June 29, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL424707	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 424707009	Date Collected: 06/05/2017 08:15	Matrix: WATER
	Date Received: 06/06/2017 09:00	
Client ID: B39XK7	Method: PU241_IE_LSC	Prep Basis: "As Received"
Batch ID: 1671440	Analyst: MXS2	SOP Ref: GL-RAD-A-035
Run Date: 06/28/2017 06:23	Aliquot: 0.4 L	Instrument: LSCRED
Data File: PU1671440.xls	Prep Method: DOE EML HASL-300, Pu-11-	Count Time: 30 min
Prep Batch: 1671440		
Prep Date: 06/22/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14119-32-5	Plutonium-241	U	-11.4	pCi/L	+/-12.9	12.9	23.1	25.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	3.77	4.92	pCi/L	76.5	(30%-105%)

Comments:

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

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 29, 2017
Page 1 of 6

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 424707

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1671439								
QC1203804826 MB									
Plutonium-238			U	0.00248	pCi/L			MXS2	06/24/1712:19
				Uncert: +/-0.0883					
				TPU: +/-0.0883					
Plutonium-239/240			U	0.000827	pCi/L				
				Uncert: +/-0.0613					
				TPU: +/-0.0613					
**Plutonium-242 Tracer	4.92			3.89	pCi/L	REC: 79	(30%-105%)		
				Uncert: +/-0.629					
				TPU: +/-0.930					
QC1203804827 424707007 DUP									
Plutonium-238		U	0.0303	U	0.00985				
				Uncert: +/-0.0519		RPD: 0	N/A		
				TPU: +/-0.0521		RER: 0.531	(0-2)		
Plutonium-239/240		U	-0.0363	U	-0.0174				
				Uncert: +/-0.0379		RPD: 0	N/A		
				TPU: +/-0.038		RER: 0.529	(0-2)		
**Plutonium-242 Tracer	4.92		4.38	3.89	pCi/L	REC: 79	(30%-105%)		
				Uncert: +/-0.536					
				TPU: +/-0.805					
QC1203804828 LCS									
Plutonium-238			U	-0.0263	pCi/L				06/24/1712:13
				Uncert: +/-0.0498					
				TPU: +/-0.0499					
Plutonium-239/240	4.94			5.14	pCi/L	REC: 104	(80%-120%)		
				Uncert: +/-0.659					
				TPU: +/-0.986					
**Plutonium-242 Tracer	4.92			4.09	pCi/L	REC: 83	(30%-105%)		
				Uncert: +/-0.646					
				TPU: +/-0.953					
Batch	1671440								
QC1203804829 MB									
Plutonium-241			U	-7.88	pCi/L			MXS2	06/28/1706:55
				Uncert: +/-12.5					
				TPU: +/-12.5					
**Plutonium-242 Tracer	4.92			3.89	pCi/L	REC: 79	(30%-105%)		
				Uncert: +/-0.629					
				TPU: +/-0.930					
QC1203804830 424707007 DUP									
Plutonium-241		U	-13.2	U	-6.66				06/28/1707:26
				Uncert: +/-10.9		RPD: 0	N/A		
				TPU: +/-10.9		RER: 0.767	(0-2)		
**Plutonium-242 Tracer	4.92		4.38	3.89	pCi/L	REC: 79	(30%-105%)		
				Uncert: +/-0.536					
				TPU: +/-0.805					

QC Summary

Workorder: 424707

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1671440								
QC1203804831	LCS								
Plutonium-241	184			161	pCi/L	REC: 88 (80%-120%)			06/28/1707:58
	Uncert:			+/-16.8					
	TPU:			+/-39.9					
**Plutonium-242 Tracer	4.92			4.20	pCi/L	REC: 85 (30%-105%)			
	Uncert:			+/-0.691					
	TPU:			+/-1.01					
Rad Gamma Spec									
Batch	1671427								
QC1203804805	MB								
Iodine-129			U	-0.00946	pCi/L			MJH1	06/08/1715:40
	Uncert:			+/-0.208					
	TPU:			+/-0.208					
QC1203804806	424692001	DUP							
Iodine-129		0.857		0.939	pCi/L				06/08/1715:40
	Uncert:	+/-0.549		+/-0.442		RPD: 9 (0% - 100%)			
	TPU:	+/-0.555		+/-0.452		RER: 0.225 (0-2)			
QC1203804807	424692001	MS							
Iodine-129	32.0	0.857		36.5	pCi/L	REC: 111 (75%-125%)			06/08/1716:17
	Uncert:	+/-0.549		+/-4.80					
	TPU:	+/-0.555		+/-6.26					
QC1203804808	LCS								
Iodine-129	0.026			27.2	pCi/L	REC: 104 (80%-120%)			06/09/1705:57
	Uncert:			+/-2.81					
	TPU:			+/-3.89					
Batch	1675360								
QC1203814555	MB								
Antimony-125			U	2.55	pCi/L			MXR1	06/22/1707:31
	Uncert:			+/-11.5					
	TPU:			+/-11.6					
Cesium-134			U	-2.77	pCi/L				
	Uncert:			+/-3.85					
	TPU:			+/-4.05					
Cesium-137			U	1.64	pCi/L				
	Uncert:			+/-4.69					
	TPU:			+/-4.75					
Cobalt-60			U	1.89	pCi/L				
	Uncert:			+/-5.64					
	TPU:			+/-5.71					
Europium-152			U	-1.48	pCi/L				
	Uncert:			+/-11.3					
	TPU:			+/-11.4					
Europium-154			U	-0.932	pCi/L				
	Uncert:			+/-12.7					
	TPU:			+/-12.7					
Europium-155			U	-0.472	pCi/L				
	Uncert:			+/-14.7					
	TPU:			+/-14.7					
Potassium-40			U	32.7	pCi/L				
	Uncert:			+/-76.5					

QC Summary

Workorder: 424707

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1675360								
		TPU:		+/-78.0					
QC1203814556 424516023 DUP									
Antimony-125		U	-2.94	U	-1.64	pCi/L			06/22/1707:31
		Uncert:	+/-12.2		+/-13.6		RPD: 0	N/A	
		TPU:	+/-12.2		+/-13.6		RER: 0.139	(0-2)	
Cesium-134		U	-1.34	U	-0.802	pCi/L			
		Uncert:	+/-5.42		+/-6.19		RPD: 0	N/A	
		TPU:	+/-5.46		+/-6.20		RER: 0.127	(0-2)	
Cesium-137			107		117	pCi/L			
		Uncert:	+/-15.3		+/-18.7		RPD: 9	(0% - 20%)	
		TPU:	+/-16.1		+/-19.5		RER: 0.776	(0-2)	
Cobalt-60			110		117	pCi/L			
		Uncert:	+/-16.2		+/-19.4		RPD: 7	(0% - 20%)	
		TPU:	+/-16.8		+/-20.0		RER: 0.578	(0-2)	
Europium-152		U	-5.64	U	-10.4	pCi/L			
		Uncert:	+/-11.6		+/-13.5		RPD: 0	N/A	
		TPU:	+/-11.8		+/-14.3		RER: 0.507	(0-2)	
Europium-154		U	6.37	U	-3.19	pCi/L			
		Uncert:	+/-11.2		+/-12.1		RPD: 0	N/A	
		TPU:	+/-11.5		+/-12.2		RER: 1.12	(0-2)	
Europium-155		U	-5.07	U	-1.14	pCi/L			
		Uncert:	+/-13.5		+/-18.8		RPD: 0	N/A	
		TPU:	+/-13.7		+/-18.8		RER: 0.331	(0-2)	
Potassium-40		U	-33.4	U	-56.9	pCi/L			
		Uncert:	+/-59.9		+/-70.2		RPD: 0	N/A	
		TPU:	+/-61.8		+/-74.8		RER: 0.475	(0-2)	
QC1203814557 LCS									
Americium-241	1.10E+05				1.16E+05	pCi/L	REC: 105	(80%-120%)	06/22/1707:35
		Uncert:			+/-2150				
		TPU:			+/-9420				
Antimony-125				U	-33.9	pCi/L			
		Uncert:			+/-330				
		TPU:			+/-331				
Cesium-134				U	-57.4	pCi/L			
		Uncert:			+/-143				
		TPU:			+/-145				
Cesium-137	42000				43900	pCi/L	REC: 104	(80%-120%)	
		Uncert:			+/-746				
		TPU:			+/-4200				
Cobalt-60	38000				39300	pCi/L	REC: 103	(80%-120%)	
		Uncert:			+/-822				
		TPU:			+/-3450				
Europium-152				U	-339	pCi/L			
		Uncert:			+/-294				
		TPU:			+/-333				
Europium-154				U	-90.2	pCi/L			
		Uncert:			+/-201				
		TPU:			+/-205				
Europium-155				U	405	pCi/L			
		Uncert:			+/-371				

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1675360								
Potassium-40	TPU:			+/-415					
			U	-177	pCi/L				
	Uncert:			+/-519					
	TPU:			+/-525					
Rad Gas Flow									
Batch	1672138								
QC1203806624	MB								
Alpha			U	-0.228	pCi/L			LXB3	06/10/1712:18
	Uncert:			+/-0.500					
	TPU:			+/-0.500					
Beta			U	0.222	pCi/L				
	Uncert:			+/-0.781					
	TPU:			+/-0.782					
QC1203806625	424707004	DUP							
Alpha		13.2		14.1	pCi/L				06/10/1712:18
	Uncert:	+/-1.30		+/-1.44		RPD: 6	(0% - 20%)		
	TPU:	+/-2.53		+/-2.77		RER: 0.457	(0-2)		
Beta		4.28		4.32	pCi/L				
	Uncert:	+/-0.846		+/-0.857		RPD: 1	(0% - 100%)		
	TPU:	+/-1.11		+/-1.13		RER: 0.0496	(0-2)		
QC1203806626	424707004	MS							
Alpha	242	13.2		276	pCi/L	REC: 109	(75%-125%)		06/12/1709:09
	Uncert:	+/-1.30		+/-24.5					
	TPU:	+/-2.53		+/-52.4					
Beta	875	4.28		970	pCi/L	REC: 110	(75%-125%)		
	Uncert:	+/-0.846		+/-33.5					
	TPU:	+/-1.11		+/-161					
QC1203806627	424707004	MSD							
Alpha	242	13.2		261	pCi/L	REC: 102	(75%-125%)		06/12/1709:14
	Uncert:	+/-1.30		+/-24.1		RPD: 6	(0%-20%)		
	TPU:	+/-2.53		+/-49.4		RER: 0.427	(0-2)		
Beta	875	4.28		980	pCi/L	REC: 111	(75%-125%)		
	Uncert:	+/-0.846		+/-35.4		RPD: 1	(0%-20%)		
	TPU:	+/-1.11		+/-168		RER: 0.0803	(0-2)		
QC1203806628	LCS								
Alpha	80.6			82.9	pCi/L	REC: 103	(80%-120%)		06/12/1709:14
	Uncert:			+/-7.55					
	TPU:			+/-15.7					
Beta	292			323	pCi/L	REC: 111	(80%-120%)		
	Uncert:			+/-11.2					
	TPU:			+/-55.4					
Rad Liquid Scintillation									
Batch	1671431								
QC1203804812	MB								
Selenium-79			U	-28.7	pCi/L			CXS7	06/27/1713:14
	Uncert:			+/-21.6					
	TPU:			+/-21.6					
**Selenium Carrier	20.0			18.7	mg	REC: 94	(40%-110%)		
QC1203804813	424658002	DUP							

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1671431								
Selenium-79		U	-28.6	U	-9.41	pCi/L			
		Uncert:	+/-22.7		+/-22.9		RPD: 0	N/A	
		TPU:	+/-22.7		+/-22.9		RER: 1.17	(0-2)	
**Selenium Carrier	20.0		17.8		18.0	mg	REC: 90	(40%-110%)	
QC1203804814	LCS								
Selenium-79	33000				33400	pCi/L	REC: 101	(80%-120%)	06/27/1714:17
		Uncert:			+/-657				
		TPU:			+/-952				
**Selenium Carrier	20.0				18.1	mg	REC: 91	(40%-110%)	
Batch	1671435								
QC1203804815	MB								
Technetium-99				U	10.6	pCi/L		CXS7	06/27/1706:48
		Uncert:			+/-25.2				
		TPU:			+/-25.2				
**Technetium-99m Tracer	62500				54800	CPM	REC: 88	(30%-105%)	
QC1203804816	424658001	DUP							
Technetium-99			7420		7530	pCi/L			06/27/1707:10
		Uncert:	+/-150		+/-152		RPD: 1	(0% - 20%)	
		TPU:	+/-836		+/-849		RER: 0.18	(0-2)	
**Technetium-99m Tracer	62500		51700		50500	CPM	REC: 81	(30%-105%)	
QC1203804817	LCS								
Technetium-99	861				780	pCi/L	REC: 91	(80%-120%)	06/27/1707:25
		Uncert:			+/-44.4				
		TPU:			+/-97.2				
**Technetium-99m Tracer	62500				58700	CPM	REC: 94	(30%-105%)	
Batch	1672415								
QC1203807372	MB								
Carbon-14				U	-0.207	pCi/L		TXJ1	06/27/1718:30
		Uncert:			+/-16.3				
		TPU:			+/-16.3				
QC1203807373	424658001	DUP							
Carbon-14		U	-7.29	U	6.81	pCi/L			06/27/1718:47
		Uncert:	+/-16.0		+/-16.7		RPD: 0	N/A	
		TPU:	+/-16.0		+/-16.7		RER: 1.19	(0-2)	
QC1203807374	424658001	MS							
Carbon-14	751	U	-7.29		705	pCi/L	REC: 94	(75%-125%)	06/27/1719:03
		Uncert:	+/-16.0		+/-38.2				
		TPU:	+/-16.0		+/-136				
QC1203807375	LCS								
Carbon-14	751				751	pCi/L	REC: 100	(80%-120%)	06/27/1719:19
		Uncert:			+/-39.3				
		TPU:			+/-145				

Notes:

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

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
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.