

February 20, 2015



PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407

P 843.556.8171 F 843.766.1178

www.gel.com

February 16, 2015

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

Re: CHPRC SAF S15-001
Work Order: 365755
SDG: GEL365755

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 24, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Heather Shaffer
Project Manager

Purchase Order: 300071
Chain of Custody: S15-001-180, S15-001-190 and S15-001-350
Enclosures



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Case Narrative

February 20, 2015

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S15-001
SDG: GEL365755

February 16, 2015

Laboratory Identification:

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

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on January 24, 2015, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

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

Sample Identification

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
365755001	B30168
365755002	B30171
365755003	B30199
365755004	B301B1
365755005	B303X2
365755006	B30186

Case Narrative

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

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Data Package

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

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



Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

831bs

C.O.C. # **S15-001-180**
 Page 1 of 1

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CH2M Hill Plateau Remediation Company
 S.W. King/CHPRC
 SAF No. S15-001
 Project Title SURV, JANUARY 2015
 Shipped To (Lab) **GEL Laboratories, LLC**
 Protocol SURV

Contact/Requester Karen Waters-Husted
 Sampling Origin Hanford Site
 Logbook No. HNF-N-506 71 / 54
 Method of Shipment Commercial Carrier
 Priority: 30 Days **PRIORITY**

Telephone No. 509-376-4650
 Purchase Order/Charge Code 300071
 Ice Chest No. 625-435
 Bill of Lading/Air Bill No. 177269244 0220
 Offsite Property No. 5363

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

Total Activity Exemption: Yes No

Sample No.	Filter	* Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B30168	N	W JAN 23 2015	1037	1x500-mL G/P	350.1_AMMONIA: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B30168	N	W		1x500-mL G/P	410.4_COD: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B30168	N	W		1x500-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Antimony (1); 6020_METALS_ICPMS: Arsenic (1)	6 Months	HNO3 to pH <2
B30168	N	W		4x40-mL aGs*	8260_VOA_GCMS: COMMON; 8260_VOA_GCMS: GW 01	14 Days	HCl or H2SO4 to pH <2/Cool <=6C
B30168	N	W		4x1-L aG	8270_SVOA_GCMS: 1,4 Dioxane (1)	7/40 Days	Cool <=6C
B30168	N	W		1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B30171	Y	W JAN 23 2015	1037	1x500-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Antimony (1); 6020_METALS_ICPMS: Arsenic (1)	6 Months	HNO3 to pH <2

Relinquished By S.W. King/CHPRC
 Date/Time 1/20/15
 Sign *[Signature]*

Received By J.C. Fulton
 Date/Time JAN 23 2015
 Sign *[Signature]*

Relinquished By CHPRC
 Date/Time 1-23-15
 Sign *[Signature]*

Received By FEDEX
 Date/Time JAN 23 2015
 Sign *[Signature]*

Relinquished By FEDEX
 Date/Time 1-28-15 0335
 Sign *[Signature]*

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

February 20, 2015

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **S15-001-350**
Page 1 of 1

Collector: **s.w. King/CHPRC** Telephone No. **509-376-4650**

SAF No. **S15-001** Purchase Order/Charge Code **300071**

Project Title: **SURV, JANUARY 2015** Logbook No. **HNF-N-506 7154**

Shipped To (Lab): **GEL Laboratories, LLC** Method of Shipment: **Commercial Carrier**

Protocol: **SURV** Priority: **30 Days** **PRIORITY** Offsite Property No. **53003**

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

SPECIAL INSTRUCTIONS Hold Time: **6 Months** Total Activity Exemption: Yes No

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B303X2	N	W	JAN 23 2015	1109	1x500-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Antimony (1); 6020_METALS_ICPMS: Arsenic (1)	6 Months	HNO3 to pH <2
B30186	Y	W	JAN 23 2015	1400	1x500-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Antimony (1); 6020_METALS_ICPMS: Arsenic (1)	6 Months	HNO3 to pH <2

Relinquished By s.w. King/CHPRC	Printed <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time JAN 23 2015 1130	Received By J.C. Fulton	Printed <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time JAN 23 2015 1130	Matrix *
Relinquished By J.C. Fulton	Printed <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time JAN 23 2015 1400	Received By CHPRC	Printed PEDEX	Sign <i>[Signature]</i>	Date/Time JAN 23 2015 1400	Matrix *
Relinquished By 10 of 129	Printed <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time JAN 23 2015 1400	Received By M. Krasnow	Printed <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time JAN 23 2015 1400	Matrix *
Relinquished By 10 of 129	Printed <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time JAN 23 2015 1400	Received By PEDEX	Printed <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time JAN 23 2015 1400	Matrix *

FINAL SAMPLE DISPOSITION Disposed By: _____ Date/Time: _____

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

PRINTED O 12/9/2014 A-6004-842 (REV 2)

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SAMPLE RECEIPT & REVIEW FORM

Client: <u>OPCR</u>		SDG/AR/COC/Work Order: <u>305755</u>	
Received By: <u>MK</u>		Date Received: <u>1-24-15</u>	
Suspected Hazard Information		Yes	No
COC/Samples marked as radioactive?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	<input type="checkbox"/>

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

Maximum Net Counts Observed* (Observed Counts - Area Background Counts): OPCR

If yes, Were swipes taken of sample containers < action levels?

If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.

Hazard Class Shipped: UN#:

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) <u>All temperatures are recorded in Celsius</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>130532776</u> Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
14 Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>7726 9244 0228 1.7c</u> <u>7726 9243 9614 1.9c</u> <u>7726 9243 9820 2.2c</u> <u>7726 8808 5403 1.9c</u>

Comments (Use Continuation Form if needed):

DS 1/20/15 1 1

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: **CPRC**

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol-condensation product	Y	Organics	Semi-Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (Organics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely performed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	General Chemistry		Replaces J Estimated Value
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	Inorganics	Metals	Replaces B Blank Detection
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	General Chemistry		Replaces B Blank Detection
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

Project Specific Qualifier Definitions for GEL Client Code: **CPRC**

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

Laboratory Certifications

List of current GEL Certifications as of 16 February 2015

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-15-10
Utah NELAP	SC000122014-16
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12

Volatile Analysis

Case Narrative

February 20, 2015
GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL365755
Work Order #: 365755

Method/Analysis Information

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

Analytical Method: SW846 8260C

Analytical Batch Number: 1452976

Sample Analysis

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

Sample ID	Client ID
365755001	B30168
365755003	B30199
1203251578	365749002(B30188) Post Spike (PS)
1203251579	365749002(B30188) Post Spike Duplicate (PSD)
1203251580	365749002(B30188) Post Spike (PS)
1203251581	365749002(B30188) Post Spike Duplicate (PSD)
1203254660	Method Blank (MB)
1203254661	Laboratory Control Sample (LCS)
1203254662	Laboratory Control Sample (LCS)

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

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

SOP Reference

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

Calibration Information

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

Initial Calibration

February 20, 2015

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

Continuing Calibration Verification Requirements

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

Quality Control (QC) Information

Blank (MB) Statement

The blank analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 365749002 (B30188) was designated for spike analysis.

Matrix Spike/Matrix Spike Duplicate Recovery Statement

The spike and/or spike duplicate 1203251578 (B30188PS) and 1203251579 (B30188PSD) recoveries were not all within the acceptance limits.

Relative Percent Difference (RPD) Statement

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

Internal Standard (ISTD) Acceptance

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

Technical Information

Holding Time Specifications

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

Sample Preservation and Integrity

The pH of samples 365755001 (B30168) and 365755003 (B30199) were above 2 at the time of analysis. The samples were analyzed within 7 days from collection.

Sample Dilutions/Methanol Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

Miscellaneous Information

Electronic Packaging Comment

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

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and

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

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1377629.

Manual Integrations

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

TIC Comment

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

Additional Comments

Additional comments were not required for this SDG.

Residual Chlorine

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

System Configuration

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

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

Certification Statement

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

February 20, 2015

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: GEL365755 GEL Work Order: 365755

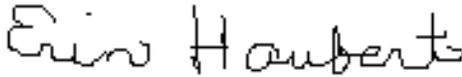
The Qualifiers in this report are defined as follows:

- 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.

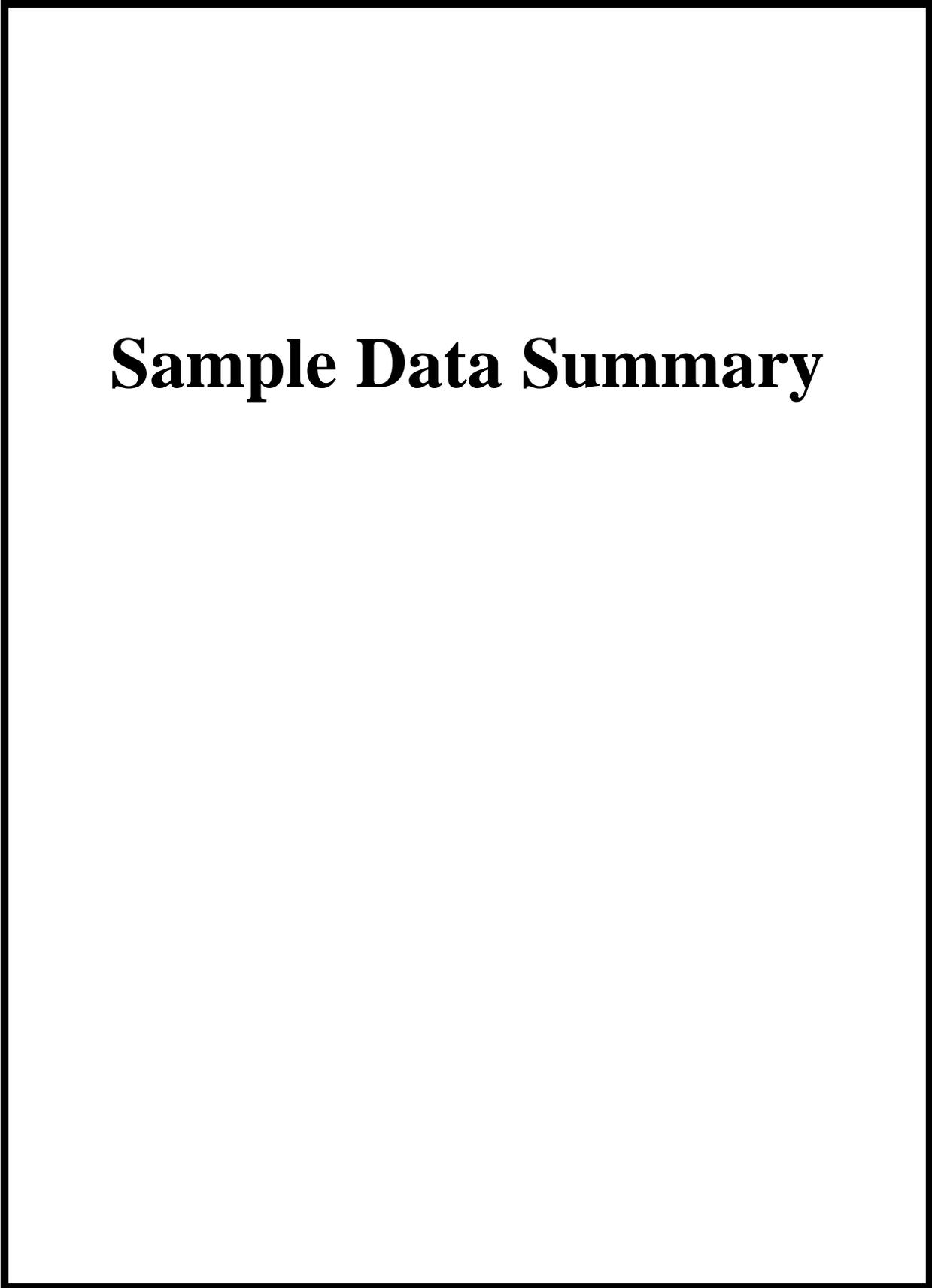
The following data validator verified the information presented in this data report:

Signature: 

Name: Erin Haubert

Date: 19 FEB 2015

Title: Data Validator



Sample Data Summary

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 18, 2015

Client Sample ID:	B30168	Project:	CPRC0S15001
Sample ID:	365755001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 10:37		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260VOA_GCMS: COMMON + GW 01 "As Received"</i>											
1,1,1-Trichloroethane 71-55-6	U	0.00	0.300	5.00	ug/L	1	CDS1	01/28/15	1158	1452976	1
1,1,2-Trichloroethane 79-00-5	U	0.00	0.300	5.00	ug/L	1					
1,1-Dichloroethane 75-34-3	U	0.00	0.300	10.0	ug/L	1					
1,1-Dichloroethylene 75-35-4	U	0.00	0.300	10.0	ug/L	1					
1,2-Dichloroethane 107-06-2	U	0.00	0.300	5.00	ug/L	1					
1,4-Dichlorobenzene 106-46-7	U	0.00	0.300	5.00	ug/L	1					
2-Butanone 78-93-3	TU	0.00	3.00	10.0	ug/L	1					
4-Methyl-2-pentanone 108-10-1	U	0.00	3.00	10.0	ug/L	1					
Acetone 67-64-1	TU	0.00	3.00	20.0	ug/L	1					
Benzene 71-43-2	U	0.00	0.300	5.00	ug/L	1					
Carbon disulfide 75-15-0	U	0.00	1.60	10.0	ug/L	1					
Carbon tetrachloride 56-23-5	U	0.00	0.300	5.00	ug/L	1					
Chlorobenzene 108-90-7	U	0.00	0.300	5.00	ug/L	1					
Chloroform 67-66-3	U	0.00	0.300	5.00	ug/L	1					
Ethylbenzene 100-41-4	U	0.00	0.300	5.00	ug/L	1					
Methylene chloride 75-09-2	U	0.00	1.60	5.00	ug/L	1					
Propionitrile 107-12-0	U	0.00	3.00	10.0	ug/L	1					
Tetrachloroethylene 127-18-4	J	0.760	0.300	5.00	ug/L	1					

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 18, 2015

Client Sample ID: B30168 Project: CPRC0S15001
 Sample ID: 365755001 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260VOA_GCMS: COMMON + GW 01 "As Received"</i>											
Tetrahydrofuran	U	0.00	1.50	50.0	ug/L	1					
109-99-9											
Toluene	U	0.00	0.300	5.00	ug/L	1					
108-88-3											
Trichloroethylene	J	0.350	0.300	5.00	ug/L	1					
79-01-6											
Vinyl chloride	U	0.00	0.300	10.0	ug/L	1					
75-01-4											
Xylenes (total)	U	0.00	0.300	10.0	ug/L	1					
1330-20-7											
cis-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-59-2											
n-Butyl alcohol	U	0.00	83.3	250	ug/L	1					
71-36-3											
trans-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-60-5											

The following Analytical Methods were performed

Method	Description	Analyst	Comments
1	SW846 8260C		

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	8260VOA_GCMS: COMMON + GW 01 "As Received"	49.5 ug/L	50.0	98.9	(77%-123%)
Bromofluorobenzene	8260VOA_GCMS: COMMON + GW 01 "As Received"	53.0 ug/L	50.0	106	(80%-120%)
Toluene-d8	8260VOA_GCMS: COMMON + GW 01 "As Received"	46.6 ug/L	50.0	93.2	(80%-120%)

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 18, 2015

Client Sample ID:	B30199	Project:	CPRC0S15001
Sample ID:	365755003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 08:11		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>8260_VOA_GCMS_IX: COMMON "As Received"</i>											
1,1,1,2-Tetrachloroethane	U	0.00	0.300	5.00	ug/L	1	CDS1	01/28/15	1228	1452976	1
630-20-6											
1,1,1-Trichloroethane	U	0.00	0.300	5.00	ug/L	1					
71-55-6											
1,1,2,2-Tetrachloroethane	U	0.00	0.300	5.00	ug/L	1					
79-34-5											
1,1,2-Trichloroethane	U	0.00	0.300	5.00	ug/L	1					
79-00-5											
1,1-Dichloroethane	U	0.00	0.300	10.0	ug/L	1					
75-34-3											
1,1-Dichloroethylene	U	0.00	0.300	10.0	ug/L	1					
75-35-4											
1,2,3-Trichloropropane	U	0.00	0.300	5.00	ug/L	1					
96-18-4											
1,2-Dibromo-3-chloropropane	U	0.00	0.500	5.00	ug/L	1					
96-12-8											
1,2-Dibromoethane	U	0.00	0.300	5.00	ug/L	1					
106-93-4											
1,2-Dichloroethane	U	0.00	0.300	5.00	ug/L	1					
107-06-2											
1,2-Dichloropropane	U	0.00	0.300	5.00	ug/L	1					
78-87-5											
2-Butanone	TU	0.00	3.00	10.0	ug/L	1					
78-93-3											
2-Chloro-1,3-butadiene	U	0.00	0.300	10.0	ug/L	1					
126-99-8											
2-Hexanone	U	0.00	3.00	20.0	ug/L	1					
591-78-6											
4-Methyl-2-pentanone	U	0.00	3.00	10.0	ug/L	1					
108-10-1											
Acetone	TU	0.00	3.00	20.0	ug/L	1					
67-64-1											
Acetonitrile	U	0.00	16.7	100	ug/L	1					
75-05-8											
Acrolein	U	0.00	3.00	100	ug/L	1					
107-02-8											

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 18, 2015

Client Sample ID: B30199 Project: CPRC0S15001
 Sample ID: 365755003 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260_VOA_GCMS_IX: COMMON "As Received"</i>											
Acrylonitrile	U	0.00	3.00	100	ug/L	1					
107-13-1											
Allyl chloride	U	0.00	3.00	10.0	ug/L	1					
107-05-1											
Benzene	U	0.00	0.300	5.00	ug/L	1					
71-43-2											
Bromoform	U	0.00	0.300	5.00	ug/L	1					
75-25-2											
Carbon disulfide	U	0.00	1.60	10.0	ug/L	1					
75-15-0											
Carbon tetrachloride	U	0.00	0.300	5.00	ug/L	1					
56-23-5											
Chlorobenzene	U	0.00	0.300	5.00	ug/L	1					
108-90-7											
Chloroethane	U	0.00	0.300	10.0	ug/L	1					
75-00-3											
Chloroform	J	0.340	0.300	5.00	ug/L	1					
67-66-3											
Dibromochloromethane	U	0.00	0.300	5.00	ug/L	1					
124-48-1											
Dibromomethane	U	0.00	0.300	10.0	ug/L	1					
74-95-3											
Dichlorodifluoromethane	U	0.00	0.300	10.0	ug/L	1					
75-71-8											
Ethyl methacrylate	U	0.00	3.00	10.0	ug/L	1					
97-63-2											
Ethylbenzene	U	0.00	0.300	5.00	ug/L	1					
100-41-4											
Iodomethane	U	0.00	3.00	10.0	ug/L	1					
74-88-4											
Isobutyl alcohol	U	0.00	33.0	500	ug/L	1					
78-83-1											
Methacrylonitrile	U	0.00	3.00	10.0	ug/L	1					
126-98-7											
Methylene chloride	U	1.09	1.60	5.00	ug/L	1					
75-09-2											
Styrene	U	0.00	0.300	5.00	ug/L	1					
100-42-5											
Tetrachloroethylene	U	0.00	0.300	5.00	ug/L	1					
127-18-4											

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 18, 2015

Client Sample ID: B30199 Project: CPRC0S15001
 Sample ID: 365755003 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260_VOA_GCMS_IX: COMMON "As Received"</i>											
Toluene	U	0.00	0.300	5.00	ug/L	1					
108-88-3											
Trichloroethylene	U	0.00	0.300	5.00	ug/L	1					
79-01-6											
Vinyl acetate	U	0.00	1.60	50.0	ug/L	1					
108-05-4											
Vinyl chloride	U	0.00	0.300	10.0	ug/L	1					
75-01-4											
Xylenes (total)	U	0.00	0.300	10.0	ug/L	1					
1330-20-7											
cis-1,3-Dichloropropylene	U	0.00	0.300	5.00	ug/L	1					
10061-01-5											
trans-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-60-5											
trans-1,3-Dichloropropylene	U	0.00	0.300	5.00	ug/L	1					
10061-02-6											
trans-1,4-Dichloro-2-butene	U	0.00	1.50	50.0	ug/L	1					
110-57-6											

The following Analytical Methods were performed

Method	Description	Analyst	Comments
1	SW846 8260C		

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	8260_VOA_GCMS_IX: COMMON "As Received"	49.9 ug/L	50.0	99.8	(77%-123%)
Bromofluorobenzene	8260_VOA_GCMS_IX: COMMON "As Received"	53.6 ug/L	50.0	107	(80%-120%)
Toluene-d8	8260_VOA_GCMS_IX: COMMON "As Received"	47.5 ug/L	50.0	95.0	(80%-120%)

Quality Control Summary

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QC Summary

Report Date: February 18, 2015

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

Contact: Mr. Scot Fitzgerald

Workorder: 365755

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS										
Batch	1452976									
QC1203254661 LCS										
1,1,1,2-Tetrachloroethane	50.0		47.6	ug/L		95.2	(70%-130%)	CDS1	01/28/15	09:29
1,1,1-Trichloroethane	50.0		49.2	ug/L		98.5	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0		49.4	ug/L		98.8	(70%-130%)			
1,1,2-Trichloroethane	50.0		48.1	ug/L		96.3	(70%-130%)			
1,1-Dichloroethane	50.0		44.7	ug/L		89.4	(70%-130%)			
1,1-Dichloroethylene	50.0		43.5	ug/L		86.9	(70%-130%)			
1,2,3-Trichloropropane	50.0		50.1	ug/L		100	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0		56.7	ug/L		113	(70%-130%)			
1,2-Dibromoethane	50.0		52.2	ug/L		104	(70%-130%)			
1,2-Dichloroethane	50.0		50.0	ug/L		100	(70%-130%)			
1,2-Dichloropropane	50.0		45.1	ug/L		90.2	(70%-130%)			
1,4-Dichlorobenzene	50.0		45.8	ug/L		91.7	(70%-130%)			
2-Butanone	250		267	ug/L		107	(70%-130%)			
2-Hexanone	250		276	ug/L		110	(70%-130%)			
4-Methyl-2-pentanone	250		249	ug/L		99.5	(70%-130%)			
Acetone	250		281	ug/L		112	(70%-130%)			
Acetonitrile	1250		1220	ug/L		97.7	(70%-130%)			
Benzene	50.0		44.0	ug/L		88	(70%-130%)			
Bromoform	50.0		56.2	ug/L		112	(70%-130%)			
Carbon disulfide	250		220	ug/L		87.8	(70%-130%)			

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GEL LABORATORIES LLC

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

QC Summary

Workorder: 365755

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1452976										
Carbon tetrachloride	50.0			48.7	ug/L		97.3	(70%-130%)	CDS1	01/28/15	09:29
Chlorobenzene	50.0			45.3	ug/L		90.5	(70%-130%)			
Chloroethane	50.0			43.6	ug/L		87.2	(70%-130%)			
Chloroform	50.0			47.0	ug/L		94	(70%-130%)			
Dibromochloromethane	50.0			54.9	ug/L		110	(70%-130%)			
Dibromomethane	50.0			50.4	ug/L		101	(70%-130%)			
Dichlorodifluoromethane	50.0			47.0	ug/L		94	(70%-130%)			
Ethylbenzene	50.0			46.0	ug/L		92	(70%-130%)			
Iodomethane	250			230	ug/L		91.9	(70%-130%)			
Methylene chloride	50.0			41.8	ug/L		83.6	(70%-130%)			
Styrene	50.0			51.7	ug/L		103	(70%-130%)			
Tetrachloroethylene	50.0			43.7	ug/L		87.5	(70%-130%)			
Toluene	50.0			42.5	ug/L		85.1	(70%-130%)			
Trichloroethylene	50.0			45.2	ug/L		90.5	(70%-130%)			
Vinyl acetate	250			233	ug/L		93.1	(70%-130%)			
Vinyl chloride	50.0			46.2	ug/L		92.4	(70%-130%)			
Xylenes (total)	150			139	ug/L		92.4	(70%-130%)			
cis-1,2-Dichloroethylene	50.0			45.7	ug/L		91.3	(70%-130%)			
cis-1,3-Dichloropropylene	50.0			52.1	ug/L		104	(70%-130%)			
n-Butyl alcohol	5000			5300	ug/L		106	(70%-130%)			
trans-1,2-Dichloroethylene	50.0			43.7	ug/L		87.4	(70%-130%)			

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

QC Summary

Workorder: 365755

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1452976										
trans-1,3-Dichloropropylene	50.0			52.1	ug/L		104	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			51.2	ug/L		102	(77%-123%)	CDS1	01/28/15	09:29
**Bromofluorobenzene	50.0			49.7	ug/L		99.4	(80%-120%)			
**Toluene-d8	50.0			47.6	ug/L		95.1	(80%-120%)			
QC1203254662 LCS											
2-Chloro-1,3-butadiene	50.0			58.1	ug/L		116	(70%-130%)		01/28/15	09:58
Acrolein	250			244	ug/L		97.4	(70%-130%)			
Acrylonitrile	250			236	ug/L		94.6	(70%-130%)			
Allyl chloride	250			240	ug/L		95.8	(70%-130%)			
Ethyl methacrylate	250			258	ug/L		103	(70%-130%)			
Isobutyl alcohol	2500			2620	ug/L		105	(70%-130%)			
Methacrylonitrile	250			250	ug/L		99.8	(70%-130%)			
Propionitrile	250			237	ug/L		94.6	(70%-130%)			
Tetrahydrofuran	250			235	ug/L		93.8	(70%-130%)			
trans-1,4-Dichloro-2-butene	250			254	ug/L		102	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			51.0	ug/L		102	(77%-123%)			
**Bromofluorobenzene	50.0			52.1	ug/L		104	(80%-120%)			
**Toluene-d8	50.0			46.1	ug/L		92.2	(80%-120%)			
QC1203254660 MB											
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					01/28/15	10:28
1,1,1-Trichloroethane			U	0.300	ug/L						
1,1,2,2-Tetrachloroethane			U	0.300	ug/L						
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						

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GEL LABORATORIES LLC

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

QC Summary

Workorder: 365755

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1452976										
1,1-Dichloroethylene			U	0.300	ug/L				CDS1	01/28/15	10:28
1,2,3-Trichloropropane			U	0.300	ug/L						
1,2-Dibromo-3-chloropropane			U	0.500	ug/L						
1,2-Dibromoethane			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						
1,2-Dichloropropane			U	0.300	ug/L						
1,4-Dichlorobenzene			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
2-Chloro-1,3-butadiene			U	0.300	ug/L						
2-Hexanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Acetonitrile			U	16.7	ug/L						
Acrolein			U	3.00	ug/L						
Acrylonitrile			U	3.00	ug/L						
Allyl chloride			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Bromoform			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						

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QC Summary

Workorder: 365755

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1452976										
Chloroethane			U	0.300	ug/L						
Chloroform			U	0.300	ug/L				CDS1	01/28/15	10:28
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L						
Dichlorodifluoromethane			U	0.300	ug/L						
Ethyl methacrylate			U	3.00	ug/L						
Ethylbenzene			U	0.300	ug/L						
Iodomethane			U	3.00	ug/L						
Isobutyl alcohol			U	33.0	ug/L						
Methacrylonitrile			U	3.00	ug/L						
Methylene chloride			U	1.60	ug/L						
Propionitrile			U	3.00	ug/L						
Styrene			U	0.300	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Tetrahydrofuran			U	1.50	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Vinyl acetate			U	1.60	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
cis-1,2-Dichloroethylene			U	0.300	ug/L						
cis-1,3-Dichloropropylene			U	0.300	ug/L						

February 20, 2015
GEL LABORATORIES LLC

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

QC Summary

Workorder: 365755

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1452976										
n-Butyl alcohol			U	83.3	ug/L						
trans-1,2-Dichloroethylene			U	0.300	ug/L				CDS1	01/28/15	10:28
trans-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,4-Dichloro-2-butene			U	1.50	ug/L						
**1,2-Dichloroethane-d4	50.0			51.0	ug/L		102	(77%-123%)			
**Bromofluorobenzene	50.0			52.9	ug/L		106	(80%-120%)			
**Toluene-d8	50.0			46.6	ug/L		93.3	(80%-120%)			
QC1203251578 365749002 PS											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	53.6	ug/L		107	(70%-130%)		01/28/15	13:58
1,1,1-Trichloroethane	50.0	U	0.00	59.1	ug/L		118	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00	50.6	ug/L		101	(70%-130%)			
1,1,2-Trichloroethane	50.0	U	0.00	51.0	ug/L		102	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00	55.0	ug/L		110	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00	56.8	ug/L		114	(70%-130%)			
1,2,3-Trichloropropane	50.0	U	0.00	49.8	ug/L		99.5	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	53.6	ug/L		107	(70%-130%)			
1,2-Dibromoethane	50.0	U	0.00	53.0	ug/L		106	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	53.0	ug/L		106	(70%-130%)			
1,2-Dichloropropane	50.0	U	0.00	56.3	ug/L		113	(70%-130%)			
1,4-Dichlorobenzene	50.0	U	0.00	53.1	ug/L		106	(70%-130%)			
2-Butanone	250	TU	0.00	T	153	ug/L	61.3*	(70%-130%)			
2-Hexanone	250	U	0.00	186	ug/L		74.5	(70%-130%)			
4-Methyl-2-pentanone	250	U	0.00	232	ug/L		92.7	(70%-130%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1452976										
Acetone	250	TU	0.00	T	107	ug/L	42.9*	(70%-130%)	CDS1	01/28/15	13:58
Acetonitrile	1250	U	0.00		1200	ug/L	95.7	(70%-130%)			
Benzene	50.0	U	0.00		54.5	ug/L	109	(70%-130%)			
Bromoform	50.0	U	0.00		56.4	ug/L	113	(70%-130%)			
Carbon disulfide	250	U	0.00		291	ug/L	116	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00		60.5	ug/L	121	(70%-130%)			
Chlorobenzene	50.0	U	0.00		54.1	ug/L	108	(70%-130%)			
Chloroethane	50.0	U	0.00		47.7	ug/L	95.4	(70%-130%)			
Chloroform	50.0	U	0.00		54.4	ug/L	109	(70%-130%)			
Dibromochloromethane	50.0	U	0.00		58.8	ug/L	118	(70%-130%)			
Dibromomethane	50.0	U	0.00		53.8	ug/L	108	(70%-130%)			
Dichlorodifluoromethane	50.0	U	0.00		53.8	ug/L	108	(70%-130%)			
Ethylbenzene	50.0	U	0.00		57.4	ug/L	115	(70%-130%)			
Iodomethane	250	U	0.00		276	ug/L	111	(70%-130%)			
Methylene chloride	50.0	J	4.18		51.2	ug/L	94	(70%-130%)			
Styrene	50.0	U	0.00		60.2	ug/L	120	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00		55.0	ug/L	110	(70%-130%)			
Toluene	50.0	U	0.00		52.6	ug/L	105	(70%-130%)			
Trichloroethylene	50.0	U	0.00		56.7	ug/L	113	(70%-130%)			
Vinyl acetate	250	U	0.00		237	ug/L	94.7	(70%-130%)			
Vinyl chloride	50.0	U	0.00		49.7	ug/L	99.3	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1452976										
Xylenes (total)	150	U	0.00	168	ug/L		112	(70%-130%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	55.6	ug/L		111	(70%-130%)	CDS1	01/28/15	13:58
cis-1,3-Dichloropropylene	50.0	U	0.00	58.8	ug/L		118	(70%-130%)			
n-Butyl alcohol	5000	U	0.00	5390	ug/L		108	(70%-130%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	55.9	ug/L		112	(70%-130%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	55.2	ug/L		110	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		51.4	49.4	ug/L		98.7	(77%-123%)			
**Bromofluorobenzene	50.0		53.2	49.0	ug/L		98	(80%-120%)			
**Toluene-d8	50.0		46.5	47.7	ug/L		95.5	(80%-120%)			
QC1203251580 365749002 PS											
2-Chloro-1,3-butadiene	50.0	U	0.00	63.5	ug/L		127	(70%-130%)		01/28/15	14:59
Acrolein	250	U	0.00	254	ug/L		102	(70%-130%)			
Acrylonitrile	250	U	0.00	243	ug/L		97	(70%-130%)			
Allyl chloride	250	U	0.00	267	ug/L		107	(70%-130%)			
Ethyl methacrylate	250	U	0.00	273	ug/L		109	(70%-130%)			
Isobutyl alcohol	2500	U	0.00	2770	ug/L		111	(70%-130%)			
Methacrylonitrile	250	U	0.00	258	ug/L		103	(70%-130%)			
Propionitrile	250	U	0.00	244	ug/L		97.6	(70%-130%)			
Tetrahydrofuran	250	U	0.00	238	ug/L		95.3	(70%-130%)			
trans-1,4-Dichloro-2-butene	250	U	0.00	271	ug/L		109	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		51.4	50.0	ug/L		100	(77%-123%)			
**Bromofluorobenzene	50.0		53.2	54.0	ug/L		108	(80%-120%)			
**Toluene-d8	50.0		46.5	47.4	ug/L		94.8	(80%-120%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1452976										
QC1203251579 365749002 PSD											
1,1,1,2-Tetrachloroethane	50.0	U	0.00		53.7	ug/L	0.130	107	(0%-20%)	CDS1	01/28/15 14:28
1,1,1-Trichloroethane	50.0	U	0.00		59.3	ug/L	0.304	119	(0%-20%)		
1,1,1,2,2-Tetrachloroethane	50.0	U	0.00		50.6	ug/L	0.0197	101	(0%-20%)		
1,1,2-Trichloroethane	50.0	U	0.00		51.1	ug/L	0.274	102	(0%-20%)		
1,1-Dichloroethane	50.0	U	0.00		54.3	ug/L	1.28	109	(0%-20%)		
1,1-Dichloroethylene	50.0	U	0.00		56.1	ug/L	1.24	112	(0%-20%)		
1,2,3-Trichloropropane	50.0	U	0.00		50.5	ug/L	1.54	101	(0%-20%)		
1,2-Dibromo-3-chloropropane	50.0	U	0.00		56.3	ug/L	4.99	113	(0%-20%)		
1,2-Dibromoethane	50.0	U	0.00		53.8	ug/L	1.59	108	(0%-20%)		
1,2-Dichloroethane	50.0	U	0.00		53.1	ug/L	0.207	106	(0%-20%)		
1,2-Dichloropropane	50.0	U	0.00		53.2	ug/L	5.74	106	(0%-20%)		
1,4-Dichlorobenzene	50.0	U	0.00		52.1	ug/L	1.75	104	(0%-20%)		
2-Butanone	250	TU	0.00	T	153	ug/L	0.379	61.1*	(0%-20%)		
2-Hexanone	250	U	0.00		190	ug/L	2.18	76.1	(0%-20%)		
4-Methyl-2-pentanone	250	U	0.00		238	ug/L	2.44	95	(0%-20%)		
Acetone	250	TU	0.00	T	112	ug/L	4.23	44.8*	(0%-20%)		
Acetonitrile	1250	U	0.00		1190	ug/L	0.974	94.8	(0%-20%)		
Benzene	50.0	U	0.00		53.0	ug/L	2.88	106	(0%-20%)		
Bromoform	50.0	U	0.00		57.3	ug/L	1.51	115	(0%-20%)		
Carbon disulfide	250	U	0.00		278	ug/L	4.57	111	(0%-20%)		
Carbon tetrachloride	50.0	U	0.00		59.7	ug/L	1.30	119	(0%-20%)		

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1452976										
Chlorobenzene	50.0	U	0.00	52.9	ug/L	2.15	106	(0%-20%)	CDS1	01/28/15	14:28
Chloroethane	50.0	U	0.00	44.5	ug/L	7.03	88.9	(0%-20%)			
Chloroform	50.0	U	0.00	54.4	ug/L	0.00	109	(0%-20%)			
Dibromochloromethane	50.0	U	0.00	58.5	ug/L	0.528	117	(0%-20%)			
Dibromomethane	50.0	U	0.00	53.3	ug/L	1.05	107	(0%-20%)			
Dichlorodifluoromethane	50.0	U	0.00	49.7	ug/L	7.96	99.4	(0%-20%)			
Ethylbenzene	50.0	U	0.00	55.7	ug/L	3.04	111	(0%-20%)			
Iodomethane	250	U	0.00	274	ug/L	0.847	110	(0%-20%)			
Methylene chloride	50.0	J	4.18	50.9	ug/L	0.549	93.4	(0%-20%)			
Styrene	50.0	U	0.00	59.9	ug/L	0.517	120	(0%-20%)			
Tetrachloroethylene	50.0	U	0.00	54.1	ug/L	1.63	108	(0%-20%)			
Toluene	50.0	U	0.00	51.3	ug/L	2.64	103	(0%-20%)			
Trichloroethylene	50.0	U	0.00	55.1	ug/L	2.93	110	(0%-20%)			
Vinyl acetate	250	U	0.00	236	ug/L	0.211	94.5	(0%-20%)			
Vinyl chloride	50.0	U	0.00	47.3	ug/L	4.97	94.5	(0%-20%)			
Xylenes (total)	150	U	0.00	164	ug/L	2.46	109	(0%-20%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	55.3	ug/L	0.667	111	(0%-20%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	56.7	ug/L	3.60	113	(0%-20%)			
n-Butyl alcohol	5000	U	0.00	5300	ug/L	1.78	106	(0%-20%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	54.7	ug/L	2.21	109	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	55.8	ug/L	1.14	112	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1452976										
**1,2-Dichloroethane-d4	50.0	51.4		50.6	ug/L		101	(77%-123%)			
**Bromofluorobenzene	50.0	53.2		50.5	ug/L		101	(80%-120%)	CDS1	01/28/15	14:28
**Toluene-d8	50.0	46.5		48.2	ug/L		96.4	(80%-120%)			
QC1203251581 365749002 PSD											
2-Chloro-1,3-butadiene	50.0	U	0.00	63.2	ug/L	0.521	126	(0%-20%)		01/28/15	15:29
Acrolein	250	U	0.00	261	ug/L	2.51	104	(0%-20%)			
Acrylonitrile	250	U	0.00	245	ug/L	1.12	98.1	(0%-20%)			
Allyl chloride	250	U	0.00	269	ug/L	0.728	108	(0%-20%)			
Ethyl methacrylate	250	U	0.00	268	ug/L	1.75	107	(0%-20%)			
Isobutyl alcohol	2500	U	0.00	2700	ug/L	2.44	108	(0%-20%)			
Methacrylonitrile	250	U	0.00	258	ug/L	0.0388	103	(0%-20%)			
Propionitrile	250	U	0.00	247	ug/L	1.22	98.8	(0%-20%)			
Tetrahydrofuran	250	U	0.00	241	ug/L	0.935	96.2	(0%-20%)			
trans-1,4-Dichloro-2-butene	250	U	0.00	265	ug/L	2.48	106	(0%-20%)			
**1,2-Dichloroethane-d4	50.0	51.4		51.3	ug/L		103	(77%-123%)			
**Bromofluorobenzene	50.0	53.2		52.7	ug/L		105	(80%-120%)			
**Toluene-d8	50.0	46.5		46.8	ug/L		93.6	(80%-120%)			

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated

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

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

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

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

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

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

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 30-JAN-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: VOA GC/MS	Test / Method: SW846 8260C	Matrix Type: Liquid	Client Code: CPRC
Batch ID: 1452976	Sample Numbers: See Below		
<p>Potentially affected work order(s)(SDG): 365553(GEL365553),365663(GEL365663),365668(GEL365668),365700(GEL365700),365749(GEL365749),365755(GEL365755),365758(GEL365758),365759(GEL365759)</p> <p>Application Issues:</p> <p>Failed Recovery for PS/PSD Failed Recovery for MS/MSD, or PS/PSD</p>			
Specification and Requirements		DER Disposition:	
Exception Description:			
<p>1. The recoveries for Acetone and 2-Butanone were outside of acceptance limits in the matrix spike and in the matrix spike duplicate performed on sample 365749002. The calculated relative percent differences between the MS and MSD were within acceptance limits for all client requested compounds.</p>		<p>1. Narrate and report data.</p>	

Originator's Name:
Crystal Stacey 30-JAN-15

Data Validator/Group Leader:
Erin Haubert 18-FEB-15

Semi-Volatile Analysis

Case Narrative

February 20, 2015
GC/MS Semivolatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL365755
Work Order #: 365755

Method/Analysis Information

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

Analytical Method: SW846 3510C/8270D

Prep Method: SW846 3510C

Analytical Batch Number: 1453142

Prep Batch Number: 1453139

Sample Analysis

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

Sample ID	Client ID
365755001	B30168
1203252088	MB for batch 1453139
1203252089	Laboratory Control Sample (LCS)
1203252092	365755001(B30168) Matrix Spike (MS)
1203252093	365755001(B30168) Matrix Spike Duplicate (MSD)

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

Preparation/Analytical Method Verification

SOP Reference

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

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

Calibration Information

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

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

Initial Calibration

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

CCV Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

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

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 365755001 (B30168) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement

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

MS/MSD Relative Percent Difference (RPD) Statement

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

Internal Standard (ISTD) Acceptance

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

Technical Information:

Holding Time Specifications

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

Preparation/Analytical Method Verification

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

Sample Dilutions

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

Sample Re-extraction/Re-analysis

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

Miscellaneous Information:

Data Exception (DER) Documentation

A data exception report (DER) was not generated for sample(s) in this SDG in this batch. A data exception report (DER) was not generated for this SDG.

Manual Integrations

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

TIC Comment

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

Additional Comments

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

Due to rounding differences in the calculation, the data reported in the Surrogate Recovery Report may differ slightly from the raw data. Due to software issue, the raw data may not correctly display the updated SPC limits. Please see Sample Data Summary Report and Surrogate Recovery Report for the correct surrogate acceptance limits.

Electronic Package Comment

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

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

System Configuration

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description
MSD3.I	Agilent 7890A/5975C GC/MS w/ 7683 Autosampler	HP7890A/HP5975C	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

Certification Statement

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

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL365755 GEL Work Order: 365755

The Qualifiers in this report are defined as follows:

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

DL Indicates that sample is diluted.

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

RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: **Barbara Bailey**

Date: **18 FEB 2015**

Title: **Data Validator**

Sample Data Summary

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 18, 2015

Client Sample ID:	B30168	Project:	CPRC0S15001
Sample ID:	365755001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 10:37		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatile-GC/MS											
<i>8270_SVOA_GCMS: 1,4 Dioxane (1) "As Received"</i>											
1,4-Dioxane	U	0.00	2.88	9.62	ug/L	1	JLD1	01/28/15	2103	1453142	1
123-91-1											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270 Analysis	SXS3	01/28/15	0630	1453139

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3510C/8270D	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
2-Fluorobiphenyl	8270_SVOA_GCMS: 1,4 Dioxane (1) "As Received"	33.5 ug/L	48.1	69.7	(35%-102%)
Nitrobenzene-d5	8270_SVOA_GCMS: 1,4 Dioxane (1) "As Received"	39.7 ug/L	48.1	82.7	(38%-113%)
p-Terphenyl-d14	8270_SVOA_GCMS: 1,4 Dioxane (1) "As Received"	40.7 ug/L	48.1	84.6	(38%-123%)
2,4,6-Tribromophenol	8270_SVOA_GCMS: 1,4 Dioxane (1) "As Received"	71.1 ug/L	96.2	74.0	(33%-126%)
2-Fluorophenol	8270_SVOA_GCMS: 1,4 Dioxane (1) "As Received"	39.2 ug/L	96.2	40.8	(18%-84%)
Phenol-d5	8270_SVOA_GCMS: 1,4 Dioxane (1) "As Received"	26.4 ug/L	96.2	27.5	(10%-110%)

Quality Control Summary

February 20, 2015
GEL LABORATORIES LLC

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

QC Summary

Report Date: February 18, 2015

Page 1 of 3

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 365755

<u>Parmname</u>	<u>NOM</u>	<u>Sample</u>	<u>Qual</u>	<u>QC</u>	<u>Units</u>	<u>RPD%</u>	<u>REC%</u>	<u>Range</u>	<u>Anlst</u>	<u>Date</u>	<u>Time</u>
Semi-Volatile-GC/MS											
Batch	1453142										
QC1203252089	LCS										
1,4-Dioxane	50.0			26.5	ug/L		53	(29%-74%)	JLD1	01/28/15	15:08
**2,4,6-Tribromophenol	100			99.1	ug/L		99.1	(33%-126%)			
**2-Fluorobiphenyl	50.0			38.4	ug/L		76.9	(35%-102%)			
**2-Fluorophenol	100			46.8	ug/L		46.8	(18%-84%)			
**Nitrobenzene-d5	50.0			37.1	ug/L		74.1	(38%-113%)			
**Phenol-d5	100			30.5	ug/L		30.5	(10%-110%)			
**p-Terphenyl-d14	50.0			54.0	ug/L		108	(38%-123%)			
QC1203252088	MB										
1,4-Dioxane			U	3.00	ug/L					01/28/15	14:37
**2,4,6-Tribromophenol	100			90.8	ug/L		90.8	(33%-126%)			
**2-Fluorobiphenyl	50.0			40.9	ug/L		81.8	(35%-102%)			
**2-Fluorophenol	100			51.7	ug/L		51.7	(18%-84%)			
**Nitrobenzene-d5	50.0			45.4	ug/L		90.7	(38%-113%)			
**Phenol-d5	100			34.7	ug/L		34.7	(10%-110%)			
**p-Terphenyl-d14	50.0			52.8	ug/L		106	(38%-123%)			
QC1203252092	365755001 MS										
1,4-Dioxane	100	U	2.88	61.5	ug/L		61.5	(27%-94%)		01/28/15	21:32
**2,4,6-Tribromophenol	200		71.1	183	ug/L		91.6	(33%-126%)			
**2-Fluorobiphenyl	100		33.5	69.8	ug/L		69.8	(35%-102%)			
**2-Fluorophenol	200		39.2	119	ug/L		59.7	(18%-84%)			
**Nitrobenzene-d5	100		39.7	72.3	ug/L		72.3	(38%-113%)			

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QC Summary

Workorder: **365755**

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1453142										
**Phenol-d5	200	26.4		94.5	ug/L		47.3	(10%-110%)	JLD1	01/28/15	21:32
**p-Terphenyl-d14	100	40.7		89.7	ug/L		89.7	(38%-123%)			
QC1203252093 365755001 MSD											
1,4-Dioxane	100	U	2.88	60.8	ug/L	1.28	60.8	(0%-30%)		01/28/15	22:01
**2,4,6-Tribromophenol	200	71.1		193	ug/L		96.6	(33%-126%)			
**2-Fluorobiphenyl	100	33.5		74.6	ug/L		74.6	(35%-102%)			
**2-Fluorophenol	200	39.2		114	ug/L		57.2	(18%-84%)			
**Nitrobenzene-d5	100	39.7		76.7	ug/L		76.7	(38%-113%)			
**Phenol-d5	200	26.4		91.5	ug/L		45.8	(10%-110%)			
**p-Terphenyl-d14	100	40.7		106	ug/L		106	(38%-123%)			

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)

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QC Summary

Workorder: 365755

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

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

Metals Analysis

Case Narrative

February 20, 2015

Metals

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL365755

Work Order #: 365755

Sample ID	Client ID
365755001	B30168
365755002	B30171
365755003	B30199
365755004	B301B1
365755005	B303X2
365755006	B30186
1203251026	Method Blank (MB)ICP
1203251027	Laboratory Control Sample (LCS)
1203251030	365758001(B2YWH9L) Serial Dilution (SD)
1203251028	365758001(B2YWH9S) Matrix Spike (MS)
1203251029	365758001(B2YWH9SD) Matrix Spike Duplicate (MSD)
1203250986	Method Blank (MB)ICP-MS
1203250987	Laboratory Control Sample (LCS)
1203250990	365755001(B30168L) Serial Dilution (SD)
1203250988	365755001(B30168S) Matrix Spike (MS)
1203250989	365755001(B30168SD) Matrix Spike Duplicate (MSD)
1203267577	365755001(B30168PS) Post Spike (PS)

Sample Analysis

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

Method/Analysis Information

Analytical Batch:	1452750 and 1452736
Prep Batch :	1452749 and 1452735
Standard Operating Procedures:	GL-MA-E-013 REV# 23, GL-MA-E-006 REV# 11 and GL-MA-E-014 REV# 25
Analytical Method:	SW846 3005A/6010C and SW846 3005A/6020A
Prep Method :	SW846 3005A

Preparation/Analytical Method Verification

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

System Configuration

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

chamber, and yttrium or scandium internal standard.

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

Calibration Information

Instrument Calibration

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

CRDL/PQL Requirements

The initial CRDL standard recoveries for EPA 200.8/SW846 6020 met the advisory control limits with the exception of the analytes listed below. The methods do not require qualifying the data, only narrating the recoveries outside the criteria. 365755003 (B30199) and 365755004 (B301B1)-ICP-MS.

ICSA/ICSAB Statement

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

Continuing Calibration Blanks (CCB) Requirements

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

Continuing Calibration Verification (CCV) Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the acceptance criteria. The zinc concentration in blank 1203251026 (MB)-ICP was greater than the MDL. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. Zinc ICP-MS.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 365758001 (B2YWH9)-ICP and 365755001 (B30168)-ICP-MS.

Matrix Spike (MS/MSD) Recovery Statement

The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analytes.

Sample	Analyte	Value
1203250989 (B30168MSD)	Chromium	134* (75%-125%)

MS/MSD Relative Percent Difference (RPD) Statement

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

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Post Spike (PS) Recovery Statement

The PS met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the absence of matrix interferences in the post-digested sample.

Technical Information

Holding Time Specifications

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Preparation Information

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

Miscellaneous Information

Electronic Packaging Comment

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

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

Data Exception (DER) Documentation

A Data exception report (DER) was generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DER was generated for this SDG: 1384305. 1203250989 (B30168MSD)-ICP-MS.

Additional Comments

Additional comments were not required for this SDG.

Certification Statement

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

February 20, 2015

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: GEL365755 GEL Work Order: 365755

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

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

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

D Results are reported from a diluted aliquot of sample.

N Spike Sample recovery is outside control limits.

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

Review/Validation

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

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

Signature: 

Name: Nik-Cole Elmore

Date: 20 FEB 2015

Title: Data Validator

Sample Data Summary

~~February 20, 2015~~
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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID:	B30168	Project:	CPRC0S15001
Sample ID:	365755001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 10:37		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP												
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Arsenic	U	2.53	+/-1.74	5.00	30.0	ug/L	1	HSC	02/09/15	1823	1452750	1
7440-38-2												
Barium		96.3	+/-19.3	1.00	5.00	ug/L	1					
7440-39-3												
Cadmium	U	0.137	+/-0.334	1.00	5.00	ug/L	1					
7440-43-9												
Calcium		93500	+/-18700	50.0	200	ug/L	1					
7440-70-2												
Chromium		19.6	+/-3.94	1.00	5.00	ug/L	1					
7440-47-3												
Cobalt	U	-0.0825	+/-0.334	1.00	5.00	ug/L	1					
7440-48-4												
Copper	U	0.131	+/-1.00	3.00	10.0	ug/L	1					
7440-50-8												
Iron		531	+/-107	30.0	100	ug/L	1					
7439-89-6												
Magnesium		19600	+/-3910	110	300	ug/L	1					
7439-95-4												
Manganese	B	3.42	+/-0.956	2.00	10.0	ug/L	1					
7439-96-5												
Nickel		8.25	+/-1.72	1.50	5.00	ug/L	1					
7440-02-0												
Potassium		8400	+/-1680	50.0	150	ug/L	1					
7440-09-7												
Silver	U	0.806	+/-0.370	1.00	5.00	ug/L	1					
7440-22-4												
Vanadium		11.8	+/-2.38	1.00	5.00	ug/L	1					
7440-62-2												
Zinc	U	1.53	+/-1.14	3.30	10.0	ug/L	1					
7440-66-6												
Antimony	U	2.67	+/-1.28	3.50	10.0	ug/L	1	HSC	02/16/15	1642	1452750	2
7440-36-0												
Sodium		25100	+/-5030	100	300	ug/L	1					
7440-23-5												

Metals Analysis-ICP-MS

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID: B30168 Project: CPRC0S15001
 Sample ID: 365755001 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: Antimony + Arsenic(1) "As Received"</i>											
Antimony 7440-36-0	U	0.221	+/-0.336	1.00	3.00	ug/L	1 PRB	02/19/15	1836	1452736	3
Arsenic 7440-38-2	B	3.04	+/-0.832	1.70	5.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	KXP3	01/26/15	1030	1452735
SW846 3005A	SW846 3005A for 6010C	KXP3	01/26/15	1030	1452749

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6010C	
3	SW846 3005A/6020A	

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID:	B30171	Project:	CPRC0S15001
Sample ID:	365755002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 10:37		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP												
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Arsenic	U	0.0172	+/-1.67	5.00	30.0	ug/L	1	HSC	02/09/15	1826	1452750	1
7440-38-2		92.3	+/-18.5	1.00	5.00	ug/L	1					
Barium												
7440-39-3												
Cadmium	U	-0.006	+/-0.333	1.00	5.00	ug/L	1					
7440-43-9												
Calcium		92200	+/-18400	50.0	200	ug/L	1					
7440-70-2												
Chromium		5.50	+/-1.15	1.00	5.00	ug/L	1					
7440-47-3												
Cobalt	U	0.223	+/-0.336	1.00	5.00	ug/L	1					
7440-48-4												
Copper	U	-0.435	+/-1.00	3.00	10.0	ug/L	1					
7440-50-8												
Iron	B	83.5	+/-19.5	30.0	100	ug/L	1					
7439-89-6												
Magnesium		19400	+/-3880	110	300	ug/L	1					
7439-95-4												
Manganese	U	1.15	+/-0.705	2.00	10.0	ug/L	1					
7439-96-5												
Nickel	B	3.26	+/-0.822	1.50	5.00	ug/L	1					
7440-02-0												
Potassium		8300	+/-1660	50.0	150	ug/L	1					
7440-09-7												
Silver	U	0.220	+/-0.336	1.00	5.00	ug/L	1					
7440-22-4												
Vanadium		10.4	+/-2.10	1.00	5.00	ug/L	1					
7440-62-2												
Zinc	U	0.247	+/-1.10	3.30	10.0	ug/L	1					
7440-66-6												
Antimony	U	2.67	+/-1.28	3.50	10.0	ug/L	1	HSC	02/16/15	1645	1452750	2
7440-36-0												
Sodium		24600	+/-4930	100	300	ug/L	1					
7440-23-5												

Metals Analysis-ICP-MS

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID: B30171 Project: CPRC0S15001
 Sample ID: 365755002 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method	
Metals Analysis-ICP-MS												
<i>6020_METALS_ICPMS: Antimony + Arsenic(1) "As Received"</i>												
Antimony 7440-36-0	U	0.219	+/-0.336	1.00	3.00	ug/L	1	PRB	02/19/15	1859	1452736	3
Arsenic 7440-38-2	B	2.54	+/-0.761	1.70	5.00	ug/L	1					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	KXP3	01/26/15	1030	1452735
SW846 3005A	SW846 3005A for 6010C	KXP3	01/26/15	1030	1452749

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6010C	
3	SW846 3005A/6020A	

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID:	B30199	Project:	CPRC0S15001
Sample ID:	365755003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 08:11		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP											
<i>6010_METALS_ICP:GW 04 (6 metals) "As Received"</i>											
Calcium		46900	+/-9390	50.0	200	ug/L	1	HSC	02/09/15	1829	1452750 1
7440-70-2											
Iron	B	90.6	+/-20.7	30.0	100	ug/L	1				
7439-89-6											
Magnesium		14800	+/-2960	110	300	ug/L	1				
7439-95-4											
Potassium		6630	+/-1330	50.0	150	ug/L	1				
7440-09-7											
Vanadium		22.5	+/-4.51	1.00	5.00	ug/L	1				
7440-62-2											
Sodium		25300	+/-5070	100	300	ug/L	1	HSC	02/16/15	1648	1452750 2
7440-23-5											
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
Aluminum	U	5.03	+/-5.10	15.0	50.0	ug/L	1	PRB	02/19/15	1902	1452736 3
7429-90-5											
Antimony	U	0.133	+/-0.334	1.00	5.00	ug/L	1				
7440-36-0											
Arsenic		4.62	+/-1.08	1.70	5.00	ug/L	1				
7440-38-2											
Barium		48.2	+/-9.65	0.600	5.00	ug/L	1				
7440-39-3											
Beryllium	U	0.011	+/-0.0667	0.200	2.00	ug/L	1				
7440-41-7											
Boron		29.3	+/-6.01	4.00	15.0	ug/L	1				
7440-42-8											
Cadmium	U	-0.003	+/-0.0367	0.110	2.00	ug/L	1				
7440-43-9											
Chromium	N	13.3	+/-2.74	2.00	10.0	ug/L	1				
7440-47-3											
Cobalt	U	0.035	+/-0.0341	0.100	4.00	ug/L	1				
7440-48-4											
Lead	U	0.060	+/-0.167	0.500	2.00	ug/L	1				
7439-92-1											
Manganese	B	2.34	+/-0.574	1.00	5.00	ug/L	1				

~~February 20, 2015~~
GEL LABORATORIES LLC

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID: B30199 Project: CPRC0S15001
 Sample ID: 365755003 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
7439-96-5											
Nickel	U	0.224	+/-0.173	0.500	2.00	ug/L					
7440-02-0											
Selenium	B	3.70	+/-0.893	1.50	5.00	ug/L					
7782-49-2											
Silver	U	0.009	+/-0.0667	0.200	2.00	ug/L					
7440-22-4											
Strontium		220	+/-44.1	2.00	10.0	ug/L					
7440-24-6											
Thallium	U	0.008	+/-0.150	0.450	2.00	ug/L					
7440-28-0											
Zinc	BC	7.70	+/-1.93	3.50	10.0	ug/L					
7440-66-6											
Thorium	U	0.130	+/-0.130	0.383	2.00	ug/L	PRB	02/20/15	0932	1452736	4
7440-29-1											
Tin	U	0.218	+/-0.336	1.00	5.00	ug/L					
7440-31-5											
Uranium		7.99	+/-1.60	0.067	0.200	ug/L					
7440-61-1											
Copper	U	0.100	+/-0.118	0.350	8.00	ug/L	PRB	02/20/15	1534	1452736	5
7440-50-8											
Molybdenum	B	8.95	+/-1.79	0.165	20.0	ug/L					
7439-98-7											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	KXP3	01/26/15	1030	1452735
SW846 3005A	SW846 3005A for 6010C	KXP3	01/26/15	1030	1452749

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6010C	
3	SW846 3005A/6020A	
4	SW846 3005A/6020A	
5	SW846 3005A/6020A	

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID:	B301B1	Project:	CPRC0S15001
Sample ID:	365755004	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 08:11		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP											
<i>6010_METALS_ICP:GW 04 (6 metals) "As Received"</i>											
Calcium		45900	+/-9180	50.0	200	ug/L	1	HSC	02/09/15	1832	1452750 1
7440-70-2											
Iron	U	12.7	+/-10.3	30.0	100	ug/L	1				
7439-89-6											
Magnesium		14400	+/-2890	110	300	ug/L	1				
7439-95-4											
Potassium		6420	+/-1280	50.0	150	ug/L	1				
7440-09-7											
Vanadium		21.9	+/-4.40	1.00	5.00	ug/L	1				
7440-62-2											
Sodium		24700	+/-4940	100	300	ug/L	1	HSC	02/16/15	1652	1452750 2
7440-23-5											
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
Aluminum	U	6.79	+/-5.18	15.0	50.0	ug/L	1	PRB	02/19/15	1905	1452736 3
7429-90-5											
Antimony	U	0.209	+/-0.336	1.00	5.00	ug/L	1				
7440-36-0											
Arsenic		4.50	+/-1.06	1.70	5.00	ug/L	1				
7440-38-2											
Barium		47.3	+/-9.46	0.600	5.00	ug/L	1				
7440-39-3											
Beryllium	U	0.00	+/-0.0667	0.200	2.00	ug/L	1				
7440-41-7											
Boron		26.4	+/-5.45	4.00	15.0	ug/L	1				
7440-42-8											
Cadmium	U	0.013	+/-0.0368	0.110	2.00	ug/L	1				
7440-43-9											
Chromium	N	12.2	+/-2.53	2.00	10.0	ug/L	1				
7440-47-3											
Cobalt	B	0.198	+/-0.0518	0.100	4.00	ug/L	1				
7440-48-4											
Lead	U	0.026	+/-0.167	0.500	2.00	ug/L	1				
7439-92-1											
Manganese	U	0.687	+/-0.361	1.00	5.00	ug/L	1				

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID: B301B1 Project: CPRC0S15001
 Sample ID: 365755004 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
7439-96-5											
Nickel	U	0.213	+/-0.172	0.500	2.00	ug/L					
7440-02-0											
Selenium	B	3.48	+/-0.857	1.50	5.00	ug/L					
7782-49-2											
Silver	U	0.008	+/-0.0667	0.200	2.00	ug/L					
7440-22-4											
Strontium		216	+/-43.1	2.00	10.0	ug/L					
7440-24-6											
Thallium	U	-0.007	+/-0.150	0.450	2.00	ug/L					
7440-28-0											
Zinc	BC	7.01	+/-1.82	3.50	10.0	ug/L					
7440-66-6											
Thorium	U	0.048	+/-0.128	0.383	2.00	ug/L	PRB	02/20/15	0934	1452736	4
7440-29-1											
Tin	U	0.141	+/-0.335	1.00	5.00	ug/L					
7440-31-5											
Uranium		7.64	+/-1.53	0.067	0.200	ug/L					
7440-61-1											
Copper	U	0.178	+/-0.122	0.350	8.00	ug/L	PRB	02/20/15	1536	1452736	5
7440-50-8											
Molybdenum	B	8.83	+/-1.77	0.165	20.0	ug/L					
7439-98-7											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	KXP3	01/26/15	1030	1452735
SW846 3005A	SW846 3005A for 6010C	KXP3	01/26/15	1030	1452749

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6010C	
3	SW846 3005A/6020A	
4	SW846 3005A/6020A	
5	SW846 3005A/6020A	

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID:	B303X2	Project:	CPRC0S15001
Sample ID:	365755005	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 11:09		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP												
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Arsenic	U	0.349	+/-1.67	5.00	30.0	ug/L	1	HSC	02/09/15	1835	1452750	1
7440-38-2		75.8	+/-15.2	1.00	5.00	ug/L	1					
Barium												
7440-39-3												
Cadmium	U	0.044	+/-0.333	1.00	5.00	ug/L	1					
7440-43-9												
Calcium		87900	+/-17600	50.0	200	ug/L	1					
7440-70-2												
Chromium		6.83	+/-1.41	1.00	5.00	ug/L	1					
7440-47-3												
Cobalt	U	0.157	+/-0.335	1.00	5.00	ug/L	1					
7440-48-4												
Copper	U	-0.257	+/-1.00	3.00	10.0	ug/L	1					
7440-50-8												
Iron	U	20.3	+/-10.8	30.0	100	ug/L	1					
7439-89-6												
Magnesium		19900	+/-3980	110	300	ug/L	1					
7439-95-4												
Manganese	U	1.85	+/-0.763	2.00	10.0	ug/L	1					
7439-96-5												
Nickel	U	0.997	+/-0.538	1.50	5.00	ug/L	1					
7440-02-0												
Potassium		8000	+/-1600	50.0	150	ug/L	1					
7440-09-7												
Silver	U	0.557	+/-0.351	1.00	5.00	ug/L	1					
7440-22-4												
Vanadium		12.9	+/-2.60	1.00	5.00	ug/L	1					
7440-62-2												
Zinc	U	0.397	+/-1.10	3.30	10.0	ug/L	1					
7440-66-6												
Antimony	U	1.62	+/-1.21	3.50	10.0	ug/L	1	HSC	02/16/15	1655	1452750	2
7440-36-0												
Sodium		25400	+/-5090	100	300	ug/L	1					
7440-23-5												

Metals Analysis-ICP-MS

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID: B303X2 Project: CPRC0S15001
 Sample ID: 365755005 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method	
Metals Analysis-ICP-MS												
<i>6020_METALS_ICPMS: Antimony + Arsenic(1) "As Received"</i>												
Antimony 7440-36-0	U	0.181	+/-0.335	1.00	3.00	ug/L	1	PRB	02/19/15	1907	1452736	3
Arsenic 7440-38-2	B	2.99	+/-0.823	1.70	5.00	ug/L	1					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	KXP3	01/26/15	1030	1452735
SW846 3005A	SW846 3005A for 6010C	KXP3	01/26/15	1030	1452749

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6010C	
3	SW846 3005A/6020A	

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID:	B30186	Project:	CPRC0S15001
Sample ID:	365755006	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 11:09		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP												
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Arsenic	U	-0.433	+/-1.67	5.00	30.0	ug/L	1	HSC	02/09/15	1838	1452750	1
7440-38-2		74.9	+/-15.0	1.00	5.00	ug/L	1					
Barium		74.9	+/-15.0	1.00	5.00	ug/L	1					
7440-39-3												
Cadmium	U	0.236	+/-0.337	1.00	5.00	ug/L	1					
7440-43-9												
Calcium		86900	+/-17400	50.0	200	ug/L	1					
7440-70-2												
Chromium		6.66	+/-1.37	1.00	5.00	ug/L	1					
7440-47-3												
Cobalt	U	0.0177	+/-0.333	1.00	5.00	ug/L	1					
7440-48-4												
Copper	U	-0.492	+/-1.00	3.00	10.0	ug/L	1					
7440-50-8												
Iron	U	6.32	+/-10.1	30.0	100	ug/L	1					
7439-89-6												
Magnesium		19800	+/-3950	110	300	ug/L	1					
7439-95-4												
Manganese	U	1.44	+/-0.726	2.00	10.0	ug/L	1					
7439-96-5												
Nickel	U	0.855	+/-0.528	1.50	5.00	ug/L	1					
7440-02-0												
Potassium		7940	+/-1590	50.0	150	ug/L	1					
7440-09-7												
Silver	U	0.403	+/-0.343	1.00	5.00	ug/L	1					
7440-22-4												
Vanadium		12.4	+/-2.51	1.00	5.00	ug/L	1					
7440-62-2												
Zinc	U	0.225	+/-1.10	3.30	10.0	ug/L	1					
7440-66-6												
Antimony	U	1.43	+/-1.20	3.50	10.0	ug/L	1	HSC	02/16/15	1658	1452750	2
7440-36-0												
Sodium		25500	+/-5090	100	300	ug/L	1					
7440-23-5												

Metals Analysis-ICP-MS

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 20, 2015

Client Sample ID: B30186 Project: CPRC0S15001
 Sample ID: 365755006 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: Antimony + Arsenic(1) "As Received"</i>											
Antimony 7440-36-0	U	0.203	+/-0.336	1.00	3.00	ug/L	1 PRB	02/19/15	1910	1452736	3
Arsenic 7440-38-2	B	2.61	+/-0.771	1.70	5.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	KXP3	01/26/15	1030	1452735
SW846 3005A	SW846 3005A for 6010C	KXP3	01/26/15	1030	1452749

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6010C	
3	SW846 3005A/6020A	

Quality Control Summary

February 20, 2015
GEL LABORATORIES LLC

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

QC Summary

Report Date: February 20, 2015

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

Contact: Mr. Scot Fitzgerald

Workorder: 365755

Parmname	NOM	Sample Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS										
Batch	1452736									
QC1203250987	LCS									
Aluminum	2000		2130	ug/L		107	(80%-120%)	PRB	02/19/15	18:17
Antimony	50.0		50.7	ug/L		101	(80%-120%)			
Arsenic	50.0		52.8	ug/L		106	(80%-120%)			
Barium	50.0		52.0	ug/L		104	(80%-120%)			
Beryllium	50.0		59.0	ug/L		118	(80%-120%)			
Boron	100		99.6	ug/L		99.6	(80%-120%)			
Cadmium	50.0		53.3	ug/L		107	(80%-120%)			
Chromium	50.0		54.7	ug/L		109	(80%-120%)			
Cobalt	50.0		54.4	ug/L		109	(80%-120%)			
Copper	50.0		55.6	ug/L		111	(80%-120%)		02/20/15	15:19
Lead	50.0		48.1	ug/L		96.3	(80%-120%)		02/19/15	18:17
Manganese	50.0		54.4	ug/L		109	(80%-120%)			
Molybdenum	50.0		54.5	ug/L		109	(80%-120%)		02/20/15	15:19
Nickel	50.0		55.2	ug/L		110	(80%-120%)		02/19/15	18:17
Selenium	50.0		51.3	ug/L		103	(80%-120%)			
Silver	50.0		52.7	ug/L		105	(80%-120%)			
Strontium	50.0		51.8	ug/L		104	(80%-120%)			
Thallium	50.0		45.2	ug/L		90.4	(80%-120%)			
Thorium	50.0		52.4	ug/L		105	(80%-120%)		02/20/15	09:07
Tin	50.0		56.4	ug/L		113	(80%-120%)			

February 20, 2015
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QC Summary

Workorder: 365755

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1452736										
Uranium	50.0			51.4	ug/L		103	(80%-120%)	PRB	02/20/15	09:07
Zinc	50.0			55.5	ug/L		111	(80%-120%)		02/19/15	18:17
QC1203250986	MB										
Aluminum			U	ND	ug/L					02/19/15	18:14
Antimony			U	ND	ug/L						
Arsenic			U	ND	ug/L						
Barium			U	ND	ug/L						
Beryllium			U	ND	ug/L						
Boron			U	ND	ug/L						
Cadmium			U	ND	ug/L						
Chromium			U	ND	ug/L						
Cobalt			U	ND	ug/L						
Copper			U	ND	ug/L					02/20/15	15:18
Lead			U	ND	ug/L					02/19/15	18:14
Manganese			U	ND	ug/L						
Molybdenum			U	ND	ug/L					02/20/15	15:18
Nickel			U	ND	ug/L					02/19/15	18:14
Selenium			U	ND	ug/L						
Silver			U	ND	ug/L						
Strontium			U	ND	ug/L						
Thallium			U	ND	ug/L						
Thorium			U	ND	ug/L					02/20/15	09:05

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QC Summary

Workorder: **365755**

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1452736										
Tin			U	ND	ug/L				PRB	02/20/15	09:05
Uranium			U	ND	ug/L						
Zinc			B	4.36	ug/L					02/19/15	18:14
QC1203250988	365755001 MS										
Aluminum	2000	119		2270	ug/L		108	(75%-125%)		02/19/15	18:39
Antimony	50.0	U	ND	50.4	ug/L		100	(75%-125%)			
Arsenic	50.0	B	3.04	55.3	ug/L		104	(75%-125%)			
Barium	50.0		93.5	143	ug/L		98.1	(75%-125%)			
Beryllium	50.0	U	ND	57.8	ug/L		116	(75%-125%)			
Boron	100		22.0	114	ug/L		92.3	(75%-125%)			
Cadmium	50.0	U	ND	51.0	ug/L		102	(75%-125%)			
Chromium	50.0	N	40.0	101	ug/L		123	(75%-125%)			
Cobalt	50.0	B	0.319	53.2	ug/L		106	(75%-125%)			
Copper	50.0		1.56	52.4	ug/L		102	(75%-125%)		02/20/15	15:23
Lead	50.0	U	ND	47.0	ug/L		93.6	(75%-125%)		02/19/15	18:39
Manganese	50.0		5.61	58.9	ug/L		107	(75%-125%)			
Molybdenum	50.0		5.80	58.4	ug/L		105	(75%-125%)		02/20/15	15:23
Nickel	50.0		13.3	66.5	ug/L		106	(75%-125%)		02/19/15	18:39
Selenium	50.0	B	2.29	51.5	ug/L		98.5	(75%-125%)			
Silver	50.0	U	ND	48.8	ug/L		97.6	(75%-125%)			
Strontium	50.0		368	412	ug/L		N/A	(75%-125%)			
Thallium	50.0	U	ND	44.0	ug/L		88	(75%-125%)			

February 20, 2015
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QC Summary

Workorder: 365755

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1452736										
Thorium	50.0	U	ND	54.3	ug/L		108	(75%-125%)	PRB	02/20/15	09:24
Tin	50.0	U	ND	56.1	ug/L		111	(75%-125%)			
Uranium	50.0		6.90	61.0	ug/L		108	(75%-125%)			
Zinc	50.0	BC	5.50	55.0	ug/L		99.1	(75%-125%)		02/19/15	18:39
QC1203250989	365755001 MSD										
Aluminum	2000		119	2310	ug/L	1.47	109	(0%-20%)		02/19/15	18:42
Antimony	50.0	U	ND	53.8	ug/L	6.48	107	(0%-20%)			
Arsenic	50.0	B	3.04	56.4	ug/L	2.10	107	(0%-20%)			
Barium	50.0		93.5	145	ug/L	1.97	104	(0%-20%)			
Beryllium	50.0	U	ND	56.7	ug/L	2.02	113	(0%-20%)			
Boron	100		22.0	115	ug/L	0.142	92.5	(0%-20%)			
Cadmium	50.0	U	ND	52.6	ug/L	3.11	105	(0%-20%)			
Chromium	50.0	N	40.0 N	107	ug/L	5.60	134*	(0%-20%)			
Cobalt	50.0	B	0.319	53.9	ug/L	1.32	107	(0%-20%)			
Copper	50.0		1.56	52.3	ug/L	0.120	101	(0%-20%)		02/20/15	15:25
Lead	50.0	U	ND	47.5	ug/L	1.08	94.6	(0%-20%)		02/19/15	18:42
Manganese	50.0		5.61	60.3	ug/L	2.33	109	(0%-20%)			
Molybdenum	50.0		5.80	59.2	ug/L	1.32	107	(0%-20%)		02/20/15	15:25
Nickel	50.0		13.3	69.3	ug/L	4.11	112	(0%-20%)		02/19/15	18:42
Selenium	50.0	B	2.29	55.1	ug/L	6.63	106	(0%-20%)			
Silver	50.0	U	ND	50.8	ug/L	4.01	102	(0%-20%)			
Strontium	50.0		368	431	ug/L	4.42	N/A	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1452736										
Thallium	50.0	U	ND	46.2	ug/L	4.88	92.4	(0%-20%)	PRB	02/19/15	18:42
Thorium	50.0	U	ND	57.0	ug/L	4.97	114	(0%-20%)		02/20/15	09:26
Tin	50.0	U	ND	58.3	ug/L	3.74	116	(0%-20%)			
Uranium	50.0		6.90	63.3	ug/L	3.78	113	(0%-20%)			
Zinc	50.0	BC	5.50	55.4	ug/L	0.719	99.9	(0%-20%)		02/19/15	18:42
QC1203267577	365755001 PS										
Chromium	50.0	N	40.0	90.0	ug/L		100	(80%-120%)		02/19/15	18:45
QC1203250990	365755001 SDILT										
Aluminum			119 D	18.3	ug/L	23		(0%-10%)		02/19/15	18:48
Antimony		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Arsenic		B	3.04 DU	ND	ug/L	N/A		(0%-10%)			
Barium			93.5 D	18.3	ug/L	2.45		(0%-10%)			
Beryllium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Boron			22.0 D	8.07	ug/L	83.1		(0%-10%)			
Cadmium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Chromium		N	40.0 D	7.87	ug/L	1.62		(0%-10%)			
Cobalt		B	0.319 DU	ND	ug/L	N/A		(0%-10%)			
Copper			1.56 DU	ND	ug/L	N/A		(0%-10%)		02/20/15	15:27
Lead		U	ND DU	ND	ug/L	N/A		(0%-10%)		02/19/15	18:48
Manganese			5.61 D	1.23	ug/L	9.94		(0%-10%)			
Molybdenum			5.80 D	1.22	ug/L	5.36		(0%-10%)		02/20/15	15:27
Nickel			13.3 D	2.72	ug/L	2.02		(0%-10%)		02/19/15	18:48
Selenium		B	2.29 DU	ND	ug/L	N/A		(0%-10%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1452736										
Silver	U	ND	DU	ND	ug/L	N/A		(0%-10%)	PRB	02/19/15	18:48
Strontium		368	D	71.5	ug/L	2.98		(0%-10%)			
Thallium	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Thorium	U	ND	DU	ND	ug/L	N/A		(0%-10%)		02/20/15	09:30
Tin	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Uranium		6.90	D	1.43	ug/L	3.71		(0%-10%)			
Zinc	BC	5.50	DU	ND	ug/L	N/A		(0%-10%)		02/19/15	18:48
Metals Analysis-ICP											
Batch	1452750										
QC1203251027	LCS										
Antimony	500			517	ug/L		103	(80%-120%)	HSC	02/16/15	16:08
Arsenic	500			548	ug/L		110	(80%-120%)		02/09/15	17:48
Barium	500			543	ug/L		109	(80%-120%)			
Cadmium	500			544	ug/L		109	(80%-120%)			
Calcium	5000			5500	ug/L		110	(80%-120%)			
Chromium	500			552	ug/L		110	(80%-120%)			
Cobalt	500			564	ug/L		113	(80%-120%)			
Copper	500			543	ug/L		109	(80%-120%)			
Iron	5000			5390	ug/L		108	(80%-120%)			
Magnesium	5000			5560	ug/L		111	(80%-120%)			
Manganese	500			544	ug/L		109	(80%-120%)			
Nickel	500			547	ug/L		109	(80%-120%)			
Potassium	5000			5470	ug/L		109	(80%-120%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1452750										
Silver	500			529	ug/L		106	(80%-120%)	HSC	02/09/15	17:48
Sodium	5000			5510	ug/L		110	(80%-120%)		02/16/15	16:08
Vanadium	500			562	ug/L		112	(80%-120%)		02/09/15	17:48
Zinc	500			535	ug/L		107	(80%-120%)			
QC1203251026	MB										
Antimony			U	ND	ug/L					02/16/15	16:05
Arsenic			U	ND	ug/L					02/09/15	17:45
Barium			U	ND	ug/L						
Cadmium			U	ND	ug/L						
Calcium			U	ND	ug/L						
Chromium			U	ND	ug/L						
Cobalt			U	ND	ug/L						
Copper			U	ND	ug/L						
Iron			U	ND	ug/L						
Magnesium			U	ND	ug/L						
Manganese			U	ND	ug/L						
Nickel			U	ND	ug/L						
Potassium			U	ND	ug/L						
Silver			U	ND	ug/L						
Sodium			U	ND	ug/L					02/16/15	16:05
Vanadium			U	ND	ug/L					02/09/15	17:45
Zinc			B	3.97	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1452750										
QC1203251028 365758001 MS											
Antimony	500	U	ND	526	ug/L		105	(75%-125%)	HSC	02/16/15	16:14
Arsenic	500	U	ND	553	ug/L		110	(75%-125%)		02/09/15	17:54
Barium	500		52.7	586	ug/L		107	(75%-125%)			
Cadmium	500	U	ND	533	ug/L		107	(75%-125%)			
Calcium	5000		38400	44800	ug/L		N/A	(75%-125%)			
Chromium	500	B	2.35	542	ug/L		108	(75%-125%)			
Cobalt	500	U	ND	548	ug/L		110	(75%-125%)			
Copper	500	U	ND	537	ug/L		107	(75%-125%)			
Iron	5000	U	ND	5460	ug/L		109	(75%-125%)			
Magnesium	5000		10000	16000	ug/L		120	(75%-125%)			
Manganese	500	U	ND	527	ug/L		105	(75%-125%)			
Nickel	500	B	2.23	526	ug/L		105	(75%-125%)			
Potassium	5000		5200	10900	ug/L		115	(75%-125%)			
Silver	500	U	ND	522	ug/L		104	(75%-125%)			
Sodium	5000		19700	24600	ug/L		97.1	(75%-125%)		02/16/15	16:14
Vanadium	500		11.2	566	ug/L		111	(75%-125%)		02/09/15	17:54
Zinc	500	U	ND	523	ug/L		105	(75%-125%)			
QC1203251029 365758001 MSD											
Antimony	500	U	ND	530	ug/L	0.657	106	(0%-20%)		02/16/15	16:17
Arsenic	500	U	ND	551	ug/L	0.333	110	(0%-20%)		02/09/15	17:58
Barium	500		52.7	582	ug/L	0.634	106	(0%-20%)			
Cadmium	500	U	ND	531	ug/L	0.487	106	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1452750										
Calcium	5000	38400		44700	ug/L	0.076	N/A	(0%-20%)	HSC	02/09/15	17:58
Chromium	500	B	2.35	541	ug/L	0.214	108	(0%-20%)			
Cobalt	500	U	ND	544	ug/L	0.663	109	(0%-20%)			
Copper	500	U	ND	536	ug/L	0.272	107	(0%-20%)			
Iron	5000	U	ND	5450	ug/L	0.238	109	(0%-20%)			
Magnesium	5000		10000	16000	ug/L	0.0437	120	(0%-20%)			
Manganese	500	U	ND	525	ug/L	0.468	105	(0%-20%)			
Nickel	500	B	2.23	527	ug/L	0.0855	105	(0%-20%)			
Potassium	5000		5200	10900	ug/L	0.146	114	(0%-20%)			
Silver	500	U	ND	520	ug/L	0.299	104	(0%-20%)			
Sodium	5000		19700	25100	ug/L	2.22	108	(0%-20%)		02/16/15	16:17
Vanadium	500		11.2	565	ug/L	0.218	111	(0%-20%)		02/09/15	17:58
Zinc	500	U	ND	521	ug/L	0.394	104	(0%-20%)			
QC1203251030 365758001 SDILT											
Antimony		U	ND DU	ND	ug/L	N/A		(0%-10%)		02/16/15	16:20
Arsenic		U	ND DU	ND	ug/L	N/A		(0%-10%)		02/09/15	18:01
Barium			52.7 D	10.1	ug/L	4.23		(0%-10%)			
Cadmium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Calcium			38400 D	7480	ug/L	2.57		(0%-10%)			
Chromium		B	2.35 DU	ND	ug/L	N/A		(0%-10%)			
Cobalt		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Copper		U	ND DU	ND	ug/L	N/A		(0%-10%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1452750										
Iron	U	ND	DU	ND	ug/L	N/A		(0%-10%)	HSC	02/09/15	18:01
Magnesium		10000	D	1990	ug/L	.923		(0%-10%)			
Manganese	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Nickel	B	2.23	DU	ND	ug/L	N/A		(0%-10%)			
Potassium		5200	D	966	ug/L	7.01		(0%-10%)			
Silver	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Sodium		19700	D	3910	ug/L	.95		(0%-10%)		02/16/15	16:20
Vanadium		11.2	D	2.50	ug/L	11.2		(0%-10%)		02/09/15	18:01
Zinc	U	ND	DU	ND	ug/L	N/A		(0%-10%)			

Notes:

The Qualifiers in this report are defined as follows:

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

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

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

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 20-FEB-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ICP/MS	Test / Method: SW846 3005A/6020A	Matrix Type: Liquid	Client Code: CPRC
Batch ID: 1452736	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 365749(GEL365749),365755(GEL365755)			
Application Issues: Failed Recovery for MS/MSD, or PS/PSD			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed Recovery for MS/MSD, or PS/PSD:</p> <p>QC 1203250989MSD</p>		<p>1.</p> <p>The matrix spike duplicate recovery failed outside of the control limits for chromium. The post spike passed the required control limits for all analytes. This verifies the absence of a matrix interference.</p>	

Originator's Name:

Paul Boyd 20-FEB-15

Data Validator/Group Leader:

Elizabeth Janssen 20-FEB-15

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL365755
Work Order #: 365755**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1452865

Method: 9060_TOC: COMMON

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9060A:

Sample ID	Client ID
365755001	B30168
1203251309	Method Blank (MB)
1203251310	Laboratory Control Sample (LCS)
1203251291	Laboratory Control Sample Duplicate (LCSD)
1203251293	365755001(B30168) Sample Duplicate (DUP)
1203251295	365755001(B30168) Post Spike (PS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV# 12.

Preparation/Analytical Method Verification

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

Calibration Information

The Carbon analysis was performed on a O-I Analytical Model 1010 Total Organic Carbon Analyzer.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD between the LCS and LCSD met the acceptance limits.

Quality Control (QC) Designation

Sample365755001 (B30168) was selected for QC analysis.

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

February 20, 2015

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

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

Method/Analysis Information

Product: Ammonia Nitrogen
Analytical Batch: 1452820 **Method:** 350.1_AMMONIA: COMMON
Prep Batch : 1452819 **Method:** EPA 350.2 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 350.1:

Sample ID	Client ID
365755001	B30168
1203251177	Method Blank (MB)
1203251178	Laboratory Control Sample (LCS)
1203251183	365755001(B30168) Sample Duplicate (DUP)
1203251184	365755001(B30168) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-106 REV# 9.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

acceptance limits.

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB 1203251177 (MB) analyzed with this SDG met the acceptance criteria. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample365755001 (B30168) was selected for QC analysis.

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

The matrix spike recovered outside of the established acceptance limits due to matrix interference. 1203251184 (B30168MS).

Duplicate Relative Percent Difference (RPD) Statement

The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1203251183 (B30168DUP).

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1378032. 1203251184 (B30168MS).

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: COD
Analytical Batch: 1453379 **Method:** 410.4_COD: COMMON

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 410.4:

Sample ID	Client ID
365755001	B30168
1203252746	Method Blank (MB)
1203252747	Laboratory Control Sample (LCS)
1203252750	365858003(B30174) Sample Duplicate (DUP)
1203252751	365858003(B30174) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-061 REV# 18.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample365858003 (B30174) was selected for QC analysis.

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

The matrix spike recovered outside of the established acceptance limits due to matrix interference. 1203252751 (B30174MS).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1376910. 1203252751 (B30174MS).

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

scanned and inserted into the electronic package.

Certification Statement

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.

February 20, 2015

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: GEL365755 GEL Work Order: 365755

The Qualifiers in this report are defined as follows:

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

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:

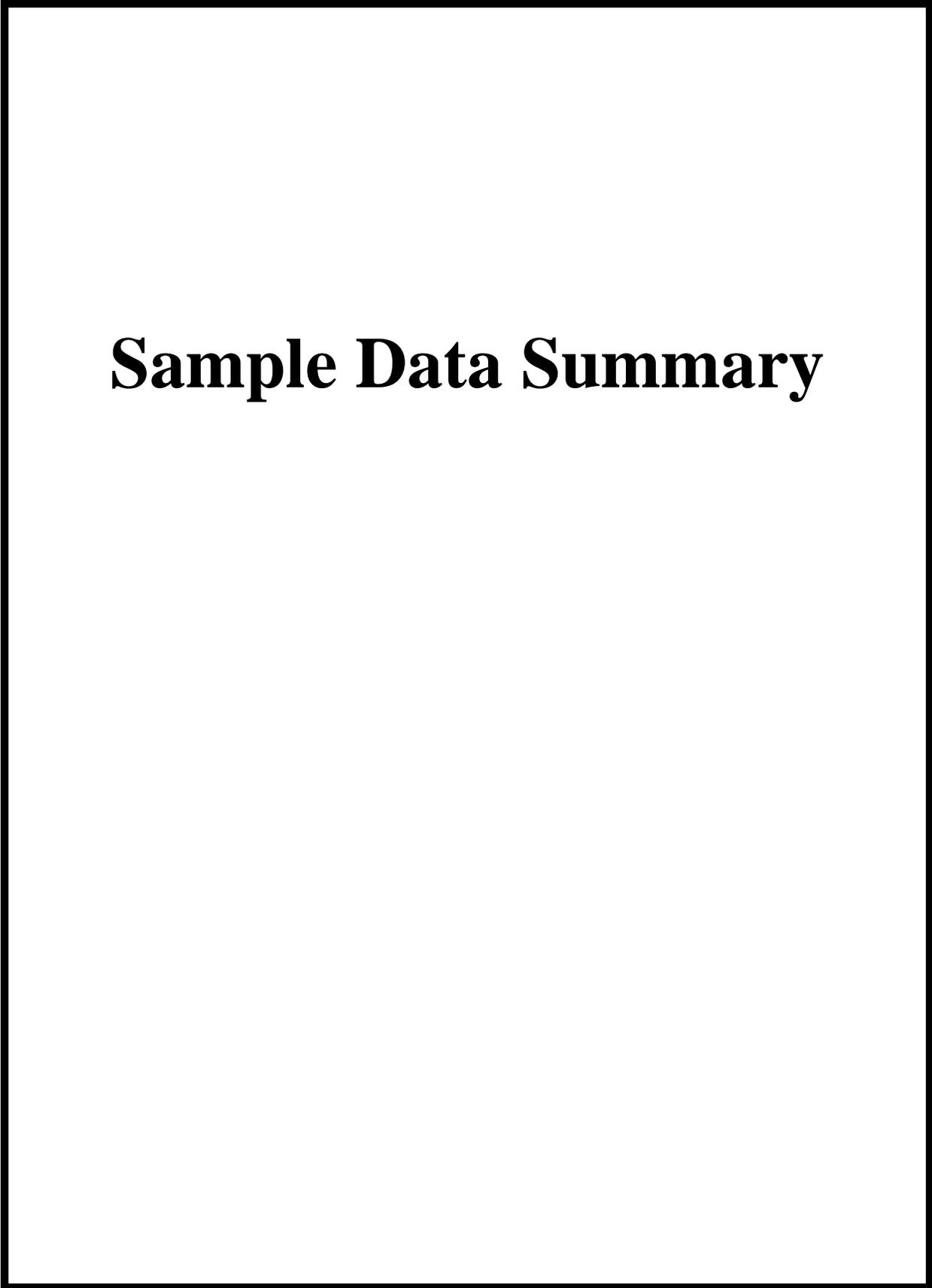
Signature:



Name: Thomas Lewis

Date: 19 FEB 2015

Title: Data Validator



Sample Data Summary

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF S15-001**

Report Date: February 19, 2015

Client Sample ID:	B30168	Project:	CPRC0S15001
Sample ID:	365755001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 10:37		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
<i>9060_TOC: COMMON "As Received"</i>											
Total Organic Carbon #1	B	476	330	1000	ug/L	1	TSM	01/28/15	1811	1452865	1
Total Organic Carbon #2	B	865	330	1000	ug/L	1					
Total Organic Carbon #3	B	595	330	1000	ug/L	1					
Total Organic Carbon #4	B	657	330	1000	ug/L	1					
Total Organic Carbon Average	B	648	330	1000	ug/L	1					
Nutrient Analysis											
<i>350.1_AMMONIA: COMMON "As Received"</i>											
Nitrogen, Ammonia 7664-41-7	NU	11.1	+/-5.68	17.0	50.0	ug/L	1	KLP1	02/02/15	1217	1452820 2
Spectrometric Analysis											
<i>410.4_COD: COMMON "As Received"</i>											
COD	U	-7740	6670	20000	ug/L	1	SXC5	01/28/15	1508	1453379	3

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	02/02/15	1125	1452819

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	EPA 350.1	
3	EPA 410.4	

Quality Control Summary

February 20, 2015
GEL LABORATORIES LLC

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

QC Summary

Report Date: February 19, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 365755

<u>Parmname</u>	<u>NOM</u>	<u>Sample</u>	<u>Qual</u>	<u>QC</u>	<u>Units</u>	<u>RPD%</u>	<u>REC%</u>	<u>Range</u>	<u>Anlst</u>	<u>Date</u>	<u>Time</u>
Carbon Analysis											
Batch	1452865										
QC1203251293	365755001	DUP									
Total Organic Carbon Average		B	648	B	605	ug/L	6.86 ^	(+/-1000)	TSM	01/28/15	18:44
QC1203251310	LCS										
Total Organic Carbon Average	10000				9790	ug/L		97.9 (85%-115%)		01/28/15	14:19
QC1203251291	LCSD										
Total Organic Carbon Average	10000				9910	ug/L	1.31	99.1 (0%-20%)		01/28/15	14:28
QC1203251309	MB										
Total Organic Carbon Average				U	330	ug/L				01/28/15	14:10
QC1203251295	365755001	PS									
Total Organic Carbon Average	10.0	B	0.648		10.3	mg/L		97 (65%-120%)		01/28/15	19:04
Nutrient Analysis											
Batch	1452820										
QC1203251183	365755001	DUP									
Nitrogen, Ammonia		NU	17.0	U	17.0	ug/L	N/A		KLP1	02/02/15	12:18
QC1203251178	LCS										
Nitrogen, Ammonia	1000				1060	ug/L		106 (90%-110%)		02/02/15	12:06
QC1203251177	MB										
Nitrogen, Ammonia				B	33.5	ug/L				02/02/15	12:06
QC1203251184	365755001	MS									
Nitrogen, Ammonia	1000	NU	17.0	N	1260	ug/L		125* (90%-110%)		02/02/15	12:19
Spectrometric Analysis											
Batch	1453379										
QC1203252750	365858003	DUP									
COD			97500		100000	ug/L	2.66 ^	(+/-20000)	SXC5	01/28/15	15:09
QC1203252747	LCS										
COD	500000				505000	ug/L		101 (90%-110%)		01/28/15	15:04
QC1203252746	MB										
COD				U	6670	ug/L				01/28/15	15:04
QC1203252751	365858003	MS									
COD	500000		97500		521000	ug/L		84.7* (90%-110%)		01/28/15	15:09

February 20, 2015
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QC Summary

Workorder: 365755

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Spectrometric Analysis											
Batch	1453379										

Notes:

The Qualifiers in this report are defined as follows:

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

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

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

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

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

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 28-JAN-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: VIS SPEC HIGH	Test / Method: EPA 410.4, HACH 8000	Matrix Type: Liquid	Client Code: CBMW, CPRC, HASS, LATA,
Batch ID: 1453379	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 365668(GEL365668),365755(GEL365755),365858(GEL365858)			
Application Issues: Failed Recovery for MS/MSD, or PS/PSD			
Specification and Requirements Exception Description:		DER Disposition:	
1. Failed Recovery for MS: QC 1203252751MS		1. The spike recovery falls outside of the established acceptance limits due to matrix interference.	

Originator's Name:

Sarah Carson 28-JAN-15

Data Validator/Group Leader:

Elzbieta Szulc 29-JAN-15

DATA EXCEPTION REPORT

Mo.Day Yr. 02-FEB-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 350.1, EPA 350.1 SC	Matrix Type: Liquid	Client Code: ALBR, CPRC, ESHL, GRSD,
Batch ID: 1452820	Sample Numbers: See Below		
<p>Potentially affected work order(s)(SDG): 365668(GEL365668),365746(2015-698),365755(GEL365755),365858(GEL365858),365874,365982,366001,366038(V4025),366061,366091</p> <p>Application Issues:</p> <p>Failed Recovery for MS/MSD, or PS/PSD</p>			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed Recovery for MS/PS:</p> <p>QC 1203251182MS,1203251184MS</p>		<p>1. The spike recovery falls outside of the established acceptance limits due to matrix interference.</p>	

Originator's Name:
Kristen Parson 02-FEB-15

Data Validator/Group Leader:
Aubrey Kingsbury 02-FEB-15

Radiological Analysis

February 20, 2015
Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL365755
Work Order #: 365755

Method/Analysis Information

Product: GAMMA_GS:COMMON (Cs137,Co60,Eu152,Eu154,Eu155)
Analytical Method: EPA 901.1
Analytical Batch Number: 1453248

Sample ID	Client ID
365755003	B30199
1203252414	MB for batch 1453248
1203252416	Laboratory Control Sample (LCS)
1203252415	365755003(B30199) Sample Duplicate (DUP)

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

SOP Reference

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

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 365755003 (B30199).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: I129LL_SEP_LEPS_GS_LL: COMMON
Analytical Method: DOE EML HASL-300,I-01 Modified
Analytical Batch Number: 1455199

Sample ID	Client ID
365755003	B30199
1203257719	MB for batch 1455199
1203257722	Laboratory Control Sample (LCS)
1203257720	366207002(B30702) Sample Duplicate (DUP)
1203257721	366207002(B30702) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-006 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 366207002 (B30702).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Recounts

Sample 1203257722 (LCS) was recounted twice due to low recovery. The third count is reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

February 20, 2015

Product: 9310_ALPHABETA_GPC: COMMON

Analytical Method: EPA 900.0/SW846 9310

Analytical Batch Number: 1454656

Sample ID	Client ID
365755003	B30199
1203257786	MB for batch 1454656
1203257790	Laboratory Control Sample (LCS)
1203257787	365992007(B30195) Sample Duplicate (DUP)
1203257788	365992007(B30195) Matrix Spike (MS)
1203257789	365992007(B30195) Matrix Spike Duplicate (MSD)

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

SOP Reference

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

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 365992007 (B30195).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Chemical Recoveries

February 20, 2015

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

Gross Alpha/Beta Preparation Information

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

Recounts

Samples 1203257788 (B30195MS) and 1203257789 (B30195MSD) were recounted due to high recovery. The recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

The matrix spike and matrix spike duplicate, 1203257788 (B30195MS) and 1203257789 (B30195MSD), aliquots were reduced to conserve sample volume.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: SRISO_SEP_PRECIP_GPC: COMMON
Analytical Method: EPA 905.0 Modified
Analytical Batch Number: 1456844

Sample ID	Client ID
365755003	B30199
1203262244	MB for batch 1456844
1203262246	Laboratory Control Sample (LCS)
1203262245	365755003(B30199) Sample Duplicate (DUP)

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

SOP Reference

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

GL-RAD-A-004 REV# 17.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 365755003 (B30199).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Chemical Recoveries

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

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: TC99_EIE_LSC: COMMON
Analytical Method: DOE EML HASL-300, Tc-02-RC Modified
Analytical Batch Number: 1453892

Sample ID	Client ID
365755003	B30199
1203254116	MB for batch 1453892
1203254118	Laboratory Control Sample (LCS)
1203254117	366140003(B2YXM1) Sample Duplicate (DUP)

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

SOP Reference

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

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 366140003 (B2YXM1).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Recounts

Sample 365755003 (B30199) was recounted to verify sample results. The recount result is similar to the original result. Original result is reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: TRITIUM_DIST_LSC: COMMON
Analytical Method: EPA 906.0 Modified
Analytical Batch Number: 1454242

Sample ID	Client ID
365755003	B30199
1203255047	MB for batch 1454242
1203255050	Laboratory Control Sample (LCS)
1203255048	365992007(B30195) Sample Duplicate (DUP)
1203255049	365992007(B30195) Matrix Spike (MS)

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

SOP Reference

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

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 365992007 (B30195).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Recounts

Sample 365755003 (B30199) was recounted to verify sample results. The recount result is similar to the original result. Original result is reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

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

February 20, 2015

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: GEL365755 GEL Work Order: 365755

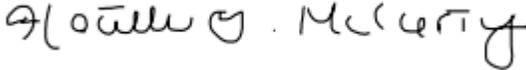
The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Heather McCarty

Date: 19 FEB 2015

Title: Analyst II

Sample Data Summary

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S15-001

Report Date: February 19, 2015

Client Sample ID:	B30199	Project:	CPRC0S15001
Sample ID:	365755003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15		
Receive Date:	24-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis													
<i>GAMMA_GS:COMMON (Cs137,Co60,Eu152,Eu154,Eu155) "As Received"</i>													
Cesium-137 10045-97-3	U	-1.35	+/-2.93	5.13	+/-2.99	10.0	pCi/L		MJH1	01/29/15	0722	1453248	1
Cobalt-60 10198-40-0	U	-2.54	+/-3.20	5.49	+/-3.41		pCi/L						
Europium-152 14683-23-9	U	-2.14	+/-8.55	14.9	+/-8.60		pCi/L						
Europium-154 15585-10-1	U	-4.82	+/-9.00	15.6	+/-9.27		pCi/L						
Europium-155 14391-16-3	U	-0.992	+/-8.59	14.7	+/-8.60		pCi/L						
<i>I129LL_SEP_LEPS_GS_LL: COMMON "As Received"</i>													
Iodine-129 15046-84-1	U	0.761	+/-0.627	0.785	+/-0.631	1.00	pCi/L		BSW1	02/12/15	0930	1455199	2
Rad Gas Flow Proportional Counting													
<i>9310_ALPHABETA_GPC: COMMON "As Received"</i>													
Alpha 12587-46-1		6.74	+/-2.38	2.65	+/-2.64	3.00	pCi/L		AXJ1	02/09/15	1311	1454656	3
Beta 12587-47-2		23.1	+/-2.51	2.68	+/-4.52	4.00	pCi/L						
<i>SRISO_SEP_PRECIP_GPC: COMMON "As Received"</i>													
Total Strontium SR-RAD	U	1.03	+/-0.906	1.46	+/-0.937	2.00	pCi/L		KSD1	02/18/15	1617	1456844	4
Rad Liquid Scintillation Analysis													
<i>TC99_EIE_LSC: COMMON "As Received"</i>													
Technetium-99 14133-76-7		23.5	+/-6.21	9.55	+/-6.74	15.0	pCi/L		MYM1	02/15/15	1710	1453892	5
<i>TRITIUM_DIST_LSC: COMMON "As Received"</i>													
Tritium 10028-17-8		16500	+/-325	78.6	+/-3210	100	pCi/L		BYS1	02/07/15	1521	1454242	6

The following Analytical Methods were performed

Method	Description
1	EPA 901.1
2	DOE EML HASL-300,I-01 Modified

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S15-001

Report Date: February 19, 2015

Client Sample ID: B30199 Project: CPRC0S15001
 Sample ID: 365755003 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time Batch	Mtd.
3		EPA 900.0/SW846	9310									
4		EPA 905.0	Modified									
5		DOE EML HASL-300,	Tc-02-RC Modified									
6		EPA 906.0	Modified									

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium Carrier	SRISO_SEP_PRECIP_GPC: COM	93.8	(25%-125%)
Technetium-99m Tracer	TC99_EIE_LSC: COMMON "As I	99.1	(15%-125%)

Notes:
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96 sigma).
 The Qualifiers in this report are defined as follows :

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

Quality Control Data

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QC Summary

Report Date: February 19, 2015
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Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 365755

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1453248								
QC1203252414	MB								
Cesium-137			U	0.368	pCi/L			MJH1	01/29/1507:22
				Uncert: +/-2.35					
				TPU: +/-2.36					
Cobalt-60			U	-0.122	pCi/L				
				Uncert: +/-2.28					
				TPU: +/-2.28					
Europium-152			U	-0.364	pCi/L				
				Uncert: +/-8.16					
				TPU: +/-8.17					
Europium-154			U	2.21	pCi/L				
				Uncert: +/-7.03					
				TPU: +/-7.10					
Europium-155			U	-3.4	pCi/L				
				Uncert: +/-7.06					
				TPU: +/-7.23					
QC1203252415	365755003	DUP							
Cesium-137		U -1.35	U	-0.958	pCi/L				01/29/1509:34
				Uncert: +/-2.93		RPD: 0	N/A		
				TPU: +/-2.99		RER: 0.195	(0-2)		
Cobalt-60		U -2.54	U	0.633	pCi/L				
				Uncert: +/-3.20		RPD: 0	N/A		
				TPU: +/-3.41		RER: 1.50	(0-2)		
Europium-152		U -2.14	U	3.69	pCi/L				
				Uncert: +/-8.55		RPD: 0	N/A		
				TPU: +/-8.60		RER: 0.911	(0-2)		
Europium-154		U -4.82	U	-0.265	pCi/L				
				Uncert: +/-9.00		RPD: 0	N/A		
				TPU: +/-9.27		RER: 0.718	(0-2)		
Europium-155		U -0.992	U	5.12	pCi/L				
				Uncert: +/-8.59		RPD: 0	N/A		
				TPU: +/-8.60		RER: 0.924	(0-2)		
QC1203252416	LCS								
Americium-241	34500			38900	pCi/L	REC: 113	(80%-120%)		01/29/1507:32
				Uncert: +/-1990					
				TPU: +/-6530					
Cesium-137	13900			13800	pCi/L	REC: 99	(80%-120%)		
				Uncert: +/-359					
				TPU: +/-1290					
Cobalt-60	16300			17400	pCi/L	REC: 107	(80%-120%)		
				Uncert: +/-428					
				TPU: +/-1430					
Europium-152			U	-201	pCi/L				
				Uncert: +/-256					
				TPU: +/-272					

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QC Summary

Workorder: 365755

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1453248								
Europium-154			U	-8.6	pCi/L				
				Uncert: +/-143					
				TPU: +/-143					
Europium-155			U	-146	pCi/L				
				Uncert: +/-304					
				TPU: +/-312					
Batch	1455199								
QC1203257719	MB								
Iodine-129			U	-0.137	pCi/L			BSW1	02/12/1514:05
				Uncert: +/-0.294					
				TPU: +/-0.300					
QC1203257720	366207002	DUP							
Iodine-129		U	0.219	U	0.392	pCi/L			02/12/1514:06
				Uncert: +/-0.597	+/-0.398	RPD: 0	N/A		
				TPU: +/-0.606	+/-0.437	RER: 0.454	(0-2)		
QC1203257721	366207002	MS							
Iodine-129		26.0	U	0.219	23.2	pCi/L	REC: 89 (75%-125%)		02/12/1514:06
				Uncert: +/-0.597	+/-2.37				
				TPU: +/-0.606	+/-3.33				
QC1203257722	LCS								
Iodine-129		26.0			22.6	pCi/L	REC: 87 (80%-120%)		02/13/1513:10
				Uncert: +/-2.81					
				TPU: +/-3.61					
Rad Gas Flow									
Batch	1454656								
QC1203257786	MB								
Alpha			U	-0.00461	pCi/L			AXJ1	02/09/1513:32
				Uncert: +/-1.01					
				TPU: +/-1.01					
Beta			U	-1.5	pCi/L				
				Uncert: +/-1.30					
				TPU: +/-1.30					
QC1203257787	365992007	DUP							
Alpha		U	-0.62	U	-0.269	pCi/L			02/09/1513:32
				Uncert: +/-1.43	+/-1.27	RPD: 0	N/A		
				TPU: +/-1.43	+/-1.27	RER: 0.360	(0-2)		
Beta			5.08		5.08	pCi/L			
				Uncert: +/-1.59	+/-1.55	RPD: 0	(0% - 100%)		
				TPU: +/-1.80	+/-1.77	RER: 0.00368	(0-2)		
QC1203257788	365992007	MS							
Alpha		243	U	-0.62	301	pCi/L	REC: 124 (75%-125%)		02/10/1515:06
				Uncert: +/-1.43	+/-30.7				
				TPU: +/-1.43	+/-60.6				
Beta		949		5.08	1180	pCi/L	REC: 123 (75%-125%)		
				Uncert: +/-1.59	+/-40.0				
				TPU: +/-1.80	+/-204				
QC1203257789	365992007	MSD							
Alpha		243	U	-0.62	275	pCi/L	REC: 113 (75%-125%)		02/10/1511:46
				Uncert: +/-1.43	+/-28.6	RPD: 9	(0%-20%)		
				TPU: +/-1.43	+/-55.5	RER: 0.615	(0-2)		

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QC Summary

Workorder: 365755

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch	1454656								
Beta	949	5.08		1150	pCi/L	REC: 121 (75%-125%)			
	Uncert:	+/-1.59		+/-39.3		RPD: 2 (0%-20%)			
	TPU:	+/-1.80		+/-192		RER: 0.180 (0-2)			
QC1203257790	LCS								
Alpha	81.1			97.0	pCi/L	REC: 120 (80%-120%)			02/09/1513:11
	Uncert:			+/-8.51					
	TPU:			+/-18.0					
Beta	316			360	pCi/L	REC: 114 (80%-120%)			
	Uncert:			+/-12.6					
	TPU:			+/-59.9					
Batch	1456844								
QC1203262244	MB								
Total Strontium			U	-2.25	pCi/L			KSD1	02/18/1516:16
	Uncert:			+/-0.646					
	TPU:			+/-0.646					
QC1203262245	365755003	DUP							
Total Strontium		U	1.03	U	1.11	pCi/L			02/18/1516:17
	Uncert:	+/-0.906		+/-0.838		RPD: 0 N/A			
	TPU:	+/-0.937		+/-0.876		RER: 0.126 (0-2)			
QC1203262246	LCS								
Total Strontium	79.0			70.7	pCi/L	REC: 90 (80%-120%)			
	Uncert:			+/-4.12					
	TPU:			+/-16.8					
Rad Liquid Scintillation									
Batch	1453892								
QC1203254116	MB								
Technetium-99			U	-4.87	pCi/L			MYM1	02/15/1522:35
	Uncert:			+/-5.39					
	TPU:			+/-5.39					
QC1203254117	366140003	DUP							
Technetium-99		U	-4.19	U	-1.34	pCi/L			02/15/1523:07
	Uncert:	+/-8.15		+/-8.38		RPD: 0 N/A			
	TPU:	+/-8.15		+/-8.38		RER: 0.478 (0-2)			
QC1203254118	LCS								
Technetium-99	290			252	pCi/L	REC: 87 (80%-120%)			02/15/1523:40
	Uncert:			+/-10.7					
	TPU:			+/-29.9					
Batch	1454242								
QC1203255047	MB								
Tritium			U	-18	pCi/L			BYS1	02/07/1521:24
	Uncert:			+/-42.0					
	TPU:			+/-42.0					
QC1203255048	365992007	DUP							
Tritium		U	28.5	U	-15	pCi/L			02/07/1523:27
	Uncert:	+/-45.0		+/-42.0		RPD: 0 N/A			
	TPU:	+/-45.3		+/-42.0		RER: 1.38 (0-2)			
QC1203255049	365992007	MS							
Tritium	1870	U	28.5		1780	pCi/L	REC: 95 (75%-125%)		02/08/1501:29
	Uncert:	+/-45.0		+/-306					

QC Summary

Workorder: 365755

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1454242								
		TPU:	+/-45.3	+/-460					
QC1203255050	LCS								
Tritium	1870			1760	pCi/L	REC: 95 (80%-120%)			02/08/1501:47
		Uncert:		+/-301					
		TPU:		+/-455					

Notes:

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

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- A The TIC is a suspected aldol-condensation product
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The analyte was detected in both the associated QC blank and in the sample.
- B The associated QC sample blank has a result $\geq 2X$ 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)

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QC Summary

Workorder: 365755

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
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N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** 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.