



January 07, 2015

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

Re: CHPRC SAF W15-012
Work Order: 363291
SDG: GEL363291

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 17, 2014. 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,

Hope Taylor for
Heather Shaffer
Project Manager

Purchase Order: 300071JDBA - 7H
Chain of Custody: W15-012-022, W15-012-023, W15-012-076, W15-012-077 and W15-012-078
Enclosures



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Case Narrative

January 12, 2015

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF W15-012
SDG: GEL363291

January 07, 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 December 17, 2014, 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:

Laboratory Identification	Sample Description
363291001	B2YHD7
363291002	B2YHD5
363291003	B2YHD8
363291004	B2YHD6
363291005	B303T0
363291006	B2YHD4
363291007	B2YHC8
363291008	B303T2
363291009	B2YHC7
363291010	B303T1

Case Narrative

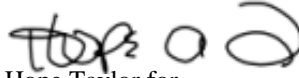
Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

January 12, 2015

Data Package

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

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 Manger (or designee) and the laboratory's client services representative as verified by their signatures on this report.



Hope Taylor for
Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

85 lbs

CH2M Hill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C.# **W15-012-022**
 Page 1 of 1

Collector S.W. King/CHPRC
SAF No. W15-012
Project Title RCRA, DECEMBER 2014
Shipped To (Lab) GEL Laboratories, LLC
Protocol RCRA

Contact/Requester Karen Waters-Husted
Sampling Origin Hanford Site
Logbook No. HNF-N-506711 ZS
Method of Shipment Commercial Carrier
Priority: 30 Days **PRIORITY**

Telephone No. 509-376-4650
Purchase Order/Charge Code 300071JDBA
Ice Chest No. 6W05-424
Bill of Lading/Air Bill No. 77722 63644287
Offsite Property No. 5280

SPECIAL INSTRUCTIONS Hold Time
SPECIAL INSTRUCTIONS Hold Time
 Total Activity Exemption: Yes No

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

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2YHD7	Y	DEC 16 2014	1030	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YHD5	N	W		1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B2YHD5	N	W		1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YHD5	N	W	DEC 16 2014 1030	1x250-mL G/P	9012_CYANIDE: COMMON	14 Days	NaOH to pH >=12/Cool <=6C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
S.W. King/CHPRC			DEC 16 2014 1030	L.D. Wall CHPRC			DEC 16 2014 1130	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
L.D. Wall CHPRC			DEC 16 2014 1400	FEDEX				DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other

FINAL SAMPLE DISPOSITION
 Disposal Method (e.g., Return to customer, per lab procedure, used in process)
 Disposed By
 Date/Time
 A-6004-842 (REV 2)

January 12, 2015

CH2M Hill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C. # **W15-012-023**
 Page 1 of 1

Collector S.W. King/CHPRC
SAF No. W15-012
Project Title RCRA, DECEMBER 2014
Shipped To (Lab) GEL Laboratories, LLC
Protocol RCRA

Contact/Requester Karen Waters-Husted
Sampling Origin Hanford Site
Logbook No. HNF-N-506 71128
Method of Shipment Commercial Carrier
Priority: 30 Days **PRIORITY**

Telephone No. 509-376-4650
Purchase Order/Charge Code 300071JDBA
Ice Chest No. GWS-423
Bill of Lading/Air Bill No. 17226304313
Offsite Property No. 5280

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

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2YHD8	Y	W DEC 16 2014	1030	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YHD6	N	W DEC 16 2014	1030	1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B2YHD6	N	W DEC 16 2014	1030	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YHD6	N	W DEC 16 2014	1030	1x250-mL G/P	9012_CYANIDE: COMMON	14 Days	NaOH to pH >=12/Cool <=6C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
S.W. King/CHPRC	[Signature]	[Signature]	DEC 16 2014 1030	L.D. Wall CHPRC	[Signature]	[Signature]	DEC 16 2014 1030	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
L.D. Wall CHPRC	[Signature]	[Signature]	DEC 16 2014 1400	Received By FEDEX	[Signature]	[Signature]	DEC 16 2014 1030	
Relinquished By	[Signature]	[Signature]	DEC 16 2014 1400	Received By [Signature]	[Signature]	[Signature]	DEC 16 2014 1400	
Relinquished By	[Signature]	[Signature]	DEC 16 2014 1400	Received By [Signature]	[Signature]	[Signature]	DEC 16 2014 1400	

FINAL SAMPLE DISPOSITION
 Disposal Method (e.g., Return to customer, per lab procedure, used in process)
 Disposed By
 Date/Time
 A-6004-842 (REV 2)

January 12, 2015

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # W15-012-076
		<i>303291</i>				Page 1 of 1
Collector	S.W. King/CHPRC	Contact/Requester	Karen Waters-Husted			Telephone No. 509-376-4650
SAF No.	W15-012	Sampling Origin	Hanford Site			Purchase Order/Charge Code 300071JDBA
Project Title	RCRA, DECEMBER 2014	Logbook No.	HNF-N-506 71.26			Ice Chest No. 6WS-423
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier			Bill of Lading/Air Bill No. 772263643913
Protocol	RCRA	Priority:	30 Days			Offsite Property No. 5280
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS		Hold Time	Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1						
Sample No.	Filter	Date	Time	Nov/Type Container	Sample Analysis	Holding Time
B303T0	N	DEC 16 2014	0920	1x500-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Lead (1)	6 Months
B2YHD4	Y	✓	✓	1x500-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Lead (1)	6 Months
						HNO3 to pH <2
						HNO3 to pH <2

Relinquished By S.W. King/CHPRC	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time DEC 16 2014 11:30	Received By L.D. Wall CHPRC	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time DEC 16 2014 11:20
Relinquished By L.D. Wall CHPRC	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time DEC 16 2014 1400	Received By FEDEX			
Relinquished By Fed Ex	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time DEC 16 2014 1400	Received By Shanta Muck	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 12/17/14 9:25
Relinquished By			Date/Time	Received By			Date/Time

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

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

January 12, 2015

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. # W15-012-077
		Page 1 of 1
363291		
CH2M Hill Plateau Remediation Company	S.W. King/CHPRC	
Collector	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650
SAF No. W15-012	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071JDBA
Project Title RCRA, DECEMBER 2014	Logbook No. HNF-N-5067128	Ice Chest No. 605-423
Shipped To (Lab) GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 1772263643913
Protocol RCRA	Priority: 30 Days	Offsite Property No. 5280
POSSIBLE SAMPLE HAZARDS/REMARKS		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1		
SPECIAL INSTRUCTIONS	Hold Time	Preservative
Sample No.	Filter	Date
B2YHC8	Y	DEC 16 2014 0844
B303T2	N	↓
No/Type Container	Sample Analysis	Holding Time
1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months
1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months
Relinquished By S.W. King/CHPRC	Received By L.D. Wall CHPRC	Date/Time DEC 16 2014 1400
Relinquished By L.D. Wall CHPRC	Received By FEDEX	Date/Time DEC 16 2014 1400
Relinquished By Fed Ex	Received By Shertz mark	Date/Time 12/12/14 9:25
Relinquished By	Received By	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Date/Time

Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time	Matrix *
S.W. King/CHPRC	<i>[Signature]</i>	<i>[Signature]</i>	L.D. Wall CHPRC	<i>[Signature]</i>	<i>[Signature]</i>	DEC 16 2014 1400	S = Soil
L.D. Wall CHPRC	<i>[Signature]</i>	<i>[Signature]</i>	FEDEX			DEC 16 2014 1400	DS = Drum Solids
Fed Ex	<i>[Signature]</i>	<i>[Signature]</i>	Shertz mark			12/12/14 9:25	DL = Drum Liquids
							T = Tissue
							WI = Wipe
							L = Liquid
							V = Vegetation
							X = Other

95165

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **W15-012-078**
Page 1 of 1

Collector: **S.W. King/CHPRC** Telephone No. **509-376-4650**

SAF No. **W15-012** Purchase Order/Charge Code **300071JDBA**

Project Title **RCRA, DECEMBER 2014** Ice Chest No. **6WS-423**

Shipped To (Lab) **GEL Laboratories, LLC** Bill of Lading/Air Bill No. **7722 6364 3913**

Protocol **RCRA** Priority: **30 Days** Offsite Property No. **5280**

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 438.1

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No

Sample No.	Filter	* Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2YHC7	Y	DEC 16 2014	0700	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B303T1	N	W	Y	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

January 12, 2015

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
S.W. King/CHPRC			DEC 16 2014 1:00	L.D. Wall			DEC 16 2014 1:20	DS = Drum Solids
L.D. Wall			DEC 16 2014 1:40	CHPRC			DEC 16 2014 1:40	DL = Drum Liquids
11 of 76					FEDEX			T = Tissue
								WI = Wipe
								L = Liquid
								V = Vegetation
								X = Other

FINAL SAMPLE DISPOSITION

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

Disposed By _____ Date/Time _____

January 12, 2015

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>303291</u>
Received By: <u>H. Taylor</u>		Date Received: <u>12/7/14</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0cpm</u>
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)																																			
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)																																			
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) <u>2,3</u> *all temperatures are recorded in Celsius																																			
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable):																																			
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>																																						
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)																																			
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:																																			
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:																																			
7 Are Encore containers present?	<input checked="" type="checkbox"/>			(If yes, immediately deliver to Volatiles laboratory)																																			
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:																																			
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:																																			
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:																																			
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:																																			
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>																																						
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>																																						
14 Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <table border="0"> <tr> <td>7722</td> <td>6364</td> <td>4287</td> <td>2</td> <td>7722</td> <td>5366</td> <td>2399-2</td> </tr> <tr> <td>7722</td> <td>3333</td> <td>9130</td> <td>-3</td> <td>7722</td> <td>4167</td> <td>2547-2</td> </tr> <tr> <td>7722</td> <td>6364</td> <td>3459</td> <td>-2</td> <td>7722</td> <td>6364</td> <td>3913-3</td> </tr> <tr> <td>7722</td> <td>6364</td> <td>3718</td> <td>-2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7722</td> <td>6584</td> <td>3050</td> <td>-3</td> <td></td> <td></td> <td></td> </tr> </table>	7722	6364	4287	2	7722	5366	2399-2	7722	3333	9130	-3	7722	4167	2547-2	7722	6364	3459	-2	7722	6364	3913-3	7722	6364	3718	-2				7722	6584	3050	-3			
7722	6364	4287	2	7722	5366	2399-2																																	
7722	3333	9130	-3	7722	4167	2547-2																																	
7722	6364	3459	-2	7722	6364	3913-3																																	
7722	6364	3718	-2																																				
7722	6584	3050	-3																																				

Comments (Use Continuation Form if needed):

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 preformed
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 >= 2X the MDA and, after corrections, result is >= 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 >= 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 >= 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

Laboratory Certifications

List of current GEL Certifications as of 07 January 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	T104704235-14-9
Utah NELAP	SC000122014-16
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

Metals Analysis

Case Narrative

January 12, 2015
Metals Fractional Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG GEL363291

Sample ID	Client ID
363291001	B2YHD7
363291002	B2YHD5
363291003	B2YHD8
363291004	B2YHD6
363291005	B303T0
363291006	B2YHD4
363291007	B2YHC8
363291008	B303T2
363291009	B2YHC7
363291010	B303T1
1203230778	Method Blank (MB)ICP
1203231495	Method Blank (MB)ICP
1203230779	Laboratory Control Sample (LCS)
1203231496	Laboratory Control Sample (LCS)
1203230782	363279002(B2Y9L9L) Serial Dilution (SD)
1203231499	363291005(B303T0L) Serial Dilution (SD)
1203230780	363279002(B2Y9L9S) Matrix Spike (MS)
1203231497	363291005(B303T0S) Matrix Spike (MS)
1203230781	363279002(B2Y9L9SD) Matrix Spike Duplicate (MSD)
1203231498	363291005(B303T0SD) Matrix Spike Duplicate (MSD)
1203230748	Method Blank (MB)ICP-MS
1203230749	Laboratory Control Sample (LCS)
1203230752	363232039(B2YKL0L) Serial Dilution (SD)
1203230750	363232039(B2YKL0S) Matrix Spike (MS)
1203230751	363232039(B2YKL0SD) Matrix Spike Duplicate (MSD)
1203238870	363232039(B2YKL0PS) Post Spike (PS)

Sample Analysis

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

Method/Analysis Information

Analytical Batch:	1444308, 1444675 and 1444298
Prep Batch :	1444307, 1444672 and 1444297
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 PE 7300 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 Perkin Elmer ELAN 9000 inductively coupled plasma mass spectrometer (ICP-MS). The instrument is equipped with a cross-flow nebulizer, quadrupole mass spectrometer, and dual mode electron multiplier detector. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 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 PQL standard recoveries for SW846 6010C met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. ICP.

Samples 363291009 (B2YHC7) and 363291010 (B303T1)-ICP were analyzed in 3 separate passing calibrations. The potassium concentrations in these samples were neither below the MDL nor greater than two times the PQL. The closing PQL standard recovered outside the control limits in all 3 analyses for potassium due to possible matrix interference interactions. The data were reported with the appropriate data exception report (DER). The PQL standard recoveries for SW846 6010C met the control limits with the exception of calcium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 363291005 (B303T0) and 363291006 (B2YHD4)-ICP.

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 MBs analyzed with this SDG met the acceptance criteria.

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: 363279002 (B2Y9L9), 363291005 (B303T0)-ICP and 363232039 (B2YKL0)-ICP-MS.

Matrix Spike (MS) 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. All applicable analytes met the acceptance criteria.

Matrix Spike Duplicate (MSD) Recovery Statement

The percent recovery (%R) obtained from the MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MSD did not meet the recommended quality control acceptance criteria for percent recoveries for beryllium and boron. 1203230751 (B2YKL0MSD)-ICP-MS.

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. Strontium did not meet the established percent difference criteria. 1203230752 (B2YKL0SDILT)-ICP-MS.

Post Spike (PS) Recovery Statement

The percent recoveries (%R) obtained from the PS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The PS did not meet the recommended quality control acceptance criteria for percent recoveries for beryllium and boron and verifies the presence of matrix interferences. 1203238870 (B2YKL0PS)-ICP-MS.

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

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. The samples in this SDG did not require dilutions.

Preparation Information

The samples in this SDG were prepared exactly 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:

January 12, 2015

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

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. Data exception reports were included behind the Case Narrative or in the Miscellaneous Data section of this data package. The following DER was generated for this SDG: 1371833. 363291009 (B2YHC7) and 363291010 (B303T1)-ICP. The following DER was generated for this SDG: 1371773. 1203230751 (B2YKL0MSD) and 1203238870 (B2YKL0PS)-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.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Y. Nick-Cole A. Elmore Date: 1.9.15

Sample Data Summary

January 12, 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: GEL363291 GEL Work Order: 363291

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

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

D Results are reported from a diluted aliquot of sample.

M Duplicate precision not met.

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.

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 Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Heather Shaffer.

Reviewed by

Nick-Cole A. Elmore 1.9.15

GEL LABORATORIES LLC

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

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 W15-012**

Report Date: January 9, 2015

Client Sample ID:	B2YHD7	Project:	CPRC0W15012
Sample ID:	363291001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 10:30		
Receive Date:	17-DEC-14		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	B	4.26	+/-1.44	3.50	10.0	ug/L	1	JWJ	12/20/14	2012	1444308	1
Arsenic 7440-38-2	U	1.08	+/-1.68	5.00	30.0	ug/L	1					
Barium 7440-39-3		52.6	+/-10.5	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	-0.0795	+/-0.334	1.00	5.00	ug/L	1					
Calcium 7440-70-2		84900	+/-17000	50.0	200	ug/L	1					
Chromium 7440-47-3	B	4.01	+/-0.869	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.360	+/-0.341	1.00	5.00	ug/L	1					
Copper 7440-50-8		12.6	+/-2.71	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	14.7	+/-10.4	30.0	100	ug/L	1					
Magnesium 7439-95-4		24300	+/-4850	110	300	ug/L	1					
Manganese 7439-96-5	U	1.78	+/-0.755	2.00	10.0	ug/L	1					
Nickel 7440-02-0	U	1.28	+/-0.562	1.50	5.00	ug/L	1					
Potassium 7440-09-7		8770	+/-1750	50.0	150	ug/L	1					
Silver 7440-22-4	U	0.728	+/-0.364	1.00	5.00	ug/L	1					
Sodium 7440-23-5		16000	+/-3190	100	300	ug/L	1					
Vanadium 7440-62-2		15.5	+/-3.12	1.00	5.00	ug/L	1					
Zinc 7440-66-6		14.1	+/-3.02	3.30	10.0	ug/L	1					

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 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF W15-012**

Report Date: January 9, 2015

Client Sample ID:	B2YHD5	Project:	CPRC0W15012
Sample ID:	363291002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 10:30		
Receive Date:	17-DEC-14		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	B	4.10	+/-1.43	3.50	10.0	ug/L	1	JWJ	12/20/14	2015	1444308	1
Arsenic 7440-38-2	U	2.00	+/-1.71	5.00	30.0	ug/L	1					
Barium 7440-39-3		53.8	+/-10.8	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.0488	+/-0.333	1.00	5.00	ug/L	1					
Calcium 7440-70-2		85400	+/-17100	50.0	200	ug/L	1					
Chromium 7440-47-3		8.16	+/-1.66	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.0619	+/-0.334	1.00	5.00	ug/L	1					
Copper 7440-50-8		12.4	+/-2.68	3.00	10.0	ug/L	1					
Iron 7439-89-6		488	+/-98.1	30.0	100	ug/L	1					
Magnesium 7439-95-4		24300	+/-4850	110	300	ug/L	1					
Manganese 7439-96-5	B	6.91	+/-1.53	2.00	10.0	ug/L	1					
Nickel 7440-02-0	B	1.63	+/-0.597	1.50	5.00	ug/L	1					
Potassium 7440-09-7		8800	+/-1760	50.0	150	ug/L	1					
Silver 7440-22-4	U	0.823	+/-0.372	1.00	5.00	ug/L	1					
Sodium 7440-23-5		16100	+/-3220	100	300	ug/L	1					
Vanadium 7440-62-2		16.4	+/-3.30	1.00	5.00	ug/L	1					
Zinc 7440-66-6		13.2	+/-2.86	3.30	10.0	ug/L	1					

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January 12, 2015

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Company : CH2MHill Plateau Remediation Company
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 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF W15-012**

Report Date: January 9, 2015

Client Sample ID:	B2YHD8	Project:	CPRC0W15012
Sample ID:	363291003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 10:30		
Receive Date:	17-DEC-14		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	B	5.93	+/-1.66	3.50	10.0	ug/L	1	JWJ	12/20/14	2018	1444308	1
Arsenic 7440-38-2	U	2.08	+/-1.72	5.00	30.0	ug/L	1					
Barium 7440-39-3		53.5	+/-10.7	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.0364	+/-0.333	1.00	5.00	ug/L	1					
Calcium 7440-70-2		85800	+/-17200	50.0	200	ug/L	1					
Chromium 7440-47-3	B	4.04	+/-0.873	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.222	+/-0.336	1.00	5.00	ug/L	1					
Copper 7440-50-8		12.8	+/-2.75	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	18.5	+/-10.7	30.0	100	ug/L	1					
Magnesium 7439-95-4		24600	+/-4920	110	300	ug/L	1					
Manganese 7439-96-5	U	1.76	+/-0.754	2.00	10.0	ug/L	1					
Nickel 7440-02-0	U	1.35	+/-0.568	1.50	5.00	ug/L	1					
Potassium 7440-09-7		8970	+/-1790	50.0	150	ug/L	1					
Silver 7440-22-4	U	0.949	+/-0.384	1.00	5.00	ug/L	1					
Sodium 7440-23-5		16200	+/-3230	100	300	ug/L	1					
Vanadium 7440-62-2		15.5	+/-3.12	1.00	5.00	ug/L	1					
Zinc 7440-66-6		13.2	+/-2.85	3.30	10.0	ug/L	1					

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 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF W15-012**

Report Date: January 9, 2015

Client Sample ID:	B2YHD6	Project:	CPRC0W15012
Sample ID:	363291004	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 10:30		
Receive Date:	17-DEC-14		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	B	5.00	+/-1.54	3.50	10.0	ug/L	1	JWJ	12/20/14	2026	1444308	1
Arsenic 7440-38-2	U	4.13	+/-1.86	5.00	30.0	ug/L	1					
Barium 7440-39-3		54.4	+/-10.9	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.0494	+/-0.333	1.00	5.00	ug/L	1					
Calcium 7440-70-2		86800	+/-17400	50.0	200	ug/L	1					
Chromium 7440-47-3		10.8	+/-2.18	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.202	+/-0.336	1.00	5.00	ug/L	1					
Copper 7440-50-8		13.6	+/-2.90	3.00	10.0	ug/L	1					
Iron 7439-89-6		1390	+/-279	30.0	100	ug/L	1					
Magnesium 7439-95-4		24700	+/-4940	110	300	ug/L	1					
Manganese 7439-96-5		12.7	+/-2.63	2.00	10.0	ug/L	1					
Nickel 7440-02-0	B	2.69	+/-0.735	1.50	5.00	ug/L	1					
Potassium 7440-09-7		9040	+/-1810	50.0	150	ug/L	1					
Silver 7440-22-4	B	1.05	+/-0.394	1.00	5.00	ug/L	1					
Sodium 7440-23-5		16300	+/-3270	100	300	ug/L	1					
Vanadium 7440-62-2		16.6	+/-3.34	1.00	5.00	ug/L	1					
Zinc 7440-66-6		14.0	+/-3.00	3.30	10.0	ug/L	1					

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Certificate of Analysis

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 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF W15-012**

Report Date: January 9, 2015

Client Sample ID:	B303T0	Project:	CPRC0W15012
Sample ID:	363291005	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 09:20		
Receive Date:	17-DEC-14		
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>											
Antimony 7440-36-0	U	2.86	+/-1.30	3.50	10.0	ug/L	1	JWJ	12/20/14	1400	1444675 1
Arsenic 7440-38-2	U	4.61	+/-1.91	5.00	30.0	ug/L	1				
Barium 7440-39-3		48.5	+/-9.70	1.00	5.00	ug/L	1				
Cadmium 7440-43-9	U	-0.194	+/-0.336	1.00	5.00	ug/L	1				
Calcium 7440-70-2		67300	+/-13500	50.0	200	ug/L	1				
Chromium 7440-47-3		9.09	+/-1.85	1.00	5.00	ug/L	1				
Cobalt 7440-48-4	U	-0.0381	+/-0.333	1.00	5.00	ug/L	1				
Copper 7440-50-8	U	-1.83	+/-1.06	3.00	10.0	ug/L	1				
Iron 7439-89-6	U	-12.5	+/-10.3	30.0	100	ug/L	1				
Magnesium 7439-95-4		19600	+/-3920	110	300	ug/L	1				
Manganese 7439-96-5	U	0.912	+/-0.691	2.00	10.0	ug/L	1				
Nickel 7440-02-0		11.4	+/-2.33	1.50	5.00	ug/L	1				
Potassium 7440-09-7		8430	+/-1690	50.0	150	ug/L	1				
Silver 7440-22-4	B	1.19	+/-0.409	1.00	5.00	ug/L	1				
Sodium 7440-23-5		15600	+/-3110	100	300	ug/L	1				
Vanadium 7440-62-2		17.6	+/-3.53	1.00	5.00	ug/L	1				
Zinc 7440-66-6	U	3.22	+/-1.28	3.30	10.0	ug/L	1				

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 W15-012**

Report Date: January 9, 2015

Client Sample ID:	B2YHD4	Project:	CPRC0W15012
Sample ID:	363291006	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 09:20		
Receive Date:	17-DEC-14		
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>												
Antimony 7440-36-0	U	1.37	+/-1.20	3.50	10.0	ug/L	1	JWJ	12/20/14	1413	1444675	1
Arsenic 7440-38-2	B	6.57	+/-2.12	5.00	30.0	ug/L	1					
Barium 7440-39-3		48.4	+/-9.68	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	-0.366	+/-0.341	1.00	5.00	ug/L	1					
Calcium 7440-70-2		67400	+/-13500	50.0	200	ug/L	1					
Chromium 7440-47-3		6.00	+/-1.25	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.293	+/-0.338	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	-1.98	+/-1.08	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	1.11	+/-10.0	30.0	100	ug/L	1					
Magnesium 7439-95-4		19400	+/-3880	110	300	ug/L	1					
Manganese 7439-96-5	B	3.97	+/-1.04	2.00	10.0	ug/L	1					
Nickel 7440-02-0		24.2	+/-4.86	1.50	5.00	ug/L	1					
Potassium 7440-09-7		8330	+/-1670	50.0	150	ug/L	1					
Silver 7440-22-4	B	1.48	+/-0.445	1.00	5.00	ug/L	1					
Sodium 7440-23-5		15600	+/-3110	100	300	ug/L	1					
Vanadium 7440-62-2		17.3	+/-3.48	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	1.53	+/-1.14	3.30	10.0	ug/L	1					

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 W15-012**

Report Date: January 9, 2015

Client Sample ID:	B2YHD4	Project:	CPRC0W15012
Sample ID:	363291006	Client ID:	CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: Lead (1) "As Received"</i>											
Lead 7439-92-1	U	0.006	+/-0.167	0.500	2.00	ug/L	1 SKJ	01/07/15	0041	1444298	2

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	JP1	12/17/14	1740	1444297
SW846 3005A	SW846 3005A for 6010C	JP1	12/18/14	1555	1444672

The following Analytical Methods were performed

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

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January 12, 2015

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 W15-012**

Report Date: January 9, 2015

Client Sample ID:	B2YHC8	Project:	CPRC0W15012
Sample ID:	363291007	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 08:44		
Receive Date:	17-DEC-14		
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>												
Antimony 7440-36-0	U	-1.5	+/-1.20	3.50	10.0	ug/L	1	JWJ	12/20/14	2029	1444308	1
Arsenic 7440-38-2	U	-0.357	+/-1.67	5.00	30.0	ug/L	1					
Barium 7440-39-3		75.5	+/-15.1	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.0926	+/-0.334	1.00	5.00	ug/L	1					
Calcium 7440-70-2		119000	+/-23900	50.0	200	ug/L	1					
Chromium 7440-47-3		8.63	+/-1.76	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.851	+/-0.374	1.00	5.00	ug/L	1					
Copper 7440-50-8		16.7	+/-3.48	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	15.8	+/-10.5	30.0	100	ug/L	1					
Magnesium 7439-95-4		34200	+/-6840	110	300	ug/L	1					
Manganese 7439-96-5	U	1.31	+/-0.716	2.00	10.0	ug/L	1					
Nickel 7440-02-0	B	3.07	+/-0.791	1.50	5.00	ug/L	1					
Potassium 7440-09-7		10500	+/-2100	50.0	150	ug/L	1					
Silver 7440-22-4	U	0.663	+/-0.359	1.00	5.00	ug/L	1					
Sodium 7440-23-5		25300	+/-5050	100	300	ug/L	1					
Vanadium 7440-62-2		16.7	+/-3.35	1.00	5.00	ug/L	1					
Zinc 7440-66-6		24.7	+/-5.07	3.30	10.0	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 W15-012**

Report Date: January 9, 2015

Client Sample ID:	B303T2	Project:	CPRC0W15012
Sample ID:	363291008	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 08:44		
Receive Date:	17-DEC-14		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	1.68	+/-1.21	3.50	10.0	ug/L	1	JWJ	12/20/14	2032	1444308	1
Arsenic 7440-38-2	U	1.98	+/-1.71	5.00	30.0	ug/L	1					
Barium 7440-39-3		75.5	+/-15.1	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	-0.0499	+/-0.333	1.00	5.00	ug/L	1					
Calcium 7440-70-2		119000	+/-23800	50.0	200	ug/L	1					
Chromium 7440-47-3		26.5	+/-5.32	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.362	+/-0.341	1.00	5.00	ug/L	1					
Copper 7440-50-8		18.3	+/-3.80	3.00	10.0	ug/L	1					
Iron 7439-89-6	B	82.5	+/-19.3	30.0	100	ug/L	1					
Magnesium 7439-95-4		33900	+/-6770	110	300	ug/L	1					
Manganese 7439-96-5	B	2.32	+/-0.812	2.00	10.0	ug/L	1					
Nickel 7440-02-0		9.01	+/-1.87	1.50	5.00	ug/L	1					
Potassium 7440-09-7		10400	+/-2070	50.0	150	ug/L	1					
Silver 7440-22-4	U	0.957	+/-0.384	1.00	5.00	ug/L	1					
Sodium 7440-23-5		25200	+/-5050	100	300	ug/L	1					
Vanadium 7440-62-2		16.9	+/-3.39	1.00	5.00	ug/L	1					
Zinc 7440-66-6		24.5	+/-5.02	3.30	10.0	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 W15-012**

Report Date: January 9, 2015

Client Sample ID:	B2YHC7	Project:	CPRC0W15012
Sample ID:	363291009	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 07:00		
Receive Date:	17-DEC-14		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	2.82	+/-1.30	3.50	10.0	ug/L	1	JWJ	12/20/14	2035	1444308	1
Arsenic 7440-38-2	U	-0.31	+/-1.67	5.00	30.0	ug/L	1					
Barium 7440-39-3	U	0.323	+/-0.340	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	-0.127	+/-0.334	1.00	5.00	ug/L	1					
Calcium 7440-70-2	U	12.8	+/-16.9	50.0	200	ug/L	1					
Chromium 7440-47-3	U	0.0286	+/-0.333	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.654	+/-0.358	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	0.182	+/-1.00	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	1.04	+/-10.0	30.0	100	ug/L	1					
Magnesium 7439-95-4	U	17.0	+/-36.8	110	300	ug/L	1					
Manganese 7439-96-5	U	0.0799	+/-0.667	2.00	10.0	ug/L	1					
Nickel 7440-02-0	U	-0.0835	+/-0.500	1.50	5.00	ug/L	1					
Silver 7440-22-4	U	0.418	+/-0.344	1.00	5.00	ug/L	1					
Sodium 7440-23-5	U	90.1	+/-37.9	100	300	ug/L	1					
Vanadium 7440-62-2	U	0.322	+/-0.339	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	1.95	+/-1.17	3.30	10.0	ug/L	1					
Potassium 7440-09-7	B	93.8	+/-25.1	50.0	150	ug/L	1	JWJ	01/08/15	1355	1444308	2

January 12, 2015

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 W15-012**

Report Date: January 9, 2015

Client Sample ID: B2YHC7 Project: CPRC0W15012
 Sample ID: 363291009 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	SW846 3005A for 6010C	JP1	12/17/14	1740	1444307

The following Analytical Methods were performed

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

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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 W15-012**

Report Date: January 9, 2015

Client Sample ID:	B303T1	Project:	CPRC0W15012
Sample ID:	363291010	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 07:00		
Receive Date:	17-DEC-14		
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>												
Antimony 7440-36-0	U	-1.29	+/-1.19	3.50	10.0	ug/L	1	JWJ	12/20/14	2038	1444308	1
Arsenic 7440-38-2	U	-2.11	+/-1.72	5.00	30.0	ug/L	1					
Barium 7440-39-3	U	-0.0191	+/-0.333	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	-0.218	+/-0.336	1.00	5.00	ug/L	1					
Calcium 7440-70-2	U	3.02	+/-16.7	50.0	200	ug/L	1					
Chromium 7440-47-3	U	-0.0769	+/-0.334	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.130	+/-0.334	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	-0.493	+/-1.00	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	0.749	+/-10.0	30.0	100	ug/L	1					
Magnesium 7439-95-4	U	-10.9	+/-36.7	110	300	ug/L	1					
Manganese 7439-96-5	U	-0.0128	+/-0.667	2.00	10.0	ug/L	1					
Nickel 7440-02-0	U	-0.417	+/-0.507	1.50	5.00	ug/L	1					
Silver 7440-22-4	U	0.716	+/-0.363	1.00	5.00	ug/L	1					
Sodium 7440-23-5	U	60.8	+/-35.5	100	300	ug/L	1					
Vanadium 7440-62-2	U	0.950	+/-0.384	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	0.932	+/-1.12	3.30	10.0	ug/L	1					
Potassium 7440-09-7		159	+/-35.9	50.0	150	ug/L	1	JWJ	01/08/15	1358	1444308	2

January 12, 2015

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 W15-012**

Report Date: January 9, 2015

Client Sample ID: B303T1 Project: CPRC0W15012
 Sample ID: 363291010 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	SW846 3005A for 6010C	JP1	12/17/14	1740	1444307

The following Analytical Methods were performed

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

Quality Control Summary

January 12, 2015
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2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: January 9, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 363291

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1444298										
QC1203230749	LCS										
Lead	50.0			50.5	ug/L		101	(80%-120%)	SKJ	01/06/15	23:01
QC1203230748	MB										
Lead			U	ND	ug/L					01/06/15	22:54
QC1203230750	363232039	MS									
Lead	50.0	U	ND	49.0	ug/L		97.9	(75%-125%)		01/06/15	23:28
QC1203230751	363232039	MSD									
Lead	50.0	U	ND	49.0	ug/L	0.112	97.8	(0%-20%)		01/06/15	23:34
QC1203230752	363232039	SDILT									
Lead		U	ND DU	ND	ug/L	N/A		(0%-10%)		01/06/15	23:47
Metals Analysis-ICP											
Batch	1444308										
QC1203230779	LCS										
Antimony	500			499	ug/L		99.8	(80%-120%)	JWJ	12/20/14	19:40
Arsenic	500			509	ug/L		102	(80%-120%)			
Barium	500			516	ug/L		103	(80%-120%)			
Cadmium	500			508	ug/L		102	(80%-120%)			
Calcium	5000			5100	ug/L		102	(80%-120%)			
Chromium	500			511	ug/L		102	(80%-120%)			
Cobalt	500			518	ug/L		104	(80%-120%)			
Copper	500			511	ug/L		102	(80%-120%)			
Iron	5000			5080	ug/L		102	(80%-120%)			
Magnesium	5000			5160	ug/L		103	(80%-120%)			
Manganese	500			513	ug/L		103	(80%-120%)			
Nickel	500			516	ug/L		103	(80%-120%)			

January 12, 2015

GEL LABORATORIES LLC

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

QC Summary

Workorder: 363291

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1444308										
Potassium	5000			5070	ug/L		101	(80%-120%)	JWJ	12/20/14	19:40
Silver	500			501	ug/L		100	(80%-120%)			
Sodium	5000			5050	ug/L		101	(80%-120%)			
Vanadium	500			532	ug/L		106	(80%-120%)			
Zinc	500			501	ug/L		100	(80%-120%)			
QC1203230778	MB										
Antimony			U	ND	ug/L					12/20/14	19:37
Arsenic			U	ND	ug/L						
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						
Vanadium			U	ND	ug/L						

January 12, 2015
GEL LABORATORIES LLC

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

QC Summary

Workorder: 363291

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1444308										
Zinc			U	ND	ug/L				JWJ	12/20/14	19:37
QC1203230780 363279002 MS											
Antimony	500	U	ND	502	ug/L		100	(75%-125%)		12/20/14	20:02
Arsenic	500	U	ND	516	ug/L		103	(75%-125%)			
Barium	500		34.9	535	ug/L		100	(75%-125%)			
Cadmium	500	U	ND	491	ug/L		98.3	(75%-125%)			
Calcium	5000		41000	46100	ug/L		N/A	(75%-125%)			
Chromium	500		21.3	515	ug/L		98.8	(75%-125%)			
Cobalt	500	U	ND	494	ug/L		98.8	(75%-125%)			
Copper	500		14.2	510	ug/L		99.2	(75%-125%)			
Iron	5000	U	ND	4970	ug/L		99.4	(75%-125%)			
Magnesium	5000		11100	16100	ug/L		99.8	(75%-125%)			
Manganese	500	U	ND	491	ug/L		98.2	(75%-125%)			
Nickel	500	U	ND	484	ug/L		96.8	(75%-125%)			
Potassium	5000		4870	10000	ug/L		103	(75%-125%)			
Silver	500	U	ND	489	ug/L		97.7	(75%-125%)			
Sodium	5000		10900	15800	ug/L		97.8	(75%-125%)			
Vanadium	500		12.7	535	ug/L		104	(75%-125%)			
Zinc	500		15.7	498	ug/L		96.4	(75%-125%)			
QC1203230781 363279002 MSD											
Antimony	500	U	ND	503	ug/L	0.137	100	(0%-20%)		12/20/14	20:04
Arsenic	500	U	ND	514	ug/L	0.408	103	(0%-20%)			
Barium	500		34.9	537	ug/L	0.282	100	(0%-20%)			

January 12, 2015
GEL LABORATORIES LLC

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QC Summary

Workorder: 363291

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1444308										
Cadmium	500	U	ND	494	ug/L	0.499	98.8	(0%-20%)	JWJ	12/20/14	20:04
Calcium	5000		41000	46500	ug/L	0.672	N/A	(0%-20%)			
Chromium	500		21.3	523	ug/L	1.40	100	(0%-20%)			
Cobalt	500	U	ND	496	ug/L	0.452	99.3	(0%-20%)			
Copper	500		14.2	514	ug/L	0.658	99.9	(0%-20%)			
Iron	5000	U	ND	4980	ug/L	0.191	99.6	(0%-20%)			
Magnesium	5000		11100	16300	ug/L	1.12	103	(0%-20%)			
Manganese	500	U	ND	494	ug/L	0.644	98.8	(0%-20%)			
Nickel	500	U	ND	490	ug/L	1.19	98	(0%-20%)			
Potassium	5000		4870	10100	ug/L	0.577	104	(0%-20%)			
Silver	500	U	ND	492	ug/L	0.557	98.2	(0%-20%)			
Sodium	5000		10900	15800	ug/L	0.0949	98.1	(0%-20%)			
Vanadium	500		12.7	541	ug/L	1.15	106	(0%-20%)			
Zinc	500		15.7	505	ug/L	1.32	97.8	(0%-20%)			
QC1203230782 363279002 SDILT											
Antimony		U	ND DU	ND	ug/L	N/A		(0%-10%)		12/20/14	20:06
Arsenic		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Barium			34.9 D	7.09	ug/L	1.38		(0%-10%)			
Cadmium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Calcium			41000 D	8290	ug/L	1.14		(0%-10%)			
Chromium			21.3 D	4.35	ug/L	2.06		(0%-10%)			
Cobalt		U	ND DU	ND	ug/L	N/A		(0%-10%)			

January 12, 2015
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QC Summary

Workorder: 363291

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1444308										
Copper		14.2	D	3.48	ug/L	22.3		(0%-10%)	JWJ	12/20/14	20:06
Iron	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Magnesium		11100	D	2250	ug/L	1.29		(0%-10%)			
Manganese	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Nickel	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Potassium		4870	D	1010	ug/L	3.94		(0%-10%)			
Silver	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Sodium		10900	D	2250	ug/L	3.37		(0%-10%)			
Vanadium		12.7	D	3.06	ug/L	20.6		(0%-10%)			
Zinc		15.7	D	5.10	ug/L	62.4		(0%-10%)			
Batch	1444675										
	QC1203231496 LCS										
Antimony	500			486	ug/L		97.2	(80%-120%)	JWJ	12/20/14	13:57
Arsenic	500			497	ug/L		99.3	(80%-120%)			
Barium	500			502	ug/L		100	(80%-120%)			
Cadmium	500			493	ug/L		98.6	(80%-120%)			
Calcium	5000			5030	ug/L		101	(80%-120%)			
Chromium	500			499	ug/L		99.8	(80%-120%)			
Cobalt	500			506	ug/L		101	(80%-120%)			
Copper	500			505	ug/L		101	(80%-120%)			
Iron	5000			4850	ug/L		97.1	(80%-120%)			
Magnesium	5000			4940	ug/L		98.8	(80%-120%)			

January 12, 2015

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QC Summary

Workorder: 363291

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1444675										
Manganese	500			506	ug/L		101	(80%-120%)			
Nickel	500			501	ug/L		100	(80%-120%)	JWJ	12/20/14	13:57
Potassium	5000			5210	ug/L		104	(80%-120%)			
Silver	500			484	ug/L		96.8	(80%-120%)			
Sodium	5000			4950	ug/L		99	(80%-120%)			
Vanadium	500			520	ug/L		104	(80%-120%)			
Zinc	500			488	ug/L		97.6	(80%-120%)			
QC1203231495 MB											
Antimony			U	ND	ug/L					12/20/14	13:53
Arsenic			U	ND	ug/L						
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						

January 12, 2015

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QC Summary

Workorder: 363291

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1444675										
Vanadium			U	ND	ug/L				JWJ	12/20/14	13:53
Zinc			U	ND	ug/L						
QC1203231497 363291005 MS											
Antimony	500	U	ND	494	ug/L		98.3	(75%-125%)		12/20/14	14:03
Arsenic	500	U	ND	508	ug/L		101	(75%-125%)			
Barium	500		48.5	545	ug/L		99.3	(75%-125%)			
Cadmium	500	U	ND	484	ug/L		96.8	(75%-125%)			
Calcium	5000		67300	73900	ug/L		N/A	(75%-125%)			
Chromium	500		9.09	501	ug/L		98.3	(75%-125%)			
Cobalt	500	U	ND	493	ug/L		98.6	(75%-125%)			
Copper	500	U	ND	513	ug/L		103	(75%-125%)			
Iron	5000	U	ND	4930	ug/L		98.6	(75%-125%)			
Magnesium	5000		19600	24900	ug/L		107	(75%-125%)			
Manganese	500	U	ND	497	ug/L		99.2	(75%-125%)			
Nickel	500		11.4	496	ug/L		96.9	(75%-125%)			
Potassium	5000		8430	13800	ug/L		107	(75%-125%)			
Silver	500	B	1.19	489	ug/L		97.6	(75%-125%)			
Sodium	5000		15600	20900	ug/L		106	(75%-125%)			
Vanadium	500		17.6	534	ug/L		103	(75%-125%)			
Zinc	500	U	ND	486	ug/L		96.6	(75%-125%)			
QC1203231498 363291005 MSD											
Antimony	500	U	ND	495	ug/L	0.0344	98.3	(0%-20%)		12/20/14	14:06
Arsenic	500	U	ND	507	ug/L	0.164	100	(0%-20%)			

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QC Summary

Workorder: 363291

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1444675										
Barium	500	48.5		543	ug/L	0.349	99	(0%-20%)	JWJ	12/20/14	14:06
Cadmium	500	U	ND	482	ug/L	0.425	96.4	(0%-20%)			
Calcium	5000	67300		73200	ug/L	0.869	N/A	(0%-20%)			
Chromium	500	9.09		498	ug/L	0.573	97.7	(0%-20%)			
Cobalt	500	U	ND	491	ug/L	0.346	98.2	(0%-20%)			
Copper	500	U	ND	512	ug/L	0.255	102	(0%-20%)			
Iron	5000	U	ND	4890	ug/L	0.886	97.8	(0%-20%)			
Magnesium	5000	19600		24600	ug/L	1.34	100	(0%-20%)			
Manganese	500	U	ND	494	ug/L	0.650	98.5	(0%-20%)			
Nickel	500	11.4		493	ug/L	0.605	96.3	(0%-20%)			
Potassium	5000	8430		13700	ug/L	0.743	105	(0%-20%)			
Silver	500	B	1.19	489	ug/L	0.0838	97.5	(0%-20%)			
Sodium	5000	15600		20800	ug/L	0.427	105	(0%-20%)			
Vanadium	500	17.6		532	ug/L	0.460	103	(0%-20%)			
Zinc	500	U	ND	483	ug/L	0.768	95.9	(0%-20%)			
QC1203231499 363291005 SDILT											
Antimony		U	ND DU	ND	ug/L	N/A		(0%-10%)		12/20/14	14:09
Arsenic		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Barium			48.5 D	9.51	ug/L	1.93		(0%-10%)			
Cadmium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Calcium			67300 D	13300	ug/L	1.42		(0%-10%)			
Chromium			9.09 D	1.75	ug/L	3.84		(0%-10%)			

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QC Summary

Workorder: 363291

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Table with columns: Parmname, NOM, Sample, Qual, QC, Units, RPD/D%, REC%, Range, Anlst, Date, Time. Rows include Cobalt, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc.

Notes:

The Qualifiers in this report are defined as follows:

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

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QC Summary

Workorder: 363291

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

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. 09-JAN-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: 1444298	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 363232(GEL363232),363291(GEL363291),363297(GEL363297)			
Application Issues: Failed Recovery for MS/PS Failed Recovery for MSD/PSD			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed Recovery for MS/PS: QC 1203238870PS</p> <p>2. Failed Recovery for MSD/PSD: QC 1203230751MSD</p>		<p>The matrix spike duplicate recovery failed outside of the control limits for beryllium and boron. The post spike failed outside the required control limits for beryllium and boron. This verifies the presence of a matrix interference.</p>	

Originator's Name:
Samantha Jacobs 09-JAN-15

Data Validator/Group Leader:
Bryan Davis 09-JAN-15

DATA EXCEPTION REPORT

Mo.Day Yr. 09-JAN-15	Division: Federal	Quality Criteria: SOP	Type: Process
Instrument Type: ICP	Test / Method: SW846 3005A/6010C	Matrix Type: Liquid	Client Code: CPRC
Batch ID: 1444308	Sample Numbers: 363291009, 363291010		
Potentially affected work order(s)(SDG): 363291(GEL363291)			
Application Issues: Other			
Specification and Requirements Exception Description:		DER Disposition:	
1.)Low level PQL recovered high for antimony.		1.) Samples 363291009 (B2YHC7) and 363291010 (B303T1)-ICP were analyzed in 3 separate passing calibrations. The potassium concentrations in these samples were neither below the MDL nor greater than two times the PQL. The closing PQL standard recovered outside the control limits in all 3 analyses for potassium due to possible matrix interference interactions.	

Originator's Name:
Jamie Johnson 09-JAN-15

Data Validator/Group Leader:
Nik-Cole Elmore 09-JAN-15

General Chem Analysis

Case Narrative

General Chemistry Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG GEL363291

Method/Analysis Information

Product: Cyanide and Total
Analytical Batch: 1445455 **Method:** 9012_CYANIDE: COMMON
Prep Batch : 1445454 **Method:** SW846 9010C Distillation

Sample Analysis

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

Sample ID	Client ID
363291002	B2YHD5
363291004	B2YHD6
1203233290	Method Blank (MB)
1203233291	Laboratory Control Sample (LCS)
1203233292	363291002(B2YHD5) Sample Duplicate (DUP)
1203233293	363291002(B2YHD5) 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-095 REV# 17.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

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

The following sample was selected for QC analysis: 363291002 (B2YHD5).

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

The MS/PS recoveries for this sample set were within the required acceptance limits.

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. 1203233292 (B2YHD5DUP).

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.

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: Alkalinity
Analytical Batch: 1445446 **Method:** 2320_ALKALINITY: COMMON (Alkalinity only)

Sample Analysis

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

Sample ID	Client ID
363291002	B2YHD5
363291004	B2YHD6
1203233262	Method Blank (MB)
1203233264	Laboratory Control Sample (LCS)
1203233268	363291002(B2YHD5) Sample Duplicate (DUP)
1203233271	363291002(B2YHD5) 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-033 REV# 11.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 363291002 (B2YHD5).

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 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.

Additional Comments

50mL of sample was used due to limited quantity. 1203233268 (B2YHD5DUP), 1203233271 (B2YHD5MS) and 363291002 (B2YHD5).

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.

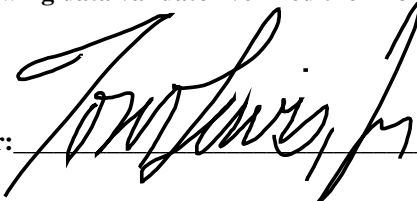
Certification Statement

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.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:  Date: 09Jan15

Sample Data Summary

January 12, 2015

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**Certificate of Analysis Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL363291 GEL Work Order: 363291

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).

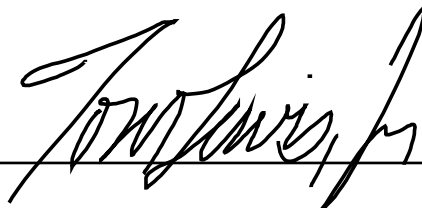
U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

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 Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Heather Shaffer.

Reviewed by



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 W15-012**

Report Date: January 7, 2015

Client Sample ID:	B2YHD5	Project:	CPRC0W15012
Sample ID:	363291002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 10:30		
Receive Date:	17-DEC-14		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis											
<i>9012_CYANIDE: COMMON "As Received"</i>											
Cyanide, Total	B	2.50	1.67	5.00	ug/L	1	AXH3	12/24/14	1239	1445455	1
57-12-5											
Titration and Ion Analysis											
<i>2320_ALKALINITY: COMMON (Alkalinity only) "As Received"</i>											
Alkalinity, Total as CaCO3		84700	1450	2000	ug/L		PXO1	12/23/14	1538	1445446	2
ALKALINITY											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	12/24/14	1229	1445454

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9012B	
2	SM 2320B	

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January 12, 2015

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 W15-012**

Report Date: January 7, 2015

Client Sample ID:	B2YHD6	Project:	CPRC0W15012
Sample ID:	363291004	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	16-DEC-14 10:30		
Receive Date:	17-DEC-14		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis											
<i>9012_CYANIDE: COMMON "As Received"</i>											
Cyanide, Total	B	3.24	1.67	5.00	ug/L	1	AXH3	12/24/14	1241	1445455	1
57-12-5											
Titration and Ion Analysis											
<i>2320_ALKALINITY: COMMON (Alkalinity only) "As Received"</i>											
Alkalinity, Total as CaCO3		86300	725	1000	ug/L		PXO1	12/23/14	1545	1445446	2
ALKALINITY											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	12/24/14	1229	1445454

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9012B	
2	SM 2320B	

Quality Control Summary

January 12, 2015
GEL LABORATORIES LLC

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

QC Summary

Report Date: January 7, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 363291

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1445455										
QC1203233292	363291002	DUP									
Cyanide, Total		B	2.50	B	3.33	ug/L	28.5 ^	(+/-5.00)	AXH3	12/24/14	12:40
QC1203233291	LCS										
Cyanide, Total	50.0				53.3	ug/L		(90%-110%)		12/24/14	12:38
QC1203233290	MB										
Cyanide, Total				U	1.67	ug/L				12/24/14	12:37
QC1203233293	363291002	MS									
Cyanide, Total	100	B	2.50		112	ug/L		(58%-134%)		12/24/14	12:40
Titration and Ion Analysis											
Batch	1445446										
QC1203233268	363291002	DUP									
Alkalinity, Total as CaCO3			84700		85800	ug/L	1.24	(0%-20%)	PXO1	12/23/14	15:40
QC1203233264	LCS										
Alkalinity, Total as CaCO3	50000				51900	ug/L		(90%-110%)		12/23/14	15:03
QC1203233262	MB										
Alkalinity, Total as CaCO3				U	725	ug/L				12/23/14	15:03
QC1203233271	363291002	MS									
Alkalinity, Total as CaCO3	100000		84700		190000	ug/L		(80%-120%)		12/23/14	15:42

Notes:

The Qualifiers in this report are defined as follows:

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

January 12, 2015

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QC Summary

Workorder: 363291

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

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

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

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