

October 30, 2015

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Tel: (314)298-8566

TestAmerica Job ID: 160-14283-1

TestAmerica Sample Delivery Group: SL1945
Client Project/Site: X15-048

For:

CH2M Hill Plateau Remediation Company
PO BOX 1600, MS H8-41
Richland, Washington 99352

Attn: Mr. Scot Fitzgerald

Elizabeth M. Hoerchler

Authorized for release by:
10/30/2015 2:21:11 PM

Elizabeth Hoerchler, Project Mgmt. Assistant
elizabeth.hoerchler@testamericainc.com

Designee for

Jayna Awalt, Project Manager II
(314)298-8566
jayna.awalt@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

- 1
- 2
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- 10

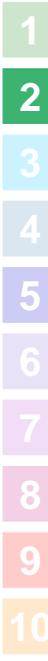


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October 30, 2015

From: Waters-husted, Karen S [Karen_S_Waters-husted@rl.gov]

Sent: Monday, September 21, 2015 10:52 AM

To: Awalt, Jayna; Puckett, Susan

Cc: ^CPP Sample Management

Subject: Clarification on TAT for X15-048 and X15-052

Jayna,

Both SAFs X15-048 and X15-052 have 6020_METALS_ICPMS for Uranium, Chromium, Copper and Manganese. These will be bottled together and on one chain. However, only the Uranium will have a 3 day TAT. The other metals will have a TAT of 15 days. Please include this email in the packages as documentation for the direction.

Please let me know if you have any questions or need more clarification.

Thank you.

Karen Waters-Husted

CH2M Plateau Remediation Company

Sample Management and Reporting

Groundwater Project Coordinator

200 East / MO-277 / 108

509-376-4650

Karen_S_Waters-husted@rl.gov

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-048

TestAmerica Job ID: 160-14283-1
SDG: SL1945

Job ID: 160-14283-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
October 30, 2015
Attention: Scot Fitzgerald

SDG : SL1945
Number of Samples : 4 samples
Sample Matrix : Water
Data Deliverable : Summary
Date SDG Closed : October 15, 2015

II. Introduction

On October 15, 4 samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and receipt checklists for documentation of any variations on receipt conditions and temperature. Upon receipt, samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: X15-048

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with an LCS/LCS duplicate.

Note: For Metals analyses, per standard practice, all 6020 water and soil samples are initially prepared at 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner. These dilutions do not necessitate flagging unless otherwise noted in the case narrative.

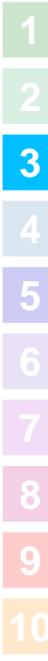
For Anion analysis, samples have been started at a 2x dilution per CHPRC direction. The samples are flagged accordingly with a "D" flag if sample concentration is above the MDL/RL. Non-conformance will be included in the below section only if dilution is greater than 2x.

For WTPH methods, the lab utilizes method 8015B. Per CHPRC direction, the method name in the electronic data has been modified to read WTPH in the place of 8015B.

IV. Definitions

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
DUP- Laboratory Duplicate
MS- Matrix Spike
MSD- Matrix Spike Duplicate

The term "Detection Limit" used in the analytical data report refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.



Job ID: 160-14283-1 (Continued)**Laboratory: TestAmerica St. Louis (Continued)**

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** - For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** - For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** - For organic analyses, the sample is estimated and less than the RL.
- **C** - For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** - For all analyses, the sample result was obtained from the analysis of a dilution. For Metals analyses, per standard practice, all solid samples are initially prepared at a 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner. These dilutions do not necessitate qualification unless otherwise noted in the case narrative. Due to limitations of the LIMS system, "D" flags may appear on QC samples.
- **N** - For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** - For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.
- **O** - For all analyses, the LCS (LCSD) recoveries are outside QC limits.
- **M** - For inorganic analyses, the precision was outside control limits.
- **P** - For organic analyses (PCB/Pests only), the aroclor target analyte has greater than 25% difference for detected concentrations between the two GC columns.

There were no observations or non-conformances associated with the following methods:

ICPMS Metals**Cyanide**

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

Reviewed and approved:

Elizabeth Hoerchler
St. Louis Project Manager Assistant

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-14283-1

SDG Number: SL1945

Login Number: 14283

List Number: 1

Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

511945

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.#

X15-048-015

Page 1 of 1

Collector	J.R. Aguilar/CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X15-048	Sampling Origin	Hanford Site	Purchase Order/Charge Code	302869
Project Title	200-BP-5 Treatability Test -Day 1	Logbook No.	HNF-N-506 76/82	Ice Chest No.	605-539
Shipped To (Lab)	TestAmerica St. Louis	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	774737824062
Protocol	CERCLA	Priority:	3 Days	Offsite Property No.	N/A

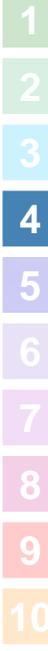
POSSIBLE SAMPLE HAZARDS/REMARKS
 *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS		Hold Time	Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
N/A			
Sample No.	Filter	* Date	Time
B32J32	N	10-14-15	0834
No/Type Container	Sample Analysis	Holding Time	Preservative
1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2

Relinquished By	J.R. Aguilar/CHPRC	Print	Sign	Date/Time	0910	Received By	L.D. Wall	Print	Sign	Date/Time	0910
Relinquished By	L.D. Wall	CHPRC		0910		Received By	CHPRC			0910	
Relinquished By	L.D. Wall	CHPRC		1400		Received By	FEDEX			1400	
Relinquished By						Received By	Jill Clarke	Jill Clarke		0920	

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

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



51945

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

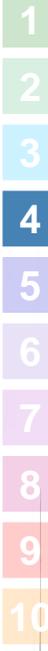
C.O.C.# X15-048-012

Page 1 of 1

Collector	J.R. Aguilar/CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X15-048	Sampling Origin	Hanford Site	Purchase Order/Charge Code	302869
Project Title	200-BP-5 Treatability Test -Day 1	Logbook No.	HNF-N-506 76/82	Ice Chest No.	6WS-539
Shipped To (Lab)	TestAmerica St. Louis	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	774737824062
Protocol	CERCLA	Priority:	15 Days	Offsite Property No.	N/A
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS			
*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		Hold Time			
		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis
B32J33	N	10-14-15	0834	1x250-mL G/P	9012_CYANIDE: COMMON ✓
					Holding Time
					14 Days
					Preservative
					NaOH to pH >=12/Cool <=6C

October 30, 2015

Relinquished By	J.R. Aguilar/CHPRC	Print	Sign	Date/Time	0910	Received By	L.D. Wall	Print	Sign	Date/Time	0910
Relinquished By	L.D. Wall	CHPRC		0910		Received By	CHPRC			0910	
Relinquished By				1400		Received By	FEDEX				
Relinquished By						Received By	Jill Clarke			0920	
						Received By	Jill Clarke			0920	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time		Matrix *			
PRINTED ON 9/17/2015		A-6004-842 (REV 2)		FSR ID = FSR6393		Date/Time		S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other			



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10/30/2015

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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.#

X15-048-011

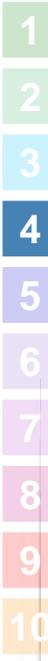
Page 1 of 1

Collector	J.R. Aguilera/CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X15-048	Sampling Origin	Hanford Site	Purchase Order/Charge Code	302869
Project Title	200-BP-5 Treatability Test -Day 1	Logbook No.	HNF-N-506 76 / 82	Ice Chest No.	GWS-539
Shipped To (Lab)	TestAmerica St. Louis	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	774737824062
Protocol	CERCLA	Priority:	15 Days	Offsite Property No.	N/A
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS		Hold Time	
*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		N/A		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Sample No.	Filter	* No/Type Container	Sample Analysis	Holding Time	Preservative
B32J28	N	W 10-14-15 0834	9012_CYANIDE: COMMON ✓	14 Days	NaOH to pH >=12/Cool <=6C

October 30, 2015

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
J.R. Aguilera/CHPRC			OCT 14 2015 0910	L.D. Wall			OCT 14 2015 0910	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	
L.D. Wall			1400	CHPRC				
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	
				FEDEX				
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	
				Oil Clarke Till Clark			10-15-15 0920	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time		
PRINTED ON 9/17/2015		10/30/2015		FSR ID = FSR6393		A-6004-842 (REV 2)		





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774737824062

Ship date:
Wed 10/14/2015

Actual delivery:
Thur 10/15/2015 9:08 am

RICHLAND, WA US

Delivered

EARTH CITY, MO US

Signed for by: J. CLARKE

Travel History

Date/Time	Activity	Location
10/15/2015 - Thursday		
9:08 am	Delivered	EARTH CITY, MO
7:03 am	On FedEx vehicle for delivery	EARTH CITY, MO
6:56 am	At local FedEx facility	EARTH CITY, MO
5:25 am	At destination sort facility	BERKELEY, MO
4:38 am	Departed FedEx location	MEMPHIS, TN
12:16 am	Arrived at FedEx location	MEMPHIS, TN
10/14/2015 - Wednesday		
5:08 pm	Left FedEx origin facility	PASCO, WA
3:13 pm	Picked up	PASCO, WA
1:10 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking number	774737824062	Service	FedEx Priority Overnight
Weight	77 lbs / 34.93 kgs	Dimensions	29x16x17 in
Delivered To	Shipping/Receiving	Total pieces	1
Total shipment weight	77 lbs / 34.93 kgs	Shipper reference	gws-539
Packaging	Your Packaging	Special handling section	Deliver Weekday



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Qualifiers

Metals

Qualifier	Qualifier Description
B	Estimated result. Result is less than the RL, but greater than MDL
U	Analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
U	Analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-048

TestAmerica Job ID: 160-14283-1
SDG: SL1945

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL SL
9012B	Cyanide, Total andor Amenable	SW846	TAL SL

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

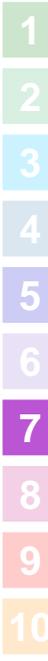
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-048

TestAmerica Job ID: 160-14283-1
SDG: SL1945

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-14283-1	B32J27	Water	10/14/15 08:34	10/15/15 09:20
160-14283-2	B32J32	Water	10/14/15 08:34	10/15/15 09:20
160-14283-3	B32J33	Water	10/14/15 08:34	10/15/15 09:20
160-14283-4	B32J28	Water	10/14/15 08:34	10/15/15 09:20



October 30, 2015
Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-048

TestAmerica Job ID: 160-14283-1
SDG: SL1945

Method: 6020A - Metals (ICP/MS)

Client Sample ID: B32J27
Date Collected: 10/14/15 08:34
Date Received: 10/15/15 09:20

Lab Sample ID: 160-14283-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	8.3	B	10.0	1.0	ug/L		10/16/15 09:05	10/19/15 16:05	2
Uranium	123		1.0	0.23	ug/L		10/16/15 09:05	10/19/15 16:05	2
Copper	0.68	U	1.0	0.68	ug/L		10/16/15 09:05	10/20/15 11:11	2
Manganese	1.1	B	2.0	0.88	ug/L		10/16/15 09:05	10/19/15 16:05	2

Client Sample ID: B32J32
Date Collected: 10/14/15 08:34
Date Received: 10/15/15 09:20

Lab Sample ID: 160-14283-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	11.0		10.0	1.0	ug/L		10/16/15 09:05	10/19/15 16:22	2
Uranium	162		1.0	0.23	ug/L		10/16/15 09:05	10/19/15 16:22	2
Copper	0.68	U	1.0	0.68	ug/L		10/16/15 09:05	10/20/15 11:41	2
Manganese	1.4	B	2.0	0.88	ug/L		10/16/15 09:05	10/19/15 16:22	2

General Chemistry

Client Sample ID: B32J33
Date Collected: 10/14/15 08:34
Date Received: 10/15/15 09:20

Lab Sample ID: 160-14283-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	266		10.0	2.9	ug/L		10/27/15 15:35	10/28/15 11:58	1

Client Sample ID: B32J28
Date Collected: 10/14/15 08:34
Date Received: 10/15/15 09:20

Lab Sample ID: 160-14283-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	258		10.0	2.9	ug/L		10/27/15 15:35	10/28/15 12:01	1

~~October 30, 2015~~
QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-048

TestAmerica Job ID: 160-14283-1
SDG: SL1945

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 160-216743/1-A
Matrix: Water
Analysis Batch: 217167

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 216743

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	1.0	U	10.0	1.0	ug/L		10/16/15 09:05	10/19/15 15:56	2
Uranium	0.23	U	1.0	0.23	ug/L		10/16/15 09:05	10/19/15 15:56	2
Manganese	0.88	U	2.0	0.88	ug/L		10/16/15 09:05	10/19/15 15:56	2

Lab Sample ID: MB 160-216743/1-A
Matrix: Water
Analysis Batch: 217430

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 216743

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	0.68	U	1.0	0.68	ug/L		10/16/15 09:05	10/20/15 11:02	2

Lab Sample ID: LCS 160-216743/2-A
Matrix: Water
Analysis Batch: 217167

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 216743

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1000	951.5		ug/L		95	80 - 120
Uranium	1000	1040		ug/L		104	80 - 120
Manganese	1000	1024		ug/L		102	80 - 120

Lab Sample ID: LCS 160-216743/2-A
Matrix: Water
Analysis Batch: 217430

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 216743

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	1000	973.9		ug/L		97	80 - 120

Lab Sample ID: 160-14283-1 MS
Matrix: Water
Analysis Batch: 217167

Client Sample ID: B32J27
Prep Type: Total/NA
Prep Batch: 216743

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	8.3	B	1000	960.5		ug/L		95	75 - 125
Uranium	123		1000	1163		ug/L		104	75 - 125
Manganese	1.1	B	1000	998.6		ug/L		100	75 - 125

Lab Sample ID: 160-14283-1 MS
Matrix: Water
Analysis Batch: 217430

Client Sample ID: B32J27
Prep Type: Total/NA
Prep Batch: 216743

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	0.68	U	1000	978.8		ug/L		98	75 - 125

Lab Sample ID: 160-14283-1 MSD
Matrix: Water
Analysis Batch: 217167

Client Sample ID: B32J27
Prep Type: Total/NA
Prep Batch: 216743

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	8.3	B	1000	968.4		ug/L		96	75 - 125	1	20

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-048

TestAmerica Job ID: 160-14283-1
SDG: SL1945

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 160-14283-1 MSD
Matrix: Water
Analysis Batch: 217167

Client Sample ID: B32J27
Prep Type: Total/NA
Prep Batch: 216743

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD	
Uranium	123		1000	1148		ug/L		103	75 - 125	1	20
Manganese	1.1	B	1000	1027		ug/L		103	75 - 125	3	20

Lab Sample ID: 160-14283-1 MSD
Matrix: Water
Analysis Batch: 217430

Client Sample ID: B32J27
Prep Type: Total/NA
Prep Batch: 216743

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD	
Copper	0.68	U	1000	976.9		ug/L		98	75 - 125	0	20

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 160-218699/1-A
Matrix: Water
Analysis Batch: 218923

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 218699

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Cyanide, Total	2.9	U	10.0	2.9	ug/L		10/27/15 15:35	10/28/15 11:48		1

Lab Sample ID: HLCS 160-218699/3-A
Matrix: Water
Analysis Batch: 218923

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218699

Analyte	Spike	Added	HLCS	HLCS	Unit	D	%Rec	%Rec.	Limits
			Result	Qualifier				Limits	
Cyanide, Total	400		386.2		ug/L		97	85 - 115	

Lab Sample ID: LCS 160-218699/2-A
Matrix: Water
Analysis Batch: 218923

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218699

Analyte	Spike	Added	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
			Result	Qualifier				Limits	
Cyanide, Total	200		203.8		ug/L		102	85 - 115	

Lab Sample ID: 160-14283-4 MS
Matrix: Water
Analysis Batch: 218923

Client Sample ID: B32J28
Prep Type: Total/NA
Prep Batch: 218699

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD	
Cyanide, Total	258		200	445.9		ug/L		94	66 - 120		

Lab Sample ID: 160-14283-4 DU
Matrix: Water
Analysis Batch: 218923

Client Sample ID: B32J28
Prep Type: Total/NA
Prep Batch: 218699

Analyte	Sample	Sample	Spike	DU	DU	Unit	D	RPD	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	
Cyanide, Total	258			267.5		ug/L		4		20

October 30, 2015
QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: X15-048

TestAmerica Job ID: 160-14283-1
 SDG: SL1945

Metals

Prep Batch: 216743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14283-1	B32J27	Total/NA	Water	3010A	
160-14283-1 MS	B32J27	Total/NA	Water	3010A	
160-14283-1 MSD	B32J27	Total/NA	Water	3010A	
160-14283-2	B32J32	Total/NA	Water	3010A	
LCS 160-216743/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 160-216743/1-A	Method Blank	Total/NA	Water	3010A	

Analysis Batch: 217167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14283-1	B32J27	Total/NA	Water	6020A	216743
160-14283-1 MS	B32J27	Total/NA	Water	6020A	216743
160-14283-1 MSD	B32J27	Total/NA	Water	6020A	216743
160-14283-2	B32J32	Total/NA	Water	6020A	216743
LCS 160-216743/2-A	Lab Control Sample	Total/NA	Water	6020A	216743
MB 160-216743/1-A	Method Blank	Total/NA	Water	6020A	216743

Analysis Batch: 217430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14283-1	B32J27	Total/NA	Water	6020A	216743
160-14283-1 MS	B32J27	Total/NA	Water	6020A	216743
160-14283-1 MSD	B32J27	Total/NA	Water	6020A	216743
160-14283-2	B32J32	Total/NA	Water	6020A	216743
LCS 160-216743/2-A	Lab Control Sample	Total/NA	Water	6020A	216743
MB 160-216743/1-A	Method Blank	Total/NA	Water	6020A	216743

General Chemistry

Prep Batch: 218699

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14283-3	B32J33	Total/NA	Water	9010C	
160-14283-4	B32J28	Total/NA	Water	9010C	
160-14283-4 DU	B32J28	Total/NA	Water	9010C	
160-14283-4 MS	B32J28	Total/NA	Water	9010C	
HLCS 160-218699/3-A	Lab Control Sample	Total/NA	Water	9010C	
LCS 160-218699/2-A	Lab Control Sample	Total/NA	Water	9010C	
MB 160-218699/1-A	Method Blank	Total/NA	Water	9010C	

Analysis Batch: 218923

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14283-3	B32J33	Total/NA	Water	9012B	218699
160-14283-4	B32J28	Total/NA	Water	9012B	218699
160-14283-4 DU	B32J28	Total/NA	Water	9012B	218699
160-14283-4 MS	B32J28	Total/NA	Water	9012B	218699
HLCS 160-218699/3-A	Lab Control Sample	Total/NA	Water	9012B	218699
LCS 160-218699/2-A	Lab Control Sample	Total/NA	Water	9012B	218699
MB 160-218699/1-A	Method Blank	Total/NA	Water	9012B	218699