

October 15, 2015

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Richland  
2800 George Washington Way  
Richland, WA 99352  
Tel: (509)375-3131

TestAmerica Job ID: 300-980-1  
TestAmerica Sample Delivery Group: WC0417  
Client Project/Site: CH2M Hill Chemical

For:  
CH2M Hill Plateau Remediation Company  
PO BOX 1600  
Mail Stop R3-50  
Richland, Washington 99352

Attn: CPP Sample Management



Authorized for release by:  
10/15/2015 2:56:42 PM

Whitney Ritari, Project Manager I  
(509)375-3131 ext164  
[whitney.ritari@testamericainc.com](mailto:whitney.ritari@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this package. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a desinee as verified by the attached signature.*

*The laboratory is accredited to EPA 7196A in Solid and Chemical Materials, per Washington State Department of Ecology this is approved for non-discharge water samples. The sample/ sample duplicate RPD agreement is not applicable if one or both results are elss than five times the MDL.*

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## Qualifiers

### General Chemistry

Qualifier	Qualifier Description
B	Estimated result. Result is less than the RL, but greater than MDL
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: CH2M Hill Chemical

TestAmerica Job ID: 300-980-1  
SDG: WC0417

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**Job ID: 300-980-1**

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**Laboratory: TestAmerica Richland**

**Narrative**

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**Job Narrative  
300-980-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/6/2015 2:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 10.1° C.

**General Chemistry**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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**CH2M Hill Plateau Remediation Company**

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

C.O.C. #

**X16-001-132**

Page 1 of 1

Collector	S.W. King/CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	X16-001	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271
Project Title	100-BC-5 RI, OCTOBER 2015	Logbook No.	HNF-N-506 <i>710/72</i>	Ice Chest No.	N/A
Shipped To (Lab)	TestAmerica Incorporated, Richland	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Protocol	CERCLA	Priority:	15 Days	Offsite Property No.	N/A
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>			<b>SPECIAL INSTRUCTIONS</b>		
*** 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			Submit deliverables & invoices to ~COP Sample Management.		
Hold Time			Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Sample No.	Filter	* Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B32TW3	Y	OCT 06 2015	11:18	1x60-ml aG	7196_CR6: COMMON	24 Hours	Cool <=6C
B32TW1	N	W	✓	1x60-ml aG	7196_CR6: COMMON	24 Hours	Cool <=6C

October 15, 2015

300-980 COC



#980  
WCO417

Reinquished By	S.W. King/CHPRC	Print	Sign	Date/Time	1210	Received By	CHRIS FULTON	Print	Sign	Date/Time	1210
Reinquished By	CHRIS FULTON	CHPRC		Date/Time	OCT 06 2015	Received By	J. Friesz, TARL			Date/Time	OCT 06 2015
Reinquished By				Date/Time	1440	Received By				Date/Time	1440

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

Reinquished By	Date/Time	Received By	Date/Time
Reinquished By	Date/Time	Received By	Date/Time

**CH2MHill Plateau Remediation Company**

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

C.O.C. #  
**X16-001-122**

Page 1 of 1

Collector	\$#. King/CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	X16-001	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271
Project Title	100-BC-5 RI, OCTOBER 2015	Logbook No.	HNF-N-506 <u>710 / 72</u>	Ice Chest No.	N/A
Shipped To (Lab)	TestAmerica Incorporated, Richland	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Protocol	CERCLA	Priority:	15 Days	Offsite Property No.	N/A
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>			<b>SPECIAL INSTRUCTIONS</b>		
*** 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			Submit deliverables & invoices to ^COP Sample Management		
Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					

Sample No.	Filter	*	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B32TP1	N		<u>WCT 06 2015</u>	<u>0849</u>	1x60-mL aG	7196_CR6: COMMON	24 Hours	Cool <=6C
B32TP3	Y	W	<u>Y</u>	<u>Y</u>	1x60-mL aG	7196_CR6: COMMON	24 Hours	Cool <=6C

#480  
WCO417

October 15, 2015

Relinquished By	Print S.W. King/CHPRC	Signature	Date/Time	Received By	Print CHRIS FULTON CHPRC	Signature	Date/Time	Matrix *
Relinquished By	CHRIS FULTON CHPRC		OCT 06 2015 1210	Received By	J. Friesz		OCT 06 2015 1440	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By				Received By				

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

October 15, 2015  
Detection Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-980-1  
SDG: WC0417

Client Sample ID: B32TW3

Lab Sample ID: 300-980-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cr (VI)	0.0025	B	0.0040	0.0015	mg/L	1		7196A	Total/NA

Client Sample ID: B32TW1

Lab Sample ID: 300-980-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cr (VI)	0.0025	B	0.0040	0.0015	mg/L	1		7196A	Total/NA

Client Sample ID: B32TP1

Lab Sample ID: 300-980-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cr (VI)	0.0035	B	0.0040	0.0015	mg/L	1		7196A	Total/NA

Client Sample ID: B32TP3

Lab Sample ID: 300-980-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cr (VI)	0.0037	B	0.0040	0.0015	mg/L	1		7196A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Richland

October 15, 2015  
**Client Sample Results**

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-980-1  
 SDG: WC0417

**Client Sample ID: B32TW3**  
 Date Collected: 10/06/15 11:18  
 Date Received: 10/06/15 14:40

**Lab Sample ID: 300-980-1**  
 Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.0025	B	0.0040	0.0015	mg/L			10/06/15 18:03	1

**Client Sample ID: B32TW1**  
 Date Collected: 10/06/15 11:18  
 Date Received: 10/06/15 14:40

**Lab Sample ID: 300-980-2**  
 Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.0025	B	0.0040	0.0015	mg/L			10/06/15 18:03	1

**Client Sample ID: B32TP1**  
 Date Collected: 10/06/15 08:42  
 Date Received: 10/06/15 14:40

**Lab Sample ID: 300-980-3**  
 Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.0035	B	0.0040	0.0015	mg/L			10/06/15 18:04	1

**Client Sample ID: B32TP3**  
 Date Collected: 10/06/15 08:42  
 Date Received: 10/06/15 14:40

**Lab Sample ID: 300-980-4**  
 Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.0037	B	0.0040	0.0015	mg/L			10/06/15 18:06	1

Client: CH2M Hill Plateau Remediation Company  
Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-980-1  
SDG: WC0417

**Method: 7196A - Chromium, Hexavalent**

**Lab Sample ID: MB 300-1336/29**  
**Matrix: Water**  
**Analysis Batch: 1336**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.0015	U	0.0040	0.0015	mg/L	-		10/06/15 17:54	1

**Lab Sample ID: LCS 300-1336/30**  
**Matrix: Water**  
**Analysis Batch: 1336**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.245		mg/L	-	98	80 - 120

**Lab Sample ID: 300-979-A-1 MS**  
**Matrix: Water**  
**Analysis Batch: 1336**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.0066		0.0499	0.0533		mg/L	-	94	85 - 115

**Lab Sample ID: 300-979-A-1 DU**  
**Matrix: Water**  
**Analysis Batch: 1336**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cr (VI)	0.0066		0.00600		mg/L	-	10	20

October 15, 2015  
QC Association Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-980-1  
SDG: WC0417

General Chemistry

Analysis Batch: 1336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-979-A-1 DU	Duplicate	Total/NA	Water	7196A	
300-979-A-1 MS	Matrix Spike	Total/NA	Water	7196A	
300-980-1	B32TW3	Total/NA	Water	7196A	
300-980-2	B32TW1	Total/NA	Water	7196A	
300-980-3	B32TP1	Total/NA	Water	7196A	
300-980-4	B32TP3	Total/NA	Water	7196A	
LCS 300-1336/30	Lab Control Sample	Total/NA	Water	7196A	
MB 300-1336/29	Method Blank	Total/NA	Water	7196A	

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Client: CH2M Hill Plateau Remediation Company  
 Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-980-1  
 SDG: WC0417

**Client Sample ID: B32TW3**  
**Date Collected: 10/06/15 11:18**  
**Date Received: 10/06/15 14:40**

**Lab Sample ID: 300-980-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1			1336	10/06/15 18:03	AMC	TAL RCH

**Client Sample ID: B32TW1**  
**Date Collected: 10/06/15 11:18**  
**Date Received: 10/06/15 14:40**

**Lab Sample ID: 300-980-2**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1			1336	10/06/15 18:03	AMC	TAL RCH

**Client Sample ID: B32TP1**  
**Date Collected: 10/06/15 08:42**  
**Date Received: 10/06/15 14:40**

**Lab Sample ID: 300-980-3**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1			1336	10/06/15 18:04	AMC	TAL RCH

**Client Sample ID: B32TP3**  
**Date Collected: 10/06/15 08:42**  
**Date Received: 10/06/15 14:40**

**Lab Sample ID: 300-980-4**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1			1336	10/06/15 18:06	AMC	TAL RCH

**Client Sample ID: Duplicate**  
**Date Collected: 10/06/15 10:40**  
**Date Received: 10/06/15 14:40**

**Lab Sample ID: 300-979-A-1 DU**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1			1336	10/06/15 17:58	AMC	TAL RCH

**Client Sample ID: Lab Control Sample**  
**Date Collected: N/A**  
**Date Received: N/A**

**Lab Sample ID: LCS 300-1336/30**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1			1336	10/06/15 17:57	AMC	TAL RCH

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-980-1  
 SDG: WC0417

**Client Sample ID: Method Blank**

**Lab Sample ID: MB 300-1336/29**

Date Collected: N/A

Matrix: Water

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1			1336	10/06/15 17:54	AMC	TAL RCH

**Client Sample ID: Matrix Spike**

**Lab Sample ID: 300-979-A-1 MS**

Date Collected: 10/06/15 10:40

Matrix: Water

Date Received: 10/06/15 14:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1		3.0 mL	1336	10/06/15 17:57	AMC	TAL RCH

**Laboratory References:**

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131



Client: CH2M Hill Plateau Remediation Company  
Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-980-1  
SDG: WC0417

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Method	Method Description	Protocol	Laboratory
7196A	Chromium, Hexavalent	SW846	TAL RCH

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**Protocol References:**

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

**Laboratory References:**

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131



Client: CH2M Hill Plateau Remediation Company  
Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-980-1  
SDG: WC0417

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-980-1	B32TW3	Water	10/06/15 11:18	10/06/15 14:40
300-980-2	B32TW1	Water	10/06/15 11:18	10/06/15 14:40
300-980-3	B32TP1	Water	10/06/15 08:42	10/06/15 14:40
300-980-4	B32TP3	Water	10/06/15 08:42	10/06/15 14:40

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-980-1  
SDG Number: WC0417

**Login Number: 980**  
**List Number: 1**  
**Creator: Friesz, Jordan D**

**List Source: TestAmerica Richland**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ 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	
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 <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

