

October 14, 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: 300-852-1  
TestAmerica Sample Delivery Group: WC0366  
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:  
10/14/2015 10:18:38 AM

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 designee 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: 300-852-1  
SDG: WC0366

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**Job ID: 300-852-1**

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**Laboratory: TestAmerica Richland**

**Narrative**

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**Job Narrative  
300-852-1**

**Comments**

No additional comments.

**Receipt**

The sample was received on 9/24/2015 8:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 6.8° C.

**General Chemistry**

Method 7196A: The following sample was received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: B31V00 (300-852-1), (300-852-A-1 DU) and (300-852-A-1 MS). For more information refer to the SIR that is attached to this report.

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

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<b>COLLECTOR</b> D 2/16/15	<b>COMPANY CONTACT</b> TODAK, D	<b>TELEPHONE NO.</b> 376-6427	<b>PROJECT COORDINATOR</b> TODAK, D	<b>PRICE CODE</b> 7H	<b>DATA TURNAROUND</b> 30 Days / 30 Days
<b>SAMPLING LOCATION</b> C8797, Post Development	<b>PROJECT DESIGNATION</b> 100-KE Characterization Boreholes - Water	<b>FIELD LOGBOOK NO.</b> HNF-N-645 3-22	<b>ACTUAL SAMPLE DEPTH</b> 853'	<b>SAF NO.</b> F15-028	<b>AIR QUALITY</b> <input type="checkbox"/>
<b>ICE CHEST NO.</b> N/A	<b>OFFSITE PROPERTY NO.</b> N/A	<b>BILL OF LADING/AIR BILL NO.</b> N/A	<b>METHOD OF SHIPMENT</b> GOVERNMENT VEHICLE	<b>ORIGINAL</b>	

**SHIPPED TO** TestAmerica Incorporated, Richland

<b>MATRIX*</b> A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SF=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	<b>POSSIBLE SAMPLE HAZARDS/ REMARKS</b> *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.	<b>PRESERVATION</b>	Cool <=6C
		<b>HOLDING TIME</b>	24 Hours
		<b>TYPE OF CONTAINER</b>	ag
		<b>NO. OF CONTAINER(S)</b>	1

<b>SPECIAL HANDLING AND/OR STORAGE</b> <del>RADIOACTIVE</del> - <del>HT-9</del> - <del>852097</del> cut 9/2/15	<b>SAMPLE ANALYSIS</b>	7196 CR6: COMMON;
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<b>SAMPLE NO.</b> B31V00	<b>MATRIX*</b> WATER	<b>SAMPLE DATE</b> SEP 23 2015	<b>SAMPLE TIME</b> 1317		300-852 COC	#852 W 06306
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October 14, 2015

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-15-112	
David W. [Signature]	SEP 23 2015 1430	SSU-1	SEP 23 2015 1430		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RA. Sheppard/CHPRC	SEP 24 2015 0715	RA. Sheppard/CHPRC	SEP 24 2015 0715		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
J. Fiesz, TARB	SEP 24 2015 0830	J. Fiesz, TARB	SEP 24 2015 0830		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
<b>LABORATORY SECTION</b>	<b>RECEIVED BY</b>	<b>TITLE</b>	<b>DATE/TIME</b>		
<b>FINAL SAMPLE DISPOSITION</b>	<b>DISPOSAL METHOD</b>	<b>DISPOSED BY</b>	<b>DATE/TIME</b>		



<b>SAMPLE ISSUE RESOLUTION</b>	<b>SIR NUM</b>	SIR16-010
	<b>REV NUM</b>	0
	<b>DATE INITIATED</b>	10/6/2015

**SAMPLE EVENT INFORMATION**

**SAF NUM(S)** F15-028  
**OPERABLE UNIT(S)** 100-KR-2  
**PROJECT(S)** 100-KE FSB  
**SAMPLE EVENT TITLE(S)** Characterization Boreholes in UPR-100-K-1 and 1116-KE-3 Waste Sites  
**LABORATORY** TestAmerica Incorporated, Richland

**SAMPLING INFORMATION**

**NUMBER OF SAMPLES** 1  
**SAMPLE NUMBERS** B31V00  
**SAMPLE MATRIX** WATER  
**COLLECTION DATE** 9/23/2015 - 9/23/2015  
**SDG NUM** WC0366

**ISSUE BACKGROUND**

**CLASS** Field Sampling Issue  
**TYPE** Analysis Hold Time Exceeded  
**DESCRIPTION** Sample B31V00 was received with less than half of the hold time. Sample was analyzed outside of hold time.

**DISPOSITION**

**DESCRIPTION** Initiate SIR, report results and include comments in the case narrative.

**JUSTIFICATION**

Final Disposition: Accept proposed resolution.  
  
 SUBMITTED BY: Whitney Ritari DATE: 10/06/2015  
 ACCEPTED BY: Scot Fitzgerald DATE: 10/08/2015

October 14, 2015  
**Detection Summary**

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

TestAmerica Job ID: 300-852-1  
SDG: WC0366

**Client Sample ID: B31V00**

**Lab Sample ID: 300-852-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cr (VI)	0.0022	B	0.0040	0.0015	mg/L	1		7196A	Total/NA

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This Detection Summary does not include radiochemical test results.

TestAmerica Richland

October 14, 2015  
**Client Sample Results**

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

TestAmerica Job ID: 300-852-1  
SDG: WC0366

**Client Sample ID: B31V00**  
**Date Collected: 09/23/15 13:17**  
**Date Received: 09/24/15 08:30**

**Lab Sample ID: 300-852-1**  
**Matrix: Water**

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.0022	B	0.0040	0.0015	mg/L			09/24/15 14:48	1

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

TestAmerica Job ID: 300-852-1  
SDG: WC0366

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

**Lab Sample ID: MB 300-1186/3**  
**Matrix: Water**  
**Analysis Batch: 1186**

**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			09/24/15 14:45	1

**Lab Sample ID: LCS 300-1186/4**  
**Matrix: Water**  
**Analysis Batch: 1186**

**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	0.252		mg/L		101	80 - 120

**Lab Sample ID: 300-852-1 MS**  
**Matrix: Water**  
**Analysis Batch: 1186**

**Client Sample ID: B31V00**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.0022	B	0.0499	0.0551		mg/L		106	85 - 115

**Lab Sample ID: 300-852-1 DU**  
**Matrix: Water**  
**Analysis Batch: 1186**

**Client Sample ID: B31V00**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cr (VI)	0.0022	B	0.00250	B	mg/L		13	20

October 14, 2015  
QC Association Summary

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

TestAmerica Job ID: 300-852-1  
SDG: WC0366

General Chemistry

Analysis Batch: 1186

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-852-1	B31V00	Total/NA	Water	7196A	
300-852-1 DU	B31V00	Total/NA	Water	7196A	
300-852-1 MS	B31V00	Total/NA	Water	7196A	
LCS 300-1186/4	Lab Control Sample	Total/NA	Water	7196A	
MB 300-1186/3	Method Blank	Total/NA	Water	7196A	

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

TestAmerica Job ID: 300-852-1  
 SDG: WC0366

**Client Sample ID: B31V00**  
**Date Collected: 09/23/15 13:17**  
**Date Received: 09/24/15 08:30**

**Lab Sample ID: 300-852-1**  
**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			1186	09/24/15 14:48	AMC	TAL RCH

**Client Sample ID: B31V00**  
**Date Collected: 09/23/15 13:17**  
**Date Received: 09/24/15 08:30**

**Lab Sample ID: 300-852-1 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			1186	09/24/15 14:48	AMC	TAL RCH

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

**Lab Sample ID: LCS 300-1186/4**  
**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			1186	09/24/15 14:45	AMC	TAL RCH

**Client Sample ID: Method Blank**  
**Date Collected: N/A**  
**Date Received: N/A**

**Lab Sample ID: MB 300-1186/3**  
**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			1186	09/24/15 14:45	AMC	TAL RCH

**Client Sample ID: B31V00**  
**Date Collected: 09/23/15 13:17**  
**Date Received: 09/24/15 08:30**

**Lab Sample ID: 300-852-1 MS**  
**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		3.0 mL	1186	09/24/15 14:45	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: 300-852-1  
SDG: WC0366

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

**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: 300-852-1  
SDG: WC0366

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-852-1	B31V00	Water	09/23/15 13:17	09/24/15 08:30

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-852-1  
SDG Number: WC0366

**Login Number: 852**  
**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	

