

July 15, 2016

# 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: 300-3403-1

TestAmerica Sample Delivery Group: WC1226

Client Project/Site: F16-043

For:

CH2M Hill Plateau Remediation Company

PO BOX 1600

Mail Stop R3-50

Richland, Washington 99352

Attn: CPP Sample Management



Authorized for release by:

7/15/2016 8:56:15 AM

Steven Campbell, Project Mgmt. Assistant

[steven.campbell@testamericainc.com](mailto:steven.campbell@testamericainc.com)

Designee for

Whitney Ritari, Project Manager I

(509)375-3131 ext164

[whitney.ritari@testamericainc.com](mailto:whitney.ritari@testamericainc.com)

### LINKS

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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 less 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
D	The reported value is from a dilution.
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: F16-043

TestAmerica Job ID: 300-3403-1  
SDG: WC1226

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**Job ID: 300-3403-1**

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**Laboratory: TestAmerica Richland**

**Narrative**

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**Job Narrative  
300-3403-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 7/1/2016 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.1° 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		FIG-043-050	PAGE 1 OF 1
COLLECTOR Will Wise CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION C9403, I-403	PROJECT DESIGNATION 100-NR-2 Drilling - Soil	FIELD LOGBOOK NO. 100-NR-2-423	ACTUAL SAMPLE DEPTH 49.6 to 52.1	SAF NO. FIG-043	<input type="checkbox"/> AIR QUALITY
ICE CHEST NO.	OFFSITE PROPERTY NO.	COA 304070	BILL OF LADING/AIR BILL NO.	METHOD OF SHIPMENT GOVERNMENT VEHICLE	<b>ORIGINAL</b>
SHIPPED TO TestAmerica Incorporated, Richland					

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WT=Wipe X=Other	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	PRESERVATION	Cool <=6C
		HOLDING TIME	30 Days
		TYPE OF CONTAINER	G/P
		NO. OF CONTAINER(S)	1
SPECIAL HANDLING AND/OR STORAGE		VOLUME	60ml
		SAMPLE ANALYSIS	7196, CR6; COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B35XB2	SOIL	JUN 30 2016	1425	✓

*3403*  
*use above*  
*Due 7-16-16*



300-3403 COC

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM Will Wise CHPRC	DATE/TIME JUN 30 2016 1530	RECEIVED BY/STORED IN SSC #1	DATE/TIME JUN 30 2016 1530	SPLIT SPOON PARTS B & A WILL BE COMBINED TO ENSURE ADEQUATE SAMPLE MATERIAL FOR ANALYSIS; SAMPLE A AND B PORTION SAMPLES B35XB1, B35XB2, B35XB3	
RELINQUISHED BY/REMOVED FROM SSU #1	DATE/TIME JUL 01 2016 0100	RECEIVED BY/STORED IN Frank Heil CHPRC	DATE/TIME JUL 01 2016 0100		
RELINQUISHED BY/REMOVED FROM Frank Heil CHPRC	DATE/TIME JUL 01 2016 0100	RECEIVED BY/STORED IN J. Bock, TARI	DATE/TIME JUL 01 2016 0100		
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		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-043-046	PAGE 1 OF 1
COLLECTOR Will Wise CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION C9403, 1-002	PROJECT DESIGNATION 100-NR-2 Drilling - Soil	FIELD LOGBOOK NO. 1455-N-645-4/23	SAF NO. F16-043	AIR QUALITY <input type="checkbox"/>	ORIGINAL
ICE CHEST NO.	ACTUAL SAMPLE DEPTH 42.1 to 44.6	COA 304070	METHOD OF SHIPMENT GOVERNMENT VEHICLE		
SHIPPED TO TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water M=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/DATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	PRESERVATION Cool <=6C	HOLDING TIME 30 Days	NO. OF CONTAINER(S) 1	VOLUME 60ml	7196, CR6: COMMON;
SPECIAL HANDLING AND/OR STORAGE						
SAMPLE NO. B35X98	MATRIX* SOIL	SAMPLE DATE JUN 30 2016	SAMPLE TIME 1220			

#3403  
we have

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM Will Wise CHPRC	DATE/TIME JUN 30 2016	RECEIVED BY/STORED IN SSO #1	DATE/TIME JUN 30 2016	SPLIT SPOON PARTS B & A WILL BE COMBINED TO ENSURE ADEQUATE SAMPLE MATERIAL FOR ANALYSIS; SAMPLE A AND B PORTION SAMPLES B35X97, B35X98, B35X99	
RELINQUISHED BY/REMOVED FROM SSO #1	DATE/TIME JUL 01 2016	RECEIVED BY/STORED IN J. BOCK, FARL	DATE/TIME JUL 01 2016		
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		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		

July 15, 2016  
**Detection Summary**

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-043

TestAmerica Job ID: 300-3403-1  
SDG: WC1226

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**Client Sample ID: B35XB2**

**Lab Sample ID: 300-3403-1**

No Detections.

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**Client Sample ID: B35X98**

**Lab Sample ID: 300-3403-2**

No Detections.

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This Detection Summary does not include radiochemical test results.

TestAmerica Richland

July 15, 2016  
**Client Sample Results**

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-043

TestAmerica Job ID: 300-3403-1  
SDG: WC1226

**Client Sample ID: B35XB2**  
**Date Collected: 06/30/16 14:25**  
**Date Received: 07/01/16 09:30**

**Lab Sample ID: 300-3403-1**  
**Matrix: Soil**

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.15	U	2.0	0.15	mg/Kg		07/07/16 08:25	07/07/16 16:44	1

**Client Sample ID: B35X98**  
**Date Collected: 06/30/16 12:20**  
**Date Received: 07/01/16 09:30**

**Lab Sample ID: 300-3403-2**  
**Matrix: Soil**

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.15	U	2.0	0.15	mg/Kg		07/07/16 08:25	07/07/16 16:57	1

July 15, 2016  
**QC Sample Results**

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: F16-043

TestAmerica Job ID: 300-3403-1  
 SDG: WC1226

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

**Lab Sample ID: MB 300-4801/1-A**  
**Matrix: Solid**  
**Analysis Batch: 4832**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 4801**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.15	U	2.0	0.15	mg/Kg		07/07/16 08:25	07/07/16 11:01	1

**Lab Sample ID: LCS 300-4801/2-A**  
**Matrix: Solid**  
**Analysis Batch: 4832**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 4801**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	20.0	19.94		mg/Kg		100	85 - 115

**Lab Sample ID: 300-3322-A-1-B MS**  
**Matrix: Solid**  
**Analysis Batch: 4832**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 4801**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.59	B	29.9	28.55		mg/Kg		93	75 - 125

**Lab Sample ID: 300-3322-A-1-D MSI**  
**Matrix: Solid**  
**Analysis Batch: 4832**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 4801**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSI Result	MSI Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.59	B	630	599.2	D	mg/Kg		95	

**Lab Sample ID: 300-3322-A-1-C DU**  
**Matrix: Solid**  
**Analysis Batch: 4832**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 4801**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cr (VI)	0.59	B	0.612	B	mg/Kg			35

July 15, 2016  
**QC Association Summary**

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: F16-043

TestAmerica Job ID: 300-3403-1  
 SDG: WC1226

**General Chemistry**

**Prep Batch: 4801**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-3322-A-1-B MS	Matrix Spike	Total/NA	Solid	3060A	
300-3322-A-1-C DU	Duplicate	Total/NA	Solid	3060A	
300-3322-A-1-D MSI	Matrix Spike	Total/NA	Solid	3060A	
300-3403-1	B35XB2	Total/NA	Soil	3060A	
300-3403-2	B35X98	Total/NA	Soil	3060A	
LCS 300-4801/2-A	Lab Control Sample	Total/NA	Solid	3060A	
MB 300-4801/1-A	Method Blank	Total/NA	Solid	3060A	

**Analysis Batch: 4832**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-3322-A-1-B MS	Matrix Spike	Total/NA	Solid	7196A	4801
300-3322-A-1-C DU	Duplicate	Total/NA	Solid	7196A	4801
300-3322-A-1-D MSI	Matrix Spike	Total/NA	Solid	7196A	4801
300-3403-1	B35XB2	Total/NA	Soil	7196A	4801
300-3403-2	B35X98	Total/NA	Soil	7196A	4801
LCS 300-4801/2-A	Lab Control Sample	Total/NA	Solid	7196A	4801
MB 300-4801/1-A	Method Blank	Total/NA	Solid	7196A	4801



Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-043

TestAmerica Job ID: 300-3403-1  
SDG: WC1226

**Client Sample ID: B35XB2**  
**Date Collected: 06/30/16 14:25**  
**Date Received: 07/01/16 09:30**

**Lab Sample ID: 300-3403-1**  
**Matrix: Soil**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5023 g	100 mL	4801	07/07/16 08:25	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5023 g	100 mL	4832	07/07/16 16:44	HR	TAL RCH

**Client Sample ID: B35X98**  
**Date Collected: 06/30/16 12:20**  
**Date Received: 07/01/16 09:30**

**Lab Sample ID: 300-3403-2**  
**Matrix: Soil**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5105 g	100 mL	4801	07/07/16 08:25	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5105 g	100 mL	4832	07/07/16 16:57	HR	TAL RCH

**Client Sample ID: Duplicate**  
**Date Collected: 06/21/16 09:30**  
**Date Received: 06/21/16 15:50**

**Lab Sample ID: 300-3322-A-1-C DU**  
**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5024 g	100 mL	4801	07/07/16 08:25	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5024 g	100 mL	4832	07/07/16 11:54	HR	TAL RCH

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

**Lab Sample ID: LCS 300-4801/2-A**  
**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5 g	100 mL	4801	07/07/16 08:25	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5 g	100 mL	4832	07/07/16 11:15	HR	TAL RCH

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

**Lab Sample ID: MB 300-4801/1-A**  
**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5 g	100 mL	4801	07/07/16 08:25	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5 g	100 mL	4832	07/07/16 11:01	HR	TAL RCH

**Client Sample ID: Matrix Spike**  
**Date Collected: 06/21/16 09:30**  
**Date Received: 06/21/16 15:50**

**Lab Sample ID: 300-3322-A-1-B MS**  
**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5043 g	100 mL	4801	07/07/16 08:25	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5043 g	100 mL	4832	07/07/16 11:41	HR	TAL RCH

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-043

TestAmerica Job ID: 300-3403-1  
SDG: WC1226

**Client Sample ID: Matrix Spike**

**Lab Sample ID: 300-3322-A-1-D MSI**

**Date Collected: 06/21/16 09:30**

**Matrix: Solid**

**Date Received: 06/21/16 15:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5023 g	100 mL	4801	07/07/16 08:25	HR	TAL RCH
Total/NA	Analysis	7196A		20	2.5023 g	100 mL	4832	07/07/16 12:07	HR	TAL RCH

**Laboratory References:**

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

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Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-043

TestAmerica Job ID: 300-3403-1  
SDG: WC1226

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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



July 15, 2016  
**Sample Summary**

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-043

TestAmerica Job ID: 300-3403-1  
SDG: WC1226

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-3403-1	B35XB2	Soil	06/30/16 14:25	07/01/16 09:30
300-3403-2	B35X98	Soil	06/30/16 12:20	07/01/16 09:30

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July 15, 2016

## Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-3403-1

SDG Number: WC1226

**Login Number: 3403**

**List Number: 1**

**Creator: Bock, Julie A**

**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.	N/A	
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 (excluding tests with immediate HTs)	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.	True	
Residual Chlorine Checked.	N/A	