July 29, 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: 300-3558-1
TestAmerica Sample Delivery Group: WC1295
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:
7/29/2016 4:37:26 PM
Steven Campbell, Project Mgmt. Assistant
steven.campbell@testamericainc.com

Designee for

Whitney Ritari, Project Manager I
(509)375-3131 ext164
whitney.ritari@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 desingee 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.

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Chain of Custody 5
Detection Summary 7
Client Sample Results 8
QC Sample Results 9
QC Association Summary 10
Lab Chronicle 11
Method Summary 13
Sample Summary 14
Receipt Checklists 15

Qualifiers

General Chemistry

Qualifier	Qualifier Description
U	Analyzed for but not detected.
B	Estimated result. Result is less than the RL, but greater than MDL
D	The reported value is from a dilution.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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)

Job ID: 300-3558-1

Laboratory: TestAmerica Richland

Narrative

Job Narrative
300-3558-1

Comments
No additional comments.

Receipt
The samples were received on 7/21/2016 1:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 6.4º C.

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

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-043-106	PAGE 1 OF 1
COLLECTOR: Ed Kauer, CHPRC	COMPANY CONTACT: TODAK, D	TELEPHONE NO.: 376-6427	PROJECT COORDINATOR: TODAK, D	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: C9425, I-003 EB	PROJECT DESIGNATION: 100-NR-2 Drilling - Soil		SAF NO.: F16-043	AIR QUALITY: ☐	
ICE CHEST NO.: N/A	FIELD LOGBOOK NO.: HNF-N-645 5 - 8	ACTUAL SAMPLE DEPTH: N/A FT	COA: 304070	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

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 HANDLING AND/OR STORAGE
N/A

PRESERVATION	Cool <=6C
HOLDING TIME	30 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	7196_CR6: COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B36669	SOIL	JUL 20 2016	0650	—

#3558
WC1295
Due 8-5-16

300-3558 COC

July 29, 2016

Page 5 of 15

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: Ed Kauer, CHPRC	DATE/TIME: JUL 20 2016 1514	RECEIVED BY/STORED IN: SSU-1	DATE/TIME: JUL 20 2016 1514	N/A
RELINQUISHED BY/REMOVED FROM: SSU-1	DATE/TIME: JUL 21 2016 0700	RECEIVED BY/STORED IN: Janelle Zunker, CHPRC	DATE/TIME: JUL 21 2016 0700	
RELINQUISHED BY/REMOVED FROM: Janelle Zunker, CHPRC	DATE/TIME: JUL 21 2016 1345	RECEIVED BY/STORED IN: J. Bock, TAPU	DATE/TIME: JUL 21 2016 1345	
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	
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	

Page 5 of 15

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-043-097	PAGE 1 OF 1
COLLECTOR: Ed Kauer CHPRC	COMPANY CONTACT: TODAK, D	TELEPHONE NO.: 376-6427	PROJECT COORDINATOR: TODAK, D	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: C9425, I-003	PROJECT DESIGNATION: 100-NR-2 Drilling - Soil		SAF NO.: F16-043	AIR QUALITY: ☐	
ICE CHEST NO.: N/A	FIELD LOGBOOK NO.: HNF-N-645 5 - 128	ACTUAL SAMPLE DEPTH: 65.91-68.41	COA: 304070	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

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 HANDLING AND/OR STORAGE
N/A

PRESERVATION	Cool <=6C
HOLDING TIME	30 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	7196_CR6: COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B36660	SOIL	JUL 2 0 2016	1350	✓

#3558
W C1295

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: Ed Kauer CHPRC	DATE/TIME: JUL 2 0 2016 1514	RECEIVED BY/STORED IN: SSU-1	DATE/TIME: JUL 2 0 2016 1514	SPLIT SPOON PARTS B & A WILL BE COMBINED TO ENSURE ADEQUATE SAMPLE MATERIAL FOR ANALYSIS;
RELINQUISHED BY/REMOVED FROM: SSU-1	DATE/TIME: JUL 2 1 2016 0700	RECEIVED BY/STORED IN: Janelle Zunker CHPRC	DATE/TIME: JUL 2 1 2016 0700	
RELINQUISHED BY/REMOVED FROM: Janelle Zunker CHPRC	DATE/TIME: JUL 2 1 2016 1345	RECEIVED BY/STORED IN: J. Bock, TABL	DATE/TIME: JUL 2 1 2016 1345	
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	
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	

PRINTED ON 7/12/2016 FSR ID = FSR33902 TRVL NUM = TRVL-16-186 A-6003-618 (REV 2)

July 29, 2016
Page 6 of 15
Page 6 of 15

Detection Summary

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

TestAmerica Job ID: 300-3558-1
SDG: WC1295

Client Sample ID: B36669 — Lab Sample ID: 300-3558-1

No Detections.

Client Sample ID: B36660 — Lab Sample ID: 300-3558-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cr (VI)	0.34	B	2.0	0.15	mg/Kg	1		7196A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

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

TestAmerica Job ID: 300-3558-1
SDG: WC1295

Client Sample ID: B36669

Lab Sample ID: 300-3558-1

Date Collected: 07/20/16 06:50
Matrix: Soil
Date Received: 07/21/16 13:45

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.15	U	2.0	0.15	mg/Kg		07/27/16 08:18	07/27/16 09:30	1

Client Sample ID: B36660

Lab Sample ID: 300-3558-2

Date Collected: 07/20/16 13:50
Matrix: Soil
Date Received: 07/21/16 13:45

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	**0.34**	**B**	2.0	0.15	mg/Kg		07/27/16 08:18	07/27/16 09:30	1

QC Sample Results

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

TestAmerica Job ID: 300-3558-1
SDG: WC1295

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 300-5052/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 5089 — **Prep Batch: 5052**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.15	U	2.0	0.15	mg/Kg		07/27/16 08:18	07/27/16 09:30	1

Lab Sample ID: LCS 300-5052/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 5089 — **Prep Batch: 5052**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cr (VI)			20.0	17.74		mg/Kg		89	85 - 115		

Lab Sample ID: 300-3561-A-1-B MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 5089 — **Prep Batch: 5052**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cr (VI)	0.26	B	30.0	23.65		mg/Kg		78	75 - 125		

Lab Sample ID: 300-3561-A-1-D MSI — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 5089 — **Prep Batch: 5052**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSI Result	MSI Qualifier	Unit	D	%Rec	%Rec. Limits		
Cr (VI)	0.26	B	636	561.3	D	mg/Kg		88			

Lab Sample ID: 300-3561-A-1-C DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 5089 — **Prep Batch: 5052**

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Cr (VI)	0.26	B		0.259	B	mg/Kg				0.1	35

QC Association Summary

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

TestAmerica Job ID: 300-3558-1
SDG: WC1295

General Chemistry

Prep Batch: 5052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-3558-1	B36669	Total/NA	Soil	3060A	
300-3558-2	B36660	Total/NA	Soil	3060A	
MB 300-5052/1-A	Method Blank	Total/NA	Solid	3060A	
LCS 300-5052/2-A	Lab Control Sample	Total/NA	Solid	3060A	
300-3561-A-1-B MS	Matrix Spike	Total/NA	Solid	3060A	
300-3561-A-1-D MSI	Matrix Spike	Total/NA	Solid	3060A	
300-3561-A-1-C DU	Duplicate	Total/NA	Solid	3060A	

Analysis Batch: 5089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-3558-1	B36669	Total/NA	Soil	7196A	5052
300-3558-2	B36660	Total/NA	Soil	7196A	5052
MB 300-5052/1-A	Method Blank	Total/NA	Solid	7196A	5052
LCS 300-5052/2-A	Lab Control Sample	Total/NA	Solid	7196A	5052
300-3561-A-1-B MS	Matrix Spike	Total/NA	Solid	7196A	5052
300-3561-A-1-D MSI	Matrix Spike	Total/NA	Solid	7196A	5052
300-3561-A-1-C DU	Duplicate	Total/NA	Solid	7196A	5052

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

TestAmerica Job ID: 300-3558-1
SDG: WC1295

Client Sample ID: B36669 — Lab Sample ID: 300-3558-1

Date Collected: 07/20/16 06:50 — **Matrix: Soil**
Date Received: 07/21/16 13:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5087 g	100 mL	5052	07/27/16 08:18	HR	TAL RCH
Total/NA	Analysis	7196A		1			5089	07/27/16 09:30	HR	TAL RCH

Client Sample ID: B36660 — Lab Sample ID: 300-3558-2

Date Collected: 07/20/16 13:50 — **Matrix: Soil**
Date Received: 07/21/16 13:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5103 g	100 mL	5052	07/27/16 08:18	HR	TAL RCH
Total/NA	Analysis	7196A		1			5089	07/27/16 09:30	HR	TAL RCH

Client Sample ID: Method Blank — Lab Sample ID: MB 300-5052/1-A

Date Collected: N/A — **Matrix: Solid**
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	Prep	3060A			2.5 g	100 mL	5052	07/27/16 08:18	HR	TAL RCH
Total/NA	Analysis	7196A		1			5089	07/27/16 09:30	HR	TAL RCH

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 300-5052/2-A

Date Collected: N/A — **Matrix: Solid**
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	Prep	3060A			2.5 g	100 mL	5052	07/27/16 08:18	HR	TAL RCH
Total/NA	Analysis	7196A		1			5089	07/27/16 09:30	HR	TAL RCH

Client Sample ID: Matrix Spike — Lab Sample ID: 300-3561-A-1-B MS

Date Collected: 07/20/16 15:00 — **Matrix: Solid**
Date Received: 07/22/16 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5009 g	100 mL	5052	07/27/16 08:18	HR	TAL RCH
Total/NA	Analysis	7196A		1			5089	07/27/16 09:30	HR	TAL RCH

Client Sample ID: Matrix Spike — Lab Sample ID: 300-3561-A-1-D MSI

Date Collected: 07/20/16 15:00 — **Matrix: Solid**
Date Received: 07/22/16 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.503 g	100 mL	5052	07/27/16 08:18	HR	TAL RCH
Total/NA	Analysis	7196A		20			5089	07/27/16 09:30	HR	TAL RCH

Lab Chronicle

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

TestAmerica Job ID: 300-3558-1
SDG: WC1295

Laboratory References:

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

Method Summary

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

TestAmerica Job ID: 300-3558-1
SDG: WC1295

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

Sample Summary

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

TestAmerica Job ID: 300-3558-1
SDG: WC1295

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-3558-1	B36669	Soil	07/20/16 06:50	07/21/16 13:45
300-3558-2	B36660	Soil	07/20/16 13:50	07/21/16 13:45

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-3558-1
SDG Number: WC1295

Login Number: 3558
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.	N/A	
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	