

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

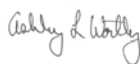
ANALYTICAL REPORT

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

TestAmerica Job ID: 300-7572-1
TestAmerica Sample Delivery Group: W08139
Client Project/Site: S18-005

For:
CH2M Hill Plateau Remediation Company
825 Jadwin Avenue
Richland, Washington 99352

Attn: CPP Sample Management



Authorized for release by:
7/31/2018 3:38:14 PM

Ashley Worthy, Project Manager I
(509)375-3131
ashley.worthy@testamericainc.com



LINKS

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Have a Question?



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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.

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Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: S18-005

TestAmerica Job ID: 300-7572-1
SDG: W08139

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
y	Duplicate analysis not within control limits.

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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)

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: S18-005

TestAmerica Job ID: 300-7572-1
SDG: W08139

Job ID: 300-7572-1

Laboratory: TestAmerica Richland

Narrative

Job Narrative
300-7572-1

Comments

No additional comments.

Receipt

The sample was received on 7/12/2018 1:30 PM; the sample arrived in good condition, properly preserved and, where required, on ice.

RAD

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

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Client Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: S18-005

TestAmerica Job ID: 300-7572-1
 SDG: W08139

Client Sample ID: B3J336

Lab Sample ID: 300-7572-1

Date Collected: 07/12/18 11:59

Matrix: Water

Date Received: 07/12/18 13:30

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	1470		115	361	700	637	pCi/L	07/16/18 15:48	07/19/18 02:40	1

Method: SM 7500 I - Iodine-129

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
I-129	1.91			0.619	1.00	0.608	pCi/L	07/18/18 15:48	07/31/18 09:36	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Iodine(C)	90.8		30 - 105					07/18/18 15:48	07/31/18 09:36	1

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Tracer/Carrier Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: S18-005

TestAmerica Job ID: 300-7572-1
SDG: W08139

Method: SM 7500 I - Iodine-129

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Iodine(C) (30-105)
300-7572-1	B3J336	90.8
300-7581-A-4-C DU	Duplicate	89.2
LCS 300-12610/2-A	Lab Control Sample	92.9
MB 300-12610/1-A	Method Blank	93.2

Tracer/Carrier Legend

Iodine(C) = Iodine(C)

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QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S18-005

TestAmerica Job ID: 300-7572-1
SDG: W08139

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 300-12551/2-A
Matrix: Water
Analysis Batch: 12669

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 12551

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	399.5	U	48.9	316	700	670	pCi/L	07/16/18 15:48	07/18/18 17:34	1

Lab Sample ID: LCS 300-12551/3-A
Matrix: Water
Analysis Batch: 12669

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 12551

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2750	2301		403	700	653	pCi/L	84	80 - 120

Lab Sample ID: 300-7532-A-2-F MS
Matrix: Water
Analysis Batch: 12669

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 12551

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-290	U	1620	1394		406	700	742	pCi/L	86	75 - 125

Lab Sample ID: 300-7572-1 DU
Matrix: Water
Analysis Batch: 12669

Client Sample ID: B3J336
Prep Type: Total/NA
Prep Batch: 12551

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
Tritium	1470		1198		348	700	641	pCi/L	20	20

Method: SM 7500 I - Iodine-129

Lab Sample ID: MB 300-12610/1-A
Matrix: Water
Analysis Batch: 12844

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 12610

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
I-129	0.396	U		0.386	1.00	0.775	pCi/L	07/18/18 15:48	07/30/18 07:10	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Iodine(C)	93.2		30 - 105		07/18/18 15:48	07/30/18 07:10	1			

Lab Sample ID: LCS 300-12610/2-A
Matrix: Water
Analysis Batch: 12844

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 12610

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
I-129	19.2	20.29		2.70	1.00	0.779	pCi/L	105	80 - 120

TestAmerica Richland

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: S18-005

TestAmerica Job ID: 300-7572-1
 SDG: W08139

Method: SM 7500 I - Iodine-129 (Continued)

Lab Sample ID: LCS 300-12610/2-A

Matrix: Water

Analysis Batch: 12844

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 12610

Carrier	LCS %Yield	LCS Qualifier	Limits
Iodine(C)	92.9		30 - 105

Lab Sample ID: 300-7581-A-4-C DU

Matrix: Water

Analysis Batch: 12844

Client Sample ID: Duplicate

Prep Type: Total/NA

Prep Batch: 12610

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
I-129	0.204	U	0.121	U y	0.338	1.00	0.650	pCi/L	51	20

Carrier	DU %Yield	DU Qualifier	Limits
Iodine(C)	89.2		30 - 105

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QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: S18-005

TestAmerica Job ID: 300-7572-1
 SDG: W08139

Rad

Prep Batch: 12551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-7572-1	B3J336	Total/NA	Water	LSC_Dist_Susp	
MB 300-12551/2-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 300-12551/3-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
300-7532-A-2-F MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
300-7572-1 DU	B3J336	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 12610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-7572-1	B3J336	Total/NA	Water	Evaporation	
MB 300-12610/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 300-12610/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
300-7581-A-4-C DU	Duplicate	Total/NA	Water	Evaporation	

Lab Chronicle

Client: CH2M Hill Plateau Remediation Company
 Project/Site: S18-005

TestAmerica Job ID: 300-7572-1
 SDG: W08139

Client Sample ID: B3J336

Lab Sample ID: 300-7572-1

Date Collected: 07/12/18 11:59

Matrix: Water

Date Received: 07/12/18 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	LSC_Dist_Susp					12551	07/16/18 15:48	DNH	TAL RCH
Total/NA	Analysis	906.0		1			12669	07/19/18 02:40	DJ	TAL RCH
Total/NA	Prep	Evaporation					12610	07/18/18 15:48	RH	TAL RCH
Total/NA	Analysis	SM 7500 I		1	2.00006 L	2.00006 L	12844	07/31/18 09:36	DJ	TAL RCH

Laboratory References:

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

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Method Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: S18-005

TestAmerica Job ID: 300-7572-1
 SDG: W08139

Method	Method Description	Protocol	Laboratory
906.0	Tritium, Total (LSC)	EPA	TAL RCH
SM 7500 I	Iodine-129	SM	TAL RCH
Evaporation	Preparation, Evaporation	None	TAL RCH
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL RCH

Protocol References:

EPA = US Environmental Protection Agency

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

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: S18-005

TestAmerica Job ID: 300-7572-1
SDG: W08139

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-7572-1	B3J336	Water	07/12/18 11:59	07/12/18 13:30

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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # S18-005-579 Page 1 of 1
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Collector: Kathy Turner /CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-005	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: SURV, May 2018	Logbook No.: HNF-N-506 -102	Ice Chest No.: N/A
Shipped To (Lab): TestAmerica Incorporated, Rich	Method of Shipment: GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.: N/A
Protocol: SURV	Priority: 30 Days	Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARK ** ** 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	SPECIAL INSTRUCTIONS N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3J336	N	W	7/12/18	1159	1x250-mL P	906.0 TRITIUM_LSC: COMMON	6 Months	None
B3J336	N	W	1	1	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None

7572
W08139



300-7572 COC

Relinquished By: Kathy Turner /CHPRC <i>Kathy Turner</i> JUL 12 2018 1330 Print First and Last Name Signature Date/Time	Received By: Christina Aguilar /CHPRC <i>Christina Aguilar</i> JUL 12 2018 1330 Print First and Last Name Signature Date/Time	Matrix * 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	
Relinquished By: Christina Aguilar /CHPRC <i>Christina Aguilar</i> JUL 12 2018 1330 Print First and Last Name Signature Date/Time	Received By: B. Jorgenson, TARL <i>B. Jorgenson</i> 7-12-18 1330 Print First and Last Name Signature Date/Time		
Relinquished By: Print First and Last Name Signature Date/Time	Received By: Print First and Last Name Signature Date/Time		
Relinquished By: Print First and Last Name Signature Date/Time	Received By: Print First and Last Name Signature Date/Time		
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-7572-1

SDG Number: W08139

Login Number: 7572

List Number: 1

Creator: Jorgenson, Briana F

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.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
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	