

6/16/2016

# 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: 300-3084-1  
TestAmerica Sample Delivery Group: WC1073  
Client Project/Site: F16-024

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

Attn: CPP Sample Management



Authorized for release by:  
6/16/2016 10:34:43 AM  
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*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.*



### LINKS

Review your project results through  
**TotalAccess**

Have a Question?



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

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## Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-024

TestAmerica Job ID: 300-3084-1  
SDG: WC1073

## Qualifiers

### HPLC/IC

Qualifier	Qualifier Description
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.
□	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)

# Case Narrative

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-024

TestAmerica Job ID: 300-3084-1  
SDG: WC1073

**Job ID: 300-3084-1**

**Laboratory: TestAmerica Richland**

## Narrative

**Job Narrative  
300-3084-1**

### Comments

No additional comments.

### Receipt

The sample was received on 5/19/2016 1:35 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 11.8° C.

### HPLC/IC

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



CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		FIG-024-009	PAGE 1 OF 1
COLLECTOR J.R. Aguilera/CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9476, post-development	PROJECT DESIGNATION 100-FR-3 Drilling FY2016 - water	FIELD LOGBOOK NO. HNF-0-645-3/74	SAF NO. F16-024	AIR QUALITY <input type="checkbox"/>	ORIGINAL
ICE CHEST NO.	ACTUAL SAMPLE DEPTH 35.05'	COA 300119	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 WI=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 48 Hours	NO. OF CONTAINER(S) 1	VOLUME 500ml	300.0 AMONS, IC. COMMON;		
		SPECIAL HANDLING AND/OR STORAGE						
		SAMPLE NO.	MATRIX*				SAMPLE DATE	SAMPLE TIME
		B34T41	WATER				5-19-16	0838

\* Sample was Filled

#3084  
WCI073



300-3084 COC

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM J.R. Aguilera/CHPRC	RECEIVED BY/STORED IN MAY 19 2016 1235 D. B. Webb CH/IC	DATE/TIME MAY 19 2016 1235
RELINQUISHED BY/REMOVED FROM D. B. Webb CH/IC	RECEIVED BY/STORED IN 5-19-16 1335 J. Bock, TARL	DATE/TIME 5-19-16 1335
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
LABORATORY SECTION	RECEIVED BY	TITLE
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME

Detection Summary

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: F16-024

TestAmerica Job ID: 300-3084-1  
 SDG: WC1073

Client Sample ID: B34T41

Lab Sample ID: 300-3084-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	16	D	0.40	0.20	mg/L	2		300.0	Total/NA
Nitrate as N	18	D	0.28	0.14	mg/L	10		300.0	Total/NA
Fluoride	0.39	D	0.10	0.050	mg/L	2		300.0	Total/NA
Nitrite as N	0.68	D	0.076	0.038	mg/L	2		300.0	Total/NA
Sulfate	72	D	2.5	1.3	mg/L	10		300.0	Total/NA

This Detection Summary does not include radiochemical test results.



Client Sample Results

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: F16-024

TestAmerica Job ID: 300-3084-1  
 SDG: WC1073

Client Sample ID: B34T41

Lab Sample ID: 300-3084-1

Date Collected: 05/19/16 08:38

Matrix: Water

Date Received: 05/19/16 13:35

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16	D	0.40	0.20	mg/L			05/19/16 17:56	2
Nitrate as N	18	D	0.28	0.14	mg/L			05/19/16 18:56	10
Fluoride	0.39	D	0.10	0.050	mg/L			05/19/16 17:56	2
Nitrite as N	0.68	D	0.076	0.038	mg/L			05/19/16 17:56	2
Sulfate	72	D	2.5	1.3	mg/L			05/19/16 18:56	10

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QC Sample Results

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-024

TestAmerica Job ID: 300-3084-1  
SDG: WC1073

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 300-4222/5  
Matrix: Water  
Analysis Batch: 4222

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.014	U	0.028	0.014	mg/L			05/19/16 17:26	1
Nitrite as N	0.019	U	0.038	0.019	mg/L			05/19/16 17:26	1

Lab Sample ID: LCS 300-4222/6  
Matrix: Water  
Analysis Batch: 4222

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.26	2.19		mg/L		97	80 - 120
Nitrite as N	3.04	2.98		mg/L		98	80 - 120

Lab Sample ID: 300-3084-1 MS  
Matrix: Water  
Analysis Batch: 4222

Client Sample ID: B34T41  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite as N	0.68	D	0.609	1.27	D	mg/L		96	75 - 125

Lab Sample ID: 300-3084-1 MS  
Matrix: Water  
Analysis Batch: 4222

Client Sample ID: B34T41  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	18	D	2.26	20.4	D	mg/L		104	75 - 125

Lab Sample ID: 300-3084-1 DU  
Matrix: Water  
Analysis Batch: 4222

Client Sample ID: B34T41  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrite as N	0.68	D	0.678	D	mg/L		0.9	20

Lab Sample ID: 300-3084-1 DU  
Matrix: Water  
Analysis Batch: 4222

Client Sample ID: B34T41  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrate as N	18	D	17.9	D	mg/L		0.6	20

Lab Sample ID: MB 300-4223/5  
Matrix: Water  
Analysis Batch: 4223

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.10	U	0.20	0.10	mg/L			05/19/16 17:26	1
Fluoride	0.025	U	0.050	0.025	mg/L			05/19/16 17:26	1
Sulfate	0.13	U	0.25	0.13	mg/L			05/19/16 17:26	1

QC Sample Results

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: F16-024

TestAmerica Job ID: 300-3084-1  
 SDG: WC1073

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 300-4223/6  
 Matrix: Water  
 Analysis Batch: 4223

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	16.0	15.3		mg/L		95	80 - 120
Fluoride	4.00	3.83		mg/L		96	80 - 120
Sulfate	20.0	19.1		mg/L		96	80 - 120

Lab Sample ID: 300-3084-1 MS  
 Matrix: Water  
 Analysis Batch: 4223

Client Sample ID: B34T41  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	16	D	3.20	19.3	D	mg/L		94	75 - 125
Fluoride	0.39	D	0.800	1.15	D	mg/L		96	75 - 125

Lab Sample ID: 300-3084-1 MS  
 Matrix: Water  
 Analysis Batch: 4223

Client Sample ID: B34T41  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	72	D	20.0	92.7	D	mg/L		102	75 - 125

Lab Sample ID: 300-3084-1 DU  
 Matrix: Water  
 Analysis Batch: 4223

Client Sample ID: B34T41  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	16	D	16.2	D	mg/L		0.7	20
Fluoride	0.39	D	0.384	D	mg/L		0.6	20

Lab Sample ID: 300-3084-1 DU  
 Matrix: Water  
 Analysis Batch: 4223

Client Sample ID: B34T41  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	72	D	71.6	D	mg/L		0.9	20

## QC Association Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-024

TestAmerica Job ID: 300-3084-1  
SDG: WC1073

## HPLC/IC

## Analysis Batch: 4222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-3084-1	B34T41	Total/NA	Water	300.0	
300-3084-1	B34T41	Total/NA	Water	300.0	
300-3084-1 DU	B34T41	Total/NA	Water	300.0	
300-3084-1 DU	B34T41	Total/NA	Water	300.0	
300-3084-1 MS	B34T41	Total/NA	Water	300.0	
300-3084-1 MS	B34T41	Total/NA	Water	300.0	
LCS 300-4222/6	Lab Control Sample	Total/NA	Water	300.0	
MB 300-4222/5	Method Blank	Total/NA	Water	300.0	

## Analysis Batch: 4223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-3084-1	B34T41	Total/NA	Water	300.0	
300-3084-1	B34T41	Total/NA	Water	300.0	
300-3084-1 DU	B34T41	Total/NA	Water	300.0	
300-3084-1 DU	B34T41	Total/NA	Water	300.0	
300-3084-1 MS	B34T41	Total/NA	Water	300.0	
300-3084-1 MS	B34T41	Total/NA	Water	300.0	
LCS 300-4223/6	Lab Control Sample	Total/NA	Water	300.0	
MB 300-4223/5	Method Blank	Total/NA	Water	300.0	

## Lab Chronicle

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-024

TestAmerica Job ID: 300-3084-1  
SDG: WC1073

**Client Sample ID: B34T41**

Date Collected: 05/19/16 08:38

Date Received: 05/19/16 13:35

**Lab Sample ID: 300-3084-1**

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	300.0		2	10 mL		4222	05/19/16 17:56	CPM	TAL RCH
Total/NA	Analysis	300.0		2	10 mL		4223	05/19/16 17:56	CPM	TAL RCH
Total/NA	Analysis	300.0		10	10 mL		4222	05/19/16 18:56	CPM	TAL RCH
Total/NA	Analysis	300.0		10	10 mL		4223	05/19/16 18:56	CPM	TAL RCH

**Client Sample ID: B34T41**

Date Collected: 05/19/16 08:38

Date Received: 05/19/16 13:35

**Lab Sample ID: 300-3084-1 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	300.0		2	10 mL		4222	05/19/16 18:26	CPM	TAL RCH
Total/NA	Analysis	300.0		2	10 mL		4223	05/19/16 18:26	CPM	TAL RCH
Total/NA	Analysis	300.0		10	10 mL		4222	05/19/16 19:26	CPM	TAL RCH
Total/NA	Analysis	300.0		10	10 mL		4223	05/19/16 19:26	CPM	TAL RCH

**Client Sample ID: Lab Control Sample**

Date Collected: N/A

Date Received: N/A

**Lab Sample ID: LCS 300-4222/6**

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	300.0		1	10 mL		4222	05/19/16 17:41	CPM	TAL RCH

**Client Sample ID: Lab Control Sample**

Date Collected: N/A

Date Received: N/A

**Lab Sample ID: LCS 300-4223/6**

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	300.0		1	10 mL		4223	05/19/16 17:41	CPM	TAL RCH

**Client Sample ID: Method Blank**

Date Collected: N/A

Date Received: N/A

**Lab Sample ID: MB 300-4222/5**

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	300.0		1	10 mL		4222	05/19/16 17:26	CPM	TAL RCH

Lab Chronicle

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: F16-024

TestAmerica Job ID: 300-3084-1  
 SDG: WC1073

**Client Sample ID: Method Blank**

**Lab Sample ID: MB 300-4223/5**

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	300.0		1	10 mL		4223	05/19/16 17:26	CPM	TAL RCH

**Client Sample ID: B34T41**

**Lab Sample ID: 300-3084-1 MS**

Date Collected: 05/19/16 08:38

Matrix: Water

Date Received: 05/19/16 13:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		2	10 mL		4222	05/19/16 18:11	CPM	TAL RCH
Total/NA	Analysis	300.0		2	10 mL		4223	05/19/16 18:11	CPM	TAL RCH
Total/NA	Analysis	300.0		10	10 mL		4222	05/19/16 19:11	CPM	TAL RCH
Total/NA	Analysis	300.0		10	10 mL		4223	05/19/16 19:11	CPM	TAL RCH

**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: F16-024

TestAmerica Job ID: 300-3084-1  
SDG: WC1073

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Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL RCH

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**Protocol References:**

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

**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: F16-024

TestAmerica Job ID: 300-3084-1  
SDG: WC1073

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-3084-1	B34T41	Water	05/19/16 08:38	05/19/16 13:35

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## Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-3084-1

SDG Number: WC1073

Login Number: 3084

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	