

March 31, 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: 300-2554-1
TestAmerica Sample Delivery Group: WC0907
Client Project/Site: I16-016

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

Attn: CPP Sample Management



Authorized for release by:
3/31/2016 4:02:28 PM
Steven Campbell, Quality Assurance Assistant
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Designee for
Whitney Ritari, Project Manager I
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LINKS

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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. 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

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.
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: I16-016

TestAmerica Job ID: 300-2554-1
SDG: WC0907

Job ID: 300-2554-1

Laboratory: TestAmerica Richland

Narrative

**Job Narrative
300-2554-1**

Comments

No additional comments.

Receipt

The sample was received on 3/13/2016 2:40 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 10.9° C.

HPLC/IC

Method 300.0: Reanalysis of the following sample was performed outside of the analytical holding time due to failure of quality control parameters in the initial analysis for Nitrate as N: B34FN3 (300-2554-1). For more information refer to SIR attached to report.

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





SAMPLE ISSUE RESOLUTION	SIR NUM	SIR16-293
	REV NUM	0
	DATE INITIATED	3/31/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) I16-016
OPERABLE UNIT(S) 200-UP-1
PROJECT(S) CERC16
SAMPLE EVENT TITLE(S) CERC16
LABORATORY TestAmerica Incorporated, Richland

SAMPLING INFORMATION

NUMBER OF SAMPLES 1
SAMPLE NUMBERS B34FN3
SAMPLE MATRIX WATER
COLLECTION DATE 3/13/2016 - 3/13/2016
SDG NUM WC0907

ISSUE BACKGROUND

CLASS Laboratory Issue
TYPE Analysis Holding Time Exceeded
DESCRIPTION The following samples were performed outside of the analytical holding time due to failure of quality control parameters in the initial analysis for Nitrate as N: B34FN3.

DISPOSITION

DESCRIPTION Initiate SIR, report results and include hold time comment in the case narrative

JUSTIFICATION Final Disposition: Accept proposed resolution.

SUBMITTED BY: Steven Cambell DATE: 03/31/2016
ACCEPTED BY: Scot Fitzgerald DATE: 03/31/2016

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
I16-016-020
Page 1 of 1

Collector	J.R. Aguilar/CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	I16-016	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	200-UP-1, MARCH 2016	Logbook No.	HNF-N-506 <u>51 / 92</u>	Ice Chest No.	N/A
Shipped To (Lab)	TestAmerica Incorporated, Richland	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Protocol	CERCLA	Priority:	30 Days	Offsite Property No.	N/A
POSSIBLE SAMPLE HAZARDS/REMARKS			SPECIAL INSTRUCTIONS		
*** 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			N/A		
Sample No.	Filter	*	Date	Time	No/Type Container
B34FN3	N	W	3-13-16	1306	1x500-mL P
					Sample Analysis
					300.0_ANIONS_IC: COMMON
					Holding Time
					48 Hours
					Preservative
					Cool <=6C

#2554
WCo907

March 31, 2016

300-2554 CO



Relinquished By	J.R. Aguilar/CHPRC	Print	Sign	DATE	MAR 13 2016	Date/Time	1400	Received By	Frank Hall CHPRC	Print	Sign	DATE	MAR 13 2016	Date/Time	1400
Relinquished By	Frank Hall CHPRC	Print	Sign	DATE	MAR 13 2016	Date/Time	1440	Received By	L. Anderson, TRL	Print	Sign	DATE	MAR 13 2016	Date/Time	1440
Relinquished By		Print	Sign	DATE	MAR 13 2016	Date/Time		Received By		Print	Sign	DATE	MAR 13 2016	Date/Time	
Relinquished By		Print	Sign	DATE	MAR 13 2016	Date/Time		Received By		Print	Sign	DATE	MAR 13 2016	Date/Time	

- Matrix *
- S = Soil
 - SE = Sediment
 - SO = Solid
 - SL = Sludge
 - W = Water
 - O = Oil
 - A = Air
 - DS = Drum Solids
 - DL = Drum Liquids
 - T = Tissue
 - WT = Wipe
 - L = Liquid
 - V = Vegetation
 - X = Other

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

March 31, 2016
Detection Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I16-016

TestAmerica Job ID: 300-2554-1
SDG: WC0907

Client Sample ID: B34FN3

Lab Sample ID: 300-2554-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	20	D	0.40	0.20	mg/L	2		300.0	Total/NA
Nitrate as N	17	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
Sulfate	34	D	0.50	0.25	mg/L	2		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Richland



March 31, 2016
Client Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I16-016

TestAmerica Job ID: 300-2554-1
 SDG: WC0907

Client Sample ID: B34FN3
Date Collected: 03/13/16 13:06
Date Received: 03/13/16 14:40

Lab Sample ID: 300-2554-1
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	20	D	0.40	0.20	mg/L			03/15/16 12:57	2
Nitrate as N	17	D	0.28	0.14	mg/L			03/15/16 16:13	10
Fluoride	0.39	D	0.10	0.050	mg/L			03/15/16 12:57	2
Nitrite as N	0.038	U	0.076	0.038	mg/L			03/15/16 12:57	2
Sulfate	34	D	0.50	0.25	mg/L			03/15/16 12:57	2

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March 31, 2016
QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I16-016

TestAmerica Job ID: 300-2554-1
SDG: WC0907

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 300-3392/5
Matrix: Water
Analysis Batch: 3392

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			03/15/16 12:27	1
Nitrite as N	0.019	U	0.038	0.019	mg/L			03/15/16 12:27	1

Lab Sample ID: LCS 300-3392/6
Matrix: Water
Analysis Batch: 3392

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	2.35		mg/L		104	80 - 120
Nitrite as N	3.04	3.16		mg/L		104	80 - 120

Lab Sample ID: 300-2554-1 MS
Matrix: Water
Analysis Batch: 3392

Client Sample ID: B34FN3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite as N	0.038	U	0.609	0.554	D	mg/L		91	75 - 125

Lab Sample ID: 300-2554-1 MS
Matrix: Water
Analysis Batch: 3392

Client Sample ID: B34FN3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	17	D	2.26	19.0	D	mg/L		99	75 - 125

Lab Sample ID: 300-2554-1 DU
Matrix: Water
Analysis Batch: 3392

Client Sample ID: B34FN3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrite as N	0.038	U	0.038	U	mg/L		NC	20

Lab Sample ID: 300-2554-1 DU
Matrix: Water
Analysis Batch: 3392

Client Sample ID: B34FN3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrate as N	17	D	16.6	D	mg/L		1	20

Lab Sample ID: MB 300-3393/5
Matrix: Water
Analysis Batch: 3393

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			03/15/16 12:27	1
Fluoride	0.025	U	0.050	0.025	mg/L			03/15/16 12:27	1
Sulfate	0.13	U	0.25	0.13	mg/L			03/15/16 12:27	1

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Client: CH2M Hill Plateau Remediation Company
Project/Site: I16-016

TestAmerica Job ID: 300-2554-1
SDG: WC0907

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 300-3393/6
Matrix: Water
Analysis Batch: 3393

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	16.4		mg/L		102	80 - 120
Fluoride	4.00	4.11		mg/L		103	80 - 120
Sulfate	20.0	20.6		mg/L		103	80 - 120

Lab Sample ID: 300-2554-1 MS
Matrix: Water
Analysis Batch: 3393

Client Sample ID: B34FN3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	20	D	3.20	23.5	D	mg/L		111	75 - 125
Fluoride	0.39	D	0.800	1.21	D	mg/L		102	75 - 125
Sulfate	34	D	4.00	38.7	D	mg/L		118	75 - 125

Lab Sample ID: 300-2554-1 DU
Matrix: Water
Analysis Batch: 3393

Client Sample ID: B34FN3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	20	D	20.3	D	mg/L		2	20
Fluoride	0.39	D	0.399	D	mg/L		2	20
Sulfate	34	D	34.6	D	mg/L		2	20

March 31, 2016
QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I16-016

TestAmerica Job ID: 300-2554-1
 SDG: WC0907

HPLC/IC

Analysis Batch: 3392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-2554-1	B34FN3	Total/NA	Water	300.0	
300-2554-1	B34FN3	Total/NA	Water	300.0	
300-2554-1 DU	B34FN3	Total/NA	Water	300.0	
300-2554-1 DU	B34FN3	Total/NA	Water	300.0	
300-2554-1 MS	B34FN3	Total/NA	Water	300.0	
300-2554-1 MS	B34FN3	Total/NA	Water	300.0	
LCS 300-3392/6	Lab Control Sample	Total/NA	Water	300.0	
MB 300-3392/5	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 3393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-2554-1	B34FN3	Total/NA	Water	300.0	
300-2554-1 DU	B34FN3	Total/NA	Water	300.0	
300-2554-1 MS	B34FN3	Total/NA	Water	300.0	
LCS 300-3393/6	Lab Control Sample	Total/NA	Water	300.0	
MB 300-3393/5	Method Blank	Total/NA	Water	300.0	

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Client: CH2M Hill Plateau Remediation Company
Project/Site: I16-016

TestAmerica Job ID: 300-2554-1
SDG: WC0907

Client Sample ID: B34FN3
Date Collected: 03/13/16 13:06
Date Received: 03/13/16 14:40

Lab Sample ID: 300-2554-1
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		3392	03/15/16 12:57	CPM	TAL RCH
Total/NA	Analysis	300.0		2	10 mL		3393	03/15/16 12:57	CPM	TAL RCH
Total/NA	Analysis	300.0		10	10 mL		3392	03/15/16 16:13	CPM	TAL RCH

Client Sample ID: B34FN3
Date Collected: 03/13/16 13:06
Date Received: 03/13/16 14:40

Lab Sample ID: 300-2554-1 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		3392	03/15/16 13:27	CPM	TAL RCH
Total/NA	Analysis	300.0		2	10 mL		3393	03/15/16 13:27	CPM	TAL RCH
Total/NA	Analysis	300.0		10	10 mL		3392	03/15/16 16:43	CPM	TAL RCH

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

Lab Sample ID: LCS 300-3392/6
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		3392	03/15/16 12:42	CPM	TAL RCH

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

Lab Sample ID: LCS 300-3393/6
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		3393	03/15/16 12:42	CPM	TAL RCH

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

Lab Sample ID: MB 300-3392/5
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		3392	03/15/16 12:27	CPM	TAL RCH

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

Lab Sample ID: MB 300-3393/5
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		3393	03/15/16 12:27	CPM	TAL RCH

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I16-016

TestAmerica Job ID: 300-2554-1
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Client Sample ID: B34FN3
Date Collected: 03/13/16 13:06
Date Received: 03/13/16 14:40

Lab Sample ID: 300-2554-1 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	300.0		2	10 mL		3392	03/15/16 13:12	CPM	TAL RCH
Total/NA	Analysis	300.0		2	10 mL		3393	03/15/16 13:12	CPM	TAL RCH
Total/NA	Analysis	300.0		10	10 mL		3392	03/15/16 16:28	CPM	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: I16-016

TestAmerica Job ID: 300-2554-1
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Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL RCH

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



March 31, 2016
Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I16-016

TestAmerica Job ID: 300-2554-1
SDG: WC0907

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-2554-1	B34FN3	Water	03/13/16 13:06	03/13/16 14:40

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-2554-1
SDG Number: WC0907

Login Number: 2554
List Number: 1
Creator: Anderson, Lori 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.	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.	N/A	
Residual Chlorine Checked.	N/A	

