

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: 300-6971-1
TestAmerica Sample Delivery Group: WC2812
Client Project/Site: I18-008

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

Attn: CPP Sample Management



Authorized for release by:
5/4/2018 12:24:48 PM

Ashley Worthy, 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.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13



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	11
Lab Chronicle	12
Method Summary	14
Sample Summary	15
Receipt Checklists	16

Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-008

TestAmerica Job ID: 300-6971-1
SDG: WC2812

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
D	The reported value is from a dilution.
y	Duplicate analysis not within control limits.
N	MS, MSD: Spike recovery is outside acceptance limits.
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	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: I18-008

TestAmerica Job ID: 300-6971-1
SDG: WC2812

Job ID: 300-6971-1

Laboratory: TestAmerica Richland

Narrative

**Job Narrative
300-6971-1**

Comments

No additional comments.

Receipt

The samples were received on 4/4/2018 2:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 7.2° C.

HPLC/IC

Method(s) 300.0: The matrix spike (MS) recoveries for analytical batch 300-10803 were outside control limits for Nitrite as N. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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



CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C.# I18-008-082
		Page 1 of 1

Collector: Juan Aguilar /CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: I18-008	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: AEA, APRIL 2018	Logbook No.: HNF-N-506-99/69	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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HNBO	N	W	4-4-18	0914	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

6971
WC2812



300-6971 COC

Relinquished By: Juan Aguilar /CHPRC Signature: <i>[Signature]</i> Date/Time: APR 04 2018 1035	Received By: Mike Esperza /CHPRC Signature: <i>[Signature]</i> Date/Time: APR 04 2018 1035	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Mike Esperza /CHPRC Signature: <i>[Signature]</i> Date/Time: APR 04 2018 1430	Received By: B. Jorgenson, TARL Signature: <i>[Signature]</i> Date/Time: APR 04 2018 1430	
Relinquished By: Signature: _____ Date/Time: _____	Received By: Signature: _____ Date/Time: _____	
Relinquished By: Signature: _____ Date/Time: _____	Received By: Signature: _____ Date/Time: _____	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C.# I18-008-081
		Page 1 of 1

Collector: Juan Aguilar /CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: I18-008	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: AEA, APRIL 2018	Logbook No.: HNF-N-506-98/69	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
B3HN99	N	W	4-4-18	0715	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

6971
WC 2812

Relinquished By: Juan Aguilar /CHPRC <i>[Signature]</i> Print First and Last Name Signature Date/Time APR 04 2018 1035	Received By: Mike Esperza /CHPRC <i>[Signature]</i> Print First and Last Name Signature Date/Time APR 04 2018 1035	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: Mike Esperza /CHPRC <i>[Signature]</i> Print First and Last Name Signature Date/Time APR 04 2018 1430	Received By: B. Jorgenson, TARL <i>[Signature]</i> Print First and Last Name Signature Date/Time APR 04 2018 1430		
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:

Detection Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-008

TestAmerica Job ID: 300-6971-1
SDG: WC2812

Client Sample ID: B3HNB0

Lab Sample ID: 300-6971-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	27	D	0.40	0.20	mg/L	2		300.0	Total/NA
Nitrate as N	4.9	D	0.056	0.028	mg/L	2		300.0	Total/NA
Fluoride	0.41	D	0.10	0.050	mg/L	2		300.0	Total/NA
Nitrite as N	0.11	N D	0.076	0.038	mg/L	2		300.0	Total/NA
Sulfate	220	D	2.5	1.3	mg/L	10		300.0	Total/NA

Client Sample ID: B3HN99

Lab Sample ID: 300-6971-2

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Richland

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-008

TestAmerica Job ID: 300-6971-1
SDG: WC2812

Client Sample ID: B3HNB0

Date Collected: 04/04/18 09:14

Date Received: 04/04/18 14:30

Lab Sample ID: 300-6971-1

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	27	D	0.40	0.20	mg/L			04/04/18 17:02	2
Nitrate as N	4.9	D	0.056	0.028	mg/L			04/04/18 17:02	2
Fluoride	0.41	D	0.10	0.050	mg/L			04/04/18 17:02	2
Nitrite as N	0.11	N D	0.076	0.038	mg/L			04/04/18 17:02	2
Sulfate	220	D	2.5	1.3	mg/L			04/04/18 19:42	10

Client Sample ID: B3HN99

Date Collected: 04/04/18 07:15

Date Received: 04/04/18 14:30

Lab Sample ID: 300-6971-2

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.20	U D	0.40	0.20	mg/L			04/04/18 17:18	2
Nitrate as N	0.028	U D	0.056	0.028	mg/L			04/04/18 17:18	2
Fluoride	0.050	U D	0.10	0.050	mg/L			04/04/18 17:18	2
Nitrite as N	0.038	U N D	0.076	0.038	mg/L			04/04/18 17:18	2
Sulfate	0.25	U D	0.50	0.25	mg/L			04/04/18 17:18	2

TestAmerica Richland

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-008

TestAmerica Job ID: 300-6971-1
 SDG: WC2812

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 300-10803/5
 Matrix: Water
 Analysis Batch: 10803

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			04/04/18 11:28	1
Nitrite as N	0.019	U	0.038	0.019	mg/L			04/04/18 11:28	1

Lab Sample ID: LCS 300-10803/6
 Matrix: Water
 Analysis Batch: 10803

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	2.21		mg/L		98	80 - 120
Nitrite as N	3.04	3.07		mg/L		101	80 - 120

Lab Sample ID: 300-6970-A-1 MS
 Matrix: Water
 Analysis Batch: 10803

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	5.4	D	0.452	5.89	D	mg/L		111	75 - 125
Nitrite as N	0.15	N D y	0.609	0.503	N D	mg/L		58	75 - 125

Lab Sample ID: 300-6970-A-1 DU
 Matrix: Water
 Analysis Batch: 10803

Client Sample ID: Duplicate
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrate as N	5.4	D	5.36	D	mg/L		0.6	20
Nitrite as N	0.15	N D y	0.0995	y D	mg/L		40	20

Lab Sample ID: MB 300-10804/5
 Matrix: Water
 Analysis Batch: 10804

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			04/04/18 11:28	1
Fluoride	0.025	U	0.050	0.025	mg/L			04/04/18 11:28	1
Sulfate	0.13	U	0.25	0.13	mg/L			04/04/18 11:28	1

Lab Sample ID: LCS 300-10804/6
 Matrix: Water
 Analysis Batch: 10804

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	16.1		mg/L		100	80 - 120
Fluoride	4.00	4.06		mg/L		102	80 - 120
Sulfate	20.0	18.9		mg/L		95	80 - 120

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-008

TestAmerica Job ID: 300-6971-1
 SDG: WC2812

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 300-6970-A-1 MS

Matrix: Water

Analysis Batch: 10804

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	17	D	3.20	20.5	D	mg/L		99	75 - 125
Fluoride	0.32	D	0.800	1.04	D	mg/L		90	75 - 125
Sulfate	46	D	4.00	49.8	D	mg/L		87	75 - 125

Lab Sample ID: 300-6970-A-1 DU

Matrix: Water

Analysis Batch: 10804

Client Sample ID: Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	17	D	17.1	D	mg/L		1	20
Fluoride	0.32	D	0.321	D	mg/L		0.7	20
Sulfate	46	D	46.4	D	mg/L		0.2	20

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-008

TestAmerica Job ID: 300-6971-1
 SDG: WC2812

HPLC/IC

Analysis Batch: 10803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-6971-1	B3HNB0	Total/NA	Water	300.0	
300-6971-2	B3HN99	Total/NA	Water	300.0	
MB 300-10803/5	Method Blank	Total/NA	Water	300.0	
LCS 300-10803/6	Lab Control Sample	Total/NA	Water	300.0	
300-6970-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
300-6970-A-1 DU	Duplicate	Total/NA	Water	300.0	

Analysis Batch: 10804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-6971-1	B3HNB0	Total/NA	Water	300.0	
300-6971-1	B3HNB0	Total/NA	Water	300.0	
300-6971-2	B3HN99	Total/NA	Water	300.0	
MB 300-10804/5	Method Blank	Total/NA	Water	300.0	
LCS 300-10804/6	Lab Control Sample	Total/NA	Water	300.0	
300-6970-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
300-6970-A-1 DU	Duplicate	Total/NA	Water	300.0	

Lab Chronicle

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-008

TestAmerica Job ID: 300-6971-1
SDG: WC2812

Client Sample ID: B3HNB0

Date Collected: 04/04/18 09:14

Date Received: 04/04/18 14:30

Lab Sample ID: 300-6971-1

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			10803	04/04/18 17:02	RTQ	TAL RCH
Total/NA	Analysis	300.0		2			10804	04/04/18 17:02	RTQ	TAL RCH
Total/NA	Analysis	300.0		10			10804	04/04/18 19:42	RTQ	TAL RCH

Client Sample ID: B3HN99

Date Collected: 04/04/18 07:15

Date Received: 04/04/18 14:30

Lab Sample ID: 300-6971-2

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			10803	04/04/18 17:18	RTQ	TAL RCH
Total/NA	Analysis	300.0		2			10804	04/04/18 17:18	RTQ	TAL RCH

Client Sample ID: Method Blank

Date Collected: N/A

Date Received: N/A

Lab Sample ID: MB 300-10803/5

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			10803	04/04/18 11:28	RTQ	TAL RCH

Client Sample ID: Method Blank

Date Collected: N/A

Date Received: N/A

Lab Sample ID: MB 300-10804/5

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			10804	04/04/18 11:28	RTQ	TAL RCH

Client Sample ID: Lab Control Sample

Date Collected: N/A

Date Received: N/A

Lab Sample ID: LCS 300-10803/6

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			10803	04/04/18 11:44	RTQ	TAL RCH

Client Sample ID: Lab Control Sample

Date Collected: N/A

Date Received: N/A

Lab Sample ID: LCS 300-10804/6

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			10804	04/04/18 11:44	RTQ	TAL RCH

TestAmerica Richland

Lab Chronicle

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-008

TestAmerica Job ID: 300-6971-1
 SDG: WC2812

Client Sample ID: Matrix Spike

Lab Sample ID: 300-6970-A-1 MS

Date Collected: 04/04/18 09:31

Matrix: Water

Date Received: 04/04/18 14:30

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			10803	04/04/18 16:13	RTQ	TAL RCH
Total/NA	Analysis	300.0		2			10804	04/04/18 16:13	RTQ	TAL RCH

Client Sample ID: Duplicate

Lab Sample ID: 300-6970-A-1 DU

Date Collected: 04/04/18 09:31

Matrix: Water

Date Received: 04/04/18 14:30

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			10803	04/04/18 16:30	RTQ	TAL RCH
Total/NA	Analysis	300.0		2			10804	04/04/18 16:30	RTQ	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: I18-008

TestAmerica Job ID: 300-6971-1
SDG: WC2812

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



Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-008

TestAmerica Job ID: 300-6971-1
SDG: WC2812

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-6971-1	B3HNB0	Water	04/04/18 09:14	04/04/18 14:30
300-6971-2	B3HN99	Water	04/04/18 07:15	04/04/18 14:30

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-6971-1

SDG Number: WC2812

Login Number: 6971**List Number: 1****Creator: Jorgenson, Briana F****List Source: TestAmerica Richland**

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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.	N/A	
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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	