

July 5, 2017

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: 300-5693-1
TestAmerica Sample Delivery Group: WC2128
Client Project/Site: F17-003

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

Attn: CPP Sample Management



Authorized for release by:
7/5/2017 8:29:29 AM
Steven Campbell, Project Mgmt. Assistant
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Designee for
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(509)375-3131 ext164
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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.



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www.testamericainc.com

July 5, 2017

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-003

TestAmerica Job ID: 300-5693-1
SDG: WC2128



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Qualifiers

HPLC/IC

Qualifier	Qualifier Description
B	Estimated result. Result is less than the RL, but greater than MDL
D	The reported value is from a dilution.
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)

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-003

TestAmerica Job ID: 300-5693-1
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Job ID: 300-5693-1

Laboratory: TestAmerica Richland

Narrative

**Job Narrative
300-5693-1**

Comments

No additional comments.

Receipt

The sample was received on 6/22/2017 10:35 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5° C.

HPLC/IC

Method 300.0: The matrix spike (MS) recoveries for Nitrite as N and Orthophosphate as P (analytical batch 8370) and for Bromide (analytical batch 8371) were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recoveries were 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		FL17-003-007	PAGE 1 OF 1
COLLECTOR	Kevin Patterson CHPRC	COMPANY CONTACT	MEDLEY, HA 373-6909	PROJECT COORDINATOR	MEDLEY, HA
SAMPLING LOCATION	SML LEACHATE	PROJECT DESIGNATION	Solid Waste Landfill - Leachate	SAF NO.	FL17-003
ICE CHEST NO.	NA	FIELD LOGBOOK NO.	HMF-AL 50138/15	COA	301754
SHIPPED TO	TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.	NA	BILL OF LADING/AIR BILL NO.	NA
MATRIX*	<p>POSSIBLE SAMPLE HAZARDS/ REMARKS</p> <p>*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.</p> <p>A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WT=Wipe X=Other</p>	<p>PRESERVATION</p> <p>Cool <=6C</p>	<p>HOLDING TIME</p> <p>48 Hours</p>	<p>PRICE CODE</p> <p>7H</p>	<p>AIR QUALITY</p> <p><input type="checkbox"/></p>
SAMPLE NO.	B3BBB9	MATRIX*	WATER	NO. OF CONTAINER(S)	1
		SAMPLE DATE	JUN 21 2017	VOLUME	125ml
		SAMPLE TIME	1029	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
					300-5693 COC

used



July 5 2017

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	Kevin Patterson CHPRC	DATE/TIME	JUN 21 2017 1145	RECEIVED BY/STORED IN	SSU-1
RELINQUISHED BY/REMOVED FROM	SSU-1	DATE/TIME	JUN 22 2017 0700	RECEIVED BY/STORED IN	Janelle Zunker CHPRC
RELINQUISHED BY/REMOVED FROM	Janelle Zunker CHPRC	DATE/TIME	JUN 22 2017 1035	RECEIVED BY/STORED IN	J. Bock, TARI
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN	

TRVL-17-158
(1) 300.0 ANIONS_IC: COMMON {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate}; 300.0 ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate};

LABORATORY SECTION	RECEIVED BY	DATE/TIME	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD			

July 5, 2017 Detection Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-003

TestAmerica Job ID: 300-5693-1
SDG: WC2128

Client Sample ID: B3BBB9

Lab Sample ID: 300-5693-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	110	D	10	5.0	mg/L	50		300.0	Total/NA
Nitrate as N	0.047	B D	0.056	0.028	mg/L	2		300.0	Total/NA
Fluoride	0.52	D	0.10	0.050	mg/L	2		300.0	Total/NA
Sulfate	150	D	13	6.3	mg/L	50		300.0	Total/NA
Bromide	0.59	D N	0.25	0.13	mg/L	2		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Richland

July 5, 2017 Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-003

TestAmerica Job ID: 300-5693-1
SDG: WC2128

Client Sample ID: B3BBB9

Lab Sample ID: 300-5693-1

Date Collected: 06/21/17 11:02

Matrix: Water

Date Received: 06/22/17 10:35

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110	D	10	5.0	mg/L			06/22/17 15:15	50
Nitrate as N	0.047	B D	0.056	0.028	mg/L			06/22/17 14:30	2
Fluoride	0.52	D	0.10	0.050	mg/L			06/22/17 14:30	2
Nitrite as N	0.038	U D N	0.076	0.038	mg/L			06/22/17 14:30	2
Orthophosphate as P	0.082	U D N	0.16	0.082	mg/L			06/22/17 14:30	2
Sulfate	150	D	13	6.3	mg/L			06/22/17 15:15	50
Bromide	0.59	D N	0.25	0.13	mg/L			06/22/17 14:30	2

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Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-003

TestAmerica Job ID: 300-5693-1
SDG: WC2128

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 300-8370/5
Matrix: Water
Analysis Batch: 8370

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			06/22/17 14:00	1
Nitrite as N	0.019	U	0.038	0.019	mg/L			06/22/17 14:00	1
Orthophosphate as P	0.041	U	0.082	0.041	mg/L			06/22/17 14:00	1

Lab Sample ID: LCS 300-8370/6
Matrix: Water
Analysis Batch: 8370

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	2.31		mg/L		102	80 - 120
Nitrite as N	3.04	3.20		mg/L		105	80 - 120
Orthophosphate as P	6.53	6.67		mg/L		102	80 - 120

Lab Sample ID: 300-5693-1 MS
Matrix: Water
Analysis Batch: 8370

Client Sample ID: B3BBB9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.047	B D	0.452	0.413	D	mg/L		81	75 - 125
Nitrite as N	0.038	U D N	0.609	0.038	U D N	mg/L		0	75 - 125
Orthophosphate as P	0.082	U D N	1.31	0.919	D N	mg/L		70	75 - 125

Lab Sample ID: 300-5693-1 DU
Matrix: Water
Analysis Batch: 8370

Client Sample ID: B3BBB9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrate as N	0.047	B D	0.0453	B D	mg/L		4	20
Nitrite as N	0.038	U D N	0.038	U D	mg/L		NC	20
Orthophosphate as P	0.082	U D N	0.082	U D	mg/L		NC	20

Lab Sample ID: MB 300-8371/5
Matrix: Water
Analysis Batch: 8371

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			06/22/17 14:00	1
Fluoride	0.025	U	0.050	0.025	mg/L			06/22/17 14:00	1
Sulfate	0.13	U	0.25	0.13	mg/L			06/22/17 14:00	1
Bromide	0.063	U	0.13	0.063	mg/L			06/22/17 14:00	1

Lab Sample ID: LCS 300-8371/6
Matrix: Water
Analysis Batch: 8371

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	4.03		mg/L		101	80 - 120
Sulfate	20.0	21.1		mg/L		105	80 - 120

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Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-003

TestAmerica Job ID: 300-5693-1
SDG: WC2128

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 300-8371/6
Matrix: Water
Analysis Batch: 8371

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	10.0	10.3		mg/L		103	80 - 120

Lab Sample ID: 300-5693-1 MS
Matrix: Water
Analysis Batch: 8371

Client Sample ID: B3BBB9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.52	D	0.800	1.21	D	mg/L		87	75 - 125
Bromide	0.59	D N	2.00	2.07	D N	mg/L		74	75 - 125

Lab Sample ID: 300-5693-1 MS
Matrix: Water
Analysis Batch: 8371

Client Sample ID: B3BBB9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	110	D	80.0	184	D	mg/L		96	75 - 125
Sulfate	150	D	100	250	D	mg/L		95	75 - 125

Lab Sample ID: 300-5693-1 DU
Matrix: Water
Analysis Batch: 8371

Client Sample ID: B3BBB9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Fluoride	0.52	D	0.477	D	mg/L		8	20
Bromide	0.59	D N	0.555	D	mg/L		5	20

Lab Sample ID: 300-5693-1 DU
Matrix: Water
Analysis Batch: 8371

Client Sample ID: B3BBB9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	110	D	105	D	mg/L		1	20
Sulfate	150	D	154	D	mg/L		0.8	20

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QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F17-003

TestAmerica Job ID: 300-5693-1
 SDG: WC2128

HPLC/IC

Analysis Batch: 8370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-5693-1	B3BBB9	Total/NA	Water	300.0	
MB 300-8370/5	Method Blank	Total/NA	Water	300.0	
LCS 300-8370/6	Lab Control Sample	Total/NA	Water	300.0	
300-5693-1 MS	B3BBB9	Total/NA	Water	300.0	
300-5693-1 DU	B3BBB9	Total/NA	Water	300.0	

Analysis Batch: 8371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-5693-1	B3BBB9	Total/NA	Water	300.0	
300-5693-1	B3BBB9	Total/NA	Water	300.0	
MB 300-8371/5	Method Blank	Total/NA	Water	300.0	
LCS 300-8371/6	Lab Control Sample	Total/NA	Water	300.0	
300-5693-1 MS	B3BBB9	Total/NA	Water	300.0	
300-5693-1 MS	B3BBB9	Total/NA	Water	300.0	
300-5693-1 DU	B3BBB9	Total/NA	Water	300.0	
300-5693-1 DU	B3BBB9	Total/NA	Water	300.0	

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Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-003

TestAmerica Job ID: 300-5693-1
SDG: WC2128

Client Sample ID: B3BBB9
Date Collected: 06/21/17 11:02
Date Received: 06/22/17 10:35

Lab Sample ID: 300-5693-1
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			8370	06/22/17 14:30	ALR	TAL RCH
Total/NA	Analysis	300.0		2			8371	06/22/17 14:30	ALR	TAL RCH
Total/NA	Analysis	300.0		50			8371	06/22/17 15:15	ALR	TAL RCH

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

Lab Sample ID: MB 300-8370/5
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			8370	06/22/17 14:00	ALR	TAL RCH

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

Lab Sample ID: MB 300-8371/5
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			8371	06/22/17 14:00	ALR	TAL RCH

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

Lab Sample ID: LCS 300-8370/6
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			8370	06/22/17 14:15	ALR	TAL RCH

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

Lab Sample ID: LCS 300-8371/6
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			8371	06/22/17 14:15	ALR	TAL RCH

Client Sample ID: B3BBB9
Date Collected: 06/21/17 11:02
Date Received: 06/22/17 10:35

Lab Sample ID: 300-5693-1 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			8370	06/22/17 14:45	ALR	TAL RCH
Total/NA	Analysis	300.0		2			8371	06/22/17 14:45	ALR	TAL RCH
Total/NA	Analysis	300.0		50			8371	06/22/17 15:30	ALR	TAL RCH

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-003

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Laboratory References:

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

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Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-003

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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



July 5, 2017 Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-003

TestAmerica Job ID: 300-5693-1
SDG: WC2128

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-5693-1	B3BBB9	Water	06/21/17 11:02	06/22/17 10:35

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-5693-1

SDG Number: WC2128

Login Number: 5693

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	

