June 26, 2017

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-98335-1
TestAmerica Sample Delivery Group: DN0156
Client Project/Site: W17-006

For:
CH2M Hill Plateau Remediation Company
PO BOX 1600, MS H8-41
Richland, Washington 99352

Attn: Mr. Scot Fitzgerald

Darlene Bandy

Authorized for release by:
6/26/2017 4:37:40 PM

Darlene Bandy, Project Manager I
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LINKS

Review your project results through TotalAccess

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 280-98335-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: CH2M Hill Plateau Remediation Company

Job Number: 280-98335-1

SDG #: DN0156
SAF#(s): W17-006

Date SDG Closed: June 15, 2017
Data Deliverable: 15 Day / Summary

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

LCS/LCSD = Laboratory Control Sample/Laboratory Control Sample Duplicate
MS/MSD = Matrix Spike/Matrix Spike Duplicate

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 6/15/2017 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.9º C.

9060A - Total Organic Carbon
Total Organic Carbon was detected in method blank MB 280-377781/4 at a level that was above the method detection limit (MDL) but below the reporting limit (RL). The value should be considered an estimate, and has been flagged “B”. Because the concentration in the method blank was not present at a level greater than half the RL, corrective action is deemed unnecessary. If the associated samples reported a result above the MDL and/or RL and the method blank concentration was greater than 5% of the sample concentration, the result has been flagged “C”.

No additional analytical or quality issues were noted.

We certify that this data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager or designee and the laboratory’s client services representative as verified by their signature on this report.

Reviewed and approved:

Darlene Bandy
Project Manager

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 280-98335-1
SDG Number: DN0156

Login Number: 98335
List Number: 1
Creator: Pottruff, Reed W

List Source: TestAmerica Denver

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.	True	
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	0.9°C
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.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2MHill Plateau Remediation Company

DN0156 RP 6-15-17 RP 6-15-17

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # W17-006-219

Collector	Roger Friesz Jr. /CHPRC ~~DN0156~~ ~~DN0156~~	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	W17-006	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	RCRA, JUNE 2017	Logbook No.	HNF-N-506 88181	Ice Chest No.	GWS-298
Shipped To (Lab)	TestAmerica Denver	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	7794 0466 3147
Protocol	RCRA	Priority:	15 Days PRIORITY	Offsite Property No.	8041

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** 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 **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3BCT0	N	W	6-14-17	0902	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B3BCT1	N	W	/	/	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B3BCR9	N	W	/	/	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B3BCT2	N	W	6-14-17	0902	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C

280-98335 Chain of Custody

09 IRH 7 0.0 RP 6-15-17

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	Roger Friesz Jr. /CHPRC		JUN 14 2017 1047		Lesly Wall /CHPRC	Lesly Wall	JUN 14 2017 1047
Relinquished By	Lesly Wall /CHPRC	Lesly Wall	JUN 14 2017 1400	Received By	FEDEX		Date/Time
Relinquished By	FedEx		Date/Time	Received By	Reed Pottruff	Reed Pott	6-15-17 0910
Relinquished By			Date/Time	Received By			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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED ON 6/12/2017 FSR ID = FSR5208 A-6004-842 (REV 2)

IMPORTANT!
Hurricane Season Readiness. Learn More

FedEx ® Tracking

779404663147

Ship date:		Actual delivery:
Wed 6/14/2017		**Thu 6/15/2017 8:59 am**
Richland, WA US	**Delivered** *Signed for by: A.GOMEZ*	ARVADA, CO US

Travel History

Date/Time	Activity	Location
- 6/15/2017 - Thursday		
8:59 am	Delivered	ARVADA, CO
8:56 am	On FedEx vehicle for delivery	ARVADA, CO
7:14 am	At local FedEx facility	ARVADA, CO
5:08 am	At local FedEx facility	DENVER, CO
4:47 am	At destination sort facility	DENVER, CO
3:48 am	Departed FedEx location	MEMPHIS, TN
12:15 am	Arrived at FedEx location	MEMPHIS, TN
- 6/14/2017 - Wednesday		
4:51 pm	Left FedEx origin facility	PASCO, WA
4:12 pm	Shipment information sent to FedEx	
3:15 pm	Picked up	PASCO, WA

Shipment Facts

Tracking number	779404663147	**Service**	FedEx Priority Overnight
Weight	54 lbs / 24.49 kgs	**Dimensions**	17x16x17 in.
Signature services	Direct signature required	**Delivered To**	Shipping/Receiving
Total pieces	1	**Total shipment weight**	54 lbs / 24.49 kgs
Terms	Third Party	**Shipper reference**	8041
Packaging	Your Packaging	**Special handling section**	Deliver Weekday, Additional Handling Surcharge, Direct Signature Required
Standard transit	6/15/2017 by 10:30 am		

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Qualifiers

General Chemistry

Qualifier	Qualifier Description
B	Estimated result. Result is less than the RL, but greater than MDL
C	The analyte was detected in both the sample and the associated QC blank, and the sample concentration was </= 5X the blank concentration.

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	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)

Method Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: W17-006

TestAmerica Job ID: 280-98335-1
SDG: DN0156

Method	Method Description	Protocol	Laboratory
9060A	Organic Carbon, Total (TOC)	SW846	TAL DEN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: W17-006

TestAmerica Job ID: 280-98335-1
SDG: DN0156

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-98335-1	B3BCT0	Water	06/14/17 09:02	06/15/17 09:10
280-98335-2	B3BCT1	Water	06/14/17 09:02	06/15/17 09:10
280-98335-3	B3BCR9	Water	06/14/17 09:02	06/15/17 09:10
280-98335-4	B3BCT2	Water	06/14/17 09:02	06/15/17 09:10

Client: CH2M Hill Plateau Remediation Company
Project/Site: W17-006

TestAmerica Job ID: 280-98335-1
SDG: DN0156

General Chemistry

Client Sample ID: B3BCT0 — **Lab Sample ID: 280-98335-1**
Date Collected: 06/14/17 09:02 — **Matrix: Water**
Date Received: 06/15/17 09:10

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average	355	B C	1000	155	ug/L			06/16/17 17:13	1

Client Sample ID: B3BCT1 — **Lab Sample ID: 280-98335-2**
Date Collected: 06/14/17 09:02 — **Matrix: Water**
Date Received: 06/15/17 09:10

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average	288	B C	1000	155	ug/L			06/16/17 17:58	1

Client Sample ID: B3BCR9 — **Lab Sample ID: 280-98335-3**
Date Collected: 06/14/17 09:02 — **Matrix: Water**
Date Received: 06/15/17 09:10

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average	276	B C	1000	155	ug/L			06/16/17 18:13	1

Client Sample ID: B3BCT2 — **Lab Sample ID: 280-98335-4**
Date Collected: 06/14/17 09:02 — **Matrix: Water**
Date Received: 06/15/17 09:10

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average	281	B C	1000	155	ug/L			06/16/17 18:29	1

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: W17-006

TestAmerica Job ID: 280-98335-1
SDG: DN0156

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 280-377781/4
Matrix: Water
Analysis Batch: 377781

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average	195.9	B	1000	155	ug/L			06/16/17 16:44	1

Lab Sample ID: LCS 280-377781/3
Matrix: Water
Analysis Batch: 377781

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon - Average			25000	24750		ug/L		99	80 - 120		

Lab Sample ID: 280-98335-1 MS
Matrix: Water
Analysis Batch: 377781

Client Sample ID: B3BCT0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon - Average	355	B C	25000	24450		ug/L		96	75 - 125		

Lab Sample ID: 280-98335-1 MSD
Matrix: Water
Analysis Batch: 377781

Client Sample ID: B3BCT0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Average	355	B C	25000	24440		ug/L		96	75 - 125	0	20

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: W17-006

TestAmerica Job ID: 280-98335-1
SDG: DN0156

General Chemistry

Analysis Batch: 377781

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98335-1	B3BCT0	Total/NA	Water	9060A	
280-98335-2	B3BCT1	Total/NA	Water	9060A	
280-98335-3	B3BCR9	Total/NA	Water	9060A	
280-98335-4	B3BCT2	Total/NA	Water	9060A	
MB 280-377781/4	Method Blank	Total/NA	Water	9060A	
LCS 280-377781/3	Lab Control Sample	Total/NA	Water	9060A	
280-98335-1 MS	B3BCT0	Total/NA	Water	9060A	
280-98335-1 MSD	B3BCT0	Total/NA	Water	9060A	