

April 22, 2016

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Tel: (314)298-8566

TestAmerica Job ID: 160-16935-1

TestAmerica Sample Delivery Group: SL2173
Client Project/Site: F15-005

For:

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

Attn: Mr. Scot Fitzgerald



Authorized for release by:
4/22/2016 11:02:34 AM

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





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Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
SDG: SL2173

Job ID: 160-16935-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2M Hill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
April 22, 2016
Attention: Scot Fitzgerald

SDG : SL2173
Number of Samples : 1 sample
Sample Matrix : Water
Data Deliverable : Summary
Date SDG Closed : April 15, 2016

II. Introduction

On April 15, 1 sample was received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and receipt checklists for documentation of any variations on receipt conditions and temperature. Upon receipt, samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F15-005

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with an LCS/LCS duplicate.

Note: For Metals analyses, per standard practice, all 6020 water and soil samples are initially prepared at 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner. These dilutions do not necessitate flagging unless otherwise noted in the case narrative.

For solid matrices, all Metals analyses (including Hg) use a Standard Reference Material for the Laboratory Control Sample (LCS). Certificate for this source material may be obtained from TASL.

For Anion analysis, samples have been started at a 2x dilution per CHPRC direction. The samples are flagged accordingly with a "D" flag if sample concentration is above the MDL/RL. Non-conformance will be included in the below section only if dilution is greater than 2x.

For WTPH methods, the lab utilizes method 8015B. Per CHPRC direction, the method name in the electronic data has been modified to read WTPH in the place of 8015B.

Per CHPRC direction (June 2014), Boron will be reported for Metals using method 6010. Boron will no longer be reported by method 6020.

Per CHPRC direction, due to the short hold times for Nitrate, Nitrite and Phosphate by IC (48 hours) as well as pH analysis (24 hours), a SIR request is not needed when samples are run outside 1x hold but within 2x hold. A narrative comment will be included below if a sample is run outside the lab-specified hold time for waters.



Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
SDG: SL2173

Job ID: 160-16935-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

For extractable and volatile organic analyses, several analytes are considered poor performers and will not meet CHPRC QC limits. Per CHPRC direction, the lab's statistical limits have been reported. Excursions outside these statistical limits will include a non-conformance in the sections below.

IV. Definitions

QCBLK-	Quality Control Blank, Method Blank
QCLCS-	Quality Control Laboratory Control Sample, Blank Spike
DUP-	Laboratory Duplicate
MS-	Matrix Spike
MSD-	Matrix Spike Duplicate

The term "Detection Limit" used in the analytical data report refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** - For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** - For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** - For organic analyses, the sample is estimated and less than the RL.
- **C** - For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** - For all analyses, the sample result was obtained from the analysis of a dilution. For Metals analyses, per standard practice, all solid samples are initially prepared at a 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner. These dilutions do not necessitate qualification unless otherwise noted in the case narrative.
- **N** - For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** - For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.
- **O** - For all analyses, the LCS (LCSD) recoveries are outside QC limits.
- **M** - For inorganic analyses, the precision was outside control limits.
- **P** - For organic analyses (PCB/Pests only), the aroclor target analyte has greater than 25% difference for detected concentrations between the two GC columns.

Volatiles

Batch: 246499

The continuing calibration verification (CCV) associated with batch 160-246499 recovered above the upper control limit for Acetone. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCVIS 160-246499/5).

The following compounds did not meet the minimum relative response factor limits in the continuing calibration verification (CCV) associated with batch 160-246499: Acetone. A low level CCV was analyzed at the base reporting limit of 1ug/L and the affected analytes were detected. Affected target analytes recovering above the reporting limit in the associated samples will be qualified and reported. (CCVIS 160-246499/5)

The laboratory control sample (LCS) associated with analytical batch 160-246499 was outside acceptance criteria, but within marginal exceedances, for Acetone. The batch LCSD, matrix spike/matrix spike duplicate (MS/MSD) were within acceptance limits and satisfy batch QC requirements. (LCS 160-246499/6) This analyte has been qualified accordingly with an "O" flag in the associated samples.

The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 160-246499 recovered outside control limits for the following analytes: Acetone. (LCS 160-246499/6) The batch matrix spike/matrix spike duplicate (MS/MSD) was within acceptance limits for %RPD and may be used to evaluate reproducibility.

The following sample was analyzed at reduced volume due to high concentrations of target analytes: B34VY5 (160-16935-1). The

April 22, 2016

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
SDG: SL2173

Job ID: 160-16935-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

reporting limits have been elevated by the appropriate factor. These analytes have been qualified accordingly with a "D" flag in the associated samples.

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:

Jayna Awalt
St. Louis Project Manager



Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-16935-1
SDG Number: SL2173

Login Number: 16935
List Number: 1
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

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.	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	0.8
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F15-005-756	PAGE 1 OF 1
COLLECTOR K.C. Patterson/CHPRC	SSU-1	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	PRICE CODE 7C
SAMPLING LOCATION 289-T, Influent Tank, Valve V12-Y30		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Water Sampling	ACTUAL SAMPLE DEPTH (N/A)	SAF NO. F15-005	AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. CWS-493		FIELD LOGBOOK NO. HNF-N-491 15	COA 303700	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. (N/A)	BILL OF LADING/AIR BILL NO. 7761 1155 5828		

MATRIX* A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WF=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. N/A	PRESERVATION HCl or H2SO4 to pH <2/Cool 14 Days	HOLDING TIME	TYPE OF CONTAINER aGs*	NO. OF CONTAINER(S) 4	VOLUME 40mL	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SPECIAL HANDLING AND/OR STORAGE							
SAMPLE NO. B34VY5	MATRIX* WATER	SAMPLE DATE APR 13 2016	SAMPLE TIME 1215				

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.C. Patterson/CHPRC	DATE/TIME APR 13 2016 2300	RECEIVED BY/STORED IN SSU-1	DATE/TIME APR 13 2016 2300	TRVL-16-109 (1) 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {Acetone, Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene/ Vinyl chloride}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};	
RELINQUISHED BY/REMOVED FROM SSU-1	DATE/TIME APR 14 2016 1015	RECEIVED BY/STORED IN L.D. Wall/Kirkwood	DATE/TIME APR 14 2016 1015		
RELINQUISHED BY/REMOVED FROM L.D. Wall/Kirkwood	DATE/TIME APR 14 2016 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME APR 14 2016 1015		
RELINQUISHED BY/REMOVED FROM FEDEX	DATE/TIME	RECEIVED BY/STORED IN JILL CLARKE	DATE/TIME 4/15/16 0830		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	





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776111555828

Ship date

Thu 4/14/2016

RICHLAND, WA US

Actual delivery

Fri 4/15/2016 8:20 am

EARTH CITY, MO US

Delivered

Signed for by: J. CLARK

Travel History

Date/Time	Activity	Location
4/15/2016 - Friday		
8:20 am	Delivered	EARTH CITY, MO
6:46 am	On FedEx vehicle for delivery	EARTH CITY, MO
6:36 am	At local FedEx facility	EARTH CITY, MO
5:23 am	At destination sort facility	BERKELEY, MO
4:39 am	Departed FedEx location	MEMPHIS, TN
12:44 am	Arrived at FedEx location	MEMPHIS, TN
4/14/2016 - Thursday		
4:48 pm	Left FedEx origin facility	PASCO, WA
3:31 pm	Shipment information sent to FedEx	
3:22 pm	Picked up	PASCO, WA

Shipment Facts

Tracking number	776111555828	Service	FedEx Standard Overnight
Weight	45 lbs / 20.41 kgs	Delivered To	Shipping/Receiving
Total pieces	1	Total shipment weight	45 lbs / 20.41 kgs
Terms	Recipient	Shipper reference	GWS-493
Packaging	Your Packaging	Special handling section	Deliver Weekday



Search or tracking number | Subr

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Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
 SDG: SL2173

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
O	LCS, LCSD: Recovery exceeds upper or lower control limits.
U	Analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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)

Method Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
SDG: SL2173

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds (GC/MS)	SW846	TAL SL

Protocol References:

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

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



April 22, 2016

Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
SDG: SL2173

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-16935-1	B34VY5	Water	04/13/16 12:15	04/15/16 08:30

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

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
 SDG: SL2173

Method: 8260C - Volatile Organic Compounds (GC/MS)

Client Sample ID: B34VY5
 Date Collected: 04/13/16 12:15
 Date Received: 04/15/16 08:30

Lab Sample ID: 160-16935-1
 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	0.85	U O	5.0	0.85	ug/L			04/19/16 17:34	2.5
Carbon tetrachloride	320	D	25	3.3	ug/L			04/19/16 12:31	25
Chloroform	4.3	D	2.5	0.25	ug/L			04/19/16 17:34	2.5
Chloromethane	0.20	U	5.0	0.20	ug/L			04/19/16 17:34	2.5
cis-1,2-Dichloroethylene	0.23	U	2.5	0.23	ug/L			04/19/16 17:34	2.5
Methylene Chloride	0.68	U	2.5	0.68	ug/L			04/19/16 17:34	2.5
Trichloroethene	2.4	J D	2.5	0.63	ug/L			04/19/16 17:34	2.5
Vinyl chloride	0.20	U	5.0	0.20	ug/L			04/19/16 17:34	2.5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		75 - 129		04/19/16 12:31	25
1,2-Dichloroethane-d4 (Surr)	90		75 - 129		04/19/16 17:34	2.5
4-Bromofluorobenzene (Surr)	109		81 - 130		04/19/16 12:31	25
4-Bromofluorobenzene (Surr)	102		81 - 130		04/19/16 17:34	2.5
Dibromofluoromethane (Surr)	103		81 - 124		04/19/16 12:31	25
Dibromofluoromethane (Surr)	102		81 - 124		04/19/16 17:34	2.5
Toluene-d8 (Surr)	106		87 - 128		04/19/16 12:31	25
Toluene-d8 (Surr)	106		87 - 128		04/19/16 17:34	2.5

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
SDG: SL2173

Method: 8260C - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 160-246499/9

Matrix: Water

Analysis Batch: 246499

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	0.34	U	2.0	0.34	ug/L			04/19/16 10:26	1
Carbon tetrachloride	0.13	U	1.0	0.13	ug/L			04/19/16 10:26	1
Chloroform	0.10	U	1.0	0.10	ug/L			04/19/16 10:26	1
Chloromethane	0.080	U	2.0	0.080	ug/L			04/19/16 10:26	1
cis-1,2-Dichloroethylene	0.090	U	1.0	0.090	ug/L			04/19/16 10:26	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			04/19/16 10:26	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			04/19/16 10:26	1
Vinyl chloride	0.080	U	2.0	0.080	ug/L			04/19/16 10:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		75 - 129		04/19/16 10:26	1
4-Bromofluorobenzene (Surr)	104		81 - 130		04/19/16 10:26	1
Dibromofluoromethane (Surr)	98		81 - 124		04/19/16 10:26	1
Toluene-d8 (Surr)	104		87 - 128		04/19/16 10:26	1

Lab Sample ID: LCS 160-246499/6

Matrix: Water

Analysis Batch: 246499

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	10.0	8.73		ug/L		87	69 - 129
Carbon tetrachloride	10.0	9.83		ug/L		98	83 - 125
Chloroform	10.0	10.1		ug/L		101	80 - 120
Chloromethane	10.0	9.26		ug/L		93	72 - 124
cis-1,2-Dichloroethylene	10.0	10.4		ug/L		104	80 - 120
Methylene Chloride	10.0	10.2		ug/L		102	80 - 120
Trichloroethene	10.0	9.22		ug/L		92	80 - 120
Vinyl chloride	10.0	9.63		ug/L		96	77 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		75 - 129
4-Bromofluorobenzene (Surr)	102		81 - 130
Dibromofluoromethane (Surr)	100		81 - 124
Toluene-d8 (Surr)	102		87 - 128

Lab Sample ID: LCSD 160-246499/7

Matrix: Water

Analysis Batch: 246499

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	10.0	6.58	O	ug/L		66	69 - 129	28	20
Carbon tetrachloride	10.0	9.85		ug/L		98	83 - 125	0	20
Chloroform	10.0	10.1		ug/L		101	80 - 120	0	20
Chloromethane	10.0	8.98		ug/L		90	72 - 124	3	20
cis-1,2-Dichloroethylene	10.0	10.4		ug/L		104	80 - 120	0	20
Methylene Chloride	10.0	10.3		ug/L		103	80 - 120	1	20
Trichloroethene	10.0	9.36		ug/L		94	80 - 120	2	20

TestAmerica St. Louis

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
SDG: SL2173

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 160-246499/7

Client Sample ID: Lab Control Sample Dup

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 246499

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl chloride	10.0	9.24		ug/L		92	77 - 122	4	20
Surrogate	%Recovery	LCSD Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	90		75 - 129						
4-Bromofluorobenzene (Surr)	102		81 - 130						
Dibromofluoromethane (Surr)	100		81 - 124						
Toluene-d8 (Surr)	102		87 - 128						

Lab Sample ID: 160-16913-B-1 MS

Client Sample ID: Matrix Spike

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 246499

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	0.34	U O	10.0	8.36		ug/L		84	50 - 137
Carbon tetrachloride	0.13	U	10.0	9.92		ug/L		99	77 - 131
Chloroform	0.10	U	10.0	10.1		ug/L		101	80 - 120
Chloromethane	0.080	U	10.0	9.28		ug/L		93	62 - 132
cis-1,2-Dichloroethylene	0.090	U	10.0	10.4		ug/L		104	80 - 120
Methylene Chloride	0.27	U	10.0	10.2		ug/L		102	80 - 120
Trichloroethene	0.39	J	10.0	9.66		ug/L		93	81 - 125
Vinyl chloride	0.080	U	10.0	9.33		ug/L		93	70 - 129
Surrogate	%Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	90		75 - 129						
4-Bromofluorobenzene (Surr)	101		81 - 130						
Dibromofluoromethane (Surr)	99		81 - 124						
Toluene-d8 (Surr)	103		87 - 128						

Lab Sample ID: 160-16913-C-1 MSD

Client Sample ID: Matrix Spike Duplicate

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 246499

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	0.34	U O	10.0	7.03		ug/L		70	50 - 137	17	20
Carbon tetrachloride	0.13	U	10.0	9.91		ug/L		99	77 - 131	0	20
Chloroform	0.10	U	10.0	10.1		ug/L		101	80 - 120	0	20
Chloromethane	0.080	U	10.0	9.14		ug/L		91	62 - 132	2	20
cis-1,2-Dichloroethylene	0.090	U	10.0	10.3		ug/L		103	80 - 120	1	20
Methylene Chloride	0.27	U	10.0	10.0		ug/L		100	80 - 120	2	20
Trichloroethene	0.39	J	10.0	9.48		ug/L		91	81 - 125	2	20
Vinyl chloride	0.080	U	10.0	8.97		ug/L		90	70 - 129	4	20
Surrogate	%Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	90		75 - 129								
4-Bromofluorobenzene (Surr)	101		81 - 130								
Dibromofluoromethane (Surr)	99		81 - 124								
Toluene-d8 (Surr)	102		87 - 128								

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
SDG: SL2173

GC/MS VOA

Analysis Batch: 246499

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16913-B-1 MS	Matrix Spike	Total/NA	Water	8260C	
160-16913-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260C	
160-16935-1	B34VY5	Total/NA	Water	8260C	
160-16935-1	B34VY5	Total/NA	Water	8260C	
LCS 160-246499/6	Lab Control Sample	Total/NA	Water	8260C	
LCSD 160-246499/7	Lab Control Sample Dup	Total/NA	Water	8260C	
MB 160-246499/9	Method Blank	Total/NA	Water	8260C	



Surrogate Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F15-005

TestAmerica Job ID: 160-16935-1
 SDG: SL2173

Method: 8260C - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	12DCE (75-129)	BFB (81-130)	DBFM (81-124)	TOL (87-128)
160-16913-B-1 MS	Matrix Spike	90	101	99	103
160-16913-C-1 MSD	Matrix Spike Duplicate	90	101	99	102
160-16935-1	B34VY5	92	109	103	106
160-16935-1	B34VY5	90	102	102	106
LCS 160-246499/6	Lab Control Sample	94	102	100	102
LCSD 160-246499/7	Lab Control Sample Dup	90	102	100	102
MB 160-246499/9	Method Blank	88	104	98	104

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)