LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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: 160-14933-1
TestAmerica Sample Delivery Group: SL2023
Client Project/Site: F15-055

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

Attn: Mr. Scot Fitzgerald

Authorized for release by:
1/14/2016 11:18:37 AM

Jayna Awalt, Project Manager II
(314)298-8566
jayna.awalt@testamericainc.com

Table of Contents

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-055

TestAmerica Job ID: 160-14933-1
SDG: SL2023

Job ID: 160-14933-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
January 14, 2016
Attention: Scot Fitzgerald

SDG	: SL2023
Number of Samples	: 2 samples
Sample Matrix	: Other Liquid
Data Deliverable	: Summary
Date SDG Closed	: November 19, 2015

II. Introduction

On November 19, 2 samples were 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: F15-055

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 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.

Per CHPRC direction, data for pH analysis will be reported outside 1x 24 hour hold time due to this being a field parameter.

IV. Definitions

Job ID: 160-14933-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

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.

ICP Metals

Batch: 231720

Due to the high concentration of potassium and sodium, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 160-227715 and analytical batch 160-231720 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria. (160-14933-B-1-B MS) and (160-14933-B-1-C MSD)

The following samples were diluted to bring the concentration of target analytes within the calibration range: B32L56 (160-14933-1), B33KY4 (160-14933-2), (160-14933-B-1-B MS), (160-14933-B-1-C MSD) and (160-14933-B-1-A SD). Elevated reporting limits (RLs) are provided. These analytes have been qualified accordingly with a "D" flag in the associated samples.

ICPMS Metals

Batch: 230919

The following samples were diluted due to the nature of the sample matrix. The samples were high in salts, which cause internal standard and QC failures when the samples are run at a lesser dilution: B32L56 (160-14933-1), B33KY4 (160-14933-2), (160-14933-B-1-E MS), (160-14933-B-1-F MSD) and (160-14933-B-1-D SD). Elevated reporting limits (RLs) are provided. This analyte has been qualified accordingly with a "D" flag in the associated samples.

Alkalinity

Batch: 222904

The following samples from alkalinity analytical batch 160-224347 were diluted to bring the concentrations of the target analyte within the titration range: B32L56 (160-14933-1), B33KY4 (160-14933-2). Elevated reporting limits (RLs) are provided. Due to a limitation in the

Case Narrative

Job ID: 160-14933-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

LIMS, the dilution factor for these samples will remain 1. The dilution was captured in the final volume used for analysis and is reflected in the reporting limit (> 5.0 mg/L). Due to the dilution factor showing as 1, no "D" flag is reported for these samples. Samples that were run at a dilution are included under the "DL" section of the sample results in the hardcopy.

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

SAMPLE ISSUE RESOLUTION

SIR NUM	SIR16-385
REV NUM	0
DATE INITIATED	5/31/2016

SAMPLE EVENT INFORMATION

SAF NUM(S)	F15-055
OPERABLE UNIT(S)	300-FF-5
PROJECT(S)	300FF5 U SEQUES
SAMPLE EVENT TITLE(S)	300-FF-5 Enhanced Attenuation
LABORATORY	TestAmerica St. Louis

SAMPLING INFORMATION

NUMBER OF SAMPLES	1
SAMPLE NUMBERS	B32L56
SAMPLE MATRIX	OTHER LIQUID
COLLECTION DATE	11/18/2015 - 11/18/2015
SDG NUM	SL2023

ISSUE BACKGROUND

CLASS	Chain of Custody Issue (Field)
TYPE	No/Illegible Relinquisher/Receiver Listed on COC
DESCRIPTION	COC F15-055-062, SAMPLE B32L56 MISSING SIGNATURE IN FIRST RECEIVED BY BOX AND SECOND RELINQUSIHED BY BOX

DISPOSITION

DESCRIPTION	DOCUMENT AND CLOSE
JUSTIFICATION	DOCUMENT AND CLOSE
	SUBMITTED BY: Kira Murray DATE: 05/19/2016 ACCEPTED BY: Kirsten Killand DATE: 05/31/2016

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-14933-1
SDG Number: SL2023

Login Number: 14933
List Number: 1
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

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	4.1°, 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.	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.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F15-055-062	PAGE 1 OF 1
COLLECTOR K.C. Patterson CHPRC SL2023	**COMPANY CONTACT** WHITLEY, KM	**TELEPHONE NO.** 373-4929	**PROJECT COORDINATOR** WHITLEY, KM	**PRICE CODE** 9H	**DATA TURNAROUND**
SAMPLING LOCATION SKID ~~2~~ 1 INJECTION ~~INFILTRATION~~ DAY 12	**PROJECT DESIGNATION** 300-FF-5 Enhanced Attenuation - Stage A Phosphate Solution Injection - ot		**SAF NO.** F15-055	**AIR QUALITY** ☐	30 Days / 30 Days
ICE CHEST NO.	**FIELD LOGBOOK NO.** HNF-N-506 81	**ACTUAL SAMPLE DEPTH** (N/A)	**COA** 300205	**METHOD OF SHIPMENT** FEDERAL EXPRESS	**ORIGINAL**
SHIPPED TO TestAmerica St. Louis	**OFFSITE PROPERTY NO.** (N/A)		**BILL OF LADING/AIR BILL NO.** 7750 1039 3666		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=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

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	None	Cool <=6C
HOLDING TIME	6 Months	14 Days
TYPE OF CONTAINER	G/P	G/P
NO. OF CONTAINER(S)	1	1
VOLUME	500mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B32L56	OTHER LIQUID	NOV 18 2015	0832	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
K.C. Patterson CHPRC	NOV 18 2015 1315	F.M. Hall/CHPRC	NOV 18 2015 1315
F.M. Hall/CHPRC	NOV 18 2015	FEDEX	
FED EX		Jill Clarke Jill Clarke	11.19.15 0920

SPECIAL INSTRUCTIONS
** Offsite lab analyses will be a blend of river water and phosphate injection solution. TRVL-15-155
(1) 6010_METALS_ICP: COMMON {Calcium, Magnesium, Potassium, Sodium}; 6020_METALS_ICPMS: COMMON (Add-on) {Uranium};
(2) 310.1_ALKALINITY: COMMON (Add-0n) {Bi-carbonate alkalinity, Carbonate alkalinity};

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

PRINTED ON 10/28/2015 **FSR ID = FSR8668** **TRVL NUM = TRVL-15-155** A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F15-055-046	PAGE 1 OF 1
COLLECTOR S.W. King/CHPRC SL2023	**COMPANY CONTACT** WHITLEY, KM	**TELEPHONE NO.** 373-4929	**PROJECT COORDINATOR** WHITLEY, KM	**PRICE CODE** 9H	**DATA TURNAROUND**
SAMPLING LOCATION SKID 2 ~~INFILTRATION~~ INJECTION DAY 11 JD 11/16/15	**PROJECT DESIGNATION** 300-FF-5 Enhanced Attenuation - Stage A Phosphate Solution Injection - ot		**SAF NO.** F15-055	**AIR QUALITY** ☐	30 Days / 30 Days
ICE CHEST NO. GWS-378	**FIELD LOGBOOK NO.** HNF-N-506-81/4D	**ACTUAL SAMPLE DEPTH** (N/A)	**COA** 300205	**METHOD OF SHIPMENT** FEDERAL EXPRESS	**ORIGINAL**
SHIPPED TO TestAmerica St. Louis	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** 774997362818		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=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

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	None	Cool <=6C
HOLDING TIME	6 Months	14 Days
TYPE OF CONTAINER	G/P	G/P
NO. OF CONTAINER(S)	1	1
VOLUME	500mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B33KY4	OTHER LIQUID	NOV 17 2015	~~0900~~ 0855 (11-17-15)	✓	✓

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
S.W. King/CHPRC	NOV 17 2015 1030	L.D. Wall CHPRC	NOV 17 2015 1030
L.D. Wall CHPRC	NOV 17 2015 1400	FEDEX	
FED EX		Jim Clarke T.W. Clarke	11.19.15 0930

SPECIAL INSTRUCTIONS
** Offsite lab analyses will be a blend of river water and phosphate injection solution. TRVL-15-155
(1) 6010_METALS_ICP: COMMON {Calcium, Magnesium, Potassium, Sodium}; 6020_METALS_ICPMS: COMMON (Add-on) {Uranium};
(2) 310.1_ALKALINITY: COMMON (Add-0n) {Bi-carbonate alkalinity, Carbonate alkalinity};

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

PRINTED ON 10/28/2015 **FSR ID = FSR8659** **TRVL NUM = TRVL-15-155** A-6003-618 (REV 2)

Track your package or shipment with FedEx Tracking

FedEx ® Tracking

775010393666

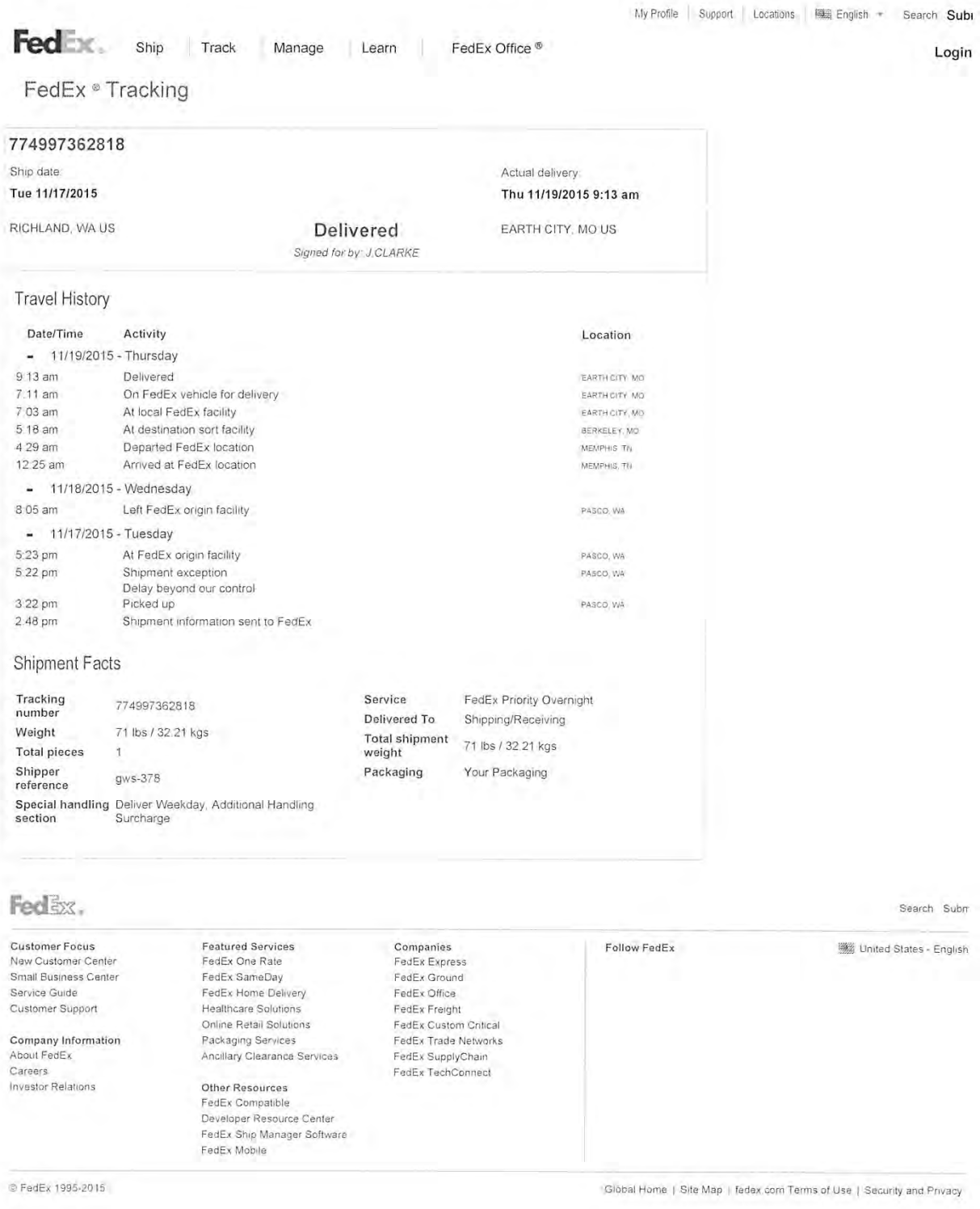
Ship date		Actual delivery
Wed 11/18/2015		**Thu 11/19/2015 9:13 am**
RICHLAND, WA US	**Delivered** *Signed for by: J.CLARKE*	EARTH CITY, MO US

Travel History

Date/Time	Activity	Location
- 11/19/2015 - Thursday		
9:13 am	Delivered	EARTH CITY, MO
7:09 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:03 am	At local FedEx facility	EARTH CITY, MO
12:25 am	Arrived at FedEx location	MEMPHIS, TN
- 11/18/2015 - Wednesday		
5:11 pm	Left FedEx origin facility	PASCO, WA
4:31 pm	Shipment information sent to FedEx	
3:23 pm	Picked up	PASCO, WA

Shipment Facts

Tracking number	775010393666	**Service**	FedEx Priority Overnight
Weight	72 lbs / 32.66 kgs	**Dimensions**	28x16x16 in
Delivered To	Shipping/Receiving	**Total pieces**	1
Total shipment weight	72 lbs / 32.66 kgs	**Shipper reference**	gws-353
Packaging	Your Packaging	**Special handling section**	Deliver Weekday



My Profile | Support | Locations | English | Search | Subi

FedEx | Ship | Track | Manage | Learn | FedEx Office ® | Login

FedEx ® Tracking

774997362818

Ship date: Tue 11/17/2015

RICHLAND, WA US

Delivered

Signed for by: J.CLARKE

Actual delivery: Thu 11/19/2015 9:13 am

EARTH CITY, MO US

Travel History

Date/Time	Activity	Location
- 11/19/2015 - Thursday		
9:13 am	Delivered	EARTH CITY, MO
7:11 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:03 am	At local FedEx facility	EARTH CITY, MO
5:18 am	At destination sort facility	BERKELEY, MO
4:29 am	Departed FedEx location	MEMPHIS, TN
12:25 am	Arrived at FedEx location	MEMPHIS, TN
- 11/18/2015 - Wednesday		
8:05 am	Left FedEx origin facility	PASCO, WA
- 11/17/2015 - Tuesday		
5:23 pm	At FedEx origin facility	PASCO, WA
5:22 pm	Shipment exception Delay beyond our control	PASCO, WA
3:22 pm	Picked up	PASCO, WA
2:48 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking number	774997362818	Service	FedEx Priority Overnight
Weight	71 lbs / 32.21 kgs	Delivered To	Shipping/Receiving
Total pieces	1	Total shipment weight	71 lbs / 32.21 kgs
Shipper reference	gws-378	Packaging	Your Packaging
Special handling section	Deliver Weekday, Additional Handling Surcharge		

FedEx Search Subm

Customer Focus
New Customer Center
Small Business Center
Service Guide
Customer Support

Company Information
About FedEx
Careers
Investor Relations

Featured Services
FedEx One Rate
FedEx SameDay
FedEx Home Delivery
Healthcare Solutions
Online Retail Solutions
Packaging Services
Ancillary Clearance Services

Other Resources
FedEx Compatible
Developer Resource Center
FedEx Ship Manager Software
FedEx Mobile

Companies
FedEx Express
FedEx Ground
FedEx Office
FedEx Freight
FedEx Custom Critical
FedEx Trade Networks
FedEx SupplyChain
FedEx TechConnect

Follow FedEx

United States - English

© FedEx 1995-2015

Global Home | Site Map | fedex.com Terms of Use | Security and Privacy

Definitions/Glossary

Qualifiers

Metals

Qualifier	Qualifier Description
U	Analyzed for but not detected.
B	Estimated result. Result is less than the RL, but greater than MDL
D	The reported value is from a dilution.

General Chemistry

Qualifier	Qualifier Description
U	Analyzed for but not detected.

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, 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: F15-055

TestAmerica Job ID: 160-14933-1
SDG: SL2023

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SL
6020A	Metals (ICP/MS)	SW846	TAL SL
310.1	Alkalinity	MCAWW	TAL SL

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
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

Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-055

TestAmerica Job ID: 160-14933-1
SDG: SL2023

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-14933-1	B32L56	Other Aqueous Sample	11/18/15 08:32	11/19/15 09:20
160-14933-2	B33KY4	Other Aqueous Sample	11/17/15 08:55	11/19/15 09:20

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-055

TestAmerica Job ID: 160-14933-1
SDG: SL2023

Method: 6010C - Metals (ICP)

Client Sample ID: B32L56
Date Collected: 11/18/15 08:32
Date Received: 11/19/15 09:20

Lab Sample ID: 160-14933-1
Matrix: Other Aqueous Sample

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	18500	B D	50000	2710	ug/L		12/16/15 15:09	01/11/16 13:22	50
Magnesium	4010	B D	50000	2530	ug/L		12/16/15 15:09	01/11/16 13:22	50
Potassium	1920000	D	250000	22800	ug/L		12/16/15 15:09	01/11/16 13:22	50
Sodium	2200000	D	50000	5250	ug/L		12/16/15 15:09	01/11/16 13:22	50

Client Sample ID: B33KY4
Date Collected: 11/17/15 08:55
Date Received: 11/19/15 09:20

Lab Sample ID: 160-14933-2
Matrix: Other Aqueous Sample

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	17900	B D	50000	2710	ug/L		12/16/15 15:09	01/11/16 13:38	50
Magnesium	4060	B D	50000	2530	ug/L		12/16/15 15:09	01/11/16 13:38	50
Potassium	2060000	D	250000	22800	ug/L		12/16/15 15:09	01/11/16 13:38	50
Sodium	2370000	D	50000	5250	ug/L		12/16/15 15:09	01/11/16 13:38	50

Method: 6020A - Metals (ICP/MS)

Client Sample ID: B32L56
Date Collected: 11/18/15 08:32
Date Received: 11/19/15 09:20

Lab Sample ID: 160-14933-1
Matrix: Other Aqueous Sample

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	5.8	U	25.0	5.8	ug/L		12/16/15 15:14	01/06/16 19:58	50

Client Sample ID: B33KY4
Date Collected: 11/17/15 08:55
Date Received: 11/19/15 09:20

Lab Sample ID: 160-14933-2
Matrix: Other Aqueous Sample

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	5.8	U	25.0	5.8	ug/L		12/16/15 15:14	01/06/16 20:29	50

General Chemistry - DL

Client Sample ID: B32L56
Date Collected: 11/18/15 08:32
Date Received: 11/19/15 09:20

Lab Sample ID: 160-14933-1
Matrix: Other Aqueous Sample

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	2950		50.0	5.4	mg/L			11/25/15 20:28	1
Carbonate Alkalinity as CaCO3	5.4	U	50.0	5.4	mg/L			11/25/15 20:28	1

Client Sample ID: B33KY4
Date Collected: 11/17/15 08:55
Date Received: 11/19/15 09:20

Lab Sample ID: 160-14933-2
Matrix: Other Aqueous Sample

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	2830		50.0	5.4	mg/L			11/25/15 20:20	1
Carbonate Alkalinity as CaCO3	5.4	U	50.0	5.4	mg/L			11/25/15 20:20	1

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-055

TestAmerica Job ID: 160-14933-1
SDG: SL2023

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 160-227715/1-A
Matrix: Water
Analysis Batch: 231720

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 227715

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	54.2	U	1000	54.2	ug/L		12/16/15 15:09	01/11/16 13:14	1
Magnesium	50.5	U	1000	50.5	ug/L		12/16/15 15:09	01/11/16 13:14	1
Potassium	456	U	5000	456	ug/L		12/16/15 15:09	01/11/16 13:14	1
Sodium	105	U	1000	105	ug/L		12/16/15 15:09	01/11/16 13:14	1

Lab Sample ID: LCS 160-227715/2-A
Matrix: Water
Analysis Batch: 231720

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 227715

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10000	11300		ug/L		113	80 - 120
Magnesium	10000	9702		ug/L		97	80 - 120
Potassium	10000	9905		ug/L		99	80 - 120
Sodium	10000	9739		ug/L		97	80 - 120

Lab Sample ID: 160-14933-1 MS
Matrix: Other Aqueous Sample
Analysis Batch: 231720

Client Sample ID: B32L56
Prep Type: Total/NA
Prep Batch: 227715

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	18500	B D	10000	30330	B D	ug/L		118	75 - 125
Magnesium	4010	B D	10000	13680	B D	ug/L		97	75 - 125
Potassium	1920000	D	10000	1935000	D	ug/L		135	75 - 125
Sodium	2200000	D	10000	2201000	D	ug/L		40	75 - 125

Lab Sample ID: 160-14933-1 MSD
Matrix: Other Aqueous Sample
Analysis Batch: 231720

Client Sample ID: B32L56
Prep Type: Total/NA
Prep Batch: 227715

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	18500	B D	10000	29530	B D	ug/L		110	75 - 125	3	20
Magnesium	4010	B D	10000	13080	B D	ug/L		91	75 - 125	4	20
Potassium	1920000	D	10000	1882000	D	ug/L		-395	75 - 125	3	20
Sodium	2200000	D	10000	2151000	D	ug/L		-465	75 - 125	2	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 160-227718/1-A
Matrix: Water
Analysis Batch: 230919

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 227718

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	0.23	U	1.0	0.23	ug/L		12/16/15 15:14	01/06/16 19:50	2

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-055

TestAmerica Job ID: 160-14933-1
SDG: SL2023

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 160-227718/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 230919 — **Prep Batch: 227718**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Uranium	1000	1007		ug/L		101	80 - 120

Lab Sample ID: 160-14933-1 MS — **Client Sample ID: B32L56**
Matrix: Other Aqueous Sample — **Prep Type: Total/NA**
Analysis Batch: 230919 — **Prep Batch: 227718**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Uranium	5.8	U	1000	965.9	D	ug/L		97	75 - 125

Lab Sample ID: 160-14933-1 MSD — **Client Sample ID: B32L56**
Matrix: Other Aqueous Sample — **Prep Type: Total/NA**
Analysis Batch: 230919 — **Prep Batch: 227718**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Uranium	5.8	U	1000	959.4	D	ug/L		96	75 - 125	1	20

Method: 310.1 - Alkalinity

Lab Sample ID: MB 160-224347/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 224347

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	0.54	U	5.0	0.54	mg/L			11/25/15 18:50	1
Carbonate Alkalinity as CaCO3	0.54	U	5.0	0.54	mg/L			11/25/15 18:50	1

Lab Sample ID: HLCS 160-224347/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 224347

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity as CaCO3	400	377.0		mg/L		94	90 - 110

Lab Sample ID: LCS 160-224347/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 224347

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity as CaCO3	200	190.0		mg/L		95	90 - 110

Method: 310.1 - Alkalinity - DL

Lab Sample ID: 160-14957-A-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 224347

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity as CaCO3 - DL	560		501	1020		mg/L		92	80 - 120

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-055

TestAmerica Job ID: 160-14933-1
SDG: SL2023

Lab Sample ID: 160-14957-A-1 DU
Matrix: Water
Analysis Batch: 224347

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Bicarbonate Alkalinity as CaCO3 - DL	560			560.0		mg/L				0	20
Carbonate Alkalinity as CaCO3 - DL	2.7	U		2.7	U	mg/L				NC	20

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-055

TestAmerica Job ID: 160-14933-1
SDG: SL2023

Metals

Prep Batch: 227715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14933-1	B32L56	Total/NA	Other Aqueous Sample	3010A	
160-14933-1 MS	B32L56	Total/NA	Other Aqueous Sample	3010A	
160-14933-1 MSD	B32L56	Total/NA	Other Aqueous Sample	3010A	
160-14933-2	B33KY4	Total/NA	Other Aqueous Sample	3010A	
LCS 160-227715/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 160-227715/1-A	Method Blank	Total/NA	Water	3010A	

Prep Batch: 227718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14933-1	B32L56	Total/NA	Other Aqueous Sample	3010A	
160-14933-1 MS	B32L56	Total/NA	Other Aqueous Sample	3010A	
160-14933-1 MSD	B32L56	Total/NA	Other Aqueous Sample	3010A	
160-14933-2	B33KY4	Total/NA	Other Aqueous Sample	3010A	
LCS 160-227718/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 160-227718/1-A	Method Blank	Total/NA	Water	3010A	

Analysis Batch: 230919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14933-1	B32L56	Total/NA	Other Aqueous Sample	6020A	227718
160-14933-1 MS	B32L56	Total/NA	Other Aqueous Sample	6020A	227718
160-14933-1 MSD	B32L56	Total/NA	Other Aqueous Sample	6020A	227718
160-14933-2	B33KY4	Total/NA	Other Aqueous Sample	6020A	227718
LCS 160-227718/2-A	Lab Control Sample	Total/NA	Water	6020A	227718
MB 160-227718/1-A	Method Blank	Total/NA	Water	6020A	227718

Analysis Batch: 231720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14933-1	B32L56	Total/NA	Other Aqueous Sample	6010C	227715
160-14933-1 MS	B32L56	Total/NA	Other Aqueous Sample	6010C	227715
160-14933-1 MSD	B32L56	Total/NA	Other Aqueous Sample	6010C	227715
160-14933-2	B33KY4	Total/NA	Other Aqueous Sample	6010C	227715
LCS 160-227715/2-A	Lab Control Sample	Total/NA	Water	6010C	227715
MB 160-227715/1-A	Method Blank	Total/NA	Water	6010C	227715

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-055

TestAmerica Job ID: 160-14933-1
SDG: SL2023

General Chemistry

Analysis Batch: 224347

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14933-1 - DL	B32L56	Total/NA	Other Aqueous Sample	310.1	
160-14933-2 - DL	B33KY4	Total/NA	Other Aqueous Sample	310.1	
160-14957-A-1 DU - DL	Duplicate	Total/NA	Water	310.1	
160-14957-A-1 MS - DL	Matrix Spike	Total/NA	Water	310.1	
HLCS 160-224347/3	Lab Control Sample	Total/NA	Water	310.1	
LCS 160-224347/2	Lab Control Sample	Total/NA	Water	310.1	
MB 160-224347/1	Method Blank	Total/NA	Water	310.1	