West Lake Landfill Lot F2H080425
Starman, Erika
to:
Fisher, Emily, Dan Gravatt
08/31/2012 04:49 PM
Hide Details
From: "Starman, Erika" <Erika.Starman@testamericainc.com>

To: "Fisher, Emily" <Emily.Fisher@tetratech.com>, Dan Gravatt/R7/USEPA/US@EPA

2 Attachments

F2H080425.csv F2H080425_AR.pdf

Good Afternoon,
Attached are the analytical results and EDD for lot F2H080425. Please let us know if you have any questions.
Thanks,

LABOR DAY HOLIDAY REMINDER-- TestAmerica's St. Louis lab will be closed on Monday, September 3rd, 2012. Please contact your Project Manager in advance if you will need sampling supplies or to make alternative arrangements for sample submission.

ERIKA K. STARMAN
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
13715 Rider Trail North
Earth City, MO 63045
314.298.8566 I Fax 314.298.8757
www.testamericainc.com

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

West Lake Landfill

Lot #: F2H080425

Emily Fisher

Tetra Tech, EMI ARRA
415 Oak Street
Kansas City, MO 64106

TESTAMERICA LABORATORIES, INC.

Erika Starman
Project Manager

August 31, 2012

13715 Rider Trail North Earth City, MO 63045 **tel** 314.298.8566 **fax** 314.298.8757 **www.testamericainc.com**

Case Narrative
LOT NUMBER: F2H080425

This report contains the analytical results for the five samples received under chain of custody by TestAmerica St. Louis on August 7, 2012. These samples are associated with your West Lake Landfill project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted on the following page.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. **TestAmerica St. Louis' Florida certification number is E87689.** The case narrative is an integral part of this report.

This report shall not be reproduced, except in full, without the written approval of the laboratory.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Isotopic Thorium by Alpha Spectroscopy (EML A-01-R MOD)

The Thorium sample duplicate had a tracer recovery below the 30% QC limit affecting the batch QC. The samples associated with the batch were re-extracted. The re-extracted Thorium samples have acceptable results and are reported for client review.

Affected Samples:
F2H080425 (1): 5808-1
F2H080425 (2): 5808-2
F2H080425 (3): 5808-3
F2H080425 (4): 5808-4
F2H080425 (5): 5808-5

Radium-226 by GFPC (EPA 903.0 MOD)

The barium carrier recovery yield is outside the upper control limit 110% (113.57%). No abnormalities were observed while this sample was being taken out of ingrowth. To minimize a potentially low biased result the carrier recovery was truncated to 100%. The data is reported for client review.

Affected Samples:
F2H080425 (1): 5808-1

There were no other nonconformances or observations noted with any analysis on this lot.

METHODS SUMMARY

F2H080425

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Isotopic Thorium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Uranium by Alpha Spectroscopy	EML A-01-R MOD	
Radium-226 by GFPC	EPA 903.0 MOD	EPA 903.0
Radium-228 by GFPC	EPA 904 MOD	EPA 904

References:

EML "ENVIRONMENTAL MEASUREMENTS LABORATORY PROCEDURES MANUAL" HASL-300 28TH EDITION, VOLUME I and II DEPARTMENT OF ENERGY

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

SAMPLE SUMMARY

F2H080425

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MV2HL	001	5808-1	08/07/12	11:00
MV2HN	002	5808-2	08/07/12	10:15
MV2HP	003	5808-3	08/07/12	13:55
MV2HQ	004	5808-4	08/07/12	14:40
MV2HR	005	5808-5	08/07/12	15:15

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Tetra Tech, EMI (ARRA)

Client Sample ID: 5808-1

Radiochemistry

Lab Sample ID: F2H080425-001
Work Order: MV2HL
Matrix: WATER

Date Collected: 08/07/12 1100
Date Received: 08/07/12 1645

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/L		Batch # 2221089	Yld % 100
Radium (226)	2.00		0.35	1.00	0.14	08/08/12	08/31/12
Radium 228 by GFPC EPA 904 MOD				pCi/L		Batch # 2221090	Yld % 92
Radium 228	4.09		0.60	1.00	0.38	08/08/12	08/30/12
Iso URANIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 2227030	Yld % 87
Uranium 234	0.16		0.12	1.00	0.10	08/14/12	08/16/12
Uranium 235/236	0.0	U	0.00997	1.00	0.072	08/14/12	08/16/12
Uranium 238	0.103		0.096	1.00	0.091	08/14/12	08/16/12
Iso THORIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 2235022	Yld % 81
Thorium 228	0.11	U	0.32	1.00	0.65	08/22/12	08/26/12
Thorium 230	0.38	U	0.39	1.00	0.45	08/22/12	08/26/12
Thorium 232	-0.021	U	0.043	1.00	0.39	08/22/12	08/26/12

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Tetra Tech, EMI (ARRA)

Client Sample ID: 5808-1 DUP

Radiochemistry

Lab Sample ID: F2H080425-001X
Work Order: MV2HL
Matrix: WATER

Date Collected: 08/07/12 1100
Date Received: 08/07/12 1645

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/L**		**Batch # 2221089**	**Yld % 109**
Radium (226)	1.72		0.31	1.00	0.15	08/08/12	08/31/12
Radium 228 by GFPC EPA 904 MOD				**pCi/L**		**Batch # 2221090**	**Yld % 98**
Radium 228	3.18		0.50	1.00	0.36	08/08/12	08/30/12
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**		**Batch # 2227030**	**Yld % 89**
Uranium 234	0.15		0.11	1.00	0.08	08/14/12	08/16/12
Uranium 235/236	0.0	U	0.0089	1.00	0.064	08/14/12	08/16/12
Uranium 238	0.100	U	0.095	1.00	0.11	08/14/12	08/16/12
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**		**Batch # 2235022**	**Yld % 76**
Thorium 228	0.43	U	0.45	1.00	0.61	08/22/12	08/26/12
Thorium 230	**0.80**		**0.54**	1.00	**0.24**	**08/22/12**	**08/26/12**
Thorium 232	0.04	U	0.19	1.00	0.47	08/22/12	08/26/12

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Tetra Tech, EMI (ARRA)

Client Sample ID: 5808-2

Radiochemistry

Lab Sample ID: F2H080425-002
Work Order: MV2HN
Matrix: WATER

Date Collected: 08/07/12 1015
Date Received: 08/07/12 1645

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/L		Batch # 2221089	Yld % 104
Radium (226)	16.9		1.7	1.0	0.1	08/08/12	08/31/12
Radium 228 by GFPC EPA 904 MOD				pCi/L		Batch # 2221090	Yld % 94
Radium 228	1.78		0.37	1.00	0.35	08/08/12	08/30/12
Iso URANIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 2227030	Yld % 69
Uranium 234	1.39		0.40	1.00	0.14	08/14/12	08/16/12
Uranium 235/236	0.021	U	0.068	1.00	0.16	08/14/12	08/16/12
Uranium 238	0.52		0.24	1.00	0.13	08/14/12	08/16/12
Iso THORIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 2235022	Yld % 63
Thorium 228	0.13	U	0.45	1.00	0.91	08/22/12	08/26/12
Thorium 230	0.96		0.70	1.00	0.78	08/22/12	08/26/12
Thorium 232	-0.026	U	0.051	1.00	0.47	08/22/12	08/26/12

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Tetra Tech, EMI (ARRA)

Client Sample ID: 5808-3

Radiochemistry

Lab Sample ID: F2H080425-003
Work Order: MV2HP
Matrix: WATER

Date Collected: 08/07/12 1355
Date Received: 08/07/12 1645

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/L		Batch # 2221089	Yld % 101
Radium (226)	**0.51**		**0.17**	1.00	**0.14**	**08/08/12**	**08/31/12**
Radium 228 by GFPC EPA 904 MOD				pCi/L		Batch # 2221090	Yld % 93
Radium 228	0.33	U	0.24	1.00	0.37	08/08/12	08/30/12
Iso URANIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 2227030	Yld % 92
Uranium 234	**0.96**		**0.28**	1.00	**0.08**	**08/14/12**	**08/16/12**
Uranium 235/236	0.048	U	0.068	1.00	0.065	08/14/12	08/16/12
Uranium 238	**0.84**		**0.26**	1.00	**0.08**	**08/14/12**	**08/16/12**
Iso THORIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 2235022	Yld % 80
Thorium 228	-0.02	U	0.20	1.00	0.59	08/22/12	08/26/12
Thorium 230	**0.48**		**0.43**	1.00	**0.46**	**08/22/12**	**08/26/12**
Thorium 232	-0.022	U	0.043	1.00	0.39	08/22/12	08/26/12

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Tetra Tech, EMI (ARRA)

Client Sample ID: 5808-4

Radiochemistry

Lab Sample ID: F2H080425-004
Work Order: MV2HQ
Matrix: WATER

Date Collected: 08/07/12 1440
Date Received: 08/07/12 1645

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/L		Batch # 2221089	Yld % 107
Radium (226)	0.60		0.17	1.00	0.14	08/08/12	08/31/12
Radium 228 by GFPC EPA 904 MOD				pCi/L		Batch # 2221090	Yld % 99
Radium 228	0.29	U	0.21	1.00	0.33	08/08/12	08/30/12
Iso URANIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 2227030	Yld % 91
Uranium 234	0.34		0.17	1.00	0.12	08/14/12	08/16/12
Uranium 235/236	0.023	U	0.047	1.00	0.063	08/14/12	08/16/12
Uranium 238	0.105		0.092	1.00	0.092	08/14/12	08/16/12
Iso THORIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 2235022	Yld % 76
Thorium 228	0.0	U	0.29	1.00	0.74	08/22/12	08/26/12
Thorium 230	0.53		0.46	1.00	0.42	08/22/12	08/26/12
Thorium 232	0.06	U	0.19	1.00	0.46	08/22/12	08/26/12

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Tetra Tech, EMI (ARRA)

Client Sample ID: 5808-5

Radiochemistry

Lab Sample ID: F2H080425-005
Work Order: MV2HR
Matrix: WATER

Date Collected: 08/07/12 1515
Date Received: 08/07/12 1645

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/L		Batch # 2221089	Yld % 104
Radium (226)	0.63		0.18	1.00	0.14	08/08/12	08/31/12
Radium 228 by GFPC EPA 904 MOD				pCi/L		Batch # 2221090	Yld % 98
Radium 228	0.58		0.24	1.00	0.33	08/08/12	08/30/12
Iso URANIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 2227030	Yld % 98
Uranium 234	2.57		0.49	1.00	0.13	08/14/12	08/16/12
Uranium 235/236	0.11		0.10	1.00	0.1	08/14/12	08/16/12
Uranium 238	2.38		0.47	1.00	0.10	08/14/12	08/16/12
Iso THORIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 2235022	Yld % 78
Thorium 228	0.20	U	0.38	1.00	0.68	08/22/12	08/26/12
Thorium 230	1.10		0.69	1.00	0.68	08/22/12	08/26/12
Thorium 232	-0.022	U	0.045	1.00	0.41	08/22/12	08/26/12

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

METHOD BLANK REPORT

Radiochemistry

Client Lot ID: F2H080425
Matrix: WATER

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC		Prep Date	Lab Sample ID / Analysis Date
Radium 226 by EPA 903.0 MOD			pCi/L	Batch # 2221089		Yld % 109		F2H080000-089B
Radium (226)	0.081	U	0.080	1.00	0.12		08/08/12	08/31/12
Radium 228 by GFPC EPA 904 MOD			pCi/L	Batch # 2221090		Yld % 103		F2H080000-090B
Radium 228	-0.007	U	0.19	1.00	0.33		08/08/12	08/30/12
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch # 2227030		Yld % 92		F2H140000-030B
Uranium 234	**0.045**		**0.042**	1.00	**0.040**		**08/14/12**	**08/16/12**
Uranium 235/236	0.012	U	0.023	1.00	0.032		08/14/12	08/16/12
Uranium 238	0.036	U	0.038	1.00	0.040		08/14/12	08/16/12
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch # 2235022		Yld % 82		F2H220000-022B
Thorium 228	0.037	U	0.060	1.00	0.099		08/22/12	08/26/12
Thorium 230	**0.133**		**0.095**	1.00	**0.045**		**08/22/12**	**08/26/12**
Thorium 232	0.0	U	0.0083	1.00	0.045		08/22/12	08/26/12

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Laboratory Control Sample Report

Radiochemistry

Client Lot ID: F2H080425
Matrix: WATER

Parameter	Spike Amount	Result	Total Uncert. (2 σ+/-)	MDC	% Yld	% Rec	Lab Sample ID / QC Control Limits
Radium 226 by EPA 903.0 MOD			pCi/L	903.0 MOD			F2H080000-089C
Radium (226)	11.3	10.5	1.1	0.1	109	93	(68 - 137)
	Batch #:	2221089		Analysis Date:	08/31/12		
Radium 228 by GFPC EPA 904 MOD			pCi/L	904 MOD			F2H080000-090C
Radium 228	4.74	5.32	0.77	0.49	95	112	(56 - 140)
	Batch #:	2221090		Analysis Date:	08/30/12		
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F2H140000-030C
Uranium 234	6.53	6.99	0.79	0.05	96	107	(84 - 120)
Uranium 238	6.78	6.91	0.78	0.03	96	102	(83 - 121)
	Batch #:	2227030		Analysis Date:	08/16/12		
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F2H220000-022C
Thorium 230	8.64	8.8	1.1	0.04	85	102	(81 - 125)
	Batch #:	2235022		Analysis Date:	08/26/12		

NOTE(S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

DUPLICATE EVALUATION REPORT

Radiochemistry

Client Lot ID: F2H080425
Matrix: WATER

Date Sampled: 08/07/12
Date Received: 08/07/12

Parameter	SAMPLE Result		Total Uncert. (2σ+/-)	% Yld	DUPLICATE Result		Total Uncert. (2σ+/-)	% Yld	QC Sample ID Precision	
Radium 226 by EPA 903.0 MOD				**pCi/L**	**903.0 MOD**				**F2H080425-001**	
Radium (226)	2.00		0.35	100	1.72		0.31	109	15	%RPD
	Batch #:		2221089	(Sample)	2221089		(Duplicate)			
Radium 228 by GFPC EPA 904 MOD				**pCi/L**	**904 MOD**				**F2H080425-001**	
Radium 228	4.09		0.60	92	3.18		0.50	98	25	%RPD
	Batch #:		2221090	(Sample)	2221090		(Duplicate)			
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F2H080425-001**	
Uranium 234	0.16		0.12	87	0.15		0.11	89	9	%RPD
Uranium 235/236	0.0	U	0.00997	87	0.0	U	0.0089	89	0	%RPD
Uranium 238	0.103		0.096	87	0.100	U	0.095	89	2	%RPD
	Batch #:		2227030	(Sample)	2227030		(Duplicate)			
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F2H080425-001**	
Thorium 228	0.11	U	0.32	81	0.43	U	0.45	76	122	%RPD
Thorium 230	0.38	U	0.39	81	0.80		0.54	76	71	%RPD
Thorium 232	-0.021	U	0.043	81	0.04	U	0.19	76	563	%RPD
	Batch #:		2235022	(Sample)	2235022		(Duplicate)			

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

U Result is less than the sample detection limit.

F2H080425

CLIENT ANALYSIS SUMMARY

TestAmerica St. Louis

Storage Loc: R59-60

Date Received: 2012-08-07

Analytical Due Date: 2012-09-04

Report Due Date: 2012-09-05

Report Type: D Expanded Deliverable

EDD Code: 00

Project Manager: EKS

Quote #: 90754

SDG:

Project:

West Lake Landfill

PO#:

Report to: Emily Fisher

Client: 3333030 Tetra Tech, EMI (ARRA)

#SMPS In LOT: 0

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
1	5808-1			2012-08-07 / 1100	MV2HL	WATER

SAMPLE COMMENTS:

XX	ZV		RAD SCREEN	WATER, RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06
XX	2I	EML	A-01-R MOD	WATER, A-01-R MOD, Iso URANIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	2K	EML	A-01-R MOD	WATER, A-01-R MOD, Iso THORIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	Z4	EPA	904 MOD	WATER, 904 MOD, Radium 228	G2	Precipitate, Separation - 21 day Ingrowth	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	ZY	EPA	903.0 MOD	WATER, 903.0 MOD, Radium 226	G2	Precipitate, Separation - 21 day Ingrowth	01	STANDARD TEST SET	PROT: R	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
2	5808-2			2012-08-07 / 1015	MV2HN	WATER

SAMPLE COMMENTS:

XX	ZV		RAD SCREEN	WATER, RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06
XX	2I	EML	A-01-R MOD	WATER, A-01-R MOD, Iso URANIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	2K	EML	A-01-R MOD	WATER, A-01-R MOD, Iso THORIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	Z4	EPA	904 MOD	WATER, 904 MOD, Radium 228	G2	Precipitate, Separation - 21 day Ingrowth	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	ZY	EPA	903.0 MOD	WATER, 903.0 MOD, Radium 226	G2	Precipitate, Separation - 21 day Ingrowth	01	STANDARD TEST SET	PROT: R	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
3	5808-3			2012-08-07 / 1355	MV2HP	WATER

SAMPLE COMMENTS:

XX	ZV		RAD SCREEN	WATER, RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06
XX	2I	EML	A-01-R MOD	WATER, A-01-R MOD, Iso URANIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	2K	EML	A-01-R MOD	WATER, A-01-R MOD, Iso THORIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	Z4	EPA	904 MOD	WATER, 904 MOD, Radium 228	G2	Precipitate, Separation - 21 day Ingrowth	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	ZY	EPA	903.0 MOD	WATER, 903.0 MOD, Radium 226	G2	Precipitate, Separation - 21 day Ingrowth	01	STANDARD TEST SET	PROT: R	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
4	5808-4			2012-08-07 / 1440	MV2HQ	WATER

SAMPLE COMMENTS:

XX	ZV		RAD SCREEN	WATER, RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06
XX	2I	EML	A-01-R MOD	WATER, A-01-R MOD, Iso URANIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	2K	EML	A-01-R MOD	WATER, A-01-R MOD, Iso THORIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	Z4	EPA	904 MOD	WATER, 904 MOD, Radium 228	G2	Precipitate, Separation - 21 day Ingrowth	01	STANDARD TEST SET	PROT: R	WRK LOC	06
XX	ZY	EPA	903.0 MOD	WATER, 903.0 MOD, Radium 226	G2	Precipitate, Separation - 21 day Ingrowth	01	STANDARD TEST SET	PROT: R	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
5	5808-5			2012-08-07 / 1515	MV2HR	WATER

SAMPLE COMMENTS:

XX	ZV		RAD SCREEN	WATER, RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client: EPA Region 7	Project Manager: Dan Gravatt	Date: 08/07/2012	Chain of Custody Number: 192486
Address: 901 North 5th Street	Telephone Number (Area Code)/Fax Number: 913-551-7324	Lab Number	Page 1 of 1
City: Kansas City; State: KS; Zip Code: 66101	Site Contact: D. Gravatt; Lab Contact: E. Starman		
Project Name and Location (State): West Lake Landfill, MO	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Analysis (Attach list if more space is needed): EML Th-01; EML U-02; EPA 903.0 Alpha Spec; EPA 904.0

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		EML Th-01	EML U-02	EPA 903.0 Alpha Spec	EPA 904.0
5808-1	8/7/12	1100		X						X					X	X	X	X
5808-2	8/7/12	1015		X						X					X	X	X	X
5808-3	8/7/12	1355		X						X					X	X	X	X
5808-4	8/7/12	1440		X						X					X	X	X	X
5808-5	8/7/12	1515		X						X					X	X	X	X

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☒ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: D. R. Gravatt	8/7/12	1645	1. Received By: [illegible]	8/7/12	1645
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

TestAmerica St. Louis

16 2H08425

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F2H080425

TestAmerica St. Louis

CUR Form #: 2 2 4

CONDITION UPON RECEIPT FORM

Client: EPA

Quote No: 90754

COC/RFA No: 192486

Initiated By: BD

Date: 8/7/12

Time: 1645

Shipping Information

Shipper: FedEx UPS DHL Courier Client Other: _____ Multiple Packages: Y N

Shipping # (s):*

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Sample Temperature (s):**

1. Ambient
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid; Rad tests- Liquid or Solids; Perchlorate

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	Y N	Are there custody seals present on the cooler?	8.	Y N	Are there custody seals present on bottles?
2.	Y N N/A	Do custody seals on cooler appear to be tampered with?	9.	Y N N/A	Do custody seals on bottles appear to be tampered with?
3.	Y N	Were contents of cooler frisked after opening, but before unpacking?	10.	Y N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	Y N	Sample received with Chain of Custody?	11.	Y N N/A	Containers for C-14, H-3 & I-129/131 marked with "Do Not Preserve" label?
5.	Y N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	Y N	Sample received in proper containers?
6.	Y N	Was sample received broken?	13.	Y N N/A	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
7.	Y N	Is sample volume sufficient for analysis?	14.	Y N N/A	Was Internal COC/Workshare received?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX, Oil & Grease and soils.

Notes:

Corrective Action:

☐ Client Contact Name: _____ Informed by: _____

☐ Sample(s) processed "as is"

☐ Sample(s) on hold until: _____ If released, notify: _____

Project Management Review: EHG Date: 8/14/12

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

LAB NAME	CLIENT PRO	LAB SAMPL	STYPE	CLIENT SAM	MATRIX	DATE SAMI	TIME SAMI	DATE ANAL	DATE PREP	SDG NUME	ANALYSIS M	CAS NUMB	COMPOUN	UNITS	RESULT	QUALIFIER:	TOTAL UNC	RPT LIMIT/	DIL FACTOI	LTYPE	BATCH ID	PCT SOLID	TCLP EXT D	SPIKE AMO	PERCENT R	CONTROL L	RPD	RPD LIMIT
TestAmeric	West Lake	F2H08000C	BM	LABQC	LI	8/7/2012	11:00	8/31/2012	8/8/2012	F2H080425	903.0 MOD	13982-63-3	Radium (22	pCi/L	0.081	U	0.08	0.12	1		2221089							
TestAmeric	West Lake	F2H08000C	LCS	LABQC	LI	8/7/2012	11:00	8/31/2012	8/8/2012	F2H080425	903.0 MOD	13982-63-3	Radium (22	pCi/L	10.5		1.1	0.1	1		2221089			11.3	93	68-137		
TestAmeric	West Lake	F2H08000C	BM	LABQC	LI	8/7/2012	11:00	8/30/2012	8/8/2012	F2H080425	904 MOD	15262-20-1	Radium 22	pCi/L	-0.007	U	0.19	0.33	1		2221090							
TestAmeric	West Lake	F2H08000C	LCS	LABQC	LI	8/7/2012	11:00	8/30/2012	8/8/2012	F2H080425	904 MOD	15262-20-1	Radium 22	pCi/L	5.32		0.77	0.49	1		2221090			4.74	112	56-140		
TestAmeric	West Lake	F2H080425	SO	5808-1	LI	8/7/2012	11:00	8/31/2012	8/8/2012	F2H080425	903.0 MOD	13982-63-3	Radium (22	pCi/L	2		0.35	0.14	1		2221089							
TestAmeric	West Lake	F2H080425	SO	5808-1	LI	8/7/2012	11:00	8/30/2012	8/8/2012	F2H080425	904 MOD	15262-20-1	Radium 22	pCi/L	4.09		0.6	0.38	1		2221090							
TestAmeric	West Lake	F2H080425	SO	5808-1	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	13966-29-5	Uranium 2	pCi/L	0.16		0.12	0.1	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-1	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	15117-96-1	Uranium 2	pCi/L	0	U	0.00997	0.072	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-1	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	Q1567	Uranium 2	pCi/L	0.103		0.096	0.091	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-1	LI	8/7/2012	11:00	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14274-82-9	Thorium 2	pCi/L	0.11	U	0.32	0.65	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-1	LI	8/7/2012	11:00	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14269-63-7	Thorium 2	pCi/L	0.38	U	0.39	0.45	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-1	LI	8/7/2012	11:00	8/26/2012	8/22/2012	F2H080425	A-01-R MO	7440-29-1	Thorium 2	pCi/L	-0.021	U	0.043	0.39	1	RE	2235022							
TestAmeric	West Lake	F2H080425	DUP	5808-1	LI	8/7/2012	11:00	8/31/2012	8/8/2012	F2H080425	903.0 MOD	13982-63-3	Radium (22	pCi/L	1.72		0.31	0.15	1		2221089						15	40
TestAmeric	West Lake	F2H080425	DUP	5808-1	LI	8/7/2012	11:00	8/30/2012	8/8/2012	F2H080425	904 MOD	15262-20-1	Radium 22	pCi/L	3.18		0.5	0.36	1		2221090						25	40
TestAmeric	West Lake	F2H080425	DUP	5808-1	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	13966-29-5	Uranium 2	pCi/L	0.15		0.11	0.08	1		2227030						9	40
TestAmeric	West Lake	F2H080425	DUP	5808-1	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	15117-96-1	Uranium 2	pCi/L	0	U	0.0089	0.064	1		2227030					Error		
TestAmeric	West Lake	F2H080425	DUP	5808-1	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	Q1567	Uranium 2	pCi/L	0.1	U	0.095	0.11	1		2227030						2	40
TestAmeric	West Lake	F2H080425	DUP	5808-1	LI	8/7/2012	11:00	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14274-82-9	Thorium 2	pCi/L	0.43	U	0.45	0.61	1	RE	2235022						122	40
TestAmeric	West Lake	F2H080425	DUP	5808-1	LI	8/7/2012	11:00	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14269-63-7	Thorium 2	pCi/L	0.8		0.54	0.24	1	RE	2235022						71	40
TestAmeric	West Lake	F2H080425	DUP	5808-1	LI	8/7/2012	11:00	8/26/2012	8/22/2012	F2H080425	A-01-R MO	7440-29-1	Thorium 2	pCi/L	0.04	U	0.19	0.47	1	RE	2235022						563	40
TestAmeric	West Lake	F2H080425	SO	5808-2	LI	8/7/2012	10:15	8/31/2012	8/8/2012	F2H080425	903.0 MOD	13982-63-3	Radium (22	pCi/L	16.9		1.7	0.1	1		2221089							
TestAmeric	West Lake	F2H080425	SO	5808-2	LI	8/7/2012	10:15	8/30/2012	8/8/2012	F2H080425	904 MOD	15262-20-1	Radium 22	pCi/L	1.78		0.37	0.35	1		2221090							
TestAmeric	West Lake	F2H080425	SO	5808-2	LI	8/7/2012	10:15	8/16/2012	8/14/2012	F2H080425	A-01-R MO	13966-29-5	Uranium 2	pCi/L	1.39		0.4	0.14	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-2	LI	8/7/2012	10:15	8/16/2012	8/14/2012	F2H080425	A-01-R MO	15117-96-1	Uranium 2	pCi/L	0.021	U	0.068	0.16	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-2	LI	8/7/2012	10:15	8/16/2012	8/14/2012	F2H080425	A-01-R MO	Q1567	Uranium 2	pCi/L	0.52		0.24	0.13	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-2	LI	8/7/2012	10:15	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14274-82-9	Thorium 2	pCi/L	0.13	U	0.45	0.91	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-2	LI	8/7/2012	10:15	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14269-63-7	Thorium 2	pCi/L	0.96		0.7	0.78	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-2	LI	8/7/2012	10:15	8/26/2012	8/22/2012	F2H080425	A-01-R MO	7440-29-1	Thorium 2	pCi/L	-0.026	U	0.051	0.47	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-3	LI	8/7/2012	13:55	8/31/2012	8/8/2012	F2H080425	903.0 MOD	13982-63-3	Radium (22	pCi/L	0.51		0.17	0.14	1		2221089							
TestAmeric	West Lake	F2H080425	SO	5808-3	LI	8/7/2012	13:55	8/30/2012	8/8/2012	F2H080425	904 MOD	15262-20-1	Radium 22	pCi/L	0.33	U	0.24	0.37	1		2221090							
TestAmeric	West Lake	F2H080425	SO	5808-3	LI	8/7/2012	13:55	8/16/2012	8/14/2012	F2H080425	A-01-R MO	13966-29-5	Uranium 2	pCi/L	0.96		0.28	0.08	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-3	LI	8/7/2012	13:55	8/16/2012	8/14/2012	F2H080425	A-01-R MO	15117-96-1	Uranium 2	pCi/L	0.048	U	0.068	0.065	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-3	LI	8/7/2012	13:55	8/16/2012	8/14/2012	F2H080425	A-01-R MO	Q1567	Uranium 2	pCi/L	0.84		0.26	0.08	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-3	LI	8/7/2012	13:55	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14274-82-9	Thorium 2	pCi/L	-0.02	U	0.2	0.59	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-3	LI	8/7/2012	13:55	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14269-63-7	Thorium 2	pCi/L	0.48		0.43	0.46	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-3	LI	8/7/2012	13:55	8/26/2012	8/22/2012	F2H080425	A-01-R MO	7440-29-1	Thorium 2	pCi/L	-0.022	U	0.043	0.39	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-4	LI	8/7/2012	14:40	8/31/2012	8/8/2012	F2H080425	903.0 MOD	13982-63-3	Radium (22	pCi/L	0.6		0.17	0.14	1		2221089							
TestAmeric	West Lake	F2H080425	SO	5808-4	LI	8/7/2012	14:40	8/30/2012	8/8/2012	F2H080425	904 MOD	15262-20-1	Radium 22	pCi/L	0.29	U	0.21	0.33	1		2221090							
TestAmeric	West Lake	F2H080425	SO	5808-4	LI	8/7/2012	14:40	8/16/2012	8/14/2012	F2H080425	A-01-R MO	13966-29-5	Uranium 2	pCi/L	0.34		0.17	0.12	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-4	LI	8/7/2012	14:40	8/16/2012	8/14/2012	F2H080425	A-01-R MO	15117-96-1	Uranium 2	pCi/L	0.023	U	0.047	0.063	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-4	LI	8/7/2012	14:40	8/16/2012	8/14/2012	F2H080425	A-01-R MO	Q1567	Uranium 2	pCi/L	0.105		0.092	0.092	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-4	LI	8/7/2012	14:40	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14274-82-9	Thorium 2	pCi/L	0	U	0.29	0.74	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-4	LI	8/7/2012	14:40	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14269-63-7	Thorium 2	pCi/L	0.53		0.46	0.42	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-4	LI	8/7/2012	14:40	8/26/2012	8/22/2012	F2H080425	A-01-R MO	7440-29-1	Thorium 2	pCi/L	0.06	U	0.19	0.46	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-5	LI	8/7/2012	15:15	8/31/2012	8/8/2012	F2H080425	903.0 MOD	13982-63-3	Radium (22	pCi/L	0.63		0.18	0.14	1		2221089							
TestAmeric	West Lake	F2H080425	SO	5808-5	LI	8/7/2012	15:15	8/30/2012	8/8/2012	F2H080425	904 MOD	15262-20-1	Radium 22	pCi/L	0.58		0.24	0.33	1		2221090							
TestAmeric	West Lake	F2H080425	SO	5808-5	LI	8/7/2012	15:15	8/16/2012	8/14/2012	F2H080425	A-01-R MO	13966-29-5	Uranium 2	pCi/L	2.57		0.49	0.13	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-5	LI	8/7/2012	15:15	8/16/2012	8/14/2012	F2H080425	A-01-R MO	15117-96-1	Uranium 2	pCi/L	0.11		0.1	0.1	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-5	LI	8/7/2012	15:15	8/16/2012	8/14/2012	F2H080425	A-01-R MO	Q1567	Uranium 2	pCi/L	2.38		0.47	0.1	1		2227030							
TestAmeric	West Lake	F2H080425	SO	5808-5	LI	8/7/2012	15:15	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14274-82-9	Thorium 2	pCi/L	0.2	U	0.38	0.68	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-5	LI	8/7/2012	15:15	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14269-63-7	Thorium 2	pCi/L	1.1		0.69	0.68	1	RE	2235022							
TestAmeric	West Lake	F2H080425	SO	5808-5	LI	8/7/2012	15:15	8/26/2012	8/22/2012	F2H080425	A-01-R MO	7440-29-1	Thorium 2	pCi/L	-0.022	U	0.045	0.41	1	RE	2235022							
TestAmeric	West Lake	F2H14000C	BM	LABQC	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	13966-29-5	Uranium 2	pCi/L	0.045		0.042	0.04	1		2227030							
TestAmeric	West Lake	F2H14000C	BM	LABQC	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	15117-96-1	Uranium 2	pCi/L	0.012	U	0.023	0.032	1		2227030							
TestAmeric	West Lake	F2H14000C	BM	LABQC	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	Q1567	Uranium 2	pCi/L	0.036	U	0.038	0.04	1		2227030							
TestAmeric	West Lake	F2H14000C	LCS	LABQC	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	13966-29-5	Uranium 2	pCi/L	6.99		0.79	0.05	1		2227030			6.53	107	84-120		
TestAmeric	West Lake	F2H14000C	LCS	LABQC	LI	8/7/2012	11:00	8/16/2012	8/14/2012	F2H080425	A-01-R MO	Q1567	Uranium 2	pCi/L	6.91		0.78	0.03	1		2227030			6.78	102	83-121		
TestAmeric	West Lake	F2H22000C	BM	LABQC	LI	8/7/2012	11:00	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14274-82-9	Thorium 2	pCi/L	0.037	U	0.06	0.099	1		2235022							
TestAmeric	West Lake	F2H22000C	BM	LABQC	LI	8/7/2012	11:00	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14269-63-7	Thorium 2	pCi/L	0.133		0.095	0.045	1		2235022							
TestAmeric	West Lake	F2H22000C	BM	LABQC	LI	8/7/2012	11:00	8/26/2012	8/22/2012	F2H080425	A-01-R MO	7440-29-1	Thorium 2	pCi/L	0	U	0.0083	0.045	1		2235022							
TestAmeric	West Lake	F2H22000C	LCS	LABQC	LI	8/7/2012	11:00	8/26/2012	8/22/2012	F2H080425	A-01-R MO	14269-63-7	Thorium 2	pCi/L	8.8		1.1	0.04	1		2235022			8.64	102	81-125		