eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-86446-1
Client Project/Site: KIF_CCR_20190205_1B
Revision: 2

For:
Environmental Standards Inc.
1140 Valley Forge Road
PO BOX 810
Valley Forge, Pennsylvania 19482-0810

Attn: Jennifer N. Gable

Authorized for release by:
5/21/2019 2:47:23 PM

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LINKS

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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.

PA Lab ID: 02-00416

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Job ID: 180-86446-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-86446-1

Revised Report
This report was revised to adjust the solid sample results for dry weight using the dry weight results from TA-Pittsburgh and to update a sample ID. This replaces the previous final report.

Receipt
The samples were received on 2/7/2019 9:00 AM; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.5º C, 2.8º C and 4.9º C.

Receipt Exceptions
KIF-CCR-FB04-20190205 (180-86446-5) was submitted for analysis; however, it was not listed on the Chain-of-Custody (COC). A revised chain was submitted.

RAD
Method 901.1: Gamma Prep Batch 160-414951
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.
KIF-CCR-FB04-20190205 (180-86446-5), (LCS 160-414951/2-A), (MB 160-414951/1-A) and (180-86446-A-5-B DU)

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.
KIF-CCR-FB04-20190205 (180-86446-5), (LCS 160-414951/2-A), (MB 160-414951/1-A) and (180-86446-A-5-B DU)

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from	Reported to Analyte
Ac-228	Ra-228
Bi-214	Ra-226

KIF-CCR-FB04-20190205 (180-86446-5), (LCS 160-414951/2-A), (MB 160-414951/1-A) and (180-86446-A-5-B DU)

Method 901.1: Gamma Prep Batch 160-414944
Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from	Reported to Analyte
Ac-228	Ra-228
Bi-214	Ra-226

KIF-CCR-TW02-1.5/3.5-20190205 (180-86446-1), KIF-CCR-TW02-6.5/8.5-20190205 (180-86446-2), KIF-CCR-TW02-11.5/13.5-20190205 (180-86446-3), KIF-CCR-TW02-16.5/18.5-20190205 (180-86446-4), KIF-CCR-TW02-26.5/28.5-20190205 (180-86446-6), KIF-CCR-TW02-31.5/33.5-20190205 (180-86446-7), KIF-CCR-TW02-36.5/38.5-20190205 (180-86446-8), (LCS 160-414944/2-A), (MB 160-414944/1-A), (180-86561-A-12-B) and (180-86561-A-12-C DU)

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.
KIF-CCR-TW02-1.5/3.5-20190205 (180-86446-1), KIF-CCR-TW02-6.5/8.5-20190205 (180-86446-2), KIF-CCR-TW02-11.5/13.5-20190205 (180-86446-3), KIF-CCR-TW02-16.5/18.5-20190205 (180-86446-4), KIF-CCR-TW02-26.5/28.5-20190205 (180-86446-6), KIF-CCR-TW02-31.5/33.5-20190205 (180-86446-7), KIF-CCR-TW02-36.5/38.5-20190205 (180-86446-8), (LCS 160-414944/2-A), (MB 160-414944/1-A), (180-86561-A-12-B) and (180-86561-A-12-C DU)

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.
KIF-CCR-TW02-1.5/3.5-20190205 (180-86446-1), KIF-CCR-TW02-6.5/8.5-20190205 (180-86446-2), KIF-CCR-TW02-11.5/13.5-20190205 (180-86446-3), KIF-CCR-TW02-16.5/18.5-20190205 (180-86446-4), KIF-CCR-TW02-26.5/28.5-20190205 (180-86446-6), KIF-CCR-TW02-31.5/33.5-20190205 (180-86446-7), KIF-CCR-TW02-36.5/38.5-20190205 (180-86446-8), (LCS 160-414944/2-A), (MB

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Laboratory: Eurofins TestAmerica, Pittsburgh (Continued)

160-414944/1-A), (180-86561-A-12-B) and (180-86561-A-12-C DU)

Method 903.0: Radium-226 Prep Batch 160-417271
Ra-226 is reported without a 21-day waiting period to ensure short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. The Ra-226 result should be considered to be potentially high biased. Associated samples have activity below the RL. The results are reported with this narrative.
KIF-CCR-TW02-1.5/3.5-20190205 (180-86446-1), KIF-CCR-TW02-11.5/13.5-20190205 (180-86446-3), KIF-CCR-TW02-16.5/18.5-20190205 (180-86446-4), KIF-CCR-TW02-26.5/28.5-20190205 (180-86446-6), KIF-CCR-TW02-31.5/33.5-20190205 (180-86446-7), KIF-CCR-TW02-36.5/38.5-20190205 (180-86446-8), (LCS 160-417271/1-A), (MB 160-417271/22-A), (180-86561-B-12-I) and (180-86561-B-12-J DU)

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.
KIF-CCR-TW02-1.5/3.5-20190205 (180-86446-1), KIF-CCR-TW02-11.5/13.5-20190205 (180-86446-3), KIF-CCR-TW02-16.5/18.5-20190205 (180-86446-4), KIF-CCR-TW02-26.5/28.5-20190205 (180-86446-6), KIF-CCR-TW02-31.5/33.5-20190205 (180-86446-7), KIF-CCR-TW02-36.5/38.5-20190205 (180-86446-8), (LCS 160-417271/1-A), (MB 160-417271/22-A), (180-86561-B-12-I) and (180-86561-B-12-J DU)

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.
KIF-CCR-TW02-1.5/3.5-20190205 (180-86446-1), KIF-CCR-TW02-11.5/13.5-20190205 (180-86446-3), KIF-CCR-TW02-16.5/18.5-20190205 (180-86446-4), KIF-CCR-TW02-26.5/28.5-20190205 (180-86446-6), KIF-CCR-TW02-31.5/33.5-20190205 (180-86446-7), KIF-CCR-TW02-36.5/38.5-20190205 (180-86446-8), (LCS 160-417271/1-A), (MB 160-417271/22-A), (180-86561-B-12-I) and (180-86561-B-12-J DU)

Method 903.0: Radium-226 Prep Batch 160-417579
Ra-226 is reported without a 21-day waiting period to ensure short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. The Ra-226 result should be considered to be potentially high biased. Associated samples have activity below the RL. The results are reported with this narrative.
KIF-CCR-TW02-6.5/8.5-20190205 (180-86446-2), (LCS 160-417579/1-A), (MB 160-417579/22-A), (180-86955-A-1-A) and (180-86955-B-1-A DU)

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.
KIF-CCR-TW02-6.5/8.5-20190205 (180-86446-2), (LCS 160-417579/1-A), (MB 160-417579/22-A), (180-86955-A-1-A) and (180-86955-B-1-A DU)

Method 904.0: Ra-228 Prep Batch 160-417288
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.
KIF-CCR-TW02-1.5/3.5-20190205 (180-86446-1), KIF-CCR-TW02-11.5/13.5-20190205 (180-86446-3), KIF-CCR-TW02-16.5/18.5-20190205 (180-86446-4), KIF-CCR-TW02-26.5/28.5-20190205 (180-86446-6), KIF-CCR-TW02-31.5/33.5-20190205 (180-86446-7), KIF-CCR-TW02-36.5/38.5-20190205 (180-86446-8), (LCS 160-417288/1-A), (MB 160-417288/22-A), (180-86561-B-12-K) and (180-86561-B-12-L DU)

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.
KIF-CCR-TW02-1.5/3.5-20190205 (180-86446-1), KIF-CCR-TW02-11.5/13.5-20190205 (180-86446-3), KIF-CCR-TW02-16.5/18.5-20190205 (180-86446-4), KIF-CCR-TW02-26.5/28.5-20190205 (180-86446-6), KIF-CCR-TW02-31.5/33.5-20190205 (180-86446-7), KIF-CCR-TW02-36.5/38.5-20190205 (180-86446-8), (LCS 160-417288/1-A), (MB 160-417288/22-A), (180-86561-B-12-K) and (180-86561-B-12-L DU)

Method 904.0: Radium 228 Prep Batch 160-417589
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Job ID: 180-86446-1 (Continued)

Laboratory: Eurofins TestAmerica, Pittsburgh (Continued)

KIF-CCR-TW02-6.5/8.5-20190205 (180-86446-2), (LCS 160-417589/1-A), (MB 160-417589/22-A), (180-86955-A-1-B) and (180-86955-B-1-B DU)

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.
KIF-CCR-TW02-6.5/8.5-20190205 (180-86446-2), (LCS 160-417589/1-A), (MB 160-417589/22-A), (180-86955-A-1-B) and (180-86955-B-1-B DU)

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

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)

Accreditation/Certification Summary

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Laboratory: Eurofins TestAmerica, Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-20
Connecticut	State Program	1	PH-0688	09-30-20
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-20
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-20
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-20
North Carolina (WW/SW)	State Program	4	434	12-31-19
Oregon	NELAP	10	PA-2151	02-06-20
Pennsylvania	NELAP	3	02-00416	04-30-20
South Carolina	State Program	4	89014	04-30-19 *
Texas	NELAP	6	T104704528-15-2	03-31-20
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19 *
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-20
Wisconsin	State Program	5	998027800	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19 *
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-19 *
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19 *
New York	NELAP	2	11616	03-31-20
North Dakota	State Program	8	R207	06-30-19 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19 *
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Assest ID
180-86446-1	KIF-CCR-TW02-2.25/4.0-20190205	Solid	02/05/19 09:05	02/07/19 09:00	
180-86446-2	KIF-CCR-TW02-6.5/8.5-20190205	Solid	02/05/19 09:50	02/07/19 09:00	
180-86446-3	KIF-CCR-TW02-11.5/13.5-20190205	Solid	02/05/19 10:18	02/07/19 09:00	
180-86446-4	KIF-CCR-TW02-16.5/18.5-20190205	Solid	02/05/19 11:02	02/07/19 09:00	
180-86446-5	KIF-CCR-FB04-20190205	Water	02/05/19 11:20	02/07/19 09:00	
180-86446-6	KIF-CCR-TW02-26.5/28.5-20190205	Solid	02/05/19 13:21	02/07/19 09:00	
180-86446-7	KIF-CCR-TW02-31.5/33.5-20190205	Solid	02/05/19 14:08	02/07/19 09:00	
180-86446-8	KIF-CCR-TW02-36.5/38.5-20190205	Solid	02/05/19 14:50	02/07/19 09:00	

Method Summary

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Method	Method Description	Protocol	Laboratory
901.1	Radium-226 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
1312	SPLP Extraction	SW846	TAL SL
Fill_Geo-21	Fill Geometry, 21-Day In-Growth	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency
None = None
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

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

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-2.25/4.0-20190205 — Lab Sample ID: 180-86446-1

Date Collected: 02/05/19 09:05 — **Matrix: Solid**
Date Received: 02/07/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			295.5 g	1.0 g	414944	02/13/19 15:17	KRS	TAL SL
Total/NA	Analysis	901.1		1			417895	03/06/19 01:42	KLS	TAL SL
	Instrument ID:	GAMMAVISION								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep-21			1000.41 mL	1.0 g	417271	02/28/19 08:50	LTC	TAL SL
SPLP East	Analysis	903.0		1			419080	03/13/19 23:41	KLS	TAL SL
	Instrument ID:	GFPCORANGE								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep_0			1000.41 mL	1.0 g	417288	02/28/19 09:58	LTC	TAL SL
SPLP East	Analysis	904.0		1			417879	03/06/19 08:51	CDR	TAL SL
	Instrument ID:	GFPCPURPLE								
SPLP East	Analysis	Ra226_Ra228		1			420381	03/20/19 17:53	CDR	TAL SL
	Instrument ID:	NOEQUIP								

Client Sample ID: KIF-CCR-TW02-6.5/8.5-20190205 — Lab Sample ID: 180-86446-2

Date Collected: 02/05/19 09:50 — **Matrix: Solid**
Date Received: 02/07/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			247.6 g	1.0 g	414944	02/13/19 15:17	KRS	TAL SL
Total/NA	Analysis	901.1		1			417906	03/06/19 01:44	KLS	TAL SL
	Instrument ID:	GAMMAVISION								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep-21			1000.42 mL	1.0 g	417579	03/04/19 12:45	LTC	TAL SL
SPLP East	Analysis	903.0		1	1.0 mL	1.0 mL	419764	03/18/19 06:29	CDR	TAL SL
	Instrument ID:	GFPCORANGE								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep_0			1000.42 mL	1.0 g	417589	03/04/19 13:17	LTC	TAL SL
SPLP East	Analysis	904.0		1			418630	03/11/19 15:00	CDR	TAL SL
	Instrument ID:	GFPCPURPLE								
SPLP East	Analysis	Ra226_Ra228		1			420381	03/20/19 17:53	CDR	TAL SL
	Instrument ID:	NOEQUIP								

Client Sample ID: KIF-CCR-TW02-11.5/13.5-20190205 — Lab Sample ID: 180-86446-3

Date Collected: 02/05/19 10:18 — **Matrix: Solid**
Date Received: 02/07/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			268.5 g	1.0 g	414944	02/13/19 15:17	KRS	TAL SL
Total/NA	Analysis	901.1		1			417870	03/06/19 02:39	KLS	TAL SL
	Instrument ID:	GAMMAVISION								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep-21			999.20 mL	1.0 g	417271	02/28/19 08:50	LTC	TAL SL
SPLP East	Analysis	903.0		1			419080	03/13/19 23:42	KLS	TAL SL
	Instrument ID:	GFPCORANGE								

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-11.5/13.5-20190205 — Lab Sample ID: 180-86446-3

Date Collected: 02/05/19 10:18 — **Matrix: Solid**
Date Received: 02/07/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep_0			999.20 mL	1.0 g	417288	02/28/19 09:58	LTC	TAL SL
SPLP East	Analysis	904.0		1			417879	03/06/19 08:51	CDR	TAL SL
	Instrument ID:	GFPCPURPLE								
SPLP East	Analysis	Ra226_Ra228		1			420381	03/20/19 17:53	CDR	TAL SL
	Instrument ID:	NOEQUIP								

Client Sample ID: KIF-CCR-TW02-16.5/18.5-20190205 — Lab Sample ID: 180-86446-4

Date Collected: 02/05/19 11:02 — **Matrix: Solid**
Date Received: 02/07/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			385.6 g	1.0 g	414944	02/13/19 15:17	KRS	TAL SL
Total/NA	Analysis	901.1		1			417872	03/06/19 02:41	KLS	TAL SL
	Instrument ID:	GAMMAVISION								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep-21			1000.91 mL	1.0 g	417271	02/28/19 08:50	LTC	TAL SL
SPLP East	Analysis	903.0		1			419080	03/13/19 23:42	KLS	TAL SL
	Instrument ID:	GFPCORANGE								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep_0			1000.91 mL	1.0 g	417288	02/28/19 09:58	LTC	TAL SL
SPLP East	Analysis	904.0		1			417879	03/06/19 08:51	CDR	TAL SL
	Instrument ID:	GFPCPURPLE								
SPLP East	Analysis	Ra226_Ra228		1			420381	03/20/19 17:53	CDR	TAL SL
	Instrument ID:	NOEQUIP								

Client Sample ID: KIF-CCR-FB04-20190205 — Lab Sample ID: 180-86446-5

Date Collected: 02/05/19 11:20 — **Matrix: Water**
Date Received: 02/07/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			1000 mL	1.0 g	414951	02/13/19 18:03	KRS	TAL SL
Total/NA	Analysis	901.1		1			417873	03/06/19 04:05	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Client Sample ID: KIF-CCR-TW02-26.5/28.5-20190205 — Lab Sample ID: 180-86446-6

Date Collected: 02/05/19 13:21 — **Matrix: Solid**
Date Received: 02/07/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			382 g	1.0 g	414944	02/13/19 15:17	KRS	TAL SL
Total/NA	Analysis	901.1		1			417896	03/06/19 02:37	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-26.5/28.5-20190205 — Lab Sample ID: 180-86446-6

Date Collected: 02/05/19 13:21
Date Received: 02/07/19 09:00
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep-21			1000.18 mL	1.0 g	417271	02/28/19 08:50	LTC	TAL SL
SPLP East	Analysis	903.0		1			419080	03/13/19 23:42	KLS	TAL SL
	Instrument ID:	GFPCORANGE								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep_0			1000.18 mL	1.0 g	417288	02/28/19 09:58	LTC	TAL SL
SPLP East	Analysis	904.0		1			417879	03/06/19 08:51	CDR	TAL SL
	Instrument ID:	GFPCPURPLE								
SPLP East	Analysis	Ra226_Ra228		1			420381	03/20/19 17:53	CDR	TAL SL
	Instrument ID:	NOEQUIP								

Client Sample ID: KIF-CCR-TW02-31.5/33.5-20190205 — Lab Sample ID: 180-86446-7

Date Collected: 02/05/19 14:08
Date Received: 02/07/19 09:00
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			380.7 g	1.0 g	414944	02/13/19 15:17	KRS	TAL SL
Total/NA	Analysis	901.1		1			417895	03/06/19 02:37	KLS	TAL SL
	Instrument ID:	GAMMAVISION								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep-21			1000.95 mL	1.0 g	417271	02/28/19 08:50	LTC	TAL SL
SPLP East	Analysis	903.0		1			419080	03/13/19 23:42	KLS	TAL SL
	Instrument ID:	GFPCORANGE								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep_0			1000.95 mL	1.0 g	417288	02/28/19 09:58	LTC	TAL SL
SPLP East	Analysis	904.0		1			417879	03/06/19 08:51	CDR	TAL SL
	Instrument ID:	GFPCPURPLE								
SPLP East	Analysis	Ra226_Ra228		1			420381	03/20/19 17:53	CDR	TAL SL
	Instrument ID:	NOEQUIP								

Client Sample ID: KIF-CCR-TW02-36.5/38.5-20190205 — Lab Sample ID: 180-86446-8

Date Collected: 02/05/19 14:50
Date Received: 02/07/19 09:00
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			338.4 g	1.0 g	414944	02/13/19 15:17	KRS	TAL SL
Total/NA	Analysis	901.1		1			417906	03/06/19 02:38	KLS	TAL SL
	Instrument ID:	GAMMAVISION								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep-21			1000.89 mL	1.0 g	417271	02/28/19 08:50	LTC	TAL SL
SPLP East	Analysis	903.0		1			419080	03/13/19 23:42	KLS	TAL SL
	Instrument ID:	GFPCORANGE								
SPLP East	Leach	1312			200 g	4000 mL	415222	02/14/19 10:00	JWM	TAL SL
SPLP East	Prep	PrecSep_0			1000.89 mL	1.0 g	417288	02/28/19 09:58	LTC	TAL SL
SPLP East	Analysis	904.0		1			417879	03/06/19 08:51	CDR	TAL SL
	Instrument ID:	GFPCPURPLE								

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-36.5/38.5-20190205

Lab Sample ID: 180-86446-8

Date Collected: 02/05/19 14:50
Date Received: 02/07/19 09:00

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Analysis	Ra226_Ra228		1			420381	03/20/19 17:53	CDR	TAL SL

Laboratory References:

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

Analyst References:

Lab: TAL SL
- Batch Type: Leach
  - JWM = Joe Mcnutt
- Batch Type: Prep
  - KRS = Kurt Slama
  - LTC = Logan Curtright
- Batch Type: Analysis
  - CDR = Conrad Reuscher
  - KLS = Kody Saulters

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-2.25/4.0-20190205

Lab Sample ID: 180-86446-1

Date Collected: 02/05/19 09:05

Matrix: Solid

Date Received: 02/07/19 09:00

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	5.87		0.646	0.780			pCi/g	02/13/19 15:17	03/06/19 01:42	1
Radium-226	3.70		0.465	0.599	1.00	0.251	pCi/g	02/13/19 15:17	03/06/19 01:42	1
Radium-228	2.17		0.448	0.499		0.306	pCi/g	02/13/19 15:17	03/06/19 01:42	1

Method: 903.0 - Radium-226 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0171	U	0.0488	0.0488	1.00	0.0935	pCi/L	02/28/19 08:50	03/13/19 23:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.9*		*40 - 110*	*02/28/19 08:50*	*03/13/19 23:41*	*1*

Method: 904.0 - Radium-228 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00623	U	0.202	0.202	1.00	0.363	pCi/L	02/28/19 09:58	03/06/19 08:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.9*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*
Y Carrier	*85.6*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.0233	U	0.208	0.208	5.00		pCi/L		03/20/19 17:53	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-6.5/8.5-20190205

Lab Sample ID: 180-86446-2

Date Collected: 02/05/19 09:50

Matrix: Solid

Date Received: 02/07/19 09:00

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	7.03		0.895	1.06			pCi/g	02/13/19 15:17	03/06/19 01:44	1
Radium-226	3.60		0.505	0.654	1.00	0.306	pCi/g	02/13/19 15:17	03/06/19 01:44	1
Radium-228	3.43		0.739	0.838		0.426	pCi/g	02/13/19 15:17	03/06/19 01:44	1

Method: 903.0 - Radium-226 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0624	U	0.0576	0.0579	1.00	0.0823	pCi/L	03/04/19 12:45	03/18/19 06:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.7*		*40 - 110*	*03/04/19 12:45*	*03/18/19 06:29*	*1*

Method: 904.0 - Radium-228 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.528	U	0.385	0.388	1.00	0.602	pCi/L	03/04/19 13:17	03/11/19 15:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.7*		*40 - 110*	*03/04/19 13:17*	*03/11/19 15:00*	*1*
Y Carrier	*55.3*		*40 - 110*	*03/04/19 13:17*	*03/11/19 15:00*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.590	U	0.389	0.392	5.00		pCi/L		03/20/19 17:53	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-11.5/13.5-20190205

Lab Sample ID: 180-86446-3

Date Collected: 02/05/19 10:18

Matrix: Solid

Date Received: 02/07/19 09:00

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	6.66		0.741	0.896			pCi/g	02/13/19 15:17	03/06/19 02:39	1
Radium-226	4.20		0.506	0.668	1.00	0.296	pCi/g	02/13/19 15:17	03/06/19 02:39	1
Radium-228	2.46		0.541	0.597		0.486	pCi/g	02/13/19 15:17	03/06/19 02:39	1

Method: 903.0 - Radium-226 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0743		0.0547	0.0551	1.00	0.0695	pCi/L	02/28/19 08:50	03/13/19 23:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*108*		*40 - 110*	*02/28/19 08:50*	*03/13/19 23:42*	*1*

Method: 904.0 - Radium-228 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.215	U	0.211	0.212	1.00	0.342	pCi/L	02/28/19 09:58	03/06/19 08:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*108*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*
Y Carrier	*84.5*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.289	U	0.218	0.219	5.00		pCi/L		03/20/19 17:53	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-16.5/18.5-20190205

Lab Sample ID: 180-86446-4

Date Collected: 02/05/19 11:02
Matrix: Solid
Date Received: 02/07/19 09:00

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	7.25		0.700	0.880			pCi/g	02/13/19 15:17	03/06/19 02:41	1
Radium-226	4.06		0.417	0.593	1.00	0.196	pCi/g	02/13/19 15:17	03/06/19 02:41	1
Radium-228	3.19		0.562	0.650		0.378	pCi/g	02/13/19 15:17	03/06/19 02:41	1

Method: 903.0 - Radium-226 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0629	U	0.0665	0.0668	1.00	0.105	pCi/L	02/28/19 08:50	03/13/19 23:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.7*		*40 - 110*	*02/28/19 08:50*	*03/13/19 23:42*	*1*

Method: 904.0 - Radium-228 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.181	U	0.206	0.207	1.00	0.339	pCi/L	02/28/19 09:58	03/06/19 08:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.7*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*
Y Carrier	*92.7*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.243	U	0.216	0.218	5.00		pCi/L		03/20/19 17:53	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-FB04-20190205

Lab Sample ID: 180-86446-5

Date Collected: 02/05/19 11:20

Matrix: Water

Date Received: 02/07/19 09:00

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	**32.6**		22.0	22.1			pCi/L	02/13/19 18:03	03/06/19 04:05	1
Radium-226	**22.8**		12.5	12.7	50.0	17.0	pCi/L	02/13/19 18:03	03/06/19 04:05	1
Radium-228	9.82	U	18.1	18.1	50.0	23.1	pCi/L	02/13/19 18:03	03/06/19 04:05	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-26.5/28.5-20190205

Lab Sample ID: 180-86446-6

Date Collected: 02/05/19 13:21
Matrix: Solid
Date Received: 02/07/19 09:00

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	5.38		0.452	0.610			pCi/g	02/13/19 15:17	03/06/19 02:37	1
Radium-226	3.45		0.296	0.465	1.00	0.133	pCi/g	02/13/19 15:17	03/06/19 02:37	1
Radium-228	1.93		0.342	0.395		0.277	pCi/g	02/13/19 15:17	03/06/19 02:37	1

Method: 903.0 - Radium-226 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.133		0.0739	0.0749	1.00	0.0875	pCi/L	02/28/19 08:50	03/13/19 23:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*02/28/19 08:50*	*03/13/19 23:42*	*1*

Method: 904.0 - Radium-228 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0257	U	0.191	0.191	1.00	0.348	pCi/L	02/28/19 09:58	03/06/19 08:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*
Y Carrier	*86.7*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.133	U	0.205	0.205	5.00		pCi/L		03/20/19 17:53	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-31.5/33.5-20190205

Lab Sample ID: 180-86446-7

Date Collected: 02/05/19 14:08
Matrix: Solid
Date Received: 02/07/19 09:00

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	6.11		0.594	0.741			pCi/g	02/13/19 15:17	03/06/19 02:37	1
Radium-226	3.51		0.434	0.562	1.00	0.306	pCi/g	02/13/19 15:17	03/06/19 02:37	1
Radium-228	2.60		0.405	0.483		0.318	pCi/g	02/13/19 15:17	03/06/19 02:37	1

Method: 903.0 - Radium-226 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0381	U	0.0554	0.0555	1.00	0.0946	pCi/L	02/28/19 08:50	03/13/19 23:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*02/28/19 08:50*	*03/13/19 23:42*	*1*

Method: 904.0 - Radium-228 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00394	U	0.184	0.184	1.00	0.332	pCi/L	02/28/19 09:58	03/06/19 08:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*
Y Carrier	*87.1*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.0420	U	0.192	0.192	5.00		pCi/L		03/20/19 17:53	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Client Sample ID: KIF-CCR-TW02-36.5/38.5-20190205

Lab Sample ID: 180-86446-8

Date Collected: 02/05/19 14:50
Date Received: 02/07/19 09:00

Matrix: Solid

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	6.57		0.708	0.893			pCi/g	02/13/19 15:17	03/06/19 02:38	1
Radium-226	3.88		0.545	0.705	1.00	0.361	pCi/g	02/13/19 15:17	03/06/19 02:38	1
Radium-228	2.69		0.452	0.548		0.472	pCi/g	02/13/19 15:17	03/06/19 02:38	1

Method: 903.0 - Radium-226 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0849	U	0.0660	0.0664	1.00	0.0911	pCi/L	02/28/19 08:50	03/13/19 23:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.8*		*40 - 110*	*02/28/19 08:50*	*03/13/19 23:42*	*1*

Method: 904.0 - Radium-228 (GFPC) - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0812	U	0.220	0.220	1.00	0.409	pCi/L	02/28/19 09:58	03/06/19 08:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.8*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*
Y Carrier	*87.1*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:51*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.0849	U	0.230	0.230	5.00		pCi/L		03/20/19 17:53	1

QC Sample Results

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-414944/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 417894 — **Prep Batch: 414944**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	0.05372	U	0.152	0.152			pCi/g	02/13/19 15:17	03/06/19 03:24	1
Radium-226	-0.04352	U	0.111	0.111	1.00	0.472	pCi/g	02/13/19 15:17	03/06/19 03:24	1
Radium-228	0.05372	U	0.152	0.152		0.269	pCi/g	02/13/19 15:17	03/06/19 03:24	1

Lab Sample ID: LCS 160-414944/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 417870 — **Prep Batch: 414944**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	96.7	96.19		10.1		1.33	pCi/g	99	87 - 116
Cesium-137	27.8	28.31		3.05		0.275	pCi/g	102	87 - 120
Cobalt-60	12.0	11.94		1.28		0.0587	pCi/g	100	87 - 115

Lab Sample ID: 180-86561-A-12-C DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 417895 — **Prep Batch: 414944**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium 226 and 228 (positive only)	8.50		10.19		1.08		0.432	pCi/g	0.86	
Radium-226	6.34		7.502		0.942	1.00	0.276	pCi/g	0.67	1
Radium-228	2.16		2.691		0.537		0.432	pCi/g	0.58	1

Lab Sample ID: MB 160-414951/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 417874 — **Prep Batch: 414951**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	13.50	U	15.9	15.9			pCi/L	02/13/19 18:03	03/06/19 07:10	1
Radium-226	-8.124	U	21.5	21.5	50.0	37.0	pCi/L	02/13/19 18:03	03/06/19 07:10	1
Radium-228	13.50	U	15.9	15.9	50.0	22.9	pCi/L	02/13/19 18:03	03/06/19 07:10	1

Lab Sample ID: LCS 160-414951/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 417875 — **Prep Batch: 414951**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	133200		15400		370	pCi/L	98	90 - 111
Cesium-137	44900	43900		4400		118	pCi/L	98	90 - 111
Cobalt-60	30400	29930		2970		76.1	pCi/L	99	89 - 110

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS) (Continued)

Lab Sample ID: 180-86446-5 DU — **Client Sample ID: KIF-CCR-FB04-20190205**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 417876 — **Prep Batch: 414951**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium 226 and 228 (positive only)	32.6			14.08	U	18.0			pCi/L			0.42	
Radium-226	22.8			-4.228	U	12.8	50.0	38.3	pCi/L			1.06	1
Radium-228	9.82	U		14.08	U	18.0	50.0	23.0	pCi/L			0.12	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-417271/22-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 419080 — **Prep Batch: 417271**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.01978	U	0.0549	0.0549	1.00	0.103	pCi/L	02/28/19 08:50	03/13/19 23:42	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.5*		*40 - 110*	*02/28/19 08:50*	*03/13/19 23:42*	*1*

Lab Sample ID: LCS 160-417271/1-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 419080 — **Prep Batch: 417271**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.96		1.13	1.00	0.0956	pCi/L	97	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*99.4*		*40 - 110*

Lab Sample ID: MB 160-417579/22-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 419763 — **Prep Batch: 417579**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.01943	U	0.0378	0.0379	1.00	0.0699	pCi/L	03/04/19 12:45	03/18/19 06:36	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*03/04/19 12:45*	*03/18/19 06:36*	*1*

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-417579/1-A
Matrix: Solid
Analysis Batch: 420022

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 417579

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	8.629		0.914	1.00	0.0823	pCi/L	76	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*108*		*40 - 110*

Lab Sample ID: 180-86955-B-1-A DU
Matrix: Solid
Analysis Batch: 419764

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 417579

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-226	0.0480	U		0.06684	U	0.0603	1.00	0.0886	pCi/L			0.14	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*

Lab Sample ID: 180-86561-B-12-J DU
Matrix: Solid
Analysis Batch: 419080

Client Sample ID: Duplicate
Prep Type: SPLP East
Prep Batch: 417271

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-226	0.104	U		0.1562		0.0786	1.00	0.0861	pCi/L			0.34	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-417288/22-A
Matrix: Solid
Analysis Batch: 417879

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 417288

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.5020		0.265	0.269	1.00	0.395	pCi/L	02/28/19 09:58	03/06/19 08:52	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.5*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:52*	*1*
Y Carrier	*84.5*		*40 - 110*	*02/28/19 09:58*	*03/06/19 08:52*	*1*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-417288/1-A
Matrix: Solid
Analysis Batch: 417879

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 417288

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.42	8.327		0.980	1.00	0.365	pCi/L	88	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*99.4*		*40 - 110*
Y Carrier	*87.1*		*40 - 110*

Lab Sample ID: MB 160-417589/22-A
Matrix: Solid
Analysis Batch: 418631

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 417589

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3505	U	0.324	0.326	1.00	0.521	pCi/L	03/04/19 13:17	03/11/19 14:58	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*03/04/19 13:17*	*03/11/19 14:58*	*1*
Y Carrier	*53.5*		*40 - 110*	*03/04/19 13:17*	*03/11/19 14:58*	*1*

Lab Sample ID: LCS 160-417589/1-A
Matrix: Solid
Analysis Batch: 418630

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 417589

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.41	10.48		1.32	1.00	0.611	pCi/L	111	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*108*		*40 - 110*
Y Carrier	*47.9*		*40 - 110*

Lab Sample ID: 180-86955-B-1-B DU
Matrix: Solid
Analysis Batch: 418630

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 417589

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-228	0.790			0.5504		0.340	1.00	0.510	pCi/L			0.32	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*
Y Carrier	*56.4*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 180-86561-B-12-L DU
Matrix: Solid
Analysis Batch: 417879

Client Sample ID: Duplicate
Prep Type: SPLP East
Prep Batch: 417288

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-228	0.257	U		0.1084	U	0.202	1.00	0.343	pCi/L			0.37	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*
Y Carrier	*89.3*		*40 - 110*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Lab Sample ID: 180-86561-A-12 DU
Matrix: Solid
Analysis Batch: 420381

Client Sample ID: Duplicate
Prep Type: SPLP East

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium 226 and 228	0.362			0.2646	U	0.217	5.00		pCi/L			0.23	

QC Association Summary

Client: Environmental Standards Inc.
Project/Site: KIF_CCR_20190205_1B

Job ID: 180-86446-1

Rad

Prep Batch: 414944

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86446-1	KIF-CCR-TW02-2.25/4.0-20190205	Total/NA	Solid	Fill_Geo-21	
180-86446-2	KIF-CCR-TW02-6.5/8.5-20190205	Total/NA	Solid	Fill_Geo-21	
180-86446-3	KIF-CCR-TW02-11.5/13.5-20190205	Total/NA	Solid	Fill_Geo-21	
180-86446-4	KIF-CCR-TW02-16.5/18.5-20190205	Total/NA	Solid	Fill_Geo-21	
180-86446-6	KIF-CCR-TW02-26.5/28.5-20190205	Total/NA	Solid	Fill_Geo-21	
180-86446-7	KIF-CCR-TW02-31.5/33.5-20190205	Total/NA	Solid	Fill_Geo-21	
180-86446-8	KIF-CCR-TW02-36.5/38.5-20190205	Total/NA	Solid	Fill_Geo-21	
MB 160-414944/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-414944/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
180-86561-A-12-C DU	Duplicate	Total/NA	Solid	Fill_Geo-21	

Prep Batch: 414951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86446-5	KIF-CCR-FB04-20190205	Total/NA	Water	Fill_Geo-21	
MB 160-414951/1-A	Method Blank	Total/NA	Water	Fill_Geo-21	
LCS 160-414951/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-21	
180-86446-5 DU	KIF-CCR-FB04-20190205	Total/NA	Water	Fill_Geo-21	

Leach Batch: 415222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86446-1	KIF-CCR-TW02-2.25/4.0-20190205	SPLP East	Solid	1312	
180-86446-2	KIF-CCR-TW02-6.5/8.5-20190205	SPLP East	Solid	1312	
180-86446-3	KIF-CCR-TW02-11.5/13.5-20190205	SPLP East	Solid	1312	
180-86446-4	KIF-CCR-TW02-16.5/18.5-20190205	SPLP East	Solid	1312	
180-86446-6	KIF-CCR-TW02-26.5/28.5-20190205	SPLP East	Solid	1312	
180-86446-7	KIF-CCR-TW02-31.5/33.5-20190205	SPLP East	Solid	1312	
180-86446-8	KIF-CCR-TW02-36.5/38.5-20190205	SPLP East	Solid	1312	
180-86561-B-12-J DU	Duplicate	SPLP East	Solid	1312	
180-86561-B-12-L DU	Duplicate	SPLP East	Solid	1312	

Prep Batch: 417271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86446-1	KIF-CCR-TW02-2.25/4.0-20190205	SPLP East	Solid	PrecSep-21	415222
180-86446-3	KIF-CCR-TW02-11.5/13.5-20190205	SPLP East	Solid	PrecSep-21	415222
180-86446-4	KIF-CCR-TW02-16.5/18.5-20190205	SPLP East	Solid	PrecSep-21	415222
180-86446-6	KIF-CCR-TW02-26.5/28.5-20190205	SPLP East	Solid	PrecSep-21	415222
180-86446-7	KIF-CCR-TW02-31.5/33.5-20190205	SPLP East	Solid	PrecSep-21	415222
180-86446-8	KIF-CCR-TW02-36.5/38.5-20190205	SPLP East	Solid	PrecSep-21	415222
MB 160-417271/22-A	Method Blank	Total/NA	Solid	PrecSep-21	
LCS 160-417271/1-A	Lab Control Sample	Total/NA	Solid	PrecSep-21	
180-86561-B-12-J DU	Duplicate	SPLP East	Solid	PrecSep-21	415222

Prep Batch: 417288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86446-1	KIF-CCR-TW02-2.25/4.0-20190205	SPLP East	Solid	PrecSep_0	415222
180-86446-3	KIF-CCR-TW02-11.5/13.5-20190205	SPLP East	Solid	PrecSep_0	415222
180-86446-4	KIF-CCR-TW02-16.5/18.5-20190205	SPLP East	Solid	PrecSep_0	415222
180-86446-6	KIF-CCR-TW02-26.5/28.5-20190205	SPLP East	Solid	PrecSep_0	415222
180-86446-7	KIF-CCR-TW02-31.5/33.5-20190205	SPLP East	Solid	PrecSep_0	415222
180-86446-8	KIF-CCR-TW02-36.5/38.5-20190205	SPLP East	Solid	PrecSep_0	415222
MB 160-417288/22-A	Method Blank	Total/NA	Solid	PrecSep_0	

Rad (Continued)

Prep Batch: 417288 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 160-417288/1-A	Lab Control Sample	Total/NA	Solid	PrecSep_0	
180-86561-B-12-L DU	Duplicate	SPLP East	Solid	PrecSep_0	415222

Prep Batch: 417579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86446-2	KIF-CCR-TW02-6.5/8.5-20190205	SPLP East	Solid	PrecSep-21	415222
MB 160-417579/22-A	Method Blank	Total/NA	Solid	PrecSep-21	
LCS 160-417579/1-A	Lab Control Sample	Total/NA	Solid	PrecSep-21	
180-86955-B-1-A DU	Duplicate	Total/NA	Solid	PrecSep-21	

Prep Batch: 417589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86446-2	KIF-CCR-TW02-6.5/8.5-20190205	SPLP East	Solid	PrecSep_0	415222
MB 160-417589/22-A	Method Blank	Total/NA	Solid	PrecSep_0	
LCS 160-417589/1-A	Lab Control Sample	Total/NA	Solid	PrecSep_0	
180-86955-B-1-B DU	Duplicate	Total/NA	Solid	PrecSep_0	

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	1	of	3
COC No:	KIF_CCR_20190205_1B		
1 of 1 Pages			
Task Desc:	KIF_CCR		

Chain-of-Custody / Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate

180-86446 Chain of Custody

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Nashville	Site ID #:	KINGSTON FOSSIL PLANT	Sampler:	Dennis Mihalek PG and T
Lab Address:	2960 Foster Creighton Drive	Project #:	175668043	Sampling Company:	Stantec
	Nashville, TN 37204	Site Address	714 Swan Pond Road	Address	601 Grassmere Park Road, Suite 22
		City	Kingston State, Zip: TN, 37763	City/State	Nashville, TN Phone: (615) 88
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	jrquinn@tva.gov	Send EDD/Hard Copy to:	tva_deliverables@envstd.com
Lab Email:	Gail.Lage@testamericainc.com				

Analysis Turnaround Time

☐ CALENDAR DAYS ☑ WORKING DAYS

TAT if different from Below _____

- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days (Standard)

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Start Depth (Depth Unit)	Sample Depth: End Depth (Select Unit)	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: CCR_MATERIALS_RAD	Analysis: CCR Materials Blanks_RAD	Preserve: none
1	KIF-CCR-TW02-1.5/3.5-20190205	TW02	1.5	3.5	S	G	N	2/5/2019	0905	2	None	☐	X		
2	KIF-CCR-TW02-6.5/8.5-20190205	TW02	6.5	8.5	S	G	N	2/5/2019	0950	2	None	☐	X		
3	KIF-CCR-TW02-11.5/13.5-20190205	TW02	11.5	13.5	S	G	N	2/5/2019	1018	2	None	☐	X		
4	KIF-CCR-TW02-16.5/18.5-20190205	TW02	16.5	18.5	S	G	N	2/5/2019	1102	2	None	☐	X		
5	KIF-CCR-TW02-26.5/28.5-20190205	TW02	26.5	28.5	S	G	N	2/5/2019	1321	2	None	☐	X		
6	KIF-CCR-TW02-31.5/33.5-20190205	TW02	31.5	33.5	S	G	N	2/5/2019	1408	2	None	☐	X		
7	KIF-CCR-TW02-36.5/38.5-20190205	TW02	36.5	38.5	S	G	N	2/5/2019	1450	2	None	☐	X		
8												☐			
9												☐			
10												☐			
11												☐			
12												☐			
13												☐			

JS 02/05/2019

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate.

Aqueous sample preservation:
Radium – preserved w/ HNO3 to pH<2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Dennis Mihalek/Stantec	2/6/19	1030		2/7/19	900

JS 02/05/2019

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
Courier	Dennis Mihalek
	Tyler Hischeke

JS 02/05/2019

Sample Receipt Conditions				
	☑Yes ☐No	☑Yes ☐No	☑Yes ☐No	☐Yes ☐No
Temperature in °C	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
Sample on Ice?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
Sample Intact?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
Trip Blank?				

Page 1 of 1

Form TVA 30067A

TVA Environmental Investigations

Tennessee Valley Authority

Chain-of-Custody / Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate

COOLER No.:	2 of 3
COC No:	KIF_CCR_20190205_1B
1 of 1 Pages	
Task Desc:	KIF_CCR

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Nashville	Site ID #:	KINGSTON FOSSIL PLANT	Sampler:	Dennis Mihalek PG and Tyler Hischke
Lab Address:	2960 Foster Creighton Drive	Project #:	175668043	Sampling Company:	Stantec
	Nashville, TN 37204	Site Address	714 Swan Pond Road	Address	601 Grassmere Park Road, Suite 22
		City	Kingston State, Zip: TN, 37763	City/State	Nashville, TN Phone: (615) 885-1144
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	jrquinn@tva.gov	Send EDD/Hard Copy to:	tva_deliverables@envstd.com
Lab Email:	Gail.Lage@testamericainc.com				

Analysis Turnaround Time

☐ CALENDAR DAYS ☑ WORKING DAYS

TAT if different from Below _____

- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days (Standard)

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Start Depth (Depth Unit)	Sample Depth: End Depth (Select Unit)	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: CCR_MATERIALS_RAD	Analysis: CCR Materials Blanks_RAD
1	KIF-CCR-TW02-1.5/3.5-20190205	TW02	1.5	3.5	S	G	N	2/5/2019	0905	2	None	☐	X	
2	KIF-CCR-TW02-6.5/8.5-20190205	TW02	6.5	8.5	S	G	N	2/5/2019	0950	2	None	☐	X	
3	KIF-CCR-TW02-11.5/13.5-20190205	TW02	11.5	13.5	S	G	N	2/5/2019	1018	2	None	☐	X	
4	KIF-CCR-TW02-16.5/18.5-20190205	TW02	16.5	18.5	S	G	N	2/5/2019	1102	2	None	☐	X	
5	KIF-CCR-TW02-26.5/28.5-20190205	TW02	26.5	28.5	S	G	N	2/5/2019	1321	2	None	☐	X	
6	KIF-CCR-TW02-31.5/33.5-20190205	TW02	31.5	33.5	S	G	N	2/5/2019	1408	2	None	☐	X	
7	KIF-CCR-TW02-36.5/38.5-20190205	TW02	36.5	38.5	S	G	N	2/5/2019	1450	2	None	☐	X	
8												☐		
9												☐		
10												☐		
11												☐		
12												☐		
13												☐		

Filtered: N

Preserve: None

JS 02/05/2019

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate.

Aqueous sample preservation:
Radium – preserved w/ HNO3 to pH<2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Dennis Mihalek/Stantec	2/6/19	1030	TA P.TT	2/7/19	900
JS 02/05/2019					

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Dennis Mihalek
	Tyler Hischeke
JS 02/05/2019	

Sample Receipt Conditions							
Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blank?				
	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No			
	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No			
	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No			
	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No			

Form TVA 30067A

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	3	of	3
COC No:	KIF_CCR_20190205_1B		
1 of 1 Pages			
Task Desc:	KIF_CCR		

Chain-of-Custody / Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Nashville	Site ID #:	KINGSTON FOSSIL PLANT	Sampler:	Dennis Mihalek PG and Tyler Hischke
Lab Address:	2960 Foster Creighton Drive	Project #:	175668043	Sampling Company:	Stantec
	Nashville, TN 37204	Site Address	714 Swan Pond Road	Address	601 Grassmere Park Road, Suite 22
		City	Kingston State, Zip: TN, 37763	City/State	Nashville, TN Phone: (615) 885-1144
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	rquinn@tva.gov	Send EDD/Hard Copy to:	tva_deliverables@envstd.com
Lab Email:	Gail.Lage@testamericainc.com				

Analysis Turnaround Time

☐ CALENDAR DAYS ☑ WORKING DAYS

TAT if different from Below _____

☐ 24 Hours
☐ 3 Business Days
☐ 5 Business Days
☑ 10 Business Days (Standard)

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Depth Unit (Start Depth)	Sample Depth: Select Unit (End Depth)	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Filtered N	Preserve None	Analysis: CCR_MATERIALS_RAD	Analysis: CCR Materials Blanks_RAD
1	KIF-CCR-TW02-1.5/3.5-20190205	TW02	1.5	3.5	S	G	N	2/5/2019	0905	2	None	☐			X	
2	KIF-CCR-TW02-6.5/8.5-20190205	TW02	6.5	8.5	S	G	N	2/5/2019	0950	2	None	☐			X	
3	KIF-CCR-TW02-11.5/13.5-20190205	TW02	11.5	13.5	S	G	N	2/5/2019	1018	2	None	☐			X	
4	KIF-CCR-TW02-16.5/18.5-20190205	TW02	16.5	18.5	S	G	N	2/5/2019	1102	2	None	☐			X	
5	KIF-CCR-TW02-26.5/28.5-20190205	TW02	26.5	28.5	S	G	N	2/5/2019	1321	2	None	☐			X	
6	KIF-CCR-TW02-31.5/33.5-20190205	TW02	31.5	33.5	S	G	N	2/5/2019	1408	2	None	☐			X	
7	KIF-CCR-TW02-36.5/38.5-20190205	TW02	36.5	38.5	S	G	N	2/5/2019	1450	2	None	☐			X	
8												☐				
9												☐				
10												☐				
11												☐				
12												☐				
13												☐				

JS 02/05/2019

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate.

Aqueous sample preservation:
Radium – preserved w/ HNO3 to pH<2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Dennis Mihalek/Stantec	2/6/19	1030		2/7/19	9:30

JS 02/05/2019

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
Courier	Dennis Mihalek
	Tyler Hischeke

JS 02/05/2019

Sample Receipt Conditions

Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blank?
☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No

Page 1 of 1

Form TVA 30067A

TVA Environmental Investigations

Tennessee Valley Authority

Chain-of-Custody / Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate

COOLER No.:	1 of 3
COC No:	KIF_CCR_20190205_1B
1 of 1 Pages	
Task Desc:	KIF_CCR

Rev. 1
DC 2/12/19

180-86446 Chain of Custody

Required Ship to Lab:

Lab Name: TestAmerica Nashville
Lab Address: 2960 Foster Creighton Drive, Nashville, TN 37204

Lab Manager Contact Information

Lab PM: Gail Lage
Phone/Fax: 615-301-5741/615-726-3404
Lab Email: Gail.Lage@testamericainc.com

Required Project Information:

Site ID #: KINGSTON FOSSIL PLANT
Project #: 175668043
Site Address: 714 Swan Pond Road
City: Kingston State, Zip: TN, 37763
Site PM Name: Roy Quinn
Phone/Fax: 423-751-3753
Site PM Email: rquinn@tva.gov

Required Sampler Information

Sampler: Dennis Mihalek PG and T
Sampling Company: Stantec
Address: 801 Grassmere Park Road, Suite 22
City/State: Nashville, TN Phone: (615) 88
Sampling Team Number: 1
Send EDD/Hard Copy to: tva_deliverables@envirolid.com

Analysis Turnaround Time

☐ CALENDAR DAYS ☑ WORKING DAYS

TAT if different from Below _____

☐ 24 Hours
☐ 3 Business Days
☐ 5 Business Days
☑ 10 Business Days (Standard)

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth Start Depth (Depth Unit)	Sample Depth End Depth (Select Unit)	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: CCR_MATERIALS_RAD	Analysis: CCR Materials Blanks_RAD	Preserve: None
1	KIF-CCR-TW02-1.5/3.5-20190205	TW02	1.5	3.5	S	G	N	2/5/2019	0905	2	None	☐	X		
2	KIF-CCR-TW02-6.5/8.5-20190205	TW02	6.5	8.5	S	G	N	2/5/2019	0950	2	None	☐	X		
3	KIF-CCR-TW02-11.5/13.5-20190205	TW02	11.5	13.5	S	G	N	2/5/2019	1018	2	None	☐	X		
4	KIF-CCR-TW02-16.5/18.5-20190205	TW02	16.5	18.5	S	G	N	2/5/2019	1102	2	None	☐	X		
5	KIF-CCR-TW02-26.5/28.5-20190205	TW02	26.5	28.5	S	G	N	2/5/2019	1321	2	None	☐	X		
6	KIF-CCR-TW02-31.5/33.5-20190205	TW02	31.5	33.5	S	G	N	2/5/2019	1408	2	None	☐	X		
7	KIF-CCR-TW02-36.5/38.5-20190205	TW02	36.5	38.5	S	G	N	2/5/2019	1450	2	None	☐	X		
8	KIF-CCR-FB04-20190205	TW02	NA	NA	AQ	G	FB	2/5/2019	1120	3	None	☐	X	DC 2/12/19	
9												☐			
10												☐			
11												☐			
12												☐			
13												☐			

IS 02/05/2019

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate.

Aqueous sample preservation:
Radium – preserved w/ HNO3 to pH<2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Dennis Mihalek/Stantec	2/8/19	1030		2/11/19	900
IS 02/05/2019					

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Dennis Mihalek
	Tyler Hischeke
IS 02/05/2019	

Sample Receipt Conditions

Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blank?
☑Yes ☐No	☐Yes ☐No	☑Yes ☐No	☐Yes ☑No
☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No

Form TVA 30067A

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No:	1	of	3
COC No:	KIF_CCR_20190205_1B		
1 of 1 Pages			
Task Desc:	KIF_CCR		

Rev. 1 DC 2/12/19

Rev 2 5/20/19

180-86446 Chain of Custody

Chain-of-Custody / Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate

Required Ship to Lab:

Lab Name: TestAmerica Nashville
Lab Address: 2960 Foster Creighton Drive, Nashville, TN 37204

Lab Manager Contact Information

Lab PM: Gail Lage
Phone/Fax: 615-301-5741/615-726-3404
Lab Email: Gail.Lage@testamericainc.com

Required Project Information:

Site ID #: KINGSTON FOSSIL PLANT
Project #: 175868943
Site Address: 714 Swan Pond Road
City: Kingston State, Zip: TN, 37763
Site PM Name: Roy Quinn
Phone/Fax: 423-751-3753
Site PM Email: [illegible]

Required Sampler Information

Sampler: Dennis Mihalek PG and T
Sampling Company: Stantec
Address: 801 Grassmere Park Road, Suite 22
City/State: Nashville, TN Phone: (615) 88
Sampling Team Number: 1
Send EDD/Hard Copy to: [illegible]

Analysis Turnaround Time

☐ CALENDAR DAYS ☑ WORKING DAYS

TAT if different from Below _____

☐ 24 Hours
☐ 3 Business Days
☐ 5 Business Days
☑ 10 Business Days (Standard)

2.25 BJ 5/20/19 4.0 BJ 5/20/19

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth Start Depth (Depth Unit)	Sample Depth End Depth (Select Unit)	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: CCR_MATERIALS_RAD	Analysis: CCR Materials Blanks_RAD	Preserve here
1	KIF-CCR-TW02-~~1.5/3.5~~-20190205	TW02	~~1.5~~	~~3.5~~	S	G	N	2/5/2019	0905	2	None	☐	X		
2	KIF-CCR-TW02-6.5/8.5-20190205	TW02	6.5	8.5	S	G	N	2/5/2019	0950	2	None	☐	X		
3	KIF-CCR-TW02-11.5/13.5-20190205	TW02	11.5	13.5	S	G	N	2/5/2019	1018	2	None	☐	X		
4	KIF-CCR-TW02-16.5/18.5-20190205	TW02	16.5	18.5	S	G	N	2/5/2019	1102	2	None	☐	X		
5	KIF-CCR-TW02-26.5/28.5-20190205	TW02	26.5	28.5	S	G	N	2/5/2019	1321	2	None	☐	X		
6	KIF-CCR-TW02-31.5/33.5-20190205	TW02	31.5	33.5	S	G	N	2/5/2019	1408	2	None	☐	X		
7	KIF-CCR-TW02-36.5/38.5-20190205	TW02	36.5	38.5	S	G	N	2/5/2019	1450	2	None	☐	X		
8	KIF-CCR-FB04-20190205	TW02	NA	NA	AQ	G	FB	2/5/2019	1120	2	None	☐		X	DC 2/12/19
9												☐			
10												☐			
11												☐			
12												☐			
13												☐			

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate.

Aqueous sample preservation:
Radium – preserved w/ HNO3 to pH<2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Dennis Mihalek/Stantec	2/8/19	1030	[illegible]	2/11/19	[illegible]
	02/05/2019				

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Dennis Mihalek
	Tyler Hischeke
02/05/2019	

Sample Receipt Conditions

Temperature in °C	Sample on Ice?	Sample Intact?	Top Blank?
☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

KIF-CCR-TW02-2.25/4.0-20190205
BJ 5/20/19

Form TVA 30087A

180-86446 Waybill

ORIGIN ID:GKIM (865) 621-1653
DAVE MYERS
TESTAMERICA KNOXVILLE LAB
5815 MIDDLEBROOK PIKE

KNOXVILLE, TN 37921
UNITED STATES US

SHIP DATE: 06FEB19
ACTWGT: 59.00 LB
CAD: 006995125/SSFE1922
DIMS: 24x14x14 IN

BILL RECIPIENT

TO **SAMPLE RECEIVING**
TEST AMERICA
301 ALPHA DR RIDC PARK

PITTSBURGH PA 15238

(412) 963-7058 REF:
INV:
PO: DEPT:

FedEx Express

1 of 3

TRK# 0215 8120 5914 9983

MASTER

NA AGCA

THU - 07 FEB 3:00P
STANDARD OVERNIGHT
AHS
15238
PA-US PIT

Uncorrected temp 2.5 °C
Thermometer ID 10

CF 0 Initials B

PT-WI-SR-001 effective 11/8/18

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING 649677

Custody Seal DATE SIGNATURE 2/6/19

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING 649676

Custody DATE SIGNATURE 2/6/19

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING 649677

ORIGIN ID:GKTA (865) 621-1653
DAVE MYERS
TESTAMERICA KNOXVILLE LAB
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN 37921
UNITED STATES US
SHIP DATE: 06FEB19
ACTWGT: 51.00 LB
CAD: 006995125/SSFE19
DIMS: 24x14x14 IN
BILL RECIPIENT
SAMPLE RECEIVING
TEST AMERICA
301 ALPHA DR RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
2 of 3
7853 4846 3143
8120 5914 9983
0215
NA AGCA
Uncorrected temp
Thermometer ID
CF
Initials
PT-WI-SR-001 effective 11/8/18
TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
194262
Custody Seal
DATE
SIGNATURE

ORIGIN ID:GKTA (865) 621-1653
DAVE MYERS
TESTAMERICA KNOXVILLE LAB
5815 MIDDLEBROOK PIKE

KNOXVILLE, TN 37921
UNITED STATES US

SHIP DATE: 06FEB19
ACTWGT: 61.00 LB
CAD: 006995125/SSFE1922
DIMS: 24x14x14 IN

BILL RECIPIENT

TO SAMPLE RECEIVING
TEST AMERICA
301 ALPHA DR RIDC PARK

PITTSBURGH PA 15238

(412) 963-7058 REF:
INV:
PO: DEPT:

FedEx Express

3 of 3
7853 4846 3154
Meter# 8120 5914 9983
0215

THU - 07 FEB 3:00P
STANDARD OVERNIGHT
AHS
15238
PA-US PIT

NA AGCA

Corrected temp 4.9 °C
Thermometer ID 10
Initials B

Custody Seal
DATE
SIGNATURE

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
649675

649674

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
649675

Custody Seal
DATE 2/6/19
SIGNATURE

TestAmerica

TestAmerica Pittsburgh
301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone (412) 963-7058 Fax (412) 963-2468

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)
Client Contact: Shipping/Receiving
Company: TestAmerica Laboratories, Inc.
Address: 13715 Rider Trail North,
City: Earth City
State, Zip: MO, 63045
Phone: 314-298-8566(Tel) 314-298-8757(Fax)
Email:
Project Name: KIF_CCR_20190205_1B
Site:

Sampler:
Phone:
Lab PM: Rumble, Jennifer L
E-Mail: jennifer.rumble@testamericainc.com
Carrier Tracking No(s):
State of Origin: Tennessee
Accreditations Required (See note):
Due Date Requested: 2/19/2019
TAT Requested (days):
PO #:
WO #:
Project #: 18019897
SSOW#:

COC No: 180-354728.1
Page: Page 1 of 1
Job #: 180-86446-1

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	901.1_Ra/Fill_Geo_21 Positive Combined Radium-226/228	903.0/1312_E SPLP Ra-226	904.0/1312_E SPLP Ra-228	Ra26_28GFP_PE_P/ SPLP Combined Radium-226/228	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
KIF-CCR-TW02-1.5/3.5-20190205 (180-86446-1)	2/5/19	09:05 Eastern		Solid			X	X	X	X	2	Analysis must follow TVA Protocol, SPLP leach done in Pittsburgh. Analysis must
KIF-CCR-TW02-6.5/8.5-20190205 (180-86446-2)	2/5/19	09:50 Eastern		Solid			X	X	X	X	2	Analysis must follow TVA Protocol, SPLP leach done in Pittsburgh. Analysis must
KIF-CCR-TW02-11.5/13.5-20190205 (180-86446-3)	2/5/19	10:18 Eastern		Solid			X	X	X	X	2	Analysis must follow TVA Protocol, SPLP leach done in Pittsburgh. Analysis must
KIF-CCR-TW02-16.5/18.5-20190205 (180-86446-4)	2/5/19	11:02 Eastern		Solid			X	X	X	X	2	Analysis must follow TVA Protocol, SPLP leach done in Pittsburgh. Analysis must
KIF-CCR-TW02-26.5/28.5-20190205 (180-86446-6)	2/5/19	13:21 Eastern		Solid			X	X	X	X	2	Analysis must follow TVA Protocol, SPLP leach done in Pittsburgh. Analysis must
KIF-CCR-TW02-31.5/33.5-20190205 (180-86446-7)	2/5/19	14:08 Eastern		Solid			X	X	X	X	2	Analysis must follow TVA Protocol, SPLP leach done in Pittsburgh. Analysis must
KIF-CCR-TW02-36.5/38.5-20190205 (180-86446-8)	2/5/19	14:50 Eastern		Solid			X	X	X	X	2	Analysis must follow TVA Protocol, SPLP leach done in Pittsburgh. Analysis must

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

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

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: Time: Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	2/12/19 1200	TMAP	Michael Fleem	2/13/19 0940	TA STL

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Pittsburgh
301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone (412) 963-7058 Fax (412) 963-2468

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)

Client Contact: Shipping/Receiving
Company: TestAmerica Laboratories, Inc.
Address: 13715 Rider Trail North,
City: Earth City
State, Zip: MO, 63045
Phone: 314-298-8566(Tel) 314-298-8757(Fax)
Email:
Project Name: KIF_CCR_20190205_1B
Site:

Sampler:
Phone:
Due Date Requested: 2/19/2019
TAT Requested (days):
PO #:
WO #:
Project #: 18019897
SSOW#:

Lab PM: Rumble, Jennifer L
E-Mail: jennifer.rumble@testamericainc.com
Carrier Tracking No(s):
State of Origin: Tennessee
Accreditations Required (See note):

COC No: 180-354729.1
Page: Page 1 of 1
Job #: 180-86446-1

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	901.1_Ra/Fill_Geo_21 Positive Combined Radium-226/228	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
KIF-CCR-FB04-20190205 (180-86446-5)	2/5/19	11:20 Eastern		Water		X		3	Analysis must follow TVA Protocol

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

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

Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: Time: Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	2/12/19 1200	TMII	Michael Huem	2/13/19 0940	TA STL

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-86446-1

Login Number: 86446
List Number: 1
Creator: Say, Thomas C

List Source: Eurofins TestAmerica, Pittsburgh

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	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-86446-1

Login Number: 86446
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 02/13/19 01:27 PM

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.	N/A	
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	2.3, 1.1
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-86446-1

Login Number: 86446
List Number: 3
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 02/13/19 02:17 PM

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.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	17.0
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	