

## ANALYTICAL REPORT

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Laboratory Job ID: 490-163317-1  
Client Project/Site: KIF\_CCR\_20181112\_1B  
Revision: 1

For:  
Environmental Standards Inc.  
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Authorized for release by:  
4/22/2019 5:24:19 PM

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



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	2
Sample Summary . . . . .	3
Case Narrative . . . . .	4
Definitions . . . . .	5
Client Sample Results . . . . .	6
QC Sample Results . . . . .	16
QC Association . . . . .	19
Chronicle . . . . .	21
Method Summary . . . . .	24
Certification Summary . . . . .	25
Chain of Custody . . . . .	27
Receipt Checklists . . . . .	38
Tracer Carrier Summary . . . . .	41

# Sample Summary

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
490-163317-1	KIF-CCR-TW05-1.5/3.5-20181113	Solid	11/13/18 11:30	11/15/18 09:00
490-163317-2	KIF-CCR-TW05-6.5/8.5-20181113	Solid	11/13/18 12:16	11/15/18 09:00
490-163317-3	KIF-CCR-TW05-11.5/13.5-20181113	Solid	11/13/18 12:59	11/15/18 09:00
490-163317-4	KIF-CCR-TW05-16.5/19.5-20181113	Solid	11/13/18 13:42	11/15/18 09:00
490-163317-5	KIF-CCR-TW05-22.5/24.5-20181113	Solid	11/13/18 14:41	11/15/18 09:00
490-163317-6	KIF-CCR-TW05-26.5/28.5-20181113	Solid	11/13/18 15:15	11/15/18 09:00
490-163317-7	KIF-CCR-TW05-31.5/33.5-20181113	Solid	11/13/18 15:48	11/15/18 09:00
490-163317-8	KIF-CCR-DUP01-20181113	Solid	11/13/18 01:01	11/15/18 09:00
490-163317-9	KIF-CCR-EB01-20181113	Water	11/13/18 16:44	11/15/18 09:00
490-163317-10	KIF-CCR-FB01-20181113	Water	11/13/18 16:28	11/15/18 09:00

# Case Narrative

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

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## Job ID: 490-163317-1

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### Laboratory: Eurofins TestAmerica, Nashville

#### Narrative

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#### Job Narrative 490-163317-1

#### Revised Report

This report was revised to adjust the solid sample results for dry weight using the dry weight results from TA-Pittsburgh. This replaces the previous final report.

#### Receipt

The samples were received on 11/15/2018 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.7° C, 1.9° C and 2.8° C.

#### RAD

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-404923:

Insufficient sample volume was available to perform a sample duplicate for the following samples: KIF-CCR-TW05-1.5/3.5-20181113 (490-163317-1), KIF-CCR-TW05-6.5/8.5-20181113 (490-163317-2), KIF-CCR-TW05-11.5/13.5-20181113 (490-163317-3), KIF-CCR-TW05-16.5/19.5-20181113 (490-163317-4), KIF-CCR-TW05-22.5/24.5-20181113 (490-163317-5), KIF-CCR-TW05-26.5/28.5-20181113 (490-163317-6), KIF-CCR-TW05-31.5/33.5-20181113 (490-163317-7) and KIF-CCR-DUP01-20181113 (490-163317-8). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-21: Radium 226 Prep Batch 160-404915:

Insufficient sample volume was available to perform a sample duplicate for the following samples: KIF-CCR-TW05-1.5/3.5-20181113 (490-163317-1), KIF-CCR-TW05-6.5/8.5-20181113 (490-163317-2), KIF-CCR-TW05-11.5/13.5-20181113 (490-163317-3), KIF-CCR-TW05-16.5/19.5-20181113 (490-163317-4), KIF-CCR-TW05-22.5/24.5-20181113 (490-163317-5), KIF-CCR-TW05-26.5/28.5-20181113 (490-163317-6), KIF-CCR-TW05-31.5/33.5-20181113 (490-163317-7) and KIF-CCR-DUP01-20181113 (490-163317-8). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

#### General Chemistry

Method 1311: SPLP rotation was performed in TestAmerica - Pittsburgh

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\_20181112\_1B

Job ID: 490-163317-1

## 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)

# Client Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-TW05-1.5/3.5-20181113**

**Lab Sample ID: 490-163317-1**

Date Collected: 11/13/18 11:30

Matrix: Solid

Date Received: 11/15/18 09:00

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	2.33		0.372	0.459	1.00	0.281	pCi/g	11/20/18 15:32	12/11/18 02:03	1
Radium-228	1.37		0.325	0.361		0.284	pCi/g	11/20/18 15:32	12/11/18 02:03	1
Radium 226 and 228	3.70		0.494	0.584			pCi/g	11/20/18 15:32	12/11/18 02:03	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.0679	U	0.0588	0.0591	1.00	0.0868	pCi/L	12/10/18 16:37	01/02/19 03:49	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					12/10/18 16:37	01/02/19 03:49	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.213	U	0.209	0.210	1.00	0.338	pCi/L	12/10/18 17:22	12/19/18 11:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					12/10/18 17:22	12/19/18 11:02	1
Y Carrier	84.1		40 - 110					12/10/18 17:22	12/19/18 11:02	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228 - SPLP East**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium 226 and 228	0.281	U	0.217	0.218	5.00		pCi/L		01/07/19 18:33	1

# Client Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-TW05-6.5/8.5-20181113**

**Lab Sample ID: 490-163317-2**

Date Collected: 11/13/18 12:16

Matrix: Solid

Date Received: 11/15/18 09:00

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	3.03		0.444	0.545	1.00	0.299	pCi/g	11/20/18 15:32	12/11/18 02:35	1
Radium-228	2.01		0.462	0.505		0.627	pCi/g	11/20/18 15:32	12/11/18 02:35	1
Radium 226 and 228	5.04		0.641	0.743			pCi/g	11/20/18 15:32	12/11/18 02:35	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	-0.0127	U	0.0349	0.0349	1.00	0.0849	pCi/L	12/10/18 16:37	01/02/19 03:49	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.5		40 - 110					12/10/18 16:37	01/02/19 03:49	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	0.118	U	0.221	0.222	1.00	0.377	pCi/L	12/10/18 17:22	12/19/18 11:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.5		40 - 110					12/10/18 17:22	12/19/18 11:02	1
Y Carrier	81.5		40 - 110					12/10/18 17:22	12/19/18 11:02	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium 226 and 228	0.118	U	0.224	0.225	5.00		pCi/L		01/07/19 18:33	1

# Client Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-TW05-11.5/13.5-20181113**

**Lab Sample ID: 490-163317-3**

Date Collected: 11/13/18 12:59

Matrix: Solid

Date Received: 11/15/18 09:00

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	2.07		0.257	0.335	1.00	0.156	pCi/g	11/20/18 15:32	12/11/18 02:34	1
Radium-228	1.72		0.320	0.365		0.216	pCi/g	11/20/18 15:32	12/11/18 02:34	1
Radium 226 and 228	3.79		0.410	0.495			pCi/g	11/20/18 15:32	12/11/18 02:34	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.166		0.0738	0.0753	1.00	0.0791	pCi/L	12/10/18 16:37	01/02/19 09:58	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	100		40 - 110					12/10/18 16:37	01/02/19 09:58	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	0.0785	U	0.211	0.211	1.00	0.365	pCi/L	12/10/18 17:22	12/19/18 11:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	100		40 - 110					12/10/18 17:22	12/19/18 11:02	1
Y Carrier	83.4		40 - 110					12/10/18 17:22	12/19/18 11:02	1

## Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium 226 and 228	0.244	U	0.224	0.224	5.00		pCi/L		01/07/19 18:33	1

# Client Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-TW05-16.5/19.5-20181113**

**Lab Sample ID: 490-163317-4**

Date Collected: 11/13/18 13:42

Matrix: Solid

Date Received: 11/15/18 09:00

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	2.41		0.293	0.385	1.00	0.193	pCi/g	11/20/18 15:51	12/11/18 02:36	1
Radium-228	1.66		0.282	0.329		0.227	pCi/g	11/20/18 15:51	12/11/18 02:36	1
Radium 226 and 228	4.07		0.407	0.506			pCi/g	11/20/18 15:51	12/11/18 02:36	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.0284	U	0.0403	0.0404	1.00	0.0686	pCi/L	12/10/18 16:37	01/02/19 09:58	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					12/10/18 16:37	01/02/19 09:58	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.310	U	0.215	0.217	1.00	0.333	pCi/L	12/10/18 17:22	12/19/18 11:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					12/10/18 17:22	12/19/18 11:02	1
Y Carrier	83.0		40 - 110					12/10/18 17:22	12/19/18 11:02	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium 226 and 228	0.338		0.219	0.221	5.00		pCi/L		01/07/19 18:33	1

# Client Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-TW05-22.5/24.5-20181113**

**Lab Sample ID: 490-163317-5**

Date Collected: 11/13/18 14:41

Matrix: Solid

Date Received: 11/15/18 09:00

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	4.35		0.455	0.635	1.00	0.296	pCi/g	11/20/18 15:51	12/11/18 02:37	1
Radium-228	3.26		0.450	0.558		0.360	pCi/g	11/20/18 15:51	12/11/18 02:37	1
Radium 226 and 228	7.61		0.640	0.845			pCi/g	11/20/18 15:51	12/11/18 02:37	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.208		0.0792	0.0814	1.00	0.0762	pCi/L	12/10/18 16:37	01/02/19 09:59	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	99.7		40 - 110					12/10/18 16:37	01/02/19 09:59	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.299	U	0.221	0.223	1.00	0.346	pCi/L	12/10/18 17:22	12/19/18 11:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	99.7		40 - 110					12/10/18 17:22	12/19/18 11:02	1
Y Carrier	86.4		40 - 110					12/10/18 17:22	12/19/18 11:02	1

## Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium 226 and 228	0.507		0.235	0.237	5.00		pCi/L		01/07/19 18:33	1

# Client Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-TW05-26.5/28.5-20181113**

**Lab Sample ID: 490-163317-6**

Date Collected: 11/13/18 15:15

Matrix: Solid

Date Received: 11/15/18 09:00

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	3.51		0.336	0.496	1.00	0.168	pCi/g	11/20/18 15:51	12/11/18 02:38	1
Radium-228	2.42		0.339	0.419		0.321	pCi/g	11/20/18 15:51	12/11/18 02:38	1
Radium 226 and 228	5.92		0.477	0.649			pCi/g	11/20/18 15:51	12/11/18 02:38	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.0434	U	0.0456	0.0457	1.00	0.0710	pCi/L	12/10/18 16:37	01/02/19 09:59	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					12/10/18 16:37	01/02/19 09:59	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	-0.119	U	0.189	0.189	1.00	0.362	pCi/L	12/10/18 17:22	12/19/18 11:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					12/10/18 17:22	12/19/18 11:02	1
Y Carrier	82.2		40 - 110					12/10/18 17:22	12/19/18 11:02	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium 226 and 228	0.0434	U	0.194	0.194	5.00		pCi/L		01/07/19 18:33	1

# Client Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-TW05-31.5/33.5-20181113**

**Lab Sample ID: 490-163317-7**

Date Collected: 11/13/18 15:48

Matrix: Solid

Date Received: 11/15/18 09:00

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	4.07		0.434	0.606	1.00	0.252	pCi/g	11/20/18 15:51	12/11/18 02:37	1
Radium-228	2.61		0.409	0.488		0.317	pCi/g	11/20/18 15:51	12/11/18 02:37	1
Radium 226 and 228	6.68		0.596	0.778			pCi/g	11/20/18 15:51	12/11/18 02:37	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-0.0122	U	0.0307	0.0307	1.00	0.0775	pCi/L	12/10/18 16:37	01/02/19 09:59	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	94.7		40 - 110					12/10/18 16:37	01/02/19 09:59	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	-0.0803	U	0.261	0.262	1.00	0.476	pCi/L	12/10/18 17:22	12/19/18 11:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	94.7		40 - 110					12/10/18 17:22	12/19/18 11:02	1
Y Carrier	80.4		40 - 110					12/10/18 17:22	12/19/18 11:02	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228 - SPLP East

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium 226 and 228	0.000	U	0.263	0.264	5.00		pCi/L		01/07/19 18:33	1

# Client Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-DUP01-20181113**

**Lab Sample ID: 490-163317-8**

Date Collected: 11/13/18 01:01

Matrix: Solid

Date Received: 11/15/18 09:00

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	2.55		0.340	0.450	1.00	0.217	pCi/g	11/20/18 15:51	12/11/18 02:39	1
Radium-228	2.06		0.345	0.418		0.223	pCi/g	11/20/18 15:51	12/11/18 02:39	1
Radium 226 and 228	4.60		0.484	0.614			pCi/g	11/20/18 15:51	12/11/18 02:39	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.0535	U	0.0497	0.0499	1.00	0.0745	pCi/L	12/10/18 16:37	01/02/19 09:59	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.8		40 - 110					12/10/18 16:37	01/02/19 09:59	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.273	U	0.237	0.239	1.00	0.380	pCi/L	12/10/18 17:22	12/19/18 11:03	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.8		40 - 110					12/10/18 17:22	12/19/18 11:03	1
Y Carrier	82.2		40 - 110					12/10/18 17:22	12/19/18 11:03	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228 - SPLP East**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium 226 and 228	0.327	U	0.242	0.244	5.00		pCi/L		01/07/19 18:33	1

# Client Sample Results

Client: Environmental Standards Inc.  
 Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-EB01-20181113**

**Lab Sample ID: 490-163317-9**

Date Collected: 11/13/18 16:44

Matrix: Water

Date Received: 11/15/18 09:00

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-12.2	U	19.9	20.0	50.0	34.0	pCi/L	11/29/18 10:28	12/20/18 10:43	1
<b>Radium-228</b>	<b>23.2</b>		19.1	19.3	50.0	20.9	pCi/L	11/29/18 10:28	12/20/18 10:43	1
Radium 226 and 228	10.9	U	27.6	27.8			pCi/L	11/29/18 10:28	12/20/18 10:43	1

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# Client Sample Results

Client: Environmental Standards Inc.  
 Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-FB01-20181113**

**Lab Sample ID: 490-163317-10**

Date Collected: 11/13/18 16:28

Matrix: Water

Date Received: 11/15/18 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
<b>Radium-226</b>	<b>30.1</b>		15.0	15.3	50.0	16.8	pCi/L	11/29/18 10:28	12/20/18 12:46	1
Radium-228	3.33	U	5.24	5.25	50.0	27.7	pCi/L	11/29/18 10:28	12/20/18 12:46	1
<b>Radium 226 and 228</b>	<b>33.4</b>		15.9	16.2			pCi/L	11/29/18 10:28	12/20/18 12:46	1

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# QC Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

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

**Lab Sample ID: MB 160-401912/1-A**  
**Matrix: Solid**  
**Analysis Batch: 404937**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 401912**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.007490	U	0.150	0.150	1.00	0.270	pCi/g	11/20/18 15:32	12/11/18 02:00	1
Radium-228	-0.06032	U	0.202	0.202		0.365	pCi/g	11/20/18 15:32	12/11/18 02:00	1
Radium 226 and 228	-0.05283	U	0.252	0.252			pCi/g	11/20/18 15:32	12/11/18 02:00	1

**Lab Sample ID: LCS 160-401912/2-A**  
**Matrix: Solid**  
**Analysis Batch: 404935**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 401912**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Americium-241	96.7	100.2		10.5		1.20	pCi/g	104	87 - 116
Cesium-137	28.0	28.41		3.07		0.280	pCi/g	101	87 - 120
Cobalt-60	12.3	12.37		1.32		0.0587	pCi/g	100	87 - 115

**Lab Sample ID: 180-84164-A-7-B DU**  
**Matrix: Solid**  
**Analysis Batch: 404937**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 401912**

Analyte	Sample Sample		DU	DU	Total	RL	MDC	Unit	RER	RER
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					Limit
Radium-226	0.661		0.8667		0.318	1.00	0.284	pCi/g	0.36	1
Radium-228	0.561	U	0.3630	U	0.723		1.08	pCi/g	0.16	1
Radium 226 and 228	1.22		1.230		0.790			pCi/g	0.01	1

**Lab Sample ID: MB 160-403262/1-A**  
**Matrix: Water**  
**Analysis Batch: 406794**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 403262**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-9.168	U	21.5	21.5	50.0	36.5	pCi/L	11/29/18 10:28	12/20/18 10:39	1
Radium-228	22.33		16.1	16.2	50.0	18.5	pCi/L	11/29/18 10:28	12/20/18 10:39	1
Radium 226 and 228	13.16	U	26.9	26.9			pCi/L	11/29/18 10:28	12/20/18 10:39	1

**Lab Sample ID: LCS 160-403262/2-A**  
**Matrix: Water**  
**Analysis Batch: 406795**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 403262**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Americium-241	136000	130300		15100		279	pCi/L	96	90 - 111
Cesium-137	45100	44270		4430		73.7	pCi/L	98	90 - 111
Cobalt-60	31200	30160		2980		46.8	pCi/L	97	89 - 110

# QC Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

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

**Lab Sample ID: 490-163317-9 DU**  
**Matrix: Water**  
**Analysis Batch: 406794**

**Client Sample ID: KIF-CCR-EB01-20181113**  
**Prep Type: Total/NA**  
**Prep Batch: 403262**

Analyte	Sample		DU		Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual						
Radium-226	-12.2	U	7.337	U	16.1	50.0	17.2	pCi/L	0.54	1
Radium-228	23.2		10.88	U	19.8	50.0	30.7	pCi/L	0.32	1
Radium 226 and 228	10.9	U	18.21	U	25.5			pCi/L	0.14	1

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

**Lab Sample ID: MB 160-404915/22-A**  
**Matrix: Solid**  
**Analysis Batch: 408481**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 404915**

Analyte	MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qual								
Radium-226	-0.008046	U	0.0322	0.0322	1.00	0.0747	pCi/L	12/10/18 16:37	01/02/19 10:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>MB Qual</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	107		40 - 110					12/10/18 16:37	01/02/19 10:02	1

**Lab Sample ID: LCS 160-404915/1-A**  
**Matrix: Solid**  
**Analysis Batch: 408486**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 404915**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
<b>Carrier</b>	<b>LCS %Yield</b>	<b>LCS Qual</b>	<b>Limits</b>						
Ba Carrier	102		40 - 110						

**Lab Sample ID: LCSD 160-404915/2-A**  
**Matrix: Solid**  
**Analysis Batch: 408486**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 404915**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
<b>Carrier</b>	<b>LCSD %Yield</b>	<b>LCSD Qual</b>	<b>Limits</b>								
Ba Carrier	103		40 - 110								

# QC Sample Results

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

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

**Lab Sample ID: MB 160-404923/22-A**  
**Matrix: Solid**  
**Analysis Batch: 406525**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 404923**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	-0.02560	U	0.182	0.182	1.00	0.334	pCi/L	12/10/18 17:22	12/19/18 11:04	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	107		40 - 110		12/10/18 17:22	12/19/18 11:04	1			
Y Carrier	81.9		40 - 110		12/10/18 17:22	12/19/18 11:04	1			

**Lab Sample ID: LCS 160-404923/1-A**  
**Matrix: Solid**  
**Analysis Batch: 406525**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 404923**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-228	9.11	9.102		1.06	1.00	0.362	pCi/L	100	56 - 140
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	102		40 - 110						
Y Carrier	80.0		40 - 110						

**Lab Sample ID: LCSD 160-404923/2-A**  
**Matrix: Solid**  
**Analysis Batch: 406525**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 404923**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER
				Uncert. (2σ+/-)							Limit
Radium-228	9.11	8.390		0.986	1.00	0.321	pCi/L	92	56 - 140	0.35	1
Carrier	LCSD %Yield	LCSD Qualifier	Limits								
Ba Carrier	103		40 - 110								
Y Carrier	81.9		40 - 110								

# QC Association Summary

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

## Rad

### Prep Batch: 401912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-163317-1	KIF-CCR-TW05-1.5/3.5-20181113	Total/NA	Solid	Fill_Geo-21	
490-163317-2	KIF-CCR-TW05-6.5/8.5-20181113	Total/NA	Solid	Fill_Geo-21	
490-163317-3	KIF-CCR-TW05-11.5/13.5-20181113	Total/NA	Solid	Fill_Geo-21	
490-163317-4	KIF-CCR-TW05-16.5/19.5-20181113	Total/NA	Solid	Fill_Geo-21	
490-163317-5	KIF-CCR-TW05-22.5/24.5-20181113	Total/NA	Solid	Fill_Geo-21	
490-163317-6	KIF-CCR-TW05-26.5/28.5-20181113	Total/NA	Solid	Fill_Geo-21	
490-163317-7	KIF-CCR-TW05-31.5/33.5-20181113	Total/NA	Solid	Fill_Geo-21	
490-163317-8	KIF-CCR-DUP01-20181113	Total/NA	Solid	Fill_Geo-21	
MB 160-401912/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-401912/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
180-84164-A-7-B DU	Duplicate	Total/NA	Solid	Fill_Geo-21	

### Prep Batch: 403262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-163317-9	KIF-CCR-EB01-20181113	Total/NA	Water	Fill_Geo-21	
490-163317-10	KIF-CCR-FB01-20181113	Total/NA	Water	Fill_Geo-21	
MB 160-403262/1-A	Method Blank	Total/NA	Water	Fill_Geo-21	
LCS 160-403262/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-21	
490-163317-9 DU	KIF-CCR-EB01-20181113	Total/NA	Water	Fill_Geo-21	

### Leach Batch: 404546

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-163317-1	KIF-CCR-TW05-1.5/3.5-20181113	SPLP East	Solid	1312	
490-163317-2	KIF-CCR-TW05-6.5/8.5-20181113	SPLP East	Solid	1312	
490-163317-3	KIF-CCR-TW05-11.5/13.5-20181113	SPLP East	Solid	1312	
490-163317-4	KIF-CCR-TW05-16.5/19.5-20181113	SPLP East	Solid	1312	
490-163317-5	KIF-CCR-TW05-22.5/24.5-20181113	SPLP East	Solid	1312	
490-163317-6	KIF-CCR-TW05-26.5/28.5-20181113	SPLP East	Solid	1312	
490-163317-7	KIF-CCR-TW05-31.5/33.5-20181113	SPLP East	Solid	1312	
490-163317-8	KIF-CCR-DUP01-20181113	SPLP East	Solid	1312	

### Prep Batch: 404915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-163317-1	KIF-CCR-TW05-1.5/3.5-20181113	SPLP East	Solid	PrecSep-21	404546
490-163317-2	KIF-CCR-TW05-6.5/8.5-20181113	SPLP East	Solid	PrecSep-21	404546
490-163317-3	KIF-CCR-TW05-11.5/13.5-20181113	SPLP East	Solid	PrecSep-21	404546
490-163317-4	KIF-CCR-TW05-16.5/19.5-20181113	SPLP East	Solid	PrecSep-21	404546
490-163317-5	KIF-CCR-TW05-22.5/24.5-20181113	SPLP East	Solid	PrecSep-21	404546
490-163317-6	KIF-CCR-TW05-26.5/28.5-20181113	SPLP East	Solid	PrecSep-21	404546
490-163317-7	KIF-CCR-TW05-31.5/33.5-20181113	SPLP East	Solid	PrecSep-21	404546
490-163317-8	KIF-CCR-DUP01-20181113	SPLP East	Solid	PrecSep-21	404546
MB 160-404915/22-A	Method Blank	Total/NA	Solid	PrecSep-21	
LCS 160-404915/1-A	Lab Control Sample	Total/NA	Solid	PrecSep-21	
LCSD 160-404915/2-A	Lab Control Sample Dup	Total/NA	Solid	PrecSep-21	

### Prep Batch: 404923

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-163317-1	KIF-CCR-TW05-1.5/3.5-20181113	SPLP East	Solid	PrecSep_0	404546
490-163317-2	KIF-CCR-TW05-6.5/8.5-20181113	SPLP East	Solid	PrecSep_0	404546
490-163317-3	KIF-CCR-TW05-11.5/13.5-20181113	SPLP East	Solid	PrecSep_0	404546
490-163317-4	KIF-CCR-TW05-16.5/19.5-20181113	SPLP East	Solid	PrecSep_0	404546

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# QC Association Summary

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

## Rad (Continued)

### Prep Batch: 404923 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-163317-5	KIF-CCR-TW05-22.5/24.5-20181113	SPLP East	Solid	PrecSep_0	404546
490-163317-6	KIF-CCR-TW05-26.5/28.5-20181113	SPLP East	Solid	PrecSep_0	404546
490-163317-7	KIF-CCR-TW05-31.5/33.5-20181113	SPLP East	Solid	PrecSep_0	404546
490-163317-8	KIF-CCR-DUP01-20181113	SPLP East	Solid	PrecSep_0	404546
MB 160-404923/22-A	Method Blank	Total/NA	Solid	PrecSep_0	
LCS 160-404923/1-A	Lab Control Sample	Total/NA	Solid	PrecSep_0	
LCSD 160-404923/2-A	Lab Control Sample Dup	Total/NA	Solid	PrecSep_0	

# Lab Chronicle

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-TW05-1.5/3.5-20181113**

**Lab Sample ID: 490-163317-1**

**Date Collected: 11/13/18 11:30**

**Matrix: Solid**

**Date Received: 11/15/18 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			362.4 g	1.0 g	401912	11/20/18 15:32	PK	TAL SL
Total/NA	Analysis	901.1		1			404931	12/11/18 02:03	KLS	TAL SL
SPLP East	Leach	1312			100.00 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep-21			999.21 mL	1.0 g	404915	12/10/18 16:37	CLP	TAL SL
SPLP East	Analysis	903.0		1			408486	01/02/19 03:49	RTM	TAL SL
SPLP East	Leach	1312			100.00 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep_0			999.21 mL	1.0 g	404923	12/10/18 17:22	CLP	TAL SL
SPLP East	Analysis	904.0		1			406525	12/19/18 11:02	CDR	TAL SL
SPLP East	Analysis	Ra226_Ra228		1			409303	01/07/19 18:33	ALS	TAL SL

**Client Sample ID: KIF-CCR-TW05-6.5/8.5-20181113**

**Lab Sample ID: 490-163317-2**

**Date Collected: 11/13/18 12:16**

**Matrix: Solid**

**Date Received: 11/15/18 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			291.8 g	1.0 g	401912	11/20/18 15:32	PK	TAL SL
Total/NA	Analysis	901.1		1			404935	12/11/18 02:35	KLS	TAL SL
SPLP East	Leach	1312			100.02 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep-21			999.41 mL	1.0 g	404915	12/10/18 16:37	CLP	TAL SL
SPLP East	Analysis	903.0		1			408486	01/02/19 03:49	RTM	TAL SL
SPLP East	Leach	1312			100.02 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep_0			999.41 mL	1.0 g	404923	12/10/18 17:22	CLP	TAL SL
SPLP East	Analysis	904.0		1			406525	12/19/18 11:02	CDR	TAL SL
SPLP East	Analysis	Ra226_Ra228		1			409303	01/07/19 18:33	ALS	TAL SL

**Client Sample ID: KIF-CCR-TW05-11.5/13.5-20181113**

**Lab Sample ID: 490-163317-3**

**Date Collected: 11/13/18 12:59**

**Matrix: Solid**

**Date Received: 11/15/18 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			371.6 g	1.0 g	401912	11/20/18 15:32	PK	TAL SL
Total/NA	Analysis	901.1		1			404936	12/11/18 02:34	KLS	TAL SL
SPLP East	Leach	1312			100.02 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep-21			1000.80 mL	1.0 g	404915	12/10/18 16:37	CLP	TAL SL
SPLP East	Analysis	903.0		1			408459	01/02/19 09:58	RTM	TAL SL
SPLP East	Leach	1312			100.02 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep_0			1000.80 mL	1.0 g	404923	12/10/18 17:22	CLP	TAL SL
SPLP East	Analysis	904.0		1			406525	12/19/18 11:02	CDR	TAL SL
SPLP East	Analysis	Ra226_Ra228		1			409303	01/07/19 18:33	ALS	TAL SL

Eurofins TestAmerica, Nashville

# Lab Chronicle

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-TW05-16.5/19.5-20181113**

**Lab Sample ID: 490-163317-4**

**Date Collected: 11/13/18 13:42**

**Matrix: Solid**

**Date Received: 11/15/18 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			383 g	1.0 g	401912	11/20/18 15:51	PK	TAL SL
Total/NA	Analysis	901.1		1			404934	12/11/18 02:36	KLS	TAL SL
SPLP East	Leach	1312			100.02 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep-21			999.64 mL	1.0 g	404915	12/10/18 16:37	CLP	TAL SL
SPLP East	Analysis	903.0		1			408459	01/02/19 09:58	RTM	TAL SL
SPLP East	Leach	1312			100.02 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep_0			999.64 mL	1.0 g	404923	12/10/18 17:22	CLP	TAL SL
SPLP East	Analysis	904.0		1			406525	12/19/18 11:02	CDR	TAL SL
SPLP East	Analysis	Ra226_Ra228		1			409303	01/07/19 18:33	ALS	TAL SL

**Client Sample ID: KIF-CCR-TW05-22.5/24.5-20181113**

**Lab Sample ID: 490-163317-5**

**Date Collected: 11/13/18 14:41**

**Matrix: Solid**

**Date Received: 11/15/18 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			363.6 g	1.0 g	401912	11/20/18 15:51	PK	TAL SL
Total/NA	Analysis	901.1		1			404932	12/11/18 02:37	KLS	TAL SL
SPLP East	Leach	1312			100.02 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep-21			1000.54 mL	1.0 g	404915	12/10/18 16:37	CLP	TAL SL
SPLP East	Analysis	903.0		1			408459	01/02/19 09:59	RTM	TAL SL
SPLP East	Leach	1312			100.02 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep_0			1000.54 mL	1.0 g	404923	12/10/18 17:22	CLP	TAL SL
SPLP East	Analysis	904.0		1			406525	12/19/18 11:02	CDR	TAL SL
SPLP East	Analysis	Ra226_Ra228		1			409303	01/07/19 18:33	ALS	TAL SL

**Client Sample ID: KIF-CCR-TW05-26.5/28.5-20181113**

**Lab Sample ID: 490-163317-6**

**Date Collected: 11/13/18 15:15**

**Matrix: Solid**

**Date Received: 11/15/18 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			444.5 g	1.0 g	401912	11/20/18 15:51	PK	TAL SL
Total/NA	Analysis	901.1		1			404933	12/11/18 02:38	KLS	TAL SL
SPLP East	Leach	1312			100.01 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep-21			1000.16 mL	1.0 g	404915	12/10/18 16:37	CLP	TAL SL
SPLP East	Analysis	903.0		1			408459	01/02/19 09:59	RTM	TAL SL
SPLP East	Leach	1312			100.01 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep_0			1000.16 mL	1.0 g	404923	12/10/18 17:22	CLP	TAL SL
SPLP East	Analysis	904.0		1			406525	12/19/18 11:02	CDR	TAL SL
SPLP East	Analysis	Ra226_Ra228		1			409303	01/07/19 18:33	ALS	TAL SL

# Lab Chronicle

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

**Client Sample ID: KIF-CCR-TW05-31.5/33.5-20181113**

**Lab Sample ID: 490-163317-7**

**Date Collected: 11/13/18 15:48**

**Matrix: Solid**

**Date Received: 11/15/18 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			343.1 g	1.0 g	401912	11/20/18 15:51	PK	TAL SL
Total/NA	Analysis	901.1		1			404930	12/11/18 02:37	KLS	TAL SL
SPLP East	Leach	1312			100.00 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep-21			999.96 mL	1.0 g	404915	12/10/18 16:37	CLP	TAL SL
SPLP East	Analysis	903.0		1			408459	01/02/19 09:59	RTM	TAL SL
SPLP East	Leach	1312			100.00 g	2000 mL	404546	11/29/18 06:29	JWM	TAL SL
SPLP East	Prep	PrecSep_0			999.96 mL	1.0 g	404923	12/10/18 17:22	CLP	TAL SL
SPLP East	Analysis	904.0		1			406525	12/19/18 11:02	CDR	TAL SL
SPLP East	Analysis	Ra226_Ra228		1			409303	01/07/19 18:33	ALS	TAL SL

**Client Sample ID: KIF-CCR-DUP01-20181113**

**Lab Sample ID: 490-163317-8**

**Date Collected: 11/13/18 01:01**

**Matrix: Solid**

**Date Received: 11/15/18 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			368.1 g	1.0 g	401912	11/20/18 15:51	PK	TAL SL
Total/NA	Analysis	901.1		1			404931	12/11/18 02:39	KLS	TAL SL
SPLP East	Leach	1312			100.01 g	2000 mL	404546	12/07/18 10:19	JWM	TAL SL
SPLP East	Prep	PrecSep-21			1000.65 mL	1.0 g	404915	12/10/18 16:37	CLP	TAL SL
SPLP East	Analysis	903.0		1			408459	01/02/19 09:59	RTM	TAL SL
SPLP East	Leach	1312			100.01 g	2000 mL	404546	12/07/18 10:19	JWM	TAL SL
SPLP East	Prep	PrecSep_0			1000.65 mL	1.0 g	404923	12/10/18 17:22	CLP	TAL SL
SPLP East	Analysis	904.0		1			406525	12/19/18 11:03	CDR	TAL SL
SPLP East	Analysis	Ra226_Ra228		1			409303	01/07/19 18:33	ALS	TAL SL

**Client Sample ID: KIF-CCR-EB01-20181113**

**Lab Sample ID: 490-163317-9**

**Date Collected: 11/13/18 16:44**

**Matrix: Water**

**Date Received: 11/15/18 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	403262	11/29/18 10:28	PK	TAL SL
Total/NA	Analysis	901.1		1			406796	12/20/18 10:43	KLS	TAL SL

**Client Sample ID: KIF-CCR-FB01-20181113**

**Lab Sample ID: 490-163317-10**

**Date Collected: 11/13/18 16:28**

**Matrix: Water**

**Date Received: 11/15/18 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	403262	11/29/18 10:28	PK	TAL SL
Total/NA	Analysis	901.1		1			406795	12/20/18 12:46	KLS	TAL SL

**Laboratory References:**

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

Eurofins TestAmerica, Nashville

# Method Summary

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

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

# Accreditation/Certification Summary

Client: Environmental Standards Inc.  
 Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

## Laboratory: Eurofins TestAmerica, Nashville

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
A2LA	ISO/IEC 17025		0453.07	12-31-19
Alaska (UST)	State Program	10	UST-087	06-30-19
Arizona	State Program	9	AZ0473	05-05-19
Arkansas DEQ	State Program	6	88-0737	04-25-20
California	State Program	9	2938	06-30-19
Connecticut	State Program	1	PH-0220	12-31-19
Florida	NELAP	4	E87358	06-30-19
Georgia	State Program	4	NA: NELAP & A2LA	12-31-19
Illinois	NELAP	5	200010	12-09-19
Iowa	State Program	7	131	04-01-20
Kansas	NELAP	7	E-10229	10-31-19
Kentucky (UST)	State Program	4	19	06-30-19
Kentucky (WW)	State Program	4	90038	12-31-19
Louisiana	NELAP	6	30613	06-30-19
Maine	State Program	1	TN00032	11-03-19
Maryland	State Program	3	316	03-31-20
Massachusetts	State Program	1	M-TN032	06-30-19
Minnesota	NELAP	5	047-999-345	12-31-19
Mississippi	State Program	4	N/A	06-30-19
Montana (UST)	State Program	8	NA	02-17-19
Nevada	State Program	9	TN00032	07-31-19
New Hampshire	NELAP	1	2963	10-09-19
New Jersey	NELAP	2	TN965	06-30-19
New York	NELAP	2	11342	03-31-20
North Carolina (WW/SW)	State Program	4	387	12-31-19
North Dakota	State Program	8	R-146	06-30-19
Ohio VAP	State Program	5	CL0033	07-06-19
Oklahoma	State Program	6	9412	08-31-19
Oregon	NELAP	10	TN200001	04-26-19
Pennsylvania	NELAP	3	68-00585	07-31-19
Rhode Island	State Program	1	LAO00268	12-30-19
South Carolina	State Program	4	84009 (001)	02-28-19 *
Tennessee	State Program	4	2008	02-23-20
Texas	NELAP	6	T104704077	08-31-19
USDA	Federal		P330-13-00306	04-10-20
Utah	NELAP	8	TN00032	07-31-19
Virginia	NELAP	3	460152	06-14-19
Washington	State Program	10	C789	07-19-19
West Virginia DEP	State Program	3	219	02-28-19 *
Wisconsin	State Program	5	998020430	08-31-19
Wyoming (UST)	A2LA	8	453.07	12-31-19

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

Eurofins TestAmerica, Nashville

# Accreditation/Certification Summary

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

## 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 / DOE		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.

Eurofins TestAmerica, Nashville



## COOLER RECEIPT FORM

490-163317 Chain of Custody

Cooler Received/Opened On 11/15/2018 @ 9:00

Time Samples Removed From Cooler 12:32 Time Samples Placed In Storage 17:59 (2 Hour Window)

1. Tracking # 4968 (last 4 digits, FedEx) Courier: FedEx  
IR Gun ID 17960358 pH Strip Lot N/A Chlorine Strip Lot N/A

2. Temperature of rep. sample or temp blank when opened: 2.4 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? 2 Front / back YES...NO...NA  
If yes, how many and where: \_\_\_\_\_

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) \_\_\_\_\_

7. Were custody seals on containers: YES NO and intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA



14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # \_\_\_\_\_

I certify that I unloaded the cooler and answered questions 7-14 (initial) \_\_\_\_\_

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) \_\_\_\_\_

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) \_\_\_\_\_

I certify that I attached a label with the unique LIMS number to each container (initial) \_\_\_\_\_

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...# \_\_\_\_\_

## COOLER RECEIPT FORM

# 490-163317

Cooler Received/Opened On 11/15/2018 @ 9:00

Time Samples Removed From Cooler 12:52 Time Samples Placed In Storage 17:59 (2 Hour Window)

1. Tracking # 4979 (last 4 digits, FedEx) Courier: FedEx  
IR Gun ID 31470366 pH Strip Lot N/A Chlorine Strip Lot N/A

2. Temperature of rep. sample or temp blank when opened: 1.9 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? YES...NO...NA

If yes, how many and where: 2 Front

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) ACE

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

Were these signed and dated correctly? 11/15 YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA



Larger than this.

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # \_\_\_\_\_

I certify that I unloaded the cooler and answered questions 7-14 (initial) ACE

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) ACE

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) ACE

I certify that I attached a label with the unique LIMS number to each container (initial) ACE

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...# \_\_\_\_\_

## COOLER RECEIPT FORM

# 490-163317

Cooler Received/Opened On 11/15/2018 @ 9:00

Time Samples Removed From Cooler 12:52 Time Samples Placed In Storage 12:59 (2 Hour Window)

1. Tracking # 4957 (last 4 digits, FedEx) Courier: FedEx  
IR Gun ID 17960358 pH Strip Lot N/A Chlorine Strip Lot N/A

2. Temperature of rep. sample or temp blank when opened: 1.7 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO  NA

4. Were custody seals on outside of cooler?  YES?..NO...NA

If yes, how many and where: 2 front

5. Were the seals intact, signed, and dated correctly?  YES...NO...NA

6. Were custody papers inside cooler?  YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) \_\_\_\_\_

7. Were custody seals on containers:  YES  NO and Intact  YES...NO...NA

Were these signed and dated correctly? 11/15  YES...NO...NA

8. Packing mat'l used?  Bubblewrap  Plastic bag  Peanuts  Vermiculite  Foam Insert  Paper  Other None

9. Cooling process:  Ice  Ice-pack  Ice (direct contact)  Dry ice  Other  None

10. Did all containers arrive in good condition (unbroken)?  YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)?  YES...NO...NA

12. Did all container labels and tags agree with custody papers?  YES...NO...NA

13a. Were VOA vials received? YES  NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO... NA



Larger than this.

14. Was there a Trip Blank in this cooler? YES  NO...NA If multiple coolers, sequence # \_\_\_\_\_

I certify that I unloaded the cooler and answered questions 7-14 (initial) \_\_\_\_\_

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO... NA

b. Did the bottle labels indicate that the correct preservatives were used  YES...NO...NA

16. Was residual chlorine present? YES...NO... NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) \_\_\_\_\_

17. Were custody papers properly filled out (ink, signed, etc)?  YES...NO...NA

18. Did you sign the custody papers in the appropriate place?  YES...NO...NA

19. Were correct containers used for the analysis requested?  YES...NO...NA

20. Was sufficient amount of sample sent in each container?  YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) \_\_\_\_\_

I certify that I attached a label with the unique LIMS number to each container (initial) \_\_\_\_\_

21. Were there Non-Conformance issues at login?  YES...NO Was a NCM generated?  YES...NO...# \_\_\_\_\_

**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.: \_\_\_\_\_ of \_\_\_\_\_ 4  
 CCC No: **KIF CCR 20181112 1B**  
 1 of 1 Pages  
 Task Desc: **KIF\_CCR**

**Required Ship to Lab:**  
 Lab Name: TestAmerica Nashville  
 Lab Address: 2980 Foster Creighton Drive  
 Nashville, TN 37204  
 Lab P/M: 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 #: 17566903  
 Site Address: 714 Pond Road  
 City: Kingston State: TN, Zip: 37763  
 Site P/M Name: Roy Quinn  
 Phone/Fax: 423-751-3753  
 Site P/M Email: rquinn@tva.gov

**Required Sampler Information:**  
 Sampler: Edgar Smith  
 Sampling Company: Statitec  
 Address: 3062 Beaumont Centre Circle  
 City/State: Lexington, KY Phone: 303-250-4718  
 Sampling Team Number: 1  
 Send EDD/Hand Copy to: tva\_deliverables@envsvid.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		MATRIX CODE	G = GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Sample Receipt Conditions	Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blanks?	
			Start Depth	End Depth																				
1	KIF-CCR-TW05-1.5/3.5-20181113	TW-05	1.5	3.5	S	G	N	11/13/2018	1130	2			X											
2	KIF-CCR-TW05-6.5/8.5-20181113	TW-05	6.5	8.5	S	G	N	11/13/2018	1216	3			X											
3	KIF-CCR-TW05-11.5/13.5-20181113	TW-05	11.5	13.5	S	G	N	11/13/2018	1259	2			X											
4	KIF-CCR-TW05-16.5/19.5-20181113	TW-05	16.5	19.5	S	G	N	11/13/2018	1342	1			X											
5	KIF-CCR-TW05-22.5/24.5-20181113	TW-05	22.5	24.5	S	G	N	11/13/2018	1441	1			X											
6	KIF-CCR-TW05-26.5/28.5-20181113	TW-05	26.5	28.5	S	G	N	11/13/2018	1515	2			X											
7	KIF-CCR-TW05-31.5/33.5-20181113	TW-05	31.5	33.5	S	G	N	11/13/2018	1548	2			X											
8	KIF-CCR-DUP01-20181113	-----	NA	NA	S	G	FD	11/13/2018	NA	1			X											
9	KIF-CCR-EB01-20181113	TW-05	NA	NA	AQ	G	EB	11/13/2018	1644	3			X											
10	KIF-CCR-FB01-20181113	TW-05	NA	NA	AQ	G	FB	11/13/2018	1628	3			X											

**Additional Comments/Special Instructions:**  
 Additional volume collected should be used for laboratory duplicate.  
 Aqueous sample preservation:  
 Radium -- preserved w/ HNO3 to pH<2

**RE-INDICED BY / AFFILIATION**  
 DATE: 11/14/18 TIME: 10:05 AM  
 ACCEPTED BY: [Signature] AFFILIATION: [Signature]

**SHIPPING METHOD:**  
 Counter: [Signature]  
 SHIPPER NAME AND SIGNATURE: [Signature]  
 SHIPPER NAME AND SIGNATURE: [Signature]

Loc: 490  
 163317



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 4  
 COC No: KIF\_CCR\_20181112\_1B  
 1 of 1 Pages  
 Task Desc: KIF\_CCR

Required Ship to Lab:  
 Lab Name: TestAmerica Nashville  
 Lab Address: 2960 Foster Creighton Drive, Nashville, TN 37204  
 Lab P/N: Gail Lagne  
 Phone/Fac: 615-301-5741/615-726-3404  
 Lab Email: Gail.Lagne@testamericainc.com

Required Project Information:  
 Site ID #: KINGSTON FOSSIL PLANT  
 Project #: 175669043  
 Site Address: 714 Pond Road, Kingston, TN, 37763  
 City: Kingston, State: TN, Zip: 37763  
 Site P/N Name: Roy Quinn  
 Phone/Fac: 423-751-3753  
 Site P/N Email: rquinn@tva.gov

Required Sampler Information:  
 Sampler: Edgar Smith  
 Sampling Company: STANTEC  
 Address: 3062 Beaumont Centre Circle, Lexington, KY, Phone: 303-250-4718  
 City/State: Lexington, KY, Phone: 303-250-4718  
 Sampling Team Number: 1  
 Send EDI/RHARD Copy to: Eva.deliverables@envsvid.com

Analysis Turnaround Time  
 CALENDAR DAYS  
 24 Hours  
 3 Business Days  
 5 Business Days  
 10 Business Days (Standard)

Analysis  
 None  
 Preservo  
 CCR MATERIALS, RAD  
 CCR MATERIALS, RAD

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth		MATRIX CODE	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	RELINQUISHED BY / AFFILIATION			SAMPLE RECEIPT CONDITIONS			
			Start Depth	End Depth								DATE	TIME	DATE	TIME	TEMPERATURE IN °C		
1	KIF-CCR-TW05-1.5/3.5-20181113	TW-05	1.5	3.5	S G	N	11/13/2018	1130	2									
2	KIF-CCR-TW05-6.5/8.5-20181113	TW-05	6.5	8.5	S G	N	11/13/2018	1216	3									
3	KIF-CCR-TW05-11.5/13.5-20181113	TW-05	11.5	13.5	S G	N	11/13/2018	1259	2									
4	KIF-CCR-TW05-16.5/19.5-20181113	TW-05	16.5	19.5	S G	N	11/13/2018	1342	1									
5	KIF-CCR-TW05-22.5/24.5-20181113	TW-05	22.5	24.5	S G	N	11/13/2018	1441	1									
6	KIF-CCR-TW05-26.5/28.5-20181113	TW-05	26.5	28.5	S G	N	11/13/2018	1515	2									
7	KIF-CCR-TW05-31.5/33.5-20181113	TW-05	31.5	33.5	S G	N	11/13/2018	1548	2									
8	KIF-CCR-DUP01-20181113	-----	NA	NA	S G	FD	11/13/2018	NA	1									
9	KIF-CCR-EB01-20181113	TW-05	NA	NA	AQ G	EB	11/13/2018	1644	3									
10	KIF-CCR-FB01-20181113	TW-05	NA	NA	AQ G	FB	11/13/2018	1628	3									

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: [Signature] / [Signature] / [Signature]  
 DATE: 11/14/18 1005, 11/15/18 9100, 11/15/18 9100

ACCEPTED BY / AFFILIATION: [Signature] / [Signature] / [Signature]  
 DATE: 11/14/18 1005, 11/15/18 9100, 11/15/18 9100

SHIPPING METHOD: Courier  
 SHIPPER NAME AND SIGNATURE: Bethany Lucente, Edgar Smith - Not available to sign

TEMPERATURE IN °C: [Blank]

Sample on Ice? [Yes/No] Sample Intact? [Yes/No] Trip Blank? [Yes/No]

LOC: 490  
 163317



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.: 3 of 4  
 COC No.: KIF\_CCR 20181112\_1B  
 1 of 1 Pages  
 Task Desc: KIF\_CCR

Required Ship to Lab:  
 Lab Name: TestAmerica Nashville  
 Lab Address: 2980 Foster Creighton Drive, Nashville, TN 37204  
 Lab P/N: 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 #: 17568043  
 Site Address: 714 Pond Road, Kingston, TN, 37763  
 City, State, Zip: TN, 37763  
 Site PM Name: Roy Quinn  
 Phone/Fax: 423-751-3753  
 Site PM Email: rquinn@tva.gov

Required Sampler Information:  
 Sampler: Edgar Smith  
 Sampling Company: StarTEC  
 Address: 3052 Beaurmont Centre Circle, Lexington, KY  
 City/State: Lexington, KY  
 Phone: 303-250-4718

Sampling Team Number: 1  
 Send EDI/Hard Copy to: Via deliverables@envsdc.com

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth		MATRIX CODE	G = GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis		Temperature in °C	Sample on leaf?	Sample Intact?	Trip Blank?
			Start Depth	End Depth									Filtered	Preserve				
1	KIF-CCR-TW05-1.5/3.5-20181113	TW-05	1.5	3.5	S	G	N	11/13/2018	1130	2			X	X				
2	KIF-CCR-TW05-6.5/8.5-20181113	TW-05	6.5	8.5	S	G	N	11/13/2018	1216	3			X	X				
3	KIF-CCR-TW05-11.5/13.5-20181113	TW-05	11.5	13.5	S	G	N	11/13/2018	1259	2			X	X				
4	KIF-CCR-TW05-16.5/19.5-20181113	TW-05	16.5	19.5	S	G	N	11/13/2018	1342	1			X	X				
5	KIF-CCR-TW05-22.5/24.5-20181113	TW-05	22.5	24.5	S	G	N	11/13/2018	1441	1			X	X				
6	KIF-CCR-TW05-26.5/28.5-20181113	TW-05	26.5	28.5	S	G	N	11/13/2018	1515	2			X	X				
7	KIF-CCR-TW05-31.5/33.5-20181113	TW-05	31.5	33.5	S	G	N	11/13/2018	1548	2			X	X				
8	KIF-CCR-DUP01-20181113		NA	NA	S	G	FD	NA	NA	1			X	X				
9	KIF-CCR-EB01-20181113	TW-05	NA	NA	AQ	G	EB	11/13/2018	1644	3			X	X				
10	KIF-CCR-FB01-20181113	TW-05	NA	NA	AQ	G	FB	11/13/2018	1628	3			X	X				

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: [Signature] TIME: 11/13/2018 11:51 AM DATE: 11/13/2018 11:51 AM

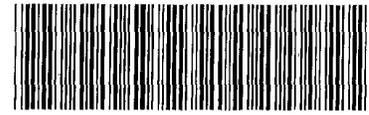
SHIPPING METHOD: [Signature] Courier: [Signature]

SAMPLER NAME AND SIGNATURE: [Signature]

Temperature in °C: [ ] Sample on leaf?: [ ] Sample Intact?: [ ] Trip Blank?: [ ]

Loc: 490  
163317

## COOLER RECEIPT FORM



490-163317 Chain of Custody

Cooler Received/Opened On 11-16-2018 @ 1335

Time Samples Removed From Cooler 13:53 Time Samples Placed In Storage 14:14 (2 Hour Window)

1. Tracking # 4587 8110 4980 (last 4 digits, FedEx) Courier: Client  
IR Gun ID 31470368 pH Strip Lot HC850248 Chlorine Strip Lot 072318K

2. Temperature of rep. sample or temp blank when opened: 0.9 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA  
If yes, how many and where: 1 front 2 back

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) e, b

7. Were custody seals on containers: YES NO and Intact YES...NO...NA  
Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry Ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA



14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # \_\_\_\_\_

I certify that I unloaded the cooler and answered questions 7-14 (initial) \_\_\_\_\_

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) \_\_\_\_\_

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) \_\_\_\_\_

I certify that I attached a label with the unique LIMS number to each container (initial) \_\_\_\_\_

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...# \_\_\_\_\_

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.: 4 of 4  
 COC No: KIF\_CCR\_20181112\_1B  
 1 of 1 Pages  
 Task Desc: KIF\_CCR

**Required Ship to Lab:**  
 Lab Name: TestAmerica Nashville  
 Lab Address: 2960 Foster Creighton Drive Nashville, TN 37204  
 Lab Pk: Gail Lagne  
 Phone/Fax: 615-301-5741/615-726-3404  
 Lab Email: Gail.Lagne@testamericainc.com

**Required Project Information:**  
 Site ID #: KINGSTON FOSSIL PLANT  
 Project #: 175669043  
 Site Address: 714 Pond Road Kingston TN 37763  
 City/State: Kingston TN  
 State/Zip: TN, 37763  
 City/State: Lexington, KY  
 Phone: 303-250-4718

**Required Sampler Information:**  
 Sampler: Edgar Smith  
 Sampling Company: Stantec  
 Address: 3052 Beaumont Centre Circle Lexington, KY  
 Phone: 303-250-4718

**Lab Manager Contact Information:**  
 Lab Pk: Gail Lagne  
 Phone/Fax: 615-301-5741/615-726-3404  
 Lab Email: Gail.Lagne@testamericainc.com

**Sampling Team Number:** 1  
 Send EDD/Hard Copy to: lva.deliverables@envsci.com

**Analysis Turnaround Time**  
 CALENDAR DAYS  
 BUSINESS DAYS  
 WORKING DAYS  
 TAT if different from Below \_\_\_\_\_

**Analysis**  
 24 Hours  
 3 Business Days  
 5 Business Days  
 10 Business Days (Standard)

Loc: 490  
163317

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth		MATRIX CODE	G= GRAB C-COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis	Filtered	Preserve	None	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blank?
			Start Depth	End Depth																					
1	KIF-CCR-TW05-1.5/3.5-20181113	TW-05	1.5	3.5	S	G	N	11/13/2018	1130	2			X												
2	KIF-CCR-TW05-6.5/8.5-20181113	TW-05	6.5	8.5	S	G	N	11/13/2018	1216	3			X												
3	KIF-CCR-TW05-11.5/13.5-20181113	TW-05	11.5	13.5	S	G	N	11/13/2018	1259	2			X												
4	KIF-CCR-TW05-16.5/19.5-20181113	TW-05	16.5	19.5	S	G	N	11/13/2018	1342	1			X												
5	KIF-CCR-TW05-22.5/24.5-20181113	TW-05	22.5	24.5	S	G	N	11/13/2018	1441	1			X												
6	KIF-CCR-TW05-26.5/28.5-20181113	TW-05	26.5	28.5	S	G	N	11/13/2018	1515	2			X												
7	KIF-CCR-TW05-31.5/33.5-20181113	TW-05	31.5	33.5	S	G	N	11/13/2018	1548	2			X												
8	KIF-CCR-DUP01-20181113	-----	NA	NA	S	G	FD	11/13/2018	NA	1			X												
9	KIF-CCR-EB01-20181113	TW-05	NA	NA	AQ	G	EB	11/13/2018	1644	3			X												
10	KIF-CCR-FB01-20181113	TW-05	NA	NA	AQ	G	FB	11/13/2018	1628	3			X												

**REMOVED BY / AFFILIATION**  
 [Signature]

**DATE** 11/14/18 **TIME** 1005

**SHIPPING METHOD:**  
 Courier

**SHIPPER NAME AND SIGNATURE**  
 Bethany Lucette  
 Edgar Smith - Not available to sign  
 [Signature] 11/14/18

**Additional Comments/Special Instructions:**  
 Additional volume collected should be used for laboratory duplicate.  
 Aqueous sample preservation:  
 Radium - preserved w/ HNO3 to pH<2





**TestAmerica Nashville**

2960 Foster Creighton Drive  
Nashville, TN 37204  
Phone (615) 726-0177 Fax (615) 726-3404

**Chain of Custody Record**



THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information (Sub Contract Lab)</b>		Sampler:	Lab PMI:	Carrier (Tracking No.):	COC No:
Client Contact:	Phone:	Lab: Gail	State of Origin:	490-83133-1	490-83133-1
Shipping/Receiving:	E-Mail:	gail.lage@testamericainc.com	Tennessee	Page:	Page 1 of 1
Company:	Accreditations Required (See note):			Job #:	490-163317-1
TestAmerica Laboratories, Inc.				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 - AsH2O2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecanhydrate U - Acetone V - MCAA W - PH 4.5 Z - other (Specify)
Address:	Due Date Requested:	Analysis Requested			
13715 Rider Trail North,	11/28/2018				
City:	TAT Requested (days):				
Earth City					
State, Zip:					
MO, 63045					
Phone:	PO #:				
314-298-8566(Tel) 314-298-8757(Fax)					
Email:	WO #:				
Project Name:	Project #:				
KIF_CCR_20181112_1B	49014515				
Site:	SSOW#:				
<b>Sample Identification - Client ID (Lab ID)</b>					
KIF-CCR-TW05-1.5/3.5-20181113 (490-163317-1)	11/13/18	11:30	Solid	X	TVA - SPLP rotation done in Nashville
KIF-CCR-TW05-6.5/8.5-20181113 (490-163317-2)	11/13/18	12:16	Solid	X	TVA - SPLP rotation done in Nashville
KIF-CCR-TW05-11.5/13.5-20181113 (490-163317-3)	11/13/18	12:59	Solid	X	TVA - SPLP rotation done in Nashville
KIF-CCR-TW05-16.5/19.5-20181113 (490-163317-4)	11/13/18	13:42	Solid	X	TVA - SPLP rotation done in Nashville
KIF-CCR-TW05-22.5/24.5-20181113 (490-163317-5)	11/13/18	14:41	Solid	X	TVA - SPLP rotation done in Nashville
KIF-CCR-TW05-26.5/28.5-20181113 (490-163317-6)	11/13/18	15:15	Solid	X	TVA - SPLP rotation done in Nashville
KIF-CCR-TW05-31.5/33.5-20181113 (490-163317-7)	11/13/18	15:48	Solid	X	TVA - SPLP rotation done in Nashville
KIF-CCR-DUP01-20181113 (490-163317-8)	11/13/18	01:01	Solid	X	TVA - SPLP rotation done in Nashville
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte &amp; accreditation compliance upon our 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 analyst/analyst/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 compliance to TestAmerica Laboratories, Inc.</p>					
<b>Possible Hazard Identification</b>					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify)					
Primary Deliverable Rank: 2					
Special Instructions/QC Requirements:					
<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b>					
Empty Kit Relinquished by:					
Date/Time:	Date:	Time:	Method of Shipment:		
12-3-18 01555					
Relinquished by: <i>[Signature]</i>					
Date/Time:	Company:	Received by:	Date/Time:	Company:	
12-3-18 1555	TAMAS	<i>[Signature]</i>	12-05-18 10:00	HSR	
Relinquished by: <i>[Signature]</i>					
Date/Time:	Company:	Received by:	Date/Time:	Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No					
Custody Seal No.:					
Cooler Temperature(s) °C and Other Remarks:					

## Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 490-163317-1

**Login Number: 163317**

**List Number: 2**

**Creator: Hellm, Michael**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 11/20/18 02:30 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> 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	1.9
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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (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: 490-163317-1

**Login Number: 163317**

**List Number: 3**

**Creator: Hellm, Michael**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 11/20/18 02:36 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	17.0, 1.9
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: 490-163317-1

**Login Number: 163317**

**List Number: 4**

**Creator: Small, Sean J**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 12/05/18 09:16 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

# Tracer/Carrier Summary

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

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

Matrix: Solid

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
LCS 160-404915/1-A	Lab Control Sample	102	
LCSD 160-404915/2-A	Lab Control Sample Dup	103	
MB 160-404915/22-A	Method Blank	107	
<b>Tracer/Carrier Legend</b>			
Ba Carrier = Ba Carrier			

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

Matrix: Solid

Prep Type: SPLP East

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
490-163317-1	KIF-CCR-TW05-1.5/3.5-201811	101	
490-163317-2	KIF-CCR-TW05-6.5/8.5-201811	98.5	
490-163317-3	KIF-CCR-TW05-11.5/13.5-20181113	100	
490-163317-4	KIF-CCR-TW05-16.5/19.5-20181113	104	
490-163317-5	KIF-CCR-TW05-22.5/24.5-20181113	99.7	
490-163317-6	KIF-CCR-TW05-26.5/28.5-20181113	104	
490-163317-7	KIF-CCR-TW05-31.5/33.5-20181113	94.7	
490-163317-8	KIF-CCR-DUP01-20181113	98.8	
<b>Tracer/Carrier Legend</b>			
Ba Carrier = Ba Carrier			

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

Matrix: Solid

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
LCS 160-404923/1-A	Lab Control Sample	102	80.0
LCSD 160-404923/2-A	Lab Control Sample Dup	103	81.9
MB 160-404923/22-A	Method Blank	107	81.9
<b>Tracer/Carrier Legend</b>			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

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

Matrix: Solid

Prep Type: SPLP East

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
490-163317-1	KIF-CCR-TW05-1.5/3.5-201811	101	84.1
490-163317-2	KIF-CCR-TW05-6.5/8.5-20181113	98.5	81.5

Eurofins TestAmerica, Nashville

# Tracer/Carrier Summary

Client: Environmental Standards Inc.  
Project/Site: KIF\_CCR\_20181112\_1B

Job ID: 490-163317-1

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

**Matrix: Solid**

**Prep Type: SPLP East**

## Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
490-163317-3	KIF-CCR-TW05-11.5/13.5-2018	100	83.4
490-163317-4	KIF-CCR-TW05-16.5/19.5-2018	104	83.0
490-163317-5	1113 KIF-CCR-TW05-22.5/24.5-2018	99.7	86.4
490-163317-6	1113 KIF-CCR-TW05-26.5/28.5-2018	104	82.2
490-163317-7	1113 KIF-CCR-TW05-31.5/33.5-2018	94.7	80.4
490-163317-8	KIF-CCR-DUP01-20181113	98.8	82.2

### Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Y Carrier = Y Carrier