ENVIRONMENTAL STANDARDS

Setting the Standards for Innovative Environmental Solutions

Data Validation Report
Tennessee Valley Authority
Bull Run Fossil Plant
Environmental Investigation Plan
Background Soil Samples
Chain-of-Custody: BRF_BS_20191001_1B

This quality assurance (QA) review is based upon an examination of the data generated from the analyses of the eight background soil samples and one aqueous blank collected on October 1, 2019, at the Tennessee Valley Authority (TVA) Bull Run Fossil Plant facility. These samples were collectively analyzed by Eurofins TestAmerica of St. Louis, Missouri, for radium-226 and for radium-228 by US EPA Method 901.1.

This review was performed in accordance with the Environmental Investigation Plan for the Tennessee Valley Authority Bull Run Fossil Plant Environmental Investigation (BRF EIP; Revision 3, July 2018). This review was performed with guidance from the National Functional Guidelines for Inorganic Data Review (US EPA, October 2004); the US EPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (November 2001); and the US EPA Region IV Data Validation Standard Operating Procedures These validation guidance documents specifically address analyses performed in accordance with the Contract Laboratory Program (CLP) analytical methods and are not completely applicable to the type of analyses and analytical protocols performed for the US EPA method utilized by the laboratory for these samples. Environmental Standards, Inc. (Environmental Standards) used professional judgment to determine the usability of the analytical results and compliance relative to the US EPA method utilized by the laboratory.

Summary

The analytical results and associated laboratory quality control (QC) samples were reviewed to determine the integrity of the reported analytical results and to ensure that the data met the established data quality objectives. This QA review includes all samples in Eurofins TestAmerica Job Number 180-96595-1.

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The samples that have undergone Stage 4 data validation are listed below:

Sample Identification	Laboratory Sample Identification	Job Number	Matrix	Date Sample Collected	Parameter(s) Examined
BRF-BS-BG13-1.5/3.5-20191001	180-96595-1	180-96595-1	Soil	10/1/19	Ra-226, Ra-228, Ra-226/228
BRF-BS-BG13-5.0/6.6-20191001	180-96595-2	180-96595-1	Soil	10/1/19	Ra-226, Ra-228, Ra-226/228
BRF-BS-BG13-0.0/0.5-20191001	180-96595-3	180-96595-1	Soil	10/1/19	Ra-226, Ra-228, Ra-226/228
BRF-BS-BG05-3.5/5.0-20191001	180-96595-4	180-96595-1	Soil	10/1/19	Ra-226, Ra-228, Ra-226/228
BRF-BS-BG05-6.5/8.5-20191001	180-96595-5	180-96595-1	Soil	10/1/19	Ra-226, Ra-228, Ra-226/228
BRF-BS-BG05-11.5/13.5-20191001	180-96595-6	180-96595-1	Soil	10/1/19	Ra-226, Ra-228, Ra-226/228
BRF-BS-BG05-15.0/17.0-20191001	180-96595-7	180-96595-1	Soil	10/1/19	Ra-226, Ra-228, Ra-226/228
BRF-BS-BG05-0.0/0.5-20191001	180-96595-8	180-96595-1	Soil	10/1/19	Ra-226, Ra-228, Ra-226/228
BRF-BS-FB02-20191001 (Field Blank)	180-96595-9	180-96595-1	Aq	10/1/19	Ra-226, Ra-228, Ra-226/228

Parameters Examined

Ra-226 - Radium-226 by US EPA Method 901.1.
Ra-228 - Radium-228 by US EPA Method 901.1.
Ra-226/228 - Radium-226/228 Calculation by US EPA Method 901.1.
Aq - Aqueous.

Items Reviewed	
Holding Times	Calibrations
Sample Preservation	Blank Results
Chain-of-Custody (COC) Records and Case Narratives	Sample Preparation
Laboratory Control Sample (LCS) Results	Laboratory Duplicate Results
Quantitation of Positive Results	

Comments and Exceptions

- All analyses performed for the sampling event were in compliance with the requirements set forth in the EIP.

- Radium-226+228 was reported as the summation of the calculated activities for radium-226 and radium-228. The reported results for radium-226+228 for the samples included in this report may have been adjusted and/or qualified in accordance with the TVA reporting protocols and assigned an “S” reason code.

Qualifier Summary

- Any radium-226+228 result reported from the summation of one isotope activity less than the MDA (non-negative value) and one isotope activity greater than the MDA should be considered estimated and have been flagged “J” on the data tables.

Review performed by: Danielle Coles, Quality Assurance Chemist
Review reviewed by: Konstadina Vlahogiani, Senior Technical Chemist
Review approved by: Andrew L. Piasecki, Senior Quality Assurance Chemist
Review approved by: Rock J. Vitale, CEAC, Technical Director of Chemistry/Principal
Date review completed: 12/9/19

SECTION 2

ANALYTICAL RESULTS

INORGANIC DATA QUALIFIERS

U* This result should be considered “not-detected” because it was detected in a rinsate blank or laboratory blank at a similar level.

UR Unreliable reporting limit; analyte may or may not be present in sample.

R Unreliable positive result; analyte may or may not be present in sample.

J Quantitation is approximate due to limitations identified during data validation.

UJ This analyte was not detected, but the reporting limit may or may not be higher due to a bias identified during data validation.

REASON CODES AND EXPLANATIONS

Reason Code	Explanation
BE	Equipment blank contamination. The result should be considered “not-detected.”
BF	Field blank contamination. The result should be considered “not-detected.”
BL	Laboratory blank contamination. The result should be considered “not-detected.”
BN	Negative laboratory blank contamination.
C	Initial and/or Continuing Calibration issue, indeterminate bias.
C+	Initial and/or Continuing Calibration issue. The result may be biased high.
C-	Initial and/or Continuing Calibration issue. The result may be biased low.
FD	Field duplicate imprecision.
FG	Total versus Dissolved Imprecision.
H	Holding time exceeded.
I	Internal standard recovery outside of acceptance limits.
L	LCS and LCSD recoveries outside of acceptance limits, indeterminate bias.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
LD	Laboratory duplicate imprecision.
LP	LCS/LCSD imprecision.
M	MS and MSD recoveries outside of acceptance limits, indeterminate bias.
M+	MS and/or MSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.
MP	MS/MSD imprecision.
P	Post-digestion spike recoveries outside of acceptance limits, indeterminate bias.
P+	Post-digestion spike recovery outside of acceptance limits. The result may be biased high.
P-	Post-digestion spike recovery outside of acceptance limits. The result may be biased low.
Q	Chemical Preservation issue.
R	RL standards outside of acceptance limits, indeterminate bias.
R+	RL standard(s) outside of acceptance limits. The result may be biased high.
R-	RL standard(s) outside of acceptance limits. The result may be biased low.
RL	Reported result between the MDL and the QL.
S	Radium-226+228 flagged due to reporting protocol for combine results.
T	Temperature preservation issue.
SD	Serial Dilution imprecision.
X	Percent solids < 50%.
Y+	Chemical Yield outside of acceptance limits. The result may be biased high.
Y-	Chemical yield outside of acceptance limits. The result may be biased low.
Z	ICP or ICP/MS Interference.
ZZ	Other.

TVA CCR Program
Facility: Bull Run Fossil Plant
SDG: 180965951

Lab Sample ID	180-96595-1
Sys Sample Code	BRF-BS-BG13-1.5/3.5-20191001
Sample Name	BRF-BS-BG13-1.5/3.5-20191001
Sample Date	10/1/2019 8:40:00 AM
Location	BRF-BG-13
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Uncertainty	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
EPA 901.1	Radium 226 + radium 228	RA226/228	T	PCI/G	2.47			0.369				Y	Yes	1	NA
	Radium 228	15262-20-1	T	PCI/G	1.59			0.296	0.0803	0.0803	1.00	Y	Yes	1	NA
	Radium-226	13982-63-3	T	PCI/G	0.875			0.221	0.155	0.155	1.00	Y	Yes	1	NA

TVA CCR Program
Facility: Bull Run Fossil Plant
SDG: 180965951

Lab Sample ID	180-96595-2
Sys Sample Code	BRF-BS-BG13-5.0/6.6-20191001
Sample Name	BRF-BS-BG13-5.0/6.6-20191001
Sample Date	10/1/2019 9:00:00 AM
Location	BRF-BG-13
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Uncertainty	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
EPA 901.1	Radium 226 + radium 228	RA226/228	T	PCI/G	2.60			0.439				Y	Yes	1	NA
	Radium 228	15262-20-1	T	PCI/G	1.68			0.333	0.289	0.289	1.00	Y	Yes	1	NA
	Radium-226	13982-63-3	T	PCI/G	0.921			0.286	0.225	0.225	1.00	Y	Yes	1	NA

TVA CCR Program
Facility: Bull Run Fossil Plant
SDG: 180965951

Lab Sample ID	180-96595-3
Sys Sample Code	BRF-BS-BG13-0.0/0.5-20191001
Sample Name	BRF-BS-BG13-0.0/0.5-20191001
Sample Date	10/1/2019 9:15:00 AM
Location	BRF-BG-13
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Uncertainty	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
EPA 901.1	Radium 226 + radium 228	RA226/228	T	PCI/G	2.30			0.408				Y	Yes	1	NA
	Radium 228	15262-20-1	T	PCI/G	1.21			0.309	0.273	0.273	1.00	Y	Yes	1	NA
	Radium-226	13982-63-3	T	PCI/G	1.09			0.267	0.169	0.169	1.00	Y	Yes	1	NA

TVA CCR Program
Facility: Bull Run Fossil Plant
SDG: 180965951

Lab Sample ID	180-96595-4
Sys Sample Code	BRF-BS-BG05-3.5/5.0-20191001
Sample Name	BRF-BS-BG05-3.5/5.0-20191001
Sample Date	10/1/2019 1:00:00 PM
Location	BRF-BG-05
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Uncertainty	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
EPA 901.1	Radium 226 + radium 228	RA226/228	T	PCI/G	2.89			0.557				Y	Yes	1	NA
	Radium 228	15262-20-1	T	PCI/G	1.87			0.485	0.233	0.233	1.00	Y	Yes	1	NA
	Radium-226	13982-63-3	T	PCI/G	1.02			0.273	0.158	0.158	1.00	Y	Yes	1	NA

TVA CCR Program
Facility: Bull Run Fossil Plant
SDG: 180965951

Lab Sample ID	180-96595-5
Sys Sample Code	BRF-BS-BG05-6.5/8.5-20191001
Sample Name	BRF-BS-BG05-6.5/8.5-20191001
Sample Date	10/1/2019 1:35:00 PM
Location	BRF-BG-05
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Uncertainty	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
EPA 901.1	Radium 226 + radium 228	RA226/228	T	PCI/G	2.17			0.341				Y	Yes	1	NA
	Radium 228	15262-20-1	T	PCI/G	1.21			0.271	0.226	0.226	1.00	Y	Yes	1	NA
	Radium-226	13982-63-3	T	PCI/G	0.960			0.207	0.0988	0.0988	1.00	Y	Yes	1	NA

TVA CCR Program
Facility: Bull Run Fossil Plant
SDG: 180965951

Lab Sample ID	180-96595-6
Sys Sample Code	BRF-BS-BG05-11.5/13.5-20191001
Sample Name	BRF-BS-BG05-11.5/13.5-20191001
Sample Date	10/1/2019 2:00:00 PM
Location	BRF-BG-05
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Uncertainty	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
EPA 901.1	Radium 226 + radium 228	RA226/228	T	PCI/G	1.75			0.323				Y	Yes	1	NA
	Radium 228	15262-20-1	T	PCI/G	1.10			0.275	0.156	0.156	1.00	Y	Yes	1	NA
	Radium-226	13982-63-3	T	PCI/G	0.650			0.170	0.135	0.135	1.00	Y	Yes	1	NA

TVA CCR Program
Facility: Bull Run Fossil Plant
SDG: 180965951

Lab Sample ID	180-96595-7
Sys Sample Code	BRF-BS-BG05-15.0/17.0-20191001
Sample Name	BRF-BS-BG05-15.0/17.0-20191001
Sample Date	10/1/2019 2:35:00 PM
Location	BRF-BG-05
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Uncertainty	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
EPA 901.1	Radium 226 + radium 228	RA226/228	T	PCI/G	2.20			0.467				Y	Yes	1	NA
	Radium 228	15262-20-1	T	PCI/G	1.06			0.369	0.376	0.376	1.00	Y	Yes	1	NA
	Radium-226	13982-63-3	T	PCI/G	1.14			0.286	0.206	0.206	1.00	Y	Yes	1	NA

Lab Sample ID	180-96595-8
Sys Sample Code	BRF-BS-BG05-0.0/0.5-20191001
Sample Name	BRF-BS-BG05-0.0/0.5-20191001
Sample Date	10/1/2019 3:00:00 PM
Location	BRF-BG-05
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Uncertainty	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
EPA 901.1	Radium 226 + radium 228	RA226/228	T	PCI/G	2.67			0.481				Y	Yes	1	NA
	Radium 228	15262-20-1	T	PCI/G	2.15			0.424	0.171	0.171	1.00	Y	Yes	1	NA
	Radium-226	13982-63-3	T	PCI/G	0.519			0.228	0.507	0.507	1.00	Y	Yes	1	NA

TVA CCR Program
Facility: Bull Run Fossil Plant
SDG: 180965951

Lab Sample ID	180-96595-9
Sys Sample Code	BRF-BS-FB02-20191001
Sample Name	BRF-BS-FB02-20191001
Sample Date	10/1/2019 3:12:00 PM
Location	BRF-BG-05
Sample Type	FB
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Uncertainty	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
EPA 901.1	Radium 226 + radium 228	RA226/228	T	PCI/L	18.7	J	S	31.1				Y	Yes	1	NA
	Radium 228	15262-20-1	T	PCI/L	-6.03	U		24.6	31.0	31.0	50.0	N	Yes	1	NA
	Radium-226	13982-63-3	T	PCI/L	18.7			19.0	17.6	17.6	50.0	Y	Yes	1	NA

SECTION 3

SUPPORTING DOCUMENTATION FOR QUALIFIERS

ENVIRONMENTAL STANDARDS

RADIOLOGICAL ANALYSIS SUPPORT DOCUMENTATION

ESI project name:	TVA BRF EI Implementation	Reviewed by:	Danielle Coles
Sample Collection Dates:	10/1/19	Approved by:	Dina V
Job Number:	**20188395.A000**	Completion Date:	11/25/19
Project Manager:	AJC		
Laboratory:	TestAmerica-St. Louis		

Applicable Sample No's (X) — Refer to Table 1 in the Quality Assurance Review

Sample No.	Lab Control No.
180-96595-1	

Deliverable: Level IV (Full) (X)
Limited ( )
Other:

The following table indicates criteria that were examined, the identified problems, and support documentation attachments

	Criteria Examined in Detail Check (√) if Yes or Footnote Letter for Comments Below					Problems Identified Check (√) if Yes or Footnote Letter for Comments Below					Support Documentation Attachments Check (√) if Yes or Footnote Letter for Comments Below				
	901.1					901.1					901.1				
Holding Times	X														
Blank Analysis Results	X														
Laboratory Control Standard (LCS)	X														
Tracer/Chemical Yield															
Duplicate Analysis: ( ) Field (X) Lab	X														
Matrix Spike Results															
Quantitation of Results	X														
Detection Limit															
Efficiency/Energy Calibrations	X														
Initial Calibration Verifications	X														
Annual Calibration Verifications															
Continuing Calibration Checks	X														
Continuing Calibration Backgrounds	X														
Sample Preservation	X														
Condition on Receipt	X														
Others: Headspace	X														

Comments: All results are usable unless otherwise qualified.

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191001_1B

Job ID: 180-96595-1

Client Sample ID: BRF-BS-FB02-20191001 ~ BRF BG05

Lab Sample ID: 180-96595-9

Date Collected: 10/01/19 15:12
Date Received: 10/02/19 09:00

Matrix: Water

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)	18.7	~~U~~ J,S	30.9	31.1			pCi/L	10/04/19 16:06	10/31/19 07:40	1
Radium-226 NAD7258, noqual	18.7		18.9	19.0	50.0	17.6	pCi/L	10/04/19 16:06	10/31/19 07:40	1
Radium-228	-6.03	U	24.5	24.6	50.0	31.0	pCi/L	10/04/19 16:06	10/31/19 07:40	1

SECTION 4

CASE NARRATIVE AND CHAIN-OF-CUSTODY RECORD

Job ID: 180-96595-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-96595-1

This report was revised to remove the mdc values.

Receipt
The samples were received on 10/2/2019 9:00 AM; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1° C and 3.0° C.

RAD
Method 901.1: Gamma Prep Batch 160-445369
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.

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

BRF-BS-BG13-1.5/3.5-20191001 ~ BRF BG13 (180-96595-1), BRF-BS-BG13-5.0/6.6-20191001 ~ BRF BG13 (180-96595-2), BRF-BS-BG13-0.0/0.5-20191001 ~ BRF BG13 (180-96595-3), BRF-BS-BG05-3.5/5.0-20191001 ~ BRF BG05 (180-96595-4), BRF-BS-BG05-6.5/8.5-20191001 ~ BRF BG05 (180-96595-5), BRF-BS-BG05-6.5/8.5-20191001 ~ BRF BG05 (180-96595-5[DU]), BRF-BS-BG05-11.5/13.5-20191001 ~ BRF BG05 (180-96595-6), BRF-BS-BG05-15.0/17.0-20191001 ~ BRF BG05 (180-96595-7), BRF-BS-BG05-0.0/0.5-20191001 ~ BRF BG05 (180-96595-8), (LCS 160-445369/2-A) and (MB 160-445369/1-A)

Method 901.1: Gamma Prep Batch 160-445202
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.

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

BRF-BS-FB02-20191001 ~ BRF BG05 (180-96595-9), (LCS 160-445202/2-A), (MB 160-445202/1-A), (180-96597-A-1-A) and (180-96597-A-1-B DU)

Method Fill_Geo-21: Gamma Prep Batch 160-445369: Samples BRF-BS-BG05-3.5/5.0-20191001 ~ BRF BG05 (180-96595-4), BRF-BS-BG05-15.0/17.0-20191001 ~ BRF BG05 (180-96595-7) and BRF-BS-BG05-0.0/0.5-20191001 ~ BRF BG05 (180-96595-8) are a light powdered soil exhibiting low density. okay, no qual

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

Sample Summary

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191001_1B

Job ID: 180-96595-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-96595-1	BRF-BS-BG13-1.5/3.5-20191001 ~ BRF BG13	Solid	10/01/19 08:40	10/02/19 09:00	
180-96595-2	BRF-BS-BG13-5.0/6.6-20191001 ~ BRF BG13	Solid	10/01/19 09:00	10/02/19 09:00	
180-96595-3	BRF-BS-BG13-0.0/0.5-20191001 ~ BRF BG13	Solid	10/01/19 09:15	10/02/19 09:00	
180-96595-4	BRF-BS-BG05-3.5/5.0-20191001 ~ BRF BG05	Solid	10/01/19 13:00	10/02/19 09:00	
180-96595-5	BRF-BS-BG05-6.5/8.5-20191001 ~ BRF BG05	Solid	10/01/19 13:35	10/02/19 09:00	
180-96595-6	BRF-BS-BG05-11.5/13.5-20191001 ~ BRF BG05	Solid	10/01/19 14:00	10/02/19 09:00	
180-96595-7	BRF-BS-BG05-15.0/17.0-20191001 ~ BRF BG05	Solid	10/01/19 14:35	10/02/19 09:00	
180-96595-8	BRF-BS-BG05-0.0/0.5-20191001 ~ BRF BG05	Solid	10/01/19 15:00	10/02/19 09:00	
180-96595-9	BRF-BS-FB02-20191001 ~ BRF BG05	Water	10/01/19 15:12	10/02/19 09:00	

Shipping and Receiving Documents

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	1	of	2
COC No:	BRF_BS_20191001_1B		
1 of 1 Pages			
Task Desc:	BRF_BS		

Rev 1 BJ 10/22/19

11/04/2019

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 Pittsburgh	Site ID #:	Bull Run Fossil Plant	Sampler:	Kevin Nguyen
Lab Address:	301 Alpha Drive	Project #:	175566274	Sampling Company:	Stantec
	Pittsburgh, PA 15238	Site Address	1285 Edgemoor Road	Address	601 Grassmere Park Suite 22
		City	Clinton State, Zip: TN, 37716	City/State	Nashville 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:	lxa_deliverables@envsid.com
Lab Email:	Gail.Lage@testamericainc.com				

180-96595 Chain of Custody

Analysis Turnaround Time

☐ CALENDAR DAYS ☒ WORKING DAYS

TAT if different from Below _____

24 Hours

3 Business Days

5 Business Days

10 Business Days

BJ 10/22/19

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Depth Unit	Sample 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: BACKGROUNDSOIL_RAD	Analysis: BACKGROUNDSOIL_BLANKS_RAD	Preserve: None	Preserve: HNO3
1	BRF-BS-BG13-1.5/3.5-20191001	BRF BG13	1.5	3.5	BS	G	N	10/1/2019	0840	2	NA	☐	X			
2	BRF-BS-BG13-5.0/6.6-20191001	BRF BG13	5.0	6.6	BS	G	N	10/1/2019	0900	2	NA	☐	X			
3	BRF-BS-BG13-0.0/0.5-20191001	BRF BG13	0.0	0.5	BS	G	N	10/1/2019	0915	2	NA	☐	X			
4	BRF-BS-BG05-3.5/5.0-20191001	BRF BG05	3.5	5.0	BS	G	N	10/1/2019	1300	2	NA	☐	X			
5	BRF-BS-BG05-6.5/8.5-20191001	BRF BG05	6.5	8.5	BS	G	N	10/1/2019	1335	3	NA	☐	X			
6	BRF-BS-BG05-11.5/13.5-20191001	BRF BG05	11.5	13.5	BS	G	N	10/1/2019	1400	2	NA	☐	X			
7	BRF-BS-BG05-15.0/17.0-20191001	BRF BG05	15.0	17.0	BS	G	N	10/1/2019	1435	2	NA	☐	X			
8	BRF-BS-BG05-0.0/0.5-20191001	BRF BG05	0.0	0.5	BS	G	N	10/1/2019	1500	2	NA	☐	X			
9	BRF-BS-FB02-20191001	BRF BG05	–	–	AQ	G	FB	10/1/2019	1512	3	NA	☐		X		

KN 10/1/19

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate analysis.

KN 10/1/19

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Kevin Nguyen / Stantec	10/1/19	1715		10/2/19	9:24
KN	10/1/19				

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Kevin Nguyen

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.:	2	of	2
COC No:	BRF_BS_20191001_1B		
1 of 1 Pages			
Task Desc:	BRF_BS		

Rev 03 10/22/19 11/04/2019

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 Pittsburgh
Lab Address:	301 Alpha Drive Pittsburgh, PA 15238

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 #:	Bull Run Fossil Plant		
Project #:	175568274		
Site Address	1265 Edgemoor Road		
City	Clinton	State, Zip:	TN, 37716
Site PM Name:	Roy Quinn		
Phone/Fax:	423-751-3753		
Site PM Email:	jrquinn@tva.gov		

Required Sampler Information

Sampler:	Kevin Nguyen		
Sampling Company:	Stantec		
Address	601 Grassmere Park Suite 22		
City/State	Nashville	Phone:	615-885-114
Sampling Team Number:	1		
Send EDD/Hard Copy to:	tva_deliverables@convsid.com		

Analysis Turnaround Time

☐ CALENDAR DAYS ☒ WORKING DAYS

TAT if different from Below _____

☐ 24 Hours

☐ 3 Business Days

☑ 5 Business Days 03/04/19

☒ 10 Business Days

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	Filtered N	Filtered Y	Preserve None	Preserve HNO3	Analysis BACKGROUNDSOIL_RAD	Analysis BACKGROUNDSOIL_BLANKS_RAD
1	BRF-BS-BG13-1.5/3.5-20191001	BRF BG13	1.5	3.5	BS	G	N	10/1/2019	0840	2	NA	☐					X	
2	BRF-BS-BG13-5.0/6.6-20191001	BRF BG13	5.0	6.6	BS	G	N	10/1/2019	0900	2	NA	☐					X	
3	BRF-BS-BG13-0.0/0.5-20191001	BRF BG13	0.0	0.5	BS	G	N	10/1/2019	0915	2	NA	☐					X	
4	BRF-BS-BG05-3.5/5.0-20191001	BRF BG05	3.5	5.0	BS	G	N	10/1/2019	1300	2	NA	☐					X	
5	BRF-BS-BG05-6.5/8.5-20191001	BRF BG05	6.5	8.5	BS	G	N	10/1/2019	1335	3	NA	☐					X	
6	BRF-BS-BG05-11.5/13.5-20191001	BRF BG05	11.5	13.5	BS	G	N	10/1/2019	1400	2	NA	☐					X	
7	BRF-BS-BG05-15.0/17.0-20191001	BRF BG05	15.0	17.0	BS	G	N	10/1/2019	1435	2	NA	☐					X	
8	BRF-BS-BG05-0.0/0.5-20191001	BRF BG05	0.0	0.5	BS	G	N	10/1/2019	1500	2	NA	☐					X	
9	BRF-BS-FB02-20191001	BRF BG05	–	–	AQ	G	FB	10/1/2019	1512	3	NA	☐				X		

KN 10/1/19

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate analysis.

KN 10/1/19

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Kevin Nguyen / Stantec	10/1/19	1715	[illegible]	10/2/19	900
LN 10/1/19					

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
Courier	Kevin Nguyen

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

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 2
COC No:	BRF_BS_20191001_1B
Page	1 of 1 Pages
Task Desc:	BRF_BS

180-96595 Chain of Custody

Required Ship to Lab:

Lab Name:	TestAmerica Pittsburgh
Lab Address:	301 Alpha Drive Pittsburgh, PA 15238

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 #:	Bull Run Fossil Plant		
Project #:	175568274		
Site Address	1265 Edgemoor Road		
City	Clinton	State, Zip:	TN, 37716
Site PM Name:	Roy Quinn		
Phone/Fax:	423-751-3753		
Site PM Email:	jrquinn@tva.gov		

Required Sampler Information

Sampler:	Kevin Nguyen		
Sampling Company:	Stantec		
Address	601 Grassmere Park Suite 22		
City/State	Nashville	Phone:	615-88
Sampling Team Number:	1		
Send EDD/Hard Copy to:	tva_deliverables@envsld.com		

Analysis Turnaround Time

☐ CALENDAR DAYS ☑ WORKING DAYS

TAT if different from Below _____

☐ 24 Hours
☐ 3 Business Days
☑ **5 Business Days**
☐ 10 Business Days

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	Analysis: BACKGROUNDGRL_RAD	Analysis: BACKGROUNDGRL_BLANKS_RAD	Preserve: None	Preserve: HNO3
1	BRF-BS-BG13-1.5/3.5-20191001	BRF BG13	1.5	3.5	BS	G	N	10/1/2019	0840	2	NA	☐	X			
2	BRF-BS-BG13-5.0/6.6-20191001	BRF BG13	5.0	6.6	BS	G	N	10/1/2019	0900	2	NA	☐	X			
3	BRF-BS-BG13-0.0/0.5-20191001	BRF BG13	0.0	0.5	BS	G	N	10/1/2019	0915	2	NA	☐	X			
4	BRF-BS-BG05-3.5/5.0-20191001	BRF BG05	3.5	5.0	BS	G	N	10/1/2019	1300	2	NA	☐	X			
5	BRF-BS-BG05-6.5/8.5-20191001	BRF BG05	6.5	8.5	BS	G	N	10/1/2019	1335	3	NA	☐	X			
6	BRF-BS-BG05-11.5/13.5-20191001	BRF BG05	11.5	13.5	BS	G	N	10/1/2019	1400	2	NA	☐	X			
7	BRF-BS-BG05-15.0/17.0-20191001	BRF BG05	15.0	17.0	BS	G	N	10/1/2019	1435	2	NA	☐	X			
8	BRF-BS-BG05-0.0/0.5-20191001	BRF BG05	0.0	0.5	BS	G	N	10/1/2019	1500	2	NA	☐	X			
9	BRF-BS-FB02-20191001	BRF BG05	–	–	AQ	G	FB	10/1/2019	1512	3	NA	☐		X		

KN 10/1/19

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate analysis.

KN 10/1/19

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Kevin Nguyen / Stantec	10/1/19	1715	[signature]	10/2/19	9:21
KN	10/1/19				

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Kevin Nguyen

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 30087A

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 2
COC No:	BRF_BS_20191001_1B
1 of 1 Pages	[redacted]
Task Desc:	BRF_BS

Required Ship to Lab:

Lab Name:	TestAmerica Pittsburgh
Lab Address:	301 Alpha Drive Pittsburgh, PA 15238

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 #:	Bull Run Fossil Plant		
Project #:	175568274		
Site Address	1265 Edgemoor Road		
City	Clinton	State, Zip:	TN, 37716
Site PM Name:	Roy Quinn		
Phone/Fax:	423-751-3753		
Site PM Email:	jrquinn@tva.gov		

Required Sampler Information

Sampler:	Kevin Nguyen		
Sampling Company:	Stantec		
Address	601 Grassmere Park Suite 22		
City/State	Nashville	Phone:	615-885-114
Sampling Team Number:	1		
Send EDD/Hard Copy to:	tva_deliverables@envsta.com		

Analysis Turnaround Time

☐ CALENDAR DAYS ☑ WORKING DAYS

TAT if different from Below _____

☐ 24 Hours
☐ 3 Business Days
☑ **5 Business Days**
☐ 10 Business Days

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	Analysis: BACKGROUNDSOIL_RAD	Analysis: BACKGROUNDSOIL_BLANKS_RAD	Filtered: N	Filtered: N	Preserve: None	Preserve: HNO3
1	BRF-BS-BG13-1.5/3.5-20191001	BRF BG13	1.5	3.5	BS	G	N	10/1/2019	0840	2	NA	☐	X					
2	BRF-BS-BG13-5.0/6.6-20191001	BRF BG13	5.0	6.6	BS	G	N	10/1/2019	0900	2	NA	☐	X					
3	BRF-BS-BG13-0.0/0.5-20191001	BRF BG13	0.0	0.5	BS	G	N	10/1/2019	0915	2	NA	☐	X					
4	BRF-BS-BG05-3.5/5.0-20191001	BRF BG05	3.5	5.0	BS	G	N	10/1/2019	1300	2	NA	☐	X					
5	BRF-BS-BG05-6.5/8.5-20191001	BRF BG05	6.5	8.5	BS	G	N	10/1/2019	1335	3	NA	☑	X					
6	BRF-BS-BG05-11.5/13.5-20191001	BRF BG05	11.5	13.5	BS	G	N	10/1/2019	1400	2	NA	☐	X					
7	BRF-BS-BG05-15.0/17.0-20191001	BRF BG05	15.0	17.0	BS	G	N	10/1/2019	1435	2	NA	☐	X					
8	BRF-BS-BG05-0.0/0.5-20191001	BRF BG05	0.0	0.5	BS	G	N	10/1/2019	1500	2	NA	☐	X					
9	BRF-BS-FB02-20191001	BRF BG05	–	–	AQ	G	FB	10/1/2019	1512	3	NA	☐		X				

KN 10/1/19

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate analysis.

KN 10/1/19

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Kevin Nguyen / Stantec	10/1/19	1715	[illegible]	10/2/19	9:00
KN 10/1/19					

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Kevin Nguyen

Sample Receipt Conditions

☑ 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
Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blank?

Environment Testing
TestAmerica

eurofins

Custody Seal

DATE

SIGNATURE

180-96595 Waybill

SHIP DATE: 01OCT
ACTWGT: 62.70 LB
CAD: 006595125/SE
DIMS: 23x13x13 IN

BILL THIRD PARTY

ING
AMERICA
RIDGE PARK
A 15238

DEPT:

Custody Seal

DATE

SIGNATURE

eurofins

Environment Testing
TestAmerica

4 of 6

MPS# 7764 3385 9261

0681

Mstr# 8120 5914 9376

0215

WED - 02 OCT

STANDARD OVERNIGHT

AHS

15238

PIT

PA-US

NA AGCA

Uncorrected temp 2.0 °C

Thermometer ID 10

Initials

ORIGIN ID:GKTA (865) 621-1853
DAVE MYERS
TESTAMERICA KNOXVILLE LAB
5815 MIDDLEBROOK PIKE

KNOXVILLE, TN 37921
UNITED STATES US

SHIP DATE: 01OCT18
ACTWGT: 62.70 LB
CAD: 0068851257SSFE2C
DIMS: 23x13x12 IN
BILL THIRD PARTY

TO SAMPLE RECIEVING
EUROFINS TEST AMERICA
301 ALPHA DR RIDGE PARK

PITTSBURGH PA 15238
(412) 963-7058

REF:
INV:
PO:
DEPT:

Fedl
Exp

E

REF
37863

WED - 02 OCT 3
STANDARD OVERNI

6 of 6
MPS# 7764 3385 9283
0681
Mstr# 8120 5914 9378
0215

15
PA-US

NA AGCA

Uncorrected Temp ___ °C
Thermometer ID 10
CF 0 Initials B
PT-WI-SR-001 effective 11/6/16

eurofins | Environment Testing TestAmerica

Custody Seal
DATE 10-1-18
SIGNATURE

eurofins | Environment Testing TestAmerica

Custody Seal
DATE
SIGNATURE

eurofins | Environment Testing TestAmerica

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

Chain of Custody Record

eurofins
Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler	Lab PM: Rumble, Jennifer L	Carrier Tracking No(s)	COC No: 180-375193.1
Client Contact: Shipping/Receiving	Phone	E-Mail: jennifer.rumble@testamericainc.com	State of Origin: Tennessee	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note)		Job #: 180-96595-1
Address: 13715 Rider Trail North,	Due Date Requested: 10/14/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #			
Email:	WO #			
Project Name: BRF_BS_20191001_1B	Project #: 18019624			
Site:	SSOW#:			

Analysis Requested

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:

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/Dry_Grind Radium-226/228	901.1_Ra/Fill_Geo_21 Radium-226/228	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
BRF-BS-BG13-1.5/3.5-20191001 ~ BRF BG13 (180-96595-1)	10/1/19	08:40 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG13-5.0/6.6-20191001 ~ BRF BG13 (180-96595-2)	10/1/19	09:00 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG13-0.0/0.5-20191001 ~ BRF BG13 (180-96595-3)	10/1/19	09:15 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG05-3.5/5.0-20191001 ~ BRF BG05 (180-96595-4)	10/1/19	13:00 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG05-6.5/8.5-20191001 ~ BRF BG05 (180-96595-5)	10/1/19	13:35 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG05-6.5/8.5-20191001 ~ BRF BG05 (180-96595-5DU)	10/1/19	13:35 Eastern	DU	Solid			X		1	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG05-11.5/13.5-20191001 ~ BRF BG05 (180-96595-6)	10/1/19	14:00 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG05-15.0/17.0-20191001 ~ BRF BG05 (180-96595-7)	10/1/19	14:35 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG05-0.0/0.5-20191001 ~ BRF BG05 (180-96595-8)	10/1/19	15:00 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna

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	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ 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]	10/3/19 17:[illegible]	MNA	[signature]	10/4/19 09:20	TAPT
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by	Date/Time	Company

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

Ver: 01/16/2019

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

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler	Lab PM: Rumble, Jennifer L	Carrier Tracking No(s)	COC No: 180-375193.2
Client Contact: Shipping/Receiving	Phone	E-Mail: jennifer.rumble@testamericainc.com	State of Origin: Tennessee	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note)		Job #: 180-96595-1
Address: 13715 Rider Trail North, .	Due Date Requested: 10/14/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #			
Email:	WO #			
Project Name: BRF_BS_20191001_1B	Project #: 18019624			
Site	SSOW#			

Analysis Requested

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:

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/Dry_Grind Radium-226/228	901.1_Ra/Fill_Geo_21 Radium-226/228	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
BRF-BS-FB02-20191001 – BRF BG05 (180-96595-9)	10/1/19	15:12 Eastern		Water				X	3	TVA - Batch alone

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.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ 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]	10/3/19 17:00	TASTL	[signature]	10/4/19 05:20	TASTL
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by	Date/Time	Company

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

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-96595-1

Login Number: 96595
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: 180-96595-1

Login Number: 96595
List Number: 2
Creator: Harris, Lorin C

List Source: Eurofins TestAmerica, St. Louis
List Creation: 10/04/19 03:45 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.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
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?	False	
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: 180-96595-1

Login Number: 96595
List Number: 3
Creator: Harris, Lorin C

List Source: Eurofins TestAmerica, St. Louis
List Creation: 10/04/19 03:50 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.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
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?	False	
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	