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From: Logsdon, Cynthia J. <logsdocj@westinghouse.com>
Sent: Thursday, August 8, 2019 4:38 PM
To: Kuhn, Kimberly M. <kuhnkm@dhec.sc.gov>
Cc: Wills Jr, Edward L. <willsel@westinghouse.com>; Parr, Nancy B. <parrnb@westinghouse.com>
Subject: Westinghouse_ RI Work Plan Addendum 1 SSAOU Assessment Report

*** Caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. ***

Kim,
Please see attached for the Westinghouse Remedial Investigation Work Plan Addendum 1 Assessment Report on the Southern Storage Area Operable Unit. The hard copy will be postmarked to you tomorrow.
Let me know if you have any questions or concerns.
Best regards.

Cynthia Logsdon
Principal Environmental Engineer
Environment, Health & Safety (EHS)
Columbia Fuel Fabrication Facility (CFFF)
Westinghouse Electric Company LLC
803.647.3171 desk
803.312.4171 cell
803.695.3964 fax
www.westinghousenuclear.com

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Westinghouse

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Westinghouse Electric Company
Nuclear Fuel
Columbia Fuel Fabrication Facility
5801 Bluff Road
Hopkins, South Carolina 29061
USA

SCDHEC, BLWM
Kim Kuhn
2600 Bull Street
Columbia, SC 29201

Direct tel: 803.647.3171
Direct fax: 803.695.3964
e-mail: logsdocj@westinghouse.com
Your ref:
Our ref: LTR-RAC-19-65

August 8, 2019

Subject: Southern Storage Area Operable Unit Remedial Investigation Work Plan Addendum 1 Assessment Report

Mrs. Kuhn:

On June 18, 2019, Westinghouse submitted to the Department a work plan to investigate the Southern Storage Area (SSA) Operable Unit (OU). The SSAOU investigation was submitted as Addendum 1[1] of the overall Remedial Investigation being performed under the Consent Agreement CA-19-02-HW. This assessment report describes the work completed, sample results and the remaining actions for this investigation.

The SSAOU, in part, is used for the intermodal storage of materials awaiting uranium (U) recovery. On May 30, 2019, a scheduled inspection of intermodal containers (sea-lands) within the SSAOU was completed and identified impaired roofing and degraded drums due to rainwater intrusion in one sea-land, C-40. The drums within this sea-land included solid combustible materials, such as mop heads and filters, awaiting U reclamation by onsite incineration. C-40 was safely emptied of its contents by June 5, 2019; all drums were transferred to the main building for processing and C-40 was wrapped with tarps to minimize further water intrusion. Three soil samples were collected at 1 foot below soil surface (bss) in the area of the degraded drums beneath C-40, with results ranging in U concentrations from 2-4 ppm.

In addition, the groundwater wells associated with the SSAOU (W-7A, W-10, W-11, 13R, W-15, W-16, and W-32) were sampled on June 4-5, 2019. The results were received on June 21, 2019, and submitted to the Department on August 1, 2019, in the July 2019 CA progress Report[2]. These results indicated that the intermodal storage has not contributed to the state of the groundwater beneath the site. Further review and comparison of groundwater well data from 2004 indicate that gross beta, Tc-99, and VOC contamination levels have not changed during the time of sea-land occupancy.

The initial extent of condition (EOC) evaluation for other onsite sea-lands identified a degraded floor in C-44 and roof leaks in C-35 and C-65. The roof leaks were immediately repaired. Corrective Action Program (CAP) issue number 2019-8970 was created, and a prioritized plan, starting with C-44, was developed for emptying each sea-land and inspecting each drum removed.

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[1] Southern Storage Area Operable Unit Sampling Work Plan, Remedial Investigation Work Plan, Addendum 1, LTR-RAC-19-45, June 18, 2019

[2] July 2019 CA Progress Report, LTR-RAC-19-60, August 1, 2019

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Phase 1 Sampling Results

Phase 1 of the Work Plan installed gravel to create a safe work area for operation of a forklift and/or other mobile machinery. This safe work area was needed to subsequently empty the drums within the sea-lands containing uranium-bearing material and to remove the containers from the site, starting with C-40.

Prior to gravel addition, the general area around the sea-lands, pictured in Figure 1, was sampled on June 21, 2019 for Contaminants of Potential Concern (CPOC) that could be present in the soil from materials stored in the intermodal containers, including isotopic uranium, Tc-99, pH, ammonia, nitrate and fluoride.

On June 28, 2019[3], Westinghouse reported to the Department the radiological survey and GEL analytical results of Phase 1 sampling. Soil sampling followed EPA Regional[4] guidance, were collected from 0-1 foot bss, and were analyzed by GEL using a chain of custody to ensure sample integrity.

Figure 1: Phase 1 Sampling Locations

[3] June 2019 CA Progress Report, LTR-RAC-19-50, June 28, 2019
[4] EPA Region 4 Science and Ecosystem Support Division (SESD), Operating Procedure SESDPROC-300-R3, *Soil Sampling*

Samples 1 – 8 are from the planned systematic grid, and bias samples 9-11 were taken behind C-40 where some low level contamination was detected during radiological survey and excavated prior to sampling. Based on these results tabulated in **Attachment A**, Westinghouse determined that the soil in the area met radiological unrestricted use criteria and acquired Department approval to install the gravel. The full laboratory report is included in **Attachment C**.

Phase 2 Sampling Results

C-40 was removed on June 28, 2019, and sent off for burial at a licensed low-level radioactive waste facility. The soil beneath C-40 was damp and allowed to dry in order to survey direct radiological readings. Radiological surveys showed low-level contamination above background levels. The Department was notified and approved Westinghouse's request to excavate the top layer of soil. The soil was removed, and the remaining area was resurveyed. The direct reading surveys were at or below background levels. The excavated soil is manifested for low-level radioactive waste burial.

Phase 2 sampling underneath the C-40 footprint was initiated. Eighteen soil samples were taken from the C-40 area on July 1, 2019, according to the work plan. Laboratory results were received on July 10, 2019. Radiological results for sample #9 exceeded the regional screening level for unrestricted use; therefore, the site elected to remove an additional 24" of soil in the immediately accessible vicinity (2' x 10'). The additional excavated soil from this area is manifested for low-level radioactive waste burial.

Following this further excavation, three additional soil samples were collected for uranium analysis on July 30, 2019. Results indicate that remediation has been completed in this area to levels that meet the unrestricted use criteria.

The results for sampling conducted on July 1, 2019, and July 30, 2019, are attached to this report in diagram and tabular formats as **Attachment B**.

Full laboratory reports are included as **Attachment C**.

Next Steps

Following the initial EOC evaluation, intermodal containers C-44, C-35 and C-65 have been safely emptied of their contents. Internal surveys of the empty containers indicate no material leaks or potential impact to the soil. However, as sea-lands are removed, the soil underneath will be sampled for confirmation.

A risk based action plan has been developed to empty the remaining intermodal containers containing uranium-bearing material and remove the emptied intermodal containers from the site.

If there is no visible indication of potential environmental impact when a sea-land is removed, sampling underneath the container will be initiated in accordance with a project plan that optimizes crane usage. That is, a crane will be scheduled onsite for a period of time that allows removal of multiple emptied intermodal containers. If there is indication of potential impact, Westinghouse will notify the Department per the communication protocol and discuss the appropriate actions including necessary sampling and Department approvals.

Respectfully,

Cynthia J. Logsdon
Principal Environmental Engineer
Westinghouse Electric Company, CFFF
803.312.4171 (m)

Cc: N. Parr, Environmental Manager
E. Wills, EH&S Manager
ENOVIA Records

Attachment A
Addendum 1 to RI Work Plan
Phase 1 Soil Sampling Results (Pre-Gravel)
Sampling conducted June 21, 2019

Systematic (S) or Bias (B) Sample	Sample Location	pH		U_{234} (ug/g)	U_{235} (ug/g)	U_{238} (ug/g)		Total Isotopic Uranium (µg/g)		Tc-99 (pCi/g)	Ammonia (mg/kg)	Nitrate (mg/kg)		Fluoride (mg/kg)
S	1	5.55	<	0.00207	0.055	2.58	<	2.64	<	3.62	86.4	2.15		1.32
S	2	5.23	<	0.00231	0.00958	0.903	<	0.915	<	5.16	134	0.799		0.724
S	3	4.48	<	0.00211	0.0609	2.74	<	2.80	<	0.785	84.8	1.19	<	0.382
S	4	4.63	<	0.00221	0.00829	0.804	<	0.815	<	4.81	55.4	1.30	<	0.363
S	5	5.23	<	0.00207	0.00661	0.802	<	0.811	<	4.22	53.5	1.08	<	0.362
S	6	4.75	<	0.00216	0.0162	1.35	<	1.37	<	-4.81	58.8	0.722		0.405
S	7	5.49	<	0.00211	0.0345	1.79	<	1.83	<	3.60	149	1.60		1.36
S	8	4.95	<	0.00219	0.00752	0.671	<	0.681	<	2.21	46.1	0.873	<	0.372
B	9	4.92	<	0.00215	0.0362	1.82	<	1.86	<	2.07	53.0	2.17		0.778
B	10	5.00	<	0.0021	0.0519	3.37	<	3.42	<	-2.3	76.1	1.88		0.832
B	11	4.72	<	0.00223	0.279	8.07	<	8.35	<	4.46	51.0	2.84		0.702

Phase 2 **Southern Storage Area Operable Unit - Soil Sampling - Beneath Sea-land C-40**

July 1, 2019 Sampling

	1 mg/kg = 1 ppm			SU	pCi/g	1 ug/g = 1 ppm			
	Fluoride	Ammonia	Nitrate	pH (H)	Tc-99	U238	U234	U235	**Total U**
C-40-1	1.52	28.8	2.05	4.76	*14.0*	0.763	*0.00212*	0.00727	0.772
C-40-2	0.593	37.6	1.77	4.75	*14.0*	2.77	*0.00218*	0.0925	2.86
C-40-3	1.00	50.2	2.60	4.95	*11.9*	0.706	*0.00207*	0.00618	0.714
C-40-4	1.36	33.3	1.75	5.52	*12.1*	0.768	*0.00206*	0.0059	0.776
C-40-5	0.851	35.9	2.14	4.73	*16.3*	0.630	*0.00218*	0.00532	0.638
C-40-6	*0.396*	76.9	2.23	4.84	*16.5*	2.46	*0.00228*	0.0513	2.51
C-40-7	0.900	49.9	5.00	4.52	*13.4*	0.660	*0.00211*	0.00508	0.667
C-40-8	*0.375*	50.0	1.95	4.66	*22.9*	1.15	*0.00207*	0.0193	1.17
C-40-9	*0.391*	81.3	2.18	4.53	*22.5*	20.4	0.00881	0.905	21.31
C-40-10	0.658	38.2	3.23	4.63	*16.8*	6.46	0.00238	0.240	6.70
C-40-11	1.98	36.3	15.4	4.15	*19.3*	2.20	*0.00213*	0.0641	2.27
C-40-12	*0.366*	42.3	1.26	4.79	*20.9*	1.27	*0.00216*	0.0215	1.29
C-40-13	*0.374*	44.9	2.27	4.66	*15.1*	1.46	*0.00221*	0.019	1.48
C-40-14	1.06	91.0	2.43	4.74	*15.2*	6.63	*0.00218*	0.179	6.81
C-40-15	0.495	87.8	2.69	4.60	*22.2*	4.47	*0.0021*	0.118	4.59
C-40-16	0.957	56.5	2.22	4.65	*21.9*	2.87	*0.00217*	0.0439	2.92
C-40-17	*0.391*	88.6	2.58	4.75	*13.7*	3.83	*0.00225*	0.0838	3.92
C-40-18	1.1	46.1	2.69	4.85	*20.0*	7.14	0.00258	0.248	7.39

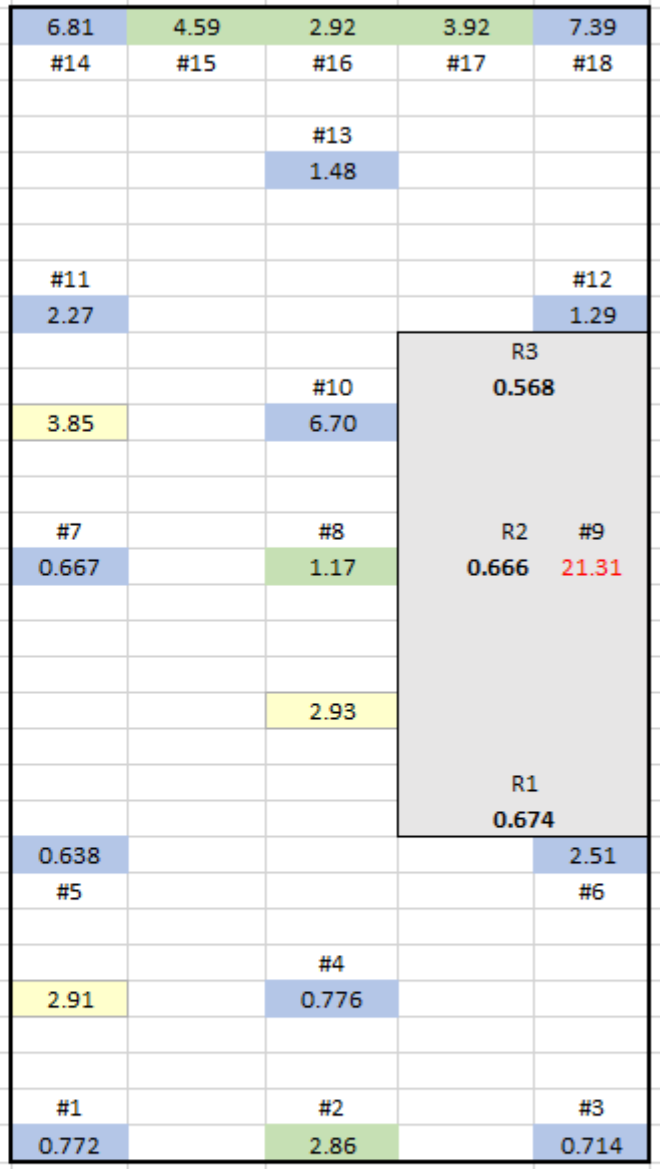
July 30, 2019 Sampling

Re-sampling following soil excavation of Sample #9 Area

	ug/kg				1000 ug/kg = 1 ppm			
	U238	U234	U235	**Total U**	U238	U234	U235	**Total U**
C-40-R1	667	*2.11*	4.61	673.720	0.667	*0.00211*	0.00461	**0.674**
C-40-R2	659	*2.18*	4.93	666.110	0.659	*0.00218*	0.00493	**0.666**
C-40-R3	562	*2.16*	4.02	568.180	0.562	*0.00216*	0.00402	**0.568**

NOTE: *italicized = non-detectable, reported at detection limit*

(H): out of holding



SAMPLE RESULTS ARE IN PPM U

initial Chem Lab samples

systematic samples

bias samples

excavated area following first round of sampling

Attachment C

Addendum 1 to RI Work Plan

Phase 1 Soil Sampling Laboratory Results (Pre-Gravel)
Sampling conducted June 21, 2019
GEL Work Order: 482639
Report Date: June 28, 2019

Phase 2 Soil Sampling Laboratory Results
Sampling conducted July 1, 2019
GEL Work Order: 483471
Report Date: July 10, 2019

Phase 2 Soil Sampling Laboratory Results
Post-Excavation of Sample #9 Area
Sampling conducted July 30, 2019
GEL Work Order: 486245
Report Date: August 5, 2019

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

June 28, 2019

Ms. Cynthia Logsdon
Westinghouse Electric Company, LLC
PO Drawer R
Columbia, South Carolina 29205

Re: Soil and Vegetation Analysis
Work Order: 482639

Dear Ms. Logsdon:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 21, 2019. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Taylor Cannon for
Hope Taylor
Project Manager

Purchase Order: 4500745037
Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

WNUC007 Westinghouse Electric Co, LLC

Client SDG: 482639 GEL Work Order: 482639

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

H Analytical holding time was exceeded

J Value is estimated

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

Reviewed by _____

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-1
Sample ID: 482639001
Matrix: Soil
Collect Date: 20-JUN-19 06:27
Receive Date: 21-JUN-19
Collector: Client
Moisture: 11.4%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride		1.32	0.375	1.10	mg/kg	9.78	1	LXA2	06/24/19	1731	1890034	1
Nitrate-N		2.15	0.364	1.10	mg/kg	9.78	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.055	0.0022	0.0154	ug/g	97.5	2	SKJ	06/25/19	1438	1889555	2
Uranium-238		2.58	0.0145	0.044	ug/g	97.5	2					
Uranium-234	U	ND	0.00207	0.0103	ug/g	91.6	2	SKJ	06/27/19	1318	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		86.4	4.46	12.4	mg/kg	43.9	5	KLP1	06/24/19	1429	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	5.55	0.010	0.100	SU		1	RXB5	06/24/19	1435	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-1 Project: WNUC00518
Sample ID: 482639001 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:
DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-2
Sample ID: 482639002
Matrix: Soil
Collect Date: 20-JUN-19 06:36
Receive Date: 21-JUN-19
Collector: Client
Moisture: 14.6%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.724	0.395	1.16	mg/kg	9.93	1	LXA2	06/24/19	2001	1890034	1
Nitrate-N	J	0.799	0.384	1.16	mg/kg	9.93	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235	J	0.00958	0.00231	0.0162	ug/g	98.8	2	SKJ	06/25/19	1445	1889555	2
Uranium-238		0.903	0.0153	0.0463	ug/g	98.8	2					
Uranium-234	U	ND	0.00231	0.0116	ug/g	98.8	2	SKJ	06/27/19	1328	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		134	4.54	12.6	mg/kg	43.1	5	KLP1	06/24/19	1431	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	5.23	0.010	0.100	SU		1	RXB5	06/24/19	1437	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-2 Project: WNUC00518
Sample ID: 482639002 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-3
Sample ID: 482639003
Matrix: Soil
Collect Date: 20-JUN-19 06:42
Receive Date: 21-JUN-19
Collector: Client
Moisture: 12%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	U	ND	0.382	1.12	mg/kg	9.88	1	LXA2	06/24/19	2030	1890034	1
Nitrate-N		1.19	0.371	1.12	mg/kg	9.88	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0609	0.00226	0.0158	ug/g	99.2	2	SKJ	06/25/19	1424	1889555	2
Uranium-238		2.74	0.0149	0.0451	ug/g	99.2	2					
Uranium-234	U	ND	0.00211	0.0105	ug/g	92.6	2	SKJ	06/27/19	1330	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		84.8	0.812	2.26	mg/kg	39.7	1	KLP1	06/24/19	1401	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.48	0.010	0.100	SU		1	RXB5	06/24/19	1439	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company :	Westinghouse Electric Company, LLC
Address :	PO Drawer R
	Columbia, South Carolina 29205
Contact:	Ms. Cynthia Logsdon
Project:	Soil and Vegetation Analysis

Client Sample ID:	SSAOU-3	Project:	WNUC00518
Sample ID:	482639003	Client ID:	WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-4
Sample ID: 482639004
Matrix: Soil
Collect Date: 20-JUN-19 06:49
Receive Date: 21-JUN-19
Collector: Client
Moisture: 9.72%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	U	ND	0.363	1.07	mg/kg	9.64	1	LXA2	06/24/19	2100	1890034	1
Nitrate-N		1.30	0.352	1.07	mg/kg	9.64	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235	J	0.00829	0.00208	0.0146	ug/g	94.0	2	SKJ	06/25/19	1426	1889555	2
Uranium-238		0.804	0.0137	0.0416	ug/g	94.0	2					
Uranium-234	U	ND	0.00221	0.0111	ug/g	99.8	2	SKJ	06/27/19	1331	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		55.4	0.997	2.77	mg/kg	50.0	1	KLP1	06/24/19	1402	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.63	0.010	0.100	SU		1	RXB5	06/24/19	1439	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-4 Project: WNUC00518
Sample ID: 482639004 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:
DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	SSAOU-5	Project:	WNUC00518
Sample ID:	482639005	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 06:55		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	8.26%		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	U	ND	0.362	1.07	mg/kg	9.78	1	LXA2	06/24/19	2130	1890034	1
Nitrate-N		1.08	0.352	1.07	mg/kg	9.78	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235	J	0.00661	0.00204	0.0143	ug/g	93.6	2	SKJ	06/25/19	1427	1889555	2
Uranium-238		0.802	0.0135	0.0408	ug/g	93.6	2					
Uranium-234	U	ND	0.00207	0.0103	ug/g	94.9	2	SKJ	06/27/19	1333	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		53.5	0.926	2.57	mg/kg	47.2	1	KLP1	06/24/19	1434	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	5.23	0.010	0.100	SU		1	RXB5	06/24/19	1440	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-5 Project: WNUC00518
Sample ID: 482639005 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:
DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-6
Sample ID: 482639006
Matrix: Soil
Collect Date: 20-JUN-19 07:01
Receive Date: 21-JUN-19
Collector: Client
Moisture: 8.86%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.405	0.368	1.08	mg/kg	9.88	1	LXA2	06/24/19	2200	1890034	1
Nitrate-N	J	0.722	0.358	1.08	mg/kg	9.88	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0162	0.00213	0.0149	ug/g	96.9	2	SKJ	06/25/19	1429	1889555	2
Uranium-238		1.35	0.014	0.0425	ug/g	96.9	2					
Uranium-234	U	ND	0.00216	0.0108	ug/g	98.2	2	SKJ	06/27/19	1334	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		58.8	0.796	2.21	mg/kg	40.3	1	KLP1	06/24/19	1435	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.75	0.010	0.100	SU		1	RXB5	06/24/19	1441	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Company :	Westinghouse Electric Company, LLC
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Contact:	Ms. Cynthia Logsdon
Project:	Soil and Vegetation Analysis

Client Sample ID:	SSAOU-6	Project:	WNUC00518
Sample ID:	482639006	Client ID:	WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-7 Project: WNUC00518
Sample ID: 482639007 Client ID: WNUC007
Matrix: Soil
Collect Date: 20-JUN-19 07:08
Receive Date: 21-JUN-19
Collector: Client
Moisture: 10.2%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride		1.36	0.378	1.11	mg/kg	9.98	1	LXA2	06/24/19	2230	1890034	1
Nitrate-N		1.60	0.366	1.11	mg/kg	9.98	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0345	0.00222	0.0156	ug/g	99.8	2	SKJ	06/25/19	1430	1889555	2
Uranium-238		1.79	0.0147	0.0444	ug/g	99.8	2					
Uranium-234	U	ND	0.00211	0.0105	ug/g	94.7	2	SKJ	06/27/19	1339	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		149	4.32	12.0	mg/kg	43.1	5	KLP1	06/24/19	1435	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	5.49	0.010	0.100	SU		1	RXB5	06/24/19	1442	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Company :	Westinghouse Electric Company, LLC
Address :	PO Drawer R
	Columbia, South Carolina 29205
Contact:	Ms. Cynthia Logsdon
Project:	Soil and Vegetation Analysis

Client Sample ID:	SSAOU-7	Project:	WNUC00518
Sample ID:	482639007	Client ID:	WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-8 Project: WNUC00518
Sample ID: 482639008 Client ID: WNUC007
Matrix: Soil
Collect Date: 20-JUN-19 07:14
Receive Date: 21-JUN-19
Collector: Client
Moisture: 9.39%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	U	ND	0.372	1.09	mg/kg	9.90	1	LXA2	06/24/19	2300	1890034	1
Nitrate-N	J	0.873	0.361	1.09	mg/kg	9.90	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235	J	0.00752	0.0019	0.0133	ug/g	86.2	2	SKJ	06/25/19	1432	1889555	2
Uranium-238		0.671	0.0126	0.0381	ug/g	86.2	2					
Uranium-234	U	ND	0.00219	0.0109	ug/g	99.2	2	SKJ	06/27/19	1341	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		46.1	0.974	2.71	mg/kg	49.0	1	KLP1	06/24/19	1436	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.95	0.010	0.100	SU		1	RXB5	06/24/19	1443	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-8 Project: WNUC00518
Sample ID: 482639008 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
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Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-9 Project: WNUC00518
Sample ID: 482639009 Client ID: WNUC007
Matrix: Soil
Collect Date: 20-JUN-19 15:33
Receive Date: 21-JUN-19
Collector: Client
Moisture: 10.9%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.778	0.369	1.09	mg/kg	9.69	1	LXA2	06/24/19	2330	1890034	1
Nitrate-N		2.17	0.359	1.09	mg/kg	9.69	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0362	0.002	0.014	ug/g	89.0	2	SKJ	06/25/19	1339	1889555	2
Uranium-238		1.82	0.0132	0.0399	ug/g	89.0	2					
Uranium-234	U	ND	0.00215	0.0107	ug/g	95.6	2	SKJ	06/27/19	1342	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		53.0	0.918	2.55	mg/kg	45.5	1	KLP1	06/24/19	1441	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.92	0.010	0.100	SU		1	RXB5	06/24/19	1444	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Report Date: June 28, 2019

Company :	Westinghouse Electric Company, LLC
Address :	PO Drawer R
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Contact:	Ms. Cynthia Logsdon
Project:	Soil and Vegetation Analysis

Client Sample ID:	SSAOU-9	Project:	WNUC00518
Sample ID:	482639009	Client ID:	WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-10
Sample ID: 482639010
Matrix: Soil
Collect Date: 20-JUN-19 15:38
Receive Date: 21-JUN-19
Collector: Client
Moisture: 10.5%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.832	0.380	1.12	mg/kg	10.0	1	LXA2	06/25/19	0000	1890034	1
Nitrate-N		1.88	0.369	1.12	mg/kg	10.0	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0519	0.00214	0.0149	ug/g	95.6	2	SKJ	06/25/19	1341	1889555	2
Uranium-238		3.37	0.0141	0.0427	ug/g	95.6	2					
Uranium-234	U	ND	0.0021	0.0105	ug/g	94.2	2	SKJ	06/27/19	1344	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		76.1	0.914	2.54	mg/kg	45.5	1	KLP1	06/24/19	1442	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	5.00	0.010	0.100	SU		1	RXB5	06/24/19	1444	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-10 Project: WNUC00518
Sample ID: 482639010 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-11
Sample ID: 482639011
Matrix: Soil
Collect Date: 20-JUN-19 15:44
Receive Date: 21-JUN-19
Collector: Client
Moisture: 11.3%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.702	0.383	1.13	mg/kg	10.0	1	LXA2	06/25/19	0029	1890034	1
Nitrate-N		2.84	0.372	1.13	mg/kg	10.0	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.279	0.0108	0.0755	ug/g	95.6	10	SKJ	06/25/19	1342	1889555	2
Uranium-238		8.07	0.0712	0.216	ug/g	95.6	10					
Uranium-234	U	ND	0.00223	0.0112	ug/g	99.0	2	SKJ	06/27/19	1345	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		51.0	0.651	1.81	mg/kg	32.1	1	KLP1	06/24/19	1443	1889626	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.72	0.010	0.100	SU		1	RXB5	06/24/19	1445	1889313	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-11 Project: WNUC00518
Sample ID: 482639011 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:
DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

QC Summary

Report Date: June 28, 2019

Westinghouse Electric Company, LLC
PO Drawer R
Columbia, South Carolina

Contact: **Ms. Cynthia Logsdon**

Workorder: **482639**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography												
Batch 1890034												
QC1204316080 482639001 DUP												
Fluoride			1.32		2.04	mg/kg	42.7 ^		(+/-1.12)	LXA2	06/24/19	18:01
Nitrate-N			2.15		2.20	mg/kg	2.2 ^		(+/-1.12)			
QC1204316081 482639011 DUP												
Fluoride		J	0.702	J	0.775	mg/kg	9.91 ^		(+/-1.12)		06/25/19	01:59
Nitrate-N			2.84		2.78	mg/kg	2.15 ^		(+/-1.12)			
QC1204316079 LCS												
Fluoride	24.8				24.9	mg/kg		100	(90%-110%)		06/24/19	17:01
Nitrate-N	24.8				23.4	mg/kg		94.1	(90%-110%)			
QC1204316078 MB												
Fluoride				U	ND	mg/kg					06/24/19	16:31
Nitrate-N				U	ND	mg/kg						
QC1204316082 482639001 MS												
Fluoride	28.2		1.32		15.4	mg/kg		49.8	(44%-130%)		06/24/19	18:31
Nitrate-N	28.2		2.15		29.0	mg/kg		95.2	(71%-117%)			
QC1204316083 482639011 MS												
Fluoride	28.0	J	0.702		8.48	mg/kg		27.8 *	(44%-130%)		06/25/19	02:29
Nitrate-N	28.0		2.84		29.8	mg/kg		96.3	(71%-117%)			

QC Summary

Workorder: **482639**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1889555										
QC1204314811 482639001 DUP										
Uranium-235		0.055		0.057	ug/g	3.46 ^		(+/-0.0154)	SKJ	06/25/19 14:39
Uranium-238		2.58		2.85	ug/g	10		(0%-20%)		
QC1204314810 LCS										
Uranium-235	0.0342			0.0345	ug/g		101	(80%-120%)		06/25/19 13:38
Uranium-238	4.71			4.97	ug/g		106	(80%-120%)		
QC1204314809 MB										
Uranium-235			U	ND	ug/g					06/25/19 13:36
Uranium-238			U	ND	ug/g					
QC1204314812 482639001 MS										
Uranium-235	0.0397	0.055		0.102	ug/g		119	(75%-125%)		06/25/19 14:41
Uranium-238	5.47	2.58		8.47	ug/g		108	(75%-125%)		
QC1204314813 482639001 SDILT										
Uranium-235		0.250	J	0.0489	ug/L	2.24		(0%-10%)		06/25/19 14:44
Uranium-238		11.7		2.35	ug/L	.325		(0%-10%)		
Batch 1890064										
QC1204316173 482639001 DUP										
Uranium-234	U	ND	U	ND	ug/g	N/A			SKJ	06/27/19 13:19
QC1204316172 LCS										
Uranium-234	0.0513			0.0573	ug/g		112	(80%-120%)		06/27/19 13:16
QC1204316171 MB										
Uranium-234			U	ND	ug/g					06/27/19 13:14

QC Summary

Workorder: **482639**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1890064										
QC1204316174 482639001 MS										
Uranium-234	0.061	ND	U	0.0659	ug/g		107	(75%-125%)	SKJ	06/27/19 13:21
QC1204316175 482639001 SDILT										
Uranium-234		ND	U	ND	ug/L	N/A				06/27/19 13:22
Nutrient Analysis										
Batch 1889626										
QC1204314990 482639001 DUP										
Nitrogen, Ammonia		86.4		109	mg/kg	23.5*		(0%-20%)	KLP1	06/24/19 14:29
QC1204314991 482639002 DUP										
Nitrogen, Ammonia		134		60.7	mg/kg	75.2*^		(+/-13.3)		06/24/19 14:32
QC1204314989 LCS										
Nitrogen, Ammonia	50.0			54.5	mg/kg		109	(90%-110%)		06/24/19 13:55
QC1204314988 MB										
Nitrogen, Ammonia			U	ND	mg/kg					06/24/19 13:54
QC1204314992 482639001 MS										
Nitrogen, Ammonia	36.2	86.4		109	mg/kg		61.2*	(90%-110%)		06/24/19 14:30
QC1204314993 482639002 MS										
Nitrogen, Ammonia	53.2	134		126	mg/kg		0*	(90%-110%)		06/24/19 14:33
Titration and Ion Analysis										
Batch 1889313										
QC1204314207 482639001 DUP										
Corrosivity		5.55	H	5.56	SU	0.18		(0%-10%)	RXB5	06/24/19 14:36
QC1204314208 482639002 DUP										
Corrosivity		5.23	H	5.22	SU	0.191		(0%-10%)		06/24/19 14:38

QC Summary

Workorder: **482639**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch 1889313											
QC1204314206 LCS											
Corrosivity	7.00			7.02	SU		100	(95%-105%)	RXB5	06/24/19	14:33

Notes:

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- Z Paint Filter Test--Particulates passed through the filter, however no free liquids were observed.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- d 5-day BOD--The 2:1 depletion requirement was not met for this sample
- e 5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for reporting purposes
- h Preparation or preservation holding time was exceeded

QC Summary

Workorder: **482639**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	SSAOU-1	Project:	WNUC00518
Sample ID:	482639001	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 06:27		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	11.4%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	3.62	+/-14.6	25.2	50.0	pCi/g			CXS7	06/26/19	1138	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			109	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	SSAOU-2	Project:	WNUC00518
Sample ID:	482639002	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 06:36		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	14.6%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	5.16	+/-17.9	30.8	50.0	pCi/g			CXS7	06/26/19	1155	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			104	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	SSAOU-3	Project:	WNUC00518
Sample ID:	482639003	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 06:42		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	12%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	0.785	+/-14.1	24.5	50.0	pCi/g			CXS7	06/26/19	1211	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			105	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-4 Project: WNUC00518
Sample ID: 482639004 Client ID: WNUC007
Matrix: Soil
Collect Date: 20-JUN-19 06:49
Receive Date: 21-JUN-19
Collector: Client
Moisture: 9.72%

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	4.81	+/-17.2	29.7	50.0	pCi/g			CXS7	06/26/19	1228	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			109	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	SSAOU-5	Project:	WNUC00518
Sample ID:	482639005	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 06:55		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	8.26%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	4.22	+/-16.7	28.9	50.0	pCi/g			CXS7	06/26/19	1245	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			110	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	SSAOU-6	Project:	WNUC00518
Sample ID:	482639006	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 07:01		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	8.86%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-4.81	+/-15.3	27.2	50.0	pCi/g			CXS7	06/26/19	1301	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			107	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 28, 2019

Company :	Westinghouse Electric Company, LLC
Address :	PO Drawer R
	Columbia, South Carolina 29205
Contact:	Ms. Cynthia Logsdon
Project:	Soil and Vegetation Analysis

Client Sample ID:	SSAOU-7	Project:	WNUC00518
Sample ID:	482639007	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 07:08		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	10.2%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	3.60	+/-8.23	14.1	50.0	pCi/g			CXS7	06/26/19	1318	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			107	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	SSAOU-8	Project:	WNUC00518
Sample ID:	482639008	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 07:14		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	9.39%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	2.21	+/-8.76	15.1	50.0	pCi/g			CXS7	06/26/19	1334	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			113	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	SSAOU-9	Project:	WNUC00518
Sample ID:	482639009	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 15:33		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	10.9%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	2.07	+/-5.02	8.62	50.0	pCi/g			CXS7	06/26/19	1351	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			104	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	SSAOU-10	Project:	WNUC00518
Sample ID:	482639010	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 15:38		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	10.5%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-2.3	+/-18.9	33.3	50.0	pCi/g			CXS7	06/26/19	1408	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			106	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 28, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	SSAOU-11	Project:	WNUC00518
Sample ID:	482639011	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	20-JUN-19 15:44		
Receive Date:	21-JUN-19		
Collector:	Client		
Moisture:	11.3%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	4.46	+/-7.13	12.1	50.0	pCi/g			CXS7	06/26/19	1424	1889966	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			103	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 28, 2019

Westinghouse Electric Company, LLC
PO Drawer R
Columbia, South Carolina

Contact: **Ms. Cynthia Logsdon**

Workorder: **482639**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Liquid Scintillation											
Batch 1889966											
QC1204315876 482639011 DUP											
Technetium-99	U	4.46	U	4.25	pCi/g	N/A			N/A CXS7	06/26/19	14:57
	Uncertainty	+/-7.13		+/-9.58							
QC1204315877 LCS											
Technetium-99	202			156	pCi/g		77.4	(75%-125%)		06/26/19	15:14
	Uncertainty			+/-10.1							
QC1204315875 MB											
Technetium-99			U	-2.74	pCi/g					06/26/19	14:41
	Uncertainty			+/-4.91							

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.
N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification

QC Summary

Workorder: **482639**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Metals

Product: **Determination of Metals by ICP-MS**
Analytical Method: SW846 3050B/6020A
Analytical Procedure: GL-MA-E-014 REV# 33
Analytical Batch: 1889555

Preparation Method: SW846 3050B
Preparation Procedure: GL-MA-E-009 REV# 28
Preparation Batch: 1889554

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204314809	Method Blank (MB)**ICP-MS**
1204314810	Laboratory Control Sample (LCS)
1204314813	482639001(SSAOU-1L) Serial Dilution (SD)
1204314811	482639001(SSAOU-1D) Sample Duplicate (DUP)
1204314812	482639001(SSAOU-1S) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

ICSA/ICSAB Statement
For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Technical Information

Preparation/Analytical Method Verification
Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that

will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions
Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range. Sample 482639011 (SSAOU-11) was diluted to ensure that the analyte concentration was within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times.

Analyte	482639									
	001	002	003	004	005	006	007	008	009	010
Uranium-235	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X
Uranium-238	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X

Analyte	482639
	011
Uranium-235	10X
Uranium-238	10X

Product: **Determination of Metals by ICP-MS**
Analytical Method: SW846 3050B/6020A
Analytical Procedure: GL-MA-E-014 REV# 33
Analytical Batch: 1890064

Preparation Method: SW846 3050B
Preparation Procedure: GL-MA-E-009 REV# 28
Preparation Batch: 1890062

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204316171	Method Blank (MB)**ICP-MS**
1204316172	Laboratory Control Sample (LCS)
1204316175	482639001(SSAOU-1L) Serial Dilution (SD)
1204316173	482639001(SSAOU-1D) Sample Duplicate (DUP)
1204316174	482639001(SSAOU-1S) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

ICSA/ICSAB Statement
For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Technical Information

Preparation/Analytical Method Verification
Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions
Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range. The ICPMS solid samples in this SDG were diluted the standard two times.

Analyte	482639									
	001	002	003	004	005	006	007	008	009	010
Uranium-234	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X

Analyte	482639
	011
Uranium-234	2X

General Chemistry

Product: **Ion Chromatography**
Analytical Method: SW846 9056A
Analytical Procedure: GL-GC-E-086 REV# 26
Analytical Batches: 1890034 and 1890032

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3

482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204316078	Method Blank (MB)
1204316079	Laboratory Control Sample (LCS)
1204316080	482639001(SSAOU-1) Sample Duplicate (DUP)
1204316081	482639011(SSAOU-11) Sample Duplicate (DUP)
1204316082	482639001(SSAOU-1) Matrix Spike (MS)
1204316083	482639011(SSAOU-11) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Fluoride	1204316083 (SSAOU-11MS)	27.8* (44%-130%)

Product: **Ammonia Nitrogen**
Preparation Method: EPA 350.1 Modified
Preparation Procedure: GL-GC-E-106 REV# 10
Preparation Batch: 1889626

Preparation Method: EPA 350.2 Modified Prep
Preparation Procedure: GL-GC-E-072 REV# 17
Preparation Batch: 1889625

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5

482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204314988	Method Blank (MB)
1204314989	Laboratory Control Sample (LCS)
1204314990	482639001(SSAOU-1) Sample Duplicate (DUP)
1204314991	482639002(SSAOU-2) Sample Duplicate (DUP)
1204314992	482639001(SSAOU-1) Matrix Spike (MS)
1204314993	482639002(SSAOU-2) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Nitrogen, Ammonia	1204314992 (SSAOU-1MS)	61.2* (90%-110%)
	1204314993 (SSAOU-2MS)	-13.8* (90%-110%)

Duplicate Relative Percent Difference (RPD) Statement
The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample:

Analyte	Sample	Value
Nitrogen, Ammonia	1204314990 (SSAOU-1DUP)	23.5* (0%-20%)
	1204314991 (SSAOU-2DUP)	abs(60.7 - 134)* (+/-13.3 mg/kg)

Technical Information

Sample Dilutions
The following samples 1204314990 (SSAOU-1DUP), 1204314991 (SSAOU-2DUP), 1204314992 (SSAOU-1MS), 1204314993 (SSAOU-2MS), 482639001 (SSAOU-1), 482639002 (SSAOU-2) and 482639007 (SSAOU-7) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	482639		
	001	002	007

Nitrogen, Ammonia	5X	5X	5X

Sample Re-analysis
Samples482639005 (SSAOU-5), 482639006 (SSAOU-6), 482639007 (SSAOU-7), 482639008 (SSAOU-8), 482639009 (SSAOU-9), 482639010 (SSAOU-10) and 482639011 (SSAOU-11) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Product: pH
Analytical Method: SW846 9045D
Analytical Procedure: GL-GC-E-008 REV# 23
Analytical Batch: 1889313

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204314206	Laboratory Control Sample (LCS)
1204314207	482639001(SSAOU-1) Sample Duplicate (DUP)
1204314208	482639002(SSAOU-2) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Holding Times
Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1204314207 (SSAOU-1DUP)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
1204314208 (SSAOU-2DUP)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639001 (SSAOU-1)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19

482639002 (SSAOU-2)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639003 (SSAOU-3)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639004 (SSAOU-4)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639005 (SSAOU-5)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639006 (SSAOU-6)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639007 (SSAOU-7)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639008 (SSAOU-8)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639009 (SSAOU-9)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639010 (SSAOU-10)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639011 (SSAOU-11)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19

Radiochemistry

Product: **Dry Weight**
Analytical Method: ASTM D 2216 (Modified)
Analytical Procedure: GL-OA-E-020 REV# 13
Analytical Batch: 1889504

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204314687	482639001(SSAOU-1) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Liquid Scint Tc99, Soil**
Analytical Method: DOE EML HASL-300, Tc-02-RC Modified
Analytical Procedure: GL-RAD-A-059 REV# 5
Analytical Batch: 1889966

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204315875	Method Blank (MB)
1204315876	482639011(SSAOU-11) Sample Duplicate (DUP)
1204315877	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Page: 1 of 2

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Project #: SSAOU Soil Sampling Work Plan
GEL Quote #:
QC Number [1]:
PO Number: 4500745037

GEL Work Order Number: 482639

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Page 31 of 45 DE: 482639

Client Name: Westinghouse Electric Company LLC — Phone #: 803.647.3171
Project/Site Name: Columbia Fuel Fabrication Facility — Fax #: 803.695.3964
Address: 5801 Bluff Road, Hopkins, SC 29061
Collected by: Randy Crews — Send Results: logsdocj@westinghouse.com

Sample Analysis Requested [5] (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code [2]	Field Filtered [3]	Sample Matrix [4]	Should this sample be considered: Radioactive	Should this sample be considered: TSCA Regulated	Total number of containers	isotopic uranium (by individual isotope, ICP-MS)	Tc-99	Ammonia	Fluoride	pH	Nitrate					<-- Preservative Type (6)
SSAOU-1	6/20/2019	0627	G	N	SO			1	X	X	X	X	X	X					
SSAOU-2	6/20/2019	0636	G	N	SO			1	X	X	X	X	X	X					
SSAOU-3	6/20/2019	0642	G	N	SO			1	X	X	X	X	X	X					
SSAOU-4	6/20/2019	0649	G	N	SO			1	X	X	X	X	X	X					
SSAOU-5	6/20/2019	0655	G	N	SO			1	X	X	X	X	X	X					
SSAOU-6	6/20/2019	0701	G	N	SO			1	X	X	X	X	X	X					
SSAOU-7	6/20/2019	0708	G	N	SO			1	X	X	X	X	X	X					
SSAOU-8	6/20/2019	0714	G	N	SO			1	X	X	X	X	X	X					

Comments
Note: extra sample is required for sample specific QC

TAT Requested: Normal: ___ Rush: __X_ Specify: _ASAP_
(Subject to Surcharge)

Fax Results: Yes / No

Circle Deliverable:
C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

*****5 STRAIGHT day turnaround*****

Sample Collection Time Zone
Eastern Pacific
Central Other _____
Mountain

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 Randy Crews	06/21/2019	1003	1 Stacy Boone	6/21/19	1003
2			2		
3			3		

Sample Shipping and Delivery Details

GEL PM: Hope Taylor
Method of Shipment: Date Shipped: N/A
Airbill #:
Airbill #:

1.) Chain of Custody Number = Client Determined
2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite
3.) Field Filtered: For liquid matrices, indicate with a **- Y -** for yes the sample was field filtered or **- N -** for sample was not field filtered.
4.) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, **ML**=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, **SS**=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal
5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B* **- 3**, *6010B 7470A* **- 1**).
6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
Custody Seal Intact? *YES* *NO*
Cooler Temp: 1 *C*

WHITE = LABORATORY **YELLOW = FILE** **PINK = CLIENT**

Page: 2 of 2

Project #: SSAOU Soil Sampling Work Plan
GEL Quote #:
QC Number [1]:
PO Number: 4500745037

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

GEL Work Order Number:

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: Westinghouse Electric Company LLC — Phone #: 803.647.3171
Project/Site Name: Columbia Fuel Fabrication Facility — Fax #: 803.695.3964
Address: 5801 Bluff Road, Hopkins, SC 29061
Collected by: Randy Crews — Send Results: logsdocj@westinghouse.com

Sample Analysis Requested [5] (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code [2]	Field Filtered [3]	Sample Matrix [4]	Should this sample be considered: Radioactive	Should this sample be considered: TSCA Regulated	Total number of containers	isotopic uranium (by individual isotope, ICP-MS)	Tc-99	Ammonia	Fluoride	pH	Nitrate					<-- Preservative Type (6)	Comments
SSAOU-9	6/20/2019	1533	G	N	SO			1	X	X	X	X	X	X						Note: extra sample is required for sample specific QC
SSAOU-10	6/20/2019	1538	G	N	SO			1	X	X	X	X	X	X						
SSAOU-11	6/20/2019	1544	G	N	SO			1	X	X	X	X	X	X						

TAT Requested: Normal: ___ Rush: __X_ Specify: _ASAP_ (Subject to Surcharge)

Fax Results: Yes / No

Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

*****5 STRAIGHT day turnaround*****

Sample Collection Time Zone: Eastern / Central / Mountain / Pacific / Other _____

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 Randy Crews R. Crews	06/21/2019	1003	1 Stacy Bon	6/21/19	1003
2			2		
3			3		

Sample Shipping and Delivery Details

GEL PM: Hope Taylor
Method of Shipment: Date Shipped: N/A
Airbill #:
Airbill #:

1.) Chain of Custody Number = Client Determined
2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite
3.) Field Filtered: For liquid matrices, indicate with a **- Y -** for yes the sample was field filtered or **- N -** for sample was not field filtered.
4.) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, ML=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, **SS**=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal
5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B* **- 3**, *6010B 7470A* **- 1**).
6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
Custody Seal Intact? *YES* *NO*
Cooler Temp: ____ *C*

WHITE = LABORATORY **YELLOW = FILE** **PINK = CLIENT**

Page 82 of 84 SDG: 48263

GEL Laboratories

SAMPLE RECEIPT & REVIEW FORM

Client: WNUC	**SDG/AR/COC/Work Order:** 482639
Received By: S L HOONE	**Date Received:** 6/21/19 HT
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other — CLIENT

Suspected Hazard Information	Yes	No	
			*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#: If UN2910, Is the Radioactive Shipment Survey Compliant? Yes___ No___
B) Did the client designate the samples are to be received as radioactive?		✓	COC notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): Ø CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3
D) Did the client designate samples are hazardous?		✓	COC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?		✓	If D or E is yes, select Hazards below. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: 1 C
4	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: IR1-19 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?			✓	Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?			✓	If Yes, are Encores or Soil Kits present for solids? Yes___ No___ NA___(If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes___ No___ NA___(If unknown, select No) Are liquid VOA vials free of headspace? Yes___ No___ NA___ Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	✓			Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided?	✓			
13	COC form is properly signed in relinquished/received sections?	✓			Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials JMC Date 6/24/19 Page 1 of 1

GL-CHL-SR-001 Rev 6

List of current GEL Certifications as of 28 June 2019

State	Certification
Alaska	17−018
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122019−3
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−19−15
Utah NELAP	SC000122018−27
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

July 10, 2019

Ms. Cynthia Logsdon
Westinghouse Electric Company, LLC
PO Drawer R
Columbia, South Carolina 29205

Re: Soil and Vegetation Analysis
Work Order: 483471

Dear Ms. Logsdon:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 02, 2019. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. This package is being resubmitted to include Tc99 results.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Hope Taylor
Project Manager

Purchase Order: 4500745037
Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

WNUC007 Westinghouse Electric Co, LLC

Client SDG: 483471 GEL Work Order: 483471

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

H Analytical holding time was exceeded

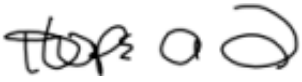
J Value is estimated

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

Reviewed by 

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-1
Project: WNUC00518
Sample ID: 483471001
Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 11:06
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.49%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride		1.52	0.374	1.10	mg/kg	9.95	1	LXA2	07/08/19	1741	1893930	1
Nitrate-N		2.05	0.363	1.10	mg/kg	9.95	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235	J	0.00727	0.00212	0.0148	ug/g	96.0	2	SKJ	07/10/19	1102	1892841	2
Uranium-238		0.763	0.014	0.0424	ug/g	96.0	2					
Uranium-234	U	ND	0.00212	0.0106	ug/g	96.0	2	SKJ	07/10/19	1255	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		28.8	0.765	2.12	mg/kg	38.5	1	KLP1	07/05/19	1015	1893310	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.76	0.010	0.100	SU		1	RXB5	07/05/19	1709	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/05/19	0935	1893309
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-1 Project: WNUC00518
Sample ID: 483471001 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-2 Project: WNUC00518
Sample ID: 483471002 Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 11:09
Receive Date: 02-JUL-19
Collector: Client
Moisture: 10.2%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.593	0.368	1.08	mg/kg	9.73	1	LXA2	07/08/19	1914	1893930	1
Nitrate-N		1.77	0.358	1.08	mg/kg	9.73	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0925	0.00218	0.0153	ug/g	97.8	2	SKJ	07/10/19	1055	1892841	2
Uranium-238		2.77	0.0144	0.0436	ug/g	97.8	2					
Uranium-234	U	ND	0.00218	0.0109	ug/g	97.8	2	SKJ	07/10/19	1301	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		37.6	0.726	2.02	mg/kg	36.2	1	KLP1	07/05/19	0946	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.75	0.010	0.100	SU		1	RXB5	07/05/19	1710	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-2	Project:	WNUC00518
Sample ID:	483471002	Client ID:	WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-3 Project: WNUC00518
Sample ID: 483471003 Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 11:12
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.48%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	1.00	0.366	1.08	mg/kg	9.73	1	LXA2	07/08/19	1945	1893930	1
Nitrate-N		2.60	0.355	1.08	mg/kg	9.73	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235	J	0.00618	0.00207	0.0145	ug/g	93.8	2	SKJ	07/10/19	1101	1892841	2
Uranium-238		0.706	0.0137	0.0415	ug/g	93.8	2					
Uranium-234	U	ND	0.00207	0.0104	ug/g	93.8	2	SKJ	07/10/19	1314	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		50.2	0.507	1.41	mg/kg	25.5	1	KLP1	07/05/19	0949	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.95	0.010	0.100	SU		1	RXB5	07/05/19	1712	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-3	Project:	WNUC00518
Sample ID:	483471003	Client ID:	WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-4
Project: WNUC00518
Sample ID: 483471004
Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 11:15
Receive Date: 02-JUL-19
Collector: Client
Moisture: 10.3%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride		1.36	0.372	1.09	mg/kg	9.80	1	LXA2	07/08/19	2016	1893930	1
Nitrate-N		1.75	0.361	1.09	mg/kg	9.80	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235	J	0.0059	0.00206	0.0145	ug/g	92.6	2	SKJ	07/10/19	1104	1892841	2
Uranium-238		0.768	0.0136	0.0413	ug/g	92.6	2					
Uranium-234	U	ND	0.00206	0.0103	ug/g	92.6	2	SKJ	07/10/19	1315	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		33.3	0.678	1.88	mg/kg	33.8	1	KLP1	07/05/19	0956	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	5.52	0.010	0.100	SU		1	RXB5	07/05/19	1713	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-4 Project: WNUC00518
Sample ID: 483471004 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-5
Project: WNUC00518
Sample ID: 483471005
Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 11:18
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.81%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.851	0.371	1.09	mg/kg	9.83	1	LXA2	07/08/19	2046	1893930	1
Nitrate-N		2.14	0.360	1.09	mg/kg	9.83	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235	J	0.00532	0.00218	0.0152	ug/g	98.2	2	SKJ	07/10/19	1105	1892841	2
Uranium-238		0.630	0.0144	0.0436	ug/g	98.2	2					
Uranium-234	U	ND	0.00218	0.0109	ug/g	98.2	2	SKJ	07/10/19	1317	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		35.9	1.16	3.22	mg/kg	58.1	1	KLP1	07/05/19	0957	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.73	0.010	0.100	SU		1	RXB5	07/05/19	1714	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Report Date: July 10, 2019

Company :	Westinghouse Electric Company, LLC
Address :	PO Drawer R
	Columbia, South Carolina 29205
Contact:	Ms. Cynthia Logsdon
Project:	Soil and Vegetation Analysis

Client Sample ID:	C-40-5	Project:	WNUC00518
Sample ID:	483471005	Client ID:	WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-6
Sample ID: 483471006
Matrix: Soil
Collect Date: 01-JUL-19 11:26
Receive Date: 02-JUL-19
Collector: Client
Moisture: 14.8%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	U	ND	0.396	1.16	mg/kg	9.93	1	LXA2	07/08/19	2117	1893930	1
Nitrate-N		2.23	0.384	1.16	mg/kg	9.93	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0513	0.00228	0.0159	ug/g	97.1	2	SKJ	07/10/19	1107	1892841	2
Uranium-238		2.46	0.015	0.0456	ug/g	97.1	2					
Uranium-234	U	ND	0.00228	0.0114	ug/g	97.1	2	SKJ	07/10/19	1318	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		76.9	0.866	2.40	mg/kg	41.0	1	KLP1	07/05/19	0957	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.84	0.010	0.100	SU		1	RXB5	07/05/19	1715	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-6 Project: WNUC00518
Sample ID: 483471006 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-7
Sample ID: 483471007
Matrix: Soil
Collect Date: 01-JUL-19 11:29
Receive Date: 02-JUL-19
Collector: Client
Moisture: 11%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.900	0.375	1.10	mg/kg	9.80	1	LXA2	07/08/19	2250	1893930	1
Nitrate-N		5.00	0.364	1.10	mg/kg	9.80	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235	J	0.00508	0.00211	0.0148	ug/g	93.8	2	SKJ	07/10/19	1133	1892841	2
Uranium-238		0.660	0.0139	0.0422	ug/g	93.8	2					
Uranium-234	U	ND	0.00211	0.0105	ug/g	93.8	2	SKJ	07/10/19	1320	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		49.9	0.936	2.60	mg/kg	46.3	1	KLP1	07/05/19	0958	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.52	0.010	0.100	SU		1	RXB5	07/05/19	1715	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

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Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-7 Project: WNUC00518
Sample ID: 483471007 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-8
Sample ID: 483471008
Matrix: Soil
Collect Date: 01-JUL-19 11:31
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.96%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	U	ND	0.375	1.10	mg/kg	9.93	1	LXA2	07/08/19	2321	1893930	1
Nitrate-N		1.95	0.364	1.10	mg/kg	9.93	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0193	0.00207	0.0145	ug/g	93.1	2	SKJ	07/10/19	1109	1892841	2
Uranium-238		1.15	0.0137	0.0414	ug/g	93.1	2					
Uranium-234	U	ND	0.00207	0.0103	ug/g	93.1	2	SKJ	07/10/19	1321	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		50.0	0.769	2.14	mg/kg	38.5	1	KLP1	07/05/19	0959	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.66	0.010	0.100	SU		1	RXB5	07/05/19	1717	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-8 Project: WNUC00518
Sample ID: 483471008 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-9 Project: WNUC00518
Sample ID: 483471009 Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 11:35
Receive Date: 02-JUL-19
Collector: Client
Moisture: 13.1%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	U	ND	0.391	1.15	mg/kg	10.0	1	LXA2	07/08/19	2352	1893930	1
Nitrate-N		2.18	0.380	1.15	mg/kg	10.0	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-238		20.4	0.0149	0.045	ug/g	97.8	2	SKJ	07/10/19	1111	1892841	2
Uranium-234	J	0.00881	0.00225	0.0113	ug/g	97.8	2	SKJ	07/10/19	1322	1892841	3
Uranium-235		0.905	0.0225	0.158	ug/g	97.8	20	SKJ	07/10/19	1134	1892841	4
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		81.3	3.36	9.34	mg/kg	32.5	5	KLP1	07/05/19	1023	1892643	5
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.53	0.010	0.100	SU		1	RXB5	07/05/19	1718	1892518	6

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	SW846 3050B/6020A	
5	EPA 350.1 Modified	
6	SW846 9045D	

Notes:

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-9 Project: WNUC00518
Sample ID: 483471009 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-10 Project: WNUC00518
Sample ID: 483471010 Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 11:40
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.8%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.658	0.366	1.08	mg/kg	9.71	1	LXA2	07/09/19	0022	1893930	1
Nitrate-N		3.23	0.355	1.08	mg/kg	9.71	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-238		6.46	0.014	0.0426	ug/g	96.0	2	SKJ	07/10/19	1115	1892841	2
Uranium-234	J	0.00238	0.00213	0.0106	ug/g	96.0	2	SKJ	07/10/19	1327	1892841	3
Uranium-235		0.240	0.0106	0.0745	ug/g	96.0	10	SKJ	07/10/19	1136	1892841	4
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		38.2	0.941	2.61	mg/kg	47.2	1	KLP1	07/05/19	1001	1892643	5
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.63	0.010	0.100	SU		1	RXB5	07/05/19	1719	1892518	6

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	SW846 3050B/6020A	
5	EPA 350.1 Modified	
6	SW846 9045D	

Notes:

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-10 Project: WNUC00518
Sample ID: 483471010 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-11
Sample ID: 483471011
Matrix: Soil
Collect Date: 01-JUL-19 11:44
Receive Date: 02-JUL-19
Collector: Client
Moisture: 8.82%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride		1.98	0.369	1.09	mg/kg	9.90	1	LXA2	07/09/19	0053	1893930	1
Nitrate-N		15.4	0.358	1.09	mg/kg	9.90	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0641	0.00213	0.0149	ug/g	96.9	2	SKJ	07/10/19	1117	1892841	2
Uranium-238		2.20	0.014	0.0425	ug/g	96.9	2					
Uranium-234	U	ND	0.00213	0.0106	ug/g	96.9	2	SKJ	07/10/19	1328	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		36.3	0.595	1.65	mg/kg	30.1	1	KLP1	07/05/19	1002	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.15	0.010	0.100	SU		1	RXB5	07/05/19	1720	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-11 Project: WNUC00518
Sample ID: 483471011 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-12
Sample ID: 483471012
Matrix: Soil
Collect Date: 01-JUL-19 11:48
Receive Date: 02-JUL-19
Collector: Client
Moisture: 8.66%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	U	ND	0.366	1.08	mg/kg	9.83	1	LXA2	07/09/19	0124	1893930	1
Nitrate-N		1.26	0.355	1.08	mg/kg	9.83	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0215	0.00216	0.0151	ug/g	98.8	2	SKJ	07/10/19	1118	1892841	2
Uranium-238		1.27	0.0143	0.0433	ug/g	98.8	2					
Uranium-234	U	ND	0.00216	0.0108	ug/g	98.8	2	SKJ	07/10/19	1330	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		42.3	0.849	2.36	mg/kg	43.1	1	KLP1	07/05/19	1003	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.79	0.010	0.100	SU		1	RXB5	07/05/19	1720	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-12 Project: WNUC00518
Sample ID: 483471012 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-13 Project: WNUC00518
Sample ID: 483471013 Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 11:54
Receive Date: 02-JUL-19
Collector: Client
Moisture: 10.4%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	U	ND	0.374	1.10	mg/kg	9.85	1	LXA2	07/09/19	0155	1893930	1
Nitrate-N		2.27	0.363	1.10	mg/kg	9.85	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.019	0.00221	0.0155	ug/g	99.0	2	SKJ	07/10/19	1120	1892841	2
Uranium-238		1.46	0.0146	0.0442	ug/g	99.0	2					
Uranium-234	U	ND	0.00221	0.0111	ug/g	99.0	2	SKJ	07/10/19	1331	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		44.9	0.985	2.74	mg/kg	49.0	1	KLP1	07/05/19	1008	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.66	0.010	0.100	SU		1	RXB5	07/05/19	1727	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Company : Westinghouse Electric Company, LLC
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Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-13 Project: WNUC00518
Sample ID: 483471013 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-14 Project: WNUC00518
Sample ID: 483471014 Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 12:08
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.61%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	1.06	0.370	1.09	mg/kg	9.83	1	LXA2	07/09/19	0226	1893930	1
Nitrate-N		2.43	0.359	1.09	mg/kg	9.83	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-238		6.63	0.0144	0.0436	ug/g	98.6	2	SKJ	07/10/19	1121	1892841	2
Uranium-234	U	ND	0.00218	0.0109	ug/g	98.6	2	SKJ	07/10/19	1332	1892841	3
Uranium-235		0.179	0.0109	0.0764	ug/g	98.6	10	SKJ	07/10/19	1137	1892841	4
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		91.0	1.04	2.88	mg/kg	52.1	1	KLP1	07/05/19	1008	1892643	5
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.74	0.010	0.100	SU		1	RXB5	07/05/19	1728	1892518	6

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	SW846 3050B/6020A	
5	EPA 350.1 Modified	
6	SW846 9045D	

Notes:

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-14 Project: WNUC00518
Sample ID: 483471014 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:
DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-15 Project: WNUC00518
Sample ID: 483471015 Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 12:13
Receive Date: 02-JUL-19
Collector: Client
Moisture: 12%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.495	0.387	1.14	mg/kg	10.0	1	LXA2	07/09/19	0257	1893930	1
Nitrate-N		2.69	0.375	1.14	mg/kg	10.0	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.118	0.0021	0.0147	ug/g	92.4	2	SKJ	07/10/19	1123	1892841	2
Uranium-238		4.47	0.0139	0.042	ug/g	92.4	2					
Uranium-234	U	ND	0.0021	0.0105	ug/g	92.4	2	SKJ	07/10/19	1334	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		87.8	3.46	9.60	mg/kg	33.8	5	KLP1	07/05/19	1024	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.60	0.010	0.100	SU		1	RXB5	07/05/19	1729	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-15 Project: WNUC00518
Sample ID: 483471015 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-16
Sample ID: 483471016
Matrix: Soil
Collect Date: 01-JUL-19 12:30
Receive Date: 02-JUL-19
Collector: Client
Moisture: 8.75%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	0.957	0.371	1.09	mg/kg	9.95	1	LXA2	07/09/19	0328	1893930	1
Nitrate-N		2.22	0.360	1.09	mg/kg	9.95	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0439	0.00217	0.0152	ug/g	99.2	2	SKJ	07/10/19	1128	1892841	2
Uranium-238		2.87	0.0144	0.0435	ug/g	99.2	2					
Uranium-234	U	ND	0.00217	0.0109	ug/g	99.2	2	SKJ	07/10/19	1335	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		56.5	1.01	2.80	mg/kg	51.0	1	KLP1	07/05/19	1010	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.65	0.010	0.100	SU		1	RXB5	07/05/19	1730	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-16 Project: WNUC00518
Sample ID: 483471016 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-17 Project: WNUC00518
Sample ID: 483471017 Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 12:36
Receive Date: 02-JUL-19
Collector: Client
Moisture: 13.4%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	U	ND	0.391	1.15	mg/kg	9.95	1	LXA2	07/09/19	0500	1893930	1
Nitrate-N		2.58	0.379	1.15	mg/kg	9.95	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-235		0.0838	0.00225	0.0157	ug/g	97.3	2	SKJ	07/10/19	1130	1892841	2
Uranium-238		3.83	0.0148	0.0449	ug/g	97.3	2					
Uranium-234	U	ND	0.00225	0.0112	ug/g	97.3	2	SKJ	07/10/19	1337	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		88.6	0.896	2.49	mg/kg	43.1	1	KLP1	07/05/19	1011	1892643	4
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.75	0.010	0.100	SU		1	RXB5	07/05/19	1730	1892518	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	
5	SW846 9045D	

Notes:

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-17 Project: WNUC00518
Sample ID: 483471017 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-18 Project: WNUC00518
Sample ID: 483471018 Client ID: WNUC007
Matrix: Soil
Collect Date: 01-JUL-19 12:42
Receive Date: 02-JUL-19
Collector: Client
Moisture: 11.8%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"												
Fluoride	J	1.10	0.376	1.11	mg/kg	9.76	1	LXA2	07/09/19	0531	1893930	1
Nitrate-N		2.69	0.365	1.11	mg/kg	9.76	1					
Metals Analysis-ICP-MS												
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"												
Uranium-238		7.14	0.0142	0.043	ug/g	94.9	2	SKJ	07/10/19	1131	1892841	2
Uranium-234	J	0.00258	0.00215	0.0108	ug/g	94.9	2	SKJ	07/10/19	1338	1892841	3
Uranium-235		0.248	0.0108	0.0753	ug/g	94.9	10	SKJ	07/10/19	1139	1892841	4
Nutrient Analysis												
EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected"												
Nitrogen, Ammonia		46.1	0.515	1.43	mg/kg	25.3	1	KLP1	07/05/19	1012	1892643	5
Titration and Ion Analysis												
SW9045D Corrosivity (pH<2or>14) "As Received"												
Corrosivity	H	4.85	0.010	0.100	SU		1	RXB5	07/05/19	1731	1892518	6

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	SW846 3050B/6020A	
5	EPA 350.1 Modified	
6	SW846 9045D	

Notes:

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-18 Project: WNUC00518
Sample ID: 483471018 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

QC Summary

Report Date: July 10, 2019

Westinghouse Electric Company, LLC
PO Drawer R
Columbia, South Carolina

Contact: **Ms. Cynthia Logsdon**

Workorder: **483471**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography												
Batch 1893930												
QC1204325458 483471001 DUP												
Fluoride			1.52	J	0.439	mg/kg	110 ^		(+/-1.10)	LXA2	07/08/19	18:12
Nitrate-N			2.05		2.23	mg/kg	8.52 ^		(+/-1.10)			
QC1204325459 483471018 DUP												
Fluoride		J	1.10	J	1.12	mg/kg	1.76 ^		(+/-1.13)		07/09/19	06:02
Nitrate-N			2.69		2.51	mg/kg	7 ^		(+/-1.13)			
QC1204325457 LCS												
Fluoride	25.0				25.7	mg/kg		103	(90%-110%)		07/08/19	17:10
Nitrate-N	25.0				25.0	mg/kg		99.9	(90%-110%)			
QC1204325456 MB												
Fluoride				U	ND	mg/kg					07/08/19	16:40
Nitrate-N				U	ND	mg/kg						
QC1204325460 483471001 MS												
Fluoride	26.9		1.52		11.3	mg/kg		36.5 *	(44%-130%)		07/08/19	18:43
Nitrate-N	26.9		2.05		29.3	mg/kg		102	(71%-117%)			
QC1204325461 483471018 MS												
Fluoride	28.1	J	1.10		9.42	mg/kg		29.7 *	(44%-130%)		07/09/19	06:33
Nitrate-N	28.1		2.69		31.4	mg/kg		102	(71%-117%)			

QC Summary

Workorder: **483471**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1892841											
QC1204323120 483471001 DUP											
Uranium-234		U	ND	U	ND	ug/g	N/A			SKJ	07/10/19 12:56
Uranium-235		J	0.00727	J	0.00872	ug/g	18.1 ^		(+/-0.0147)		07/10/19 10:49
Uranium-238			0.763		1.02	ug/g	28.6*		(0%-20%)		
QC1204322969 LCS											
Uranium-235	0.0355				0.0352	ug/g		99.1	(80%-120%)		07/10/19 10:46
Uranium-238	4.90				4.89	ug/g		100	(80%-120%)		
QC1204322970 LCS											
Uranium-234	0.0515				0.0585	ug/g		114	(80%-120%)		07/10/19 12:50
QC1204322968 MB											
Uranium-234				U	ND	ug/g					07/10/19 12:52
Uranium-235				U	ND	ug/g					07/10/19 10:45
Uranium-238				U	ND	ug/g					
QC1204322971 483471001 MS											
Uranium-235	0.0376	J	0.00727		0.0457	ug/g		102	(75%-125%)		07/10/19 10:51
Uranium-238	5.18		0.763		5.91	ug/g		99.2	(75%-125%)		
QC1204322972 483471001 MS											
Uranium-234	0.0557	U	ND		0.0654	ug/g		117	(75%-125%)		07/10/19 12:57
QC1204322973 483471001 SDILT											
Uranium-234		U	ND	U	ND	ug/L	N/A				07/10/19 13:03

QC Summary

Workorder: **483471**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1892841										
Uranium-235	J	0.0343	U	ND	ug/L	N/A		(0%-10%)	SKJ	07/10/19 10:54
Uranium-238		3.60		0.724	ug/L	.6		(0%-10%)		
Nutrient Analysis										
Batch 1892643										
QC1204322469 483471003 DUP Nitrogen, Ammonia		50.2		42.2	mg/kg	17.2		(0%-20%)	KLP1	07/05/19 09:50
QC1204322470 483471002 DUP Nitrogen, Ammonia		37.6		39.9	mg/kg	5.98		(0%-20%)		07/05/19 09:47
QC1204322468 LCS Nitrogen, Ammonia	50.0			51.0	mg/kg		102	(90%-110%)		07/05/19 09:46
QC1204322467 MB Nitrogen, Ammonia			J	2.08	mg/kg					07/05/19 09:45
QC1204322471 483471003 MS Nitrogen, Ammonia	54.2	50.2		103	mg/kg		97.4	(90%-110%)		07/05/19 09:55
QC1204322472 483471002 MS Nitrogen, Ammonia	28.1	37.6		61.0	mg/kg		83.4*	(90%-110%)		07/05/19 09:48
Batch 1893310										
QC1204324049 483471001 DUP Nitrogen, Ammonia		28.8		32.3	mg/kg	11.5		(0%-20%)	KLP1	07/05/19 10:21
QC1204324048 LCS Nitrogen, Ammonia	50.0			48.1	mg/kg		96.2	(90%-110%)		07/05/19 10:14
QC1204324047 MB Nitrogen, Ammonia			U	ND	mg/kg					07/05/19 10:20

QC Summary

Workorder: **483471**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch 1893310											
QC1204324050 483471001 MS											
Nitrogen, Ammonia	44.5	28.8		78.9	mg/kg		112*	(90%-110%)	KLP1	07/05/19	10:22
Titration and Ion Analysis											
Batch 1892518											
QC1204322204 483471001 DUP											
Corrosivity	H	4.76	H	4.75	SU	0.21		(0%-10%)	RXB5	07/05/19	17:10
QC1204322205 483471002 DUP											
Corrosivity	H	4.75	H	4.74	SU	0.211		(0%-10%)		07/05/19	17:11
QC1204322203 LCS											
Corrosivity	7.00			7.02	SU		100	(95%-105%)		07/05/19	17:08

Notes:

The Qualifiers in this report are defined as follows:

<	Result is less than value reported
>	Result is greater than value reported
B	The target analyte was detected in the associated blank.
E	%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
E	General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
FB	Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
H	Analytical holding time was exceeded
J	Value is estimated
N	Metals--The Matrix spike sample recovery is not within specified control limits
N/A	RPD or %Recovery limits do not apply.
N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

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QC Summary

Workorder: **483471**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

Z Paint Filter Test--Particulates passed through the filter, however no free liquids were observed.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

d 5-day BOD--The 2:1 depletion requirement was not met for this sample

e 5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for reporting purposes

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-1	Project:	WNUC00518
Sample ID:	483471001	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 11:06		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	9.49%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-6.72	+/-7.70	14.0	50.0	pCi/g			CXS7	07/07/19	0511	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			91.4	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-2	Project:	WNUC00518
Sample ID:	483471002	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 11:09		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	10.2%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-4.86	+/-7.83	14.0	50.0	pCi/g			CXS7	07/07/19	0527	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			97.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-3
Sample ID: 483471003
Matrix: Soil
Collect Date: 01-JUL-19 11:12
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.48%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-0.0748	+/-6.79	11.9	50.0	pCi/g			CXS7	07/07/19	0544	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			92.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-4	Project:	WNUC00518
Sample ID:	483471004	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 11:15		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	10.3%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-1.87	+/-6.82	12.1	50.0	pCi/g			CXS7	07/07/19	0600	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			95.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-5	Project:	WNUC00518
Sample ID:	483471005	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 11:18		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	9.81%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	1.07	+/-9.40	16.3	50.0	pCi/g			CXS7	07/07/19	0617	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			98.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-6
Sample ID: 483471006
Matrix: Soil
Collect Date: 01-JUL-19 11:26
Receive Date: 02-JUL-19
Collector: Client
Moisture: 14.8%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-5.14	+/-9.26	16.5	50.0	pCi/g			CXS7	07/07/19	0633	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			89.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-7
Sample ID: 483471007
Matrix: Soil
Collect Date: 01-JUL-19 11:29
Receive Date: 02-JUL-19
Collector: Client
Moisture: 11%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	2.84	+/-7.77	13.4	50.0	pCi/g			CXS7	07/07/19	0650	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			93.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-8	Project:	WNUC00518
Sample ID:	483471008	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 11:31		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	9.96%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-6.71	+/-12.8	22.9	50.0	pCi/g			CXS7	07/07/19	0706	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			93.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-9
Sample ID: 483471009
Matrix: Soil
Collect Date: 01-JUL-19 11:35
Receive Date: 02-JUL-19
Collector: Client
Moisture: 13.1%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-4.41	+/-12.7	22.5	50.0	pCi/g			CXS7	07/07/19	0723	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			99	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-10
Sample ID: 483471010
Matrix: Soil
Collect Date: 01-JUL-19 11:40
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.8%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-1.22	+/-9.59	16.8	50.0	pCi/g			CXS7	07/07/19	0740	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			98.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-11	Project:	WNUC00518
Sample ID:	483471011	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 11:44		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	8.82%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-1.36	+/-11.0	19.3	50.0	pCi/g			CXS7	07/07/19	0757	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			97.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-12	Project:	WNUC00518
Sample ID:	483471012	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 11:48		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	8.66%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-8.33	+/-11.6	20.9	50.0	pCi/g			CXS7	07/07/19	0813	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			94.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-13
Sample ID: 483471013
Matrix: Soil
Collect Date: 01-JUL-19 11:54
Receive Date: 02-JUL-19
Collector: Client
Moisture: 10.4%

Project: WNUC00518
Client ID: WNUC007

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-0.755	+/-8.62	15.1	50.0	pCi/g			CXS7	07/07/19	0830	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			96.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-14	Project:	WNUC00518
Sample ID:	483471014	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 12:08		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	9.61%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-4.24	+/-8.52	15.2	50.0	pCi/g			CXS7	07/07/19	0847	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			87.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-15	Project:	WNUC00518
Sample ID:	483471015	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 12:13		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	12%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-0.755	+/-12.7	22.2	50.0	pCi/g			CXS7	07/07/19	0904	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			93.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

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Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-16	Project:	WNUC00518
Sample ID:	483471016	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 12:30		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	8.75%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	1.68	+/-12.6	21.9	50.0	pCi/g			CXS7	07/07/19	0920	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			95	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-17	Project:	WNUC00518
Sample ID:	483471017	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 12:36		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	13.4%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	-3.16	+/-7.74	13.7	50.0	pCi/g			CXS7	07/07/19	0937	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			92.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 10, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID:	C-40-18	Project:	WNUC00518
Sample ID:	483471018	Client ID:	WNUC007
Matrix:	Soil		
Collect Date:	01-JUL-19 12:42		
Receive Date:	02-JUL-19		
Collector:	Client		
Moisture:	11.8%		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Liquid Scintillation Analysis													
Liquid Scint Tc99, Soil "As Received"													
Technetium-99	U	4.26	+/-11.6	20.0	50.0	pCi/g			CXS7	07/07/19	0954	1892527	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Technetium-99m Tracer	Liquid Scint Tc99, Soil "As Received"			85.5	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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QC Summary

Report Date: July 10, 2019

Westinghouse Electric Company, LLC
PO Drawer R
Columbia, South Carolina

Contact: **Ms. Cynthia Logsdon**

Workorder: **483471**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Liquid Scintillation											
Batch 1892527											
QC1204322218 483471001 DUP											
Technetium-99	U	-6.72	U	-2.34	pCi/g	N/A		N/A	CXS7	07/07/19	10:27
	Uncertainty	+/-7.70		+/-9.86							
QC1204322219 LCS											
Technetium-99	221			198	pCi/g		89.5	(75%-125%)		07/07/19	10:43
	Uncertainty			+/-12.4							
QC1204322217 MB											
Technetium-99			U	-5.36	pCi/g					07/07/19	10:10
	Uncertainty			+/-6.64							

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.
N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification

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QC Summary

Workorder: **483471**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Technical Case Narrative
Westinghouse Electric Co, LLC
SDG #: 483471

Metals

Product: **Determination of Metals by ICP-MS**
Analytical Method: SW846 3050B/6020A
Analytical Procedure: GL-MA-E-014 REV# 33
Analytical Batch: 1892841

Preparation Method: SW846 3050B
Preparation Procedure: GL-MA-E-009 REV# 28
Preparation Batch: 1892840

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
483471002	C-40-2
483471003	C-40-3
483471004	C-40-4
483471005	C-40-5
483471006	C-40-6
483471007	C-40-7
483471008	C-40-8
483471009	C-40-9
483471010	C-40-10
483471011	C-40-11
483471012	C-40-12
483471013	C-40-13
483471014	C-40-14
483471015	C-40-15
483471016	C-40-16
483471017	C-40-17
483471018	C-40-18
1204322968	Method Blank (MB)**ICP-MS**
1204322969	Laboratory Control Sample (LCS)
1204322970	Laboratory Control Sample (LCS)
1204322973	483471001(C-40-1L) Serial Dilution (SD)
1204323120	483471001(C-40-1D) Sample Duplicate (DUP)
1204322971	483471001(C-40-1S) Matrix Spike (MS)
1204322972	483471001(C-40-1S) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

ICSA/ICSAB Statement
For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Quality Control (QC) Information

Duplicate Relative Percent Difference (RPD) Statement
The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. Not all the applicable analyte RPD values were within the acceptance criteria.

Sample	Analyte	Value
1204323120 (C-40-1DUP)	Uranium-238	28.6* (0%-20%)

Technical Information

Preparation/Analytical Method Verification
Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions
Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range. Samples 483471009 (C-40-9), 483471010 (C-40-10), 483471014 (C-40-14) and 483471018 (C-40-18) were diluted to ensure that the analyte concentrations were within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times.

Analyte	483471									
	001	002	003	004	005	006	007	008	009	010
Uranium-234	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X
Uranium-235	2X	2X	2X	2X	2X	2X	2X	2X	20X	10X
Uranium-238	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X

Analyte	483471							
	011	012	013	014	015	016	017	018
Uranium-234	2X	2X	2X	2X	2X	2X	2X	2X
Uranium-235	2X	2X	2X	10X	2X	2X	2X	10X
Uranium-238	2X	2X	2X	2X	2X	2X	2X	2X

General Chemistry

Product: **Ion Chromatography**

Analytical Method: SW846 9056A
Analytical Procedure: GL-GC-E-086 REV# 26
Analytical Batches: 1893930 and 1893929

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
483471002	C-40-2
483471003	C-40-3
483471004	C-40-4
483471005	C-40-5
483471006	C-40-6
483471007	C-40-7
483471008	C-40-8
483471009	C-40-9
483471010	C-40-10
483471011	C-40-11
483471012	C-40-12
483471013	C-40-13
483471014	C-40-14
483471015	C-40-15
483471016	C-40-16
483471017	C-40-17
483471018	C-40-18
1204325456	Method Blank (MB)
1204325457	Laboratory Control Sample (LCS)
1204325458	483471001(C-40-1) Sample Duplicate (DUP)
1204325459	483471018(C-40-18) Sample Duplicate (DUP)
1204325460	483471001(C-40-1) Matrix Spike (MS)
1204325461	483471018(C-40-18) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Fluoride	1204325460 (C-40-1MS)	36.5* (44%-130%)
	1204325461 (C-40-18MS)	29.7* (44%-130%)

Product: **Ammonia Nitrogen**
Preparation Method: EPA 350.1 Modified
Preparation Procedure: GL-GC-E-106 REV# 10
Preparation Batch: 1892643

Preparation Method: EPA 350.2 Modified Prep
Preparation Procedure: GL-GC-E-072 REV# 17
Preparation Batch: 1892642

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471002	C-40-2
483471003	C-40-3
483471004	C-40-4
483471005	C-40-5
483471006	C-40-6
483471007	C-40-7
483471008	C-40-8
483471009	C-40-9
483471010	C-40-10
483471011	C-40-11
483471012	C-40-12
483471013	C-40-13
483471014	C-40-14
483471015	C-40-15
483471016	C-40-16
483471017	C-40-17
483471018	C-40-18
1204322467	Method Blank (MB)
1204322468	Laboratory Control Sample (LCS)
1204322469	483471003(C-40-3) Sample Duplicate (DUP)
1204322470	483471002(C-40-2) Sample Duplicate (DUP)
1204322471	483471003(C-40-3) Matrix Spike (MS)
1204322472	483471002(C-40-2) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Nitrogen, Ammonia	1204322472 (C-40-2MS)	83.4* (90%-110%)

Technical Information

Sample Dilutions
The following samples 483471009 (C-40-9) and 483471015 (C-40-15) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	483471	
	009	015
Nitrogen, Ammonia	5X	5X

Product: **Ammonia Nitrogen**
Preparation Method: EPA 350.1 Modified
Preparation Procedure: GL-GC-E-106 REV# 10
Preparation Batch: 1893310

Preparation Method: EPA 350.2 Modified Prep
Preparation Procedure: GL-GC-E-072 REV# 17
Preparation Batch: 1893309

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
1204324047	Method Blank (MB)
1204324048	Laboratory Control Sample (LCS)
1204324049	483471001(C-40-1) Sample Duplicate (DUP)
1204324050	483471001(C-40-1) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Nitrogen, Ammonia	1204324050 (C-40-1MS)	112* (90%-110%)

Technical Information

Sample Re-analysis
Sample1204324047 (MB) was re-analyzed due to (its) proximity to an overrange sample. The results from the reanalysis are reported.

Product: pH
Analytical Method: SW846 9045D
Analytical Procedure: GL-GC-E-008 REV# 23
Analytical Batch: 1892518

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
483471002	C-40-2
483471003	C-40-3
483471004	C-40-4
483471005	C-40-5
483471006	C-40-6
483471007	C-40-7
483471008	C-40-8
483471009	C-40-9
483471010	C-40-10
483471011	C-40-11
483471012	C-40-12
483471013	C-40-13
483471014	C-40-14
483471015	C-40-15
483471016	C-40-16
483471017	C-40-17
483471018	C-40-18
1204322203	Laboratory Control Sample (LCS)
1204322204	483471001(C-40-1) Sample Duplicate (DUP)
1204322205	483471002(C-40-2) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Holding Times
Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1204322204 (C-40-1DUP)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19

1204322205 (C-40-2DUP)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471001 (C-40-1)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471002 (C-40-2)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471003 (C-40-3)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471004 (C-40-4)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471005 (C-40-5)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471006 (C-40-6)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471007 (C-40-7)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471008 (C-40-8)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471009 (C-40-9)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471010 (C-40-10)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471011 (C-40-11)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471012 (C-40-12)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471013 (C-40-13)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471014 (C-40-14)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471015 (C-40-15)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471016 (C-40-16)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471017 (C-40-17)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471018 (C-40-18)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19

Radiochemistry

Product: **Dry Weight**
Analytical Method: ASTM D 2216 (Modified)
Analytical Procedure: GL-OA-E-020 REV# 13
Analytical Batch: 1892592

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
483471002	C-40-2
483471003	C-40-3
483471004	C-40-4
483471005	C-40-5
483471006	C-40-6
483471007	C-40-7
483471008	C-40-8
483471009	C-40-9
483471010	C-40-10
483471011	C-40-11
483471012	C-40-12
483471013	C-40-13

483471014	C-40-14
483471015	C-40-15
483471016	C-40-16
483471017	C-40-17
483471018	C-40-18
1204322383	483471001(C-40-1) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Liquid Scint Tc99, Soil**
Analytical Method: DOE EML HASL-300, Tc-02-RC Modified
Analytical Procedure: GL-RAD-A-059 REV# 5
Analytical Batch: 1892527

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
483471002	C-40-2
483471003	C-40-3
483471004	C-40-4
483471005	C-40-5
483471006	C-40-6
483471007	C-40-7
483471008	C-40-8
483471009	C-40-9
483471010	C-40-10
483471011	C-40-11
483471012	C-40-12
483471013	C-40-13
483471014	C-40-14
483471015	C-40-15
483471016	C-40-16
483471017	C-40-17
483471018	C-40-18
1204322217	Method Blank (MB)
1204322218	483471001(C-40-1) Sample Duplicate (DUP)
1204322219	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration,

continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Page: 1 of 3

Project #: SSAOU Soil Sampling Work Plan

GEL Quote #:

QAPP Number [1]:

PO Number: 4500745037

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

GEL Work Order Number: 483471

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: Westinghouse Electric Company LLC Phone #: 803.647.3171

Project/Site Name: Columbia Fuel Fabrication Facility Fax #: 803.695.3964

Address: 5801 Bluff Road, Hopkins, SC 29061

Collected by: Randy Crews Send Results: logsdocj@westinghouse.com

Sample Analysis Requested [5] (Fill in the number of containers for each test)

Sample ID * For composites - indicate start and stop date time	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code [2]	Field Filtered [3]	Sample Matrix [4]	Should this sample be considered: Radioactive	Should this sample be considered: TSCA Regulated	Total number of containers	isotopic uranium (by individual isotope, ICP-MS)	Tc-99	Ammonia	Fluoride	pH	Nitrate					<-- Preservative Type (6)
C-40-1	7/1/2019	1106	G	N	SO			1	X	X	X	X	X	X					
C-40-2	7/1/2019	1109	G	N	SO			1	X	X	X	X	X	X					
C-40-3	7/1/2019	1112	G	N	SO			1	X	X	X	X	X	X					
C-40-4	7/1/2019	1115	G	N	SO			1	X	X	X	X	X	X					
C-40-5	7/1/2019	1118	G	N	SO			1	X	X	X	X	X	X					
C-40-6	7/1/2019	1126	G	N	SO			1	X	X	X	X	X	X					
C-40-7	7/1/2019	1129	G	N	SO			1	X	X	X	X	X	X					
C-40-8	7/1/2019	1131	G	N	SO			1	X	X	X	X	X	X					

Comments
Note: extra sample is required for sample specific QC

TAT Requested: Normal: ___ Rush: __X_ Specify: _ASAP_
(Subject to Surcharge)

Fax Results: Yes / No

Circle Deliverable:
C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

*****5 STRAIGHT day turnaround*****

Sample Collection Time Zone
Eastern Pacific
Central Other _____
Mountain

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 Randy Crews RCrews	7/2/2019	1630	1 Hayboon	7/2/19	1030
2			2		
3			3		

Sample Shipping and Delivery Details

GEL PM: Hope Taylor

Method of Shipment: Date Shipped: N/A

Airbill #:

Airbill #:

1.) Chain of Custody Number = Client Determined

2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite

3.) Field Filtered: For liquid matrices, indicate with a **- Y -** for yes the sample was field filtered or **- N -** for sample was not field filtered.

4.) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, **ML**=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, **SS**=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal

5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B* **- 3**, *6010B 7470A* **- 1**).

6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
YES NO

Cooler Temp:
C

WHITE = LABORATORY **YELLOW = FILE** **PINK = CLIENT**

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Page: 2 of 3

Project #: SSAOU Soil Sampling Work Plan
GEL Quote #:
COC Number (1):
PO Number: 4500745037

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

GEL Work Order Number:

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: Westinghouse Electric Company LLC — Phone #: 803.647.3171
Project/Site Name: Columbia Fuel Fabrication Facility — Fax #: 803.695.3964
Address: 5801 Bluff Road, Hopkins, SC 29061
Collected by: Randy Crews — Send Results: logsdocj@westinghouse.com

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Should this sample be considered: Radioactive	Should this sample be considered: TSCA Regulated	Total number of containers	isotopic uranium (by individual isotope, ICP-MS)	Tc-99	Ammonia	Fluoride	pH	Nitrate					<-- Preservative Type (6)
C-40-9	7/1/2019	1135	G	N	SO			1	X	X	X	X	X	X					
C-40-10	7/1/2019	1140	G	N	SO			1	X	X	X	X	X	X					
C-40-11	7/1/2019	1144	G	N	SO			1	X	X	X	X	X	X					
C-40-12	7/1/2019	1148	G	N	SO			1	X	X	X	X	X	X					
C-40-13	7/1/2019	1154	G	N	SO			1	X	X	X	X	X	X					
C-40-14	7/1/2019	1208	G	N	SO			1	X	X	X	X	X	X					
C-40-15	7/1/2019	1213	G	N	SO			1	X	X	X	X	X	X					
C-40-16	7/1/2019	1230	G	N	SO			1	X	X	X	X	X	X					

Comments
Note: extra sample is required for sample specific QC

TAT Requested: Normal: ___ Rush: __X_ Specify: _ASAP_
(Subject to Surcharge)

Fax Results: Yes / No

Circle Deliverable:
C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

*****5 STRAIGHT day turnaround******

Sample Collection Time Zone
Eastern Pacific
Central Other _____
Mountain

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 Randy Crews	7/2/2019	1030	1 Hayton	7/2/19	1030
2			2		
3			3		

Sample Shipping and Delivery Details

GEL PM: Hope Taylor
Method of Shipment: Date Shipped: N/A
Airbill #:
Airbill #:

1.) Chain of Custody Number = Client Determined
2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite
3.) Field Filtered: For liquid matrices, indicate with a **- Y -** for yes the sample was field filtered or **- N -** for sample was not field filtered.
4.) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, **ML**=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, **SS**=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal
5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B**, **6010B/7470A**) and number of containers provided for each (i.e. *8260B* - **3**, *6010B 7470A* - **1**).
6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
Custody Seal Intact?
YES NO
Cooler Temp:
C

WHITE = LABORATORY **YELLOW = FILE** **PINK = CLIENT**

Page: 3 of 3

Project #: SSAOU Soil Sampling Work Plan
GEL Quote #:
COC Number (1):
PO Number: 4500745037

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

GEL Work Order Number:

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: Westinghouse Electric Company LLC — Phone #: 803.647.3171

Project/Site Name: Columbia Fuel Fabrication Facility — Fax #: 803.695.3964

Address: 5801 Bluff Road, Hopkins, SC 29061

Collected by: Randy Crews — Send Results: logsdocj@westinghouse.com

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Should this sample be considered: Radioactive	Should this sample be considered: TSCA Regulated	Total number of containers	isotopic uranium (by individual isotope, ICP-MS)	Tc-99	Ammonia	Fluoride	pH	Nitrate					<-- Preservative Type (6)	Comments
C-40-17	7/1/2019	1236	G	N	SO			1	X	X	X	X	X	X						
C-40-18	7/1/2019	1242	G	N	SO			1	X	X	X	X	X	X						

Note: extra sample is required for sample specific QC

TAT Requested: Normal: ___ Rush: __X_ Specify: _ASAP_ (Subject to Surcharge)

Fax Results: Yes / No

Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

*****5 STRAIGHT day turnaround*****

Sample Collection Time Zone: Eastern Pacific Central Other _____ Mountain

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 Randy Crews	7/2/2019	1030	1	7/2/19	1038
2			2		
3			3		

Sample Shipping and Delivery Details

GEL PM: Hope Taylor

Method of Shipment: Date Shipped: N/A

Airbill #:

Airbill #:

1.) Chain of Custody Number = Client Determined

2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite

3.) Field Filtered: For liquid matrices, indicate with a **- Y -** for yes the sample was field filtered or **- N -** for sample was not field filtered.

4.) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, **ML**=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, **SS**=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal

5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B**, **6010B/7470A**) and number of containers provided for each (i.e. *8260B* **- 3**, *6010B/7470A* **- 1**).

6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact? *YES* *NO*

Cooler Temp: _____ *C*

WHITE = LABORATORY **YELLOW = FILE** **PINK = CLIENT**

Page 15 of 17 SDG: 483411 Rev1

GEL Laboratories

SAMPLE RECEIPT & REVIEW FORM

Client: WNUC	SDG/AR/COC/Work Order: 483471
Received By: STACY BOONE	Date Received: 2-JULY-19
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other CLIENT

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#: If UN2910, Is the Radioactive Shipment Survey Compliant? Yes___ No___
B) Did the client designate the samples are to be received as radioactive?		✓	COC notation or radioactive stickers on containers equal client designation
C) Did the RSO classify the samples as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3
D) Did the client designate samples are hazardous?		✓	COC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?		✓	If D or E is yes, select Hazards below. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: 1c + 15c
4	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: IR1-19 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	✓			Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?			✓	If Yes, are Encores or Soil Kits present for solids? Yes___ No___ NA___(If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes___ No___ NA___(If unknown, select No) Are liquid VOA vials free of headspace? Yes___ No___ NA___ Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	✓			Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials KF Date 7/2/19 Page 1 of 1

GL-CHL-SR-001 Rev 6

List of current GEL Certifications as of 10 July 2019

State	Certification
Alaska	17−018
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122019−3
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−19−15
Utah NELAP	SC000122019−28
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

August 05, 2019

Ms. Cynthia Logsdon
Westinghouse Electric Company, LLC
PO Drawer R
Columbia, South Carolina 29205

Re: ENV-CONSENTA
Work Order: 486245

Dear Ms. Logsdon:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 31, 2019. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Taylor Cannon for
Hope Taylor
Project Manager

Purchase Order: 4500778461
Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

WNUC009 Westinghouse Electric Co, LLC

Client SDG: 486245 GEL Work Order: 486245

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

J Value is estimated

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

Reviewed by _____

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 5, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: ENV-CONSENTA

Client Sample ID: C-40-R1
Sample ID: 486245001
Matrix: Soil
Collect Date: 30-JUL-19 08:15
Receive Date: 31-JUL-19
Collector: Client
Moisture: 8.87%

Project: WNUC01519
Client ID: WNUC009

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
SW846 3050B/6020B "Dry Weight Corrected"												
Uranium-235	J	4.61	2.11	14.8	ug/kg	96.3	2	SKJ	08/02/19	0841	1902271	1
Uranium-238		667	14.0	42.3	ug/kg	96.3	2					
Uranium-234	U	ND	2.11	10.6	ug/kg	96.3	2	SKJ	08/02/19	0920	1902271	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3050B	ICP-MS 3050BS PREP	SXW1	08/01/19	0955	1902270

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3050B/6020B	
2	SW846 3050B/6020B	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 5, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: ENV-CONSENTA

Client Sample ID: C-40-R2
Sample ID: 486245002
Matrix: Soil
Collect Date: 30-JUL-19 08:18
Receive Date: 31-JUL-19
Collector: Client
Moisture: 10.7%

Project: WNUC01519
Client ID: WNUC009

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
SW846 3050B/6020B "Dry Weight Corrected"												
Uranium-235	J	4.93	2.18	15.3	ug/kg	97.5	2	SKJ	08/02/19	0848	1902271	1
Uranium-238		659	14.4	43.7	ug/kg	97.5	2					
Uranium-234	U	ND	2.18	10.9	ug/kg	97.5	2	SKJ	08/02/19	0926	1902271	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3050B	ICP-MS 3050BS PREP	SXW1	08/01/19	0955	1902270

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3050B/6020B	
2	SW846 3050B/6020B	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 5, 2019

Company : Westinghouse Electric Company, LLC
Address : PO Drawer R

Columbia, South Carolina 29205
Contact: Ms. Cynthia Logsdon
Project: ENV-CONSENTA

Client Sample ID: C-40-R3
Sample ID: 486245003
Matrix: Soil
Collect Date: 30-JUL-19 08:21
Receive Date: 31-JUL-19
Collector: Client
Moisture: 11.8%

Project: WNUC01519
Client ID: WNUC009

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
SW846 3050B/6020B "Dry Weight Corrected"												
Uranium-235	J	4.02	2.16	15.1	ug/kg	95.2	2	SKJ	08/02/19	0850	1902271	1
Uranium-238		562	14.3	43.2	ug/kg	95.2	2					
Uranium-234	U	ND	2.16	10.8	ug/kg	95.2	2	SKJ	08/02/19	0927	1902271	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3050B	ICP-MS 3050BS PREP	SXW1	08/01/19	0955	1902270

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3050B/6020B	
2	SW846 3050B/6020B	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

QC Summary

Report Date: August 5, 2019

Westinghouse Electric Company, LLC
PO Drawer R
Columbia, South Carolina

Contact: **Ms. Cynthia Logsdon**

Workorder: **486245**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1902271										
QC1204345602 LCS										
Uranium-235	35.8			31.6	ug/kg		88.2	(80%-120%)	SKJ	08/02/19 08:39
Uranium-238	4930			4560	ug/kg		92.3	(80%-120%)		
QC1204345606 LCS										
Uranium-234	54.2			64.2	ug/kg		118	(80%-120%)		08/02/19 09:19
QC1204345601 MB										
Uranium-234			U	ND	ug/kg					08/02/19 09:17
Uranium-235			U	ND	ug/kg					08/02/19 08:38
Uranium-238			U	ND	ug/kg					
QC1204345603 486245001 MS										
Uranium-235	39.5 J	4.61		38.6	ug/kg		86.2	(75%-125%)		08/02/19 08:42
Uranium-238	5450	667		5340	ug/kg		85.7	(75%-125%)		
QC1204345607 486245001 MS										
Uranium-234	59.4 U	ND		68.6	ug/kg		115	(75%-125%)		08/02/19 09:22
QC1204345604 486245001 MSD										
Uranium-235	39.0 J	4.61		43.2	ug/kg	11.1	99	(0%-20%)		08/02/19 08:44
Uranium-238	5370	667		5810	ug/kg	8.46	95.7	(0%-20%)		
QC1204345608 486245001 MSD										
Uranium-234	59.3 U	ND		61.2	ug/kg	11.4	103	(0%-20%)		08/02/19 09:23

QC Summary

Workorder: **486245**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1902271										
QC1204345605 486245001 SDILT										
Uranium-234	U	ND	U	ND	ug/L	N/A		(0%-20%)	SKJ	08/02/19 09:25
Uranium-235	J	0.0218	U	ND	ug/L	N/A		(0%-20%)		08/02/19 08:47
Uranium-238		3.15		0.611	ug/L	3.17		(0%-20%)		

Notes:

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Metals

Product: **Determination of Metals by ICP-MS**
Analytical Method: SW846 3050B/6020B
Analytical Procedure: GL-MA-E-014 REV# 33
Analytical Batch: 1902271

Preparation Method: SW846 3050B
Preparation Procedure: GL-MA-E-009 REV# 28
Preparation Batch: 1902270

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
486245001	C-40-R1
486245002	C-40-R2
486245003	C-40-R3
1204345601	Method Blank (MB)**ICP-MS**
1204345602	Laboratory Control Sample (LCS)
1204345606	Laboratory Control Sample (LCS)
1204345605	486245001(C-40-R1L) Serial Dilution (SD)
1204345603	486245001(C-40-R1S) Matrix Spike (MS)
1204345607	486245001(C-40-R1S) Matrix Spike (MS)
1204345604	486245001(C-40-R1SD) Matrix Spike Duplicate (MSD)
1204345608	486245001(C-40-R1SD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

ICSA/ICSAB Statement
For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Technical Information

Preparation/Analytical Method Verification
Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range. The ICPMS solid samples in this SDG were diluted the standard two times.

Analyte	486245		
	001	002	003
Uranium-234	2X	2X	2X
Uranium-235	2X	2X	2X
Uranium-238	2X	2X	2X

Radiochemistry

Product: **Dry Weight**
Analytical Method: ASTM D 2216 (Modified)
Analytical Procedure: GL-OA-E-020 REV# 13
Analytical Batch: 1902369

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
486245001	C-40-R1
486245002	C-40-R2
486245003	C-40-R3
1204345842	486245001(C-40-R1) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Page 10061 SDG: 486245

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Project #: SSAOU Soil Sampling Work Plan
GEL Quote #:
COC Number [1]:
PO #:4500778461 Ln 2 ENV-LEGCYWSTE

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

GEL Work Order Number: 486245

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: Westinghouse Electric Company LLC — Phone #: 803.647.3171
Project/Site Name: Columbia Fuel Fabrication Facility — Fax #: 803.695.3964
Address: 5801 Bluff Road, Hopkins, SC 29061
Collected by: Randy Crews — Send Results: logsdocj@westinghouse.com

Sample Analysis Requested [5] (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code [2]	Field Filtered [3]	Sample Matrix [4]	Should this sample be considered: Radioactive	Should this sample be considered: TSCA Regulated	Total number of containers	isotopic uranium (by individual isotope, ICP MS)	<-- Preservative Type (6)	Comments
C-40-R1	7/30/2019	0815	G	N	SO			1	X		Note: extra sample is required for sample specific QC
C-40-R2	7/30/2019	0818	G	N	SO			1	X		
C-40-R3	7/30/2019	0821	G	N	SO			1	X		

TAT Requested: Normal: ___ Rush: X Specify: ASAP
(Subject to Surcharge)

Fax Results: Yes / No

Circle Deliverable:
C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

*****5 STRAIGHT day turnaround*****

Sample Collection Time Zone
Eastern Pacific
Central Other ____
Mountain

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 Randy Crews RCrews	7/31/2019	1038	1 Secure Location	7/31/2019	1038
2 Secure Location	7/31/2019	1115	2	7-31-19	
3	7-31-19	1511	3	7/31/19	15:11

Sample Shipping and Delivery Details

GEL PM: Hope Taylor
Method of Shipment: Date Shipped: N/A
Airbill #:
Airbill #:

1.) Chain of Custody Number = Client Determined
2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite
3.) Field Filtered: For liquid matrices, indicate with a - **Y** - for yes the sample was field filtered or - **N** - for sample was not field filtered
4.) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, **ML**=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, **SS**=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal
5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B* - **3**, *6010B 7470A* - **1**).
6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
Custody Seal Intact? *YES* *NO*
Cooler Temp: 21 C

WHITE = LABORATORY **YELLOW = FILE** **PINK = CLIENT**

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: WMC	**SDG/AR/COC/Work Order:** 486245
Received By: ZKW	**Date Received:** 7/31/19
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services (Courier) Other GEL

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#: If UN2910, Is the Radioactive Shipment Survey Compliant? Yes___ No___
B) Did the client designate the samples are to be received as radioactive?		✓	COC notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): ___ (CPM / mR/Hr) **Classified as: Rad 1 Rad 2 Rad 3**
D) Did the client designate samples are hazardous?		✓	COC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?		✓	If D or E is yes, select Hazards below. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	**Comments/Qualifiers (Required for Non-Conforming Items)**
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*		✓		Preservation Method: Wet Ice Ice Packs Dry ice (None) Other: *all temperatures are recorded in Celsius TEMP: 21C
4	Daily check performed and passed on IR temperature gun?	✓			**Temperature Device Serial #:** IR3-18 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?		✓		Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?			✓	If Yes, are Encores or Soil Kits present for solids? Yes___ No___ NA___(If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes___ No___ NA___(If unknown, select No) Are liquid VOA vials free of headspace? Yes___ No___ NA___ Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	✓			Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided?	✓			
13	COC form is properly signed in relinquished/received sections?	✓			Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials JMC Date 8/1/19 Page 1 of 1

GL-CHL-SR-001 Rev 6

List of current GEL Certifications as of 05 August 2019

State	Certification
Alaska	17−018
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122020−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−19−15
Utah NELAP	SC000122019−28
Vermont	VT87156
Virginia NELAP	460202
Washington	C780