# U.S.ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
# 540 S. MORRIS AVE., MONTGOMERY, AL 36115
# U ANALYSES

## REPORT OF SAMPLE DELIVERY GROUP #1900152

| | |
|---|---|
| Project: | Canadian Radium and Uranium 9/19 |
| Analysis method: | Isotopic Uranium Using NaOH Fusion |
| Report ID: | 1900152-U |
| Report type: | Original |
| Date reported: | 11/25/2019 |
| Total pages in report: | 32 |

## SAMPLES

| NAREL Sample # | Client Sample ID | Location | Matrix | Date Collected | Date Received |
|---|---|---|---|---|---|
| B9.10537D | C008-SB001-036048-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10538E | C008-SB001-036048-02 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10539F | C008-SB001-108120-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10540Y | C008-SB002-024036-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10541Z | C008-SB002-060072-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10542A | C008-SB003-000012-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10543B | C008-SB003-072084-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10544C | C008-SB004-012024-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10545D | C008-SB004-084096-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10546E | C008-SB005-036048-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10547F | C008-SB005-060072-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10548G | C008-SB006-024036-01 | NY:MT. KISCO | SOIL | 09/08/2019 | 09/10/2019 |
| B9.10549H | C008-SB006-060072-01 | NY:MT. KISCO | SOIL | 09/09/2019 | 09/10/2019 |
| B9.10550A | C008-SB007-024036-01 | NY:MT. KISCO | SOIL | 09/09/2019 | 09/10/2019 |
| B9.10551B | C008-SB007-060072-01 | NY:MT. KISCO | SOIL | 09/09/2019 | 09/10/2019 |
| B9.10552C | C008-SB008-048060-01 | NY:MT. KISCO | SOIL | 09/09/2019 | 09/10/2019 |
| B9.10553D | C008-SB008-084096-01 | NY:MT. KISCO | SOIL | 09/09/2019 | 09/10/2019 |
| B9.10554E | C008-SB009-000012-01 | NY:MT. KISCO | SOIL | 09/09/2019 | 09/10/2019 |
| B9.10555F | C008-SB009-072084-01 | NY:MT. KISCO | SOIL | 09/09/2019 | 09/10/2019 |

## EXCEPTIONS

1. **Packaging and shipping** – Upon inspection at NAREL, it was discovered that the lid on sample B9.10551 was off the container. Client was informed and instructed NAREL to proceed with analysis of the sample as received.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – No problems were encountered.
5. **Holding times** – No holding times were specified.

## QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Yields** – All chemical yields were within acceptance limits.
3. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.



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## ACCREDITATION

NAREL is accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard. NAREL maintains accreditation for all its radiological analyses except the following:

- Analyses of drinking water
- Gross alpha and gross beta of solid matrices, including swipes
- Tritium analysis of solid matrices, including swipes
- Analyses for Ra-226 by method NAREL RA-07-EC
- Analyses for Am-241 by method NAREL ACT-02F
- Curium-244/243

## CERTIFICATION

I certify that this data report complies with the terms and conditions of the Project Acceptance Form and/or the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

for Velinda Herbert — 11/25/19
Quality Assurance Manager, NAREL — Date

Cynthia White — 11-25-19
Director, Center for Environmental Radioanalytical Laboratory Science — Date

If you have questions about the data, please contact Cynthia White (white.cindy@epa.gov).



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# GENERAL INFORMATION

## SAMPLE TYPES

| | |
|---|---|
| BLD | Blind sample |
| FBK | Field blank |
| SAM | Normal sample |

## ANALYSIS QC TYPES

| | |
|---|---|
| ANA | Normal analysis |
| DUP | Laboratory duplicate |
| LCS | Laboratory control sample, or blank spike |
| LCX | Laboratory control sample duplicate |
| MS | Matrix spike |
| MSD | Matrix spike duplicate (not currently analyzed) |
| RBK | Method blank |
| STD | External standard (used for $^{228}$Ra yield determination) |

## QUALITY INDICATORS

| | |
|---|---|
| RPD | Relative Percent Difference |
| %R | Percent Recovery |
| Z | Number of standard deviations by which a QC measurement differs from the expected value |

## RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

## EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. Generally the score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference. The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation of most analyses. An exception is the use of %R in the evaluation of gross alpha matrix spike results. A gross alpha matrix spike result is considered acceptable if either $|Z| \leq 3$ or $60 \leq \%R \leq 110$.



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# Chain of Custody Forms



**USEPA**
DateShipped: 9/9/2019
CarrierName: FedEx
AirbillNo: 7761-9080-7836

**CHAIN OF CUSTODY RECORD**
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: 908-565-2980

**No: 2-090919-0032-0030-0001**
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: 343-270-3433

| Lab # | Sample # | Location | Matrix | Analyses | Sample Date | Sample Time | Numb Cont | Container | Preservative | Lab QC |
|---|---|---|---|---|---|---|---|---|---|---|
| | C008-SB001-036048-01 | C008-SB001 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 14:10 | 2 | 32 oz poly | None | Y 89.10537D |
| | C008-SB001-036048-02 | C008-SB001 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 14:10 | 1 | 32 oz poly | None | N 89.10538E |
| | C008-SB001-108120-01 | C008-SB001 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 14:15 | 1 | 32 oz poly | None | N 89.10539F |
| | C008-SB002-024036-01 | C008-SB002 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 15:25 | 1 | 32 oz poly | None | N 89.10540Y |
| | C008-SB002-060072-01 | C008-SB002 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 15:30 | 1 | 32 oz poly | None | N 89.10541Z |
| | C008-SB003-000012-01 | C008-SB003 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 16:15 | 1 | 32 oz poly | None | N 89.10542A |
| | C008-SB003-072084-01 | C008-SB003 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 16:20 | 1 | 32 oz poly | None | N 89.10543B |
| | C008-SB004-012024-01 | C008-SB004 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 16:50 | 1 | 32 oz poly | None | N 89.10544C |
| | C008-SB004-084096-01 | C008-SB004 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 16:55 | 1 | 32 oz poly | None | N 89.10545D |
| | C008-SB005-036048-01 | C008-SB005 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 17:35 | 1 | 32 oz poly | None | N 89.10546E |
| | C008-SB005-060072-01 | C008-SB005 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 17:40 | 1 | 32 oz poly | None | N 89.10547F |
| | C008-SB006-024036-01 | C008-SB006 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 18:15 | 1 | 32 oz poly | None | N 89.10548G |
| | C008-SB006-060072-01 | C008-SB006 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/8/2019 | 18:20 | 1 | 32 oz poly | None | N 89.10549H |
| | C008-SB007-024036-01 | C008-SB007 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/9/2019 | 08:20 | 1 | 32 oz poly | None | N 89.10550A |
| | C008-SB007-060072-01 | C008-SB007 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/9/2019 | 08:25 | 1 | 32 oz poly | None | N 89.10551B |
| | C008-SB008-048060-01 | C008-SB008 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/9/2019 | 09:35 | 1 | 32 oz poly | None | N 89.10552C |
| | C008-SB008-084096-01 | C008-SB008 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/9/2019 | 09:40 | 1 | 32 oz poly | None | N 89.10553D |
| | C008-SB009-000012-01 | C008-SB009 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/9/2019 | 10:00 | 1 | 32 oz poly | None | N 89.10554E |
| | C008-SB009-072084-01 | C008-SB009 | Soil | Alpha Spec (U, Th) & Gamma Spec | 9/9/2019 | 10:05 | 1 | 32 oz poly | None | N 89.10555F |

Special Instructions: Please email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com. Samples to be run for isotopic thorium via NAREL ACT-02FTH, Isotopic Uranium via NAREL ACT-02F-U, other gamma isotopes via NAREL GM-01-RA, and Radium-226 and Radium-228 via 21-day ingrowth. 60 day TAT.

**SAMPLES TRANSFERRED FROM**

**CHAIN OF CUSTODY #**

| Items/Reason | Relinquished by (Signature and Organization) | Date/Time | Received by (Signature and Organization) | Date/Time | Sample Condition Upon Receipt |
|---|---|---|---|---|---|
| All Samples/ All Analysis | (Weston) | 9/9/19 1600 | Zachary Chambers | 9/10/19 0920 | Most Good. 1 sample missing a lid |
| | | | | | |
| | | | | | |
| | | | | | |

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## ANALYSIS SUMMARY

Analysis method: NAREL ACT-02F-U
Title: Isotopic Uranium Using NaOH Fusion

| NAREL Sample # | Client Sample ID | QC Type | Date Completed | Preparation Batch # | Assay Batch # |
|---|---|---|---|---|---|
| B9.10537D | C008-SB001-036048-01 | | 11/15/2019 | 0016820C | 0024717L |
| B9.10537D | C008-SB001-036048-01 | DUP | 11/15/2019 | 0016820C | 0024717L |
| B9.10538E | C008-SB001-036048-02 | | 11/15/2019 | 0016820C | 0024717L |
| B9.10539F | C008-SB001-108120-01 | | 11/15/2019 | 0016820C | 0024717L |
| B9.10540Y | C008-SB002-024036-01 | | 11/15/2019 | 0016820C | 0024717L |
| B9.10541Z | C008-SB002-060072-01 | | 11/15/2019 | 0016820C | 0024717L |
| B9.10542A | C008-SB003-000012-01 | | 11/15/2019 | 0016820C | 0024717L |
| B9.10543B | C008-SB003-072084-01 | | 11/15/2019 | 0016820C | 0024717L |
| B9.10544C | C008-SB004-012024-01 | | 11/15/2019 | 0016820C | 0024717L |
| B9.10545D | C008-SB004-084096-01 | | 11/15/2019 | 0016820C | 0024717L |
| B9.10546E | C008-SB005-036048-01 | | 11/21/2019 | 0016831F | 0024738R |
| B9.10546E | C008-SB005-036048-01 | DUP | 11/21/2019 | 0016831F | 0024738R |
| B9.10547F | C008-SB005-060072-01 | | 11/21/2019 | 0016831F | 0024738R |
| B9.10548G | C008-SB006-024036-01 | | 11/21/2019 | 0016831F | 0024738R |
| B9.10549H | C008-SB006-060072-01 | | 11/21/2019 | 0016831F | 0024738R |
| B9.10550A | C008-SB007-024036-01 | | 11/21/2019 | 0016831F | 0024738R |
| B9.10551B | C008-SB007-060072-01 | | 11/21/2019 | 0016831F | 0024738R |
| B9.10552C | C008-SB008-048060-01 | | 11/21/2019 | 0016831F | 0024738R |
| B9.10553D | C008-SB008-084096-01 | | 11/21/2019 | 0016831F | 0024738R |
| B9.10554E | C008-SB009-000012-01 | | 11/21/2019 | 0016831F | 0024738R |
| B9.10555F | C008-SB009-072084-01 | | 11/21/2019 | 0016831F | 0024738R |
| LCS-00786565A * | | LCS | 11/15/2019 | 0016820C | 0024717L |
| RBK-00786564Z * | | RBK | 11/15/2019 | 0016820C | 0024717L |
| LCS-00786694J * | | LCS | 11/21/2019 | 0016831F | 0024738R |
| RBK-00786693H * | | RBK | 11/21/2019 | 0016831F | 0024738R |

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.



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# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10537D | Amount analyzed: | 1.009e+00 GASH |
| Client sample ID: | C008-SB001-036048-01 | Preparation batch #: | 0016820C |
| Matrix: | SOIL | Assay batch #: | 0024717L |
| Collected: | 2019-09-08 14:10 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 94.64 % | Analyst: | SPK |
| Ash/dry weight: | 95.64 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:21 | 1000.0 | AS33 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 4.44e-01 | 9.2e-02 | 1.1e-02 | 2.9e-02 | PCI/GDRY | 11/14/2019 15:21 CST |
| U235 | 2.87e-02 | 2.5e-02 | 8.3e-03 | 2.7e-02 | PCI/GDRY | 11/14/2019 15:21 CST |
| U238 | 5.56e-01 | 1.1e-01 | 9.5e-03 | 2.7e-02 | PCI/GDRY | 11/14/2019 15:21 CST |



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# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10537D | Amount analyzed: | 1.023e+00 GASH |
| Client sample ID: | C008-SB001-036048-01 | Preparation batch #: | 0016820C |
| Matrix: | SOIL | Assay batch #: | 0024717L |
| Collected: | 2019-09-08 14:10 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 94.64 % | Analyst: | SPK |
| Ash/dry weight: | 95.64 % | QC type: | DUP |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:20 | 1000.0 | AS34 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 4.04e-01 | 8.4e-02 | 6.5e-03 | 2.1e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U235 | 2.02e-02 | 2.0e-02 | 5.4e-03 | 2.0e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U238 | 4.40e-01 | 8.9e-02 | 7.9e-03 | 2.3e-02 | PCI/GDRY | 11/14/2019 15:20 CST |



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# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10538E | Amount analyzed: | 1.030e+00 GASH |
| Client sample ID: | C008-SB001-036048-02 | Preparation batch #: | 0016820C |
| Matrix: | SOIL | Assay batch #: | 0024717L |
| Collected: | 2019-09-08 14:10 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 93.01 % | Analyst: | SPK |
| Ash/dry weight: | 95.21 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:20 | 1000.0 | AS35 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 4.20e-01 | 8.6e-02 | 6.4e-03 | 2.0e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U235 | 3.57e-02 | 2.6e-02 | 5.3e-03 | 2.0e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U238 | 3.55e-01 | 7.8e-02 | 8.8e-03 | 2.5e-02 | PCI/GDRY | 11/14/2019 15:20 CST |



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# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10539F | Amount analyzed: | 1.004e+00 GASH |
| Client sample ID: | C008-SB001-108120-01 | Preparation batch #: | 0016820C |
| Matrix: | SOIL | Assay batch #: | 0024717L |
| Collected: | 2019-09-08 14:15 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 59.03 % | Analyst: | SPK |
| Ash/dry weight: | 91.71 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:20 | 1000.0 | AS36 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 8.15e-01 | 1.2e-01 | 8.4e-03 | 2.3e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U235 | 5.03e-02 | 2.9e-02 | 6.6e-03 | 2.1e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U238 | 6.96e-01 | 1.1e-01 | 3.8e-03 | 1.4e-02 | PCI/GDRY | 11/14/2019 15:20 CST |



ED_006395_00002268-00009

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10540Y | Amount analyzed: | 1.005e+00 GASH |
| Client sample ID: | C008-SB002-024036-01 | Preparation batch #: | 0016820C |
| Matrix: | SOIL | Assay batch #: | 0024717L |
| Collected: | 2019-09-08 15:25 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 88.87 % | Analyst: | SPK |
| Ash/dry weight: | 86.80 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:20 | 1000.0 | AS37 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 6.88e-01 | 1.3e-01 | 5.1e-03 | 1.9e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U235 | 4.12e-02 | 3.0e-02 | 6.1e-03 | 2.3e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U238 | 7.82e-01 | 1.4e-01 | 7.4e-03 | 2.4e-02 | PCI/GDRY | 11/14/2019 15:20 CST |



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# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10541Z | Amount analyzed: | 1.006e+00 GASH |
| Client sample ID: | C008-SB002-060072-01 | Preparation batch #: | 0016820C |
| Matrix: | SOIL | Assay batch #: | 0024717L |
| Collected: | 2019-09-08 15:30 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 84.06 % | Analyst: | SPK |
| Ash/dry weight: | 90.68 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:20 | 1000.0 | AS38 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 5.27e-01 | 1.0e-01 | 1.0e-02 | 2.9e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U235 | 2.25e-02 | 2.3e-02 | 9.8e-03 | 2.9e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U238 | 6.04e-01 | 1.1e-01 | 1.0e-02 | 2.9e-02 | PCI/GDRY | 11/14/2019 15:20 CST |



ED_006395_00002268-00011

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10542A | Amount analyzed: | 1.018e+00 GASH |
| Client sample ID: | C008-SB003-000012-01 | Preparation batch #: | 0016820C |
| Matrix: | SOIL | Assay batch #: | 0024717L |
| Collected: | 2019-09-08 16:15 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 91.27 % | Analyst: | SPK |
| Ash/dry weight: | 96.18 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:20 | 1000.0 | AS39 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 4.07e-01 | 8.5e-02 | 6.6e-03 | 2.1e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U235 | 4.80e-02 | 3.1e-02 | 7.9e-03 | 2.5e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U238 | 4.33e-01 | 8.8e-02 | 4.6e-03 | 1.7e-02 | PCI/GDRY | 11/14/2019 15:20 CST |



ED_006395_00002268-00012

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10543B | Amount analyzed: | 9.996e-01 GASH |
| Client sample ID: | C008-SB003-072084-01 | Preparation batch #: | 0016820C |
| Matrix: | SOIL | Assay batch #: | 0024717L |
| Collected: | 2019-09-08 16:20 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 81.19 % | Analyst: | SPK |
| Ash/dry weight: | 73.08 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:20 | 1000.0 | AS40 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 1.75e+00 | 2.4e-01 | 6.7e-03 | 2.1e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U235 | 9.99e-02 | 4.5e-02 | 5.5e-03 | 2.1e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U238 | 1.78e+00 | 2.5e-01 | 8.1e-03 | 2.4e-02 | PCI/GDRY | 11/14/2019 15:20 CST |



ED_006395_00002268-00013

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10544C | Amount analyzed: | 1.037e+00 GASH |
| Client sample ID: | C008-SB004-012024-01 | Preparation batch #: | 0016820C |
| Matrix: | SOIL | Assay batch #: | 0024717L |
| Collected: | 2019-09-08 16:50 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 89.22 % | Analyst: | SPK |
| Ash/dry weight: | 97.28 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:20 | 1000.0 | AS65 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 5.06e-01 | 1.1e-01 | 1.7e-02 | 4.3e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U235 | 2.61e-02 | 3.1e-02 | 1.9e-02 | 4.8e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U238 | 5.29e-01 | 1.1e-01 | 2.0e-02 | 4.8e-02 | PCI/GDRY | 11/14/2019 15:20 CST |



ED_006395_00002268-00014

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10545D | Amount analyzed: | 1.029e+00 GASH |
| Client sample ID: | C008-SB004-084096-01 | Preparation batch #: | 0016820C |
| Matrix: | SOIL | Assay batch #: | 0024717L |
| Collected: | 2019-09-08 16:55 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 48.26 % | Analyst: | SPK |
| Ash/dry weight: | 78.67 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:20 | 1000.0 | AS68 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 1.91e+00 | 2.5e-01 | 6.3e-03 | 2.0e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U235 | 6.41e-02 | 3.5e-02 | 9.2e-03 | 2.7e-02 | PCI/GDRY | 11/14/2019 15:20 CST |
| U238 | 1.96e+00 | 2.6e-01 | 4.4e-03 | 1.6e-02 | PCI/GDRY | 11/14/2019 15:20 CST |



ED_006395_00002268-00015

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10546E | Amount analyzed: | 1.056e+00 GASH |
| Client sample ID: | C008-SB005-036048-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-08 17:35 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 90.31 % | Analyst: | SPK |
| Ash/dry weight: | 88.79 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:33 | 1000.0 | AS99 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 7.25e-01 | 1.3e-01 | 8.6e-03 | 2.6e-02 | PCI/GDRY | 11/20/2019 14:33 CST |
| U235 | 2.65e-02 | 2.4e-02 | 5.9e-03 | 2.2e-02 | PCI/GDRY | 11/20/2019 14:33 CST |
| U238 | 6.73e-01 | 1.2e-01 | 1.2e-02 | 3.2e-02 | PCI/GDRY | 11/20/2019 14:33 CST |



ED_006395_00002268-00016

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10546E | Amount analyzed: | 1.009e+00 GASH |
| Client sample ID: | C008-SB005-036048-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-08 17:35 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 90.31 % | Analyst: | SPK |
| Ash/dry weight: | 88.79 % | QC type: | DUP |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:33 | 1000.0 | AS100 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 6.22e-01 | 1.1e-01 | 8.3e-03 | 2.5e-02 | PCI/GDRY | 11/20/2019 14:33 CST |
| U235 | 3.13e-02 | 2.7e-02 | 1.0e-02 | 3.0e-02 | PCI/GDRY | 11/20/2019 14:33 CST |
| U238 | 6.37e-01 | 1.2e-01 | 6.9e-03 | 2.2e-02 | PCI/GDRY | 11/20/2019 14:33 CST |



ED_006395_00002268-00017

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10547F | Amount analyzed: | 1.011e+00 GASH |
| Client sample ID: | C008-SB005-060072-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-08 17:40 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 81.14 % | Analyst: | SPK |
| Ash/dry weight: | 90.29 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:33 | 1000.0 | AS101 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 9.21e-01 | 1.6e-01 | 8.7e-03 | 2.8e-02 | PCI/GDRY | 11/20/2019 14:33 CST |
| U235 | 3.04e-02 | 2.9e-02 | 1.0e-02 | 3.3e-02 | PCI/GDRY | 11/20/2019 14:33 CST |
| U238 | 8.23e-01 | 1.5e-01 | 1.3e-02 | 3.6e-02 | PCI/GDRY | 11/20/2019 14:33 CST |



ED_006395_00002268-00018

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10548G | Amount analyzed: | 1.021e+00 GASH |
| Client sample ID: | C008-SB006-024036-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-08 18:15 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 95.38 % | Analyst: | SPK |
| Ash/dry weight: | 98.58 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:33 | 1000.0 | AS102 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 3.77e-01 | 8.5e-02 | 1.0e-02 | 2.9e-02 | PCI/GDRY | 11/20/2019 14:33 CST |
| U235 | 9.11e-03 | 1.9e-02 | 1.2e-02 | 3.5e-02 | PCI/GDRY | 11/20/2019 14:33 CST |
| U238 | 3.79e-01 | 8.6e-02 | 7.4e-03 | 2.3e-02 | PCI/GDRY | 11/20/2019 14:33 CST |



ED_006395_00002268-00019

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10549H | Amount analyzed: | 1.012e+00 GASH |
| Client sample ID: | C008-SB006-060072-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-09 18:20 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 79.29 % | Analyst: | SPK |
| Ash/dry weight: | 86.11 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:33 | 1000.0 | AS103 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 1.10e+00 | 1.8e-01 | 8.2e-03 | 2.6e-02 | PCI/GDRY | 11/20/2019 14:33 CST |
| U235 | 3.71e-02 | 3.1e-02 | 1.2e-02 | 3.5e-02 | PCI/GDRY | 11/20/2019 14:33 CST |
| U238 | 1.09e+00 | 1.8e-01 | 1.1e-02 | 3.2e-02 | PCI/GDRY | 11/20/2019 14:33 CST |



ED_006395_00002268-00020

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10550A | Amount analyzed: | 1.006e+00 GASH |
| Client sample ID: | C008-SB007-024036-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-09 08:20 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 85.05 % | Analyst: | SPK |
| Ash/dry weight: | 37.87 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:34 | 1000.0 | AS105 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 9.20e-01 | 1.2e-01 | 3.2e-03 | 1.0e-02 | PCI/GDRY | 11/20/2019 14:34 CST |
| U235 | 4.00e-02 | 1.9e-02 | 2.7e-03 | 1.0e-02 | PCI/GDRY | 11/20/2019 14:34 CST |
| U238 | 8.48e-01 | 1.2e-01 | 3.9e-03 | 1.2e-02 | PCI/GDRY | 11/20/2019 14:34 CST |



ED_006395_00002268-00021

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10551B | Amount analyzed: | 1.070e+00 GASH |
| Client sample ID: | C008-SB007-060072-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-09 08:25 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 85.12 % | Analyst: | SPK |
| Ash/dry weight: | 88.68 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:34 | 1000.0 | AS106 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 5.91e-01 | 1.1e-01 | 8.9e-03 | 2.5e-02 | PCI/GDRY | 11/20/2019 14:34 CST |
| U235 | 1.34e-02 | 1.9e-02 | 9.4e-03 | 2.8e-02 | PCI/GDRY | 11/20/2019 14:34 CST |
| U238 | 5.67e-01 | 1.0e-01 | 4.5e-03 | 1.7e-02 | PCI/GDRY | 11/20/2019 14:34 CST |

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10552C | Amount analyzed: | 1.005e+00 GASH |
| Client sample ID: | C008-SB008-048060-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-09 09:35 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 94.57 % | Analyst: | SPK |
| Ash/dry weight: | 98.42 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:34 | 1000.0 | AS107 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 4.39e-01 | 9.7e-02 | 9.6e-03 | 2.9e-02 | PCI/GDRY | 11/20/2019 14:34 CST |
| U235 | 4.45e-02 | 3.2e-02 | 6.6e-03 | 2.5e-02 | PCI/GDRY | 11/20/2019 14:34 CST |
| U238 | 4.41e-01 | 9.7e-02 | 8.0e-03 | 2.5e-02 | PCI/GDRY | 11/20/2019 14:34 CST |



ED_006395_00002268-00023

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10553D | Amount analyzed: | 9.846e-01 GASH |
| Client sample ID: | C008-SB008-084096-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-09 09:40 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 20.50 % | Analyst: | SPK |
| Ash/dry weight: | 27.77 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:34 | 1000.0 | AS108 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 2.02e+00 | 2.2e-01 | 2.4e-03 | 7.1e-03 | PCI/GDRY | 11/20/2019 14:34 CST |
| U235 | 7.76e-02 | 2.3e-02 | 1.6e-03 | 6.2e-03 | PCI/GDRY | 11/20/2019 14:34 CST |
| U238 | 1.47e+00 | 1.6e-01 | 2.4e-03 | 7.1e-03 | PCI/GDRY | 11/20/2019 14:34 CST |



ED_006395_00002268-00024

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10554E | Amount analyzed: | 1.002e+00 GASH |
| Client sample ID: | C008-SB009-000012-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-09 10:00 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 95.17 % | Analyst: | SPK |
| Ash/dry weight: | 96.68 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:34 | 1000.0 | AS109 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 4.56e-01 | 9.6e-02 | 7.4e-03 | 2.4e-02 | PCI/GDRY | 11/20/2019 14:34 CST |
| U235 | 6.84e-02 | 3.8e-02 | 6.1e-03 | 2.3e-02 | PCI/GDRY | 11/20/2019 14:34 CST |
| U238 | 5.40e-01 | 1.1e-01 | 7.4e-03 | 2.4e-02 | PCI/GDRY | 11/20/2019 14:34 CST |



ED_006395_00002268-00025

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | B9.10555F | Amount analyzed: | 1.039e+00 GASH |
| Client sample ID: | C008-SB009-072084-01 | Preparation batch #: | 0016831F |
| Matrix: | SOIL | Assay batch #: | 0024738R |
| Collected: | 2019-09-09 10:05 EDT | Prep procedure: | N/A |
| Sample type: | SAM | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | 84.76 % | Analyst: | SPK |
| Ash/dry weight: | 93.63 % | QC type: | ANA |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:34 | 1000.0 | AS110 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 4.52e-01 | 9.4e-02 | 4.9e-03 | 1.8e-02 | PCI/GDRY | 11/20/2019 14:34 CST |
| U235 | 2.79e-02 | 2.6e-02 | 1.0e-02 | 3.1e-02 | PCI/GDRY | 11/20/2019 14:34 CST |
| U238 | 4.27e-01 | 9.1e-02 | 4.9e-03 | 1.8e-02 | PCI/GDRY | 11/20/2019 14:34 CST |



ED_006395_00002268-00026

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | LCS-00786565A | Amount analyzed: | 1.000e+00 SAMP |
| Client sample ID: | N/A | Preparation batch #: | 0016820C |
| Matrix: | N/A | Assay batch #: | 0024717L |
| Collected: | N/A | Prep procedure: | N/A |
| Sample type: | N/A | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | N/A | Analyst: | SPK |
| Ash/dry weight: | N/A | QC type: | LCS |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:21 | 1000.0 | AS69 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 2.11e+00 | 2.5e-01 | 6.4e-03 | 2.0e-02 | PCI | 11/14/2019 15:21 CST |
| U235 | 7.80e-02 | 3.8e-02 | 7.7e-03 | 2.4e-02 | PCI | 11/14/2019 15:21 CST |
| U238 | 2.04e+00 | 2.4e-01 | 4.4e-03 | 1.7e-02 | PCI | 11/14/2019 15:21 CST |

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | RBK-00786564Z | Amount analyzed: | 1.000e+00 SAMP |
| Client sample ID: | N/A | Preparation batch #: | 0016820C |
| Matrix: | N/A | Assay batch #: | 0024717L |
| Collected: | N/A | Prep procedure: | N/A |
| Sample type: | N/A | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | N/A | Analyst: | SPK |
| Ash/dry weight: | N/A | QC type: | RBK |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/14/2019 15:21 | 1000.0 | AS70 | CEB |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 3.34e-03 | 9.7e-03 | 4.4e-03 | 1.7e-02 | PCI | 11/14/2019 15:21 CST |
| U235 | -1.33e-03 | 8.8e-03 | 7.7e-03 | 2.5e-02 | PCI | 11/14/2019 15:21 CST |
| U238 | 6.68e-03 | 1.2e-02 | 4.4e-03 | 1.7e-02 | PCI | 11/14/2019 15:21 CST |



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# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | LCS-00786694J | Amount analyzed: | 1.000e+00 SAMP |
| Client sample ID: | N/A | Preparation batch #: | 0016831F |
| Matrix: | N/A | Assay batch #: | 0024738R |
| Collected: | N/A | Prep procedure: | N/A |
| Sample type: | N/A | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | N/A | Analyst: | SPK |
| Ash/dry weight: | N/A | QC type: | LCS |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:34 | 1000.0 | AS111 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 1.92e+00 | 2.4e-01 | 5.2e-03 | 2.0e-02 | PCI | 11/20/2019 14:34 CST |
| U235 | 9.17e-02 | 4.5e-02 | 9.0e-03 | 2.9e-02 | PCI | 11/20/2019 14:34 CST |
| U238 | 2.01e+00 | 2.5e-01 | 7.5e-03 | 2.4e-02 | PCI | 11/20/2019 14:34 CST |



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# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG #1900152

## SAMPLE ANALYSIS REPORT

| | | | |
|---|---|---|---|
| Lab sample #: | RBK-00786693H | Amount analyzed: | 1.000e+00 SAMP |
| Client sample ID: | N/A | Preparation batch #: | 0016831F |
| Matrix: | N/A | Assay batch #: | 0024738R |
| Collected: | N/A | Prep procedure: | N/A |
| Sample type: | N/A | Analysis method: | NAREL ACT-02F-U |
| Dry/wet weight: | N/A | Analyst: | SPK |
| Ash/dry weight: | N/A | QC type: | RBK |
| Sample description: | N/A | | |
| Comment: | N/A | | |

## COUNTING INFORMATION

| Date and time | Duration (min) | Detector ID | Operator |
|---|---|---|---|
| 11/20/2019 14:34 | 1000.0 | AS112 | MO |

## ANALYTICAL RESULTS

| Analyte | Activity | ± 2 σ Uncertainty | DLC | MDC | Unit | Reference Date |
|---|---|---|---|---|---|---|
| U234 | 0.00e+00 | 9.7e-03 | 8.3e-03 | 2.4e-02 | PCI | 11/20/2019 14:34 CST |
| U235 | 0.00e+00 | 1.2e-02 | 9.9e-03 | 2.8e-02 | PCI | 11/20/2019 14:34 CST |
| U238 | 1.45e-02 | 1.6e-02 | 6.0e-03 | 1.9e-02 | PCI | 11/20/2019 14:34 CST |



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# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG 1900152

## PREPARATION BATCH SUMMARY

Preparation batch #: 0016820C
Analysis method: NAREL ACT-02F-U
Preparation procedure: N/A

| NAREL Sample # | Client Sample ID | Analysis # | QC Type | Yield | ± 2 σ Uncertainty | Analyst |
|---|---|---|---|---|---|---|
| B9.10537D | C008-SB001-036048-01 | 00783844R | | 73.43 % | 6.79 % | SPK |
| B9.10537D | C008-SB001-036048-01 | 00786563Y | DUP | 78.51 % | 7.16 % | SPK |
| B9.10538E | C008-SB001-036048-02 | 00783848W | | 75.79 % | 6.89 % | SPK |
| B9.10539F | C008-SB001-108120-01 | 00783852R | | 83.59 % | 7.31 % | SPK |
| B9.10540Y | C008-SB002-024036-01 | 00783856W | | 63.36 % | 6.15 % | SPK |
| B9.10541Z | C008-SB002-060072-01 | 00783860R | | 73.72 % | 6.89 % | SPK |
| B9.10542A | C008-SB003-000012-01 | 00783864W | | 73.57 % | 6.72 % | SPK |
| B9.10543B | C008-SB003-072084-01 | 00783868A | | 55.69 % | 5.54 % | SPK |
| B9.10544C | C008-SB004-012024-01 | 00783872W | | 63.86 % | 6.19 % | SPK |
| B9.10545D | C008-SB004-084096-01 | 00783876A | | 65.51 % | 6.30 % | SPK |
| LCS-00786565A * | | 00786565A | LCS | 84.65 % | 7.53 % | SPK |
| RBK-00786564Z * | | 00786564Z | RBK | 83.22 % | 7.42 % | SPK |

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

### QC RESULTS FOR BATCH 0016820C

| NAREL Sample # | Analysis # | QC Type | Analyte | %R | RPD | Z | Evaluation |
|---|---|---|---|---|---|---|---|
| B9.10537D | 00786563Y | DUP | U234 | | 9.4 | -0.64 | PASS |
| B9.10537D | 00786563Y | DUP | U235 | | 34.5 | -0.52 | PASS |
| B9.10537D | 00786563Y | DUP | U238 | | 23.4 | -1.68 | PASS |
| LCS-00786565A | 00786565A | LCS | U234 | 107.9 | | 1.25 | PASS |
| LCS-00786565A | 00786565A | LCS | U235 | 83.8 | | -0.79 | PASS |
| LCS-00786565A | 00786565A | LCS | U238 | 101.2 | | 0.20 | PASS |
| RBK-00786564Z | 00786564Z | RBK | U234 | | | | PASS |
| RBK-00786564Z | 00786564Z | RBK | U235 | | | | PASS |
| RBK-00786564Z | 00786564Z | RBK | U238 | | | | PASS |



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# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

## SDG 1900152

## PREPARATION BATCH SUMMARY

Preparation batch #: 0016831F
Analysis method: NAREL ACT-02F-U
Preparation procedure: N/A

| NAREL Sample # | Client Sample ID | Analysis # | QC Type | Yield | ± 2 σ Uncertainty | Analyst |
|---|---|---|---|---|---|---|
| B9.10546E | C008-SB005-036048-01 | 00783880W | | 63.54 % | 6.17 % | SPK |
| B9.10546E | C008-SB005-036048-01 | 00786692G | DUP | 71.02 % | 6.71 % | SPK |
| B9.10547F | C008-SB005-060072-01 | 00783884A | | 55.07 % | 5.58 % | SPK |
| B9.10548G | C008-SB006-024036-01 | 00783888E | | 70.03 % | 6.56 % | SPK |
| B9.10549H | C008-SB006-060072-01 | 00783892A | | 57.04 % | 5.76 % | SPK |
| B9.10550A | C008-SB007-024036-01 | 00783896E | | 60.70 % | 5.90 % | SPK |
| B9.10551B | C008-SB007-060072-01 | 00783900G | | 69.04 % | 6.53 % | SPK |
| B9.10552C | C008-SB008-048060-01 | 00783904L | | 68.84 % | 6.59 % | SPK |
| B9.10553D | C008-SB008-084096-01 | 00783908Q | | 75.83 % | 6.93 % | SPK |
| B9.10554E | C008-SB009-000012-01 | 00783912L | | 69.67 % | 6.53 % | SPK |
| B9.10555F | C008-SB009-072084-01 | 00783916Q | | 69.51 % | 6.59 % | SPK |
| LCS-00786694J * | | 00786694J | LCS | 73.00 % | 6.81 % | SPK |
| RBK-00786693H * | | 00786693H | RBK | 94.23 % | 8.23 % | SPK |

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

### QC RESULTS FOR BATCH 0016831F

| NAREL Sample # | Analysis # | QC Type | Analyte | %R | RPD | Z | Evaluation |
|---|---|---|---|---|---|---|---|
| B9.10546E | 00786692G | DUP | U234 | | 15.3 | -1.21 | PASS |
| B9.10546E | 00786692G | DUP | U235 | | 16.5 | 0.27 | PASS |
| B9.10546E | 00786692G | DUP | U238 | | 5.5 | -0.43 | PASS |
| LCS-00786694J | 00786694J | LCS | U234 | 98.1 | | -0.30 | PASS |
| LCS-00786694J | 00786694J | LCS | U235 | 98.6 | | -0.06 | PASS |
| LCS-00786694J | 00786694J | LCS | U238 | 99.6 | | -0.06 | PASS |
| RBK-00786693H | 00786693H | RBK | U234 | | | | PASS |
| RBK-00786693H | 00786693H | RBK | U235 | | | | PASS |
| RBK-00786693H | 00786693H | RBK | U238 | | | | PASS |



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