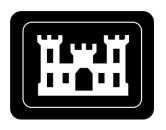
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IOWA ARMY AMMUNITION PLANT OPERABLE UNIT 8 ANNUAL ENVIRONMENTAL MONITORING DATA AND ANALYSIS REPORT FOR CALENDAR YEAR 2018

MIDDLETOWN, IOWA

AUGUST 7, 2019



U.S. Army Corps of Engineers St. Louis District Office Formerly Utilized Sites Remedial Action Program

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prepared by

U.S. Army Corps of Engineers St. Louis District Office Formerly Utilized Sites Remedial Action Program

with assistance from

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ACRONYMS AND ABBREVIATIONS

AEC U.S. Atomic Energy Commission

ARAR applicable or relevant and appropriate requirement

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CFR Code of Federal Regulations
COC contaminant of concern

CY calendar year

DOD U.S. Department of Defense DOE U.S. Department of Energy DQO data quality objective DU depleted uranium

EDE effective dose equivalent

ELAP Environmental Laboratory Accreditation Program

EM Engineer Manual

EMDAR Environmental Monitoring Data and Analysis Report

ER Engineer Regulation

FS firing site

FUSRAP Formerly Utilized Sites Remedial Action Program

GIS geographic information system IAAAP Iowa Army Ammunition Plant

IDA Inert Disposal Area LAP load, assemble, and pack

MARSSIM Multi-Agency Radiation Survey and Site Investigation Manual

MDA minimum detectable activity
MDC minimum detectable concentration
MED Manhattan Engineer District
NAD normalized absolute difference

NRC U.S. Nuclear Regulatory Commission

OU operable unit

PDI pre-design investigation

QA quality assurance

QAPP quality assurance project plan

QC quality control

QSM Department of Defense (DoD)/Department of Energy (DOE) Consolidated Quality

Systems Manual (QSM) for Environmental Laboratories

RA remedial action RG remediation goal

RI WP Remedial Investigation Work Plan for Line 1, Firing Sites Area, Yards C, G,

and L, Warehouse 3-01 and the West Burn Pads Area South of the Road

Rn radon

ROD FUSRAP Record of Decision for the Iowa Army Ammunition Plant

RPD relative percent difference SOP standard operating procedure

SU survey unit

SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods

TEDE total effective dose equivalent

U uranium

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ACRONYMS AND ABBREVIATIONS (Continued)

USACE U.S. Army Corps of Engineers

USEPA U.S. Environmental Protection Agency

VQ validation qualifier

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UNIT ABBREVIATIONS

Both English and metric units are used in this report. The units used in a specific situation are based on common unit usage or regulatory language (e.g., depths are given in feet, and areas are given in square meters). Units included in the following list are not defined at first use in this report.

$^{\circ}\mathrm{C}$	degrees Celsius (centigrade)
μCi/cm ³	microcurie(s) per cubic centimeter
μCi/mL	microcurie(s) per milliliter
Ci	curie(s)
cm	centimeter(s)
cm ³	cubic centimeter(s)
m	meter(s)
m^2	square meter(s)
m^3	cubic meter(s)
mL	milliliter(s)
mrem	millirem
pCi/g	picocurie(s) per gram

picocurie(s) per liter

pCi/L

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EXECUTIVE SUMMARY

This annual Environmental Monitoring Data and Analysis Report (EMDAR) for calendar year (CY) 2018 applies to the Iowa Army Ammunition Plant (IAAAP) Operable Unit (OU)-8 (Figure 1-1), which is within the scope of the Formerly Utilized Sites Remedial Action Program (FUSRAP). This EMDAR provides an evaluation of the data collected as part of the environmental monitoring conducted for IAAAP OU-8. IAAAP OU-8 consists of the Firing Sites Area (containing five subareas named for the buildings located within them, grouped by proximity: Firing Site (FS)-1 and FS-2 Area [FS-1 and FS-2]; FS-3, FS-4, and FS-5 Area [FS-3, FS-4, and FS-5]; FS-6 Area [FS-6, FS-7, FS-8, and FS-15]; FS-12 Area [FS-9, FS-10, FS-11, and FS-12]; and FS-14 Area [FS-14]); Line 1 Structures; Yards C, G, and L; and Warehouse 3-01. M-Yard is not included as part of OU-8 in *FUSRAP Record of Decision for the Iowa Army Ammunition Plant* (ROD) (USACE 2011); however, references to OU-8 include M-Yard for the purposes of this EMDAR. Environmental monitoring of various media at IAAAP OU-8 is required under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and under the commitments in the ROD (USACE 2011).

The U.S. Army Corps of Engineers (USACE) St. Louis District collects environmental monitoring data as a component of remedial action (RA). These data serve as a critical component in the evaluation of the current status of residual contaminants and in the assessment of the potential future migration of residual contaminants.

The collection and evaluation of environmental monitoring data for IAAAP OU-8 is used to demonstrate compliance with the applicable or relevant and appropriate requirements (ARARs).

Radiological air data collected at IAAAP OU-8 through airborne radioactive particulate monitoring were evaluated. In addition to environmental monitoring purposes, radiological air data were also used as inputs to calculate the total effective dose equivalent (TEDE) to the hypothetical maximally exposed individual from IAAAP OU-8.

The TEDE calculated for the hypothetical maximally exposed individual at IAAAP OU-8 was less than 0.1 mrem per year. The results of the radiological air monitoring conducted at IAAAP OU-8 demonstrate compliance with the ARARs for IAAAP OU-8.

Surface-water and sediment sampling was completed as a best management practice in April and November of CY 2018. Samples were collected from 10 surface-water and sediment sampling locations (Figure 4-1). The results of the sampling were used to evaluate the radiological conditions of Long Creek and its tributary downgradient of the FS-12 Area and running to the east and south of the FS-12 Area. The results of the surface-water and sediment sampling demonstrate no adverse impacts from the remedial activities at the FS-12 Area.

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Iowa Army Ammunition Pla Calendar Year 2018	nt Operable Unit 8 Annual Environmental Monitoring Data and Analysis Report for
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1.0 HISTORICAL SITE BACKGROUND AND CURRENT SITE STATUS

1.1 INTRODUCTION

This annual Environmental Monitoring Data and Analysis Report (EMDAR) for calendar year (CY) 2018 applies to the Iowa Army Ammunition Plant (IAAAP) Operable Unit (OU)-8, which is within the scope of the Formerly Utilized Sites Remedial Action Program (FUSRAP). This EMDAR provides an evaluation of the data collected as part of the environmental monitoring conducted for IAAAP OU-8. IAAAP OU-8 includes the Firing Sites Area (consisting of five subareas named for the buildings located within them, grouped for proximity: Firing Site [FS]-1 and FS-2 Area [FS-1 and FS-2]; FS-3, FS-4, and FS-5 Area [FS-3, FS-4, and FS-5]; FS-6 Area [FS-6, FS-7, FS-8, and FS-15]; FS-12 Area [FS-9, FS-10, FS-11, and FS-12]; and FS-14 Area [FS-14]); Line 1 Structures; Yards C, G, and L; and Warehouse 3-01 (Figure 1-1). M-Yard is not included as part of OU-8 in *FUSRAP Record of Decision for the Iowa Army Ammunition Plant* (ROD) (USACE 2011); however, references to OU-8 include M-Yard for the purposes of this EMDAR. Environmental monitoring of various media at IAAAP OU-8 is required under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and under the commitments in the ROD (USACE 2011).

1.2 PURPOSE

The primary purpose of this EMDAR is to calculate the total effective dose equivalent (TEDE) from radionuclide emissions (exclusive of radon) to the hypothetical maximally exposed individual and other receptors from IAAAP OU-8 at which a reasonable potential for radionuclide emissions due to FUSRAP activities exists. The results of these calculations demonstrate compliance with the applicable or relevant and appropriate requirements (ARARs) or other federal and state benchmarks. During CY 2018, the FS-12 Area and the loadout area at M-Yard had a reasonable potential for radionuclide emissions due to FUSRAP activities. The air emissions from the FS-12 Area and M-Yard are releases of particulate radionuclides in soil as a result of windblown action and remedial action (RA) in the form of excavation, stockpiling, on-site treatment (i.e., sorting), and loadout of soil.

This EMDAR additionally serves to enhance the reader's awareness of the current condition of IAAAP OU-8, summarize the data collection efforts for CY 2018, and provide analysis of the CY 2018 environmental monitoring data results. This EMDAR presents the following information:

- IAAAP OU-8 sample collection data and interpretation of CY 2018 results; and
- The status of IAAAP OU-8 regarding compliance with the ARARs or other federal and state benchmarks.

1.3 PROGRAM AND SITE HISTORY

FUSRAP was executed by the U.S. Atomic Energy Commission (AEC) in 1974 to identify, remediate, or otherwise control sites at which residual radioactivity remained from operations conducted for the Manhattan Engineer District (MED). FUSRAP was continued by the successor agencies to the AEC until 1997, when the U.S. Congress transferred responsibility for the execution aspect of FUSRAP from the U.S. Department of Energy (DOE) to the U.S. Army Corps of Engineers (USACE).

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IAAAP is a government-owned, contractor-operated facility that occupies approximately 76,890,000 m² (19,000 acres) in Des Moines County near Middletown, Iowa, approximately 10 miles west of Burlington, Iowa, and the Mississippi River (Figure 1-1). The installation's mission is to load, assemble, and pack (LAP) ammunition items, including projectiles, mortar rounds, warheads, demolition charges, and munitions components such as fuses, primers, and boosters.

All IAAAP land is currently owned by and under the control of the U.S. Army. Approximately one-third of IAAAP property is occupied by active or formerly active munitions production or storage facilities. The remaining property is generally either forested (30,350,000 m² [7,500 acres]) or leased for agricultural use (31,160,000 m² [7,700 acres]).

Since operations began in 1941, IAAAP has used explosives and lead-based initiating compounds to produce a wide variety of ordnance items. During the summer of 1947, Mason & Hanger – Silas Mason Company, Inc., the operating contractor, entered into a contract with the Ordnance Department to assist in the design and engineering, to perform the construction, and to operate a facility for the purpose of supplying AEC with explosive components for nuclear weapons. From 1947 to 1975, IAAAP OU-8 areas were under the control of AEC or its successors for weapon assembly operations. Based on IAAAP project history reports, the first nuclear weapon assembly operations are believed to have begun in 1949. Throughout the remaining years of AEC control, IAAAP tested, assembled, conducted surveillance on, and disassembled a wide variety of nuclear weapons. Detailed descriptions and histories of IAAAP OU-8 areas are contained in the *Iowa Army Ammunition Plant FUSRAP Remedial Investigation Report for Firing Sites Area, Yards C, E, F, G, and L, Warehouse 3-01 and Area West of Line 5B* (USACE 2008) and the ROD (USACE 2011).

1.4 CALENDAR YEAR 2018 ACTIVITIES

1.4.1 IAAAP Operable Unit 8 Calendar Year 2018 Documents

During CY 2018, the *Iowa Army Ammunition Plant Operable Unit 8 Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2017* (USACE 2018) was finalized.

1.4.2 IAAAP Operable Unit 8 Calendar Year 2018 Remedial Actions

During CY 2018, RA was performed at the FS-12 Area. The RA began at the FS-12 Area in the second quarter and continued through the fourth quarter. A total of 10,232 tons of soil was sorted following excavation from IAAAP OU-8, with 616 tons of the soil stockpiled as contaminated material after sorting at the FS-12 Area.

In CY 2018, contaminated material, including the 2018 soil stockpile, a soil stockpile remaining from 2017 activities, and additional bulky material collected during the 2018 activities (i.e., large material discharged from soil sorting, material from structures such as concrete and metal, tree and brush material, etc.) was transported from the FS-12 Area to M-Yard for loading into railcars for transport to an off-site disposal facility.

A total of 1,667 tons of contaminated material was loaded on railcars and shipped offsite for disposal at Energy Solutions in Clive, Utah.

During CY 2018, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (DOD 2000) Class 1 verifications were completed at the FS-12 Area (on survey unit [SU]-13, SU-14, SU-15, SU-20, SU-21, SU-22, SU-35, SU-36, SU-37, SU-41, SU-42, SU-43, SU-94,

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SU-105, SU-114, and SU-115 [i.e., Areas G and H] and at the FS-12 Bunker). Verifications at the FS-12 Area were performed to confirm the remediation goals (RGs) of the ROD were achieved.

During CY 2018, characterizations/pre-design investigations (PDIs) were performed at the FS-12 Area (on SU-48, SU-49, SU-50, SU-51, SU-54, SU-55, SU-56, SU-57, SU-58, SU-59, SU-63, SU-64, SU-67, SU-68, SU-79, SU-81, SU-87, SU-88, SU-89, SU-90, SU-91, SU-93, SU-97, SU-100, SU-101, SU-102, SU-103, SU-104, SU-108, SU-109, SU-111, and SU-118).

No excavation or decontamination water was released in CY 2018.

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2.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS EVALUATION

Section 2.8.2 of the ROD lists two ARARs that are evaluated in this EMDAR. The first ARAR, from 10 *Code of Federal Regulations [CFR]* 20.1403(b), requires that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group not exceed 25 mrem per year. The second ARAR, from 10 *CFR* 20.1101(d), requires that emissions of radioactive material to the environment, excluding radon (Rn)-222 and its progeny, be maintained so the highest individual dose to the public does not exceed 10 mrem per year. For the purposes of the CY 2018 evaluation, the critical group is a current IAAAP employee not engaged in FUSRAP RA (i.e., an employee working at the Inert Disposal Area [IDA], located approximately 613 m east of the FS-12 Area, and an employee working at the FS-1 and FS-2 Area, located approximately 521 m northwest of M-Yard).

The evaluation for compliance with the 10 *CFR* 20.1101(d) ARAR is accomplished using the U.S. Environmental Protection Agency (USEPA) computer code CAP88-PC to determine dose from radioactive airborne emissions to members of the public located at specific distances and directions from the site. The evaluation for compliance with the 10 *CFR* 20.1403(b) ARAR is accomplished by calculating the total dose from contaminant exposures, resulting from soil excavation, sorting, and loadout activities at the FS-12 Area and M-Yard, to the closest onsite worker at the IDA and at the FS-1 and FS-2 Area, respectively, via the most significant migration pathway, which is airborne emissions. Consequently, both ARARs were evaluated against only the total dose from airborne emissions and all of the radiological exposure routes (i.e., ingestion, inhalation, air immersion, ground surface, internal and external radiation) associated with airborne emissions. Additionally, compliance with 10 *CFR* 20.1101(d) will automatically ensure compliance with 10 *CFR* 20.1403(b), because both are dose-based limits of 10 mrem per year and 25 mrem per year, respectively, to the same receptor.

Exposures to potential trespassers and recreational users (e.g., hunters) are considered infrequent and insignificant because of access restrictions to IAAAP property, as well as the physical characteristics of each area.

Although not required to be followed, 40 *CFR* 61, Appendix E, (the USEPA's equivalent regulation to 10 *CFR* 20.1101(d)), provides a procedure to determine compliance with radioactive airborne emissions. This procedure was followed to calculate dose to the potential receptors (e.g., residential, farm, business, and school receptors), and is described in the subsequent sections.

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3.0 EVALUATION OF RADIOLOGICAL AIR MONITORING DATA

3.1 METHOD

Emission rates for IAAAP OU-8 were modeled using guidance documents referenced in 40 CFR 61, Appendix E, Compliance Procedures Methods for Determining Compliance with Subpart I (USEPA 1989), and were measured by collection of environmental air samples for radioactive particles. Emission rates were input into the USEPA computer code CAP88-PC, Version 4.0.1.17 (USEPA 2014), along with appropriate meteorological data and distances to receptors¹, to obtain the effective dose equivalent (EDE) from the air emissions.

Although 40 CFR 61.103, Determining Compliance, requires the use of the USEPA computer code COMPLY, the USEPA no longer supplies technical support for COMPLY. Because the USEPA lists both COMPLY and CAP88-PC as "Atmospheric transport models for assessing dose and risk from radioactive air emissions" (USEPA 2015), CAP88-PC was used as a comparable and conservative method to demonstrate compliance with the ARARs.

3.1.1 Emission Rate

The method used to determine particulate radionuclide emission rates from IAAAP OU-8 was 40 CFR 61, Appendix D, Methods for Estimating Radionuclide Emissions. Emissions during excavations and waste loadout were evaluated using air sampling data at the excavation and waste loadout perimeters.

3.1.2 Effective Dose Equivalent

The EDE to receptors is obtained using the USEPA computer code CAP88-PC, Version 4.0.1.17 (USEPA 2014). CAP88-PC uses a Gaussian plume equation to estimate the dispersion of radionuclides. An area ground release at a height of 1 m is modeled for IAAAP OU-8.

The EDE is the dose from inhalation; exposures from ingestion, air immersion, and external ground surface are insignificant. CAP88-PC contains historical weather data libraries for major airports across the country, and the results can be modeled for receptors at multiple distances from the emission source.

3.2 METEOROLOGICAL DATA

Meteorological data were obtained from CAP88-PC for the Quad City International Airport in Moline, Illinois (wind file 14923.WND). The Quad City International Airport, located 60 miles northeast of IAAAP, is the closest airport to IAAAP with meteorological data. Data in the file were accumulated from 1988 through 1992.

Average Annual Wind Velocity: 4.252 m per second
Average Annual Precipitation Rate: 103 cm per year

• Average Annual Air Temperature: 11 °C

Wind direction frequency was obtained from the CAP88-PC wind file, 14923.WND (Table 3-1).

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¹ "Receptors," as used in this EMDAR, are the locations for the nearest residence, school, business, and farm.

Table 3-1. Quad City International Airport Wind Rose Frequency

Wind Direction		Wind	Wind Wind Direction		Wind
Wind Toward	Wind From	Frequency (Percent)	Wind Toward	Wind From	Frequency (Percent)
North	South	12.8	South	North	5.0
North-Northwest	South-Southeast	4.5	South-Southeast	North-Northwest	3.3
Northwest	Southeast	3.6	Southeast	Northwest	5.5
West-Northwest	East-Southeast	5.2	East-Southeast	West-Northwest	9.0
West	East	8.6	East	West	0.5
West-Southwest	East-Northeast	5.2	East-Northeast	West-Southwest	8.5
Southwest	Northeast	3.5	Northeast	Southwest	6.6
South-Southwest	North-Northeast	2.5	North-Northeast	South-Southwest	6.9

3.3 IAAAP OPERABLE UNIT 8 SITES UNDER ACTIVE REMEDIATION

3.3.1 Material Handling and Processing for Calendar Year 2018

At IAAAP OU-8 in CY 2018, remedial activities were performed at the FS-12 Area, and waste loadout activities were conducted at M-Yard. Excavated soil was placed at the FS-12 Area prior to treatment (i.e., soil sorting). The excavated soil (10,232 tons) was then sorted, with 616 tons of the soil diverted to a post-sorting contaminated soil pile. The post-sorting contaminated soil pile was covered when sorting activities were concluded. The clean soil piles were not covered. Verification data for the clean soil piles and the excavation surface are less than the RG. Contaminated soil, debris, and other materials from remedial activities during 2018 and previous years were transported to M-Yard via covered dump trucks, stockpiled, and loaded onto railcars for off-site disposal.

General area air samples were collected around active excavation perimeters, soil sorting activities, and loadout activities during CY 2018, with the results used to determine the site emissions. In-situ emissions from inactive areas of IAAAP OU-8 were not calculated because the ground surface soil at IAAAP is generally covered with vegetation that limits the potential for material to become airborne.

3.3.2 Source Description – Radionuclide Soil Concentrations

For an IAAAP OU-8 excavation area, the depleted uranium (DU) activity fractions listed in Section 2.5.7 of the ROD were used. Activity fractions for the contaminants of concern (COCs) are as follows:

- 90.14 percent (uranium [U]-238),
- 1.45 percent (U-235), and
- 8.40 percent (U-234).

The averaged total alpha air particulate concentrations at the FS-12 Area and M-Yard, along with the three uranium activity fractions, were used to calculate the emission rate for each area.

3.3.3 List of Assumed Air Releases for Calendar Year 2018

Wind erosion during periods of RA excavations and periods in which the FS-12 Area excavated soil pile, FS-12 Area post-sorting contaminated soil pile, and M-Yard loadout pile were uncovered is assumed for the particulate radionuclide emission determinations from IAAAP OU-8. Verification data for post-sorting clean soil piles and non-backfilled excavation surfaces than the RG. Therefore, the post-sorting clean soil piles and non-backfilled excavation surfaces

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are protective of human health and the environment and do not contribute to the emission determinations. Unexcavated areas do not contribute to the emission determinations for periods of inactivity due to the low activity and vegetative cover.

The FS-12 Area excavation area, the FS-12 Area excavated soil pile, the FS-12 Area post-sorting contaminated soil pile, and M-Yard loadout pile were assumed to be contributing to air releases during the 2018 dates when the SUs were open and when the sorting and loadout piles were uncovered. Appendix A, Table A-1, lists the 2018 dates of potential air releases by location.

3.3.4 Distances to Receptors

The distances to receptors are listed in Table 3-2. Distances and directions to receptors are determined by using tools in a geographic information system (GIS). The location of the receptors is shown on Figure 3-1.

Command	Resident		Fari	m	Business ^a School			ol
Sources	Distance (m)	Direction	Distance (m)	Direction	Distance (m)	Direction	Distance (m)	Direction
FS-12 Area	2,714	W	2,714	W	613	Е	7,894	NW
M_Vard	3 /108	NW	3 /108	NW	521	NW	0.463	NW

Table 3-2. IAAAP Operable Unit 8 Receptors for CY 2018

3.4 EMISSIONS DETERMINATION

3.4.1 Measured Airborne Radioactive Particulate Emissions

Particulate air samples were collected from several locations around the perimeter of the FS-12 Area excavation, FS-12 Area soil sorting area, FS-12 Area soil stockpile areas, and M-Yard loadout area to measure the radionuclide emissions from the RA, soil sorting, and soil loadout. The samples provide the basis for determining the radionuclide emission rates during CY 2018. Air sample data for particulate air samples were determined through the use of calibrated field instruments. Appendix B, Attachment B-1, contains the CY 2018 Air Sample Reports, and Table B-1 is a summary table of the particulate air sample data. One particulate air sample for each week was submitted to USACE St. Louis District FUSRAP Radioanalytical Laboratory for analysis to verify sample results from the calibrated field instruments (see Table B-2).

The average gross alpha concentration (in μ Ci/mL) for CY 2018 was determined for the FS-12 Area and M-Yard and is presented in Table 3-3. Gross alpha particulate results (Table B-1) less than zero indicate the result was less than the average background value for the instrument. When calculating an average airborne concentration, negative data points were rounded to a zero value.

Table 3-3. IAAAP Operable Unit 8 Average Gross Alpha Airborne Particulate Emissions for CY 2018

Sampley Logation	Average Concentration (µCi/mL)
Sampler Location	Gross Alpha
FS-12 Area ^a	1.75E-15
M-Yard ^b	1.70E-15

Includes the emission rates from the RA, soil sorting, and soil stockpiles.

The activity fractions for DU at IAAAP OU-8 were determined as described in Section 3.3.2. The product of the DU activity fraction and the gross concentration provides the radionuclide

^a The business receptors, an IAAAP employee at the IDA and at the FS-1 and FS-2 Area, are average members of the critical group.

Includes the emission rates from the soil stockpile and loadout activities.

emission concentration (in μ Ci/mL) for that area. The gross average concentration (in μ Ci/mL) is converted to a release (i.e., emission) rate (in Ci per year) using Equations 1 and 2.

A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities (USEPA 1989) provides Equation 1 for determination of the effective diameter of a non-circular stack or vent.

$$D = (1.3 \text{ A})^{1/2}$$
 Equation 1

where:

D = effective diameter of the release (in m)

A = area of the stack, vent, or release point (in m²)

Table 3-4 provides (1) the effective surface area available for release of airborne radionuclides normalized to 1 year for the FS-12 Area and M-Yard and (2) the effective diameter for the FS-12 Area and M-Yard, at which excavation (Areas G and H) and/or soil stockpiling was conducted in CY 2018. Calculation of the effective surface area is presented in Appendix A.

Table 3-4. IAAAP Operable Unit 8 Excavation Effective Areas and Effective Diameters for CY 2018

IAAAP OU-8 Location	Effective Area (m ²)	Effective Diameter (m)
FS-12 Area	9,264	110
M-Yard	18	5

The average annual wind speed for the Quad City International Airport is provided in CAP88-PC as 4.252 m per second. Conversion of this wind speed to a flow rate through stacks with the listed effective diameters for each area is completed using Equation 2 from A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities (USEPA 1989).

$$F = V \pi [(D)^2/4]*60$$
 Equation 2

where:

F = flow rate (in m³ per minute)

V = wind velocity (in m per second)

 π = mathematical constant

D = effective diameter of the release using Equation 1 (in m)

60 = time conversion (seconds to minute)

Converting the velocity of emissions from the FS-12 Area and M-Yard to an effective flow rate results in the following site release flow rates for IAAAP OU-8 areas, as listed in Table 3-5. The product of the flow rate, the activity fraction associated with each radionuclide, and the appropriate conversion factors provide the site emission rate for each radionuclide, as illustrated in Table 3-6. Appendix A contains flow rates and average radionuclide concentration data.

Table 3-5. IAAAP Operable Unit 8 Areas Release Flow Rate for CY 2018

IAAAP OU-8 Location	Site Release Flow Rate (m³/minute)
FS-12 Area	2.4E+06
M-Yard	4.6E+03

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3.4.2 IAAAP Operable Unit 8 Total Airborne Radioactive Particulate Emission Rates

The CY 2018 emission rates for the FS-12 Area and M-Yard are presented in Table 3-6 and are based on the air samples collected from the perimeter of the excavated area, soil sorting area, and stockpiled soil.

Table 3-6. IAAAP Operable Unit 8 Airborne Radioactive Particulate Emission Rates Based on Excavation Perimeter Air Samples for CY 2018

Dadionnalida	Emission Rate (Ci/year) ^a						
Radionuclide	FS-12 Area	M-Yard					
U-238	2.0E-03	3.7E-06					
U-235	3.2E-05	5.9E-08					
U-234	1.9E-04	3.4E-07					

Emission rate based on 365-day period at a respective flow rate (as presented in Table 3-5) as determined from the average annual wind speed (i.e., 4.252 m per second) and the effective site area (as presented in Table 3-4) for each location.

3.4.3 CAP88-PC Results

The CAP88-PC report is contained in Appendix C. The effective area factor input was taken from Table 3-4. The individual dose results for the FS-12 Area and M-Yard were summed for the resident, school, and farm receptors. As shown in Table 3-7, this evaluation demonstrates that all IAAAP OU-8 receptors, including the hypothetical maximally exposed individuals at IAAAP OU-8 (i.e., the business receptors, an IAAAP employee at the IDA and at the FS-1 and FS-2 Area, who are average members of the critical group), receive less than the dose standards prescribed in 10 *CFR* 20.1101(d) (i.e., 10 mrem per year) and 10 *CFR* 20.1403(b) (i.e., 25 mrem per year).

Table 3-7. IAAAP Operable Unit 8 CAP88-PC Results for Receptors for CY 2018

C		Dose (mi	em/year)	
Source	Residenta	School ^b	Business ^{b,c}	Farm ^a
FS-12 Area	< 0.1	< 0.1	<0.1	<0.1
M-Yard	< 0.1	< 0.1	< 0.1	< 0.1

¹⁰⁰ percent occupancy factor.

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b Corrected for the 23 percent occupancy factor (i.e., 40 hours per week for 50 weeks per year).

The business receptors, an IAAAP employee at the IDA and at the FS-1 and FS-2 Area, are average members of

Calendar Year 2018	ant Operable Unit 8 Annual Environmental Monitoring Data and Analysis Report for
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4.0 SURFACE-WATER, SEDIMENT, AND STORMWATER MONITORING

4.1 SURFACE-WATER AND SEDIMENT MONITORING

Surface-water and sediment monitoring in Long Creek and its tributary, downgradient of the FS-12 Area and running to the east and south of the FS-12 Area, was performed as a best management practice. The purpose of the monitoring was to determine if RA is having a negative effect on Long Creek.

Surface water and sediment were sampled for the uranium isotopes to evaluate/determine if runoff from the FS-12 Area affects the quality of surface water and sediment in Long Creek and its tributary. Surface-water and sediment sampling was conducted during April and November of CY 2018. Grab samples were collected and analyzed according to the protocol defined in Appendix D of the Remedial Investigation Work Plan for Line 1, Firing Sites Area, Yards C, G, and L, Warehouse 3-01 and the West Burn Pads Area South of the Road (RI WP) (USACE 2007).

The sampling events were conducted at 10 monitoring stations. Of these 10 stations, 8 stations were established in 2007 during the remedial investigation, and the remaining 2 stations (i.e., IAAP177509 and IAAP177517) were established in December 2014. Locations of the 10 surface-water and sediment monitoring stations are shown on Figure 4-1.

4.2 SURFACE-WATER MONITORING RESULTS

The radiological monitoring results for the CY 2018 surface-water sampling events are summarized in Table 4-1. FUSRAP surface-water monitoring analysis included unfiltered water samples for radionuclides associated with DU (i.e., U-234, U-235, and U-238). The monitoring results are presented in Appendix D, Table D-1, of this EMDAR.

Table 4-1. Radiological Results for CY 2018 Surface-Water Monitoring

Monitoring	Collection	Monit	oring Parameters (pCi/L)
Station	Date	U-234	U-235	U-238
IAAP100153	04/16/18	0.83	0.55a	0.79
IAAP100153	11/27/18	1.17	0.57 ^a	1.81
IAAP100154	04/16/18	1.22	0.44 ^a	0.50^{a}
IAAP100154	11/27/18	1.28	0.72a	0.46
IAAP100155	04/17/18	1.09	0.51a	0.50
IAAP100155	11/27/18	0.61	0.55a	0.46 ^a
IAAP100164	b	ь	b	b
IAAP100164	b	ь	b	b
IAAP100165	04/17/18	0.63	0.52a	0.48 ^a
IAAP100165	11/27/18	0.72	0.40^{a}	0.72
IAAP100178	04/17/18	0.58a	0.72a	0.42a
IAAP100178	11/28/18	0.50	0.66a	0.45 ^a
IAAP100180	04/17/18	0.71	0.66^{a}	0.83
IAAP100180	11/28/18	0.40	0.63 ^a	0.51 ^a
IAAP100187	04/17/18	0.56^{a}	0.65 ^a	0.76
IAAP100187	11/28/18	0.33 ^a	0.49^{a}	0.46a
IAAP177509	04/17/18	0.89	0.69^{a}	0.56
IAAP177509	11/28/18	0.55	0.45 ^a	0.68
IAAP177517	04/16/18	0.76	0.64ª	0.83
IAAP177517	11/27/18	0.87	0.41 ^a	0.33 ^a

^a Reported result is less than the minimum detectable concentration (MDC) and is therefore set equal to the MDC.

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No surface water was present at the sample location due to seasonal weather conditions. No surface-water sample was collected.

The historical radiological surface-water monitoring data for all monitoring stations are summarized in Table 4-2.

Table 4-2. Comparison of Historical Radiological Surface-Water Results

Stations	Radionuclide	Units	December 2014	August 2015	December 2015	April 2016	November 2016	April 2017	November 2017	April 2018	November 2018
	U-234	pCi/L	0.59	0.92	0.36	0.64	1.28	1.28	1.46	0.83	1.17
IAAP100153	U-235	pCi/L	0.16 ^a	0.18 ^a	0.63a	0.63a	0.20^{a}	0.18^{a}	0.23a	0.55a	0.57a
	U-238	pCi/L	0.67	0.18	0.65	0.30	0.91	1.31	1.36	0.79	1.81
	U-234	pCi/L	0.63	0.56	0.52	0.48^{a}	0.83	1.29	0.80	1.22	1.28
IAAP100154	U-235	pCi/L	0.20^{a}	0.22a	0.44a	0.22a	0.23a	0.19^{a}	0.57a	0.44a	0.72a
	U-238	pCi/L	0.64	0.33	0.38	0.52	1.07	0.95	0.62	0.50^{a}	0.46
	U-234	pCi/L	0.95	0.54a	0.70	0.71a	0.62	1.65	1.23	1.09	0.61
IAAP100155	U-235	pCi/L	0.14 ^a	0.22a	0.47a	0.23a	0.24a	0.18^{a}	0.21a	0.51a	0.55a
	U-238	pCi/L	0.34	0.75	0.54^{a}	0.42a	0.44 ^a	1.26	1.17	0.5	0.46a
	U-234	pCi/L	1.12	0.72	0.31a	0.37	ь	b	b	ь	b
IAAP100164	U-235	pCi/L	0.16a	0.58^{a}	0.47a	0.19a	b	b	b	ь	ь
	U-238	pCi/L	1.44	0.64	0.13^{a}	0.45	b	b	b	Ь	ь
	U-234	pCi/L	0.68	0.24	0.45	0.61a	0.74	0.78	0.51	0.63	0.72
IAAP100165	U-235	pCi/L	0.16a	0.59	0.17 ^a	0.48^{a}	0.25a	0.41a	0.50^{a}	0.52a	0.40^{a}
	U-238	pCi/L	0.58	0.16^{a}	0.36	0.68	0.20^{a}	0.31	0.25	0.48^{a}	0.72
	U-234	pCi/L	0.39	0.36	0.67	0.60	0.42a	1.02	1.01	0.58a	0.50
IAAP100178	U-235	pCi/L	0.16a	0.39a	0.42a	0.22a	0.52a	0.20^{a}	0.52a	0.72a	0.66^{a}
	U-238	pCi/L	0.37^{a}	0.20^{a}	0.41	0.49	0.80	0.74	0.54	0.42a	0.45 ^a
	U-234	pCi/L	0.77	0.36	0.42	0.62	0.35^{a}	0.67	0.82	0.71	0.40
IAAP100180	U-235	pCi/L	0.16a	0.20^{a}	0.15 ^a	0.24a	0.20^{a}	0.20^{a}	0.19a	0.66a	0.63a
	U-238	pCi/L	0.48^{a}	0.38^{a}	0.40	0.58	0.35^{a}	0.47	0.53	0.83	0.51a
	U-234	pCi/L	1.07	0.52	0.34 ^a	0.43	0.39	0.43	0.61	0.56a	0.33a
IAAP100187	U-235	pCi/L	0.20^{a}	0.55^{a}	0.52a	0.21a	0.71a	0.16^{a}	0.21a	0.65a	0.49a
	U-238	pCi/L	0.45	0.33	0.42	0.43	0.29	0.44	0.43	0.76	0.46a
	U-234	pCi/L	0.90	1.79	0.48	0.43a	1.06	1.08	0.55	0.89	0.55
IAAP177509	U-235	pCi/L	0.17 ^a	0.21a	0.19a	0.24a	0.20^{a}	0.39a	0.18a	0.69a	0.45a
	U-238	pCi/L	0.43	1.17	0.29	0.19 ^a	0.72	1.03	0.40	0.56	0.68
	U-234	pCi/L	0.71	0.54a	0.63	0.47	0.93	0.16^{a}	0.41a	0.76	0.87
IAAP177517	U-235	pCi/L	0.16a	0.22a	0.17 ^a	0.65a	0.57a	0.19^{a}	0.41a	0.64a	0.41a
a Domonto di manulti a 1	U-238	pCi/L	0.52	0.43a	0.51	0.68	0.50	0.46^{a}	0.51	0.83	0.33^{a}

^a Reported result is less than the MDC and is therefore set equal to the MDC.

4.3 SEDIMENT MONITORING RESULTS

Sediment samples were collected in depositional environments near each of the 10 previously described surface-water locations (Figure 4-1). Sediment samples were evaluated for the radiological constituents associated with DU (i.e., U-234, U-235, and U-238). The analytical results from these monitoring activities are presented in Appendix D, Table D-2, of this EMDAR.

The radiological results for CY 2018 sediment sampling events are summarized in Table 4-3. The ROD (USACE 2011) established a soil RG for DU which uses U-238 as a surrogate. Therefore, sediment sampling results for U-238 were compared against the corresponding soil

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b No surface water was present at the sample location due to seasonal weather conditions. No surface-water sample was collected.

RG of 150 pCi/g established in the ROD. All sediment monitoring results for U-238 were less than the soil RG.

Table 4-3. Radiological Results for CY 2018 Sediment Monitoring

Monitoring	Collection	Monit	toring Parameters (pCi/g)
Station	Date	U-234	U-235	U-238
IAAP100153	04/16/18	0.22	0.22a	0.17
IAAP100153	11/27/18	0.20	0.16a	0.23
IAAP100154	04/16/18	0.92	0.21a	0.55
IAAP100154	11/27/18	0.73	0.17 ^a	1.05
IAAP100155	04/17/18	0.31	0.18 ^a	0.62
IAAP100155	11/27/18	0.45	0.26 a	0.50
IAAP100164	04/17/18	0.85	0.17 ^a	0.91
IAAP100164	11/28/18	0.40	0.20a	0.66
IAAP100165	04/17/18	0.37	0.16a	0.21a
IAAP100165	11/27/18	0.11 ^a	0.34a	0.33
IAAP100178	04/17/18	0.71	0.21a	0.55
IAAP100178	11/28/18	0.42	0.28a	0.57
IAAP100180	04/17/18	0.31	0.20a	0.21
IAAP100180	11/28/18	0.43	0.18 ^a	0.23
IAAP100187	04/17/18	0.35	0.17 ^a	0.23a
IAAP100187	11/28/18	0.75	0.17 ^a	0.64
IAAP177509	04/17/18	0.33	0.31a	0.31
IAAP177509	11/28/18	0.22	0.22a	0.51
IAAP177517	04/16/18	0.29	0.16 ^a	0.27
IAAP177517	11/27/18	0.90	0.20a	1.22

Reported result is less than the MDC and is therefore set equal to the MDC.

The historical radiological sediment monitoring data for all monitoring stations are summarized in Table 4-4.

Table 4-4. Comparison of Historical Radiological Sediment Results

Stations	Radionuclide	Units	April 2007	December 2014	August 2015	December 2015	April 2016	November 2016	April 2017	November 2017	April 2018	November 2018
	U-234	pCi/g	a	0.56	0.51	0.43	0.99	0.42	0.75	0.37	0.22	0.20
IAAP100153	U-235	pCi/g	0.11^{b}	0.05^{b}	0.58^{b}	0.13^{b}	0.17^{b}	0.21^{b}	0.18^{b}	0.10^{b}	0.22^{b}	0.16^{b}
	U-238	pCi/g	0.50	0.43	1.00	0.20^{b}	0.85	0.31^{b}	1.02	0.50	0.17	0.23
	U-234	pCi/g	a	0.37	0.53^{b}	0.46	0.82	0.36^{b}	0.54	0.20	0.92	0.73
IAAP100154	U-235	pCi/g	0.17^{b}	0.13^{b}	0.55^{b}	0.28^{b}	0.36^{b}	0.44^{b}	0.26^{b}	0.04^{b}	0.21 ^b	0.17^{b}
	U-238	pCi/g	0.49	0.50	0.44 ^b	0.45	1.08	0.75	0.31	0.14	0.55	1.05
	U-234	pCi/g	a	0.19	0.61 ^b	0.61	0.76	0.40	0.67	0.18	0.31	0.45
IAAP100155	U-235	pCi/g	0.17^{b}	0.12 ^b	0.61 ^b	0.24 ^b	0.18^{b}	0.20^{b}	0.19^{b}	0.04	0.26 ^b	0.18^{b}
	U-238	pCi/g	0.37	0.24	0.49	0.83	0.86	0.30^{b}	0.85	0.19	0.50	0.62
	U-234	pCi/g	a	0.79	0.52 ^b	0.94	0.74	0.52	1.04	0.67	0.85	0.40
IAAP100164	U-235	pCi/g	0.22 ^b	0.12 ^b	0.57^{b}	0.33^{b}	0.14^{b}	0.40^{b}	0.31^{b}	0.10^{b}	0.17^{b}	0.20^{b}
	U-238	pCi/g	0.87	0.84	0.59	1.01	0.47	0.84	0.84	0.81	0.91	0.66
	U-234	pCi/g	a	0.17	0.20 ^b	0.59	0.38	0.26	0.28	0.32	0.37	0.15 ^b
IAAP100165	U-235	pCi/g	0.13 ^b	0.05^{b}	0.24 ^b	0.37 ^b	0.26 ^b	0.33 ^b	0.13 ^b	0.09^{b}	0.16 ^b	0.34 ^b
	U-238	pCi/g	0.29	0.14	0.43	1.07	0.41	0.35	0.31	0.20	0.21 ^b	0.33

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Table 4-4. Comparison of Historical Radiological Sediment Results (Continued)

Stations	Radionuclide	Units	April 2007	December 2014	August 2015	December 2015	April 2016	November 2016	April 2017	November 2017	April 2018	November 2018
	U-234	pCi/g	a	0.33	0.53	0.30^{b}	0.62	0.39	0.41	0.50	0.71	0.42
IAAP100178	U-235	pCi/g	0.11^{b}	0.13^{b}	0.49^{b}	0.17^{b}	0.15^{b}	0.19^{b}	0.11 ^b	0.10^{b}	0.21 ^b	0.28^{b}
	U-238	pCi/g	0.23^{b}	0.37	0.33	0.30^{b}	0.18	0.29	0.44	0.38	0.55	0.57
	U-234	pCi/g	a	0.26	0.23^{b}	0.39	0.31^{b}	0.40	0.36	0.23	0.31	0.43
IAAP100180	U-235	pCi/g	0.16^{b}	0.13^{b}	0.52^{b}	0.27^{b}	0.21^{b}	0.28^{b}	0.23^{b}	0.09^{b}	0.20^{b}	0.18^{b}
	U-238	pCi/g	0.41	0.19	0.23^{b}	0.59	0.49	0.39	0.37	0.33	0.21	0.23
	U-234	pCi/g	a	0.34	0.39	0.34	0.29 ^b	0.58	0.29	0.35	0.35	0.75
IAAP100187	U-235	pCi/g	0.14 ^b	0.16 ^b	0.36 ^b	0.27 ^b	0.27 ^b	0.15 ^b	0.16 ^b	0.03 ^b	0.17 ^b	0.17 ^b
	U-238	pCi/g	0.30	0.37	0.29 ^b	0.64	0.25	0.31	0.36	0.34	0.23 ^b	0.64
	U-234	pCi/g	d	0.17	0.14^{b}	0.62	0.32^{b}	0.39	0.09 b	0.32	0.33	0.22
IAAP177509°	U-235	pCi/g	d	0.04^{b}	0.33^{b}	0.15^{b}	0.21 ^b	0.17^{b}	0.10^{b}	0.22^{b}	0.31 ^b	0.22^{b}
	U-238	pCi/g	d	0.27	0.32^{b}	0.68	0.81	0.25	0.31	0.71	0.31	0.51
	U-234	pCi/g	d	0.27	0.41	0.40	0.32	0.47	0.13	0.17	0.29	0.90
IAAP177517°	U-235	pCi/g	d	0.04 ^b	0.23 ^b	0.17 ^b	0.16 ^b	0.16 ^b	0.21 ^b	0.04	0.16 ^b	0.20 ^b
	U-238	pCi/g	d	0.18	0.41	0.54	0.28	0.28 ^b	0.24	0.28	0.27	1.22

^a Sample was not analyzed for U-234.

4.4 STORMWATER MONITORING

No stormwater monitoring samples were collected in CY 2018.

4.5 CONCLUSION

Surface-water and sediment sampling results from CY 2018 indicate that RA at the FS-12 Area is not having a negative effect on Long Creek.

b Reported result is less than the MDC and is therefore set equal to the MDC.

Stations IAAP177509 and IAAP177517 were established and initially sampled in December 2014.

d Sample not collected in 2007.

5.0 ENVIRONMENTAL QUALITY ASSURANCE PROGRAM

5.1 PROGRAM OVERVIEW

The environmental quality assurance (QA) program includes management of the QA/quality control (QC) programs, plans, and procedures governing environmental monitoring activities at IAAAP and at a USACE subcontracted vendor QA laboratory. The environmental monitoring standards of FUSRAP and the goals for these programs, plans, and procedures are described in this section.

The environmental QA program provides FUSRAP with reliable, accurate, and precise monitoring data. The program furnishes guidance and directives to detect and prevent problems from the time a sample is collected until the associated data are evaluated.

Key elements in achieving the goals of this program are personnel training; compliance assessments; use of QC samples; documentation of field activities and laboratory analyses; and a review of data documents for precision, accuracy, and completeness.

General objectives of the program follow.

- Provide data of sufficient quality and quantity to support ongoing remedial efforts.
- Ensure samples were collected using approved techniques and are representative of existing site conditions.

5.2 QUALITY ASSURANCE PROJECT PLAN

The quality assurance project plan (QAPP) for environmental monitoring activities performed at IAAAP OU-8 is contained in Appendix D of the RI WP (USACE 2007). The QAPP provides the organization, objectives, functional activities, and specific QA/QC activities associated with environmental monitoring activities at IAAAP OU-8.

QA/QC procedures are performed in accordance with applicable professional technical standards, USEPA requirements, government regulations and guidelines, and specific project goals and requirements. The QAPP was prepared in accordance with USEPA and USACE guidance documents, including *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans* (USEPA 1991), *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations* (USEPA 1994), and Engineer Manual (EM) 200-1-3, *Requirements for the Preparation of Sampling and Analysis Plans* (USACE 2001).

The QAPP summarizes standard operating procedures (SOPs) and data quality requirements for collecting and analyzing environmental data. The QAPP integrates protocols and methodologies identified under various USACE and regulatory guidance. This plan documents administrative procedures for managing environmental data and governs sampling plan preparation; data review, evaluation, and validation; database administration; and data archiving.

5.3 FIELD SAMPLE COLLECTION AND MEASUREMENT

Prior to beginning field sampling, field personnel were trained, as necessary, and participated in a project-specific readiness review. These activities ensured standard procedures were followed in sample collection and in completion of field logbooks, chain-of-custody forms, labels, and custody seals. Documentation of training and readiness was retained in the project file.

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The master field investigation documents are the site field logbooks. The primary purpose of these documents is to record daily field activities; personnel on each sampling team; and any administrative occurrences, conditions, or activities that may have affected the field work or data quality of any environmental samples for a given day. Guidance for documenting specific types of field sampling activities in field logbooks or on log sheets is contained in Appendix C of EM 200-1-3, *Requirements for the Preparation of Sampling and Analysis Plans* (USACE 2001).

At any point in the process of sample collection or data and document review, a non-conformance report may be initiated if non-conformances are identified (Leidos 2015a). Data entered into the database may be flagged accordingly.

5.4 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits of both field and laboratory activities were conducted to verify that sampling and analysis activities were performed in accordance with the procedures established in the QAPP.

5.4.1 Field Assessments

Internal assessments (i.e., audits or surveillances) of field activities (i.e., sampling and measurements) were conducted by the QA/QC representative (or designee) for FUSRAP. Assessments included an examination of field sampling records, field instrument operating records, sample collection, handling and packaging procedures, maintenance of QA procedures, and chain-of-custody forms. These assessments (i.e., system audits) occurred at the onset of the project to verify all established procedures were followed.

Performance assessments followed the system audits to ensure deficiencies had been corrected and to verify that QA practices/procedures were being maintained throughout the duration of the project. These assessments involved reviewing field measurement records, instrumentation calibration records, and sample documentation.

External assessments may be conducted at the discretion of USACE, the USEPA Region 7, or the State of Iowa.

5.4.2 Laboratory Audits

USACE St. Louis FUSRAP laboratory is subject to periodic review(s) (i.e., system audits) by the local USACE chemist to demonstrate compliance with the *Department of Defense* (*DoD*)/*Department of Energy* (*DOE*) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories (QSM) (DOD and DOE 2017). Accordingly, USACE St. Louis FUSRAP laboratory participates in blind, third-party performance evaluation studies (i.e., performance audits) at least twice per year, with results reported to the local USACE point(s) of contact. In addition, contract laboratories are required to be accredited under the U.S. Department of Defense (DOD) Environmental Laboratory Accreditation Program (ELAP). The DOD ELAP requires an annual audit and re-accreditation every 3 years.

System audits include examining laboratory documentation of sample receipt, sample log-in, sample storage, chain-of-custody procedures, sample preparation and analysis, and instrument operating records. Performance audits consist of USACE laboratories receiving performance evaluation samples from an outside vendor for an ongoing assessment of laboratory precision and accuracy. The analytical results of the analysis of performance evaluation samples are

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evaluated by USACE Hazardous, Toxic, and Radioactive Waste – Center of Expertise and/or a local oversight chemist to ensure laboratories maintain acceptable performance.

Internal performance and system audits of laboratories were conducted by the Laboratory QA Manager as directed in the *Laboratory Quality Assurance Plan for the FUSRAP St. Louis Radiological Laboratory* (USACE 2013). Internal system audits included an examination of laboratory documentation of sample receipt, sample log-in, sample storage, chain-of-custody procedures, sample preparation and analysis, and instrument operating records against the requirements of the laboratory SOPs. Internal performance audits were also conducted on a regular basis. Single-blind performance samples were prepared along with project samples and submitted to the laboratory for analysis. The Laboratory QA Manager evaluated the analytical results of these single-blind performance samples to ensure the laboratory maintained acceptable performance. Quarterly QA/QC reports are generated and provided to the local USACE authority; these reports document the ongoing QC elements and allow further monitoring of quality processes/status. In addition, QA plans and methodology are to follow the guidance presented in the QSM (DOD and DOE 2017).

5.5 SUBCONTRACTED LABORATORY PROGRAMS

All samples collected during environmental monitoring activities were analyzed by USACE-approved laboratories. The QA samples collected for surface water and sediment were analyzed by the designated USACE-subcontracted QA laboratory. The laboratory supporting this work maintained statements of qualifications, including an organizational structure, QA manual, and SOPs. Additionally, the subcontracted laboratory is an accredited laboratory under the DOD ELAP.

Samples collected during these investigations were analyzed by the USEPA methods contained in USEPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846) (USEPA 1993), and by other documented USEPA or nationally recognized methods. Laboratory SOPs are based on USEPA SW-846 methods.

5.6 QUALITY ASSURANCE AND QUALITY CONTROL SAMPLES

The QA/QC samples were analyzed for the purpose of assessing the quality of the sampling effort and the reported analytical data. The QA/QC samples include duplicate samples (-1) and split samples (-2). The equations utilized for accuracy and precision are presented in Section 5.8.

5.6.1 Duplicate Samples

These samples, which measure precision, were collected by the sampling teams and were submitted for analysis to the USACE St. Louis FUSRAP laboratory. The purpose of these samples is to provide activity-specific, field-originated information regarding the homogeneity of the sampled matrix and the consistency of the sampling effort. These samples were collected concurrently with the primary environmental samples and equally represent the medium at a given time and location. Duplicate samples were collected from each medium addressed by this project and were submitted to the USACE St. Louis FUSRAP laboratory for analysis. One duplicate sample was collected for approximately every 20 field samples of each matrix and analyte. Precision is measured by the relative percent difference (RPD) or the normalized absolute difference (NAD) for radiological analyses.

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The RPDs and NADs for radiological analyses are presented in Tables 5-1 and 5-2. The overall precision for CY 2018 environmental monitoring sampling activities was acceptable. See Section 5.8 for the evaluation process.

Table 5-1. Radiological Duplicate Sample Alpha Analysis for CY 2018 – Surface Water

Suufaas Water Samula Namai	U-2	234 ^b	U-2	235 ^b	U-238b	
Surface-Water Sample Name ^a	RPD	NAD	RPD	NAD	RPD	NAD
IAAP201053 / IAAP201053-1	0.92	NA	NC	NA	50.97	0.52

Samples ending in "-1" are duplicate samples.

Table 5-2. Radiological Duplicate Sample Alpha Analysis for CY 2018 – Sediment

Sediment Sample Name ^a	U-2	.34 ^b	U-2	35 ^b	U-238 ^b	
	RPD	NAD	RPD	NAD	RPD	NAD
IAAP208777 / IAAP208777-1	27.59	NA	NC	NA	38.85	NA

Samples ending in "-1" are duplicate samples.

5.6.2 Split Samples

Split samples measure accuracy and were collected by the sampling team and sent to a USACE-subcontracted QA laboratory for analysis to provide an independent assessment of contractor and subcontractor laboratory performance. One split sample was collected for approximately every 20 field samples of each matrix for radiological analytes.

The RPDs and NADs for radiological analyses are presented in Tables 5-3 and 5-4. The overall accuracy for the CY 2018 environmental monitoring sampling activities was acceptable. See Section 5.8 for the evaluation process.

Table 5-3. Radiological Split Sample Alpha Analysis for CY 2018 – Surface Water

Surface Water Sample Names	U-2	34 ^b	U-2	235 ^b	U-238b		
	Surface-Water Sample Name ^a	RPD	NAD	RPD	NAD	RPD	NAD
	IAAP201053 / IAAP201053-2	59.22	0.86	NC	NA	35.12	0.51

Samples ending in "-2" are split samples.

NC – not calculated (due to one or both concentrations being below MDCs)

Table 5-4. Radiological Split Sample Alpha Analysis for CY 2018 – Sediment

Cadimant Cample Names	U-2	34 ^b	U-2	35 ^b	U-238b		
Sediment Sample Name ^a	RPD	NAD	RPD	NAD	RPD	NAD	
IAAP208777 / IAAP208777-2	11.27	NA	NC	NA	18.25	NA	

Samples ending in "-2" are split samples.

RPD criterion for water matrix samples is less than or equal to 30 percent. If the RPD is greater than 30 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.

NA – not applicable (see RPD)

NC – not calculated (due to one or both concentrations being below MDCs)

PPD criterion for solid matrix samples is less than or equal to 50 percent. If the RPD is greater than 50 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.

NA – not applicable (see RPD)

NC – not calculated (due to one or both concentrations being below MDCs)

b RPD criterion for water matrix samples is less than or equal to 30 percent. If the RPD is greater than 30 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.

NA – not applicable (see RPD)

PPD criterion for solid matrix samples is less than or equal to 50 percent. If the RPD is greater than 50 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.

NA – not applicable (see RPD)

NC – not calculated (due to one or both concentrations being below MDCs)

5.6.3 Equipment Rinsate Blanks

Equipment rinsate blank samples are typically taken from the rinsate water collected from equipment decontamination activities. These samples consist of analyte-free water that has been rinsed over sampling equipment for the purposes of evaluating the effectiveness of equipment decontamination.

Sediment samples are collected from each station using a clean sampling spoon. These spoons are segregated after use and decontaminated according to Field Technical Procedure 400, *Equipment Decontamination* (Leidos 2015b). Because the process of collecting sediment occurs below the surface of the water, a rinsate blank would not represent the wetted surface of the sampling spoon at the time of sample collection and, therefore, would not apply. The surface-water samples are collected using new nitrile gloves and new laboratory sample containers. Equipment rinsate blanks for these samples are also not required because no potential for contamination exists.

5.7 DATA REVIEW, EVALUATION, AND VALIDATION

All data packages received from the analytical laboratory were reviewed and either evaluated or validated by data management personnel. Data validation is the systematic process of ensuring that the precision and accuracy of the analytical data are adequate for their intended use. Validation was performed in accordance with *Data Verification and Validation* (Leidos 2015c), and/or with project-specific guidelines. General chemical data quality management guidance found in Engineer Regulation (ER)-1110-1-263, *Engineering and Design – Chemical Data Quality Management for Hazardous, Toxic, and Radioactive Waste Activities* (USACE 1998), was also used when planning for chemical data management and evaluation. Additional details of data review, evaluation, and validation are provided in *FUSRAP Laboratory Data Management Process for the St. Louis Site* (USACE 1999). Data assessment guidance to determine the usability of data from hazardous, toxic, and radioactive waste projects is provided in EM-200-1-6, *Chemical Quality Assurance for Hazardous, Toxic, and Radioactive Waste (HTRW) Projects* (USACE 1997).

One hundred (100) percent of the data generated from all analytical laboratories was independently reviewed and either evaluated or validated. The data review process documents the possible effects on the data from various QC failures; it does not determine data usability, nor does it include assignment of data validation qualifier (VQ) flags. The data evaluation process uses the results of the data review to determine the usability of the data. The process of data evaluation summarizes the potential effects of QA/QC failures on the data, and a USACE District Chemist or District Health Physicist assesses their impact on the attainment of the project-specific data quality objectives (DQOs). Consistent with the data quality requirements, as defined in the DQOs, approximately 10 percent of all project data were validated.

5.8 PRECISION, ACCURACY, REPRESENTATIVENESS, COMPARABILITY, COMPLETENESS, AND SENSITIVITY

The data evaluation process considers precision, accuracy, representativeness, comparability, completeness, and sensitivity. The following subsections detail the particular parameters and the data evaluation method for each.

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Accuracy and precision can be measured by the RPD or the NAD using the following equations:

$$RPD = \left(\frac{[S-D]}{\frac{S+D}{2}}\right) x \ 100$$

$$NAD = \frac{|S - D|}{\sqrt{U_S^2 + U_D^2}}$$

where:

S = Parent Sample Result

D = Duplicate/Split Sample Result

 U_S = Parent Sample Uncertainty

 U_D = Duplicate/Split Sample Uncertainty

The RPD is calculated for all samples for which a detectable result is reported for both the parent and the QA field split or field duplicate. For surface-water radiological samples when the RPD is greater than 30 percent, the NAD is used to determine the accuracy or precision of the method. The RPD criterion for sediment samples is greater than 50 percent. The NAD accounts for uncertainty in the results; the RPD does not. The NAD should be equal to or less than a value of 1.96. Neither equation is used when the analyte in one or both of the samples is not detected. In cases in which neither equation can be used, the comparison is counted as acceptable in the overall number of comparisons.

Precision is a measure of mutual agreement among individual measurements performed under the same laboratory controls. To evaluate for precision, a field duplicate is submitted to the same laboratory as the original sample to be analyzed under the same laboratory conditions.

The RPD and NAD between the two results was calculated and used as an indication of the precision of the analyses performed (Tables 5-1 and 5-2). Sample collection precision was evaluated in the laboratory by the analyses of duplicates. The overall precision for the CY 2018 environmental monitoring sampling activities was acceptable.

Accuracy provides a gauge or measure of the agreement between an observed result and the true value for an analysis. The RPD and NAD between the two results was calculated and used as an indication of the accuracy of the analyses performed (Tables 5-3 and 5-4). For this EMDAR, accuracy is evaluated through the use of the field split samples through a comparison of the prime laboratory results versus the results of an independent laboratory. The overall accuracy for CY 2018 environmental monitoring sampling activities was acceptable.

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness is a qualitative parameter that depends upon the proper design of the sampling program and proper laboratory protocols. Representativeness is satisfied through proper design of the sampling network, use of proper sampling techniques, following proper analytical procedures, and not exceeding holding times of the samples.

Representativeness was determined by assessing the combined aspects of the QA program, QC measures, and data evaluations. The sampling protocol from the RI WP QAPP was followed, and analytical procedures were conducted in accordance with the QAPP. The overall representativeness of the CY 2018 environmental monitoring sampling activities was acceptable for the media and sampling described in this EMDAR.

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Comparability expresses the confidence with which one dataset can be compared with another. The extent to which analytical data will be comparable depends upon the similarity of sampling and analytical methods, as well as sample-to-sample and historical comparability. Standardized and consistent procedures used to obtain analytical data are expected to provide comparable results. Some sample media (e.g., radiological monitoring) have values that are primarily useful in the present, thus the comparison to historical data is not as relevant. The overall comparability of the applicable environmental monitoring sampling data met the project DQOs.

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected to be obtained under normal conditions. Laboratories are expected to provide data meeting QC acceptance criteria for all samples tested. For the CY 2018 environmental monitoring sampling activities, the data completeness was 100 percent (i.e., FUSRAP DQO for completeness is 90 percent).

Sensitivity is the determination of MDC values that allows the investigation to assess the relative confidence that can be placed in an analytical result in comparison to the magnitude or level of analyte concentration observed. For this report, MDC is a term generically used to represent the minimum detectable activity (MDA) for radiological analytes. The closer a measured value to the MDC, the lower the established confidence and the greater the variation in the measured value. Project sensitivity goals were expressed as quantitation level goals in the RI WP QAPP. These levels were achieved or exceeded throughout the analytical process.

The MDC is reported for each result obtained by laboratory analysis. These very low MDCs are achieved through the use of alpha spectroscopy. Variations in MDCs for the same radiological analyte reflect variability in the detection efficiencies and conversion factors due to factors such as individual sample aliquot, sample density, and variations in analyte background radioactivity for alpha spectroscopy at the laboratory. To complete the data evaluation (i.e. precision, accuracy, representativeness, and comparability), analytical results that exceed the MDC of the analyte are desired.

5.9 DATA QUALITY ASSESSMENT SUMMARY

The overall quality of the data meets the established project objectives. Through proper implementation of the project data review, evaluation, validation, and assessment process, project information has been determined to be acceptable for use.

Data, as presented, have been qualified as usable, but estimated when necessary. Data that have been estimated have concentrations/activities that are below the quantitation limit or are indicative of accuracy, precision, or sensitivity being less than desired but adequate for interpretation.

These data can withstand scientific scrutiny, are appropriate for the intended purpose, and are technically defensible. Confidence in the presented environmental information has been established, allowing the information to be utilized for the project objectives and providing data for future needs.

5.10 RESULTS FOR PARENT SAMPLES AND THE ASSOCIATED DUPLICATE AND SPLIT SAMPLES

A summary of the QA parent sample results and associated duplicate and/or split sample results are presented in Tables 5-5 and 5-6.

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Table 5-5. Radiological Parent Samples and Associated Duplicate and Split Samples for CY 2018 – Surface Water

Surface-Water	U-234 ^{b,c}			U-235 ^{b,c}				U-238 ^{b,c}				
Sample Name ^a	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
IAAP201053	1.09	0.54	0.45	=	0.02	0.15	0.51	UJ	0.50	0.35	0.30	J
IAAP201053-1	1.08	0.62	0.57	J	0.17	0.27	0.50	UJ	0.84	0.55	0.56	J
IAAP201053-2	0.59	0.21	0.13	=	0.04	0.06	0.10	UJ	0.71	0.23	0.12	=

Samples ending in "-1" are duplicate samples. Samples ending in "-2" are split samples.

Table 5-6. Radiological Parent Samples and Associated Duplicate and Split Samples for CY 2018 - Sediment

Sediment	U-234 ^{b,c}			U-235 ^{b,c}				U-238 ^{b,c}				
Sample Name ^a	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
IAAP208777	0.45	0.24	0.13	J	-0.01	0.07	0.18	UJ	0.62	0.28	0.14	=
IAAP208777-1	0.59	0.31	0.17	J	-0.01	0.09	0.19	UJ	0.91	0.40	0.14	=
IAAP208777-2	0.40	0.13	0.06	=	0.02	0.03	0.06	UJ	0.51	0.14	0.04	=

Samples ending in "-1" are duplicate samples. Samples ending in "-2" are split samples.

Results are expressed in pCi/L.

Results from alpha spectroscopy.
 VQ symbols indicate: "=" for positively identified results, "U" for not detected, "J" for analyte was identified as estimated quantity, and "UJ" for analyte was not detected and had QC deficiencies.

Results are expressed in pCi/g.

Results from alpha spectroscopy.

VQ symbols indicate: "=" for positively identified results, "U" for not detected, "J" for analyte was identified as estimated quantity, and "UJ" for analyte was not detected and had QC deficiencies.

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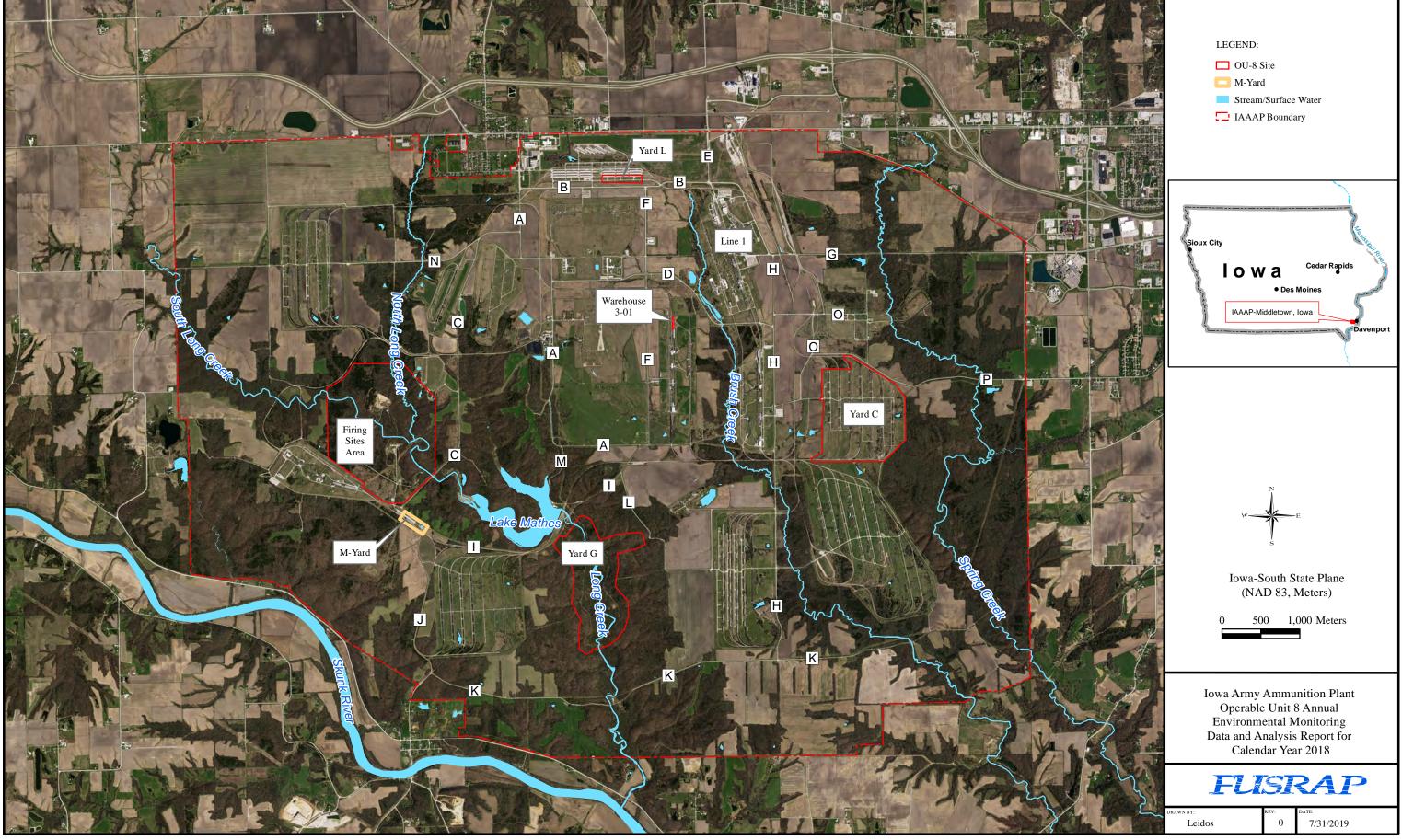


Figure 1-1. FUSRAP Areas at IAAAP

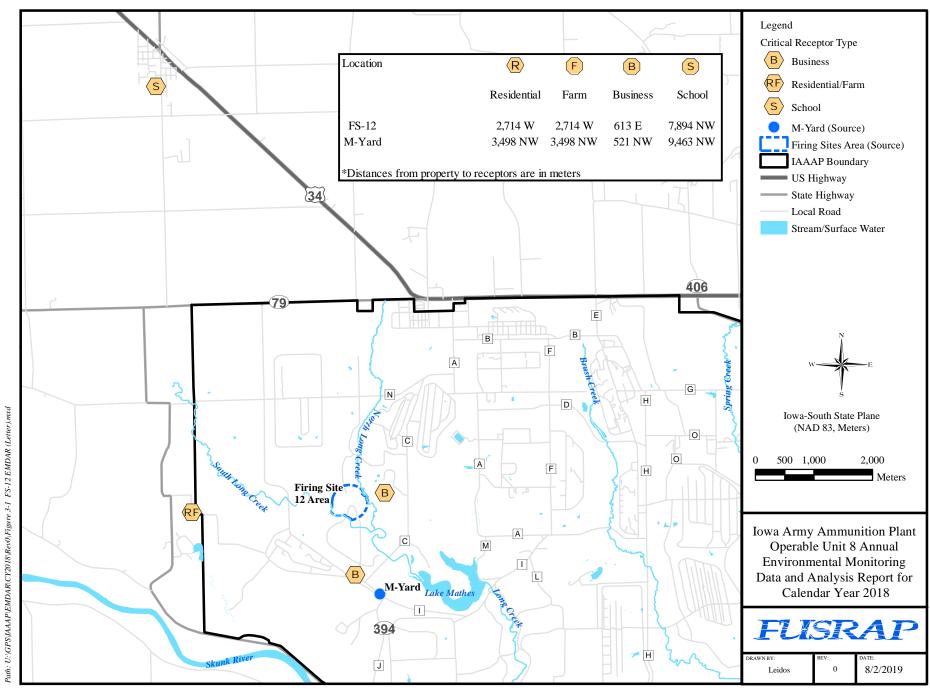
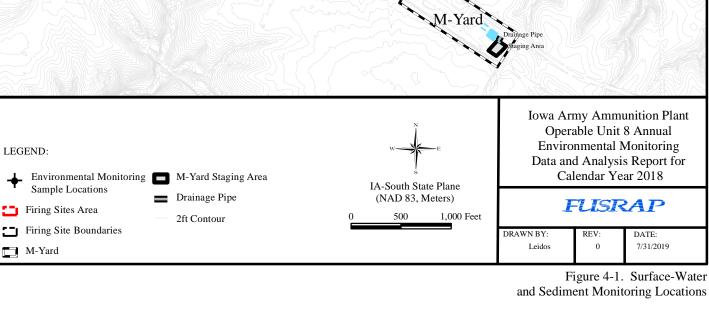
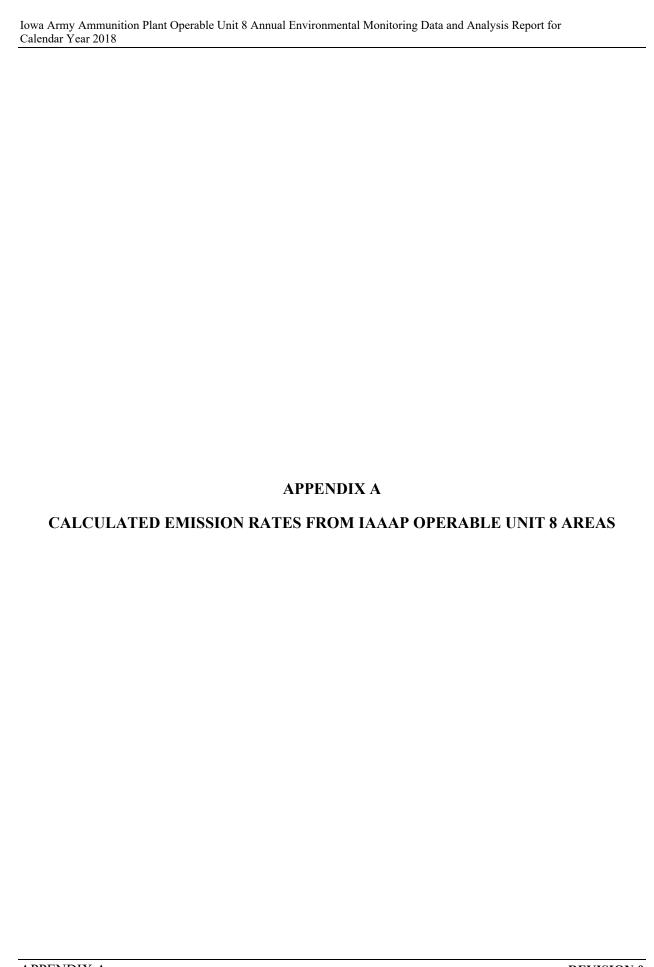


Figure 3-1. IAAAP Firing Sites Area Receptors





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Table A-1. Total Days for CY 2018

Location	Open Date	Close Date	Total Days
FS-12 Area SUs (Areas G and H)	05/25/18	11/30/18	190
FS-12 Area Pre-Sorting Pile	05/25/18	11/08/18	168
FS-12 Area Post-Sorting Contaminated Pile	06/02/18	12/12/18	194
M-Yard Post-Sorting Contaminated Pile	11/29/18	12/14/18	16

Table A-2. FS-12 Area Average Surface Area and Flow Rate Per Location for CY 2018

Location	Surface Area (m²)	Total Days ^a	Surface Area × Total Days	Average Surface Area/Year (A) ^c (m ²)	Diameter of Stack D = (1.3 A) ^{1/2} (m)	Flow Rate ^d $F = V \pi [(D)^2 / 4]*60$ $(m^3/minute)$
FS-12 Area						
SUs (Areas G and H)	15,620	190	2,967,800			
Pre-Sorting Pile ^b	2,000	168	336,000			
Post-Sorting Contaminated Pileb	400	194	77,600			
		Total	3,381,400	9,264	110	2.4E+06
M-Yard						
Post-Sorting Contaminated Pileb	400	16	6,400	18	5	4.6E+03

^a Total days were based on the 2018 dates in which potential wind-erosion occurred, as listed in Table A-1.

Table A-3. Airborne Radioactive Particulate Emissions Based on Excavation Perimeter Air Samples

Radionuclide	Gross Alpha Concentration (μCi/cm³)	Activity Fraction ^a	Emission Concentration (μCi/cm³) ^b	Emission Rate (Ci/year) ^c
FS-12 Area				
U-238	1.75E-15	0.9014	1.6E-15	2.0E-03
U-235	1.75E-15	0.0145	2.5E-17	3.2E-05
U-234	1.75E-15	0.0840	1.5E-16	1.9E-04
M-Yard				
U-238	1.70E-15	0.9014	1.5E-15	3.7E-06
U-235	1.70E-15	0.0145	2.5E-17	5.9E-08
U-234	1.70E-15	0.0840	1.4E-16	3.4E-07

^a As listed in the ROD (USACE 2011).

b No data identifying the area associated with the pre- and post-sorting piles existed. Therefore, the pre-sorting contaminated pile area was set at 2,000 m² (conservative value selected based on previous years' area values). The post-sorting contaminated piles at both the FS-12 Area and M-Yard were set at 400 m², which corresponds to 20 percent of the pre-sorting pile. The average volume ratio of post-sorting contaminated pile to pre-sorting pile is 11 percent.

Average surface area/year (A) = $[\Sigma(\text{surface area x total days})]/365$

V = 4.252 m per second

b Emission concentration is equal to the activity fraction multiplied by the gross alpha airborne particulate concentrations.

Emission rate is based on a 365-day period calculated flow rate (as presented in Table A-2) for each site as determined from the average annual wind speed (i.e., 4.252 m per second) and calculated site area (as presented in Table A-2). (Note: 1 mL = 1 cm³.)

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APPENDIX B CALENDAR YEAR 2018 AIR MONITORING DATA

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Table B-1. CY 2018 IAAAP Air Sample Summary Table

D. (G I ID	,	Gross Alpha	a Concentration	on (μCi/mL)
Date	Sample ID	Area	1st Count	2nd Count	3rd Count
05/23/18	20180515-001	FS-12 Wood Soil Sort Area	4.04E-15	-	-
05/23/18	20180515-002	FS-12 SCA Boundary	0.00E+00	-	-
05/25/18	20180517-003	FS-12 SCA Boundary	1.68E-15	-	-
05/29/18	20180515-004	FS-12 Wood Soil Sort Area	0.00E+00	-	-
05/31/18	20180522-005	FS-12 SCA Boundary	-1.47E-15	-	-
05/31/18	20180522-006	FS-12 Wood Soil Sort Area	4.00E-15	-	-
06/05/18	20180524-007	FS-12 SCA Boundary	3.28E-15	-	-
06/07/18	20180524-008	FS-12 Wood Soil Sort Area	4.75E-15	-	-
06/07/18	20180529-009	FS-12 SCA Boundary	5.40E-15	-	-
06/07/18	20180529-010	FS-12 Wood Soil Sort Area	5.84E-15	-	-
06/08/18	20180531-011	FS-12 SCA Boundary	3.94E-15	-	-
06/08/18	20180531-012	FS-12 Wood Soil Sort Area	1.09E-15	-	-
06/12/18	20180601-013	FS-12 SCA Boundary	5.47E-15	-	-
06/12/18	20180601-014	FS-12 Wood Soil Sort Area	1.75E-15	-	-
06/20/18	20180608-015	FS-12 SCA Boundary	4.38E-15	-	-
06/20/18	20180608-016	FS-12 Wood Soil Sort Area	3.28E-15	-	-
06/25/18	20180614-017	FS-12 SCA Boundary	2.80E-15	-	-
06/25/18	20180614-018	FS-12 Wood Soil Sort Area	3.52E-15	-	-
06/27/18	20180619-019	FS-12 SCA Boundary	3.59E-16	-	-
06/27/18	20180619-020	FS-12 Wood Soil Sort Area	3.98E-15	-	-
07/09/18	20180625-021	FS-12 SCA Boundary	1.45E-15	-	-
07/09/18	20180625-022	FS-12 Wood Soil Sort Area	1.27E-15	-	-
07/10/18	20180628-023	FS-12 SCA Boundary	1.23E-15	-	-
07/10/18	20180628-024	FS-12 Wood Soil Sort Area	1.63E-15	-	-
07/16/18	20180709-025	FS-12 SCA Boundary	0.00E+00	-	-
07/16/18	20180709-026	FS-12 Wood Soil Sort Area	2.50E-15	-	-
07/19/18	20180711-027	FS-12 SCA Boundary	3.59E-16	-	-
07/19/18	20180711-028	FS-12 Wood Soil Sort Area	3.26E-16	-	-
07/23/18	20180713-029	FS-12 SCA Boundary	3.35E-15	-	-
07/23/18	20180713-030	FS-12 Wood Soil Sort Area	1.74E-15	-	-
07/25/18	20180717-031	FS-12 SCA Boundary	2.76E-15	-	-
07/25/18	20180717-032	FS-12 Wood Soil Sort Area	1.17E-15	-	-
07/27/18	20180720-033	FS-12 SCA Boundary	1.96E-15	-	-
07/27/18	20180720-034	FS-12 Wood Soil Sort Area	2.50E-15	-	-
07/31/18	20180724-035	FS-12 SCA Boundary	1.83E-15	-	-
07/31/18	20180724-036	FS-12 Wood Soil Sort Area	2.18E-15	-	-
08/06/18	20180724-037	FS-12 SCA Boundary	2.11E-15	-	-
08/06/18	20180724-038	FS-12 Wood Soil Sort Area	3.48E-15	-	-
08/06/18	20180730-039	FS-12 SCA Boundary	1.12E-15	-	-
08/06/18	20180730-040	FS-12 Wood Soil Sort Area	1.26E-15	-	-
08/08/18	20180802-041	FS-12 SCA Boundary	2.29E-15	-	-
08/08/08	20180802-042	FS-12 Wood Soil Sort Area	2.53E-15	-	-
08/10/18	20180803-043	FS-12 SCA Boundary	2.78E-15	-	-

Table B-1. CY 2018 IAAAP Air Sample Summary Table

D (G 1 ID		Gross Alpha	a Concentration	on (μCi/mL)
Date	Sample ID	Area	1st Count	2nd Count	3rd Count
08/10/18	20180803-044	FS-12 Wood Soil Sort Area	3.24E-15	-	-
08/13/18	20180806-045	FS-12 SCA Boundary	1.10E-15	-	-
08/13/18	20180806-046	FS-12 Wood Soil Sort Area	8.99E-16	-	-
08/15/18	20180808-047	FS-12 SCA Boundary	4.89E-16	-	-
08/15/18	20180808-048	FS-12 Wood Soil Sort Area	1.33E-15	-	-
08/23/18	20180810-049	FS-12 SCA Boundary	2.78E-15	-	-
08/23/18	20180810-050	FS-12 Wood Soil Sort Area	1.45E-16	-	-
08/27/18	20180816-051	FS-12 SCA Boundary	-4.28E-16	-	-
08/28/18	20180816-052	FS-12 Wood Soil Sort Area	1.77E-15	-	-
08/23/18	20180814-053	FS-12 SCA Boundary	3.36E-16	-	-
08/23/18	20180814-054	FS-12 Wood Soil Sort Area	4.35E-16	-	-
09/05/18	20180823-055	FS-12 SCA Boundary	1.25E-15	-	-
09/05/18	20180823-056	FS-12 Wood Soil Sort Area	1.19E-15	-	-
09/11/18	20180827-057	FS-12 SCA Boundary	1.86E-15	-	-
09/11/18	20180827-058	FS-12 Wood Soil Sort Area	5.31E-16	-	-
09/11/18	20180903-059	FS-12 SCA Boundary	9.43E-16	-	-
09/11/18	20180903-060	FS-12 Wood Soil Sort Area	1.27E-15	-	-
09/20/18	20180911-061	FS-12 SCA Boundary	1.71E-15	-	-
09/20/18	20180911-062	FS-12 Wood Soil Sort Area	2.93E-15	-	-
09/22/18	20180914-063	FS-12 SCA Boundary	8.38E-16	-	-
09/22/18	20180914-064	FS-12 Wood Soil Sort Area	2.32E-15	-	-
09/22/18	20180914-065	FS-12 Block House (Boundary)	1.32E-15	-	-
09/28/18	20180920-066	FS-12 SCA Boundary	1.56E-15	-	-
09/28/18	20180920-067	FS-12 Wood Soil Sort Area	2.21E-15	-	-
09/28/18	20180920-068	FS-12 Block House (Boundary)	3.36E-16	-	-
10/02/18	20180927-069	FS-12 SCA Boundary	8.93E-16	-	-
10/02/18	20180927-070	FS-12 Wood Soil Sort Area	1.74E-15	-	-
10/02/18	20180927-071	FS-12 Block House (Boundary)	9.16E-16	-	-
10/04/18	20180922-072	FS-12 SCA Boundary	5.65E-16	-	-
10/04/18	20180922-073	FS-12 Wood Soil Sort Area	8.86E-16	-	-
10/04/18	20180922-074	FS-12 Block House (Boundary)	1.50E-15	-	-
10/09/18	20180925-075	FS-12 Block House (Boundary)	1.86E-15	-	-
10/09/18	20180925-076	FS-12 SCA Boundary	1.37E-15	-	-
10/09/18	20180925-077	FS-12 Wood Soil Sort Area	1.86E-15	-	-
10/10/18	20181001-078	FS-12 Block House (Boundary)	1.86E-15	-	-
10/10/18	20181001-079	FS-12 Wood Soil Sort Area	6.41E-16	-	-
10/10/18	20181001-080	FS-12 SCA Boundary	7.74E-16	-	-
10/11/18	20131003-081	FS-12 SCA Boundary	7.33E-16	-	-
10/11/18	20181003-082	FS-12 Wood Soil Sort Area	1.19E-15	-	-
10/11/18	20181003-083	FS-12 Block House (Boundary)	1.19E-15	-	-
10/17/18	20181010-084	FS-12 SCA Boundary	1.71E-15	-	-
10/17/18	20181010-085	FS-12 Wood Soil Sort Area	2.63E-15	-	-
10/17/18	20181010-086	FS-12 Block House (Boundary)	2.02E-15	-	-

Table B-1. CY 2018 IAAAP Air Sample Summary Table

	g 1.75		Gross Alpha	a Concentration	on (μCi/mL)
Date	Sample ID	Area	1st Count	2nd Count	3rd Count
10/14/18	20181012-087	FS-12 SCA Boundary	1.99E-15	-	-
10/14/18	20181012-088	FS-12 Wood Soil Sort Area	2.44E-15	-	-
10/23/18	20181014-089	FS-12 SCA Boundary	2.44E-15	-	-
10/23/18	20181014-090	FS-12 Wood Soil Sort Area	1.22E-15	-	-
10/23/18	20181014-091	FS-12 Block House (Boundary)	1.37E-15	-	-
10/29/18	20181017-092	FS-12 SCA Boundary	1.68E-15	-	-
10/29/18	20181017-093	FS-12 Wood Soil Sort Area	1.07E-15	-	-
10/29/18	20181017-094	FS-12 Block House (Boundary)	1.53E-16	-	-
10/30/18	20181019-095	FS-12 SCA Boundary	4.89E-16	-	-
10/30/18	20181019-096	FS-12 Wood Soil Sort Area	7.94E-16	-	-
10/30/18	20181019-097	FS-12 Block House (Boundary)	6.41E-16	-	-
11/01/18	20181023-098	FS-12 SCA Boundary	1.86E-15	-	-
11/01/18	20181014-099	FS-12 Wood Soil Sort Area	3.36E-16	-	-
11/01/18	20181023-100	FS-12 Block House (Boundary)	1.86E-15	-	-
11/01/18	20181025-101	FS-12 SCA Boundary	3.05E-15	-	-
11/01/18	20181025-102	FS-12 Wood Soil Sort Area	2.29E-15	-	-
11/01/18	20181025-103	FS-12 Block House (Boundary)	2.60E-15	-	-
11/06/18	20181029-104	FS-12 SCA Boundary	6.72E-16	-	-
11/06/18	20181029-105	FS-12 Wood Soil Sort Area	6.72E-16	-	-
11/06/18	20181029-106	FS-12 (Boundary)	1.59E-15	-	-
11/09/18	20181031-107	FS-12 SCA Boundary	1.40E-15	-	-
11/09/18	20181031-108	FS-12 Wood Soil Sort Area	4.89E-16	-	-
11/09/18	20181031-109	FS-12 (Boundary)	1.86E-15	-	-
11/12/18	20181105-110	FS-12 Wood Soil Sort Area	-1.53E-16	-	-
11/12/18	20181105-111	FS-12 (Boundary)	1.53E-16	-	-
12/03/18	20181109-112	FS-12 Wood Soil Sort Area	2.17E-15	-	-
12/03/18	20181109-113	FS-12 (Boundary)	3.36E-16	-	-
12/03/18	20181113-114	FS-12 Wood Soil Sort Area	1.40E-15	-	-
12/03/18	20181113-116	FS-12 (Boundary)	2.14E-15	-	-
12/03/18	20181115-115	FS-12 (Boundary)	7.64E-16	-	-
12/03/18	20181115-117	FS-12 Wood Soil Sort Area	0.00E+00	-	-
12/10/18	20181116-118	FS-12 Wood Soil Sort Area	3.78E-15	-	-
12/10/18	20181116-119	FS-12 (Boundary)	5.91E-15	-	-
12/10/18	20181130-120	M-Yard Boundary	1.70E-15	-	-
12/10/18	20181130-121	FS-12 (Boundary)	1.84E-15	-	-
12/10/18	20181204-122	FS-12 SCA Boundary	5.33E-16	-	-
01/08/19	20181206-123	FS-12 SCA Boundary	1.28E-15	-	-
01/08/19	20181206-124	FS-12 (Boundary)	1.71E-15	-	-
01/08/19	20181210-125	FS-12 (Boundary)	1.68E-15	-	-
01/08/19	20181210-126	FS-12 SCA Boundary	2.04E-15	-	-
01/08/19	20181212-127	FS-12 (Boundary)	9.16E-16	-	-
01/08/19	20181212-128	FS-12 SCA Boundary	3.52E-15	-	-

Negative results indicate result was less than the average background value for the instrument.

⁻ Count not performed.

Table B-2. CY 2018 IAAAP Air Sample Laboratory Analysis Summary Table

Field Sample ID	Station Name	Sample Name	Collect Date	Analyte	Result	Error	Detection Limit	Units	VQ		
AS 20180515-002	FS12 SCA Boundary	IAAP209483	05/15/18	Gross Alpha	1.305E-14	5.312E-15	4.211E-15	μCi/mL	J		
AS 20180313-002	rs12 SCA boundary	IAAP209483	03/13/18	Gross Beta	4.09E-14	8.484E-15	6.685E-15	μCi/mL	J		
AS 20180517-003	FS12 SCA Boundary	IAAP209484	05/17/18	Gross Alpha	4.997E-15	3.621E-15	4.211E-15	μCi/mL	J		
AS 20180317-003	1312 SCA Douldary	IAAI 209464	03/17/18	Gross Beta	3.189E-14	7.658E-15	6.685E-15	μCi/mL	J		
AS 20180522-005	FS12 SCA Boundary	IAAP209485	05/22/18	Gross Alpha	8.578E-15	4.444E-15	4.211E-15	μCi/mL	J		
AS 20180322-003	TS12 SCA Doulldary	IAAI 209463	03/22/18	Gross Beta	4.033E-14	8.433E-15	6.685E-15	μCi/mL	J		
AS 20180524-007	FS12 SCA Boundary	IAAP209486	05/24/18	Gross Alpha	1.122E-14	4.753E-15	3.888E-15	μCi/mL	J		
AS 20180324-007	1312 SCA Doundary	IAAI 209400	03/24/18	Gross Beta	4.139E-14	8.156E-15	6.171E-15	μCi/mL	J		
AS 20180529-009	FS12 SCA Boundary	IAAP209487	05/29/18	Gross Alpha	1.619E-14	5.853E-15	4.211E-15	μCi/mL	J		
113 20100327 007	1312 SCA Doundary	IAAI 209407	03/29/10	Gross Beta	5.441E-14	9.668E-15	6.685E-15	μCi/mL	J		
AS 20180531-011	FS12 SCA Boundary	IAAP209488	05/31/18	Gross Alpha	9.92E-15	4.719E-15	4.211E-15	μCi/mL	J		
AS 20100331-011	1312 SCA Doundary	IAAI 209400	03/31/16	Gross Beta	3.048E-14	7.525E-15	6.685E-15	μCi/mL	J		
AS 20180601-013	FS12 SCA Boundary	IAAP209489	06/04/18	Gross Alpha	1.305E-14	5.312E-15	4.211E-15	μCi/mL	J		
AS 20180001-013	FS12 SCA Boundary	IAAP209489	00/04/18	Gross Beta	3.273E-14	7.737E-15	6.685E-15	μCi/mL	J		
AS 20180608-015	FS12 SCA Boundary	IAAP209490	06/08/18	Gross Alpha	1.216E-14	5.149E-15	4.211E-15	μCi/mL	J		
AS 20100000-015		F512 SCA Doundary	1512 SCA Doundary	1512 SCA Doundary	IAAI 209490	00/08/18	Gross Beta	3.611E-14	8.049E-15	6.685E-15	μCi/mL
AS 20180614-017	FS12 SCA Boundary	IAAP209491	06/14/18	Gross Alpha	1.171E-14	5.066E-15	4.211E-15	μCi/mL	J		
AS 20160014-017	1312 SCA Doundary	IAAI 209491	00/14/18	Gross Beta	3.47E-14	7.92E-15	6.685E-15	μCi/mL	J		
AS 20180619-019	FS12 SCA Boundary	IAAP209492	06/19/18	Gross Alpha	4.55E-15	3.506E-15	4.211E-15	μCi/mL	J		
AS 20100017-017	1312 SCA Doundary		11 11 207772	11111 207 172	11 11 207772	00/19/10	Gross Beta	2.766E-14	7.257E-15	6.685E-15	μCi/mL
AS 20180625-021	FS12 SCA Boundary	IAAP209493	06/25/18	Gross Alpha	7.235E-15	4.153E-15	4.211E-15	μCi/mL	J		
AS 20100025-021	1312 SCA Doundary	IAAI 209493	00/23/18	Gross Beta	1.95E-14	6.449E-15	6.685E-15	μCi/mL	J		
AS 20180628-023	FS12 SCA Boundary	IAAP209494	06/28/18	Gross Alpha	9.025E-15	4.538E-15	4.211E-15	μCi/mL	J		
AS 20100020-025	1312 SCA Doundary	1AA1 207474	00/20/10	Gross Beta	3.724E-14	8.152E-15	6.685E-15	μCi/mL	J		
AS 20180709-025	FS12 SCA Boundary	IAAP209495	07/09/18	Gross Alpha	5.22E-16	2.233E-15	4.211E-15	μCi/mL	UJ		
AS 20160709-025	1312 SCA Doundary	IAAI 209493	07/09/18	Gross Beta	1.978E-14	6.478E-15	6.685E-15	μCi/mL	J		
AS 20180711-027	FS12 SCA Boundary	IAAP209496	07/11/18	Gross Alpha	3.588E-14	8.623E-15	4.211E-15	μCi/mL	J		
710 20100/11-02/	1512 SCA Doundary	1/4/A1 203430	0//11/10	Gross Beta	8.988E-14	1.258E-14	6.685E-15	μCi/mL	J		
AS 20180713-029	FS12 SCA Boundary	IAAP209497	07/13/18	Gross Alpha	1.118E-14	6.185E-15	6.126E-15	μCi/mL	J		
130 20100/13-027	1512 SCA Doulldary	1AA1 20349	07/13/10	Gross Beta	6.071E-14	1.245E-14	9.724E-15	μCi/mL	J		
AS 20180717-031	FS12 SCA Boundary	IAAP209498	07/17/18	Gross Alpha	7.683E-15	4.252E-15	4.211E-15	μCi/mL	J		
715 20100/17 051	1512 SCA Doundary	1AA1 207790	07/17/10	Gross Beta	4.23E-14	8.61E-15	6.685E-15	μCi/mL	J		

Table B-2. CY 2018 IAAAP Air Sample Laboratory Analysis Summary Table

Field Sample ID	Station Name	Sample Name	Collect Date	Analyte	Result	Error	Detection Limit	Units	VQ					
AS 20180720-033	FS12 SCA Boundary	IAAP209499	07/20/18	Gross Alpha	6.788E-15	4.052E-15	4.211E-15	μCi/mL	J					
AS 20100720-055	FS12 SCA Boundary	IAAF 209499	07/20/18	Gross Beta	2.738E-14	7.229E-15	6.685E-15	μCi/mL	J					
AS 20180724-035	FS12 SCA Boundary	IAAP209500	07/24/18	Gross Alpha	7.578E-15	3.703E-15	3.369E-15	μCi/mL	J					
AS 20100724-033	1312 SCA Douldary	IAAI 209300	07/24/10	Gross Beta	3.091E-14	6.624E-15	5.348E-15	μCi/mL	J					
AS 20180726-037	FS12 SCA Boundary	IAAP209501	07/26/18	Gross Alpha	5.072E-15	3.159E-15	3.369E-15	μCi/mL	J					
AS 20100720-037	1312 SCA Douldary	II II II 207301 07	07/20/18	Gross Beta	2.821E-14	6.377E-15	5.348E-15	μCi/mL	J					
AS 20180730-039	FS12 SCA Boundary	IAAP209502	07/30/18	Gross Alpha	4.442E-15	3.219E-15	3.744E-15	μCi/mL	J					
AS 20100730-037	1312 SCA Boundary	IAAI 207302	07/30/10	Gross Beta	3.11E-14	7.063E-15	5.943E-15	μCi/mL	J					
AS 20180802-041	FS12 SCA Boundary	IAAP209503	08/01/18	Gross Alpha	1.42E-14	5.304E-15	3.706E-15	μCi/mL	=					
AS 20160602-041	1312 SCA Doulldary	IAAF 209303	06/01/18	Gross Beta	3.493E-14	7.011E-15	5.882E-15	μCi/mL	=					
AS 20180806-045	FS12 SCA Boundary	IAAP209504	08/06/18	Gross Alpha	5.834E-15	3.986E-15	3.912E-15	μCi/mL	J					
AS 20100000-043	1312 SCA Doulldary	IAAI 209304	06/00/16	Gross Beta	2.711E-14	6.477E-15	6.209E-15	μCi/mL	=					
AS 20180808-047	FS12 SCA Boundary	IAAP209505	08/08/18	Gross Alpha	4.774E-15	3.618E-15	3.706E-15	μCi/mL	J					
AS 20160606-047	FS12 SCA Boundary	FS12 SCA Boundary	FS12 SCA Douildary	TS12 SCA Boundary	TS12 SCA Doubleary	1312 SCA Doundary	IAAF 209303	06/06/18	Gross Beta	2.9E-14	6.457E-15	5.882E-15	μCi/mL	=
AS 20180810-049	ES12 SCA Roundary	FS12 SCA Roundary	FS12 SCA Boundary	IAAP209506	08/10/18	Gross Alpha	1.721E-14	5.756E-15	3.706E-15	μCi/mL	=			
AS 20100010-049	1312 SCA Douldary	11 11 11 207300	06/10/16	Gross Beta	5.034E-14	8.376E-15	5.882E-15	μCi/mL	=					
AS 20180816-051	FS12 SCA Boundary	IAAP209507	08/16/18	Gross Alpha	2.512E-15	3.099E-15	3.706E-15	μCi/mL	UJ					
AS 20100010-031	1312 SCA Douldary	IAAI 209307	06/10/16	Gross Beta	1.644E-14	5.195E-15	5.882E-15	μCi/mL	=					
AS 20180823-055	FS12 SCA Roundary	FS12 SCA Boundary IAAP209508	08/22/18	Gross Alpha	1.759E-15	2.907E-15	3.706E-15	μCi/mL	UJ					
AS 20100025-055	1312 SCA Doundary		11111 207300	1111 207500	17A1 203300	11 A1 20/300	06/22/16	Gross Beta	1.905E-14	5.469E-15	5.882E-15	μCi/mL	=	
AS 20180827-057	FS12 SCA Boundary	IAAP209509	08/27/18	Gross Alpha	1.582E-14	5.822E-15	4.024E-15	μCi/mL	=					
AS 20100027-037	1312 SCA Doundary	IAAI 209309	06/27/16	Gross Beta	4.797E-14	8.513E-15	6.386E-15	μCi/mL	=					
AS 20180903-059	FS12 SCA Boundary	IAAP209510	09/03/18	Gross Alpha	1.591E-15	3.232E-15	4.268E-15	μCi/mL	UJ					
AS 20100703-037	1312 SCA Douldary	IAAI 209310	09/03/18	Gross Beta	2.166E-14	6.27E-15	6.773E-15	μCi/mL	=					
AS 20180911-061	FS12 SCA Boundary	IAAP209511	09/11/18	Gross Alpha	1.08E-14	4.756E-15	3.706E-15	μCi/mL	=					
AS 20100911-001	1312 SCA Doulldary	IAAI 209311	09/11/18	Gross Beta	5.58E-14	8.84E-15	5.882E-15	μCi/mL	=					
AS 20180914-064	FS12 Wood Soil Sort Area	IAAP209512	09/14/18	Gross Alpha	7.225E-15	4.188E-15	3.806E-15	μCi/mL	J					
110 20100714-004	1512 WOOD SOIL SOIL AICA	1AA1 209312	03/14/10	Gross Beta	6.802E-14	9.97E-15	6.041E-15	μCi/mL	=					
AS 20180920-066	FS12 SCA Boundary	IAAP209513	09/20/18	Gross Alpha	4.893E-15	3.513E-15	3.521E-15	μCi/mL	J					
AS 20100720-000	1312 SCA Douildary	1AA1 207313	03/20/10	Gross Beta	7.35E-14	1.008E-14	5.588E-15	μCi/mL	=					
AS 20180927-069	FS12 SCA Boundary	IAAP209514	09/27/18	Gross Alpha	5.569E-15	4.479E-15	4.695E-15	μCi/mL	J					
AS 20100921-009	1512 SCA Doundary	1AAF 207314	03/27/10	Gross Beta	7.848E-14	1.185E-14	7.451E-15	μCi/mL	=					

Table B-2. CY 2018 IAAAP Air Sample Laboratory Analysis Summary Table

Field Sample ID	Station Name	Sample Name	Collect Date	Analyte	Result	Error	Detection Limit	Units	VQ				
AS 20180922-072	FS12 SCA Boundary	IAAP209515	09/22/18	Gross Alpha	2.081E-15	2.927E-15	3.611E-15	μCi/mL	UJ				
AS 20160922-072	TS12 SCA Doulldary	IAAF 209313	09/22/18	Gross Beta	1.579E-14	5.037E-15	5.731E-15	μCi/mL	=				
AS 20180925-075	FS12 Block House	IAAP209516	09/25/18	Gross Alpha	3.292E-15	4.061E-15	4.856E-15	μCi/mL	UJ				
AS 20100925-075	(Boundary)	IAAI 209310	09/23/16	Gross Beta	5.447E-14	9.972E-15	7.708E-15	μCi/mL	=				
AS 20181001-078	FS12 Block House	IAAP209517	10/01/18	Gross Alpha	1.082E-14	5.522E-15	4.695E-15	μCi/mL	J				
AS 20101001-070	(Boundary)	1AA1 207317	10/01/10	Gross Beta	7.188E-14	1.13E-14	7.451E-15	μCi/mL	=				
AS 20181003-081	FS12 SCA Boundary	IAAP209518	10/03/18	Gross Alpha	2.228E-15	3.683E-15	4.695E-15	μCi/mL	UJ				
715 20101003 001	1512 SCA Doundary	11111 209310	10/03/10	Gross Beta	4.275E-14	8.742E-15	7.451E-15	μCi/mL	=				
AS 20181010-084	FS12 SCA Boundary	IAAP209519	10/09/18	Gross Alpha	4.137E-15	4.155E-15	4.695E-15	μCi/mL	UJ				
AS 20101010-004	1512 SCA Doundary	IAAI 207317	10/02/10	Gross Beta	2.383E-14	6.897E-15	7.451E-15	μCi/mL	=				
AS 20181012-087	D181012-087 FS12 SCA Boundary	0181012-087 FS12 SCA Roundary IAAP209520	IAAP209520	10/12/18	Gross Alpha	-4.09E-16	2.446E-15	2.018E-15	μCi/mL	UJ			
715 20101012 007		11 H H 209320	10/12/10	Gross Beta	9.34E-16	2.111E-15	3.587E-15	μCi/mL	UJ				
AS 20181014-089	089 FS12 SCA Boundary	IAAP209521	10/14/18	Gross Alpha	3.182E-15	3.925E-15	4.695E-15	μCi/mL	UJ				
AS 20101014-007	1512 SCA Doundary	IAAI 207321	10/14/10	Gross Beta	4.695E-14	9.127E-15	7.451E-15	μCi/mL	=				
AS 20181017-092	FS12 SCA Boundary	IAAP209522	10/17/18	Gross Alpha	5.569E-15	4.479E-15	4.695E-15	μCi/mL	J				
715 20101017 072	1512 SCA Doundary	IAAI 203322	1AA1 203322	11 IAI 20/322	11 IAI 20/322	11 ATI 207322	10/17/10	Gross Beta	6.257E-14	1.051E-14	7.451E-15	μCi/mL	=
AS 20181019-095	FS12 SCA Boundary	IAAP209523	10/19/18	Gross Alpha	3.7E-15	3.461E-15	4.186E-15	μCi/mL	UJ				
AS 20101017-073	1.512 SCA Doundary	IAAF 209323	1AAF 209323	10/17/10	Gross Beta	5.775E-14	1.188E-14	1.019E-14	μCi/mL	=			
AS 20181023-098	FS12 SCA Boundary	IAAP209524	10/23/18	Gross Alpha	1.682E-15	2.803E-15	4.186E-15	μCi/mL	UJ				
715 20101025 070	1512 SCA Doundary	11 H H 209324	10/23/10	Gross Beta	5.16E-14	1.14E-14	1.019E-14	μCi/mL	=				
AS 20181025-101	FS12 SCA Boundary	IAAP209525	10/25/18	Gross Alpha	2.691E-15	3.149E-15	4.186E-15	μCi/mL	UJ				
AS 20101025-101	1312 SCA Doundary	IAAI 209323	10/23/16	Gross Beta	6.648E-14	1.256E-14	1.019E-14	μCi/mL	=				
AS 20181029-104	FS12 SCA Boundary	IAAP209526	10/29/18	Gross Alpha	4.204E-15	3.608E-15	4.186E-15	μCi/mL	J				
715 20101027-104	1512 SCA Doundary	1741 207320	10/27/10	Gross Beta	3.315E-14	9.918E-15	1.019E-14	μCi/mL	=				
AS 20181031-107	FS12 SCA Boundary	IAAP209527	10/31/18	Gross Alpha	1.076E-14	5.169E-15	4.186E-15	μCi/mL	=				
715 20101031-107	1512 SCA Doundary	11411 207321	10/31/10	Gross Beta	4.933E-14	1.122E-14	1.019E-14	μCi/mL	=				

Negative results are less than the laboratory system's background level.

VQs:

⁼ Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

ATTACHMENT B-1

CALENDAR YEAR 2018 AIR SAMPLE REPORTS

(On the CD-ROM on the Back Cover of this Report)

APPENDIX B REVISION 0

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APPENDIX B REVISION 0

Date:	5/23/2018		ection I - Coll				
Occupational (DAC):	Limit:	Sample II	2018	0515-001	1	RWP: 2018-001	
Non-Occupational (EC):		2.00E-11		μCi/ml (1)	Breathing Zone		7
Non-Occupational (EC):		$[DAC = 2.0E-11\mu Ci/ml (U-238), E$	C= 6.0E-14uCi/m	all .			
Location:		FS12 Wood Soil Sort A			Radionuclides	DU (Deplete	d Uranium)
Wearer:			uea		Sampled By:	Stephen B	eames
Monitored Workers:		NA NA		_	Activity Performed:	NA NA	
				NA	_		
Lapel Pump Model:	NA		Serial No.		MA		
Air Pump Model:	LV-I		Serial No.		NA	Calibration Due Date:	NA
Sample Information			Serial No.		2773	Calibration Due Date:	3/27/2019
Collection Date	C. I	Time				Flow P	ate (lpm)
5/14/2018	7:00	Stop	Total (minutes)		Start	
5/15/2018	7:00	15:00	4	80		65.0	Stop 65.0
	7.00	15:00		80		65	65
		Total Time (Tc):	9	60		Avg. Flow Rate (lpm)	65.0
ument Information		Serial Number	tion II - Anal	ysis Data	Colibert	ion Due Data	
Instrument Type		Serial Number Meter			Calibrat	ion Due Date	
L-2929		158817	Dete		Meter	Detector	Efficiency (a)
N/A		N/A	164		12/13/2018	12/13/2018	0.361
			N/	A	N/A	N/A	N/A
Variables	, Calculations,	Results	Units	-		Alpha	
nt Date		2.1	- Sund		st Count	2nd Count	3rd Count
nt Time (e.g., noon, 1300, etc.)				3.	/23/2018 10:00		
ple Count Time (Ts, Tb) = T			minutes		60		
ole Count Rate			counts		18		
ground Count Rate			cpm		0.30		
olume (liters)	(A)		cpm		0.10		
ount rate	(B)		liters	6	.2E+04	6.2E+04	6.2E+04
ter Efficiency	(C)		cpm		0.20		0.22.04
ction Efficiency	(D)		cpm/dpm 0.99		0.36	0.36	0.36
ency = (C) x (D)	(E)		cpm/dpm		0.99	0.99	0.99
ty (dpm) = (B)/(E)	(F)		dpm		0.56	0.36	0.36
num Detectable Activity (dpm) = ntration = (F)/(2.22E9 x (A))		(Cb))/(E*T) (G)	dpm		0.66		
round "Strip" value (F.1) Da	(H)		μCi/ml		4E-15		
Concentration Value = (H) - (F1		4/20-4/21	uCi/ml		31E-18		
or AE) Fraction = (F2)/(I)); (F2)		uCi/ml		3E-15		
= MDA/V = (G)/(A)	m				02%		
raction of DAC (or AE) = (J)/((J) (Goal-109)	,	μCi/ml		BE-15		
ount?	(Goal~10%				92%		
		Note: Transported D. C.	Yes/No		Yes		
	1	Note: Unexpected DAC or AE fra	ction > 100% rec	nires immedi	ate RSO notification.		
Performed By:	4	- h				101111	_
(1					Date: 5	-23-18
Reviewed By:							- 0
Keviewed By:							

Date:	5/23/2018	30	ection I - Colle				
Occupational (DAC):		Sample II	20180	0515-002		RWP: 2018-001	
Non-Occupational (EC):		6.00E-14		μCi/ml (I)	Breathing Zon		7
		$[DAC = 2.0E-11\mu Ci/ml (U-238), E$	C= 6.0E-14µCi/m	η	Radionuclide		
Location:		FS12 SCA Boundar		•		S: DU (Deplete	d Uranium)
Wearer:		NA	,		Sampled By:	David Be	erres
Monitored Workers:		NA .			Activity Performed:	NA	
	2/28			NA			
Lapel Pump Model:	NA		Serial No.		NA	242 77 2	
Air Pump Model:	LV-I		Serial No.			Calibration Due Date:	
Sample Information			ochar No.		2591	Calibration Due Date:	3/27/2019
Collection Date	Sunt T	Time				Flow Ra	ste (lpm)
5/14/2018	7:00	Stop	Total (r	ninutes)		Start	
5/15/2018	7:00	15:00	48	80		65.0	Stop 65.0
	7.00	15:00	48			65	65
		Total Time (Tc):	96	50		Avg. Flow Rate (lpm)	65.0
Instrument Type		Serial Number	tion II - Analy		Calibrat	ion Due Date	
Instrument Type		Meter Serial Number			Calibrat	ion Due Date	
L-2929		158817	Detec		Meter	Detector	Efficiency (a)
N/A		N/A	N/A		1/10/2019	1/10/2019	0.361
			T		N/A	N/A	N/A
Date Variable	s, Calculations,	Results	Units	10	t Count	Alpha	
Time (e.g., noon, 1300, etc.)					23/2018	2nd Count	3rd Count
e Count Time (Ts, Tb) = T					11:00		
Counts			minutes		60		
C			counts		6		
Count Rate			cpm		0.10		
ound Count Rate							
ound Count Rate lume (liters)	(A)		cpm		0.10		
ound Count Rate lume (liters) unt rate	(A) (B)		liters	6.3	2E+04	6.2E+04	6.2E+04
ound Count Rate lume (liters) unt rate r Efficiency		- 4	liters cpm	6.2	2E+04 0.00	6.2E+04	6.2E+04
ound Count Rate lume (liters) int rate r Efficiency ion Efficiency	(B)		liters cpm cpm/dpm	6.3	2E+04 0.00 0.36	6.2E+04 0.36	6.2E+04 0.36
ound Count Rate fume (liters) int rate r Efficiency ion Efficiency ey = (C) x (D)	(B)		cpm cpm/dpm 0.99	6.2	2E+04 0.00 0.36 0.99	0.36	
ound Count Rate fume (liters) int rate r Efficiency ion Efficiency ey = (C) x (D) r (dpm) = (B)/(E)	(B) (C) (D) (E)		liters cpm cpm/dpm 0.99 cpm/dpm	6.2	2E+04 0.00 0.36 0.99	0.36	0.36
ound Count Rate fume (liters) int rate r Efficiency ion Efficiency cy = (C) x (D) (dpm) = (B)(E) m Detectable Activity (dnm)	(B) (C) (D) (E) (F) = (3+4.65*SQRT	(Cb))/(E*T) (G)	cpm cpm/dpm 0.99	6.3	2E+04 0.00 0.36 0.99 0.36	0.36	0.36 0.99
ound Count Rate lume (liters) int rate r Efficiency ion Efficiency cy = (C) x (D) (dpm) = (B)/(E) m Detectable Activity (dpm) tration = (F)/(2.22E9 x (A))	(B) (C) (D) (E) (F) = (3+4.65*SQRT		liters cpm cpm/dpm 0.99 cpm/dpm dpm	6.3	2E+04 0.00 0.36 0.99	0.36	0.36 0.99
ound Count Rate fume (liters) int rate r Efficiency ion Efficiency ion (Count) = (B)/(E) m Detectable Activity (dpm) irration = (F)/(2.22E9 x (A)) und "Strip" value (F.1) D	(B) (C) (D) (E) (F) = (3+4.65*SQRT (H)	(Cb))/(E*T) (G) 4/20-4/21	cpm/dpm 0.99 cpm/dpm dpm dpm	6.2	2E+04 0.00 0.36 0.99 0.36 0.00	0.36	0.36 0.99
ound Count Rate fume (liters) int rate r Efficiency ion Efficiency ion (Efficiency) r (p) = (D) × (D) r (dpm) = (B)/(E) im Detectable Activity (dpm) irration = (F)/(2.22E9 × (A)) und "Strip" value (F.1) D incentration Value = (H) - (F.	(B) (C) (D) (E) (F) = (3+4.65*SQRT (H)		liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	6.2 6.2 6.0 6.0 6.0 6.0 6.0 7.3	2E+04 0.00 0.36 0.99 0.36 0.00 0.66 E+00	0.36	0.36 0.99
ound Count Rate lume (liters) unt rate r Efficiency on Efficiency (cy = (C) x (D) (dpm) = (B)/(E) und Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) und "Strip" value (F.1) D ncentration Value = (H) - (F. (AE) Fraction = (F2)/(D)	(B) (C) (D) (E) (F) = (3+4.65*SQRT (H) tate Updated 1); (F2)		liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	6.2 0 0 0 0 0 0 0 0 0 0 0 0 0	2E+04 0.00 0.36 0.99 0.36 0.00 0.66 E+00 1E-18 1E-18	0.36	0.36 0.99
ound Count Rate lume (liters) int rate r Efficiency ion Efficiency ion (C) x (D) (dpm) = (B)/(E) im Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) und "Strip" value (F.1) nocentration Value = (H) - (F. AE) Fraction = (F2)/(I) MDA/V = (G)/(A)	(B) (C) (D) (E) (F) = (3+4.65*SQRT (H) hate Updated 1); (F2)	4/20-4/21	liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	6.2 0 0 0 0 0 0 0 0 0 0 0 0 0	2E+04 0.00 0.36 0.99 0.36 0.00 0.66 E+00 1E-18 1E-18	0.36	0.36 0.99
ound Count Rate lume (liters) unt rate r Efficiency on Efficiency (cy = (C) x (D) (dpm) = (B)/(E) und Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) und "Strip" value (F.1) D ncentration Value = (H) - (F. (AE) Fraction = (F2)/(D)	(B) (C) (D) (E) (F) = (3+4.65*SQRT (H) hate Updated 1); (F2)	4/20-4/21	liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	6.3 (0 0 0 0 0.00 7.3 -7.3 -9.8	2E+04 0.00 0.36 0.99 0.36 0.00 0.66 E+00 1E-18	0.36	0.36 0.99
ound Count Rate lume (liters) unt rate r Efficiency on Efficiency (C) x (D) (dpm) = (B)/(E) und P(B)/(E) tration = (F)/(2.22E9 x (A)) und "Strip" value (F.1) ncentration Value = (H) - (F. r AE) Fraction = (F2)/(I) MDA/V = (G)/(A) action of DAC (or AE) = (J)/(I)	(B) (C) (D) (E) (F) = (3+4.65*SQRT (H) Pate Updated (I); (F2) (J) (J) (Goal<10%)	4/20-4/21	liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	6.3 (0 0 0 0.00 7.3 -7.3 -9.1 4.80 7.9	2E+04 0.00 0.36 0.99 0.36 0.00 0.36 0.00 0.66 E+00 0.66 E+100 0.66 E-18 0.66 0.66	0.36	0.36 0.99
ound Count Rate lume (liters) ant rate r Efficiency on Efficiency (cy = (C) x (D) (dpm) = (B)/(E) an Detectable Activity (dpm) ritation = (F)/(2.2E9 x (A)) und "Strip" value (F.1) D neentration Value = (H) - (F. AE) Fraction = (F2)/(I) MDA/V = (G)/(A) action of DAC (or AE) = (J)/(unt?	(B) (C) (D) (E) (F) (F) (4) (A) (A) (A) (B) (B) (C) (B) (C) (C) (C) (D) (E) (F) (A) (A) (C) (C) (D) (C) (D) (C) (D) (D) (D) (D) (D) (D) (D) (D) (D) (D	4/20-4/21	liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	6.3 (0 0 0 0.00 7.3 -7.3 -9.1 4.80 7.9	2E+04 0.00 0.36 0.99 0.36 0.00 0.36 0.00 0.66 E+00 0.66 E+100 0.66 E-18 0.66 0.66	0.36 0.99 0.36	0.36 0.99
ound Count Rate lume (liters) unt rate r Efficiency on Efficiency (C) x (D) (dpm) = (B)/(E) und P(B)/(E) tration = (F)/(2.22E9 x (A)) und "Strip" value (F.1) ncentration Value = (H) - (F. r AE) Fraction = (F2)/(I) MDA/V = (G)/(A) action of DAC (or AE) = (J)/(I)	(B) (C) (D) (E) (F) (F) (4) (A) (A) (A) (B) (B) (C) (B) (C) (C) (C) (D) (E) (F) (A) (A) (C) (C) (D) (C) (D) (C) (D) (D) (D) (D) (D) (D) (D) (D) (D) (D	4/20-4/21	liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	6.3 (0 0 0 0.00 7.3 -7.3 -9.1 4.80 7.9	2E+04 0.00 0.36 0.99 0.36 0.00 0.36 0.00 0.66 E+00 0.66 E+100 0.66 E-18 0.66 0.66	0.36 0.99 0.36	0.36 0.99 0.36

			on I - Collection I		RWP: 2018-001	
Date:	5/29/2018	Sample ID:	20180515-004			Work Area:
Occupational (DAC):	Limit:	2.00E-11	μCı/m	(1) Breathing Zon	_	
Non-Occupational (EC):	T	OAC = 2.0E-11μCi/ml (U-238), EC=	5.0E-14µCi/ml]	Radionuclide	es: DU (Depleted	Uranium)
		FS12 Wood Soil Sort Area		Sampled By:	Stephen Be	eames
Location:					NA	
Wearer:		NA		Activity renormed.		
Monitored Workers:				NA	A CONTRACTOR	
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA NA
	16.6	S	erial No.	2773	Calibration Due Date:	3/27/2019
Air Pump Model:	LV-1				I Flow R	ate (lpm)
Sample Information		Time			Start	Stop
Collection Date	Start	Stop	Total (minute	s)	60.0	60.0
5/16/2018	7:00	15:00	480 480		60	60
5/17/2018	7:00	15:00	960		Avg. Flow Rate (lpm)	60.0
		Total Time (Tc):		******	75	
			Minimum Air Samp	le Volume: 3.2E+01	Liters	5.0.71
Sample Volume:	60 (lpm)	х	960 (minutes)	= 5.8E+04 L	iters (A)
		umes identified are necessary to achie	we 10% of DAC or Al	E value.		
Remarks: Mir	nimum sample voi	ames identified are fiecessary to acrite	VC 107001 2110 07 12		- Item	
		Sect	ion II - Analysis	Data		
trument Information		Serial Number		Cal	ibration Due Date	mor :(m)
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/20		0.361
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	3rd Count
Varia	bles, Calculation	s, Results	Units	1st Count	2nd Count	Sid Count
unt Date				5/29/2018		
unt Time (e.g., noon, 1300, et	c.)			10:00		
mple Count Time (Ts, Tb) = 1			minutes	60		
tal Counts			counts	7		
mple Count Rate			cpm	0.12		
ackground Count Rate			epm	0.12	5.8E+04	5.8E+04
r Volume (liters)	(A)	liters	5.8E+04 0.00	3.02.41	
	0	B)	cpm	0.00	0,36	0.36
et count rate			The same of the same of the first	0.26		
	(C)		cpm/dpm	0.36		0.99
ounter Efficiency	(D)	0.99	0.99	0.99	0.99
ounter Efficiency ollection Efficiency	(E))	0.99 cpm/dpm	0.99		
ounter Efficiency clication Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E)	(E) (F))	0.99 cpm/dpm dpm	0.99 0.36 0.00	0.99	
ounter Efficiency clicetion Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d	(E) (F) (pm) = (3+4.65*Se)	0.99 cpm/dpm dpm dpm	0.99 0.36 0.00 0.71	0.99	
ounter Efficiency clicetion Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (concentration = (F)/(2.22E9 x ((E) (F) (Ipm) = (3+4.65*S(A)) (H)	QRT(Cb))/(E*T) (G)	0.99 cpm/dpm dpm dpm uCi/mI	0.99 0.36 0.00 0.71 0.00E+00	0.99	
ounter Efficiency collection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (concentration = (F)/(2.22E9 × (ackground "Strip" value (F.1)	(D (E) (F) dpm) = (3+4.65*S(A)) (H) Date Updated	QRT(Cb))/(E*T) (G) 4/20-4/21	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml	0.99 0.36 0.00 0.71 0.00E+00 7.31E-18	0.99	
ounter Efficiency collection Efficiency ficiency = (C) × (D) ctivity (dpm) = (B)/(E) concentration = (F)/(2.22E9 × (ackground "Strip" value (F.1) ET Concentration Value = (B)	(D) (E) (F) (spm) = (3+4.65*S) (A)) (H) Date Updated (I) - (F1); (F	QRT(Cb))/(E*T) (G) 4/20-4/21	0.99 cpm/dpm dpm dpm uCi/mI	0.99 0.36 0.00 0.71 0.00E+00 7.31E-18	0.99	
ounter Efficiency collection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (B)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E	(D (E) (IF) (Ipm) = (3+4.65°S) (A)) (H) Date Updated (I) - (F1); (F	QRT(Cb))/(E*T) (G) 4/20-4/21	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml	0.99 0.36 0.00 0.71 0.00E+00 7.31E-18 -7.31E-18 0.00%	0.99	
ounter Efficiency collection Efficiency ficiency = (C) x (D) ctivity (dpm) = (B)/(E) concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (B)/(A)/(C)/(B)/(C)/(C)/(B)/(C)/(C)/(C)/(C)/(C)/(C)/(C)/(C)/(C)/(C	(D (E) (pm) = (3+4.65*S(A)) (H) Date Updated (I) - (F1); (F	QRT(Cb))/(E*T) (G) 4/20-4/21 2)	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml	0.99 0.36 0.00 0.71 0.00E+00 7.31E-18 -7.31E-18 0.00% 5.53E-15	0.99	
et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ffet Concentration Value = (B)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E	(D (E) (pm) = (3+4.65*S(A)) (H) Date Updated (I) - (F1); (F	QRT(Cb))/(E*T) (G) 4/20-4/21 2)	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml	0.99 0.36 0.00 0.71 0.00E+00 7.31E-18 -7.31E-18 0.00% 5.53E-15 0.03%	0.99	
ounter Efficiency collection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) feet Concentration Value = (B)/(A) for AE) Fraction = (F2)/(I) for MDA/V = (G)/(A) for Fraction of DAC (or AE)	(D (E) (pm) = (3+4.65*S(A)) (H) Date Updated (I) - (F1); (F	QRT(Cb))/(E*T) (G) 4/20-4/21 2)	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml	0.99 0.36 0.00 0.71 0.00E+00 7.31E-18 -7.31E-18 0.00% 5.53E-15 0.03% Yes	0.99	
ounter Efficiency collection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (collection = (F)/(2.22E9 × (lackground "Strip" value (F.1) feet Concentration Value = (H.2)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E	(D (E) (pm) = (3+4.65*S(A)) (H) Date Updated (I) - (F1); (F	QRT(Cb))/(E*T) (G) 4/20-4/21 2)	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml	0.99 0.36 0.00 0.71 0.00E+00 7.31E-18 -7.31E-18 0.00% 5.53E-15 0.03% Yes	0.99 0.36	0.36
ounter Efficiency Dilection Efficiency Efficiency = (C) x (D) Divivity (dpm) = (B)/(E) Dinimum Detectable Activity (concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (E)/(I) ET Concentration = (F2)/(I) ET CONCENTRATION = (F2)/(I) ET CONCENTRATION = (F2)/(I) ET CONCENTRATION = (F2)/(I) ET CONCENTRATION = (F2)/(I)	(D (E) (pm) = (3+4.65*S(A)) (H) Date Updated (I) - (F1); (F	QRT(Cb))/(E*T) (G) 4/20-4/21 2)	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml	0.99 0.36 0.00 0.71 0.00E+00 7.31E-18 -7.31E-18 0.00% 5.53E-15 0.03% Yes	0.99 0.36	0.36
ounter Efficiency Dilection Efficiency Efficiency = (C) x (D) Divivity (dpm) = (B)/(E) Dinimum Detectable Activity (concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (E)/(I) ET Concentration = (F2)/(I) ET CONCENTRATION = (F2)/(I) ET CONCENTRATION = (F2)/(I) ET CONCENTRATION = (F2)/(I) ET CONCENTRATION = (F2)/(I)	(D (E) (spm) = (3+4.65*S(A)) (H) Date Updated (I) - (F1); (F (I) (J) = (J)/(I) (Goal-	QRT(Cb))/(E*T) (G) 4/20-4/21 2)	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml	0.99 0.36 0.00 0.71 0.00E+00 7.31E-18 -7.31E-18 0.00% 5.53E-15 0.03% Yes	0.99 0.36	

Date:	5/25/2018	Sample ID:	20180517-0		RWP	2018-001	
Occupational (DAC)				7.00			NYada A
Occupational (DAC):	Limit:	6.00E-14		un (1)	reathing Zone:	General Area:	Work Ar
Non-Occupational (EC): ✓	[DAC	= 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]		Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary		Sam	pled By:	David Be	rres
Wearer:		NA		Activity	Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1	S	Serial No.	2591		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow R	ate (lpm)
Collection Date	Start	Stop	Total (minu	tes)		Start	Stop
5/16/2018	7:00	15:00	480			65.0	65.0
5/17/2018	7:00	15:00	480			65	65
		Total Time (Te):	960			Avg. Flow Rate (lpm)	65.0
			Minimum Air San	ple Volume:	1.0E+04 Lin	ers	
Canala Valumas	65 (l)				nutes) =		ters (A)
Sample Volume:	65 (lpm)		x		iules) –	0.2E704 LI	ieis (A)
Remarks: Mir	nimum sample volumes	identified are necessary to achie	ve 10% of DAC or A	E value.			
		6	to II Amabat	D-4-			
			ion II - Analysis	Data	Calibration	D. D.	
strument Information		Serial Number Meter	Detector		Meter		Efficiency (a)
Instrument Type			Detector			Detector 1/10/2010	0,361
L-2929		158817	164736		1/10/2019	1/10/2019	
N/A		N/A	N/A		N/A	N/A	N/A
Vanial	bles, Calculations, Res	ndte T	Units	1st Cou	. 1	Alpha 2nd Count	3rd Count
ount Date	oies, Calculations, Res	unis	Units	5/25/20		200 Count	Sru Count
un Date							
unt Time (a.c. mann 1200 ata							
				13:00:00	PM		
mple Count Time (Ts, Tb) = T			minutes	60	PM		
mple Count Time (Ts, Tb) = T stal Counts			counts	60 11	PM		
ount Time (e.g., noon, 1300, etc imple Count Time (Ts, Tb) = T otal Counts imple Count Rate			counts	60 11 0.18	PM		
mple Count Time (Ts, Tb) = T stal Counts mple Count Rate sckground Count Rate			counts cpm cpm	60 11 0.18 0.10		COTION	COEVE
mple Count Time (Ts, Tb) = T otal Counts imple Count Rate ockground Count Rate ir Volume (liters)	(A)		counts cpm cpm liters	60 11 0.18 0.10 6.2E+0		6.2E+04	6.2E+04
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate	(A) (B)		counts cpm cpm liters cpm	60 11 0.18 0.10 6.2E+0 0.08			
mple Count Time (Ts, Tb) = T stal Counts mple Count Rate telekground Count Rate r Volume (liters) et count rate sounter Efficiency	(A) (B) (C)		counts cpm cpm liters cpm cpm/dpm	60 11 0.18 0.10 6.2E+0 0.08 0.36		0.36	0.36
mple Count Time (Ts, Tb) = T stal Counts mple Count Rate sckground Count Rate r Volume (liters) set count rate sounter Efficiency llection Efficiency	(A) (B) (C) (D)		counts cpm cpm liters cpm cpm/dpm 0.99	60 11 0.18 0.10 6.2E+0 0.08 0.36		0.36 0.99	0,36 0.99
mple Count Time (Ts, Tb) = T tal Counts mple Count Rate nekground Count Rate r Volume (liters) et count rate number Efficiency fliction Efficiency ficiency = (C) x (D)	(A) (B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99		0.36	0.36
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate ockground Count Rate r Volume (liters) et count rate ounter Efficiency oliection Efficiency ficiency = (C) x (D) stivity (dpm) = (B)/(E)	(A) (B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36		0.36 0.99	0,36 0.99
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate ockground Count Rate r Volume (liters) et count rate ounter Efficiency ollection Efficiency ficiency = (C) x (D) ctivity (dpm) = (B)/(E) infimum Detectable Activity (dp	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(0)	Σb))/(E°T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36	4	0.36 0.99	0,36 0.99
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate ockground Count Rate r Volume (liters) et count rate ounter Efficiency oliection Efficiency ficiency = (C) x (D) ctivity (dpm) = (B)/(E) minum Detectable Activity (dp oncentration = (F)/(2.22E9 x (A)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(C) (II)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66	15	0.36 0.99	0,36 0.99
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate leckground Count Rate r Volume (liters) et count rate ounter Efficiency officiency = (C) x (D) ctivity (dpm) = (B)/(E) inimum Detectable Activity (dp oncentration = (F)/(2.22E9 x (A leckground "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(C) (H) Date Updated	Sb))/(E°T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66 1.68E-	15 8	0.36 0.99	0,36 0.99
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate leckground Count Rate r Volume (liters) et count rate ounter Efficiency officiency = (C) x (D) ctivity (dpm) = (B)/(E) inimum Detectable Activity (dp oncentration = (F)/(2.22E9 x (A leckground "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(C) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66	15 8	0.36 0.99	0,36 0.99
mple Count Time (Ts, Tb) = T ptal Counts mple Count Rate reckground Count Rate reckground Count Rate rection (Liters) et count rate punter Efficiency ficiency = (C) x (D) strivity (dpm) = (B)/(E) minum Detectable Activity (dp moentration = (F)/(2.22E9 x (A modern (B) (B) (B) et Concentration Value = (H)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(C) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66 1.68E-	15 8 15	0.36 0.99	0,36 0.99
mple Count Time (Ts, Tb) = T tal Counts mple Count Rate ckground Count Rate r Volume (liters) t count rate punter Efficiency fliction Efficiency ficiency = (C) x (D) trivity (dpm) = (B)/(E) minum Detectable Activity (dp meentration = (F)/(2.22E9 x (A ckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(0)) (H) Date Updated - (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66 1.68E-7.31E-1 1.68E-2.79% 4.80E-	15 8 15 6	0.36 0.99	0,36 0.99
mple Count Time (Ts, Tb) = T ptal Counts mple Count Rate lockground Count Rate r Volume (liters) et count rate punter Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) minum Detectable Activity (dp mocentration = (F)/(2.22E9 x (A lockground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MIDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(0)) (H) Date Updated - (F1); (F2)		counts cpm cpm liters cpm cpm/dpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66 1.68E- 7.31E-1 1.68E- 2.79%	15 8 15 6	0.36 0.99 0.36	0,36 0.99
mple Count Time (Ts, Tb) = T otal Counts imple Count Rate inckground Count Rate in Volume (liters) et count rate ounter Efficiency officiency = (C) x (D) ctivity (dpm) = (B)/(E) infimum Detectable Activity (dp oncentration = (F)/(2.22E9 x (A inckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MIDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(0)) (H) Date Updated - (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66 1.68E-7.31E-1 1.68E-2.79% 4.80E-	15 8 15 6	0.36 0.99	0,36 0.99
mple Count Time (Ts, Tb) = T otal Counts imple Count Rate inckground Count Rate in Volume (liters) et count rate ounter Efficiency officiency = (C) x (D) ctivity (dpm) = (B)/(E) infimum Detectable Activity (dp oncentration = (F)/(2.22E9 x (A inckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MIDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT((6))) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66 1.68E-7.31E-1 1.68E-2.79% 4.80E-7.99%	15 8 15 6 15	0.36 0.99 0.36	0,36 0.99
mple Count Time (Ts, Tb) = T tal Counts mple Count Rate teleground Count Rate r Volume (liters) tel count rate teleground Efficiency ficiency = (C) x (D) trivity (dpm) = (B)/(E) trimum Detectable Activity (dp teleground "Strip" value (F.1) teleground "Strip" value (F.1) teleground "Strip" value (F.1) teleground "Strip" value (F.1) teleground "Gl/(A) teleground (Gl/(A) te	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(C) (J) (H) Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66 1.68E-7.31E-1 1.68E-2.79% 4.80E-7.99%	15 8 15 6 15	0.36 0.99 0.36 Yes	0,36 0.99 0.36
mple Count Time (Ts, Tb) = T tal Counts mple Count Rate ekground Count Rate r Volume (liters) t count rate unter Efficiency lilection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dp neentration = (F)/(2.22E9 x (A ekground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) = nal Count?	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(C) (J) (H) Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66 1.68E-7.31E-1 1.68E-2.79% 4.80E-7.99%	15 8 15 6 15	0.36 0.99 0.36 Yes	0,36 0.99 0.36
mple Count Time (Ts, Tb) = T otal Counts imple Count Rate inckground Count Rate in Volume (liters) et count rate ounter Efficiency officiency = (C) x (D) ctivity (dpm) = (B)/(E) infimum Detectable Activity (dp oncentration = (F)/(2.22E9 x (A inckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MIDA/V = (G)/(A) DC Fraction of DAC (or AE) = inal Count?	(A) (B) (C) (D) (E) (F) (M) = (3+4.65*SQRT((0))) (H) Date Updated -(F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	60 11 0.18 0.10 6.2E+0 0.08 0.36 0.99 0.36 0.23 0.66 1.68E-7.31E-1 1.68E-2.79% 4.80E-7.99%	15 8 15 6 15	0.36 0.99 0.36 Ves	0,36 0.99

		Sect	ion I - Collection	Data			
Date:	5/31/2018	Sample ID:	20180522-00	5	RWP	2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/n	ni (I) Br	reathing Zone:		Work Are
Non-Occupational (EC):	IDAC	C = 2.0E-11µCi/ml (U-238), EC=	6.0F-14uCi/ml1		Radionuclides:		
			o.oc-14µCbim]		_	DU (Depleted	
Location:		FS12 SCA Boundary		Samp	oled By:	David Ber	res
Wearer:		NA		Activity l	Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2591		Calibration Due Date:	
Sample Information Collection Date	St. d	Time			<u> </u>	Flow Ra	
5/18/2018	Start	Stop	Total (minute	s)	-	Start	Stop
	7:00	15:00	480			60.0	60.0
5/22/2018	7:00	15:00	480		-	60	60
		Total Time (Tc):	960		11 2	Avg. Flow Rate (lpm)	60.0
Remarks: Mi	nimum sample volumes	s identified are necessary to achie	ion II - Analysis				
rument Information		Serial Number			Calibration	Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736		1/10/2019	1/10/2019	0.361
N/A	7	N/A	N/A		N/A	N/A	N/A
						Alpha	
	bles, Calculations, Res	ults	Units	1st Count		2nd Count	3rd Count
nt Date				5/31/2018	3		
nt Time (e.g., noon, 1300, etc			Tell York	13:00:00 P	M		
ple Count Time (Ts, Tb) = T			minutes	60			
l Counts			counts	2			
ple Count Rate			cpm	0.03			
reground Count Rate			cpm	0.10			
Volume (liters)	(A)		liters	5.8E+04		5.8E+04	5.8E+04
count rate	(B)		cpm	-0.07			
nter Efficiency	(C)		cpm/dpm	0.36		0.36	0.36
ection Efficiency	(D)		0.99	0.99		0.99	0.99
riency = (C) x (D)	(E)		cpm/dpm	0.36		0.36	0.36
vity (dpm) = (B)/(E)	(F)	1 1 1 (magn. 45)	dpm	-0.19			
mum Detectable Activity (dp		(b))/(E*1) (G)	dpm	0.66			
centration = (F)/(2.22E9 x (A ground "Strip" value (F.1)		470.470	μCi/ml	-1.47E-1	5		
Concentration Value = (H)	Date Updated	4/20-4/21	uCi/ml	7.31E-18			
C (or AE) Fraction = (F2)/(I)	-(F1); (F2)		uCi/ml	-1.47E-1		(
C = MDA/V = (G)/(A)	(D)		- m	-2.46%			
C Fraction of DAC (or AE) =	(J) (J)/(I) (Goal<10%)		μCi/ml	5.20E-15	,		
Count?	(0) (Ooal~10%)		Yes/No	8.66%			
		17.0		No		Yes	
Performed By:	N	ote: Unexpected DAC or AE fr	action > 100% requir	es immediate RS	O notification.	Date: 5	-31-18
Reviewed By:	Sie	mus &					-31-18

		Section	I - Collection		RWP:	2018-001	
	5/31/2018	Sample ID:	20180522-0		reathing Zone:	General Area:	Work Area:
	Limit	- our 11	μCi				Tranium)
Occupational (DAC):	Limit	2.00E-11 [DAC = 2.0E-11µCi/ml (U-238), EC= 6.0	E-14uCi/ml]		Radionuclides:		
on-Occupational (EC):				San	npled By:	Stephen Bea	mes
Location:		FS12 Wood Soil Sort Area			y Performed:		
Location.				Activity	y Perioritied.		
Wearer:		NA		NA			NA
Monitored Workers:		6	ial No.	NA		Calibration Due Date:	
Lapel Pump Model:		_		2773		Calibration Due Date:	3/27/2019
	LV-1	Ser	rial No.	2113		Flow R	ite (lpm)
Air Pump Model:		Time			<u>L</u>		Stop
Sample Information			Total (mir	utes)	-	Start 60.0	60.0
Collection Date	Start	Stop 15:00	480		-	60	60
5/18/2018	7:00	15:00	480	100	- +	Avg. Flow Rate (lpm)	60.0
5/22/2018	7:00	Total Time (Tc):	960			Avg. Flow Fund (7 7)	
Sample Volume:	60 finimum sample	_(lpm) e volumes identified are necessary to achie	ve 10% of DAC o	960 (or AE value.			
		Sect	ion II - Anaiy	313 15411	Calibrati	on Due Date	
	T	Serial Number		-	Meter	Detector	Efficiency (a)
strument Information	-	Meter	Dete		12/13/2018	12/13/2018	0.361
Instrument Type		158817	164' N/		N/A	N/A	N/A
L-2929 N/A		N/A	14/	Α		Alpha	3rd Count
			Units	1st	Count	2nd Count	Sta Count
Var	riables, Calcula	ations, Results	Cana	5/3	1/2018		
Count Date			1 = 5 = 5	1	4:00		
Count Time (e.g., noon, 1300,	etc.)		minutes		60		
Sample Count Time (Ts, Tb)	=T		counts		17		
Total Counts			срш		0.28		7 10
Sample Count Rate			cpm		0.10	5.8E+04	5.8E+04
Background Count Rate		(4)	liters		8E+04	3,02.01	
Air Volume (liters)		(A)	cpm		0.18	0.36	0.36
Net count rate		(B)	cpm/dpm		0.36	0.99	0.99
Counter Efficiency		(C) (D)	0.99		0.99	0.36	0.36
Collection Efficiency		(E)	cpm/dpm	-	0.36		
Efficiency = (C) x (D)	(F)	(2)	dpm		0.51		
Activity (dpm) = (B)/(E) Minimum Detectable Activit	v(dnm) = (3+4)	65*SORT(Cb))/(E*T) (G)	dpm	1	0.66 00E-15		
Minimum Detectable Activit Concentration = (F)/(2.22E9	x (A)) (H)	μCi/ml	-	31E-18		A Carrie
Background "Strip" value (F	(1) Date U	- in - 1 in -	uCi/ml		00E-15		
NET Concentration Value =		(F2)	uCi/ml		0.02%		Y
DAC (or AE) Fraction = (F2			-		20E-15		
MDC = MDA/V = (G)/(A)	(1)		μCi/ml		9.03%	1	
MDC Fraction of DAC (or A		(Goal<10%)	VAL	+	Yes		
		Note: Unexpected DAC or A	Yes/No	Of pageiner inter		tion.	
Final Count?		Note: Unexpected DAC or A	E HREIGH - 100				e: 5-31-18

	×10 10 10 10 10 10 10 10 10 10 10 10 10 1		ction I - Colle	ction Data			
Date:	6/5/2018	Sample ID	20180	524-007	1	RWP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14		μCi/ml (1)	Breathing Zone		1 11
Non-Occupational (EC):	[DAC	C = 2.0E-11µCi/ml (U-238), E0	= 6.0E-14uCi/ml			_	
Location:		FS12 SCA Boundary			Radionuclides	DU (Depleted	Uranium)
Wearer:					Sampled By:	David Be	rres
		NA		A	Activity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.		NA	0.12	1 41 7
Air Pump Model:	LV-1		Serial No.		2591	Calibration Due Date:	NA
Sample Information					.591	Calibration Due Date:	3/27/2019
Collection Date	Start	Time	3200			Flow Ra	ite (lpm)
5/23/2018	7:00	Stop 15:00	Total (n			Start	Stop
5/24/2018	7:00	15:00	48			60.0	60.0
		Total Time (Tc):	48 96		1	60	60
		(10).	30	0	4	Avg. Flow Rate (lpm)	60.0
Instrument Type		Serial Number	tion II - Analy	sis Data	Calibra	tion Due Date	
		Meter	Detec	tor	Meter	Detector	TOTAL CON
L-2929 N/A		58817	1647	36	1/10/2019	1/10/2019	Efficiency (a) 0.361
IVA		N/A	N/A		N/A	N/A	N/A
Variable	es, Calculations, Resu	lte I				Alpha	1071
Date	on cumitous, reco	113	Units		Count	2nd Count	3rd Count
Time (e.g., noon, 1300, etc.)				10.15	5/2018		
e Count Time (Ts, Tb) = T			minutes		0:00 PM 60		
					00		
Counts			counts		15		
Count Rate			counts		15		
Count Rate				0			
Count Rate	(A)		cpm cpm liters	0	0.25	5.8E+04	5.8E+04
e Count Rate round Count Rate hume (liters) unt rate	(B)		cpm cpm liters cpm	0 0 5.8 0	0.25 0.10 E+04 0.15	5.8E+04	5.8E+04
e Count Rate ound Count Rate lume (liters)	(B) (C)		cpm cpm liters cpm cpm	0 0 5.8 0	0.25 0.10 E+04 0.15	5.8E+04 0.36	5.8E+04 0.36
c Count Rate cound Count Rate lume (liters) unt rate r Efficiency ion Efficiency acy = (C) x (D)	(B)		cpm cpm liters cpm cpm/dpm 0.99	0 0 5.8 0 0	0.25 0.10 E+04 0.15 0.36	0.36 0.99	
c Count Rate cound Count Rate lume (liters) unt rate r Efficiency ion Efficiency cy = (C) x (D) r (dpm) = (B)/(E)	(B) (C) (D) (E)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	0 0 5.8 0 0 0	0.25 0.10 E+04 0.15 0.36 0.99	0.36	0.36
c Count Rate cound Count Rate lume (liters) unt rate r Efficiency ion Efficiency cy = (C) x (D) r (dpm) = (B)(E) und Count Rate coun	(B) (C) (D) (E))/(E*T) (G)	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0 5.8 0 0 0 0	0.25 0.10 E+04 0.15 0.36 0.99	0.36 0.99	0.36 0.99
c Count Rate cound Count Rate lume (liters) unt rate r Efficiency ion Efficiency ney = (C) x (D) r (dpm) = (B)/(E) um Detectable Activity (dpm) tration = (F)/(2.22E9 x (A))	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb))/(E*T) (G)	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	0 0 5.8 0 0 0 0 0	0.25 0.10 E+04 0.15 0.36 0.99 0.36 0.42	0.36 0.99	0.36 0.99
c Count Rate cound Count Rate lume (liters) unt rate r Efficiency ion Efficiency (cy = (C) x (D) (dpm) = (B)(E) und Detectable Activity (dpm) tration = (F)(2.22E9 x (A)) cound "Strip" value (F.1)	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb) (H) Date Updated)/(E*T) (G) 4/20-4/21	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0 0 5.8 0 0 0 0 0 0 0 3.28	0.25 0.10 E+04 0.15 0.36 0.99	0.36 0.99	0.36 0.99
c Count Rate cound Count Rate lume (liters) ant rate r Efficiency ion Efficiency ion (C) x (D) r (dpm) = (B)(E) am Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) ound "Strip" value (F.1)	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb) (H) Date Updated		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	0 0 5.8 0 0 0 0 0. 0. 0. 3.28 7.31	0.25 0.10 E+04 0.15 0.36 0.99 0.36 0.42 0.66 E-15	0.36 0.99	0.36 0.99
c Count Rate cound Count Rate lume (liters) ant rate r Efficiency ion Efficiency ion (C) x (D) r (dpm) = (B)/(E) am Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) ound "Strip" value (F.1) oncentration Value = (H) - (I r AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb) (H) Date Updated		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0 0 5.8 0 0 0 0 0. 0. 3.28 7.31	0.25 0.10 E+04 0.15 0.36 0.99 0.36 0.42 0.66 E-15 E-18	0.36 0.99	0.36 0.99
c Count Rate round Count Rate lume (liters) unt rate r Efficiency ion Efficiency ocy = (C) x (D) r (dpm) = (B)/(E) unt Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) r AE) Fraction = (F2)/(1) MDA/V = (G)/(A)	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb) (B) Oate Updated (T); (F2)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm pCi/ml	0 0 5.8 0 0 0 0. 0. 3.28 7.31 3.27 5.44	0.25 0.10 E+04 0.15 0.36 0.99 0.36 0.42 0.66 E-15 E-18 E-15 6% E-15	0.36 0.99	0.36 0.99
c Count Rate cound Count Rate lume (liters) ant rate r Efficiency ion Efficiency ion (C) x (D) r (dpm) = (B)/(E) am Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) ound "Strip" value (F.1) oncentration Value = (H) - (I r AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb) (B) Oate Updated (T); (F2)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0 0 5.8 0 0 0 0. 0. 3.28 7.31 3.27 5.4 5.20	0.25 0.10 E+04 0.15 0.36 0.99 0.36 0.42 0.66 E-15 E-18 E-15 6% E-15 6%	0.36 0.99	0.36 0.99
c Count Rate round Count Rate lume (liters) unt rate r Efficiency ion Efficiency ion Efficiency ion (L) x (D) y (dpm) = (B)/(E) um Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) r (AE) Fraction = (F2)/(1) und "Strip" value (F1) oncentration Value = (H) - (H) r (AE) Fraction = (F2)/(1) MDA/V = (G)/(A) action of DAC (or AE) = (J)	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb) (H) Oate Updated (T); (F2) (J) (J) (J) (Goal<10%)	4/20-4/21	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml yCs/No	0 0 0 0 0 0 0 0 0 3.28 7.31 3.27 5.40 8.60	0.25 0.10 E+04 0.15 0.36 0.99 0.36 0.42 0.66 0.66 0.66 E-15 E-15 E-15 E-15 E-15 E-15 E-15 E-16 E-15	0.36 0.99 0.36	0.36 0.99
c Count Rate round Count Rate lume (liters) unt rate r Efficiency ion Efficiency ion Efficiency ion (L) x (D) y (dpm) = (B)/(E) um Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) r (AE) Fraction = (F2)/(1) und "Strip" value (F1) oncentration Value = (H) - (H) r (AE) Fraction = (F2)/(1) MDA/V = (G)/(A) action of DAC (or AE) = (J)	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb) (H) Oate Updated (T); (F2) (J) (J) (J) (Goal<10%)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml yCs/No	0 0 0 0 0 0 0 0 0 3.28 7.31 3.27 5.40 8.60	0.25 0.10 E+04 0.15 0.36 0.99 0.36 0.42 0.66 0.66 0.66 E-15 E-15 E-15 E-15 E-15 E-15 E-15 E-16 E-15	0.36 0.99 0.36	0.36 0.99
c Count Rate cound Count Rate lume (liters) unt rate r Efficiency ion Efficiency ion Efficiency ion = (C) x (D) r (dpm) = (B)/(E) und Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) tration = (F)/(2.22E9 x (A)) tration = (F)/(1 = (H) - (I) r AE) Fraction = (F2)/(I) MDAV = (G)/(A) raction of DAC (or AE) = (J) transport (Jume)	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb) (H) Oate Updated (F1); (F2) (J) (I) (Goal<10%)	4/20-4/21 ** Unexpected DAC or AE fra	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml yCs/No	0 0 0 0 0 0 0 0 0 3.28 7.31 3.27 5.40 8.60	0.25 0.10 E+04 0.15 0.36 0.99 0.36 0.42 0.66 0.66 0.66 E-15 E-15 E-15 E-15 E-15 E-15 E-15 E-16 E-15	0.36 0.99 0.36	0.36 0.99 0.36
c Count Rate round Count Rate lume (liters) unt rate r Efficiency ion Efficiency ion Efficiency ion (L) x (D) y (dpm) = (B)/(E) um Detectable Activity (dpm) tration = (F)/(2.22E9 x (A)) r (AE) Fraction = (F2)/(1) und "Strip" value (F1) oncentration Value = (H) - (H) r (AE) Fraction = (F2)/(1) MDA/V = (G)/(A) action of DAC (or AE) = (J)	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb) (H) Oate Updated (T); (F2) (J) (J) (J) (Goal<10%)	4/20-4/21 ** Unexpected DAC or AE fra	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml yCs/No	0 0 0 0 0 0 0 0 0 3.28 7.31 3.27 5.40 8.60	0.25 0.10 E+04 0.15 0.36 0.99 0.36 0.42 0.66 0.66 0.66 E-15 E-15 E-15 E-15 E-15 E-15 E-15 E-16 E-15	0.36 0.99 0.36	0.36 0.99



		Sect	tion I - Collection	Data			
Date:	6/7/2018	Sample ID:	20180524-0		RWP	2018-001	
Occupational (DAC):	Limit: -	2.00E-11	μCi	ml (I) Breat	hing Zone:		
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14uCi/ml1		ionuclides:		
Location:		FS12 Wood Soil Sort Are	CONTRACTOR OF THE PROPERTY OF				
Wearer,		NA NA	a .	Sampleo	_	Stephen Be	eames
Monitored Workers:		INA		Activity Per	ormed:	NA	
	in the second		TAR Y	NA			
Lapel Pump Model:	NA	5	Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1	S	Serial No.	2773		Calibration Due Date:	3/27/2019
Sample Information		Time			- 1		ate (Ipm)
Collection Date	Start	Stop	Total (minut	:s)	-	Start	Stop
5/23/2018	7:00	15:00	480			60.0	60.0
5/24/2018	7:00	15:00	480			60	60
		Total Time (Tc):	960			Avg. Flow Rate (lpm)	60,0
			Minimum Air Samp	la Valaria a m	100		00.0
Sample Volume:	60 (lpm)			ie volume: 2.81	E+01 Lite	ers	
The second secon			х	960 (minutes)	-	5.8E+04 Lit	ers (A)
Remarks: Min	mum sample volumes	identified are necessary to achie	ve 10% of DAC or Al	value.			1.4
ument Information			ion II - Analysis	Data			
Instrument Type		Serial Number Meter			Calibration	Due Date	
L-2929			Detector	N	feter	Detector	Efficiency (a)
N/A		158817 N/A	164736	12/	3/2018	12/13/2018	0.361
		IVA	N/A		N/A	N/A	N/A
Variabl	les, Calculations, Res	ulte T	***			Alpha	
t Date	co, Carculations, Res	ints	Units	1st Count		2nd Count	3rd Count
t Time (e.g., noon, 1300, etc.)				5/31/2018			
le Count Time (Ts, Tb) = T				8:00			
Counts			minutes	60			
le Count Rate			counts	18			
			cpm				
ground Count Rate				0.30			
ground Count Rate	(4)		cpm	0.08			
ground Count Rate plume (liters) punt rate	(A)		cpm liters	0.08 5.8E+04		5.8E+04	5.8E+04
olume (liters)	(B)		cpm liters cpm	0.08 5.8E+04 0.22		5.8E+04	5.8E+04
olume (liters) ount rate er Efficiency	(B) (C)		cpm liters cpm cpm/dpm	0.08 5.8E+04 0.22 0.36		5.8E+04 0.36	5.8E+04 0.36
olume (liters) ount rate er Efficiency stion Efficiency	(B) (C) (D)		cpm liters cpm cpm/dpm	0.08 5.8E+04 0.22 0.36 0.99			
olume (liters) ount rate er Efficiency etion Efficiency ency = (C) × (D)	(B) (C) (D) (E)		cpm liters cpm cpm/dpm 0.99 cpm/dpm	0.08 5.8E+04 0.22 0.36 0.99 0.36		0.36	0.36
olume (liters) ount rate er Efficiency etion Efficiency ency = (C) × (D) ty (dpm) = (B)/(E)	(B) (C) (D) (E)))VEFT) (C)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61		0.36 0.99	0.36 0.99
olume (liters) ount rate er Efficiency etion Efficiency ency = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm	(B) (C) (D) (E) (F)) = (3+4.65*SQRT(C)	•))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62		0.36 0.99	0.36 0.99
olume (liters) ount rate er Efficiency etion Efficiency ency = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 × (A))	(B) (C) (D) (E) (F)) = (3+4.65*SQRT(C) (H)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62 4.75E-15		0.36 0.99	0.36 0.99
olume (liters) ount rate er Efficiency etion Efficiency ency = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 × (A)) round "Strip" value (F.1)	(B) (C) (D) (E) (F)) = (3+4.65*SQRT(C) (H) Date Updated	b))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62 4.75E-15 7.31E-18		0.36 0.99	0.36 0.99
olume (liters) ount rate er Efficiency etion Efficiency etion Efficiency ety = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 × (A)) round "Strip" value (F.1) Concentration Value = (H) - (Concentration Va	(B) (C) (D) (E) (F)) = (3+4.65*SQRT(Ct) (H) Date Updated		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62 4.75E-15 7.31E-18 4.74E-15		0.36 0.99	0.36 0.99
olume (liters) ount rate er Efficiency etion Efficiency etion Efficiency ety = (C) × (D) by (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 × (A)) round "Strip" value (F.1) concentration Value = (H) - (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F)) = (3+4.65*SQRT(C) (H) Date Updated F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62 4.75E-15 7.31E-18 4.74E-15 0.02%		0.36 0.99	0.36 0.99
polume (liters) point rate er Efficiency etion Efficiency	(B) (C) (D) (E) (F) (F) (F)) = (3+4.65*SQRT(CE) (H) Date Updated F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62 4.75E-15 7.31E-18 4.74E-15 0.02% 4.83E-15		0.36 0.99	0.36 0.99
olume (liters) ount rate er Efficiency etion Efficiency etion Efficiency ety = (C) × (D) by (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 × (A)) round "Strip" value (F.1) concentration Value = (H) - (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) (F) (F)) = (3+4.65*SQRT(CE) (H) Date Updated F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62 4.75E-15 7.31E-18 4.74E-15 0.02% 4.83E-15 0.02%		0.36 0.99	0.36 0.99
polume (liters) point rate er Efficiency etion Efficiency etion Efficiency ety (C) x (D) by (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(B) (C) (D) (E) (F)) = (3+4.65*SQRI(C) (H) Date Updated F1); (F2) (J))/(I) (Goal<10%)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62 4.75E-15 7.31E-18 4.74E-15 0.02% 4.83E-15 0.02% Yes		0.36 0.99	0.36 0.99
polume (liters) point rate er Efficiency etion Efficiency etion Efficiency ety (C) x (D) by (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(B) (C) (D) (E) (F)) = (3+4.65*SQRI(C) (H) Date Updated F1); (F2) (J))/(I) (Goal<10%)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62 4.75E-15 7.31E-18 4.74E-15 0.02% 4.83E-15 0.02% Yes	tification.	0.36 0.99	0.36 0.99
polume (liters) pount rate er Efficiency ertion Efficiency ency = (C) × (D) fy (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 × (A)) round "Strip" value (F, 1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(B) (C) (D) (E) (F)) = (3+4.65*SQRT(C) (H) Date Updated F1); (F2) (J) (J) (Goal<10%)	4/20-4/21 At 20-4/21 At 20-4/21 At 20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62 4.75E-15 7.31E-18 4.74E-15 0.02% 4.83E-15 0.02% Yes	tification.	0.36 0.99 0.36	0.36 0.99 0.36
polume (liters) point rate er Efficiency etion Efficiency etion Efficiency ety (C) x (D) by (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(B) (C) (D) (E) (F)) = (3+4.65*SQRI(C) (H) Date Updated F1); (F2) (J))/(I) (Goal<10%)	4/20-4/21 At 20-4/21 At 20-4/21 At 20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.08 5.8E+04 0.22 0.36 0.99 0.36 0.61 0.62 4.75E-15 7.31E-18 4.74E-15 0.02% 4.83E-15 0.02% Yes	tification.	0.36 0.99 0.36	0.36 0.99



			Section I - Collectio			
Date:	6/7/2018	Sample	ID: 20180529-		RWP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μC	n/ml (I) Breathing Zo	ne: General Area:	Work Area:
Non-Occupational (EC):	[DAC	=2.0E-11µCi/ml (U-238)	, EC= 6.0E-14µCi/ml]	Radionuclid	es: DU (Deplete	d Uranium)
Location:		FS12 SCA Boun	darv	Sampled By:	David B	erres
Wearer:		NA			NA	
Control of the second		NA.			- NA	
Monitored Workers:				NA		
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow R	ate (lpm)
Collection Date	Start	Stop	Total (min	utes)	Start	Stop
5/25/2018	7:00	15:00	480		60.0	60.0
5/29/2018	7:00	15:00	480		60	60
		Total Time (Tc): 960	2.3	Avg. Flow Rate (lpm)	60.0
Sample Volume: Remarks: Min	60 (lpm)	identified are necessary to	xachieve 10% of DAC or	960 (minutes) AE value.	= 5.8E±04 L	iters (A)
			Section II - Analysi	s Data		
trument Information		Serial Numb	~		bration Due Date	
Instrument Type		Meter	Detecto		Detector	Efficiency (a)
L-2929		158817	164736			0.361
N/A		N/A	N/A	N/A	N/A	N/A
Varia	bles, Calculations, Res	alta.	Units	140	Alpha	1 240-4
unt Date	bies, Calculations, Nes	uits	Units	1st Count 6/7/2018	2nd Count	3rd Count
unt Time (e.g., noon, 1300, etc	c)			13:00:00 PM		
nple Count Time (Ts, Tb) = T			minutes	60		
tal Counts			counts	20		
nple Count Rate			cpm	0.33		
ckground Count Rate			cpm	0.08		
Volume (liters)	(A)		liters	5.8E+04	5.8E+04	5.8E+04
Totalio (meis)	1000					
	(B)		cpm	0.25		
count rate	(B) (C)		cpm/dpm	0.25 0.36	0.36	0.36
t count rate unter Efficiency Ilection Efficiency					0.36	0.36 0.99
count rate unter Efficiency lection Efficiency iciency = (C) x (D)	(C) (D) (E)		cpm/dpm	0.36		
t count rate unter Efficiency llection Efficiency iciency = (C) x (D) tivity (dpm) = (B)/(E)	(C) (D) (E)		cpm/dpm 0.99	0.36 0.99 0.36 0.69	0.99	0.99
t count rate unter Efficiency llection Efficiency iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dp	(C) (D) (E) (F) om) = (3+4.65*SQRT(C)	b))/(E*T) (G)	cpm/dpm 0.99 cpm/dpm dpm dpm	0.36 0.99 0.36 0.69	0.99	0.99
t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) fivity (dpm) = (B)/(E) finimum Detectable Activity (dpm) flectoration = (F)/(2.22E9 x (A)	(C) (D) (E) (F) pm) = (3+4.65*SQRT(C)		cpm/dpm 0.99 cpm/dpm dpm dpm uCi/mI	0.36 0.99 0.36 0.69 0.62 5.40E-15	0.99	0.99
t count rate unter Efficiency llection Efficiency iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dpm) neentration = (F)/(2.22E9 x (A) ekground "Strip" value (F.1)	(C) (D) (E) (F) pm) = (3+4.65*SQRT(C) (H) Date Updated	b))/(E* T) (G) 4/20-4/21	cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	0.36 0.99 0.36 0.69 0.62 5.40E-15 7.31E-18	0.99	0.99
t count rate unter Efficiency llection Efficiency liciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dpm) neentration = (F)/(2.22E9 x (A ekground "Strip" value (F.1) T Concentration Value = (H)	(C) (D) (E) (F) pm) = (3+4.65*SQRT(C) (A)) (H) Date Updated 1- (F1); (F2)		cpm/dpm 0.99 cpm/dpm dpm dpm uCi/mI	0.36 0.99 0.36 0.69 0.62 5.40E-15 7.31E-18 5.40E-15	0.99	0.99
t count rate unter Efficiency llection Efficiency liciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dpm) neentration = (F)/(2.22E9 x (A ckground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	(C) (D) (E) (F) pm) = (3+4.65*SQRT(C) (A)) (H) Date Updated (-(F1); (F2)		cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.36 0.99 0.36 0.69 0.62 5.40E-15 7.31E-18 5.40E-15 9.00%	0.99	0.99
t count rate unter Efficiency llection Efficiency liciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dpm) neentration = (F)/(2.22E9 x (A ckground "Strip" value (F.1) T Concentration Value = (H) LC (or AE) Fraction = (F2)/(I) OC = MDA/V = (G)/(A)	(C) (D) (E) (F) pm) = (3+4.65*SQRT(C) (A)) (H) Date Updated 1-(F1); (F2)		cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	0.36 0.99 0.36 0.69 0.62 5.40E-15 7.31E-18 5.40E-15 9.00% 4.83E-15	0.99	0.99
t count rate unter Efficiency llection Efficiency liciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dpm) neentration = (F)/(2.22E9 x (A ckground "Strip" value (F.1) TC Concentration Value = (H) LC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(C) (D) (E) (F) pm) = (3+4.65*SQRT(C) (A)) (H) Date Updated 1-(F1); (F2)		cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.36 0.99 0.36 0.69 0.62 5.40E-15 7.31E-18 5.40E-15 9.00% 4.83E-15 8.05%	0.99	0.99
to count rate unter Efficiency Illection Efficiency Illection Efficiency Illection Efficiency Interest of the state of the	(C) (D) (E) (F) pm) = (3+4.65*SQRT(C) (A)) (H) Date Updated 1-(F1); (F2) (J) (J) (J) (Goal<10%)	4/20-4/21	cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.36 0.99 0.36 0.69 0.62 5.40E-15 7.31E-18 5.40E-15 9.00% 4.83E-15	0.99 0.36	0.99
t count rate unter Efficiency llection Efficiency liciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dpm) nentration = (F)/(2.22E9 x (Ackground "Strip" value (F.1) The Concentration Value = (H) LC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(C) (D) (E) (F) pm) = (3+4.65*SQRT(C) (A)) (H) Date Updated 1-(F1); (F2) (J) (J) (J) (Goal<10%)	4/20-4/21	cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.36 0.99 0.36 0.69 0.62 5.40E-15 7.31E-18 5.40E-15 9.00% 4.83E-15 8.05% No	0.99 0.36	0.99



2.0	1	Sec	tion I - Collect	ion Data			
Date:	6/7/2018	Sample ID:	2018052	9-010	R	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	,	(Cı/ml (I)	Breathing Zone:	General Area:	Work A
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC	= 6.0E-14uCi/ml]		Radionuclides:	_	
Location:		FS12 Wood Soil Sort Are				DU (Depleted	Uranium)
Wearer:		741 A	ea		Sampled By:	Stephen Be	ames
Acres de la Companya		NA NA			Activity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.		NA	Calibration Due Date:	274
Air Pump Model:	LV-1		Serial No.		2773		
Sample Information			22 NV / = X		10	Calibration Due Date:	3/27/2019
Collection Date	Start	Time				Flow Ra	te (lpm)
5/25/2018	7:00	Stop 15:00	Total (mi		-	Start	Stop
5/29/2018	7:00	15:00	480		-	60.0	60.0
		Total Time (Tc):	960		-	60	60
		()/	Minimum Air Sa			Avg. Flow Rate (lpm)	60.0
Remarks: Mini	imum sample volumes	identified are necessary to achie	ion II - Analys				
rument Information		Serial Number	- Tanany	13 Data	Calibert	ion Due Date	
Instrument Type		Meter	Detect	or	Meter		7107 1 1 1
L-2929		158817	16473		12/13/2018	Detector 12/13/2018	Efficiency (a)
N/A		N/A	N/A		N/A	N/A	0,361 N/A
** ***						Alpha	IVA
t Date Variable	es, Calculations, Res	ults	Units	1	st Count	2nd Count	3rd Count
at Time (e.g., noon, 1300, etc.)	· · · · · · · · · · · · · · · · · · ·			- (5/7/2018		
ole Count Time (Ts, Tb) = T			minutes		8:00		
Counts			counts		60		
ole Count Rate			cpm		0.35		
ground Count Rate			cpm		0.08		
olume (liters)	(A)		liters	5	5.8E+04	5.8E+04	5.8E+04
ount rate	(B)		срт		0.27	5,02,07	3.013104
ter Efficiency	(C)		cpm/dpm		0.36	0.36	0.36
ency = (C) x (D)	(D)		0.99		0.99	0.99	0.99
ity (dpm) = (B)/(E)	(E)		cpm/dpm		0.36	0.36	0.36
	(F))=(3+4.65*\$OPT/C)	-))/(EAT) (C)	dpm		0.75		
num Detectable Activity (dom	(H))))(E+1)(G)	dpm	-	0.62		
num Detectable Activity (dpm entration = $(F)/(2.22E9 \times (A))$	(-)	VIII. 2012	μCi/ml uCi/ml		84E-15 31E-18		
pround "Strip" value (F.1)	Date Updated	4/20-4/21					
entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - (4/20-4/21		4.5	845-15		
entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - (4/20-4/21	uCi/ml		84E-15		
entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - ((or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(J)	4/20-4/21	uCi/ml	0	.03%		
entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - ((or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(J)	4/20-4/21		4.8	3.03% B3E-15		
entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - ((or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(J) (Goal<10%)		uCi/ml μCi/ml Yes/No	4.8 0	.03% 83E-15 .02% Yes		
entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - ((or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(J) (Goal<10%)		uCi/ml μCi/ml Yes/No	4.8 0	.03% 83E-15 .02% Yes		
entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - ((or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(J) (J) (J) (I) (Goal<10%) No	te: Unexpected DAC or AE fra	uCi/ml μCi/ml Yes/No	4.8 0	.03% 83E-15 .02% Yes	Date:	6-7-18
ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J. Count?	(J) (J) (J) (I) (Goal<10%) No	ite: Unexpected DAC or AE fra	uCi/ml μCi/ml Yes/No	4.8 0	.03% 83E-15 .02% Yes		6-7-18



		Section	on I - Collection	n Data			
Date:	6/8/2013	Sample ID:	20180531	-011	RWP:	2018-001	
Occupational (DAC):	Limit:	6.00E-14		Cu/ml (I)	Breathing Zone:		Work Area:
Non-Occupational (EC):	[DA	AC = 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]		Radionuclides:	DU (Depleted	Uranium)
Location;		FS12 SCA Boundary			Sampled By:	David Ben	es
		62.		A	Activity Performed:	NA	
Monitored Workers:				NA			
	7.1	c	erial No.		NA	Calibration Due Date:	NA
Lapel Pump Model:	NA					Calibration Due Date:	
Air Pump Model:	LV-1	S	erial No.		2391		
Sample Information		Time			4 -	Flow Ra	
Collection Date	Start	Stop	Total (mi	nutes)	4 -	Start	Stop 60.0
5/30/2018	7:00	15:00	480			60.0	
5/31/2018	7:00	15:00	480	_	- I	60	60.0
		Total Time (Tc):	960			Avg. Flow Rate (lpm)	00.0
Sample Volume:		nes identified are necessary to achie	ve 10% of DAC o				
		Serial Number			Calibration	n Due Date	
trument Information		Meter	Detec	tor	Meter	Detector	Efficiency (a)
Instrument Type L-2929		158817	1647		1/10/2019	1/10/2019	0.361
N/A		N/A	N/A		N/A	N/A	N/A
1014						Alpha	
Varia	bles, Calculations,	Results	Units		1st Count	2nd Count	3rd Count
unt Date					6/8/2018		
unt Time (e.g., noon, 1300, et	c.)		N. C. C.	13	3:00:00 PM		
mple Count Time (Ts, Tb) = T		The state of the s	minutes		60		
tal Counts			counts		17		
mple Count Rate			cpm		0.28		
ckground Count Rate			cpm		0.10		5.8E+04
Volume (liters)	(A)		liters		5.8E+04	5.8E+04	3.8E704
et count rate	(B)		cpm		0.18	0.36	0.36
unter Efficiency	(C)		cpm/dpm		0.36	0.99	0.99
Illection Efficiency	(D)		0.99		0.99	0,36	0,36
$ficiency = (C) \times (D)$	(E)		cpm/dpm		0.50	0,30	
ctivity (dpm) = (B)/(E)	(F)	mich Nicrem (C)	dpm	_	0.66		
inimum Detectable Activity (d		(1(Cb))/(E+1) (G)	dpm μCi/ml		3.94E-15		
oncentration = (F)/(2.22E9 x (4/20-4/21	uCi/ml	-	7.31E-18		
ackground "Strip" value (F.1)		4/20-4/21	uCi/ml	-	3.93E-15		
ET Concentration Value = (H			ucom		6.55%		
AC (or AE) Fraction = (F2)/(I			μCi/ml		5.20E-15		
DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	(J) = (J)/(I) (Goal<1	1%)	рсиш	1	8.66%		
nal Count?	-(3)(1) (Guai<1)	(10)	Yes/No		No	Yes	
na Count		Note: Unexpected DAC or AE		requires imr			
Performed By	Ster	0	follo	В			6-8-18
Reviewed By						Date:	



		Sec	ction I - Collect	ion Data			
Date:	6/8/2018	Sample ID:			R	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11		Cı/ml (I)	Breathing Zone:		5
Non-Occupational (EC):	ī	DAC = 2.0E-11μCi/ml (U-238), EC	C= 6.0E-14μCi/ml]		Radionuclides:		
Location:		FS12 Wood Soil Sort A					ed Uranium)
Wearer:		The state of the s	ica		Sampled By:	Stephen I	Beames
Monitored Workers:		NA		Acti	vity Performed:	NA NA	
Lapel Pump Model:	***			NA			
	NA		Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	277	3	Calibration Due Date:	
Sample Information	A STATE	Time					
Collection Date	Start	Stop	Total (mi	nutae)	4		Rate (lpm)
5/30/2018	7:00	15:00	480		-	Start	Stop
5/31/2018	7:00	15:00	480		1	60.0	60.0
		Total Time (Tc):	960			60 Avg. Flow Rate (lpm)	60.0
Remarks: Mini	mum sample volu	mes identified are necessary to achi		AE value.	ninutes) =	5.8E+04 L	iters (A)
rument Information			tion II - Analys	is Data			
Instrument Type		Serial Number Meter	-			on Due Date	
L-2929		158817	Detecte		Meter	Detector	Efficiency (a)
N/A		N/A	16473 N/A		12/13/2018	12/13/2018	0.361
			I I		N/A	N/A	N/A
	es, Calculations, I	Results	Units	1st Co	ont I	Alpha 2nd Count	1 210
nt Date nt Time (e.g., noon, 1300, etc.)				6/8/20		and Count	3rd Count
ple Count Time (Ts, Tb) = T				10:0	0		
			minutes				
Counts			nanotes	60			
			counts	9			
l Counts ple Count Rate ground Count Rate			counts	9 0.15			
Counts ple Count Rate ground Count Rate /olume (liters)	(A)		counts	9 0.15 0.10		507.04	
l Counts ple Count Rate ground Count Rate /olume (liters) count rate	(B)		counts cpm cpm	9 0.15	04	5.8E+04	5.8E+04
l Counts ple Count Rate ground Count Rate /olume (liters) count rate ster Efficiency	(B) (C)		counts cpm cpm liters	9 0.15 0.10 5.8E+	04		
l Counts ple Count Rate ground Count Rate /olume (liters) count rate ster Efficiency	(B) (C) (D)		counts cpm cpm liters cpm cpm/dpm 0.99	9 0.15 0.10 5.8E+4 0.05	04	5.8E+04 0.36 0.99	0.36
l Counts ple Count Rate ground Count Rate /olume (liters) count rate ster Efficiency section Efficiency incry = (C) x (D)	(B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	9 0.15 0.10 5.8E++ 0.05 0.36 0.99	04	0.36	
l Counts ple Count Rate ground Count Rate /olume (liters) count rate ster Efficiency section Efficiency section Efficiency ster(C) x (D) sity (dpm) = (B)/(E) num Detectable Activity (dpm)	(B) (C) (D) (E)	(Cb)//(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	9 0.15 0.10 5.8E++ 0.05 0.36 0.99 0.36	04	0.36 0.99	0.36 0.99
l Counts ple Count Rate ground Count Rate folume (liters) count rate atter Efficiency testion Efficiency tiency = (C) x (D) ity (dpm) = (B)/(E) mum Detectable Activity (dpm) entration = (F)/(2.22E9 x (A))	(B) (C) (D) (E)	(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	9 0.15 0.10 5.8E+4 0.05 0.36 0.99 0.36 0.14	04	0.36 0.99	0.36 0.99
l Counts ple Count Rate ground Count Rate folume (liters) count rate ster Efficiency settion Efficiency settion Efficiency inty (dpm) = (B)/(E) num Detectable Activity (dpm) ground "Strip" value (F.1)	(B) (C) (D) (E) (F) (= (3+4.65*SQRT) (H) Date Updated	(Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	9 0.15 0.10 5.8E+4 0.05 0.36 0.99 0.36 0.14 0.66	15	0.36 0.99	0.36 0.99
l Counts ple Count Rate ground Count Rate folume (liters) count rate ster Efficiency tetion Efficiency iency = (C) x (D) inty (dpm) = (B)/(E) num Detectable Activity (dpm) ground "Strip" value (F.1) Concentration Value = (H) - (I)	(B) (C) (D) (E) (F) (= (3+4.65*SQRT) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	9 0.15 0.10 5.8E+4 0.05 0.36 0.99 0.36 0.14 0.66 1.09E-	15	0.36 0.99	0.36 0.99
l Counts ple Count Rate ground Count Rate folume (liters) count rate ster Efficiency section Efficiency section Efficiency inty (dpm) = (B)/(E) num Detectable Activity (dpm) entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - (I (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) (= (3+4.65*SQRT) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	9 0.15 0.10 5.8E+4 0.05 0.36 0.99 0.36 0.14 0.66 1.09E- 7.31E-1	15 8 15	0.36 0.99	0.36 0.99
l Counts ple Count Rate ground Count Rate folume (liters) count rate the Efficiency tetron Efficiency tetron Efficiency tency = (C) x (D) tency = (C) x (D) tency = (C) x (D) tency = (F)/(2.22E9 x (A)) tency = ((B) (C) (D) (E) (F) (F) (H) Date Updated (F1); (F2)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	9 0.15 0.10 5.8E+4 0.05 0.36 0.99 0.36 0.14 0.66 1.09E- 7.31E-1 1.09E- 0.01%	15 18 15 6	0.36 0.99	0.36 0.99
l Counts ple Count Rate ground Count Rate folume (liters) count rate ster Efficiency section Efficiency section Efficiency inty (dpm) = (B)/(E) num Detectable Activity (dpm) entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - (I (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) (F) (H) Date Updated (F1); (F2)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	9 0.15 0.10 5.8E+4 0.05 0.36 0.99 0.36 0.14 0.66 1.09E- 7.31E-1	15 18 15 6	0.36 0.99	0.36 0.99
l Counts ple Count Rate ground Count Rate folume (liters) count rate the Efficiency tetron Efficiency eincy = (C) x (D) inty (dpm) = (B)/(E) num Detectable Activity (dpm) ground "Strip" value (F.1) Concentration Value = (H) - (I) (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J)	(B) (C) (D) (E) (F) (E) (H) Date Updated (F1); (F2) (J) (J) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	9 0.15 0.10 5.8E+4 0.05 0.36 0.99 0.36 0.14 0.66 1.09E- 7.31E-1 1.09E- 0.01% 5.20E-	15 18 15 6 15 6	0.36 0.99	0.36 0.99
l Counts ple Count Rate ground Count Rate folume (liters) count rate the Efficiency tetron Efficiency eincy = (C) x (D) inty (dpm) = (B)/(E) num Detectable Activity (dpm) ground "Strip" value (F.1) Concentration Value = (H) - (I) (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J)	(B) (C) (D) (E) (F) (E) (H) Date Updated (F1); (F2) (J) (J) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	9 0.15 0.10 5.8E+4 0.05 0.36 0.99 0.36 0.14 0.66 1.09E- 7.31E-1 1.09E- 0.01% 5.20E-	15 18 15 6 15 6	0.36 0.99	0.36 0.99



			tion I - Collection	Data			
Date:	6/12/2018	Sample ID:	20180601-0	13	RWF	2018-001	
Occupational (DAC):	Limit;	6.00E-14	μCi	mi (I) B	reathing Zone:	General Area:	Work A
Non-Occupational (EC):	[DAG	C = 2.0E-11μCi/ml (U-238), EC=	= 6.0E-14uCi/m[]			DU (Depleted	
Location			Tipe Tipe Time			DU (Depleted	()ranium)
_				Sam	pled By:	David Ber	res
Wearer:		NA		Activity	Activity Performed: NA		
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-I		Serial No.	2591		Calibration Due Date:	
Sample Information		Time				the state of the s	
Collection Date	Start	Stop	Total (minut	400	<u> </u>	Flow Ra	
6/1/2018	7:00	15:00	480	25)	-	Start	Stop
6/4/2018	7:00	15:00	480			60.0	60.0
		Total Time (Tc):	960			Avg. Flow Rate (lpm)	60.0
	minum sample volumes		ion II - Analysis				
ument Information		Serial Number			Calibration	Due Date	
Instrument Type		Meter	Detector	r Meter		Detector	Efficiency (a)
L-2929 N/A		158817	164736		1/10/2019	1/10/2019	0.361
IN/A		N/A	N/A		N/A	N/A	N/A
Variab	les, Calculations, Resi	ulte	Units			Alpha	
nt Date		ins	Units	6/12/2018		2nd Count	3rd Count
t Time (e.g., noon, 1300, etc.)			10:00			
le Count Time (Ts, Tb) = T			minutes	60			
Counts			counts	21			
le Count Rate			cpm	0.35			
ground Count Rate	200		cpm	0.10			
olume (liters) (A)			liters	5.8E+04		5.8E+04	5.8E+04
ount rate (B)			cpm	0.25			
	The state of the s		cpm/dpm	0.36		0.36	0.36
ter Efficiency			0.00				0.99
ter Efficiency ction Efficiency	(D)		0.99	0.99		0.99	
ter Efficiency ction Efficiency ency = (C) x (D)			cpm/dpm	0.99 0.36		0.36	0.36
ter Efficiency ction Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpn	(D) (E) (F) n) = (3+4.65*SQRT(Ch))/(E*T) (G)	cpm/dpm dpm	0.99 0.36 0.70			
ter Efficiency ction Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpn entration = (F)/(2.22E9 x (A))	(D) (E) (F) n) = (3+4.65*SQRT(Ch))/(E*T) (G)	cpm/dpm dpm dpm	0.99 0.36 0.70 0.66			
ter Efficiency ction Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpn entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1)	(D) (E) (F) (n) = (3+4.65*SQRT(Ct) (H) Date Updated	5))/(E*T) (G) 4/20-4/21	cpm/dpm dpm	0.99 0.36 0.70			
ter Efficiency ction Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpn entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) -	(D) (E) (F) (n) = (3+4.65*SQRT(Ct) (H) Date Updated		cpm/dpm dpm dpm μCi/ml	0.99 0.36 0.70 0.66 5.47E-15			
ter Efficiency ction Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpn entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I)	(D) (E) (F) a) = (3+4.65*SQRT(Cb) (H) Date Updated (F1); (F2)		cpm/dpm dpm dpm pCi/ml uCi/ml	0.99 0.36 0.70 0.66 5.47E-15 7.31E-18 5.46E-15 9.11%			
ter Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(D) (E) (F) n) = (3+4.65*SQRT(Ct) (H) Date Updated (F1); (F2)		cpm/dpm dpm dpm pCi/ml uCi/ml	0.99 0.36 0.70 0.66 5.47E-15 7.31E-18 5.46E-15			
ter Efficiency ction Efficiency ency = (C) x (D) thy (dpm) = (B)/(E) thum Detectable Activity (dpn entration = (F)/(2.22E9 x (A) tround "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (A)	(D) (E) (F) n) = (3+4.65*SQRT(Ct) (H) Date Updated (F1); (F2)		cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml	0.99 0.36 0.70 0.66 5.47E-15 7.31E-18 5.46E-15 9.11%			
er Efficiency ettion Efficiency ency = (C) x (D) ty (dpm) = (B)/(E) turn Detectable Activity (dpm ntration = (F)/(2.22E9 x (A) round "Strip" value (F.1) Concentration Value = (H) - or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(D) (E) (F) n) = (3+4.65*SQRT(Ct) (H) Date Updated (F1); (F2) (J) (J) (J)(I) (Goal<10%)		cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml γCi/ml	0.99 0.36 0.70 0.66 5.47E-15 7.31E-18 5.46E-15 9.11% 5.20E-15 8.66% No			

Occupational (DAC):	6/12/2018	Sample ID:	20180601-	014	RWP	2018-001	
	Limit:				Breathing Zone:		West Asse
Non-Occupational (EC):		2.00E-11		(-)		_	
Non-Occupational (EC):	[DAC	[DAC = $2.0E-11\mu$ Ci/ml (U-238), EC= $6.0E-14\mu$ Ci/ml]			Radionuclides: DU (Depleted Uranium)		Uranium)
Location:		FS12 Wood Soil Sort Area		Sa	ampled By:	Stephen Bea	ames
Wearer:	NA				ity Performed:	NA	
Monitored Workers:				NA			
	NIA			-		to the second	
Lapel Pump Model:	NA		Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2773	1	Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	te (Ipm)
Collection Date	Start	Stop	Total (minu	ites)		Start	Stop
6/1/2018	7;00	15:00	480			60.0	60.0
6/4/2018	7:00	15:00	480			60	60
		Total Time (Tc):	960			Avg. Flow Rate (lpm)	60.0
			Minimum Air San	ple Volume:	3.0E+01 Lit	ers	
Sample Volume:	60 (lpm)		x	i	ninutes) =		445
		ii da ta a a a a a a a a a a a a a a a a a	_		inutes) =	5.8E+04 Lite	ers (A)
Remarks: Minir	num sample volumes	identified are necessary to achie	ve 10% of DAC or	AE value.			
		Sect	ion II - Analysis	Data			
rument Information		Serial Number	ion H - Allalysi.	Data	C-13	p. p.	
Instrument Type		Meter	Detector		Calibration Meter		P.O
L-2929		158817	164736		12/13/2018	Detector 12/13/2018	Efficiency (a) 0.361
N/A		N/A	N/A		N/A	N/A	N/A
					1911	Alpha	10/4
Variable	es, Calculations, Res	ults	Units	1st Co	unt	2nd Count	3rd Count
unt Date				6/12/20	018		
int Time (e.g., noon, 1300, etc.)				11:0	0		
pple Count Time (Ts, Tb) = T			minutes	60			
al Counts			counts	- 11	1 1 1		
ple Count Rate			cpm	0.18			
kground Count Rate			cpm	0.10			
Volume (liters)			liters	5.8E+	04	5.8E+04	5.8E+04
count rate	(B)		cpm	0.08			
nter Efficiency	(C)		cpm/dpm	0.36		0,36	0.36
lection Efficiency	(D)		0.99	0.99		0.99	0.99
ciency = (C) x (D)			cpm/dpm	0.36		0.36	0.36
vity (dpm) = (B)/(E) (F)		SSECTION COS	dpm	0.22			
imum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G)		b))/(E*1) (G)	dpm	0.66			
entration = (F)(2.22E9 x (A)) (H) ground "Strip" value (F.1) Date Updated 4/20-4/21		4/20-4/21	μCi/ml	1.75E-15			
Concentration Value = (H) - (110 111 000 0000		uCi/ml	7.31E-18 1.74E-15			
(or AE) Fraction = (F2)/(I)	(, ,		uci/mi				
, (* a) (1)	(J)		μCi/ml	0.019 5.20F			
C = MDA/V = (G)/(A)			ролии	5.20E-15 0.03%			
				0.00			
C Fraction of DAC (or AE) = (J			Yes/No	V			
C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (J) al Count?	N	ote: Unexpected DAC or AE fr	Yes/No	Yes			

Date:	6/20/2018	Sample ID:	20180608-015	RWI	2018-001	
Occupational (DAC):			μCi/ml (I)			Work Area:
		6.00E-14		_		
Non-Occupational (EC):	[DAC	DAC = 2.0E-11μCi/ml (U-238), EC= 6.0E-14μCi/ml]		and the second s	DU (Depleted Uranium)	
Location:		FS12 SCA Boundary		Sampled By: David		res
				Activity Performed:	NA	
Monitored Workers:			NA.			
				NA	Calibration Due Date:	NA
Lapel Pump Model:			erial No.	-		The state of the s
Air Pump Model:	LV-1	S	erial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
6/5/2018	7:00	15:00	480		60.0	60.0
6/8/2018	7:00	15:00	480		60	60
		Total Time (Tc):	960		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample Ve	olume: 1.0E+04 L	iters	
Sample Volume:	60 (lpm)		x 960	(minutes) =	5.8E+04 Lit	ers (A)
			. J. C. 10			
Remarks: Mi	nimum sample volume	s identified are necessary to achie	ve 10% of DAC or AE val	ue.		
		Sect	ion II - Analysis Dat	a		
trument Information		Serial Number			n Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.361
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varis	bles, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
ount Date				6/18/2018		
ount Time (e.g., noon, 1300, etc.)				10:00		
nple Count Time (Ts, Tb) = T			minutes	60		
al Counts			counts	18		
nple Count Rate			cpm	0.30		
	ground Count Rate		epm	0.10	5 OF 104	5.8E+04
/olume (liters) (A)			liters	5.8E+04	5,8E+04	3.8ET04
count rate	(B)		epm	0.20	0.36	0.36
ter Efficiency (C)			cpm/dpm 0.99	0.99	0.99	0.99
ection Efficiency (D) ciency = (C) x (D) (E)			cpm/dpm	0.36	0.36	0.36
				0.56	0,00	
iciency = (C) x (D)	(F)		dom I			
iciency = (C) x (D) tivity (dpm) = (B)/(E)		Cb))/(E*T) (G)	dpm dpm	0.66		
iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d	pm) = (3+4.65*SQRT(Cb))/(E*T) (G)				
iciency = (C) x (D) ivity (dpm) = (B)/(E) immum Detectable Activity (d icentration = (F)/(2.22E9 x (A))	pm) = (3+4.65*SQRT(4 A)) (H)	Cb))/(E*T) (G) 4/20-4/21	dpm	0.66		
iciency = (C) x (D) ivity (dpm) = (B)/(E) immum Detectable Activity (d icentration = (F)/(2.22E9 x (L ickground "Strip" value (F.1)	pm) = (3+4.65*SQRT(4A)) (H) Date Updated		dpm μCi/ml	0.66 4.38E-15		
iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (a kground "Strip" value (F.1) T Concentration Value = (H	pm) = (3+4.65*SQRT(4A)) (H) Date Updated () - (F1); (F2)		dpm μCi/ml uCi/ml	0.66 4.38E-15 7.31E-18 4.37E-15 7.28%		
iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) The Concentration Value = (H.1) Concentration = (F2)/(I) Concentration = (F2)/(I) Concentration = (F2)/(I) Concentration = (F2)/(I)	pm) = (3+4.65*SQRT(4A)) (H) Date Updated 0 - (F1); (F2)		dpm μCi/ml uCi/ml	0.66 4.38E-15 7.31E-18 4.37E-15 7.28% 5.20E-15		
iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (ckground "Strip" value (F.1) CT Concentration Value = (H. AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) = (AC (or AE	pm) = (3+4.65*SQRT(4A)) (H) Date Updated 0 - (F1); (F2)		dpm μCi/ml uCi/ml uCi/ml	0.66 4.38E-15 7.31E-18 4.37E-15 7.28% 5.20E-15 8.66%		
iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (d ckground "Strip" value (F.1) T Concentration Value = (H C (or AE) Fraction = (F2)/(I) OC = MDA/V = (G)/(A)	pm) = (3+4.65*SQRT(4A)) (H) Date Updated 0 - (F1); (F2)		dpm μCi/ml uCi/ml uCi/ml	0.66 4.38E-15 7.31E-18 4.37E-15 7.28% 5.20E-15	Yes	
ciency = (C) x (D) ivity (dpm) = (B)/(E) imum Detectable Activity (d incentration = (F)/(2.22E9 x (d ikground "Strip" value (F.1) T Concentration Value = (H C (or AE) Fraction = (F2)/(I) iC = MDA/V = (G)/(A) iC Fraction of DAC (or AE)	pm) = (3+4.65*SQRT(4A)) (H) Date Updated 0 - (F1); (F2) (J) = (J)/(I) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE f	dpm μCi/ml uCi/ml uCi/ml μCi/ml μCi/ml Yes/No	0.66 4.38E-15 7.31E-18 4.37E-15 7.28% 5.20E-15 8.66% No		
ciency = (C) x (D) (vity (dpm) = (B)/(E) imum Detectable Activity (d centration = (F)/(2.22E9 x (d kground "Strip" value (F.1) F Concentration Value = (H C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE)	pm) = (3+4.65*SQRT(4A)) (H) Date Updated 0 - (F1); (F2) (J) = (J)/(I) (Goal<10%)	4/20-4/21	dpm μCi/ml uCi/ml uCi/ml μCi/ml μCi/ml Yes/No	0.66 4.38E-15 7.31E-18 4.37E-15 7.28% 5.20E-15 8.66% No		6.20-18

		Sec	tion I - Collecti	on Data			
Date:	6/20/2018	Sample ID:	2018060	3-016	R	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	μ	Ci/ml (1)	Breathing Zone:		Work
Non-Occupational (EC):	[DA	C = 2.0E-11μCi/ml (U-238), EC	= 6.0E-14uCi/ml)		Radionuclides:		The State of
Location:		FS12 Wood Soil Sort Ar			2 - 2 10 -		
Wearer:			ea		The second second	Stephen Be	ames
		NA		Acti	ivity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.	NA NA	1	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	277	3	Calibration Due Date:	
Sample Information		Time					
Collection Date	Start	Stop	Total (min	utaa)		Flow Ra	
6/5/2018	7:00	15:00	480	utes)	1.5	Start	Stop
6/8/2018	7:00	15:00	480			60.0	60.0
		Total Time (Tc):	960			Avg. Flow Rate (Ipm)	60.0
			Minimum Air Sa	mple Volume:	3.0E+01	Liters	
Sample Volume:	60 (lpm)		x	960 (minutes) =		
Remarks: Mini		identified are necessary to achie	_		inimutes) =	5.8E+04 Lite	ers (A)
remares. Mili	mum sample volumes	identified are necessary to achie	ve 10% of DAC or	AE value.			
		Sect	ion II - Analysi	s Data			
rument Information		Serial Number			Calibrat	ion Due Date	
Instrument Type		Meter	Detecto	r	Meter	Detector	Efficiency (a)
L-2929	1 P	158817	164736		12/13/2018	12/13/2018	0.361
N/A		N/A	N/A		N/A	N/A	N/A
V	61.14					Alpha	
it Date	es, Calculations, Res	ults	Units	1st C		2nd Count	3rd Count
t Time (e.g., noon, 1300, etc.)				6/18/2			
ole Count Time (Ts, Tb) = T			articles t	11:			
Counts			counts	60			
ole Count Rate			cpm	0.2			
ground Count Rate			cpm	0.1			
olume (liters)	(A)		liters	5.8E-		5 90 104	
ount rate	(B)		cpm	0.1		5.8E+04	5.8E+04
ter Efficiency	(C)		cpm/dpm	0.3		0.36	0.36
ction Efficiency	(D)		0.99	0.9		0,99	0.36
ency = (C) x (D)	(E)		cpm/dpm	0.3	6	0,36	0.36
ity (dpm) = (B)/(E)	(F)		dpm	0.4	2		0,00
num Detectable Activity (dpm		b))/(E*T) (G)	dpm	0.6	6		
ground "Strip" value (F.1)	(H) Date Updated	400 401	μCi/ml	3.28E			114
Concentration Value = (H) - (4/20-4/21	uCi/ml	7,31E			
(or AE) Fraction = (F2)/(I)	(F4)		uCi/ml	3.27E			
= MDA/V = (G)/(A)	(J)		0:1-1	0.02			
Fraction of DAC (or AE) = (J			μCi/ml	5.20E			
	12 12 12 12 13		Vac/No	0.03	-		
Count?			Yes/No	Yes			
	No	te: Unexpected DAC or AE fra	ction > 100% requ	ires immediate	RSO notification		

Date:	6/25/2018	Sample ID:	20180614-01	7	RWP:	2018-001	
Occupational (DAC):	Limit:		μСι/п		g Zone:		W. J. A.
		6.00E-14		breatnin	g Zone:	General Area:	Work Ar
Non-Occupational (EC):	[DA	$C = 2.0E-11\mu Ci/ml$ (U-238), EC=	6.0E-14µCi/ml]	Radion	uclides:	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary		Sampled B	r.	David Ber	res
Wearer:		NA		Activity Perfor	ned:	NA	
Monitored Workers:				NA			
The factor of the control of	NIA.					. 7.45 27 42 7	1.64.1
Lapel Pump Model:		Se	erial No.	NA	Cal	ibration Due Date:	NA
Air Pump Model:	LV-1	Se	erial No.	2591	Cal	ibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes	3)		Start	Stop
6/11/2018	7:00	15:00	480			60.0	60.0
6/14/2018	7:00	15:00	480			60	60
		Total Time (Tc):	960		Av	g. Flow Rate (lpm)	60.0
rument Information	umum sampie volume		on II - Analysis I	5.0	Calibratica	Patr I	
Instrument Type		Serial Number Meter	District	74	Calibration Du		W.W. 1
L-2929		158817	Detector 164736	1/10/		Detector 1/10/2019	Efficiency (a)
N/A		N/A	N/A	1/10/ N		N/A	0.361 N/A
			T T	1 10		Alpha	IN/A
Varial	oles, Calculations, Re	sults	Units	1st Count		2nd Count	3rd Count
nt Date				6/25/2018			
nt Time (e.g., noon, 1300, etc	.)			10:00			
ple Count Time (Ts, Tb) = T			minutes	60			
Counts			counts	8			
ground Count Rate			epm	0.13	_		
olume (liters)	(A)		epm	0.01		* AMCA.	
count rate	(B)		liters cpm	5.8E+04 0.13	_	5.8E+04	5.8E+04
iter Efficiency	(C)		epm/dpm	0.36		0.36	0.36
ection Efficiency	(D)		0.99	0.99		0.99	0.99
$iency = (C) \times (D)$	(E)		cpm/dpm	0.36		0.36	0.36
vity (dpm) = (B)/(E)	(F)		dpm	0.36			
mum Detectable Activity (dpr		Cb))/(E*T) (G)	dpm	0.26			
centration = $(F)/(2.22E9 \times (A))$			μCi/ml	2.80E-15			
ground "Strip" value (F.1)		4/20-4/21	uCi/ml	7.31E-18			
Concentration Value = (H) -	· (F1); (F2)		uCi/ml	2.79E-15			
(or AE) Fraction = $(F2)/(I)$	/n		071.1	4.66%		T	N
C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = ((J) (J)/(I) (Goal<10%)		μCi/ml	2.00E-15			
Count?	(Goal -1076)		Yes/No	3.34%		V	
	1	ote: Unexpected DAC or AE fra		No es immediate RSO not	ification	Yes	
Performed By:	Steve &		1 h	a materiale rigo no	unduvii.	Date:	6-25-18
Reviewed By:	ES Sice	news 15				Date:	6-25-18

	CIDT IDOLO		on I - Collection Da		2010.001	
Date:	6/25/2018	Sample ID:	5.00	RWI		
Occupational (DAC):	Limit:	2.00E-11	μCı/mi (I	Breathing Zone:	General Area:	Work Area
Non-Occupational (EC):	[DAC	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 Wood Soil Sort Area		Sampled By:	Stephen Bea	imes
-						
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-I	Se	erial No.	2773	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes)	-	Start	Stop
6/11/2018	7:00	15:00	480		60.0	60.0
6/14/2018	7:00	15:00	480		60	60
		Total Time (Tc):	960		Avg. Flow Rate (lpm)	60.0
	nimum sample volume		on II - Analysis Da	a		
trument Information		Serial Number			n Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/2018	12/13/2018	0.361
N/A		N/A	N/A	N/A	N/A	N/A
				928 T	Alpha	
	bles, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
unt Date	- 1			6/25/2018		
unt Time (e.g., noon, 1300, et mple Count Time (Ts, Tb) = T			minutes	12:00		
tal Counts		-	counts	10		
nple Count Rate				0.17		
ckground Count Rate			cpm	0.01		
Volume (liters)	(A)		liters	5.8E+04	5.8E+04	5.8E+04
t count rate	(B)		cpm	0.16	5.02.104	5.02704
unter Efficiency	(C)		cpm/dpm	0.36	0.36	0.36
lection Efficiency	(D)		0.99	0.99	0.99	0.99
iciency = (C) x (D)	(E)		cpm/dpm	0.36	0.36	0.36
ivity (dpm) = (B)/(E)	(F)		dpm	0.45	7 11 11	
nimum Detectable Activity (dp	om) = $(3+4.65*SQRT(6)$	Cb))/(E*T) (G)	dpm	0.26		
ncentration = $(F)/(2.22E9 \times (A))$	(H)		μCi/ml	3.52E-15		
ekground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
T Concentration Value = (H)	- (F1); (F2)		uCi/ml	3.52E-15		
C (or AE) Fraction = $(F2)/(I)$				0.02%		
OC = MDA/V = (G)/(A)	(J)		μCi/ml	2.00E-15		
OC Fraction of DAC (or AE) =	(J)/(I) (Goal<10%)			0.01%		
al Count?			Yes/No	Yes		
	7	Note: Unexpected DAC or AE fra	7	mmediate RSO notification.		1 251
Performed By:	Steve &	1 8	V ~.		Date:	6-25-1
	The second secon	1 11				

			tion I - Collection	Data			
Date:	6/27/2018	Sample ID:	20180619-01	9	RWP:	2018-001	
Occupational (DAC):	Limit:	6.00E-14	μC1/n	I (1) Breathin	Zone:	General Area:	Work A
Non-Occupational (EC):	[DAG	C = 2.0E-11μCi/ml (U-238), EC	= 6.0E-14µCi/ml]	Radion	iclides:		
Location:		FS12 SCA Boundary					
Wearer:				Sampled By			res
		NA		Activity Perform	ned;	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.	NA	Cali	bration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2591		bration Due Date:	
Sample Information		Time					
Collection Date	Start	Stop	Total (minutes		-	Flow Rat	
6/18/2018	7:00	15:00	480			Start 60.0	Stop
6/19/2018	7:00	15:00	480			60	60.0
		Total Time (Tc):	960		Ave	Flow Rate (lpm)	60.0
			Minimum Air Sample	Values 5001	- 6	1, 1,	
Sample Volume:	60 (lam)				3 Liters		
				960 (minutes)	-	5.8E+04 Lite	rs (A)
Remarks: Min	imum sample volumes	identified are necessary to achie	ve 10% of DAC or AE	value.			
			ion II - Analysis D	ata			
Instrument Type		Serial Number			Calibration Due	Date	
L-2929		Meter	Detector	Met	er	Detector	Efficiency (a)
N/A		158817	164736	1/10/2		1/10/2019	0.726
IVA		N/A	N/A	N/A		N/A	N/A
Variah	les, Calculations, Res	alle.	W. C.		A	Mpha	
Date	co, Carculations, Res	iits	Units	1st Count		2nd Count	3rd Count
Time (e.g., noon, 1300, etc.)			6/27/2018			
le Count Time (Ts, Tb) = T			(Millione)	10:00			
Counts			minutes	60	-		
e Count Rate			counts	8	_		
round Count Rate			cpm	0.13	_		
olume (liters)	(A)		cpm	0.10			
						5.8E+04	5.8E+04
ount rate	(B)		liters	5.8E+04		2.0151.04	1,02-01
	(B)		cpm	0.03			
ount rate	(C)		cpm cpm/dpm	0.03 0.73		0.73	0.73
ount rate er Efficiency	(C) (D)		cpm cpm/dpm 0.99	0.03 0.73 0.99		0.73 0.99	0.73 0.99
ount rate er Efficiency tion Efficiency	(C) (D) (E)		cpm/dpm 0.99 cpm/dpm	0.03 0.73 0.99 0.72		0.73	0.73
ount rate er Efficiency tion Efficiency ency = (C) x (D) ty (dpm) = (B)/(E)	(C) (D) (E)))/(E*T) (G)	cpm cpm/dpm 0.99 cpm/dpm dpm	0.03 0.73 0.99 0.72 0.05		0.73 0.99	0.73 0.99
ount rate er Efficiency tion Efficiency ency = (C) x (D)	(C) (D) (E) (F) 0) = (3+4.65*SQRT(Cb))/(E*T) (G)	cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.03 0.73 0.99 0.72 0.05 0.33		0.73 0.99	0.73 0.99
ount rate er Efficiency tion Efficiency ney = (C) x (D) ty (dpm) = (B)/(E) um Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1)	(C) (D) (E) (F) (s) = (3+4.65*SQRT(Ct) (H) Date Updated))/(E*T) (G) 4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	0.03 0.73 0.99 0.72 0.05 0.33 3.59E-16		0.73 0.99	0.73 0.99
unt rate er Efficiency tion Efficiency ncy = (C) x (D) ty (dpm) = (B)/(E) um Detectable Activity (dpm ntration = (F)/(2.22E9 x (A))	(C) (D) (E) (F) (s) = (3+4.65*SQRT(Ct) (H) Date Updated		cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	0.03 0.73 0.99 0.72 0.05 0.33 3.59E-16 7.31E-18		0.73 0.99	0.73 0.99
ount rate er Efficiency tion Efficiency ney = (C) x (D) ty (dpm) = (B)/(E) um Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) concentration Value = (H) - (for AE) Fraction = (F2)/(I)	(C) (D) (E) (F) (s) = (3+4.65*SQRT(Ct) (H) Date Updated		cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	0.03 0.73 0.99 0.72 0.05 0.33 3.59E-16 7.31E-18 3.52E-16		0.73 0.99	0.73 0.99
ount rate er Efficiency tion Efficiency ney = (C) x (D) ty (dpm) = (B)/(E) um Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(C) (D) (E) (F) (s) = (3+4.65*SQRT(Ct) (H) Date Updated (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.03 0.73 0.99 0.72 0.05 0.33 3.59E-16 7.31E-18 3.52E-16 0.59%		0.73 0.99	0.73 0.99
ount rate er Efficiency tion Efficiency ney = (C) x (D) ty (dpm) = (B)/(E) um Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) concentration Value = (H) - (for AE) Fraction = (F2)/(I)	(C) (D) (E) (F) (s) = (3+4.65*SQRT(Ct) (H) Date Updated (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	0.03 0.73 0.99 0.72 0.05 0.33 3.59E-16 7.31E-18 3.52E-16 0.59% 2.58E-15		0.73 0.99	0.73 0.99
ount rate er Efficiency tion Efficiency ney = (C) x (D) ty (dpm) = (B)/(E) um Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(C) (D) (E) (F) (s) = (3+4.65*SQRT(Ct) (H) Date Updated (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml	0.03 0.73 0.99 0.72 0.05 0.33 3.59E-16 7.31E-18 3.52E-16 0.59% 2.58E-15 4.31%		0.73 0.99 0.72	0.73 0.99
ount rate er Efficiency tion Efficiency ney = (C) x (D) y (dpm) = (B)/(E) um Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) roncentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(C) (D) (E) (F) () = (3+4.65*SQRT(C) (H) Date Updated (F1); (F2) (J) (J) (Goal<10%)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml γcs/No	0.03 0.73 0.99 0.72 0.05 0.33 3.59E-16 7.31E-18 3.52E-16 0.59% 2.58E-15 4.31% No		0.73 0.99	0.73 0.99
ount rate er Efficiency tion Efficiency ney = (C) x (D) y (dpm) = (B)/(E) um Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) roncentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(C) (D) (E) (F) () = (3+4.65*SQRT(C) (H) Date Updated (F1); (F2) (J) (J) (Goal<10%)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml γcs/No	0.03 0.73 0.99 0.72 0.05 0.33 3.59E-16 7.31E-18 3.52E-16 0.59% 2.58E-15 4.31% No	cation.	0.73 0.99 0.72	0.73 0.99
ount rate or Efficiency tion Efficiency ncy = (C) x (D) ty (dpm) = (B)/(E) um Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) on AE) Fraction = (F2)/(I) = MDAV = (G)/(A) Fraction of DAC (or AE) = (Jount?	(C) (D) (E) (F) (F) (H) Date Updated (F1); (F2) (J) (J) (Goal<10%)	4/20-4/21 de: Unexpected DAC or AE fra	cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml γes/No	0.03 0.73 0.99 0.72 0.05 0.33 3.59E-16 7.31E-18 3.52E-16 0.59% 2.58E-15 4.31% No	cation.	0.73 0.99 0.72	0.73 0.99 0.72
ount rate er Efficiency tion Efficiency ney = (C) x (D) y (dpm) = (B)/(E) um Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) roncentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(C) (D) (E) (F) () = (3+4.65*SQRT(C) (H) Date Updated (F1); (F2) (J) (J) (Goal<10%)	4/20-4/21 de: Unexpected DAC or AE fra	cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml γcs/No	0.03 0.73 0.99 0.72 0.05 0.33 3.59E-16 7.31E-18 3.52E-16 0.59% 2.58E-15 4.31% No	cation.	0.73 0.99 0.72	0.73 0.99

Decupational (DAC) Limit 2.00E-11 pC/mit (U) Breathing Zone General Area Work Work December General Area Sumpled By: Stephen Beames Na.	Date:	6/27/2018		ection I - Colle				
Non-Occupational (EC)				20180		the same of the sa		
Sample 1 Sample 1 Sample 2 Sample 3 Sample 3 Sample 3 Sample 3 Sample 4	the second secon		2.00E-11				The second second	
No.			[DAC = 2.0E-11µCi/ml (U-238), E	C= 6.0E-14μCi/ml	1	Radionuclides:	DU (Deplete	d Uranium)
Monitored Workers: State Serial No.			FS12 Wood Soil Sort	Area		Sampled By:	Stephen B	eames
Marie Mar	Wearer:		NA NA			Activity Performed:	NA	
Air Pump Model: LV-I Serial No. 2773 Calibration Due Date: 3,272019 Sample Information	Monitored Workers:							
Air Pump Model: LV-1 Serial No. 2773 Calibration Due Date less (327201) 3272010 Sample Information Time Calibration Due Date less (327201) 3272010 Sample Volume: Sample Volume: Sample Volume: Page 10 (Ipm) List Minimum Air Sample Volume: Page 10 (Ipm) <th< td=""><td>Lapel Pump Model:</td><td>NA</td><td></td><td>Serial No.</td><td></td><td>NA</td><td>Calibration Due Date:</td><td>MA</td></th<>	Lapel Pump Model:	NA		Serial No.		NA	Calibration Due Date:	MA
Sample Information	Air Pump Model:	LV-1						
Start Stop	Sample Information		Time				Canoration Due Date:	3/2//2019
Start Stop Color Start Stop Color		Start		Total (-		-		ate (lpm)
College Fraction Front						- H		
Total Time (Tc) Soil Any Flow Rate (pm) Any Flow Rate (6/19/2018	7:00						
Minimum Air Sample Volume 1.5E+01 Liters					-			
Detector Meter Detector Meter Detector Efficiency (0		imum sample vo	176					
Detector			Serial Number			Calibration	Due Date	
N/A			Meter	Dete	ctor			Efficiency (a)
N/A N/A N/A N/A N/A				164	736	12/13/2018	12/13/2018	
Variables, Calculations, Results Units 1st Count 2nd Count 3rd Count at Time (e.g., noon, 1300, etc.) 12:00 12:0	N/A		N/A	N/	Α	N/A	N/A	N/A
Section Sect	Variabl	les Calculations	Resulte	77.7				
1 Time (e.g., noon, 1300, etc.) le Count Time (Ts, Tb) = T Counts le Count Rate crom 0.10 counts le Count Rate crom 0.10 colume (liters) (A) liters 5.8E+04 5.8E+04 5.8E+04 count rate (B) crom 0.37 ter Efficiency (C) crom/dpm 0.73 0.73 0.73 0.73 cer (C) cpm/dpm 0.73 0.73 0.73 cer (C) cpm/dpm 0.72 0.72 cer (C) cpm/dpm 0.51 cer (C) cpm/dpm 0.73 cer (C) cpm/		on cureumiton	, Acouts	Units			2nd Count	3rd Count
De Count Time (Ts, Tb) = T	t Time (e.g., noon, 1300, etc.)							
Count Rate Cou				minutes				
Companies Com				counts				
Second Column (liters) Second Column (lite				cpm		0.47		
Second Final Content and Second Final Conten		-		cpm		0.10		
Company Comp						5.8E+04	5.8E+04	5.8E+04
Conting Efficiency Conting								
ency = (C) x (D) (E) cpm/dpm 0.72 0.72 0.72 0.72 ty (dpm) = (B)/(E) (F) dpm 0.51					_			0.73
ty (dpm) = (B)/(E) (F) (F) dpm 0.51 num Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.33 intration = (F)/(2.22E9 x (A)) (H) µCi/ml 3.98E-15 round "Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-18 Concentration Value = (H) - (F1); (F2) uCi/ml 3.97E-15 or AE) Fraction = (F2)/(I) 0.02% = MDA/V = (G)/(A) (J) µCi/ml 2.58E-15 Fraction of DAC (or AE) = (J)/(I) (Goal<10%) Ves/No Yes Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.								
Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.33					_		0.72	0.72
Date Updated House Hous	num Detectable Activity (dpm) = (3+4.65*SQ)	RT(Cb))/(E*T) (G)					
Tound Strip" value (F.1) Date Updated 4/20-4/21 UCi/ml 7.31E-18	entration = $(F)/(2.22E9 \times (A))$	(H)			3.			
(or AE) Fraction = (F2)/(I) 0.02%			4/20-4/21	uCi/ml				
= MDA/V = (G)/(A) (J)		F1); (F2)		uCi/mI	3.	97E-15		
Fraction of DAC (or AE) = (J)/(I) (Goal<10%) Count? Yes/No Yes Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.		101			0	0.02%		
Count? Yes/No Yes Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.	Fraction of DAC (AE)	(J)	40	μCi/ml	2.:	58E-15	- 4	
Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.)/(1) (Goal<1)	9%)		0	.01%		
	Journ !		Mate Wasser 18 18					
Performed By: Feld Beames #8 hr Reviewed By: Ed Stewart S Date: 6-27-18	Performed By:	Sec			equires immer	diate RSO notification.	Die	6-27-18

Ditte	7/9/2018	Sample ID:	on I - Collection I 20180625-021		P: 2018-001	
Date:		_	μCı/ml		General Area: ✓	Work Area:
Occupational (DAC):	Limit:	6.00E-14				
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary		Sampled By:	David Berr	res
Wearer:		NA		Activity Performed:	NA	
the second second			-	NA .		
Monitored Workers:	1.70		The state of the s		Calibration Due Date:	NA
Lapel Pump Model:	NA		Serial No.	NA		With the same
Air Pump Model:	LV-1		Serial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time		- 1	Flow Rat	te (lpm)
Collection Date	Start	Stop	Total (minutes		Start	Stop
6/20/2018	7:00	15:00	480		60.0	60.0
6/25/2018	7:00	15:00	480		60	60
0/23/2010	7.90	Total Time (Tc):	960		Avg. Flow Rate (lpm)	60.0
					Liters	
Sample Volume:				960 (minutes) =	5.8E+04 Lite	ers (A)
Remarks: Min	nimum sample volume	s identified are necessary to achi	eve 10% of DAC or AE	value,		
			. w 4 1 1 1 1	N-40		
			tion II - Analysis l		ion Due Date	
strument Information		Serial Number	Detector	Meter	Detector	Efficiency (a)
Instrument Type		Meter	Detector 164736	1/10/2019	1/10/2019	0.726
L-2929		158817	N/A	N/A	N/A	N/A
N/A		N/A	IVA	19/8	Alpha	
	11. (11.1.2 P.	- No.	Units	1st Count	2nd Count	3rd Count
	bles, Calculations, Re	Suits	Units	7/9/2018		
ount Date				13:00		
ount Time (e.g., noon, 1300, et mple Count Time (Ts, Tb) = T			minutes	60		
otal Counts			counts	14		
imple Count Rate			cpm	0.23		
ackground Count Rate			cpm	0.10		
	AV.				5.8E+04	5.8E+04
			liters	5.8E+04	2.02.04	
ir Volume (liters)	(A)		liters	5.8E+04 0.13	3.85104	
r Volume (liters) et count rate	(B)		epm		0.73	0.73
ir Volume (liters) et count rate ounter Efficiency	(B) (C)		cpm cpm/dpm	0.13		
ir Volume (liters) et count rate ounter Efficiency ollection Efficiency	(B) (C) (D)		cpm cpm/dpm 0.99	0.13 0.73	0.73	0.73
ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D)	(B) (C) (D) (E)		cpm/dpm 0.99 cpm/dpm	0.13 0.73 0.99	0.73 0.99	0.73 0.99
ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E)	(B) (C) (D) (E)	(Cb))/(E*T) (G)	cpm/dpm 0.99 cpm/dpm dpm	0.13 0.73 0.99 0.72	0.73 0.99	0.73 0.99
ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT	(Cb))/(E*T) (G)	cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.13 0.73 0.99 0.72 0.19	0.73 0.99	0.73 0.99
ir Volume (liters) et count rate counter Efficiency collection Efficiency efficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (doncentration = (F)/(2.22E9 × (A))	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT(A)) (H)		cpm/dpm 0.99 cpm/dpm dpm	0.13 0.73 0.99 0.72 0.19 0.33	0.73 0.99	0.73 0.99
tr Volume (liters) et count rate punter Efficiency fliciency = (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (d encentration = (F)/(2.22E9 x (d enckground "Strip" value (F.1)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT(A)) (H) Date Updated	(Cb))/(E*T) (G) 4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	0.13 0.73 0.99 0.72 0.19 0.33 1.45E-15	0.73 0.99	0.73 0.99
ir Volume (liters) et count rate counter Efficiency collection Efficiency efficiency = (C) x (D) etivity (dpm) = (B)/(E) finimum Detectable Activity (d concentration = (F)/(2.22E9 x (d cackground "Strip" value (F.1) ET Concentration Value = (H)	(B) (C) (D) (E) (F) (spm) = (3+4.65*SQRT(A)) (H) Date Updated () - (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	0.13 0.73 0.99 0.72 0.19 0.33 1.45E-15 7.31E-18	0.73 0.99	0.73 0.99
ir Volume (liters) et count rate counter Efficiency collection Efficiency efficiency = (C) x (D) etivity (dpm) = (B)/(E) finimum Detectable Activity (d concentration = (F)/(2.22E9 x (a cackground "Strip" value (F.1) ET Concentration Value = (H AC (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT(A)) (H) Date Updated () - (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.13 0.73 0.99 0.72 0.19 0.33 1.45E-15 7.31E-18 1.44E-15	0.73 0.99	0.73 0.99
ir Volume (liters) et count rate counter Efficiency collection Efficiency efficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d concentration = (F)/(2.22E9 × (A cackground "Strip" value (F.1) ET Concentration Value = (H collection = (F2)/(I) etc. AC (or AE) Fraction = (F2)/(I) etc. = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT(A)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	0.13 0.73 0.99 0.72 0.19 0.33 1.45E-15 7.31E-18 1.44E-15 2.40%	0.73 0.99	0.73 0.99
ir Volume (liters) et count rate ounter Efficiency ollection Efficiency efficiency = (C) x (D) etivity (dpm) = (B)/(E) finimum Detectable Activity (d oncentration = (F)/(2.22E9 x (a ackground "Strip" value (F.1) ET Concentration Value = (H. AC (or AE) Fraction = (F2)/(I) EDC = MDA/V = (G)/(A) EDC Fraction of DAC (or AE)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT(A)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.13 0.73 0.99 0.72 0.19 0.33 1.45E-15 7.31E-18 1.44E-15 2.40% 2.58E-15	0.73 0.99	0.73 0.99
ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d oncentration = (F)/(2.22E9 x (a ackground "Strip" value (F.1) IET Concentration Value = (H. AC (or AE) Fraction = (F2)/(I) fDC = MDA/V = (G)/(A) fDC Fraction of DAC (or AE)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT(A)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml vCi/ml	0.13 0.73 0.99 0.72 0.19 0.33 1.45E-15 7.31E-18 1.44E-15 2.40% 2.58E-15 4.31% No	0.73 0.99 0.72	0.73 0.99
ir Volume (liters) let count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d loncentration = (F)/(2.22E9 x (L) ackground "Strip" value (F.1) dET Concentration Value = (H. DAC (or AE) Fraction = (F2)/(A) dDC = MDA/V = (G)/(A) dDC Fraction of DAC (or AE) inal Count?	(B) (C) (D) (E) (F) (spm) = (3+4.65*SQRT(A)) (H) Date Updated () - (F1); (F2) () (J) = (J)/(I) (Goal<10%	4/20-4/21 Note: Unexpected DAC or AE	cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml vCi/ml vCi/ml vCi/ml	0.13 0.73 0.99 0.72 0.19 0.33 1.45E-15 7.31E-18 1.44E-15 2.40% 2.58E-15 4.31% No	0.73 0.99 0.72 Yes	0.73 0.99 0.72
ackground country ir Volume (liters) let count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E) finimum Detectable Activity (d concentration = (F)/(2.22E9 x (d ackground "Strip" value (F.1) EET Concentration Value = (H DAC (or AE) Fraction = (F2)/(I) ADC = MDA/V = (G)/(A) ADC Fraction of DAC (or AE) = inal Count? Performed By:	(B) (C) (D) (E) (F) (spm) = (3+4.65*SQRT(A)) (H) Date Updated () - (F1); (F2) () (J) = (J)/(I) (Goal<10%	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml vCi/ml	0.13 0.73 0.99 0.72 0.19 0.33 1.45E-15 7.31E-18 1.44E-15 2.40% 2.58E-15 4.31% No	0.73 0.99 0.72 Yes	0.73 0.99

		Sect	ion I - Collectio		2777.00	17.00 544	
Date:	7/9/2018	Sample ID:	20180625		RWP:		
Occupational (DAC):	Limit:	2.00E-11	μС	ı/ml (1) Bı	reathing Zone:	General Area:	Work Area:
Non-Occupational (EC):	[D	AC = 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	I	Radionuclides:	DU (Depleted	d Uranium)
Location:		FS12 Wood Soil Sort Are	a	Samı	oled By:	Stephen Be	eames
					Performed:	- 776	
Wearer:		NA			cronnea.		
Monitored Workers:				NA		T 1000 V. V. V. V.	
Lapel Pump Model:	NA		Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2773		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow R	ate (lpm)
Collection Date	Start	Stop	Total (min	utes)		Start	Stop
6/20/2018	7:00	15:00	480			60.0	60.0
6/25/2018	7:00	15:00	480			60	60
0/25/2018	7.00	Total Time (Tc):	960			Avg. Flow Rate (lpm)	60.0
			Minimum Air Sa	mple Volume:	1.5E+01 Lite	ers	
Sample Volume:	60 (lp	om)	x	960 (min	utes) =	5.8E+04 L	iters (A)
		mes identified are necessary to achi	eve 10% of DAC or	AE value			
Kemarks: Mi	nimum sampie voiu	mes identified are necessary to acm	EVE 1076 OF DACE OF	TLE VALUE			
		Sec	tion II - Analys	is Data			
nstrument Information		Serial Number			Calibration	Due Date	
Instrument Type		Meter	Detecto	or	Meter	Detector	Efficiency (a)
L-2929	7	158817	16473	6	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
Varia	bles, Calculations,	Results	Units	1st Com	nt	2nd Count	3rd Count
				7/9/201	8		
Count Date				12.00			
Count Date Count Time (e.g., noon, 1300, et	c.)			12:00			
			minutes	60			
Count Time (e.g., noon, 1300, et			minutes counts				
Count Time (e.g., noon, 1300, et cample Count Time (Ts, Tb) = T				60			
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T Cotal Counts			counts	60 13			
Count Time (e.g., noon, 1300, et sample Count Time (Ts, Tb) = T Cotal Counts sample Count Rate			counts	60 13 0.22	4	5.8E+04	5.8E+04
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = 1 Total Counts cample Count Rate Background Count Rate			counts cpm cpm	60 13 0.22 0.10	4	5.8E+04	5.8E+04
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = 1 Total Counts cample Count Rate Background Count Rate hir Volume (liters)	(A)		counts cpm cpm liters	60 13 0.22 0.10 5.8E+0-	4	0.73	0.73
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = 1 Cotal Counts cample Count Rate Background Count Rate Air Volume (liters)	(A) (B)		counts cpm cpm liters cpm	60 13 0.22 0.10 5.8E+0- 0.12	4		0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = 1 Cotal Counts cample Count Rate Background Count Rate Air Volume (liters) Net count rate Counter Efficiency	(A) (B) (C)		counts cpm cpm liters cpm cpm/dpm	60 13 0.22 0.10 5.8E+0 0.12 0.73	4	0.73	0.73
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = 1 Cotal Counts cample Count Rate Background Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency	(A) (B) (C)		counts cpm cpm liters cpm cpm cpm 0.99	60 13 0.22 0.10 5.8E+0 0.12 0.73	4	0.73 0.99	0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = 1 Cotal Counts Count Rate Count Rate Count Count Rate Count Count Rate Count Count Rate Rate Rate Rate Rate Rate Rate Rat	(A) (B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm cpm/dpm 0.99 cpm/dpm	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99	4	0.73 0.99	0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts cample Count Rate Count Rate Count Rate Count Rate Count rate Count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQF		counts cpm cpm liters cpm opm/dpm 0.99 cpm/dpm dpm	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99 0.72 0.16 0.33	15	0.73 0.99	0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts cample Count Rate Count R	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQEA)) (H)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99 0.72 0.16 0.33 1.27E-1	15	0.73 0.99	0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts ample Count Rate Sackground Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Stricency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d) Concentration = (F)/(2.22E9 x (d)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQF A)) (H) Date Updated	RT(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm pCi/mI	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99 0.72 0.16 0.33	15	0.73 0.99	0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts cample Count Rate car Volume (liters) Set count rate Counter Efficiency Collection Efficiency Set count rate Counter (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (deconcentration = (F)/(2.22E9 x (decound = (F))/(2.22E9 x (decound	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQE (A)) (H) Date Updated () - (F1); (F2)	RT(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99 0.72 0.16 0.33 1.27E- 7.31E-1 1.27E- 0.01%	15 8 15	0.73 0.99	0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts ample Count Rate Background Counter Efficiency Counter Efficiency Counter Efficiency (Counter Efficiency	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQE A)) (H) Date Updated () - (F1); (F2)	RT(Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99 0.72 0.16 0.33 1.27E-7,31E-1 1.27E-0.01% 2.58E-	15 8 15 6	0.73 0.99	0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts ample Count Rate Background Counter Efficiency Counter Efficiency Counter Efficiency (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d) Concentration = (F)/(2.22E9 x (d) Background "Strip" value (F.1) NET Concentration Value = (H) DAC (or AE) Fraction = (F2)/(I)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQEA) (H) Date Updated () - (F1); (F2)	RT(Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99 0.72 0.16 0.33 1.27E- 7.31E-1 1.27E- 0.01%	15 8 15 6	0.73 0.99	0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = 1 Cotal Counts ample Count Rate Background Count Rate Background Count Rate Background Count Rate Background Counter Efficiency Collection Efficiency Collection Efficiency Efficiency = (C) × (D) Counter Efficiency = (F) / (E) Counter Efficiency (D) (E) (E) (E) (E) (E) (E) (E) (E) (E) (E	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQEA) (H) Date Updated () - (F1); (F2)	RT(Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99 0.72 0.16 0.33 1.27E-7,31E-1 1.27E-0.01% 2.58E-	15 8 15 6	0.73 0.99	0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts ample Count Rate Background Counter Efficiency Collection Efficiency Collection Efficiency Efficiency = (C) × (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (deconcentration = (F)/(2.22E9 ×	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQEA) (H) Date Updated () - (F1); (F2)	RT(Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml pCi/ml	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99 0.72 0.16 0.33 1.27E-7,31E-1 1.27E-0.01% 2.58E-0.01% Yes	15 8 15 6	0.73 0.99	0.73 0.99
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = 1 Total Counts tample Count Rate Background Count Rate Lir Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) × (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (deconcentration = (F)/(2.22E9 × (c.g.)) Activity (april "Strip" value (F.1) DET Concentration Value = (H.1) DAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQEAA)) (H) Date Updated (F2) (J) (J) (Goal<10	2T(Cb))/(E*T) (G) 4/20-4/21 27/6) Note: Unexpected DAC or AE	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml pCi/ml	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99 0.72 0.16 0.33 1.27E-7,31E-1 1.27E-0.01% 2.58E-0.01% Yes	15 8 15 6	0.73 0.99 0.72	0.73 0.99 0.72
Count Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts ample Count Rate Background Counter Efficiency Collection Efficiency Collection Efficiency Efficiency = (C) × (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (deconcentration = (F)/(2.22E9 ×	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQEAA)) (H) Date Updated (F2) (J) (J) (Goal<10	2T(Cb))/(E*T) (G) 4/20-4/21 27/6) Note: Unexpected DAC or AE	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml pCi/ml	60 13 0.22 0.10 5.8E+0 0.12 0.73 0.99 0.72 0.16 0.33 1.27E-7,31E-1 1.27E-0.01% 2.58E-0.01% Yes	15 8 15 6	0.73 0.99	0.73 0.99

			ion I - Collection		tWP: 2018-001	
Date:	7/10/2018	Sample ID:				Work Area
Occupational (DAC):	Limit	6.00E-14	μCi/i	nl (1) Breathing Zone	_	
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	= 6.0E-14μCi/ml]	Radionuclides	DU (Depleted	Uranium)
		FS12 SCA Boundary		Sampled By:	David Ber	res
		NA			NA	
Wearer:		101		NA		
Monitored Workers:			Total P		Calibration Due Date:	NA
Lapel Pump Model:	NA		Serial No.	NA		
Air Pump Model:	LV-1		Serial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	ate (lpm)
	Start	Stop	Total (minut	es)	Start	Stop
Collection Date 6/27/2018	7:00	15:00	480		60.0	60.0
6/28/2018	7:00	15:00	480		60	60
WIEWIEVIO		Total Time (Tc):	960		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sam	ple Volume: 5.3E+03	Liters	
					The state of the s	ters (A)
Sample Volume:	60 (lpm)	x	960 (minutes)	= 5.8E+04 Li	iers (A)
		es identified are necessary to ach	ieve 10% of DAC or A	E value.		
Remarks: M	nimum sample volum	es identified are necessary to acti	ieve 1070 of Bite of 1	1000		
		Sec	tion II - Analysis	Data		
nstrument Information		Serial Number		Calit	oration Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
4764					Alpha	
Vari	ables, Calculations, F	lesults	Units	1st Count	2nd Count	3rd Count
Count Date			1 4 5 4 3	7/10/2018		
Count Time (e.g., noon, 1300, e	tc.)			11:00		
Sample Count Time (Ts, Tb) =			minutes	60		
Total Counts			counts	14		
Sample Count Rate			cpm	0.23		
Background Count Rate			epm	0.12	E 2001.04	6 012404
Air Volume (liters)	(A)		liters	5.8E+04	5.8E+04	5.8E+04
Net count rate	(B)		cpm	0.11	0.72	0.73
Counter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
D. H. of a T. C. issues	(D)		0.99	0.99	0.99	0.72
offection Efficiency	(E)		cpm/dpm	0.72	0.72	0.72
			dpm			
Efficiency = (C) x (D) Activity (dpm) = (B)/(E)	(F)	This is faction was				
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (dpm) = (3+4.65*SQR	Г(Сь))/(Е*Т) (G)	dpm	0,36		
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (Concentration = (F)/(2.22E9 x	dpm) = (3+4.65*SQR' (A)) (H)		dpm μCi/ml	0,36 1.23E-15		-
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (Concentration = (F)/(2.22E9 x Background "Strip" value (F.I)	dpm) = (3+4.65*SQR' (A)) (H) Date Updated	T(Cb))/(E*T) (G) 4/20-4/21	dpm μCi/ml uCi/ml	0,36 1.23E-15 7.31E-18		
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (Concentration = (F)/(2.22E9 x Background "Strip" value (F.I) NET Concentration Value = (I	dpm) = (3+4.65*SQR' (A)) (H) Date Updated I) - (F1); (F2)		dpm μCi/ml	0,36 1.23E-15 7.31E-18 1.22E-15		
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (Concentration = (F)/(2.22E9 x Background "Strip" value (F.I) NET Concentration Value = (I DAC (or AE) Fraction = (F2)/(I	dpm) = (3+4.65*SQR*(A)) (H) Date Updated (I) - (F1); (F2)		dpm μCi/ml uCi/ml uCi/ml	0,36 1.23E-15 7.31E-18 1.22E-15 2.04%		
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (Concentration = (F)/(2.22E9 x Background "Strip" value (F.I.) NET Concentration Value = (I DAC (or AE) Fraction = (F2)/(MDC = MDA/V = (G)/(A)	dpm) = (3+4.65*SQR (A)) (H) Date Updated I) - (F1); (F2) (J)	4/20-4/21	dpm μCi/ml uCi/ml	0.36 1.23E-15 7.31E-18 1.22E-15 2.04% 2.78E-15		
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (Concentration = (F)/(2.22E9 x Background "Strip" value (F.I.) NET Concentration Value = (I DAC (or AE) Fraction = (F2)/(MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE)	dpm) = (3+4.65*SQR (A)) (H) Date Updated I) - (F1); (F2) (J)	4/20-4/21	dpm μCi/ml uCi/ml uCi/ml μCi/ml	0.36 1.23E-15 7.31E-18 1.22E-15 2.04% 2.78E-15 4.63%	Ves	
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (Concentration = (F)/(2.22E9 x Background "Strip" value (F.I) NET Concentration Value = (I DAC (or AE) Fraction = (F2)/(MDC = MDA/V = (G)/(A)	dpm) = (3+4.65*SQR (A)) (H) Date Updated I) - (F1); (F2) (J)	4/20-4/21	dpm μCi/ml uCi/ml uCi/ml μCi/ml γCi/ml	0.36 1.23E-15 7.31E-18 1.22E-15 2.04% 2.78E-15 4.63% No	Yes	
Concentration = (F)/(2.22E9 x Background "Strip" value (F.I) NET Concentration Value = (I DAC (or AE) Fraction = (F2)/(MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE)	dpm) = (3+4.65*SQR (A)) (H) Date Updated I) - (F1); (F2) (J)	4/20-4/21	dpm μCi/ml uCi/ml uCi/ml μCi/ml γCi/ml	0.36 1.23E-15 7.31E-18 1.22E-15 2.04% 2.78E-15 4.63% No		
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (Concentration = (F)/(2.22E9 x Background "Strip" value (F.I.) NET Concentration Value = (I DAC (or AE) Fraction = (F2)/(MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	dpm) = (3+4.65*SQR* (A)) (B) Date Updated (I) - (F1); (F2) (J) = (J)/(I) (Goal<10*	4/20-4/21 Note: Unexpected DAC or Al	dpm μCi/ml uCi/ml uCi/ml μCi/ml γCi/ml	0.36 1.23E-15 7.31E-18 1.22E-15 2.04% 2.78E-15 4.63% No	ation.	7-10-10
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (Concentration = (F)/(2.22E9 x Background "Strip" value (F.I. NET Concentration Value = (I DAC (or AE) Fraction = (F2)/(MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE)	dpm) = (3+4.65*SQR* (A)) (B) Date Updated (I) - (F1); (F2) (J) = (J)/(I) (Goal<10*	4/20-4/21 Note: Unexpected DAC or Al	dpm μCi/ml uCi/ml uCi/ml μCi/ml γCi/ml	0.36 1.23E-15 7.31E-18 1.22E-15 2.04% 2.78E-15 4.63% No	Date:	7-10-18
Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (Concentration = (F)/(2.22E9 x Background "Strip" value (F.I) NET Concentration Value = (I DAC (or AE) Fraction = (F2)/(MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	dpm) = (3+4.65*SQR* (A)) (H) Date Updated (I) - (F1); (F2) (I) (J) = (J)/(I) (Goal<10)	4/20-4/21 Note: Unexpected DAC or Al	dpm μCi/ml uCi/ml uCi/ml μCi/ml γCi/ml	0.36 1.23E-15 7.31E-18 1.22E-15 2.04% 2.78E-15 4.63% No	Date:	7-10-18

		Section	on I - Collectio	n Data			
Date:	7/10/2018	Sample ID:	20180628-	-024	RWI	P: 2018-001	
Occupational (DAC):		2.00E-11		Cı/ml (1)	Breathing Zone:	General Area:	Work Area:
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]		Radionuclides:	DU (Depleted	Uranium)
		FS12 Wood Soil Sort Area				Stephen Bea	
				-			
		NA			Activity Performed:	Det.	
Monitored Workers:				NA			
Lapel Pump Model:	NA	S	erial No.		NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	3	2773	Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (min	iutes)	i [Start	Stop
6/27/2018	7:00	15:00	480		7 0	60.0	60.0
6/28/2018	7:00	15:00	480			60	60
Wasta	7100	Total Time (Tc):	960			Avg. Flow Rate (lpm)	60.0
			-4.0 07.4	1 11 1	. CPURE Y	Ž.	
			Minimum Air Sa	mple Volum	ne: 1.6E+01 L	iters	
Sample Volume:	60 (lpm)	j	x	960	(minutes) =	5.8E+04 Lite	ters (A)
Remarks: Min	aimum sample volume	es identified are necessary to achiev	ve 10% of DAC or	Al: value.			
		Sant	ion II - Analys	in Data			
			Off II - Allaiys	IS Data	T Calibratio	on Due Date	
nstrument Information		Serial Number	Detect		Meter	Detector Detector	Efficiency (a)
Instrument Type		Meter	Detecto		12/13/2018	12/13/2018	0.726
L-2929		158817	16473		N/A	N/A	N/A
N/A		N/A	N/A		IVA		Iva
			77.144	-		Alpha 2nd Count	3rd Count
	bles, Calculations, Re	sults	Units		Ist Count	2nd Count	Jiu Count
Count Date					7/9/2018		-
Count Time (e.g., noon, 1300, etc			The same of the sa		12:00		
Sample Count Time (Ts, Tb) = T			minutes				
Total Counts			counts		16		
Sample Count Rate			cpm		0.27		-
Background Count Rate	18.7		cpm		0.12	5 m. n.i	5.05.04
Air Volume (liters)	(A)		liters		5.8E+04	5.8E+04	5.8E+04
Net count rate	(B)		cpm		0.15		
Counter Efficiency	(C)		cpm/dpm		0.73	0.73	0.73
Collection Efficiency	(D)		0.99		0.99	0.99	0.99
Efficiency = (C) x (D)	(E)		cpm/dpm		0.72	0.72	0.72
Activity (dpm) = (B)/(E)	(F)		dpm		0.21		
Minimum Detectable Activity (dp	pm) = (3+4.65*SQRT((Cb))/(E*T) (G)	dpm	-	0.36		
Concentration = $(F)/(2.22E9 \times (A))$			μCi/ml		.63E-15		
Background "Strip" value (F.1)		4/20-4/21	uCi/ml		7.31E-18		
NET Concentration Value = (H)			uCi/ml		.62E-15		
DAC (or AE) Fraction = (F2)/(I)					0.01%		
MDC = MDA/V = (G)/(A)	(J)		μCi/ml		2.78E-15		1
MDC Fraction of DAC (or AE) =	(J)/(I) (Goal<10%))		1)	0.01%		
Final Count?			Yes/No		Yes		
		Note: Unexpected DAC or AE fr	raction > 100% rv	quires imm	ediate RSO notification	i.	
		1	1				7 15 15
Performed By:	Steve	Beamas 4	m			Date:	7-10-18
Terrorined 27,	15.4	The state of the s	_			-	
Reviewed By:	51 51	energy / E				Date:	7-10-10
Keviewed By.							

		Sample ID:	on I - Collection 20180709-02		RWP: 2018-001	
	7/16/2018	Sample ID.	μC1/n			Work Area:
Occupational (DAC):		6.00E-14				
Non-Occupational (EC):	[DAC	= 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclio	les: DU (Depleted	
Location		FS12 SCA Boundary		Sampled By:	David Be	пеѕ
		311		Activity Performed	NA	
Wearer:		NA				
Monitored Workers:				NA	O. I'll and an Day Date:	NA
Lapel Pump Model:	NA	S	lerial No.	NA	Calibration Due Date:	
Air Pump Model:	LV-1	S	Serial No.	2591	Calibration Due Date:	3/27/2019
		Time			Flow R	ate (lpm)
Sample Information	Chart	Stop	Total (minut	es)	Start	Stop
Collection Date	7:00	15:00	480		60.0	60.0
6/29/2018	7:00	15:00	480		60	60
7/9/2018	7.00	Total Time (Tc):	960		Avg. Flow Rate (lpm)	60.0
			201 1100	ole Volume: 4.3E+03	Liters	
			Minimum Air Sam	3 13 10 10		(A)
Sample Volume:	60 (lpm)		x	960 (minutes)	= 5.8E+04 L	iters (A)
Pamarke: Mi	nimum sample volume	s identified are necessary to achie	eve 10% of DAC or A	E value.		
Kemara, M	inimata sample remine		TRACIL A TO	1.7		
		Sect	tion II - Analysis			
strument Information		Serial Number			libration Due Date	ECC.:(a)
Instrument Type		Meter	Detector	Meter		Efficiency (a)
L-2929		158817	164736	1/10/201		
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	2nd Count
Varia	bles, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
ount Date				7/16/2018		
ount Time (e.g., noon, 1300, et	tc.)			13:00		
mple Count Time (Ts, Tb) = T			minutes	60		
otal Counts			counts	4		
mple Count Rate			cpm	0.07		
			cpm	0.07	5.051.04	5.8E+04
ckground Count Rate	(A)		liters	5.8E+04	5.8E+04	3.615704
r Volume (liters)	(A)					
r Volume (liters)	(B)		cpm	0.00	0.72	0.73
r Volume (liters) et count rate			epm epm/dpm	0.00 0.73	0.73	0.73
r Volume (liters) et count rate ounter Efficiency	(B)		cpm cpm/dpm 0.99	0.00 0.73 0.99	0.99	0.99
r Volume (liters) et count rate ounter Efficiency ollection Efficiency	(B) (C)		cpm cpm/dpm 0.99 cpm/dpm	0.00 0.73 0.99 0.72		
r Volume (liters) et count rate sounter Efficiency ollection Efficiency efficiency = (C) x (D) otivity (dpm) = (B)/(E)	(B) (C) (D) (E)		cpm cpm/dpm 0.99 cpm/dpm dpm	0.00 0.73 0.99 0.72 0.00	0.99	0.99
r Volume (liters) et count rate sounter Efficiency ollection Efficiency efficiency = (C) x (D) otivity (dpm) = (B)/(E)	(B) (C) (D) (E)	(Cb))/(E*T) (G)	cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.00 0.73 0.99 0.72 0.00 0.29	0.99	0.99
r Volume (liters) et count rate punter Efficiency ollection Efficiency efficiency = (C) × (D) otivity (dpm) = (B)/(E) finimum Detectable Activity (doncentration = (F)/(2.22E9 × (doncentration = (F)/(2.22E9 × (doncentration = (D	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT) (H)		epm/dpm 0.99 epm/dpm dpm dpm dpm µCi/ml	0.00 0.73 0.99 0.72 0.00 0.29 0.00E+00	0.99	0.99
r Volume (liters) et count rate punter Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (d encentration = (F)/(2.22E9 x (encertration detectable (F.1)	(B) (C) (D) (E) (F) tpm) = (3+4.65*SQRT) (H) Date Updated	(Cb))/(E*T) (G) 4/20-4/21	epm/dpm 0.99 epm/dpm dpm dpm uCi/ml	0.00 0.73 0.99 0.72 0.00 0.29 0.00E+00 7.31E-18	0.99	0.99
r Volume (liters) et count rate counter Efficiency fliciency = (C) x (D) etivity (dpm) = (B)/(E) finimum Detectable Activity (d concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1)	(B) (C) (D) (E) (F) tpm) = (3+4.65*SQRT) (H) Date Updated		epm/dpm 0.99 epm/dpm dpm dpm dpm µCi/ml	0.00 0.73 0.99 0.72 0.00 0.29 0.00E+00 7.31E-18	0.99	0.99
r Volume (liters) et count rate counter Efficiency fliciency = (C) x (D) etivity (dpm) = (B)/(E) finimum Detectable Activity (d concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (H)	(B) (C) (D) (E) (F) tpm) = (3+4.65*SQRT) (A)) (H) Date Updated () - (F1); (F2)		epm epm/dpm 0.99 epm/dpm dpm dpm uCi/ml uCi/ml	0.00 0.73 0.99 0.72 0.00 0.29 0.00E+00 7.31E-18 -7.31E-18	0.99	0.99
r Volume (liters) et count rate punter Efficiency fliciency = (C) x (D) etivity (dpm) = (B)/(E) finimum Detectable Activity (d puncentration = (F)/(2.22E9 x (packground "Strip" value (F.1) ET Concentration Value = (H AC (or AE) Fraction = (F2)/(I DC = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) ipm) = (3+4.65*SQRT) (A)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	epm/dpm 0.99 epm/dpm dpm dpm uCi/ml	0.00 0.73 0.99 0.72 0.00 0.29 0.00E+00 7.31E-18 -7.31E-18 -0.01% 2.25E-15	0.99	0.99
r Volume (liters) et count rate counter Efficiency fliciency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dencentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (HAC (or AE) Fraction = (F2)/(I	(B) (C) (D) (E) (F) ipm) = (3+4.65*SQRT) (A)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.00 0.73 0.99 0.72 0.00 0.29 0.00E+00 7.31E-18 -7.31E-18 -0.01% 2.25E-15 3.75%	0.99	0.99
r Volume (liters) et count rate punter Efficiency fliciency = (C) x (D) etivity (dpm) = (B)/(E) finimum Detectable Activity (d puncentration = (F)/(2.22E9 x (packground "Strip" value (F.1) ET Concentration Value = (H AC (or AE) Fraction = (F2)/(I DC = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) ipm) = (3+4.65*SQRT) (A)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yCi/ml	0.00 0.73 0.99 0.72 0.00 0.29 0.00E+00 7.31E-18 -7.31E-18 -0.01% 2.25E-15 3.75% No	0.99 0.72	0.99

Deter		Sect	ion I - Collection	Data		
Date:	7/16/2018	Sample ID:	20180709-0	26	RWP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	μC1/	ml (I) Breathing Zor	ne: General Area:	Work Area
Non-Occupational (EC):	1	$DAC = 2.0E-11\mu Ci/ml$ (U-238), EC=	6.0E-14µCi/ml]	Radionuclide	es: DU (Depleted	l Uranium)
Location:		FS12 Wood Soil Sort Are	a	Sampled By:	Stephen Be	eames
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:				NA		
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	26.77.7		Serial No.	2773	Calibration Due Date:	072 343 37
	DA-1			1	_	
Sample Information		Time				ate (lpm)
Collection Date	Start	Stop	Total (minut	es)	Start	Stop
6/29/2018	7:00	15;00	480		60.0	60.0
7/9/2018	7:00	15:00	480		60	60.0
		Total Time (Tc):	960		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sam	ple Volume: 1.3E+01	Liters	
Sample Volume:	Carrier vo	lpm)	x	960 (minutes)	= 5.8E+04 Li	iters (A)
Remarks: Mir	nimum sample voi	lumes identified are necessary to achie	eve 10% of DAC or A	E value.		
		Sec	tion II - Analysis	Data		
strument Information		Serial Number		Cali	bration Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/2013	8 12/13/2018	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varia	bles, Calculation	s, Results	Units	1st Count	2nd Count	3rd Count
ount Date				7/9/2018		
ount Time (e.g., noon, 1300, etc	2.)			12:00		
ample Count Time (Ts, Tb) = T			minutes	60		
otal Counts			counts	18		
			cpm	0.30		
ample Count Rate			opin		_	_
			cpm	0.07		
ackground Count Rate	(/	A)		0.07 5.8E+04	5.8E+04	5.8E+04
ackground Count Rate ir Volume (liters)	(/ (E		cpm		5.8E+04	5.8E+04
ackground Count Rate ir Volume (liters) et count rate		3)	cpm liters cpm cpm/dpm	5.8E+04 0.23 0.73	0.73	0.73
ackground Count Rate ir Volume (liters) et count rate ounter Efficiency	(E	3)	cpm liters cpm	5.8E+04 0,23	0.73 0.99	0.73 0.99
ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency	(E)	3)	cpm liters cpm cpm/dpm	5.8E+04 0.23 0.73 0.99 0.72	0.73	0.73
ackground Count Rate ir Volume (liters) fet count rate counter Efficiency follection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E)	(E) (C) (D) (E) (F)	2)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	5.8E+04 0.23 0.73 0.99 0.72 0.32	0.73 0.99	0.73 0.99
ackground Count Rate ir Volume (liters) let count rate counter Efficiency collection Efficiency fficiency = (C) x (D) letivity (dpm) = (B)/(E) finimum Detectable Activity (dp	(E) (E) (m) = (3+4.65*SQ	2)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29	0.73 0.99	0.73 0.99
ackground Count Rate ir Volume (liters) fet count rate founter Efficiency follection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dponcentration = (F)/(2.22E9 x (A)	(E) (D) (E) (F) (m) = (3+4.65*SQ)) (RT(Cb))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29 2.50E-15	0.73 0.99	0.73 0.99
ackground Count Rate ir Volume (liters) let count rate counter Efficiency collection Efficiency fficiency = (C) x (D) cetivity (dpm) = (B)/(E) finimum Detectable Activity (dpm) = (F)/(2.22E9 x (A) cackground "Strip" value (F.1)	(E) (C) (D) (E) (F) (m) = (3+4.65*SC) (H) Date Updated	9) PRT(Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29 2.50E-15 7.31E-18	0.73 0.99	0.73 0.99
ackground Count Rate ir Volume (liters) fet count rate founter Efficiency follection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dpm) cncentration = (F)/(2.22E9 x (A ackground "Strip" value (F.1) fet Concentration Value = (H)	(E) (C) (D) (E) (F) (m) = (3+4.65*SC) (H) Date Updated	9) PRT(Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29 2.50E-15 7.31E-18 2.50E-15	0.73 0.99	0.73 0.99
ackground Count Rate air Volume (liters) let count rate counter Efficiency collection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E) finimum Detectable Activity (dpm) concentration = (F)/(2.22E9 x (A) ackground "Strip" value (F.1) activity (A) activity ((E) (C) (D) (E) (F) om) = (3+4.65*S(C)) (H) Date Updated - (F1); (F2)	9) PRT(Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29 2.50E-15 7.31E-18 2.50E-15 0.01%	0.73 0.99	0.73 0.99
ackground Count Rate ir Volume (liters) fet count rate founter Efficiency follection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dpm) concentration = (F)/(2.22E9 x (A ackground "Strip" value (F.1) fet Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) IDC = MDA/V = (G)/(A)	(E) (E) (E) (E) (F) (M) (E) (F) (M) (H) (H) (F2) (J)	(PRT(Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29 2.50E-15 7.31E-18 2.50E-15 0.01% 2.25E-15	0.73 0.99	0.73 0.99
ackground Count Rate air Volume (liters) let count rate counter Efficiency collection Efficiency efficiency = (C) x (D) activity (dpm) = (B)/(E) efficiency = (F)/(2.22E9 x (A) ackground "Strip" value (F.1) act Concentration Value = (H) act (or AE) Fraction = (F2)/(I) efficiency = (F2)/	(E) (E) (E) (E) (F) (M) (E) (F) (M) (H) (H) (F2) (J)	(PRT(Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29 2.50E-15 7.31E-18 2.50E-15 0.01% 2.25E-15 0.01%	0.73 0.99	0.73 0.99
Background Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (dpm) Concentration = (F)/(2.22E9 x (A) Background "Strip" value (F.1) NET Concentration Value = (H) DAC (or AE) Fraction = (F2)/(1) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) =	(E) (E) (E) (E) (F) (M) (E) (F) (M) (H) (H) (F2) (J)	(PRT(Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29 2.50E-15 7.31E-18 2.50E-15 0.01% 2.25E-15	0.73 0.99	0.73 0.99
cample Count Rate Sackground Count Rate Air Volume (liters) Set count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Animum Detectable Activity (dp Concentration = (F)/(2.22E9 x (A Background "Strip" value (F.1) AET Concentration Value = (H) DAC (or AE) Fraction = (F2)/(I) ADC = MDA/V = (G)/(A) ADC Fraction of DAC (or AE) = Final Count?	(E) (E) (E) (E) (F) (M) (E) (F) (M) (H) (H) (F2) (J)	(PRT(Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29 2.50E-15 7.31E-18 2.50E-15 0.01% 2.25E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99
sackground Count Rate Lir Volume (liters) Set count rate Counter Efficiency Collection	(E) (C) (D) (E) (F) (m) = (3+4.65*SC(1)) (H) Date Updated (-(F1); (F2) (J) (J) (Goal<	PRT(Cb))/(E*T) (G) 4/20-4/21 Note: Unexpected DAC or AE	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29 2.50E-15 7.31E-18 2.50E-15 0.01% 2.25E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99 0.72
Background Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (dpm) Concentration = (F)/(2.22E9 x (A) Background "Strip" value (F.1) NET Concentration Value = (H) DAC (or AE) Fraction = (F2)/(1) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) =	(E) (C) (D) (E) (F) (m) = (3+4.65*SC(1)) (H) Date Updated (-(F1); (F2) (J) (J) (Goal<	PRT(Cb))/(E*T) (G) 4/20-4/21 Note: Unexpected DAC or AE	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	5.8E+04 0.23 0.73 0.99 0.72 0.32 0.29 2.50E-15 7.31E-18 2.50E-15 0.01% 2.25E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99

			n I - Collection D		RWP:	2018-001	
Date:	7/19/2018	Sample ID:				General Area:	Work Area:
Occupational (DAC):	Limit:	6.00E-14	μCı/ml				
Non-Occupational (EC):	IDAC	= 2.0E-11µCi/ml (U-238), EC= 6	.0E-14µCi/mI]	Radionuclio	les:	DU (Depleted	Uranium)
		FS12 SCA Boundary		Sampled By:		David Ber	res
				Activity Performed			
Wearer:		NA					
Monitored Workers:			N	IA .	3500	F & 7247	5.0
Lapel Pump Model:	NA	Se	erial No.	NA		ion Due Date:	
Air Pump Model:		Se	erial No.	2591	Calibrat	ion Due Date:	3/27/2019
		Time				Flow Ra	ite (lpm)
Sample Information			Total (minutes			Start	Stop
Collection Date	Start	Stop 15:00	480			60.0	60.0
7/10/2018	7:00	15:00	480			60	60
7/11/2018	7:00	Total Time (Tc):	960		Avg. Fle	ow Rate (lpm)	60.0
		20,000		V-1 2.4E+03	Liters		
				Volume: 2.4E+03		Ti	(A)
Sample Volume:	60 (lpm)		х	960 (minutes)	= 5,	8E+04 Li	ters (A)
		s identified are necessary to achiev	ve 10% of DAC or AE	value.			
Remarks: IVII	minum sample volume	s identified the freedom) to the					
		Secti	on II - Analysis I				
trument Information		Serial Number			libration Due D		Efficiency (a)
Instrument Type		Meter	Detector	Meter		/10/2019	0.726
L-2929		158817	164736	1/10/20	19	N/A	N/A
N/A		N/A	N/A	N/A	Alp		10.1
			20.07	4.00		nd Count	3rd Count
Varia	ables, Calculations, Re	sults	Units	1st Count	-	no Count	
unt Date				7/18/2018			
unt Time (e.g., noon, 1300, e	tc.)		20.00	10:00			
mple Count Time (Ts, Tb) =	Г		minutes	27			
tal Counts			counts	0.05			
mple Count Rate			cpm	0.01			
ekground Count Rate			epm	5.8E+04		5.8E+04	5.8E+04
Volume (liters)	(A)		liters	0.03		5.02.0	
et count rate	(B)		cpm	0.73		0.73	0.73
ounter Efficiency	(C)		cpm/dpm 0.99	0.99		0.99	0.99
ollection Efficiency	(D)		cpm/dpm	0.72		0.72	0.72
$ficiency = (C) \times (D)$	(E)		dpm	0.05			
	(F)	(CL))/(EST) (C)	dpm	0.16	710		
	dpm) = (3+4.65*SQR1	(Cb))/(E*1) (G)	μCi/ml	3.59E-16			
inimum Detectable Activity ((435		uCi/ml	7.31E-18			
inimum Detectable Activity (oncentration = (F)/(2.22E9 x				May not the			
inimum Detectable Activity (concentration = (F)/(2.22E9 x ackground "Strip" value (F.1)	Date Updated	4/20-4/21		3.52E-16			
inimum Detectable Activity (concentration = (F)/(2.22E9 x cackground "Strip" value (F.1) ET Concentration Value = (F.2)	Date Updated I) - (F1); (F2)	4/20-4/21	uCi/ml	3.52E-16 0.59%			
inimum Detectable Activity (r concentration = (F)/(2.22E9 x ackground "Strip" value (F.1) ET Concentration Value = (F AC (or AE) Fraction = (F2)/(1	Date Updated (F1); (F2)	4/20-4/21	uCi/ml	0.59%			
inimum Detectable Activity (incentration = (F)/(2.22E9 x) ackground "Strip" value (F.1) ET Concentration Value = (EAC (or AE) Fraction = (F2)/(1) (IDC = MDA/V = (G)/(A)	Date Updated (H) - (F1); (F2) (J)			0.59% 1.25E-15			
ctivity (dpm) = (B)/(E) finimum Detectable Activity (oncentration = (F)/(2.22E9 x. ackground "Strip" value (F.1) ET Concentration Value = (F. AC (or AE) Fraction = (F2)/(3 DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	Date Updated (H) - (F1); (F2) (J)		uCi/ml μCi/ml	0.59% 1.25E-15 2.08%		Yes	
inimum Detectable Activity (in concentration = (F)/(2.22E9 x) ackground "Strip" value (F.1) ET Concentration Value = (F.2)/(2.22E0 x) (F.2) ET Concentration Value = (F.2)/(2.22E0 x) (F.2)/(2.22	Date Updated (H) - (F1); (F2) (J)	6)	uCi/ml μCi/ml Yes/No	0.59% 1.25E-15 2.08% No	fication.	Yes	
inimum Detectable Activity (in concentration = (F)/(2.22E9 x) ackground "Strip" value (F.1) ET Concentration Value = (Kac (or AE) Fraction = (F2)/(1) (IDC = MDA/V = (G)/(A)	Date Updated (H) - (F1); (F2) (J)		uCi/ml μCi/ml Yes/No	0.59% 1.25E-15 2.08% No	fication.		
inimum Detectable Activity (incentration = (F)/(2.22E9 x) inckground "Strip" value (F.1) ET Concentration Value = (F.2) (Inckground "Strip" value (F.1) ET Concentration Value = (F.2)/(Inckground "AE) (Inckground "F.2)/(Inckground "AE) (Inckground "AE) (Inckgrou	Date Updated (I) - (F1); (F2) (J) - (J)/(I) (Goal<10%	Note: Unexpected DAC or AE	uCi/ml μCi/ml Yes/No	0.59% 1.25E-15 2.08% No ires immediate RSO noti	fication.		7-19-18
inimum Detectable Activity (in concentration = (F)/(2.22E9 x) ackground "Strip" value (F.1) ET Concentration Value = (F.2)/(2.22E0 x) (F.2) ET Concentration Value = (F.2)/(2.22E0 x) (F.2)/(2.22	Date Updated (I) - (F1); (F2) (J) - (J)/(I) (Goal<10%	Note: Unexpected DAC or AE	uCi/ml μCi/ml Yes/No	0.59% 1.25E-15 2.08% No	fication.		7-19-18

		Section	on I - Collection Data	a		
Date:	7/19/2018	Sample ID:	20180711-028	R'	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	μCi/ml (1)	Breathing Zone:	General Area:	Work Are
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC= 6	5.0E-14uCi/ml1	Radionuclides	DU (Depleted	
	7.0			4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	100000000000000000000000000000000000000	
Location:		FS12 Wood Soil Sort Area		Sampled By:	Stephen Bea	mes
Wearer.		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA	Se	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	17.7		erial No.	2773		V June
			110.	2113	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
7/10/2018	7:00	15:00	480		60.0	60.0
7/11/2018	7:00	15:00	480		60	60
		Total Time (Tc):	960		Avg. Flow Rate (lpm)	60.0
			on II - Analysis Data			
rument Information		Serial Number	-	Calibra	tion Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A	N/A	N/A	N/A
W	L CLIC D	v. I		40.4 00	Alpha	1000
nt Date	les, Calculations, Res	ults	Units	1st Count	2nd Count	3rd Count
nt Time (e.g., noon, 1300, etc.	V			7/18/2018		_
ple Count Time (Ts, Tb) = T	/		minutes	11:00		
l Counts				9		
ple Count Rate			counts	0.15		
ground Count Rate			cpm	0.13		
Volume (liters)	(A)		liters	5.8E+04	5.8E+04	5.8E+04
count rate	(B)		cpm	0.03	3.015704	3.85704
nter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ection Efficiency	(D)		0.99	0.99	0.99	0.99
eiency = (C) x (D)	(E)		cpm/dpm	0.72	0.72	0.72
vity (dpm) = (B)/(E)	(F)		dpm	0.04		
mum Detectable Activity (dpr	n) = (3+4.65*SQRT(C	(b))/(E*T) (G)	dpm	0.36		
centration = $(F)/(2.22E9 \times (A)$) (H)		μCi/ml	3.26E-16		
ground "Strip" value (F.1)		4/20-4/21	uCi/ml	7.31E-18		
Concentration Value = (H) -	(F1); (F2)		uCi/ml	3.19E-16		
(or AE) Fraction = (F2)/(I)				0.00%		
C = MDA/V = (G)/(A)	(J)		μCi/ml	2.78E-15		
C Fraction of DAC (or AE) = (J)/(I) (Goal<10%)		1	0.01%		
Count?			Yes/No	Yes		
	N	ote: Unexpected DAC or AE fra	ction > 100% requires im	mediate RSO notification	n.	
	81.	0	.111			7 10 10
Performed By: _	TEVE	Blames A	1800		Date:	1-19-18
Reviewed By:	61 -	1/	/	_		7-19-18
Keviewed By:	(d 01	emers / he			Date:/	17-18

		Sect	ion I - Collection Data	a		
Date:	7/23/2018	Sample ID:	20180713-029	RW	VP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (I)	Breathing Zone:	General Area:	Work Ar
Non-Occupational (EC):	[DAC	= 2.0E-11µCi/ml (U-238), EC=	6.0E-14uCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:			Disconsister of the second			
_		FS12 SCA Boundary			David Ber	res
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time	-			
Collection Date	Start	Stop	Total (minutes)	_	Flow Ra	
7/12/2018	7:00	15:00	480	-	Start 60.0	Stop 60,0
7/13/2018	7:00	15:00	480	_	60	60
771312010	7.00	Total Time (Tc):	960	-	Avg. Flow Rate (lpm)	60,0
			16 har 11 0 1 11	2.07.02		
2.1.4.27			Minimum Air Sample Vol		Liters	
Sample Volume:	60 (lpm)		x 960	(minutes) =	5,8E+04 Lite	ers (A)
Remarks: Mi	nimum sample volumes	identified are necessary to achie	eve 10% of DAC or AE value	e.		
		C	to II And Late Date			
			ion II - Analysis Data			
rument Information		Serial Number			on Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (α)
L-2929 N/A		158817 N/A	164736	1/10/2019	1/10/2019	0.726
IN/A		N/A	N/A	N/A	N/A	N/A
Varia	bles, Calculations, Res	nlte I	Units	1st Count	Alpha 2nd Count	3rd Count
nt Date	oren Carcumitons, res		Cinta	7/23/2018	and Count	3rd Count
nt Time (e.g., noon, 1300, etc	.)			10:00		
ple Count Time (Ts, Tb) = T			minutes	60		
l Counts			counts	19		
ple Count Rate			cpm	0.32		
ground Count Rate			cpm	0.01		
/olume (liters)	(A)		liters	5.8E+04	5.8E+04	5.8E+04
count rate	(B)		cpm	0.31	5,62104	3.82104
nter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
	(D)		0.99	0.99	0.99	0.99
					V10-0	
ection Efficiency					0.72	0.72
ection Efficiency iency = (C) x (D)	(E)		cpm/dpm	0.72	0.72	0.72
ection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E)	(E)	b))/(E*T) (G)	cpm/dpm dpm	0.72 0.43	0.72	0.72
ection Efficiency iency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp	(E) (F) m) = (3+4.65*SQRT(C	b))/(E*T) (G)	cpm/dpm	0.72 0.43 0.16	0.72	0.72
ection Efficiency iency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A)	(E) (F) om) = (3+4.65*SQRT(C) (H)	b))/(E*T) (G) 4/20-4/21	cpm/dpm dpm dpm	0.72 0.43	0.72	0.72
ection Efficiency iency = (C) × (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 × (A ground "Strip" value (F.1)	(E) (F) em) = (3+4.65*SQRT(C) (H) Date Updated		cpm/dpm dpm dpm µCi/ml	0.72 0.43 0.16 3.35E-15	0.72	0.72
ection Efficiency iency = (C) × (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 × (A ground "Strip" value (F.1) Concentration Value = (H)	(E) (F) em) = (3+4.65*SQRT(C) (H) Date Updated		cpm/dpm dpm dpm µCi/ml uCi/ml	0.72 0.43 0.16 3.35E-15 7.31E-18 3.34E-15	0.72	0.72
ection Efficiency iency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A ground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	(E) (F) em) = (3+4.65*SQRT(C) (H) Date Updated		cpm/dpm dpm dpm µCi/ml uCi/ml	0.72 0.43 0.16 3.35E-15 7.31E-18 3.34E-15 5.57%	0.72	0.72
ection Efficiency ciency = (C) × (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 × (A cground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated - (F1); (F2)		cpm/dpm dpm dpm µCi/ml uCi/ml	0.72 0.43 0.16 3.35E-15 7.31E-18 3.34E-15 5.57% 1.25E-15	0.72	0.72
ection Efficiency eiency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A rground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated - (F1); (F2)		cpm/dpm dpm dpm µCi/ml uCi/ml	0.72 0.43 0.16 3.35E-15 7.31E-18 3.34E-15 5.57% 1.25E-15 2.08%		0.72
ection Efficiency eiency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A rground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(E) (F) (m) = (3+4.65*SQRT(C))) (H) Date Updated - (F1); (F2) (J) (J)(I) (Goal<10%)	4/20-4/21	cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml μCi/ml γEs/No	0.72 0.43 0.16 3.35E-15 7.31E-18 3.34E-15 5.57% 1.25E-15 2.08% No	Yes	0.72
ection Efficiency eiency = (C) × (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2 22E9 × (A sground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = I Count?	(E) (F) (m) = (3+4.65*SQRT(C))) (H) Date Updated - (F1); (F2) (J) (J)(I) (Goal<10%)		cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml μCi/ml γEs/No	0.72 0.43 0.16 3.35E-15 7.31E-18 3.34E-15 5.57% 1.25E-15 2.08% No	Yes	
ection Efficiency iency = (C) x (D) rity (dpm) = (B)/(E) mum Detectable Activity (dp rentration = (F)/(2.22E9 x (A ground "Strip" value (F.1) Concentration Value = (H) c (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = Count?	(E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 ote: Unexpected DAC or AE fr	cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml μCi/ml γEs/No	0.72 0.43 0.16 3.35E-15 7.31E-18 3.34E-15 5.57% 1.25E-15 2.08% No	Yes	
ection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A cground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(E) (F) (m) = (3+4.65*SQRT(C))) (H) Date Updated -(F1); (F2) (J) (J)(I) (Goal<10%) N	4/20-4/21	cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml μCi/ml γEs/No	0.72 0.43 0.16 3.35E-15 7.31E-18 3.34E-15 5.57% 1.25E-15 2.08% No	Yes	7-23-18

Date:	7/23/2018						
	772372016	Sample ID:	2018071	3-030	RV	VP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11		Cı/ml (1)	Breathing Zone:		Work Are
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC	= 6.0E-14µCi/ml]		Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 Wood Soil Sort Ar	ea	S		Stephen Be	
Wearer:		NA				NA NA	anes
Monitored Workers:				NA		INA.	
Lapel Pump Model:	NA		Serial No.				4
Air Pump Model:	LV-1		-	NA	_	Calibration Due Date:	1.714.17
	LV-I		Serial No.	2773		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (mi	nutes)	I	Start	Stop
7/12/2018	7:00	15:00	480			60.0	60.0
7/13/2018	7:00	15:00	480	-		60	60
		Total Time (Tc):	960	1 3		Avg. Flow Rate (lpm)	60.0
	imum sampie volumes	identified are necessary to achi	tion II - Analys				
rument Information		Serial Number			Calibrati	on Due Date	
Instrument Type		Meter	Detect	or	Meter	Detector	Efficiency (a)
L-2929		158817	16473	6	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A		N/A	N/A	N/A
Variati	les, Calculations, Res	n I				Alpha	
t Date	ies, Calculations, Resi	ints	Units	1st Co		2nd Count	3rd Count
t Time (e.g., noon, 1300, etc.)	1		-	7/23/20			
ole Count Time (Ts, Tb) = T			minutes	11:00	,		
Counts				60			
ole Count Rate			counts	17			
ground Count Rate			cpm	0.28		-	
olume (liters)	(A)		liters	0.12		6.00.04	
ount rate	(B)		cpm	5.8E+0)4	5.8E+04	5.8E+04
ter Efficiency	(C)		cpm/dpm	0.73		0.72	0.04
ction Efficiency	(D)		0.99	0.79		0.73	0.73
$ency = (C) \times (D)$	(E)		cpm/dpm	0.72		0.72	0.99
ity $(dpm) = (B)/(E)$	(F)		dpm	0.22		0.72	0.72
num Detectable Activity (dpm))/(E*T) (G)	dpm	0.36			
entration = $(F)/(2.22E9 \times (A))$			μCi/ml	1.74E-	15		
ground "Strip" value (F.1)		4/20-4/21	uCi/ml	7.31E-1	8		
Concentration Value = (H) - ((F1); (F2)		uCi/ml	1.73E-			
(or AE) Fraction = (F2)/(I)				0.01%			
= MDA/V = (G)/(A)	(J)		μCi/ml	2.78E-			
Fraction of DAC (or AE) = (J	I)/(I) (Goal<10%)			0.019			
Count?			Yes/No	Yes			
	No.	te: Unexpected DAC or AE fr	action > 100% req	uires immediate l	RSO notification.		
Performed By:	6.1	cures #8	1 1				

		Sec	tion I - Collectio	n Data			
Date:	7/25/2018	Sample ID:	20180717-	031	RV	VP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μС	/ml (1)	Breathing Zone:	General Area:	Work Ar
Non-Occupational (EC):	IDAC	C = 2.0E-11µCi/ml (U-238), EC-	= 6.0F-14uCi/ml1				
	[Direction of the control of the con		- O.OE-14µCDIIII			DU (Depleted	
Location:		FS12 SCA Boundary		San	npled By:	David Ben	res
Wearer:		NA		Activity	Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		C. S. INT.	37.8			100
			Serial No.	NA		Calibration Due Date:	NA
Air Pump Model;	LV-1		Serial No.	2591		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Rat	te (lpm)
Collection Date	Start	Stop	Total (minu	tes)	f	Start	Stop
7/16/2018	7;00	17:00	600		1	60.0	60.0
7/17/2018	7:00	17:00	600			60	60
		Total Time (Tc):	1200			Avg. Flow Rate (lpm)	60.0
ument Information			ion II - Analysis	Data			
rument Information		Serial Number			Calibrati	on Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929	- 41	158817	164736		1/10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
Variat	oles, Calculations, Res		***	12.2		Alpha	
nt Date	oles, Calculations, Res	uits	Units	1st Cour		2nd Count	3rd Count
	1			7/24/201	8		
	.)			10:00			
at Time (e.g., noon, 1300, etc.			minutes	70			
ole Count Time (Ts, Tb) = T	Y		minutes	60			
ole Count Time (Ts, Tb) = T Counts	Y		counts	21			
count Time (Ts, Tb) = T Counts Count Rate			counts	21 0.35	- 4		
ole Count Time (Ts, Tb) = T Counts ole Count Rate ground Count Rate	(A)		counts cpm cpm	0.35 0.03		7.25±04	7.25±04
ole Count Time (Ts, Tb) = T Counts ole Count Rate ground Count Rate Volume (liters)	(A) (B)		counts cpm cpm liters	21 0.35 0.03 7.2E+04	1	7.2E+04	7.2E+04
ole Count Time (Ts, Tb) = T Counts ole Count Rate ground Count Rate /olume (liters)	- 111		counts cpm cpm liters cpm	21 0.35 0.03 7.2E+04 0.32	1		
ole Count Time (Ts, Tb) = T Counts ole Count Rate ground Count Rate /olume (liters) ount rate ter Efficiency	(B)		counts cpm cpm liters	21 0.35 0.03 7.2E+04	1	7.2E+04 0.73 0.99	0.73
ole Count Time (Ts, Tb) = T Counts ole Count Rate ground Count Rate /olume (liters) ount rate ster Efficiency cetion Efficiency	(B) (C)		counts cpm cpm liters cpm cpm/dpm	21 0.35 0.03 7.2E+04 0.32 0.73	1	0.73	0.73 0.99
count Time (Ts, Tb) = T Counts cle Count Rate ground Count Rate folume (liters) count rate ther Efficiency ention Efficiency ency = (C) x (D) ity (dpm) = (B)/(E)	(B) (C) (D) (E) (F)		counts cpm cpm liters cpm cpm/dpm 0.99	21 0.35 0.03 7.2E+04 0.32 0.73 0.99	1	0.73 0.99	0.73
count Time (Ts, Tb) = T Counts cle Count Rate ground Count Rate folume (liters) count rate ther Efficiency etion Efficiency etion Efficiency inty (dpm) = (B)/(E) mum Detectable Activity (dpm	(B) (C) (D) (E) (F) m) = (3+4.65*SQRT(C)	b))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	21 0.35 0.03 7.2E+04 0.32 0.73 0.99		0.73 0.99	0.73 0.99
ple Count Time (Ts, Tb) = T Counts ple Count Rate ground Count Rate folume (liters) count rate ther Efficiency tetion Efficiency tetion Efficiency tetion (C) x (D) tity (dpm) = (B)/(E) the mum Detectable Activity (dpr entration = (F)/(2.22E9 x (A))	(B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(C)) (H)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	21 0.35 0.03 7.2E+04 0.32 0.73 0.99 0.72		0.73 0.99	0.73 0.99
ole Count Time (Ts, Tb) = T Counts ole Count Rate ground Count Rate folume (liters) ount rate ther Efficiency tetro Efficiency tetro Efficiency tity (dpm) = (B)/(E) num Detectable Activity (dpr entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1)	(B) (C) (D) (E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated	b))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	21 0.35 0.03 7.2E+04 0.32 0.73 0.99 0.72 0.44	5	0.73 0.99	0.73 0.99
ole Count Time (Ts, Tb) = T Counts ole Count Rate ground Count Rate folume (liters) ount rate ther Efficiency tetron Efficiency ity (dpm) = (B)/(E) mum Detectable Activity (dpr entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H) Concentration Value = (H)	(B) (C) (D) (E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	21 0.35 0.03 7.2E+04 0.32 0.73 0.99 0.72 0.44 0.22 2.76E-1 7.31E-18	5 3 5	0.73 0.99	0.73 0.99
ple Count Time (Ts, Tb) = T Counts ple Count Rate ground Count Rate folume (liters) count rate ter Efficiency tetro Efficiency tetron Efficiency tetron Efficiency tetron Efficiency tetron Efficiency tetron Efficiency tetron = (T)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H)- (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	21 0.35 0.03 7.2E+04 0.32 0.73 0.99 0.72 0.44 0.22 2.76E-1	5 3 5	0.73 0.99	0.73 0.99
ple Count Time (Ts, Tb) = T Counts ple Count Rate ground Count Rate folume (liters) count rate ther Efficiency tensy = (C) x (D) tity (dpm) = (B)/(E) thum Detectable Activity (dpm entration = (F)/(2.22F9 x (A) ground "Strip" value (F.1) Concentration Value = (H)- (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) m) = (3+4.65*SQRT(C) (H) Date Updated (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	21 0.35 0.03 7.2E+04 0.32 0.73 0.99 0.72 0.44 0.22 2.76E-1 7.31E-18	5 3 5	0.73 0.99	0.73 0.99
ple Count Time (Ts, Tb) = T Counts ple Count Rate ground Count Rate folume (liters) count rate ther Efficiency tency = (C) x (D) tity (dpm) = (B)/(E) thum Detectable Activity (dpr entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H)- (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = ((B) (C) (D) (E) (F) m) = (3+4.65*SQRT(C) (H) Date Updated (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	21 0.35 0.03 7.2E+04 0.32 0.73 0.99 0.72 0.44 0.22 2.76E-1 7.31E-18 2.75E-1 4.59%	5 3 5 5 5 5 5	0.73 0.99	0.73 0.99
ple Count Time (Ts, Tb) = T Counts ple Count Rate ground Count Rate folume (liters) count rate ther Efficiency tensy = (C) x (D) tity (dpm) = (B)/(E) thum Detectable Activity (dpm entration = (F)/(2.22F9 x (A) ground "Strip" value (F.1) Concentration Value = (H)- (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) m) = (3+4.65*SQRT(C) (H) Date Updated (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	21 0.35 0.03 7.2E+04 0.32 0.73 0.99 0.72 0.44 0.22 2.76E-1 7.31E-18 2.75E-1 4.59%	5 3 5 5 5 5 5	0.73 0.99	0.73 0.99
ple Count Time (Ts, Tb) = T Counts ple Count Rate ground Count Rate folume (liters) count rate ther Efficiency tency = (C) x (D) tity (dpm) = (B)/(E) thum Detectable Activity (dpr entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H)- (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = ((B) (C) (D) (E) (F) (F) (F) (F) (F) (F) (F) (F) (F) (F		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml uCi/ml	21 0.35 0.03 7.2E+04 0.32 0.73 0.99 0.72 0.44 0.22 2.76E-1 7.31E-18 2.75E-1 4.59% 1.37E-1 2.28% No	5 3 5 5	0.73 0.99 0.72	0.73 0.99

		Section	on I - Collection	Data			
Date:	7/25/2018	Sample ID:	20180717-0	32	RWP:	2018-001	
Occupational (DAC):	Limit:	2.00E-11	μСи		thing Zone:		Work Area:
Non-Occupational (EC):	0	DAC = 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	Ra	dionuclides:	DU (Depleted	Uranium)
				Sampl	ed By:	Stephen Bea	mes
					erformed:		
Wearer:		NA .		NA			
Monitored Workers:				444		Election Due Date:	NA
Lapel Pump Model:	NA	S	erial No.	NA		alibration Due Date:	VS. v. 5.17.
Air Pump Model:	LV-1	S	erial No.	2773		alibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	
Collection Date	Start	Stop	Total (minu	tes)		Start	Stop
7/16/2018	7:00	17:00	600	1.		60.0	60.0
7/17/2018	7:00	17:00	600			60	60
		Total Time (Tc):	1200		_ /	lvg. Flow Rate (lpm)	60.0
			Minimum Air Sar	ple Volume:	.9E+00 Lite	ers	
				1200 (minu		7.2E+04 Li	ters (A)
Sample Volume:			x				
Remarks: Mir	imum sample vol	lumes identified are necessary to achie	eve 10% of DAC or	AE value.			
Kelliaks. Wil	illiam sampre 10.						
		Sect	tion II - Analysi	s Data		200 - NO.	
trument Information		Serial Number			Calibration		Efficiency (a)
Instrument Type		Meter	Detecto		Meter	Detector 12/13/2018	0.726
L-2929		158817	164736		12/13/2018	N/A	N/A
N/A		N/A	N/A		N/A	Alpha	1972
				1.78		2nd Count	3rd Count
Varia	bles, Calculation	s, Results	Units	1st Coun		2nd Count	Did Count
unt Date				7/24/2013			
unt Time (e.g., noon, 1300, et	e.)			60			
mple Count Time (Ts, Tb) = T			minutes	10			
tal Counts			counts	0.17			
mple Count Rate			cpm	0.03			
ckground Count Rate			cpm liters	7.2E+04		7.2E+04	7.2E+04
r Volume (liters)		A)	cpm	0.13			
et count rate		B)	cpm/dpm	0.73		0.73	0.73
ounter Efficiency	(C)		0.99	0.99		0.99	0.99
ollection Efficiency	(D		epm/dpm	0.72		0.72	0.72
ficiency = (C) x (D)	(E)		dpm	0.19			
ctivity (dpm) = (B)/(E) inimum Detectable Activity (d	(F)	OPT/C5))/(E*T) (C)	dpm	0.22			
	7 A A	QKI(CO))(C 1)(O)	uCi/ml	1.17E-1	5		
oncentration = (F)/(2.22E9 x (a ackground "Strip" value (F.1)		4/20-4/21	uCi/ml	7.31E-1			
ET Concentration Value = (H			uCi/ml	1.16E-1	5		
				0.01%			
AC (or AE) Fraction = $(F2)/(\Gamma)$ DC = MDA/V = (G)/(A)	(J)		μCi/ml	1.37E-1	5		
DC Fraction of DAC (or AE)		<10%)	V	0.01%			
	(a) (com		Yes/No	Yes			
inal Count?		Note: Unexpected DAC or AE			SO notification.		
		Note: Unexpected DAC OF AL	100,011				
			/ /				
	Slan	Bennes Les	ld			Date:	1-25-10
Performed By:	Steve	Beames 48 Siemes 5	ld			Date:	7-25-18

		Sect	ion I - Collection D	ata		
Date:	7/27/2018	Sample ID:			/P: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml	- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Work Area:
Non-Occupational (EC):	[DAC	= 2.0E-11µCi/ml (U-238), EC=	= 6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
	- 770	FS12 SCA Boundary		Sampled By:	David Ben	res
Location:					NA	
Wearer:		NA				
Monitored Workers:			N	NA.	THE RESERVE OF THE SECOND	40
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	44.2		Serial No.	2591	Calibration Due Date:	3/27/2019
		Ti			Flow Ra	te (lpm)
Sample Information		Time	Total (minutes		Start	Stop
Collection Date	Start	Stop	480	,	60.0	60.0
7/18/2018	7;00	15:00	480		60	60
7/20/2018	7:00	15:00 Total Time (Tc):	960		Avg. Flow Rate (lpm)	60.0
		Total Time (10).		over edeble	VC-E	
			Minimum Air Sample	e Volume: 5.0E+03	Liters	
	(O (lam)		x	960 (minutes) =	5.8E+04 Lin	ters (A)
Sample Volume:						
Remarks: Mi	nimum sample volume	s identified are necessary to ach	ieve 10% of DAC or AE	value.		
			AT THE OTHER WAS IN			
			ction II - Analysis I		tion Due Date	
strument Information		Serial Number	D.	Meter	tion Due Date Detector	Efficiency (a)
Instrument Type		Meter	Detector	1/10/2019	1/10/2019	0.726
L-2929		158817	164736	N/A	N/A	N/A
N/A		N/A	N/A	N/A		*****
				1.0	Alpha 2nd Count	3rd Count
Varia	bles, Calculations, Re	sults	Units	1st Count 7/27/2018	Ziid Count	
ount Date				10:00		
ount Time (e.g., noon, 1300, et	tc.)			60		
imple Count Time (Ts, Tb) = T			minutes			
otal Counts			counts	17		
ample Count Rate			cpm	0.28		
ackground Count Rate			cpm	0.10	5.8E+04	5.8E+04
ir Volume (liters)	(A)		liters	5.8E+04	3.85704	5.02.01
et count rate	(B)		cpm	0.18	0.73	0.73
ounter Efficiency	(C)		cpm/dpm	0.73	0.99	0.99
ollection Efficiency	(D)		0.99	0.99	0.72	0.72
fficiency = $(C) \times (D)$	(E)		cpm/dpm	0.72	V.12	0.72
ctivity (dpm) = (B)/(E)	(F)		dpm	0.25		
finimum Detectable Activity (c		(Cb))/(E*T) (G)	dpm	1.96E-15		
Concentration = $(F)/(2.22E9 \times ($		100 101	μCi/ml	7.31E-18		
ackground "Strip" value (F.1)		4/20-4/21	uCi/ml	1.95E-15		
ET Concentration Value = (H			uCi/ml			1
AC (or AE) Fraction = (F2)/(I)		au.	3.25%		
ma amanar mu	(J)		μCi/ml	2.58E-15		
	= (J)/(I) (Goal<10%	5)		4.31%	Van	
			Yes/No	No	Yes	1
MDC Fraction of DAC (or AE)				THE PROPERTY AND ADDRESS AND A	ion	
MDC Fraction of DAC (or AE)		Note: Unexpected DAC or Al	E fraction > 100% requ	ires immediate RSO notificat	1011.	
MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?		Note: Unexpected DAC or Al		ires immediate RSO notificat		7 70 11
ADC Fraction of DAC (or AE) inal Count?	Steve	0	g fraction > 100% requ	ires immediate RSO notificat		7-28-18
ADC Fraction of DAC (or AE) final Count?	: Steve	0		ires immediate KSO notificat		7-28-18

D.	Z/OZ MOLIN		on I - Collection Da	TA .		
Date:	7/27/2018	Sample ID:	20180720-034	RW		
Occupational (DAC):	Limit:	2.00E-11	μCı/ml (Breathing Zone:	General Area:	Work Ar
Non-Occupational (EC):	[DA	$C = 2.0E-11\mu Ci/ml$ (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Deplete	ed Uranium)
Location:		FS12 Wood Soil Sort Area		Sampled By:	Stephen E	Beames
Wearer:		NA		Activity Performed:		
Monitored Workers:			N/			
Lapel Pump Model:	NA	Š	erial No.	NA	Colibration Due Date:	NA
Air Pump Model:					Calibration Due Date:	
- 1	EV-1		erial No.	2773	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow F	Rate (Ipm)
Collection Date 7/18/2018	7:00	Stop	Total (minutes)		Start	Stop
7/20/2018	7:00	15:00	480		60.0	60.0
7/20/2018	7,00	15:00 Total Time (Tc):	480 960		60	60
-		Total Time (Tc):	960		Avg. Flow Rate (lpm)	60.0
ument Information		Section Serial Number	on II - Analysis Da		P. D	
Instrument Type		Meter Serial Number	Detector		n Due Date	TOT :
L-2929		158817	164736	Meter 12/13/2018	Detector 12/13/2018	Efficiency (a)
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	TWA
	les, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
nt Date				7/27/2018		
nt Time (e.g., noon, 1300, etc.)			11:00		
ple Count Time (Ts, Tb) = T Counts			minutes	60		
ole Count Rate			counts	0.33		
ground Count Rate			cpm cpm	0,33		
olume (liters)	(A)		liters	5.8E+04	5.8E+04	5.8E+04
ount rate	(B)		cpm	0.23	2102.04	3.02.04
ter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ection Efficiency	(D)		0.99	0.99	0.99	0.99
ency = (C) x (D)	(E)		cpm/dpm	0.72	0.72	0.72
rity (dpm) = (B)/(E)	(F)	71 33 (00)400 A00	dpm	0.32		
mum Detectable Activity (dpn centration = (F)/(2.22E9 x (A))		.b))/(E+1) (G)	dpm	0.33		
	Date Updated	4/20-4/21	μCi/ml uCi/ml	2.50E-15 7.31E-18		
Concentration Value = (H) -		3724 1721	uCi/ml	2.50E-15		
(or AE) Fraction = (F2)/(I)			ucam	0.01%		
= MDA/V $=$ (G)/(A)	(J)		μCi/ml	2.58E-15		
Fraction of DAC (or AE) = (0.01%		
Count?			Yes/No	Yes		
	N	iote: Unexpected DAC or AE fra				
Performed By:	Steve	Beames	for Ad		Date:	7-27-18
Reviewed By:		Sioners	11-			

Date:	7/31/2018	Sample ID	20180724-0	35	RWP:	2018-001	
Occupational (DAC):	Limit:	12/24/24		/ml (1)	Breathing Zone:		Work Area:
		6.00E-14					
Non-Occupational (EC):	Į.	DAC = 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]		Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary			Sampled By:	David Be	rres
Wearer:		NA		Acti	vity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA	5	Serial No.	N/A		Calibration Due Date:	NA
			V	259		Calibration Due Date:	
Air Pump Model:	LV-1		Serial No.	239	1		
Sample Information		Time					ite (Ipm)
Collection Date	Start	Stop	Total (minu	tes)		Start	Stop
7/23/2018	7:00	17:00	600			60.0	60.0
7/24/2018	7:00	17:00	600			60	60
		Total Time (Tc):	1200			Avg. Flow Rate (lpm)	60.0
			Minimum Air Sam	ple Volume:	5.3E+03 Li	ers	
Court Websen	60 (lam)	x	1200	(minutes) =	7.2E+04 Li	ters (A)
Sample Volume:							
Remarks: Min	imum sample vol	iumes identified are necessary to achie	eve 10% of DAC or A	AE value.			
		Sect	ion II - Analysis	s Data			
Assumption I		Serial Number			Calibration	Due Date	
trument Information		Meter	Detector		Meter	Detector	Efficiency (a)
Instrument Type		158817	164736		1/10/2019	1/10/2019	0.726
L-2929		N/A	N/A		N/A	N/A	N/A
N/A		IVA				Alpha	
Varial	oles, Calculations	Recults	Units	1st	Count	2nd Count	3rd Count
unt Date	nes, Calculations	, Acours		7/31	/2018		
unt Time (e.g., noon, 1300, etc	1			14	1:00		
nple Count Time (Ts, Tb) = T	-/		minutes		60		
al Counts			counts		20		
nple Count Rate			cpm	0	.33		
ckground Count Rate			cpm	0	.12		
Volume (liters)	(/	A)	liters	7.2	E+04	7.2E+04	7.2E+04
t count rate	(B		cpm	0	.21		
unter Efficiency	(C)		cpm/dpm	0	.73	0.73	0.73
llection Efficiency	(D)		0.99	0	.99	0.99	0.99
iciency = (C) x (D)	(E)		cpm/dpm	0	.72	0.72	0.72
tivity $(dpm) = (B)/(E)$	(F)		dpm	0	.29		
nimum Detectable Activity (dp		ORT(Cb))/(E*T) (G)	dpm	0	.36		
ncentration = $(F)/(2.22E9 \times (A))$	7 - y		μCi/ml	1.83	BE-15		
ekground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.3	1E-18		
T Concentration Value = (H)	- (F1); (F2)	uCi/ml	1.82	2E-15		
C (or AE) Fraction = (F2)/(I)				3.0	3%		
DC = MDA/V = (G)/(A)	(J)		μCi/ml	2.22	2E-15		
OC Fraction of DAC (or AE) =		10%)		3.	70%		
al Count?			Yes/No		No	Yes	
		Note: Unexpected DAC or AE	fraction > 100% req	nires immedi	ate RSO notification.		
		0	, /				7 -1 1
	- 1-	4. 1/	11/1/				1 21 10
Performed By:	Ste.	or begins f	- 11 /V			Date:	7-31-18

Date:	7/31/2018		ion I - Collection		DWD. 2019 001	
0 1010		Sample ID:	20180724-03		RWP: 2018-001	- m
Occupational (DAC):	Limit:	2.00E-11	рсил	nl (1) Breathing Z	one: General Area:	Work Area:
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionucli	des: DU (Deplete	ed Uranium)
Location:		FS12 Wood Soil Sort Are	a	Sampled By:	Stephen B	Beames
Wearer;		NA			: NA	
		NA.				
Monitored Workers:				NA		
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	5	Serial No.	2773	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow I	Rate (Ipm)
Collection Date	Start	Stop	Total (minute	s)	Start	Stop
7/23/2018	7:00	17:00	600		60.0	60.0
7/24/2018	7:00	17:00	600		60	60
772,720,70	7.50	Total Time (Tc):	1200		Avg. Flow Rate (lpm)	60.0
			200	1.6. Par 1. C.	62.	
			Minimum Air Samp	le Volume: 1.6E+01	Liters	
Sample Volume:	60 (lpm))	x	1200 (minutes)	= 7.2E+04 I	iters (A)
The state of the s		s identified are necessary to achie	ION OF DAC or A	7 mahaa		
Kemarks: Mil	nimum sampie voiume	es identified are necessary to acme	ve 10% of DAC of A	value.		
		Sect	ion II - Analysis	Data		
strument Information		Serial Number		Ca	libration Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/20	18 12/13/2018	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varial	bles, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
ount Date				7/31/2018		
				*****		-
ount Time (e.g., noon, 1300, etc	2.)			15:00		
			minutes	60		
ample Count Time (Ts, Tb) = T			minutes counts			
ample Count Time (Ts, Tb) = T otal Counts				60		
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate			counts	60 22		
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate			counts cpm	60 22 0.37	7.2E+04	7.2E+04
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate ackground Count Rate r Volume (liters)			counts cpm cpm	60 22 0.37 0.12	7.2E+04	7.2E+04
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate ackground Count Rate r Volume (liters) et count rate	(A)		counts cpm cpm liters	60 22 0.37 0.12 7.2E+04	7.2E+04 0.73	7.2E+04 0.73
mple Count Time (Ts, Tb) = T stal Counts mple Count Rate sekground Count Rate r Volume (liters) set count rate sounter Efficiency	(A) (B)		counts cpm cpm liters cpm	60 22 0.37 0.12 7.2E+04 0.25		
mple Count Time (Ts, Tb) = T stal Counts mple Count Rate sekground Count Rate r Volume (liters) et count rate sounter Efficiency ollection Efficiency	(A) (B) (C)		counts cpm cpm liters cpm cpm/dpm	60 22 0.37 0.12 7.2E+04 0.25 0.73	0.73	0.73
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate ockground Count Rate r Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D)	(A) (B) (C) (D)		counts cpm cpm liters cpm cpm/dpm 0.99	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency ficiency = (C) x (D) ctivity (dpm) = (B)/(E)	(A) (B) (C) (D) (E)	Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency ficiency = (C) x (D) otivity (dpm) = (B)/(E) inimum Detectable Activity (dpm)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) inimum Detectable Activity (dp oncentration = (F)/(2.22E9 x (A)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(A)) (H)	Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72 0.35	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = Total Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate counter Efficiency ficiency = (C) x (D) ctivity (dpm) = (B)/(E) inimum Detectable Activity (dpm) cncentration = (F)/(2.22E9 x (A ackground "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(A)) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72 0.35 0.36 2.18E-15	0.73 0.99	0.73 0.99
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate reckground Count Rate reckground Count Rate reckground (liters) et count rate ounter Efficiency oliection Efficiency fficiency = (C) x (D) stivity (dpm) = (B)/(E) inimum Detectable Activity (dpm) meentration = (F)/(2.22E9 x (A) ackground "Strip" value (F.1) ET Concentration Value = (H)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(A)) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml uCi/ml	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72 0.35 0.36 2.18E-15 7.31E-18	0.73 0.99	0.73 0.99
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate leckground Count Rate r Volume (liters) et count rate ounter Efficiency officiency = (C) x (D) stivity (dpm) = (B)/(E) inimum Detectable Activity (dpm) mentration = (F)/(2.22E9 x (A) leckground "Strip" value (F.1) eT Concentration Value = (H) AC (or AE) Fraction = (F2)/(I)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(A)) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml uCi/ml	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72 0.35 0.36 2.18E-15 7.31E-18 2.17E-15	0.73 0.99	0.73 0.99
mple Count Time (Ts, Tb) = T otal Counts mple Count Rate leckground Count Rate r Volume (liters) et count rate ounter Efficiency officiency = (C) x (D) stivity (dpm) = (B)/(E) inimum Detectable Activity (dpm) concentration = (F)/(2.22E9 x (A leckground "Strip" value (F.1) eT Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(4)) (H) Date Updated - (F1); (F2)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72 0.35 0.36 2.18E-15 7.31E-18 2.17E-15 0.01%	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency officiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dp oncentration = (F)/(2.22E9 x (A ackground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(4)) (H) Date Updated - (F1); (F2)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72 0.35 0.36 2.18E-15 7.31E-18 2.17E-15 0.01% 2.22E-15	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency officiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dp oncentration = (F)/(2.22E9 x (A ackground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(4)) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72 0.35 0.36 2.18E-15 7.31E-18 2.17E-15 0.01% 2.22E-15 0.01%	0.73 0.99 0.72	0.73 0.99
ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) fet count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dp oncentration = (F)/(2.22E9 x (A ackground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) dDC = MDA/V = (G)/(A) dDC Fraction of DAC (or AE) = inal Count?	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(A)) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE (counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72 0.35 0.36 2.18E-15 7.31E-18 2.17E-15 0.01% 2.22E-15 0.01%	0.73 0.99 0.72	0.73 0.99
ample Count Time (Ts, Tb) = Total Counts tangle Count Rate tackground Efficiency fliction Efficie	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(A)) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE (counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72 0.35 0.36 2.18E-15 7.31E-18 2.17E-15 0.01% 2.22E-15 0.01%	0.73 0.99 0.72	0.73 0.99 0.72
ample Count Time (Ts, Tb) = Total Counts tangle Count Rate ackground Count Rate ir Volume (liters) et count rate counter Efficiency oblication Efficiency fficiency = (C) x (D) stivity (dpm) = (B)/(E) inimum Detectable Activity (dpm) concentration = (F)/(2.22E9 x (A ackground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(A)) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	60 22 0.37 0.12 7.2E+04 0.25 0.73 0.99 0.72 0.35 0.36 2.18E-15 7.31E-18 2.17E-15 0.01% 2.22E-15 0.01%	0.73 0.99 0.72	0.73 0.99

		Secti	on I - Collection Data	1		
Date:	8/6/2018	Sample ID:	20180724-037	RWI	2: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (1)	Breathing Zone:	General Area:	Work Area
Non-Occupational (EC):	[DAC	= 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:				120000000000000000000000000000000000000	David Ber	
						165
		NA .		Activity Performed:	NA	
Monitored Workers:			NA.			
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
7/25/2018	7:30	17:00	570		60.0	60.0
7/26/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
				110.12		
6 1 1 1 1			Minimum Air Sample Vol		iters	
Sample Volume:	60 (lpm)		x 1140	(minutes) =	6.8E+04 Lit	ers (A)
Remarks: Min	nimum sample volumes	identified are necessary to achie	ve 10% of DAC or AE value	e,		
		6 4				
			ion II - Analysis Data		I	
rument Information		Serial Number			n Due Date	vide to the Co.
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
** *			***		Alpha	
	bles, Calculations, Res	uits	Units	1st Count	2nd Count	3rd Count
nt Date				8/6/2018 8:00		
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T			minutes	60		_
al Counts			counts	20		
ple Count Rate			cpm	0.33		
kground Count Rate				0.10		
Volume (liters)	(A)		cpm liters	6.8E+04	6.8E+04	6.8E+04
count rate	(B)	+	cpm	0.23	0.85704	0.8E704
nter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ection Efficiency	(D)		0.99	0.99	0.99	0.99
ciency = (C) x (D)	(E)		cpm/dpm	0.72	0.72	0.72
vity $(dpm) = (B)/(E)$	(F)		dpm	0.32	0.72	0.72
		(G)	dpm	0.33		
imum Detectable Activity (dr		-1/\/\-	μCi/ml	2.11E-15		
			uCi/ml	7.31E-18		
centration = $(F)/(2.22E9 \times (A))$		4/20-4/21	uC/mi			
centration = (F)/(2.22E9 x (A kground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	2.10E-15		
centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H)	Date Updated	4/20-4/21				
centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	Date Updated	4/20-4/21	uCi/ml	3.50%		
centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	Date Updated - (F1); (F2)	4/20-4/21				
centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	Date Updated - (F1); (F2)	4/20-4/21	uCi/ml	3.50% 2.18E-15	Yes	
centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) f Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	uCi/ml μCi/ml Yes/No	3.50% 2.18E-15 3.63% No	Yes	
imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) f Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = dl Count?	Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	iote: Unexpected DAC or AE fr	uCi/ml μCi/ml Yes/No action > 100% requires in	3.50% 2.18E-15 3.63% No		8-6-18
centration = (F)/(2.22E9 x (A sground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = I Count?	Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)		uCi/ml μCi/ml Yes/No	3.50% 2.18E-15 3.63% No		8-6-18

Date:	8/6/2018	Sample ID:	ion I - Collection 20180724-0		RWP	2018-001	
		Sample ID.		ml (1)	Breathing Zone:		1 Work Area
Occupational (DAC):	Limit:	2.00E-11		uu (1)			
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	= 6.0E-14µCi/ml]		Radionuclides:	DU (Depleted	d Uranium)
Location:		FS12 Wood Soil Sort Are	ea	Sa	ampled By:	Stephen Be	eames
Wearer:		NA		Activ	ity Performed:	NA	
				NA			
Monitored Workers:			A			Anna Serial Serial	1691
Lapel Pump Model:	NA		Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2773		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow R	ate (lpm)
Collection Date	Start	Stop	Total (minut	tes)		Start	Stop
7/26/2018	7:30	17:00	570			60.0	60.0
7/26/2018	7:30	17:00	570			60	60
772072070	7.00	Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
			nearth ordered	Walk was	-1 (A) (a)		
			Minimum Air Sam	ple Volume:	1.5E+01 L	iters	
Sample Volume:	60 (lpm)	x	1140 (n	ninutes) =	6.8E+04 Li	ters (A)
				4	_		
Remarks: Mi	nimum sample volume	es identified are necessary to achi-	eve 10% of DAC or A	E value.			
			tion II - Analysis	Data			
rument Information		Serial Number	20000			n Due Date	F.02 (m)
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736	_	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
Varia	bles, Calculations, Re	sults	Units	1st Co		2nd Count	3rd Count
nt Date				8/6/2			
nt Time (e.g., noon, 1300, et	c.)			15:0			
ple Count Time (Ts, Tb) = T			minutes	60			
al Counts			counts	29			
					0		
ple Count Rate			cpm	0.4	0		
pple Count Rate kground Count Rate			cpm cpm	0.4			
	(A)				0	6.8E+04	6,8E+04
kground Count Rate	(A) (B)		cpm	0.1	0+04	6.8E+04	6.8E+04
kground Count Rate Volume (liters)			cpm liters	0.1 6.8E	0 +04 8	6.8E+04 0.73	6.8E+04 0.73
kground Count Rate Volume (liters) count rate	(B)		cpm liters cpm	0.1 6.8E- 0.3	0 +04 88		
kground Count Rate Volume (liters) count rate nter Efficiency	(B) (C)		cpm liters cpm cpm/dpm	0.1 6.8E 0.3 0.7	0 +04 -8 -8 -73 -99	0.73	0.73
kground Count Rate Volume (liters) count rate nter Efficiency lection Efficiency	(B) (C) (D)		cpm liters cpm cpm/dpm	0.1 6.8E 0.3 0.7 0.9	0 +04 -88 -73 -99 -72	0.73 0.99	0.73 0.99
kground Count Rate Volume (liters) count rate inter Efficiency lection Efficiency ciency = (C) x (D)	(B) (C) (D) (E)	Cb))(E*T) (G)	cpm liters cpm cpm/dpm 0.99	0.1 6.8E 0.3 0.7 0.9	0 +04 +88 -33 -99 -72 -33	0.73 0.99	0.73 0.99
kground Count Rate Volume (liters) count rate inter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(Cb))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.1 6.8E 0.3 0.7 0.9 0.7	0 +04 -88 -73 -99 -92 -22 -33 -33	0.73 0.99	0.73 0.99
kground Count Rate Volume (liters) count rate nter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (d	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H)	Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.1 6.8E 0.3 0.7 0.9 0.7 0.5	0 +04 -88 -73 -99 -92 -22 -33 -33 -2-15	0.73 0.99	0.73 0.99
kground Count Rate Volume (liters) count rate nter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (d centration = (F)/(2.22E9 x (A)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml	0.1 6.8E 0.3 0.7 0.9 0.7 0.5 0.3 3.48E	0	0.73 0.99	0.73 0.99
kground Count Rate Volume (liters) count rate nter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (d centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) E Concentration Value = (H)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated 1- (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml	0.1 6.8E 0.3 0.7 0.9 0.7 0.5 0.3 3.48I 7.31F	0	0.73 0.99	0.73 0.99
kground Count Rate Volume (liters) count rate nter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (d centration = (F)/(2.22E9 x (A kground "Strip" value (F.1)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated 1- (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml	0.1 6.8E 0.3 0.7 0.9 0.7 0.5 0.3 3.48I 7.31F	0	0.73 0.99	0.73 0.99
kground Count Rate Volume (liters) count rate nter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (d centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) F Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated (-(F1); (F2)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.1 6.8E 0.3 0.7 0.9 0.7 0.5 0.3 3.48F 7.31F 3.47F	0	0.73 0.99	0.73 0.99
kground Count Rate Volume (liters) count rate Inter Efficiency lection Efficiency lection Efficiency lection Efficiency lection Efficiency lection Efficiency lection = (C) x (D) limit (dpm) = (B)/(E) limit (dpm) = (B)/(E	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated (-(F1); (F2)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.1 6.8E 0.3 0.7 0.9 0.7 0.5 0.3 3.48F 7.31F 3.47F 0.02	0	0.73 0.99	0.73 0.99
kground Count Rate Volume (liters) count rate nter Efficiency lection Efficiency lection Efficiency vity (dpm) = (B)/(E) imum Detectable Activity (dicentration = (F)/(2.22E9 x (Akground "Strip" value (F.1) F Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated (1-(F1); (F2) (J) (Goal<10%)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.1 6.8E 0.3 0.7 0.9 0.7 0.5 0.3 3.48I 7.31F 0.02 2.18I 0.01	0	0.73 0.99 0.72	0.73 0.99
kground Count Rate Volume (liters) count rate inter Efficiency teetion Efficiency teetion Efficiency teincy = (C) x (D) to yity (dpm) = (B)/(E) timum Detectable Activity (d centration = (F)/(2.22E9 x (4) kground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = d Count?	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated (1-(F1); (F2) (J) (J) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yCi/ml yCi/ml yCi/ml yCi/ml	0.1 6.8E 0.3 0.7 0.9 0.7 0.5 0.3 3.48I 7.31F 0.02 2.18I 0.01	0	0.73 0.99 0.72	0.73 0.99 0.72
kground Count Rate Volume (liters) count rate inter Efficiency teetion Efficiency teetion Efficiency teincy = (C) x (D) to yity (dpm) = (B)/(E) timum Detectable Activity (d centration = (F)/(2.22E9 x (4) kground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = d Count?	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated (1-(F1); (F2) (J) (J) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yCi/ml yCi/ml yCi/ml yCi/ml	0.1 6.8E 0.3 0.7 0.9 0.7 0.5 0.3 3.48I 7.31F 0.02 2.18I 0.01	0	0.73 0.99 0.72	0.73 0.99 0.72
kground Count Rate Volume (liters) count rate inter Efficiency teetion Efficiency teetion Efficiency teincy = (C) x (D) to yity (dpm) = (B)/(E) timum Detectable Activity (d centration = (F)/(2.22E9 x (4) kground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = d Count?	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated (1-(F1); (F2) (J) (J) (Goal<10%)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yCi/ml yCi/ml yCi/ml yCi/ml	0.1 6.8E 0.3 0.7 0.9 0.7 0.5 0.3 3.48I 7.31F 0.02 2.18I 0.01	0	0.73 0.99 0.72	0.73 0.99

		Sect	ion I - Collection Dat	а		
Date:	8/6/2018	Sample ID:	20180730-039	RW	P: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (I)	Breathing Zone:	General Area: ✓	Work Area
Non-Occupational (EC):	[DAC	= 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted)	Uranium)
Location:		FS12 SCA Boundary		Sampled By:	David Berr	res
				Activity Performed:		
		NA		Activity I cholined.		
Monitored Workers:	71.4		NA	2.5	W	371
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	
Air Pump Model:	LV-1		Serial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Rat	te (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
7/27/2018	7:00	15:00	480		60.0	60.0
7/26/2018	7:00	17:00	600		60	60
		Total Time (Tc):	1080		Avg. Flow Rate (lpm)	60,0
			Minimum Air Sample Vo	olume: 5.0E+03 I	iters	
	co (I.)				6.5E+04 Lite	ers (A)
Sample Volume:	60 (lpm)		x1086	(minutes)	0.5E704 Lite	is (A)
Remarks: Mir	nimum sample volumes	identified are necessary to achie	eve 10% of DAC or AE value	ie.		
		- 37	DV U YSGIDJEJS			
			ion II - Analysis Dat			
rument Information		Serial Number			on Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varia	bles, Calculations, Res	sults	Units	1st Count	2nd Count	3rd Count
				8/6/2018		
int Date				414144		
int Date int Time (e.g., noon, 1300, etc	c.)			8:00		
			minutes			
ant Time (e.g., noon, 1300, etc apple Count Time (Ts, Tb) = T			minutes counts	8:00		
nnt Time (e.g., noon, 1300, etc				8:00 60		
ant Time (e.g., noon, 1300, etc pple Count Time (Ts, Tb) = T al Counts			counts	8:00 60 13		
ant Time (e.g., noon, 1300, etc pple Count Time (Ts, Tb) = T al Counts pple Count Rate ekground Count Rate			counts	8:00 60 13 0.22	6.5E+04	6.5E+04
ant Time (e.g., noon, 1300, etc apple Count Time (Ts, Tb) = T al Counts apple Count Rate			counts cpm cpm	8:00 60 13 0.22 0.10	6.5E+04	6.5E+04
ant Time (e.g., noon, 1300, etc pple Count Time (Ts, Tb) = T al Counts pple Count Rate kground Count Rate Volume (liters) count rate	(A)		counts cpm cpm liters	8:00 60 13 0.22 0.10 6.5E+04	6.5E+04 0.73	6.5E+04 0.73
ant Time (e.g., noon, 1300, etc.) pple Count Time (Ts, Tb) = T al Counts pple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency	(A) (B) (C)		counts cpm cpm liters cpm	8:00 60 13 0.22 0.10 6.5E+04 0.12		
ant Time (e.g., noon, 1300, etc pple Count Time (Ts, Tb) = T al Counts pple Count Rate kkground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency	(A) (B) (C) (D)		counts cpm cpm liters cpm cpm/dpm	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73	0.73	0.73
ant Time (e.g., noon, 1300, etc pple Count Time (Ts, Tb) = T al Counts pple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D)	(A) (B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm 0.99	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99	0.73 0.99	0.73 0.99
ant Time (e.g., noon, 1300, etc.) ple Count Time (Ts, Tb) = T al Counts ple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E)	(A) (B) (C) (D) (E)	Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72	0.73 0.99	0.73 0.99
ant Time (e.g., noon, 1300, etc.) al Counts al Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) nimum Detectable Activity (d)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6)	Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpin 0.99 cpm/dpm dpm	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72 0.16	0.73 0.99	0.73 0.99
ant Time (e.g., noon, 1300, etc.) ple Count Time (Ts, Tb) = T al Counts ple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) imum Detectable Activity (diecentration = (F)/(2.22E9 x (A))	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6) (H)	Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72 0.16 0.33	0.73 0.99	0.73 0.99
ant Time (e.g., noon, 1300, etc. pple Count Time (Ts, Tb) = T al Counts apple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) imum Detectable Activity (dr centration = (F)/(2.22E9 x (A kground "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0,99 cpm/dpm dpm dpm dpm µCi/ml	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72 0.16 0.33 1.12E-15	0.73 0.99	0.73 0.99
ant Time (e.g., noon, 1300, etc. pple Count Time (Ts, Tb) = T al Counts pple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) immm Detectable Activity (dp incentration = (F)/(2.22E9 x (A) ikground "Strip" value (F.1) T Concentration Value = (H)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0,99 cpm/dpm dpm dpm µCi/ml uCi/ml	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72 0.16 0.33 1.12E-15 7.31E-18 1.11E-15	0.73 0.99	0.73 0.99
ant Time (e.g., noon, 1300, etc.) pple Count Time (Ts, Tb) = T al Counts pple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) immum Detectable Activity (dr incentration = (F)/(2.22E9 x (A ekground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(1)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6A)) (H) Date Updated - (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0,99 cpm/dpm dpm dpm µCi/ml uCi/ml	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72 0.16 0.33 1.12E-15 7.31E-18 1.11E-15 1.86%	0.73 0.99	0.73 0.99
ant Time (e.g., noon, 1300, etc. pple Count Time (Ts, Tb) = T al Counts pple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) immm Detectable Activity (dp incentration = (F)/(2.22E9 x (A) ikground "Strip" value (F.1) T Concentration Value = (H)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6) (A)) (H) Date Updated (-(F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0,99 cpm/dpm dpm dpm µCi/ml uCi/ml	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72 0.16 0.33 1.12E-15 7.31E-18 1.11E-15 1.86% 2.30E-15	0.73 0.99	0.73 0.99
ant Time (e.g., noon, 1300, etc.) pple Count Time (Ts, Tb) = T al Counts pple Count Rate klaground Count Rate Volume (liters) count rate inter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) immum Detectable Activity (dpm) intertration = (F)/(2.22E9 x (A) ckground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(1) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6) (A)) (H) Date Updated (-(F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0,99 cpm/dpm dpm dpm uCi/ml uCi/ml	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72 0.16 0.33 1.12E-15 7.31E-18 1.11E-15 1.86% 2.30E-15 3.83%	0.73 0.99 0.72	0.73 0.99
ant Time (e.g., noon, 1300, etc., noon, 1300, et	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6) (N) (H) Date Updated (-(F1); (F2) (J) (J) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72 0.16 0.33 1.12E-15 7.31E-18 1.11E-15 1.86% 2.30E-15 3.83% No	0.73 0.99 0.72	0.73 0.99
ant Time (e.g., noon, 1300, etc. pple Count Time (Ts, Tb) = T al Counts pple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) nimum Detectable Activity (dp neentration = (F)/(2.22E9 x (A kground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = al Count?	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6) (A)) (H) Date Updated -(F1); (F2) (J) (J) (J) (J)(I) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72 0.16 0.33 1.12E-15 7.31E-18 1.11E-15 1.86% 2.30E-15 3.83% No	0.73 0.99 0.72 Yes	0.73 0.99 0.72
ant Time (e.g., noon, 1300, etc., noon, 1300, et	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6) (A)) (H) Date Updated -(F1); (F2) (J) (J) (J) (J)(I) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	8:00 60 13 0.22 0.10 6.5E+04 0.12 0.73 0.99 0.72 0.16 0.33 1.12E-15 7.31E-18 1.11E-15 1.86% 2.30E-15 3.83% No	0.73 0.99 0.72 Yes	0.73 0.99

		Sect	ion I - Collection Da	ta		
Date:	8/6/2018	Sample ID:	20180730-40	RW	2018-001	
Occupational (DAC):	Limit:	2,00E-11	μCı/ml (I	Breathing Zone:	General Area:	Work Area
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 Wood Soil Sort Are	a	Sampled By:	Stephen Bea	imes
				Activity Performed:	NA	
Monitored Workers:			NA.			
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
and the contract of the contra			Serial No.	- X	Calibration Due Date:	07.4.7.0
Air Pump Model:	LV-I		seriai No.	2773		
Sample Information		Time			Flow Ra	
Collection Date	Start	Stop	Total (minutes)		Start	Stop
7/27/2018	7:00	15:00	480		60.0	60.0
7/30/2018	7:00	17:00	600		60	60
		Total Time (Tc):	1080		Avg. Flow Rate (lpm)	60,0
			Minimum Air Sample V	olume: 1.5E+01 L	iters	
Sample Volume:	60 (lpm)		x 108	0 (minutes) =	6.5E+04 Lit	ers (A)
			- 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1			
Remarks: Mir	nimum sample volume	s identified are necessary to achie	eve 10% of DAC or AE val	ue,		
		Sant	ion II - Analysis Dat	la .		
		Serial Number	ion II - Analysis Da		on Due Date	
strument Information			Detector	Meter	Detector	Efficiency (a)
Instrument Type		Meter			12/13/2018	0.726
L-2929		158817	164736	12/13/2018	N/A	N/A
N/A		N/A	N/A	N/A	Alpha	N/A
Vania	bles Calculations Do	-ulto	Units	1st Count	2nd Count	3rd Count
	bles, Calculations, Re	suits	Units	7/31/2018	2nd Count	ora Count
ount Date	· ·			15:00		
ount Time (e.g., noon, 1300, etc	:.)		minutes	60		
imple Count Time (Ts, Tb) = T				14		
otal Counts			counts	0.23		
imple Count Rate			cpm			
ackground Count Rate	715		cpm	0.10	C FE LOA	6.512.04
r Volume (liters)	(A)		liters	6.5E+04	6.5E+04	6.5E+04
et count rate	(B)		cpm	0.13	0.72	0.22
ounter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ollection Efficiency	(D)		0.99	0.99	0.99	0.99
ficiency = (C) x (D)	(E)		cpm/dpm	0.72	0.72	0.72
ctivity (dpm) = (B)/(E)	(F)	ou to traden con	dpm	0.18		
inimum Detectable Activity (dp		Cb))/(E*1) (G)	dpm	0.33		
oncentration = (F)/(2.22E9 x (A		100.10-	μCi/ml	1.26E-15		
ackground "Strip" value (F.1)		4/20-4/21	uCi/ml	7.31E-18		4
ET Concentration Value = (H)	- (F1); (F2)		uCi/ml	1.25E-15		
AC (or AE) Fraction = $(F2)/(I)$	133		44.00	0.01%		
DC = MDA/V = (G)/(A)	(J)		μCi/ml	2.30E-15		
DC Fraction of DAC (or AE) =	(J)/(I) (Goal<10%)			0.01%		
			Yes/No	Yes		
nal Count?		Note: Unexpected DAC or AE	raction > 100% requires	immediate RSO notification		
inal Count?						
	0. 10	/ 1	4			2 1 10
	David Bo	unes /Daw B	-		Date:	8-3-18
Performed By:	David Bo		-			8-3-18

			Section I - Collecti	on Data			
Date:	8/8/2018		ID: 2018080		RWP:	2018-001	
Occupational (DAC):	Limit:	6.00E-14	μ	Ct/ml (1) Brea	thing Zone:	General Area:	Work Area
Non-Occupational (EC):	IDAC	= 2.0E-11µCi/ml (U-238)	FC= 6 0F-14uCi/ml1	Rad	ionuclides:	DU (Depleted	Uranium)
			district and a second				
Location:		FS12 SCA Bound	dary	Sample	d By:	David Ber	res
Wearer:		NA		Activity Per	formed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2591		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (mi	nutes)		Start	Stop
7/31/2018	7:30	17:00	570	7.14		60.0	60.0
8/1/2018	7:30	17:00	570			60	60
		Total Time (Tc): 1140)	1.74	Avg. Flow Rate (lpm)	60.0
Remarks: Mi	nimum sample volumes	identified are necessary to	Section II - Analys	V. 18 1.			
rument Information		Serial Numb	er		Calibration	Due Date	
Instrument Type		Meter	Detec	or	Meter	Detector	Efficiency (a)
L-2929		158817	16473		/10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
	bles, Calculations, Res	ults	Units	1st Count		2nd Count	3rd Count
nt Date			10	8/8//18			
nt Time (e.g., noon, 1300, et				8:00			
ple Count Time (Ts, Tb) = T			minutes	60			
Counts (Gross)			counts	21			
ple Count Rate ground Count Rate			cpm	0.35			
/olume (liters)	741		cpm	0.10		6.001.04	CODIO
ount rate	(A)		liters	6.8E+04	-	6.8E+04	6,8E+04
nter Efficiency	(B)		cpm	0.25	_	0.72	0.72
ection Efficiency	(C) (D)		cpm/dpm 0,99	0.73		0.73	0.73
riency = (C) x (D)	(E)		cpm/dpm	0.72	-	0.72	0.72
vity $(dpm) = (B)/(E)$	(F)		dpm	0.72		0.72	0,72
mum Detectable Activity (d		b))/(E*T) (G)	dpm	0.33			
centration = $(F)/(2.22E9 \times (A))$		-77 (-7)	μCi/ml	2.29E-15			
ground "Strip" value (F.1)		4/20-4/21	uCi/ml	7.31E-18			
Concentration Value = (H)			uCi/ml	2.28E-15			
(or AE) Fraction = (F2)/(I)				3.81%			
C = MDA/V = (G)/(A)	(J)		μCi/ml	2.18E-15			
C Fraction of DAC (or AE) =	(J)/(I) (Goal<10%)		il taras and fine	3.63%			
Count?			Yes/No	No		Yes	
	N	ote: Unexpected DAC or	AE fraction > 100% re	quires immediate RSO	notification.		
Performed By:	David &	Serres /D	and Be	_		Date: 8	3-8-18

Date:	8/8/2008	Sample ID:	20180802-04	2	RWP:	2018-001	
Occupational (DAC):	Limit:				ng Zone:	General Area:	Work Area:
		2.00E-11				7 7 7 7	•
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radio	nuclides:	DU (Deplete	d Uranium)
Location:		FS12 Wood Soil Sort Area	1	Sampled I	Ву:	Stephen B	eames
Wearer:		NA		Activity Perfo	rmed:	NA	
				NA			
Monitored Workers:			1.7				211
Lapel Pump Model:	NA	S	erial No.	NA	Ca	libration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	2773	Ca	libration Due Date:	3/27/2019
Sample Information		Time				Flow F	tate (lpm)
Collection Date	Start	Stop	Total (minute	es)		Start	Stop
7/31/2018	7:00	17:00	600			60.0	60.0
8/1/2018	7:30	17:00	570			60	60
		Total Time (Tc):	1170		Av	g. Flow Rate (lpm)	60,0
			Minimum Air Sam	ole Volume: 1.5E	+01 Liters		
							item (A)
Sample Volume:	60 (lpm)	х	1170 (minutes)	_	7.0E÷04 L	iters (A)
Remarks: Mi	nimum sample volum	es identified are necessary to achie	ve 10% of DAC or A	E value.			
		0	TT A	Dete			
			ion II - Analysis	Data	O.F. D	D. I	_
strument Information		Serial Number	5.00		Calibration D	Detector Detector	Efficiency (a)
Instrument Type		Meter	Detector		leter 2/2018		0.726
L-2929		158817	164736		3/2018	12/13/2018 N/A	N/A
N/A		N/A	N/A		N/A	Alpha	INA
		T	Units	1st Count	-	2nd Count	3rd Count
	ables, Calculations, R	esuits	Units	7/31/2018		200	
ount Date	- V			15:00			
ount Time (e.g., noon, 1300, et			minutes	60			
ample Count Time (Ts, Tb) = 7 otal Counts			counts	23			
							-
				0.38			
ample Count Rate			cpm	0.38			
ample Count Rate ackground Count Rate	(4)		cpm	0.10		7.0F±04	7.0E+04
ample Count Rate ackground Count Rate für Volume (liters)	(A)		cpm liters	0.10 7.0E+04		7.0E+04	7.0E+04
ample Count Rate ackground Count Rate ir Volume (liters) let count rate	(B)		cpm liters cpm	0.10 7.0E+04 0.28			
ample Count Rate sackground Count Rate cir Volume (liters) let count rate counter Efficiency	(B) (C)		cpm liters cpm cpm/dpm	0.10 7.0E+04 0.28 0.73		0.73	7.0E+04 0.73 0.99
ample Count Rate ackground Count Rate ir Volume (liters) fet count rate ounter Efficiency ollection Efficiency	(B) (C) (D)		cpm liters cpm cpm/dpm 0.99	0.10 7.0E+04 0.28 0.73 0.99		0.73 0.99	0.73
ample Count Rate ackground Count Rate ir Volume (liters) fet count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D)	(B) (C) (D) (E)		cpm liters cpm cpm/dpm 0.99 cpm/dpm	0.10 7.0E+04 0.28 0.73 0.99		0.73	0.73 0.99
ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E)	(B) (C) (D) (E)	(Ch)/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39		0.73 0.99	0.73 0.99
ample Count Rate ackground Count Rate ir Volume (liters) fet count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT	(Cb))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39 0.33		0.73 0.99	0.73 0.99
ample Count Rate ackground Count Rate ar Volume (liters) fet count rate founter Efficiency follection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E) finimum Detectable Activity (doncentration = (F)/(2.22E9 x ((B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTA)) (H)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39		0.73 0.99	0.73 0.99
ample Count Rate ackground Count Rate ir Volume (liters) fet count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d oncentration = (F)/(2.22E9 x (c ackground "Strip" value (F.1)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTAA)) (H) Date Updated	(Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39 0.33 2.53E-15		0.73 0.99	0.73 0.99
ample Count Rate ackground Count Rate ir Volume (liters) fet count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E) finimum Detectable Activity (doncentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) IET Concentration Value = (H)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTA)) (H) Date Updated)-(F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39 0.33 2.53E-15 7.31E-18		0.73 0.99	0.73 0.99
ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d oncentration = (F)/(2.22E9 x (c) ackground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) (ipm) = (3+4.65*SQRTA)) (H) Date Updated () - (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39 0.33 2.53E-15 7.31E-18 2.52E-15		0.73 0.99	0.73 0.99
ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d oncentration = (F)/(2.22E9 x (. ackground "Strip" value (F.1) ET Concentration Value = (H AC (or AE) Fraction = (F2)/(I DC = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTAA)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39 0.33 2.53E-15 7.31E-18 2.52E-15 0.01%		0.73 0.99	0.73 0.99
ample Count Rate sackground Count Rate sur Volume (liters) Set count rate Counter Efficiency Sollection Efficiency Sollection Efficiency Sollection Efficiency Sollection Efficiency Sollection Efficiency Sollection = (B)/(E) Sollection = (F)/(2.22E9 x (Concentration = (F)/(2.22E9 x (Concentration = (F)/(2.22E9 x (Concentration Value = (H)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTAA)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39 0.33 2.53E-15 7.31E-18 2.52E-15 0.01% 2.12E-15 0.01%		0.73 0.99	0.73 0.99
ample Count Rate sackground Count Rate sur Volume (liters) Set count rate Counter Efficiency Sollection Efficiency Sollection Efficiency Sollection Efficiency Sollection Efficiency Sollection Efficiency Sollection = (B)/(E) Sollection = (F)/(2.22E9 x (Concentration = (F)/(2.22E9 x (Concentration = (F)/(2.22E9 x (Concentration Value = (H)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTAA)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yEs/No	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39 0.33 2.53E-15 7.31E-18 2.52E-15 0.01% 2.12E-15 0.01% Yes	notification.	0.73 0.99	0.73 0.99
ample Count Rate Sackground Count Rate Lir Volume (liters) Set count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d Concentration = (F)/(2.22E9 x (C) Sackground "Strip" value (F.1) SET Concentration Value = (H DAC (or AE) Fraction = (F2)/(I MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTAA)) (H) Date Updated ()-(F1); (F2) (J) = (J)/(I) (Goal<10%	4/20-4/21 6) Note: Unexpected DAC or AE (cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yEs/No	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39 0.33 2.53E-15 7.31E-18 2.52E-15 0.01% 2.12E-15 0.01% Yes	notification.	0.73 0.99 0.72	0.73 0.99 0.72
ample Count Rate sackground Count Rate six Volume (liters) let count rate counter Efficiency collection Efficiency efficiency = (C) x (D) sectivity (dpm) = (B)/(E) dinimum Detectable Activity (d concentration = (F)/(2.22E9 x (C) sackground "Strip" value (F.1) set Concentration Value = (H DAC (or AE) Fraction = (F2)/(I dDC = MDA/V = (G)/(A) dDC Fraction of DAC (or AE) inal Count?	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTAA)) (H) Date Updated ()-(F1); (F2) (J) = (J)/(I) (Goal<10%	4/20-4/21 6) Note: Unexpected DAC or AE (cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yEs/No	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39 0.33 2.53E-15 7.31E-18 2.52E-15 0.01% 2.12E-15 0.01% Yes	notification.	0.73 0.99 0.72	0.73 0.99 0.72
sample Count Rate Sackground Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d Concentration = (F)/(2.22E9 x (C) Sackground "Strip" value (F.1) NET Concentration Value = (H DAC (or AE) Fraction = (F2)/(I MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTAA)) (H) Date Updated ()-(F1); (F2) (J) = (J)/(I) (Goal<10%	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yEs/No	0.10 7.0E+04 0.28 0.73 0.99 0.72 0.39 0.33 2.53E-15 7.31E-18 2.52E-15 0.01% 2.12E-15 0.01% Yes	notification.	0.73 0.99 0.72	0.73 0.99

Date:	8/10/2018	Sample ID:	20180803-0-	13	RWP: 2018-001	
Occupational (DAC):	Limit:	0.00	μСι/г	nl (1) Breathing	Zone: General Are	ea: Work Area:
		6.00E-14 [DAC = 2.0E-11µCi/ml (U-238), EC=	COE M. Cileall		elides: DU (De	nleted Uranium)
Non-Occupational (EC):		$[DAC = 2.0E-11\mu Ci/mi (U-238), EC=$	6.0Е-14µСитіј			11.5
Location:		FS12 SCA Boundary		Sampled By:	Dav	vid Berres
Wearer:		NA		Activity Perform	ed:	NA
Monitored Workers:				NA		
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Da	nte: NA
	The same of the sa		erial No.	2591	Calibration Due Da	ate: 3/27/2019
Air Pump Model:	LV-I		enai No.	2391		
Sample Information		Time				low Rate (lpm)
Collection Date	Start	Stop	Total (minut	es)	Start	Stop
8/2/2018	7:30	17:00	570		60.0	60.0
8/3/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140	1 41	Avg. Flow Rate (lp	om) 60.0
			Minimum Air Sam	ple Volume: 4.5E+0	3 Liters	
0 1 17 1	60	(low)	x	1140 (minutes)	= 6.8E+04	Liters (A)
Sample Volume:		(lpm)				
Remarks; Mi	nimum sample v	olumes identified are necessary to achie	ve 10% of DAC or A	E value.		
		Sect	ion II - Analysis	Data		
The state of the s			ion ii minijos		Calibration Due Date	
rument Information		Serial Number	Detector	1 100		Efficiency (a)
Instrument Type		Meter	164736	1/10/2		0.726
L-2929		158817	N/A	N/2		N/A
N/A		N/A	IVA	1 130	Alpha	
	bles, Calculatio	- PI	Units	1st Count	2nd Count	3rd Count
	bies, Calculatio	ns, Resuits	Caits	8/10/2018		
int Date	- Y		- (63	8:00		
int Time (e.g., noon, 1300, et			minutes	60		
nple Count Time (Ts, Tb) = T			counts	23		
al Counts (Gross)			cpm	0.38		
nple Count Rate			cpm	0.08		
kground Count Rate		(A)	liters	6.8E+04	6.8E+04	6.8E+04
Volume (liters)		(B)	cpm	0.30		
count rate			cpm/dpm	0.73	0.73	0.73
		C) D)	0.99	0.99	0.99	0.99
unter Efficiency		0)	4144		4.47	0.72
unter Efficiency lection Efficiency)	com/dom	0.72	0.72	
unter Efficiency lection Efficiency iciency = (C) x (D)	(F	5)	cpm/dpm	0.72	0.72	
unter Efficiency llection Efficiency iciency = (C) × (D) tivity (dpm) = (B)/(E)	(F)		dpm	0.42	0.72	
unter Efficiency llection Efficiency iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d	(F) pm) = (3+4.65*)		dpm dpm		0.72	
unter Efficiency election Efficiency election (Efficiency election (Efficiency) election	(F) pm) = (3+4.65*3 A)) (H)	SQRT(Cb))/(E*T) (G)	dpm	0.42	0.72	
unter Efficiency flection Efficiency ficiency = (C) x (D) fivity (dpm) = (B)/(E) finition Detectable Activity (decentration = (F)/(2.22E9 x (c)) flection =	(F) pm) = (3+4.65*5 A)) (H) Date Update	SQRT(Cb))/(E*T) (G) d 4/20-4/21	dpm dpm µCi/ml	0.42 0.30 2.78E-15	0.72	
unter Efficiency llection Efficiency iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (decentration = (F)/(2.22E9 x (ekground "Strip" value (F.1) The Concentration Value = (H.1)	(F) pm) = (3+4.65*! A)) (H) Date Update 0 - (F1); (l)	SQRT(Cb))/(E*T) (G)	dpm dpm μCi/ml uCi/ml	0.42 0.30 2.78E-15 7.31E-18	0.72	
unter Efficiency llection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (c ckground "Strip" value (F.1) TT Concentration Value = (H LC (or AE) Fraction = (F2)/(I	(F) pm) = (3+4.65*; A)) (H) Date Update) - (F1); (I)	SQRT(Cb))/(E*T) (G) d 4/20-4/21	dpm dpm µCi/ml uCi/ml uCi/ml	0.42 0.30 2.78E-15 7.31E-18 2.77E-15 4.62%	0.72	
unter Efficiency lection Efficiency ficiency = (C) x (D) fivity (dpm) = (B)/(E) nimum Detectable Activity (denontration = (F)/(2.22E9 x (color to the contration = (F)/(2.22E) x (Color to the color	(F) pm) = (3+4.65*; A)) (H) Date Update) - (F1); (i)	SQRT(Cb))/(E*T) (G) d 4/20-4/21 F2)	dpm dpm μCi/ml uCi/ml	0.42 0.30 2.78E-15 7.31E-18 2.77E-15	0.72	
unter Efficiency llection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (c ckground "Strip" value (F.1) TT Concentration Value = (H LC (or AE) Fraction = (F2)/(I DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	(F) pm) = (3+4.65*; A)) (H) Date Update) - (F1); (i)	SQRT(Cb))/(E*T) (G) d 4/20-4/21	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml	0.42 0.30 2.78E-15 7.31E-18 2.77E-15 4.62% 1.99E-15 3.32%	Ves	
inter Efficiency lection Efficiency lection Efficiency lection (C) x (D) livity (dpm) = (B)/(E) liminum Detectable Activity (dincentration = (F)/(2.22E9 x (c) lekground "Strip" value (F.1) T Concentration Value = (H. C (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	(F) pm) = (3+4.65*; A)) (H) Date Update) - (F1); (i)	SQRT(Cb))/(E*T) (G) 4/20-4/21 F2)	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml Yes/No	0.42 0.30 2.78E-15 7.31E-18 2.77E-15 4.62% 1.99E-15 3.32% No	Yes	
unter Efficiency llection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (c kground "Strip" value (F.1) ET Concentration Value = (H AC (or AE) Fraction = (F2)/(I DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) hal Count?	(F) pm) = (3+4.65*; A)) (H) Date Update) - (F1); (i)	SQRT(Cb))/(E*T) (G) d 4/20-4/21 F2)	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml Yes/No	0.42 0.30 2.78E-15 7.31E-18 2.77E-15 4.62% 1.99E-15 3.32% No	Yes	
unter Efficiency llection Efficiency iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (decentration = (F)/(2.22E9 x (c)) Reground "Strip" value (F.1) The Concentration Value = (H.1) Characteristic (G) (A)	(F) pm) = (3+4.65* A)) (H) Date Update) - (F1); (l) (J) = (J)/(I) (Goal	SQRT(Cb))/(E*T) (G) 4/20-4/21 F2)	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml Yes/No	0.42 0.30 2.78E-15 7.31E-18 2.77E-15 4.62% 1.99E-15 3.32% No	Yes tification.	ate: 2-10-18 ate: 8-10-18

		Secti	ion I - Collection Da	ta 20/	18-0803	.099	
Date:	8/10/2018	Sample ID	2018080803 044	80	RWP	2018-001	4
Occupational (DAC):	Limit:	2.00E-11	1808 805 JuCi/ml (1) B	reathing Zone:	General Area:	Work Area
		[DAC = 2.0E-11μCi/ml (U-238), EC=	6 0F-14uCi/ml]	4	Radionuclides:	DU (Depleted	Uranium)
Non-Occupational (EC):					_	Stephen Be	
Location:		FS12 Wood Soil Sort Are	a	Sam	pied By:	7.7.	anico
Wearer:		NA		Activity	Performed:	NA	
Monitored Workers:			NA NA				
	NA		Serial No.	NA		Calibration Due Date:	NA
Lapel Pump Model:				2773		Calibration Due Date:	1. 10 July 2011
Air Pump Model:	LV-1		Serial No.	2113			
Sample Information		Time				Flow R	ate (lpm)
Collection Date	Start	Stop	Total (minutes)			Start	Stop
8/2/2018	7:30	17:00	570	- 1		60.0	60.0
8/3/2018	7:30	17:00	570			60	60
3.072.00		Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample	Volume:	1.4E+01 L	iters	
							(A)
Sample Volume:	60	(lpm)	x11	40 (mir	nutes) =	6,8E+94 Li	iters (A)
2 1 10	things sample in	olumes identified are necessary to achi	eve 10% of DAC or AE va	due.			
Remarks: Mir	nimum sample vo	numes identified are necessary to acm	eve to wor bite or the				
		Sec	tion II - Analysis Da	ita			
atmospherical Information		Serial Number			Calibratio	n Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736		12/13/2018	12/13/2018	0.726
N/A		N/A	N/A		N/A	N/A	N/A
TVA .						Alpha	
Varia	bles, Calculation	as, Results	Units	1st Cou	int	2nd Count	3rd Count
ount Date				8/10/20	18		
ount Time (e.g., noon, 1300, etc	c.)			15:00			
ample Count Time (Ts, Tb) = T			minutes	60			
otal Counts			counts	26			
ample Count Rate			cpm	0.43			
ackground Count Rate			cpm	0.08			
ir Volume (liters)		(A)	liters	6.8E+0	04	6.8E+04	6.8E+04
et count rate		(B)	cpm	0.35			
ounter Efficiency	(0)	cpm/dpm	0.73		0.73	0.73
ollection Efficiency	(1		0.99	0.99		0.99	0.99
fficiency = (C) x (D)	(E		cpm/dpm	0.72		0.72	0.72
etivity $(dpm) = (B)/(E)$	(F)		dpm	0.49			1
finimum Detectable Activity (d		QRT(Cb))/(E*T) (G)	dpm	0.30			
Concentration = $(F)/(2.22E9 \times (A))$			μCi/ml	3.24E-	-15		
	The second second	4/20-4/21	uCi/ml	7.31E-	18		
		72)	uCi/ml	3.23E-	-15		1/2
ackground "Strip" value (F.1)				0.029	/6		
ackground "Strip" value (F.1) ET Concentration Value = (H)				1 000	15		
ackground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I)			μCi/ml	1.99E	-13		
sackground "Strip" value (F.1) JET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) ADC = MDA/V = (G)/(A)	(J)	<10%)	μCi/ml	0.019			
Sackground "Strip" value (F.1) NET Concentration Value = (H) DAC (or AE) Fraction = (F2)/(I) ADC = MDA/V = (G)/(A) ADC Fraction of DAC (or AE) =	(J)	<10%)	μCi/ml Yes/No		/a		
Background "Strip" value (F.1) NET Concentration Value = (H) DAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) =	(J)		Yes/No	0.01° Yes	/o		
Background "Strip" value (F.1) NET Concentration Value = (H) DAC (or AE) Fraction = (F2)(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) = Final Count?	(J)	<10%) Note: Unexpected DAC or AE	Yes/No	0.01° Yes	/o		
Sackground "Strip" value (F.1) NET Concentration Value = (H) OAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) = Final Count?	(J) = (J)/(I) (Goal-	Note: Unexpected DAC or AE	Yes/No	0.01° Yes	/o		8-14-18
Background "Strip" value (F.1) NET Concentration Value = (H) DAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) = Final Count? Performed By:	(J) = (J)/(I) (Goal		Yes/No fraction > 100% require	0.01° Yes	/o	Date:	8-10-18

Wearer: Monitored Workers: Lapel Pump Model: NA	Company 1.00 1.0	Serial No. Total (minus 570 1140 Minimum Air San x	Activity I NA NA 2591 tes) mple Volume: 1140 (mim. AE value. 8 Data	oled By: Performed: C C A 5.5E+03 Lite	General Area: DU (Depleted David Ben NA Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) TS 6.8E+04 Lite	NA 3/27/2019
Non-Occupational (EC): Location: Wearer: Monitored Workers: Lapel Pump Model: NA Air Pump Model: Sample Information Collection Date 8/4/2018 7:30 8/6/2018 7:30 Sample Volume: 60 Remarks: Minimum sample Start Minimum sample Start Sample Volume: 100 Remarks: Minimum sample Start St	Time Stop 17:00 17:00 Total Time (Tc): (lpm) volumes identified are necessary to achi Sec Serial Number Meter 158817	Serial No. Serial No. Total (minu 570 1140 Minimum Air San x 1140 M	Activity I NA NA 2591 tes) tes) mple Volume: 1140 (mim AE value.	Calibration Meter 1/10/2019	DU (Depleted	NA 3/27/2019 Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Location: Wearer: Monitored Workers: Lapel Pump Model: NA Air Pump Model: Sample Information Collection Date 8/4/2018 7:30 8/6/2018 7:30 Sample Volume: 60 Remarks: Minimum sample Frument Information Instrument Type L-2929 N/A Variables, Calcular int Date int Time (e.g., noon, 1300, etc.) uple Count Time (Ts, Tb) = T al Counts uple Count Rate kground Count Rate Volume (liters) count rate	FS12 SCA Boundary NA Time Stop 17:00 17:00 Total Time (Te): (lpm) evolumes identified are necessary to achi Sec Serial Number Meter 158817	Serial No. Serial No. Total (minu 570 570 1140 Minimum Air San x ieve 10% of DAC or 1601 II - Analysi Detecto 164736	Samp Activity I NA NA 2591 tes) pple Volume: 1140 (mim. AE value.	Calibration Meter	David Ber NA Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) Avg. Flow Rate (lpm) Trs 6.8E+04 Lite Due Date Detector 1/10/2019	NA 3/27/2019 Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Wearer: Monitored Workers: Lapel Pump Model: NA	Time Stop 17:00 17:00 Total Time (Tc): (lpm) volumes identified are necessary to achi Sec Serial Number Meter 158817	Serial No. Serial No. Total (minu 570 570 1140 Minimum Air San x ieve 10% of DAC or attion II - Analysi Detecto 164736	Activity I NA NA 2591 tes) tes) mple Volume: 1140 (minutate value. 8 Data	2 Calibration Meter 1/10/2019	NA Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) Start 6.8E+04 Litt Due Date Detector 1/10/2019	NA 3/27/2019 Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Wearer: Monitored Workers:	Time Stop 17:00 17:00 Total Time (Tc): (lpm) volumes identified are necessary to achi Sec Serial Number Meter 158817	Serial No. Serial No. Total (minu 570 570 1140 Minimum Air San x ieve 10% of DAC or attion II - Analysi Detecto 164736	NA NA 2591 tes) tes) (minute value. S Data	5.5E+03 Lite Calibration Meter 1/10/2019	Calibration Due Date:	3/27/2019 ste (lpm) Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Lapel Pump Model: Air Pump Model: LV-1 Sample Information Collection Date Start 8/4/2018 7:30 8/6/2018 7:30 Sample Volume: 60 Remarks: Minimum sample trument Information Instrument Type L-2929 N/A Variables, Calcular ant Date ant Time (e.g., noon, 1300, etc.) uple Count Time (Ts, Tb) = T al Counts apple Count Rate kground Count Rate Volume (liters) count rate	Time Stop 17:00 17:00 Total Time (Tc): (lpm) e volumes identified are necessary to achi Sec Serial Number Meter 158817	Total (minu 570 570 1140 Minimum Air San x ieve 10% of DAC or 1601 II - Analysi Detecto 164736	NA 2591 tes) pple Volume: 1140 (mim AE value.	5.5E+03 Lite tites) =	Start 60.0 60 Avg. Flow Rate (lpm) rs 6.8E+04 Lite Due Date Detector 1/10/2019	3/27/2019 ste (lpm) Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Lapel Pump Model: Air Pump Model: Sample Information Collection Date 8/4/2018 7:30 8/6/2018 7:30 Sample Volume: 60 Remarks: Minimum sample Frument Information Instrument Type L-2929 N/A Variables, Calcular ant Date ant Time (e.g., noon, 1300, etc.) uple Count Time (Ts, Tb) = T al Counts apple Count Rate kground Count Rate Volume (liters) count rate	Time Stop 17:00 17:00 Total Time (Tc): (lpm) e volumes identified are necessary to achi Sec Serial Number Meter 158817	Total (minu 570 570 1140 Minimum Air San x ieve 10% of DAC or 1601 II - Analysi Detecto 164736	tes) aple Volume: 1140 (mim AE value.	5.5E+03 Lite tites) =	Start 60.0 60 Avg. Flow Rate (lpm) rs 6.8E+04 Lite Due Date Detector 1/10/2019	3/27/2019 ste (lpm) Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Sample Information	Time Stop 17:00 17:00 Total Time (Te): (lpm) evolumes identified are necessary to achi Sec Serial Number Meter 158817	Total (minn 570 570 1140 Minimum Air San x ieve 10% of DAC or	tes) spie Volume: 1140 (minuments value. 8 Data	5.5E+03 Lite ttes) = Calibration Meter 1/10/2019	Flow Ra Start 60.0 60 Wg. Flow Rate (lpm) 10 10 10 10 10 10 10 10	Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Sample Volume: Sample Volume: Sample Volume: Remarks: Minimum sample Frument Information Instrument Type L-2929 N/A Variables, Calcular ant Date ant Time (e.g., noon, 1300, etc.) and Count Time (Ts, Tb) = T al Counts apple Count Rate kground Count Rate Volume (liters) count rate	Stop 17:00 17:00 Total Time (Tc): (lpm) volumes identified are necessary to achi Sec Serial Number Meter 158817	570 570 1140 Minimum Air San x ieve 10% of DAC or tion II - Analysi Detecto	nple Volume: 1140 (minu AE value.	5.5E+03 Lite ttes) = Calibration Meter 1/10/2019	Start 60.0 60 Avg. Flow Rate (lpm) sts 6.8E+04 Lite Due Date Detector 1/10/2019	Stop 60.0 60 60.0 ers (A)
Sample Volume: Sample Volume: Sample Volume: Remarks: Minimum sample Trument Information Instrument Type L-2929 N/A Variables, Calcular ant Date ant Time (e.g., noon, 1300, etc.) apple Count Time (Ts, Tb) = T al Counts apple Count Rate kground Count Rate Volume (liters) count rate	Stop 17:00 17:00 Total Time (Tc): (lpm) volumes identified are necessary to achi Sec Serial Number Meter 158817	570 570 1140 Minimum Air San x ieve 10% of DAC or tion II - Analysi Detecto	nple Volume: 1140 (minu AE value.	5.5E+03 Lite ttes) = Calibration Meter 1/10/2019	Start 60.0 60 Avg. Flow Rate (lpm) sts 6.8E+04 Lite Due Date Detector 1/10/2019	Stop 60.0 60 60.0 ers (A)
Sample Volume: Sample Volume: Remarks: Minimum sample Frument Information Instrument Type L-2929 N/A Variables, Calcular ant Date ant Time (e.g., noon, 1300, etc.) apple Count Time (Ts, Tb) = T al Counts apple Count Rate kground Count Rate kground Count Rate Volume (liters) count rate	17:00 17:00 Total Time (Tc): (lpm) evolumes identified are necessary to achi Sec Serial Number Meter 158817	570 570 1140 Minimum Air San x ieve 10% of DAC or tion II - Analysi Detecto	nple Volume: 1140 (minu AE value.	5.5E+03 Lite ttes) = Calibration Meter 1/10/2019	60.0 60 Avg. Flow Rate (lpm) rs 6.8E+04 Lite Due Date Detector 1/10/2019	60.0 60 60.0 ers (A) Efficiency (a) 0.726
Sample Volume: Remarks: Minimum sample Trument Information Instrument Type L-2929 N/A Variables, Calcular ant Date ant Time (e.g., noon, 1300, etc.) apple Count Time (Ts, Tb) = T al Counts apple Count Rate kground Count Rate Volume (liters) count rate	17:00 Total Time (Tc): (lpm) volumes identified are necessary to achi Sec Serial Number Meter 158817	570 1140 Minimum Air San x ieve 10% of DAC or tion II - Analysi Detecto 164736	1140 (minu AE value.	5.5E+03 Lite ttes) = Calibration Meter 1/10/2019	60 Avg. Flow Rate (lpm) rs 6.8E+04 Lite Due Date Detector 1/10/2019	60 60.0 ers (A) Efficiency (a) 0.726
Sample Volume: Remarks: Minimum sample rument Information Instrument Type L-2929 N/A Variables, Calcular int Date int Time (e.g., noon, 1300, etc.) intiple Count Time (Ts, Tb) = T al Counts intiple Count Rate kground Count Rate Volume (liters) count rate	(lpm) volumes identified are necessary to achi Sec Serial Number Meter 158817	1140 Minimum Air San x ieve 10% of DAC or tion II - Analysi Detecto 164736	1140 (minu AE value.	5.5E+03 Lite ttes) = Calibration Meter 1/10/2019	Avg. Flow Rate (lpm) 178 6.8E+04 Litt Due Date Detector 1/10/2019	60.0 ers (A) Efficiency (a) 0.726
Remarks: Minimum sample rument Information Instrument Type L-2929 N/A Variables, Calcular Int Date Int Time (e.g., noon, 1300, etc.) Int Counts Interpolate Count Rate kground Count Rate Volume (liters) count rate	(lpm) volumes identified are necessary to achi Sec Serial Number Meter 158817	Minimum Air San x ieve 10% of DAC or tion II - Analysi Detecto 164736	1140 (minu AE value.	5.5E+03 Lite ttes) = Calibration Meter 1/10/2019	0.8E+04 Lite 0.8E+04 Lite Due Date Detector 1/10/2019	Efficiency (a)
Remarks: Minimum sample rument Information Instrument Type L-2929 N/A Variables, Calculate the Date at Time (e.g., noon, 1300, etc.) ole Count Time (Ts, Tb) = T I Counts ole Count Rate ground Count Rate //olume (liters)	Sec Serial Number Meter 158817	tion II - Analysi Detecto 164736	S Data	Calibration Meter 1/10/2019	Due Date Detector 1/10/2019	Efficiency (a) 0.726
rument Information Instrument Type L-2929 N/A Variables, Calcular nt Date nt Time (e.g., noon, 1300, etc.) ple Count Time (Ts, Tb) = T al Counts ple Count Rate kground Count Rate Volume (liters) count rate	Sec Serial Number Meter 158817	Detecto	s Data	Meter 1/10/2019	Detector 1/10/2019	0.726
Instrument Type L-2929 N/A Variables, Calcular ant Date ant Time (e.g., noon, 1300, etc.) mple Count Time (Ts, Tb) = T al Counts mple Count Rate ekground Count Rate Volume (liters)	Serial Number Meter 158817	Detecto 164736		Meter 1/10/2019	Detector 1/10/2019	0.726
Instrument Type L-2929 N/A Variables, Calcular int Date int Time (e.g., noon, 1300, etc.) uple Count Time (Ts, Tb) = T al Counts uple Count Rate kground Count Rate Volume (liters) count rate	Meter 158817	164736		Meter 1/10/2019	Detector 1/10/2019	0.726
L-2929 N/A Variables, Calcular int Date int Time (e.g., noon, 1300, etc.) uple Count Time (Ts, Tb) = T al Counts uple Count Rate kground Count Rate Volume (liters) count rate	158817	164736		1/10/2019	1/10/2019	0.726
N/A Variables, Calcular nt Date nt Time (e.g., noon, 1300, etc.) ple Count Time (Ts, Tb) = T Il Counts ple Count Rate kground Count Rate Volume (liters) count rate						
Variables, Calcular int Date int Time (e.g., noon, 1300, etc.) ple Count Time (Ts, Tb) = T il Counts ple Count Rate kground Count Rate Volume (liters) count rate	N/A	N/A		N/A	N/A	N/A
nt Date nt Time (e.g., noon, 1300, etc.) ple Count Time (Ts, Tb) = T al Counts ple Count Rate kground Count Rate Volume (liters) count rate				10.25		
nt Date Int Time (e.g., noon, 1300, etc.) Int Count Time (Ts, Tb) = T Int Counts Int Count Rate Reground Count Rate Volume (liters) count rate					Alpha	
nt Time (e.g., noon, 1300, etc.) pple Count Time (Ts, Tb) = T al Counts pple Count Rate kground Count Rate Volume (liters) count rate	ions, Results	Units	1st Coun	t	2nd Count	3rd Count
ple Count Time (Ts, Tb) = T al Counts ple Count Rate kground Count Rate Volume (liters) count rate			8/13/2018	3		
al Counts uple Count Rate kground Count Rate Volume (liters) count rate			10:00			
ple Count Rate kground Count Rate Volume (liters) count rate		minutes	60			
kground Count Rate Volume (liters) count rate		counts	15			
Volume (liters) count rate		cpm	0.25			
count rate		cpm	0.13	TO LOCAL		
	(A)	liters	6.8E+04		6.8E+04	6.8E+04
nter Efficiency	(B)	cpm	0.12			
	(C)	cpm/dpm	0.73		0.73	0.73
ection Efficiency	(D)	0.99	0.99		0.99	0.99
ciency = (C) x (D)	(E)	cpm/dpm	0.72		0.72	0.72
vity $(dpm) = (B)/(E)$ (F)		dpm	0.17			
imum Detectable Activity (dpm) = (3+4.65	*SORT(Cb))/(E*T) (G)	dpm	0.37			
centration = $(F)/(2.22E9 \times (A))$ (H)		μCi/ml	1.10E-1	5		
kground "Strip" value (F.1) Date Upda	ed 4/20-4/21	uCi/ml	7.31E-18			
	(F2)	uCi/ml	1.09E-1			
C (or AE) Fraction = (F2)/(I)			1.82%			
C = MDA/V = (G)/(A) (J)		μCi/ml	2.42E-1:	5		
	al<10%)	ровин	4.03%			
Count?		Yes/No	No		Yes	
	Note: Unexpected DAC or AE			SO notification.		
1	. 7	1 , ,		/		1 1
Performed By: Mich	/ /	Michael	Dousa	int	Date:	38/12/18

Location: FS12	Serion Serion Time Total Time (Tc):	al No. Total (minutes 600 1200 Minimum Air Sampl	(I) Bre R: Samp Activity P NA NA 2773 Belle Volume: 1200 (min.) value.	led By: Performed: 1.7E+01 Li nutes) =	General Area: DU (Depleted Stephen Be NA Calibration Due Date: Calibration Due Date: Flow R Start 60.0 60 Avg. Flow Rate (lpm)	NA 3/27/2019 Rate (Ipm) Stop 60.0 60 60.0 Liters (A)
Non-Occupational (DAC):	Serial Company of the	E-14µCi/ml] al No. Total (minutes 600 600 1200 Minimum Air Sampl x 2-10% of DAC or AE on II - Analysis	Activity P Activity P NA NA 2773 Belle Volume: 1200 (min	adionuclides:led By:	Stephen Be NA Calibration Due Date: Calibration Due Date: Flow R Start 60.0 60 Avg. Flow Rate (lpm) ters 7.2E+04 I n Due Date	NA 3/27/2019 Rate (Ipm) Stop 60.0 60 60.0 Liters (A)
Non-Occupational (EC):	Serial Company of the	E-14µCi/ml] al No. Total (minutes 600 600 1200 Minimum Air Sampl x 2-10% of DAC or AE on II - Analysis	R. Samp Activity P NA NA 2773 S) le Volume: 1200 (min	led By: Performed: 1.7E+01 Linutes) =	Stephen Be NA Calibration Due Date: Calibration Due Date: Flow R Start 60.0 60 Avg. Flow Rate (lpm) ters 7.2E+04 I n Due Date	NA 3/27/2019 State (Ipm) Stop 60.0 60 60.0 Liters (A)
Location: FS12	Seria	al No. Total (minutes 600 600 1200 Minimum Air Sampl x 2 10% of DAC or AE on II - Analysis	Samp Activity P NA NA 2773 S) le Volume: 1200 (min	led By: Performed: 1.7E+01 Linutes) =	Stephen Be NA Calibration Due Date: Calibration Due Date: Flow R Start 60.0 60 Avg. Flow Rate (lpm) ters 7.2E+04 I n Due Date	NA 3/27/2019 State (Ipm) Stop 60.0 60 60.0 Liters (A)
Wearer: NA	Serion Se	al No. Total (minutes 600 600 1200 Minimum Air Sampl x 10% of DAC or AE on II - Analysis Detector 164736	Activity P NA NA 2773 S) le Volume: 1200 (min	1.7E+01 Li	NA Calibration Due Date: Calibration Due Date: Flow R Start 60.0 60 Avg. Flow Rate (lpm) ters 7.2E+04 I n Due Date	NA 3/27/2019 tate (lpm) Stop 60.0 60 60.0 Liters (A)
NA Monitored Workers: Lapel Pump Model: NA Air Pump Model: LV-1	Serion Se	al No. Total (minutes 600 600 1200 Minimum Air Sampl x 10% of DAC or AE on II - Analysis Detector 164736	NA NA 2773 S) le Volume: 1200 (min	1.7E+01 Li nutes) =	Calibration Due Date: Calibration Due Date: Flow R Start 60.0 60 Avg. Flow Rate (lpm) ters 7.2E+04 I	NA 3/27/2019 Rate (Ipm) Stop 60.0 60 60.0 Liters (A)
Lapel Pump Model:	Serion Se	al No. Total (minutes 600 600 1200 Minimum Air Sampl x 10% of DAC or AE on II - Analysis Detector 164736	NA 2773 s) le Volume: 1200 (min	1.7E+01 Li nutes) =	Flow R Start 60.0 60 Avg. Flow Rate (lpm) ters 7.2E+04 I n Due Date	3/27/2019 Stop 60.0 60 60.0 Liters (A)
Lapel Pump Model:	Time op 00 00 Total Time (Tc): re necessary to achieve	Total (minutes 600 600 1200 Minimum Air Sampl x 2 10% of DAC or AE on II - Analysis Detector 164736	2773	1.7E+01 Li nutes) =	Flow R Start 60.0 60 Avg. Flow Rate (lpm) ters 7.2E+04 I n Due Date	3/27/2019 Stop 60.0 60 60.0 Liters (A)
Sample Information Collection Date Start	Time op 00 00 Total Time (Tc): re necessary to achieve	Total (minutes 600 600 1200 Minimum Air Sampl x 2 10% of DAC or AE on II - Analysis Detector 164736	2773	1.7E+01 Li nutes) =	Flow R Start 60.0 60 Avg. Flow Rate (lpm) ters 7.2E+04 I n Due Date	3/27/2019 Stop 60.0 60 60.0 Liters (A)
Sample Information	Time DD DD Total Time (Tc): Tre necessary to achieve Section	Total (minutes 600 600 1200 Minimum Air Sampl x 2 10% of DAC or AE on II - Analysis	le Volume: 1200 (min	1.7E+01 Li nutes) =	Start	Stop 60.0 60 60.0 Liters (A) Efficiency (α)
Sample Information	Total Time (Tc): re necessary to achieve	600 600 1200 Minimum Air Sampl x 10% of DAC or AE on II - Analysis	le Volume:(min	1.7E+01 Li nutes) =	Start 60.0 60 Avg. Flow Rate (lpm) ters 7.2E+04 I	Stop 60.0 60 60.0 Liters (A)
Sample Volume:	Total Time (Tc): re necessary to achieve	600 600 1200 Minimum Air Sampl x 10% of DAC or AE on II - Analysis	le Volume:(min	1.7E+01 Li nutes) =	60.0 60 Avg. Flow Rate (lpm) ters 7.2E+04 1	60.0 60 60.0 Liters (A)
Sample Volume:	00 00 Total Time (Tc):	600 600 1200 Minimum Air Sampl x 10% of DAC or AE on II - Analysis	le Volume:(min	1.7E+01 Li nutes) =	60 Avg. Flow Rate (lpm) ters 7.2E+04 I	60 60.0 Liters (A)
Sample Volume: Sample Volume: Remarks: Minimum sample volumes identified in the sample volume identified in the sample volume (i.e.g., noon, 1300, etc.) Sample Count Time (Ts, Tb) = T Fotal Counts Sample Count Rate Background Count Rate Background Count Rate Air Volume (liters) (A) Net count rate (B) Counter Efficiency (C) Collection Efficiency (D) Efficiency (D) Activity (dom) = (B)(E) (F)	Total Time (Tc):	600 1200 Minimum Air Sampl x 10% of DAC or AE on II - Analysis Detector 164736	1200 (min	1.7E+01 Li nutes) =	Avg. Flow Rate (lpm) ters 7.2E+04 I n Due Date	60.0 Liters (A) Efficiency (α)
Sample Volume: Sample Volume: 60	Total Time (Tc):	Minimum Air Sampl x 10% of DAC or AE on II - Analysis Detector 164736	1200 (min	1.7E+01 Li nutes) =	ters 7.2E+04 1 n Due Date	Liters (Α) Efficiency (α)
Remarks: Minimum sample volumes identified and strument Information Instrument Type Meter L-2929 158817 N/A N/A Variables, Calculations, Results Count Date Count Time (e.g., noon, 1300, etc.) Sample Count Time (Ts, Tb) = T Fotal Counts Sample Count Rate Background Count Rate Air Volume (liters) (A) Net count rate (B) Counter Efficiency (C) Collection Efficiency (D) Efficiency = (C) x (D) (E) Activity (dom) = (B)(E) (F)	re necessary to achieve	x 10% of DAC or AE on II - Analysis Detector 164736	1200 (min	Calibratio	7.2E+04 I	Efficiency (a)
Remarks: Minimum sample volumes identified and strument Information Instrument Type Meter L-2929 158817 N/A N/A Variables, Calculations, Results ount Date ount Time (e.g., noon, 1300, etc.) ample Count Time (Ts, Tb) = T otal Counts ample Count Rate sackground Count Rate sackground Count Rate sackground Count Rate cackground Efficiency (C) Collection Efficiency (D) Sefficiency = (C) x (D) Sefficiency = (B)(E) Sefficiency = (B) Sefficiency = (B)(E) Sefficiency = (B)(E) Sefficiency = (B) Sefficiency = (B)(E) Sefficiency = (B)(E) Sefficiency = (B)(E) Sefficiency (E) Seffi	re necessary to achieve	x 10% of DAC or AE on II - Analysis Detector 164736	1200 (min	Calibratio	7.2E+04 I	Efficiency (α)
Remarks: Minimum sample volumes identified a strument Information Instrument Type Meter L-2929 158817 N/A N/A Variables, Calculations, Results ount Date ount Time (e.g., noon, 1300, etc.) ample Count Time (Ts, Tb) = T otal Counts ample Count Rate tackground Count Rate tackground Count Rate tackground Count Rate (ackground Efficiency (b) Collection Efficiency (C) Collection Efficiency (D) Sefficiency = (C) x (D) Activity (dom) = (B)(E) (F)	Sectio	Detector	value.	Calibratio	n Due Date	Efficiency (a)
Remarks: Minimum sample volumes identified a strument Information Instrument Type Meter L-2929 158817 N/A N/A Variables, Calculations, Results ount Date ount Time (e.g., noon, 1300, etc.) ample Count Time (Ts, Tb) = T otal Counts ample Count Rate tackground Count Rate tackground Count Rate tackground Count Rate (ackground Efficiency (b) Collection Efficiency (C) Collection Efficiency (D) Sefficiency = (C) x (D) Activity (dom) = (B)(E) (F)	Sectio	Detector 164736				
Instrument Information Instrument Type L-2929 158817 N/A Variables, Calculations, Results Count Date Count Time (e.g., noon, 1300, etc.) Count Counts Count Counts Count Count Rate Background Count Rate Background Count Rate Counter Efficiency (C) Collection Efficiency (D) Efficiency = (C) x (D) Activity (dpm) = (B)(E) (F)	Sectio	Detector 164736				
Instrument Type Meter L-2929 158817 N/A N/A Variables, Calculations, Results Fount Date Count Time (e.g., noon, 1300, etc.) Counter Time (Ts, Tb) = T Cotal Counts Count Rate Count Rate Count (Count Rate Count (Count (Count Rate) Counter Efficiency (C) Counter Efficiency (C) Counter Efficiency (D) Efficiency = (C) × (D) Activity (dom) = (B)(E) (F)		Detector 164736	Data			
Instrument Type Meter L-2929 158817 N/A N/A Variables, Calculations, Results Fount Date Count Time (e.g., noon, 1300, etc.) Counter Time (Ts, Tb) = T Cotal Counts Count Rate Count Rate Count (Count Rate Count (Count (Count Rate) Counter Efficiency (C) Counter Efficiency (C) Counter Efficiency (D) Efficiency = (C) × (D) Activity (dom) = (B)(E) (F)		Detector 164736				
Instrument Type Meter L-2929 158817 N/A N/A Variables, Calculations, Results Fount Date Fount Time (e.g., noon, 1300, etc.) Found Counts Found Counts Found Count Rate Found Rate Foun	Serial Number	164736		Meter	Detector	
L-2929 158817 N/A N/A Variables, Calculations, Results Fount Date Fount Time (e.g., noon, 1300, etc.) Found Counts Found Counts Found Counts Found Count Rate Found F		164736				
N/A Variables, Calculations, Results Fount Date Fount Time (e.g., noon, 1300, etc.) Found Counts Found Counts Found Count Rate Foun				12/13/2018	12/13/2018	0.726
Variables, Calculations, Results Count Time (e.g., noon, 1300, etc.) Count Time (e.g., noon, 1300, etc.) Count Time (Ts, Tb) = T Cotal Counts Counts Count Count Rate Background Count Rate Air Volume (liters) Vet count rate Counter Efficiency (C) Collection Efficiency (D) Efficiency = (C) x (D) Activity (dom) = (B)(E) (F)				N/A	N/A	N/A
count Date Count Time (e.g., noon, 1300, etc.) count Time (e.g., noon, 1300, etc.) count Time (Ts, Tb) = T Cotal Counts counts count Rate count Rate count rate (B) Counter Efficiency (C) Collection Efficiency (D) Efficiency = (C) x (D) Activity (dom) = (B)/(E) (F)					Alpha	
count Date Count Time (e.g., noon, 1300, etc.) count Time (e.g., noon, 1300, etc.) count Time (Ts, Tb) = T Cotal Counts counts count Rate count Rate count rate (B) Counter Efficiency (C) Collection Efficiency (D) Efficiency = (C) x (D) Activity (dom) = (B)/(E) (F)		Units	1st Cou	mt	2nd Count	3rd Count
Count Time (e.g., noon, 1300, etc.) Sample Count Time (Ts, Tb) = T Fotal Counts Sample Count Rate Background Count Rate Air Volume (liters) Vet count rate Counter Efficiency Collection Efficiency (D) Efficiency = (C) x (D) Activity (dpm) = (B)(E) (F)		Cuits	7/31/20			
ample Count Time (Ts, Tb) = T fotal Counts ample Count Rate sackground Count Rate sackground Count Rate ir Volume (liters) (A) Net count rate (B) Counter Efficiency (C) Collection Efficiency (D) Efficiency = (C) x (D) (E) Activity (dpm) = (B)/(E) (F)			15:00			
Cotal Counts Cotal Count Rate		minutes	60			
Sample Count Rate		counts	14			
Sackground Count Rate Air Volume (liters) (A)			0.23			
Air Volume (liters) (A) Net count rate (B) Counter Efficiency (C) Collection Efficiency (D) Efficiency = (C) x (D) (E) Activity (dpm) = (B)/(E) (F)		cpm	0.13			
Net count rate (B)		cpm	7.2E+0		7.2E+04	7.2E+04
Counter Efficiency (C) Collection Efficiency (D) Efficiency = (C) x (D) (E) Activity (dom) = (B)/(E) (F)		liters	0.10			
Collection Efficiency (D) Efficiency = (C) x (D) (E) Activity (dpm) = (B)/(E) (F)		cpm	0.73		0.73	0.73
Efficiency = (C) x (D) (E) Activity (dpm) = (B)/(E) (F)		epm/dpm	0.99		0.99	0.99
Activity (dpm) = (B)/(E) (F)		0.99	0.72		0.72	0.72
		cpm/dpm	0.14			
Grimum Detectable Activity (dnm) = (3+4.65*SORT(Cb))/(E*T)	-	dpm	0.14			
Minimum Detectable Activity (upin)	(G)	dpm Ci/ml	8.99E			
Concentration = $(F)/(2.22E9 \times (A))$ (H)		μCi/ml	7.31E-			
Background "Strip" value (F.1) Date Updated 4/	20-4/21	uCi/ml	8.92E			
NET Concentration Value = (H) - (F1); (F2)		uCi/ml				
DAC (or AE) Fraction = (F2)/(I)			0.00			
MDC = MDA/V = (G)/(A) (J)		μCi/ml	2.30E		-	
MDC Fraction of DAC (or AE) = (J)/(I) (Goal<10%)			0.01			
		Yes/No	Yes			
Note: Unc		raction > 100% req	uires immediate	e RSO notificatio	n.	
	xpected DAC or AE fo	2	rard			8-13-18

	8/15/2018	Sample ID:	20180808-04		WP: 2018-001	
Date:		Sample ID.	μСι/п	ACTOR AND ADDRESS OF THE RESERVE OF		Wash Asso
Occupational (DAC):	_	6.00E-14		Breatning Zone	General Area:	Work Area
Non-Occupational (EC):	1	DAC = $2.0E-11\mu Ci/ml$ (U-238), EC	= 6.0E-14µCi/ml]	Radionuclides	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary		Sampled By:	David Ber	rres
Wearer:		NÁ			NA	
Monitored Workers:				NA		
_	NIA		Serial No.	NA	Calibration Due Date:	NA
Lapel Pump Model:						
Air Pump Model:	LV-1		Serial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	ite (lpm)
Collection Date	Start	Stop	Total (minute	s)	Start	Stop
8/7/2018	7:30	17:00	570		60.0	60.0
8/8/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Samp	e Volume: 4.5E+03	Liters	
Comple Well-	60 /	I>			6.8E+04 Lit	ters (A)
Sample Volume:		lpm)			0.0E794 LII	ieis (A)
Remarks: Mi	nimum sample vol	umes identified are necessary to achi	eve 10% of DAC or AF	value.		
			tion II - Analysis			
trument Information		Serial Number			ation Due Date	707 (m)
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
		# 1 T		1.0	Alpha	2-d Cd
	bles, Calculations	s, Results	Units	1st Count	2nd Count	3rd Count
unt Date				8/15/2018		
unt Time (e.g., noon, 1300, et			1.4	10:00		
mple Count Time (Ts, Tb) = T			minutes	8		
tal Counts			counts			
mple Count Rate			cpm	0.13		
			cpm liters	6.8E+04	6.8E+04	6.8E+04
		1)	mers 1		0.0ETU4	0.66104
r Volume (liters)			oom.			
Volume (liters) t count rate	(B		cpm	0.05	0.73	0.73
r Volume (liters) et count rate unter Efficiency	(B))	cpm/dpm	0.05 0.73	0.73	0.73
Volume (liters) t count rate unter Efficiency flection Efficiency	(E) (C) (D))	cpm/dpm 0.99	0.05 0.73 0.99	0.99	0.99
r Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D)	(E) (E))	cpm/dpm 0.99 cpm/dpm	0.05 0.73 0.99 0.72		-
r Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E)	(E) (C) (D) (E) (F))	cpm/dpm 0.99 cpm/dpm dpm	0.05 0.73 0.99 0.72 0.07	0.99	0.99
r Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d	(E) (D) (E) (F) pm) = (3+4.65*SQ)	cpm/dpm 0.99 cpm/dpm dpm dpm	0.05 0.73 0.99 0.72 0.07 0.30	0.99	0.99
r Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (A))	(B) (C) (D) (E) (F) (F) (3+4.65*SQ	PRT(Cb))/(E*T) (G)	cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	0.05 0.73 0.99 0.72 0.07 0.30 4.89E-16	0.99	0.99
r Volume (liters) It count rate unter Efficiency Illection Efficiency Sciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (d ckground "Strip" value (F.1)	(B) (C) (D) (E) (F) (F) (H) (A) (H) (Date Updated	PRT(Cb))/(E*T) (G) 4/20-4/21	epm/dpm 0.99 epm/dpm dpm dpm µCi/ml uCi/ml	0.05 0.73 0.99 0.72 0.07 0.30 4.89E-16 7.31E-18	0.99	0.99
r Volume (liters) et count rate punter Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (d incentration = (F)/(2.22E9 x (d ckground "Strip" value (F.1) ET Concentration Value = (H)	(B) (C) (D) (E) (E) (F) (F) (H) (Date Updated 1- (F1); (F2)	PRT(Cb))/(E*T) (G) 4/20-4/21	cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	0.05 0.73 0.99 0.72 0.07 0.30 4.89E-16 7.31E-18 4.81E-16	0.99	0.99
r Volume (liters) It count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (d ckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) (F) (F) (H) (Date Updated 1- (F1); (F2)	PRT(Cb))/(E*T) (G) 4/20-4/21	epm/dpm 0.99 epm/dpm dpm dpm µCi/ml uCi/ml	0.05 0.73 0.99 0.72 0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.80%	0.99	0.99
r Volume (liters) t count rate unter Efficiency flection Detectable Activity (deption of the first of the flection of the	(B) (C) (D) (E) (F) (F) (F) (H) (Date Updated (J) (F1); (F2)	PRT(Cb))/(E*T) (G) 4/20-4/21	epm/dpm 0.99 epm/dpm dpm dpm µCi/ml uCi/ml	0.05 0.73 0.99 0.72 0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.80% 1.99E-15	0.99	0.99
r Volume (liters) et count rate punter Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (d incentration = (F)/(2.22E9 x (d ckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(B) (C) (D) (E) (F) (F) (F) (H) (Date Updated (J) (F1); (F2)	PRT(Cb))/(E*T) (G) 4/20-4/21	epm/dpm 0.99 epm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.05 0.73 0.99 0.72 0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.80% 1.99E-15 3.32%	0,99 0.72	0.99
r Volume (liters) It count rate unter Efficiency flection Office flection	(B) (C) (D) (E) (F) (F) (F) (H) (Date Updated (J) (F1); (F2)	PRT(Cb))/(E*T) (G) 4/20-4/21)	cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml vCi/ml	0.05 0.73 0.99 0.72 0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.80% 1.99E-15 3.32% No	0.99 0.72	0.99
control Count Rate r Volume (liters) et count rate cunter Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (d encentration = (F)/(2.22E9 x (A) etivity (B) = (B) etivity (B) = (B) etivity (B) = (B)/(B) etivity (B) = (B)/(B) etivity (B) = (B)/(B) etivity (B) = (B)/(B) etivity (B)/(B) = (B)/(B) etivity (B)/(B)/(B)/(B)/(B)/(B)/(B)/(B)/(B)/(B)/	(B) (C) (D) (E) (F) (F) (F) (H) (Date Updated (J) (F1); (F2)	PRT(Cb))/(E*T) (G) 4/20-4/21	cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.05 0.73 0.99 0.72 0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.80% 1.99E-15 3.32% No	0.99 0.72	0.99
t volume (liters) t count rate unter Efficiency llection Efficiency llection Efficiency brivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (leckground "Strip" value (F.1) T Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) = hal Count?	(B) (C) (D) (E) (F) (F) (F) (H) (D) (E) (F) (F) (F) (F) (F) (F) (F) (F) (F) (F	(Cb))/(E*T) (G) 4/20-4/21 0%) Note: Unexpected DAC or AE	epm/dpm 0.99 epm/dpm dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml	0.05 0.73 0.99 0.72 0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.80% 1.99E-15 3.32% No	0.99 0.72 Yes	0.99
r Volume (liters) t count rate unter Efficiency llection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (d ekground "Strip" value (F.1) TT Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(B) (C) (D) (E) (F) (F) (F) (H) (D) (E) (F) (F) (F) (F) (F) (F) (F) (F) (F) (F	(Cb))/(E*T) (G) 4/20-4/21 0%) Note: Unexpected DAC or AE	cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.05 0.73 0.99 0.72 0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.80% 1.99E-15 3.32% No	0.99 0.72 Yes	0.99

	THE RESERVE OF THE PARTY OF THE		on I - Collection Data			
Date:	7/31/2018	Sample ID:	20180808-048	RW	P: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	μCı/ml (1)	Breathing Zone:	General Area:	Work Ar
Non-Occupational (EC):	[DAG	C = 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 Wood Soil Sort Area		Sampled By:	Stephen Bea	
Wearer:		NA		Activity Performed:		
Monitored Workers:			NA NA			
Lapel Pump Model:	NA	9	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:			erial No.			
	EV-I		eriai No.	2773	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes)	_	Start	Stop
8/7/2018	7:00	17:00	600	_	60.0	60.0
8/8/2018	7:00	17:00	600		60	60
		Total Time (Tc):	1200		Avg. Flow Rate (lpm)	60.0
ument Information		Serial Number	on II - Analysis Data		on Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
	oles, Calculations, Res	sults	Units	1st Count	2nd Count	3rd Count
nt Date				7/31/2018		
nt Time (e.g., noon, 1300, etc	.)			15:00		
ple Count Time (Ts, Tb) = T			minutes	60		
ple Count Rate			counts	14		
ground Count Rate			cpm	0.23		
Volume (liters)	(A)		liters	7.2E+04	7.2E+04	725:01
count rate	(B)		cpm	0.15	7.2E+04	7.2E+04
Journ rate	(C)		cpm/dpm	0.73	0.73	0.73
nter Efficiency	(D)	(C-12 (12 (12 (12 (12 (12 (12 (12 (12 (12 (0.99	0.99	0.99	0.99
nter Efficiency ection Efficiency					0.99	0.99
nter Efficiency ection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E)	(D) (E) (F)		0.99	0.99		
nter Efficiency ection Efficiency siency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp	(D) (E) (F) m) = (3+4.65*SQRT(C	Cb))/(E*T) (G)	0.99 cpm/dpm	0.99		
nter Efficiency ection Efficiency eiency = (C) x (D) vity (dpm) = (B)(E) imum Detectable Activity (dp centration = (F)(2.22E9 x (A)	(D) (E) (F) m) = (3+4.65*SQRT(C) (H)		0.99 cpm/dpm dpm dpm μCi/ml	0.99 0.72 0.21 0.30 1.33E-15		
nter Efficiency ection Efficiency siency = (C) x (D) vity (dpm) = (B)(E) imum Detectable Activity (dpi centration = (F)(2.22E9 x (A) kground "Strip" value (F.1)	(D) (E) (F) (m) = (3+4.65*SQRT(C) (H) Date Updated	(Cb))/(E*T) (G) 4/20-4/21	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.33E-15 7.31E-18		
nter Efficiency ection Efficiency siency = (C) x (D) vity (dpm) = (B)/(E) from Detectable Activity (dp) centration = (F)/(2.22E9 x (A) sground "Strip" value (F.1) Concentration Value = (H)	(D) (E) (F) m) = (3+4.65*SQRT(O)) (H) Date Updated		0.99 cpm/dpm dpm dpm μCi/ml	0.99 0.72 0.21 0.30 1.33E-15 7.31E-18 1.33E-15		
nter Efficiency ection Efficiency eiency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	(D) (E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated (F1); (F2)		0.99 cpm/dpm dpm dpm μCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.33E-15 7.31E-18 1.33E-15 0.01%		
nter Efficiency ection Efficiency eitency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) eground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(D) (E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated (F1); (F2)		0.99 cpm/dpm dpm dpm μCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.33E-15 7.31E-18 1.33E-15 0.01% 1.89E-15		
nter Efficiency ection Efficiency eiency = (C) × (D) wity (dpm) = (B)/(E) mum Detectable Activity (dp eentration = (F)/(2.22E9 × (A eground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(D) (E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated (F1); (F2)		0.99 cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.33E-15 7.31E-18 1.33E-15 0.01% 1.89E-15 0.01%		
nter Efficiency ection Efficiency iency = (C) × (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp entration = (F)/(2.22E9 × (A ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(D) (E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml	0.99 0.72 0.21 0.30 1.33E-15 7.31E-18 1.33E-15 0.01% 1.89E-15 0.01% Yes	0.72	
nter Efficiency ection Efficiency siency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) sground "Strip" value (F.1) Concentration Value = (H) - C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (I) I Count?	(D) (E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 lote: Unexpected DAC or AE fra	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml	0.99 0.72 0.21 0.30 1.33E-15 7.31E-18 1.33E-15 0.01% 1.89E-15 0.01% Yes	0,72	0.72
ter Efficiency etion Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dp entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (Count?	(D) (E) (F) m) = (3+4.65*SQRT(C))) (H) Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 lote: Unexpected DAC or AE fra	0.99 cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml μCi/ml μCi/ml	0.99 0.72 0.21 0.30 1.33E-15 7.31E-18 1.33E-15 0.01% 1.89E-15 0.01% Yes	0,72	

			tion I - Collection				
Date:	8/23/2018	Sample ID:	20180810	-049	RV	VP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14		Ci/ml (I)	Breathing Zone:	General Area:	Work Are
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	= 6.0F-14uCi/ml)			DU (Depleted	
Location:			over 1 hearing				
		FS12 SCA Boundary				David Ber	rres
Wearer.		NA		Ac	tivity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.	N	Α	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	25	91	Calibration Due Date:	
Sample Information		Time					
Collection Date	Start	Stop	Tatal (-i-	ation)	l ļ	Flow Ra	
8/9/2018	7:30	17:00	Total (min	utes)		Start	Stop
8/10/2018	7:30	17:00	570			60.0	60.0
		Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
			Minimum Air Sar	nple Volume:	3.2E+03	Liters	
Sample Volume:	60 (lpm)		x	1140	(minutes) =	6.8E+04 Lit	ers (A)
		s identified are necessary to achie	ave 10% of DAC or				0.5 (22)
	man sample volume.	s identified are necessary to acine	eve 10% of DAC of	AE value.			
		Sect	ion II - Analysi	s Data			
rument Information		Serial Number		4 4 4	Calibrati	on Due Date	
Instrument Type		Meter	Detecto	r	Meter	Detector	Efficiency (a)
L-2929		158817	164736		1/10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
nt Date	oles, Calculations, Res	ults	Units		Count	2nd Count	3rd Count
					/2018		
)						
nt Time (e.g., noon, 1300, etc	.)		minutes	9			
	.)		minutes		50		
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T	5.)		counts		50		
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts	.)		counts	0	50 20 33		
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate	(A)		counts cpm cpm	0	50 20 33 03	6.8F+04	6 95404
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate			counts	0 0 0 6.81	50 20 33	6.8E+04	6.8E+04
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T l Counts ple Count Rate ground Count Rate //olume (liters) count rate tter Efficiency	(A)		counts cpm cpm liters	0 0 0 6.81	50 20 33 03 E+04	6.8E+04	
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate //olume (liters) count rate ster Efficiency retion Efficiency	(A) (B) (C) (D)		counts cpm cpm liters cpm	0 0 0 6.81 0	50 20 33 .03 .03 .04 .03		6.8E+04 0.73 0.99
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate //olume (liters) count rate ster Efficiency retion Efficiency fency = (C) x (D)	(A) (B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm	0 0 0. 6.81 0. 0.	50 20 33 .03 .03 .04 .03 .04 .03 .03 .03 .03 .03 .03 .03 .03 .03 .04 .04 .04 .04 .04 .04 .04 .04 .04 .04	0.73	0.73
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate //olume (liters) count rate etter Efficiency ettion Efficiency iency = (C) x (D) etty (dpm) = (B)/(E)	(A) (B) (C) (D) (E)		counts cpm cpm liters cpm epm/dpm 0.99 cpm/dpm dpm	0 0 0 6.81 0 0 0 0	50 20 33 33 03 E+04 30 73 99 72	0.73	0.73 0.99
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate ground Count Rate volume (liters) count rate etter Efficiency tetton Efficiency iency = (C) x (D) rity (dpm) = (B)/(E) mum Detectable Activity (dpm	(A) (B) (C) (D) (E) (F) m) = (3+4.65*SQRT(C)	b))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0 0 0 6.81 0 0 0.0 0.0	50 20 33 33 03 E+04 30 73 99 72 42	0.73	0.73 0.99
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate folume (liters) count rate ter Efficiency tetro Efficiency tetron Efficiency iency = (C) x (D) ity (dpm) = (B)/(E) mum Detectable Activity (dpentration = (F)/(2.22E9 x (A))	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(C) (H)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	0 0 0 6.81 0 0 0 0.0 0.0 0.0 0.0 0.0	50 20 33 33 03 E+04 30 73 99 72 42 21 E-15	0.73	0.73 0.99
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate folume (liters) count rate ter Efficiency tetro Efficiency tetron Efficiency inty (dpm) = (B)/(E) mum Detectable Activity (dpr entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) m) = (3+4.65*SQRT(C)) (H) Date Updated	b))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	0 0 0 6.81 0 0 0 0 0 0 2.78	50 20 33 33 03 E+04 30 73 99 72 42 21 E-15 E-18	0.73	0.73 0.99
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate folume (liters) count rate ster Efficiency seiency = (C) x (D) sity (dpm) = (B)/(E) mum Detectable Activity (dpr entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H)	(A) (B) (C) (D) (E) (F) m) = (3+4.65*SQRT(C)) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	0 0 0 6.81 0 0 0 0 0 2.78 7.31	50 20 33 33 03 E+04 30 73 99 72 42 21 E-15 E-18 E-15	0.73	0.73 0.99
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate folume (liters) count rate ter Efficiency terion Efficiency iency = (C) x (D) inty (dpm) = (B)/(E) mum Detectable Activity (dpr entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H)- (or AE) Fraction = (F2)/(I)	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(C) (D) (H) (Date Updated (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0 0 0 6.81 0 0 0 0 0 2.78 7.31 2.77	50 20 33 33 30 30 80 80 80 80 80 80 80 80 80 8	0.73	0.73 0.99
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate folume (liters) count rate ster Efficiency seiency = (C) x (D) sity (dpm) = (B)/(E) mum Detectable Activity (dpr entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H)	(A) (B) (C) (D) (E) (F) (M) = (3+4.65*SQRT(C) (F) (F1); (F2) (J)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	0 0 0 6.81 0 0 0 0 0 2.78 7.31 2.77 4.6	500 200 333 303 E+04 300 73 999 72 42 21 E-15 E-18 E-15 22% E-15	0.73	0.73 0.99
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T l Counts ple Count Rate ground Count Rate //olume (liters) //ount rate //oure (liters) //ount rate //oure (C) x (D) //outp (B)/(E) //outp (B)/	(A) (B) (C) (D) (E) (F) (M) = (3+4.65*SQRT(C) (F) (F1); (F2) (J)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0 0 0 6.81 0 0 0 0 0 2.78 7.31 2.77 4.6 1.40	500 200 333 303 6E+04 30 73 999 72 42 21 E-15 E-18 E-15 22% E-15 3%	. 0.73 0.99 0.72	0.73 0.99
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T l Counts ple Count Rate ground Count Rate /olume (liters) /ount rate /our Efficiency /our Efficiency /our Efficiency /our Details Activity (dpr /our De	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(C) (J) (Date Updated (F1); (F2) (J) (J)(I) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0 0 0 6.81 0 0 0 0 0 2.78 7.31 2.77 4.66 1.40 2.33	50 20 33 33 03 E+04 30 73 99 72 42 21 E-15 E-18 E-15 2% E-15 3%	0.73 0.99 0.72	0.73 0.99
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T I Counts ple Count Rate ground Count Rate ground Count Rate //olume (liters) //ount rate ter Efficiency //out (Efficiency //out (Effi	(A) (B) (C) (D) (E) (F) (F) (F) (F) (F) (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 ote: Unexpected DAC or AE fr	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml uCi/ml	0 0 0 6.81 0 0 0 0 0 2.78 7.31 2.77 4.66 1.40 2.33	50 20 33 33 03 E+04 30 73 99 72 42 21 E-15 E-18 E-15 2% E-15 3%	. 0.73 0.99 0.72	0.73 0.99 0.72
nt Time (e.g., noon, 1300, etc ple Count Time (Ts, Tb) = T l Counts ple Count Rate ground Count Rate //olume (liters) //ount rate ter Efficiency //ount Efficiency //ount Efficiency //ount Efficiency //ount Efficiency //ount mum Detectable Activity (dpn //ount Petectable Activity (dpn /	(A) (B) (C) (D) (E) (F) (F) (F) (F) (F) (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 ote: Unexpected DAC or AE fr	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0 0 0 6.81 0 0 0 0 0 2.78 7.31 2.77 4.66 1.40 2.33	50 20 33 33 03 E+04 30 73 99 72 42 21 E-15 E-18 E-15 2% E-15 3%	. 0.73 0.99 0.72	0.73 0.99

		Sect	ion I - Collection Da	ta		
Date:	8/23/2018	Sample ID:	20180810-050	R	VP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	μCt/ml (1)	Breathing Zone:	General Area:	Work Are
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	6.0E-14uCi/ml]		DU (Depleted	
Location:					200 . 61	7
			d		Stephen Ber	ames
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2773	Calibration Due Date:	3/27/2019
Sample Information	11,	Time			Flow Ra	te (lom)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
8/9/2018	7:00	17:00	600		60.0	60.0
8/10/2018	7:00	17:00	600		60	60
		Total Time (Tc):	1200		Avg. Flow Rate (lpm)	60.0
Remarks: Min	imum sample volumes	identified are necessary to achie	ive 10% of DAC or AE valu			
rument Information		Serial Number			ion Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
	les, Calculations, Res	ults	Units	1st Count	2nd Count	3rd Count
nt Date				8/23/2018		
nt Time (e.g., noon, 1300, etc.)		- (-)	12:00		
ple Count Time (Ts, Tb) = T			minutes	60		
ple Count Rate			counts	19		
			cpm	0.32		
ground Count Rate Volume (liters)	713		cpm	0.30		
count rate	(A)		liters	7.2E+04	7.2E+04	7.2E+04
nter Efficiency	(B)		cpm	0.02		
ection Efficiency	(C) (D)		cpm/dpm 0.99	0.73	0.73	0.73
tiency = (C) x (D)	(E)		cpm/dpm	0.99	0.99	0.99
vity (dpm) = (B)/(E)	(F)		dpm	0.02	0.72	0.72
mum Detectable Activity (dpn		b))/(E*T) (G)	dpm	0.52		
centration = $(F)/(2.22E9 \times (A))$		5))(5 1)(6)	μCi/ml	1.45E-16		
ground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
Concentration Value = (H) -			uCi/ml	1.38E-16		
(or AE) Fraction = (F2)/(I)			ge#iii	0.00%		
C = MDA/V = (G)/(A)	(J)		μCi/ml	3.26E-15		
Fraction of DAC (or AE) = (porm	0.02%		
			Yes/No	Yes		
Count?						
Count?	N	ote: Unexpected DAC or AE fr	action > 100% requires in	mediate RSO notification		

Strument Information Serial Number L-2929 158817 N/A Variables, Calculations, Results 17:00 17:00	pC/ml (t) NA NA NA Stal (minutes) 570 570 1140 n Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	Sampled By: Activity Performed: NA (2591 (General Area: DU (Depleted David Bern NA Calibration Due Date: Calibration Due Date: Flow Rate Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lite	Uranium) res NA 3/27/2019
Non-Occupational (EC):	NA NA Stal (minutes) 570 570 1140 n Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	Radionuclides: Sampled By: Activity Performed: NA (2591 (2591) (DU (Depleted David Berr NA Calibration Due Date: Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	NA 3/27/2019 te (lpm) Stop 60.0 60 60.0 ers (A) Efficiency (α) 0.726
Location: FS12 SCA Boundary	NA Stal (minutes) 570 570 1140 In Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	Sampled By: Activity Performed: NA (2591	David Berri NA Calibration Due Date: Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	NA 3/27/2019 te (lpm) Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Wearer: NA Monitored Workers: Lapel Pump Model: NA Serial No.	ntal (minutes) 570 570 1140 n Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	Activity Performed: NA (2591 (255) (2591 (2591 (2591 (2591 (2591 (255) (2591 (2591 (2591 (255) (2591 (2591 (255) (2591 (2591 (255) (2591 (255) (2591 (255) (2591 (255) (255) (2591 (255) (255) (2591 (255) (255) (255)	Calibration Due Date: Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	NA 3/27/2019 te (lpm) Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Monitored Workers: Lapel Pump Model: NA	ntal (minutes) 570 570 1140 n Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	NA (2591 (255) (2591 (2591 (255) (2591 (2591 (255) (2591 (255) (2591 (255) (2591 (255) (2591 (255) (2591 (255) (2591 (255) (2591 (255) (25	Calibration Due Date:	3/27/2019 tte (lpm) Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Lapel Pump Model: NA Serial No. Air Pump Model: LV-1 Serial No. Sample Information Time Collection Date Start Stop Total Stop 8/13/2018 7:30 17:00 Total Time (To): Minimum Sample Volume: 60 (lpm) x Section II - Amount Information Serial Number Instrument Information Serial Number Instrument Type Meter L-2929 158817 N/A N/A	otal (minutes) 570 570 1140 In Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	2591 (Calibration Meter 1/10/2019	Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	3/27/2019 tte (lpm) Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Lapel Pump Model: NA Serial No. Air Pump Model: LV-1 Serial No. Sample Information Time Collection Date Start Stop Total Stop 8/13/2018 7:30 17:00 Total Time (To): Minimum Sample Volume: 60 (lpm) x Section II - Amount Information Serial Number Instrument Information Serial Number Instrument Type Meter L-2929 158817 N/A N/A	stal (minutes) 570 570 1140 In Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	2591 (Calibration Meter 1/10/2019	Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	3/27/2019 tte (lpm) Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Sample Information Time Collection Date Start Stop Total Time 8/13/2018 7:30 17:00 Total Time (To): Minimum Sample Volume: 60 (lpm) x Section II - An activation of the property of the p	otal (minutes) 570 570 1140 In Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	2591 (Calibration Meter 1/10/2019	Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	3/27/2019 te (lpm) Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Sample Information	otal (minutes) 570 570 1140 In Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	Calibration Meter 1/10/2019	Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	Stop 60.0 60 60 60.0 ers (A) Efficiency (α) 0.726
Collection Date	570 570 1140 n Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	Calibration Meter 1/10/2019	Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	Stop 60.0 60 60.0 ers (A) Efficiency (a) 0.726
Sample Volume:	570 570 1140 n Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	Calibration Meter 1/10/2019	60.0 60 Avg. Flow Rate (Ipm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	60.0 60 60.0 ers (A) Efficiency (a) 0.726
Note	570 1140 In Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	Calibration Meter 1/10/2019	60 Avg. Flow Rate (lpm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	60 60.0 ers (A) Efficiency (α) 0.726
Total Time (Tc):	n Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	Calibration Meter 1/10/2019	Avg. Flow Rate (lpm) ers 6.8E+04 Lite Due Date Detector 1/10/2019 N/A	60.0 ers (A) Efficiency (α) 0.726
Minimum Sample Volume: 60 (lpm) x	n Air Sample Volum 1140 DAC or AE value. Analysis Data Detector 164736 N/A	Calibration Meter 1/10/2019	Due Date Detector 1/10/2019 N/A	ers (A) Efficiency (α) 0.726
Sample Volume: 60 (lpm) x	DAC or AE value. Analysis Data Detector 164736 N/A	(minutes) =	6.8E+04 Lite Due Date Detector 1/10/2019 N/A	Efficiency (a)
Instrument Type	164736 N/A	Meter 1/10/2019	Detector 1/10/2019 N/A	0.726
Instrument Type	164736 N/A	1/10/2019	1/10/2019 N/A	0.726
L-2929 158817 N/A N/A Variables, Calculations, Results Units	N/A		N/A	
N/A N/A Variables, Calculations, Results Units		N/A		N/A
	1		Alpha	
	1			
unt Date		1st Count	2nd Count	3rd Count
	8	8/23/2018		
unt Time (e.g., noon, 1300, etc.)	11	10:00		
nple Count Time (Ts, Tb) = T minute		60		
al Counts counts				
nple Count Rate cpm	-	0.07		
kground Count Rate cpm Volume (liters) (A) liters		6.8E+04	6.8E+04	6.8E+04
		0.04	0.02.04	0.02.07
count rate (B) cpm unter Efficiency (C) cpm/dpi	m	0.73	0.73	0.73
llection Efficiency (D) 0.99		0,99	0.99	0.99
$ficiency = (C) \times (D) $ (E) cpm/dpi	m	0.72	0.72	0.72
tivity $(dpm) = (B)/(E)$ (F) dpm		0.05		
nimum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm		0.21		
ncentration = $(\mathbf{F})/(2.22E9 \times (\mathbf{A}))$ (H) μ Ci/m	3	3.36E-16	-	
ckground "Strip" value (F.1) Date Updated 4/20-4/21 uCi/m		7.31E-18		
T Concentration Value = (H) - (F1); (F2) uCi/m		3.29E-16		
AC (or AE) Fraction = (F2)/(I)		0.55%		
$DC = MDA/V = (G)/(A)$ (J) $\mu Ci/m$		1.40E-15		
DC Fraction of DAC (or AE) = (J)/(I) (Goal<10%)		2.33%	Ver	-
nal Count? Yes/No		No PSO antiformina	Yes	
Performed By: David Berres David	Be-	ediate KSO notification.	Date:	8-23-18

		Secti	on I - Collectio	n Data			
Date:	8/23/2018	Sample ID:	20180814	-054	RWP	2018-001	
Occupational (DAC):	Limit:	2.00E-11	μС	Ci/ml (1)	Breathing Zone:		Work Area:
Non-Occupational (EC):	- U	$DAC = 2.0E-11\mu Ci/ml$ (U-238), EC=	6.0E-14μCi/ml]		Radionuclides:	DU (Depleted 1	Jranium)
Location:		FS12 Wood Soil Sort Area	1		Sampled By:	Stephen Bear	mes
		4.1		Ac	tivity Performed:	NA	
and the second of the second				NA			
Monitored Workers:					A	Calibration Due Date:	NA
Lapel Pump Model:	NA	3	erial No.				177.11.5
Air Pump Model:	LV-1	S	Serial No.	27	73	Calibration Due Date:	3/2//2019
Sample Information		Time				Flow Rat	e (lpm)
Collection Date	Start	Stop	Total (mir	utes)		Start	Stop
8/13/2018	7:00	17:00	600		1 1	60.0	60.0
8/14/2018	7:00	17:00	600		ļ	60	60
		Total Time (Tc):	1200			Avg. Flow Rate (lpm)	60.0
			Minimum Air Sa	imple Volume:	2.4E+01 L	iters	
Sample Volume:	60 (1	pm)	x	1200	(minutes) =	7.2E+04 Lite	ers (A)
			_	AF value			
Remarks: Mi	nimum sample vol	umes identified are necessary to achie	eve 10% of DAC of	AL value.			
		Sect	ion II - Analys	sis Data			
nstrument Information		Serial Number			Calibratio	n Due Date	
Instrument Type		Meter	Detect	tor	Meter	Detector	Efficiency (a)
L-2929		158817	16473	36	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
Varia	bles, Calculations	, Results	Units		Count	2nd Count	3rd Count
Count Date					23/2018		
ount Time (e.g., noon, 1300, et	c.)				14:00		
ample Count Time (Ts, Tb) = T			minutes	- 100	21		
otal Counts			counts		0.35		
ample Count Rate			cpm cpm		0.30		
Background Count Rate	(/		liters	7	2E+04	7.2E+04	7.2E+04
Air Volume (liters)	(B		cpm		0.05		
Net count rate Counter Efficiency	(C)		cpm/dpm		0.73	0.73	0.73
Collection Efficiency	(D)		0.99		0.99	0.99	0.99
Efficiency = (C) x (D)	(E)		cpm/dpm		0.72	0.72	0.72
Activity (dpm) = (B)/(E)	(F)		dpm		0.07		
Minimum Detectable Activity (d		PRT(Cb))/(E*T) (G)	dpm		0.52		
Concentration = $(F)/(2.22E9 \times ($			μCi/ml		35E-16		
oncemation - (F)/(2.22L) X	Date Updated	4/20-4/21	uCi/ml		31E-18		
) - (F1); (F2)	uCi/ml		28E-16		
Background "Strip" value (F.1) NET Concentration Value = (H					1.00%		
Background "Strip" value (F.1) NET Concentration Value = (HDAC (or AE) Fraction = (F2)/(I			- ATT -		26E-15		
Background "Strip" value (F.1) NET Concentration Value = (H DAC (or AE) Fraction = (F2)/(I MDC = MDA/V = (G)/(A)	(J)	1000	μCi/ml				
Sackground "Strip" value (F.1) NET Concentration Value = (H DAC (or AE) Fraction = (F2)/(I MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE)	(J)	10%)			0.02%		
Background "Strip" value (F.1) NET Concentration Value = (H DAC (or AE) Fraction = (F2)/(I MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	(J)	10%) Note: Unexpected DAC or AE	Yes/No	0	1.02% Yes		

		Section	n I - Collection Da	ita	2019 001	
Date: 8	3/27/2018	Sample ID:			VP: 2018-001	Work Area:
The state of the s	Limit:	C 00T 14	μCı/ml (
Occupational (DAC):		6.00E-14 [DAC = 2.0E-11μCi/ml (U-238), EC= 6.	0E-14uCi/mll	Radionuclides:	DU (Deplete	d Uranium)
Non-Occupational (EC):			OD THEODING		D	
Location:		FS12 SCA Boundary		Sampled By:		
		NA		Activity Performed:	NA	
			N	A		
Monitored Workers:					Calibration Due Date:	NA
Lapel Pump Model:	NA	Se	rial No.	NA	Calibration Due Date:	
Air Pump Model:		Se	erial No.	2591	Calibration Due Date.	Sierieors
Air Pump Model.	DV-I	-			Flow	Rate (lpm)
Sample Information		Time	Tr. (1 (-il-utas)		Start	Stop
Collection Date	Start	Stop	Total (minutes) 570		60.0	60,0
8/15/2018	7:30	17:00	570		60	60
8/16/2018	7:30	17:00	1140		Avg. Flow Rate (lpm)	60.0
		Total Time (Tc):			Dec.	
			Minimum Air Sample	Volume: 5.5E+03	Liters	
				140 (minutes)	= 6.8E+04	Liters (A)
Sample Volume:	60	(lpm)				
	· sample x	volumes identified are necessary to achie	ve 10% of DAC or AE	value.		
Remarks: Min	ilmum sample v					
		Secti	ion II - Analysis I	ata		
		Serial Number			ration Due Date	Efficiency (a)
strument Information		Meter	Detector	Meter	Detector	0.726
Instrument Type		158817	164736	1/10/2019		N/A
L-2929		N/A	N/A	N/A	N/A	IVE
N/A		1012			Alpha	3rd Count
¥7da	bles, Calculation	ons Results	Units	1st Count	2nd Count	Jiu Count
	ibies, Carculation	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		8/28/2018		
ount Date				12:30	74	
			minutes	60		
ount Time (e.g., noon, 1300, et	c.)				9.7	
ample Count Time (Ts, Tb) = T	(c.)		counts	5		
ample Count Time (Ts, Tb) = T otal Counts	c.)			5 0.08		
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate	(c.)	- 1	counts			6 95104
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate sackground Count Rate	(c.)	(A)	counts	0.08	6.8E+04	6.8E+04
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate sackground Count Rate kir Volume (liters)	C.)	(A)	counts cpm cpm	0.08		- V
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate kir Volume (liters) Set count rate		(B)	counts cpm cpm liters	0.08 0.13 6.8E+04	0.73	0.73
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate sackground Count Rate sir Volume (liters) let count rate Counter Efficiency		(B) (C)	counts cpm cpm liters cpm	0.08 0.13 6.8E+04 -0.05	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) let count rate counter Efficiency collection Efficiency		(B) (C) (D)	counts cpm cpm liters cpm cpm/dpm	0.08 0.13 6.8E+04 -0.05 0.73	0.73	0.73
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate sackground Count Rate sir Volume (liters) let count rate counter Efficiency Collection Efficiency Efficiency = (C) x (D)	((B) (C)	counts cpm cpm liters cpm cpm/dpm 0.99	0.08 0.13 6.8E+04 -0.05 0.73 0.99	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate sackground Count Rate sir Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) × (D) Activity (dpm) = (B)/(E)	(F)	(B) (C) (D) (E)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	0.08 0.13 6.8E+04 -0.05 0.73 0.99	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = Total Counts ample Count Rate ackground Count Rate air Volume (liters) Act count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (decimination)	(F) (3+4.65	(B) (C) (D) (E)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.08 0.13 6.8E+04 -0.05 0.73 0.99 0.72 -0.06	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate sackground Count Rate six Volume (liters) let count rate Counter Efficiency Collection Efficiency Efficiency = (C) × (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (c Concentration = (F)/(2.22E9 × (C))	(F) dpm) = (3+4.65 (A)) (H)	(B) (C) (D) (E) *SQRT(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.08 0.13 6.8E+04 -0.05 0.73 0.99 0.72 -0.06 0.37	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = Total Counts ample Count Rate ackground Count Rate ackground Count Rate ackground Count Rate ackground Elicency fet count rate counter Efficiency collection Efficiency efficiency = (C) × (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (c Concentration = (F)/(2.22E9 × (C) Background "Strip" value (F.1)	(F) dpm) = (3+4.65 (A)) (H) Date Upda	(B) (C) (D) (E) *SQRT(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm pCi/ml	0.08 0.13 6.8E+04 -0.05 0.73 0.99 0.72 -0.06 0.37 -4.28E-16	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = Total Counts ample Count Rate ackground Count Rate ackground Count Rate ackground Count Rate ackground Efficiency counter Efficiency difficiency = (C) × (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (deconcentration = (F)/(2.22E9 × (Background "Strip" value (F.1) NET Concentration Value = (F)	(F) dpm) = (3+4.65 (A)) (H) Date Updat 1) - (F1);	(B) (C) (D) (E) *SQRT(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	0.08 0.13 6.8E+04 -0.05 0.73 0.99 0.72 -0.06 0.37 -4.28E-16 7.31E-18	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = Total Counts ample Count Rate ackground Count Rate ackground Count Rate ackground Count Rate ackground Efficiency fet count rate counter Efficiency Efficiency = (C) × (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (of Concentration = (F)/(2.22E9 × (Background "Strip" value (F.1) NET Concentration Value = (B) DAC (or AE) Fraction = (F2)/(1)	(F) dpm) = (3+4.65 (A)) (H) Date Upda 1) - (F1);	(B) (C) (D) (E) *SQRT(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.08 0.13 6.8E+04 -0.05 0.73 0.99 0.72 -0.06 0.37 -4.28E-16 7.31E-18 -4.35E-16	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = Total Counts ample Count Rate ackground Count Rate ir Volume (liters) let count rate counter Efficiency follection Efficiency efficiency = (C) x (D) detivity (dpm) = (B)/(E) dinimum Detectable Activity (c concentration = (F)/(2.22E9 x (C)) sackground "Strip" value (F.1) NET Concentration Value = (B) DAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A)	(F) dpm) = (3+4.65 (A)) (H) Date Upda H) - (F1); (J)	(B) (C) (D) (E) *SQRT(Cb))/(E*T) (G) ted 4/20-4/21 (F2)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	0.08 0.13 6.8E+04 -0.05 0.73 0.99 0.72 -0.06 0.37 -4.28E-16 7.31E-18 -4.35E-16 -0.72%	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = T otal Counts ample Count Rate sackground Count Rate	(F) dpm) = (3+4.65 (A)) (H) Date Upda H) - (F1); (J)	(B) (C) (D) (E) *SQRT(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.08 0.13 6.8E+04 -0.05 0.73 0.99 0.72 -0.06 0.37 -4.28E-16 7.31E-18 -4.35E-16 -0.72% 2.42E-15	0.73 0.99	0.73 0.99
ample Count Time (Ts, Tb) = Total Counts ample Count Rate ackground rate counter Efficiency follection Efficiency	(F) dpm) = (3+4.65 (A)) (H) Date Upda H) - (F1); (J)	(B) (C) (D) (E) *SQRT(Cb))/(E*T) (G) ted 4/20-4/21 (F2)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.08 0.13 6.8E+04 -0.05 0.73 0.99 0.72 -0.06 0.37 -4.28E-16 7.31E-18 -4.35E-16 -0.72% 2.42E-15 4.03% YES	0.73 0.99 0.72	0.73 0.99

P	0/00/0010	Sample ID:	20180816-052		P: 2018-001	
Date:	8/28/2018	Sample ID.	μCı/ml (J			Work Area:
Occupational (DAC):	Limit:	2.00E-11	1			
Non-Occupational (EC):	[DA	$C = 2.0E-11\mu Ci/ml$ (U-238), $EC = 0$	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 Wood Soil Sort Area		Sampled By:	Dave Ber	rres
				Activity Performed:	NA	
Wearer:		NA				
Monitored Workers:			NA NA		Meson Assessment	
Lapel Pump Model:	NA	Se	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	Se	erial No.	2773	Calibration Due Date:	3/27/2019
		Time			Flow R	ate (lpm)
Sample Information	0.0		Total (minutes)		Start	Stop
Collection Date	Start	Stop 17:00	600		60.0	60.0
8/15/2018	7:00	17:00	600		60	60
8/16/2018	7:00	Total Time (Tc):	1200		Avg. Flow Rate (lpm)	60.0
		(-2)		4.751.04	r team	
			Minimum Air Sample \	Volume: 1.7E+01	Liters	
Sample Volume:	60 (lpm	à ·	x 12	00 (minutes) =	7.2E+04 L	iters (A)
				7		
Remarks: Mi	nimum sample volum	es identified are necessary to achie	ve 10% of DAC or AE va	ilue.		
			W 4 1 2 D			
			ion II - Analysis Da		ion Due Date	
trument Information		Serial Number	Database	Meter	Detector Detector	Efficiency (a)
Instrument Type		Meter	Detector	12/13/2018	12/13/2018	0.726
L-2929		158817	164736	N/A	N/A	N/A
N/A		N/A	N/A	N/A	Alpha	Ture.
			77.74	1st Count	2nd Count	3rd Count
	bles, Calculations, R	esults	Units	8/28/2018	Ziid Count	Ora Count
unt Date				14:00		
unt Time (e.g., noon, 1300, et			77.040	60		
mple Count Time (Ts, Tb) = T			minutes	20		
			counts			
			2000			
mple Count Rate			cpm	0.33		
tal Counts mple Count Rate ckground Count Rate	16		cpm	0.13	7.2E+04	7.2E+04
mple Count Rate ekground Count Rate r Volume (liters)	(A)		cpm liters	0.13 7.2E+04	7.2E+04	7.2E+04
mple Count Rate ckground Count Rate r Volume (liters) ct count rate	(B)		cpm liters cpm	0.13 7.2E+04 0.20		
mple Count Rate ckground Count Rate r Volume (liters) ct count rate unter Efficiency	(B) (C)		cpm liters cpm cpm/dpm	0.13 7.2E+04 0.20 0.73	0.73	0.73
mple Count Rate ckground Count Rate r Volume (liters) t count rate nunter Efficiency	(B) (C) (D)		cpm liters cpm cpm/dpm 0.99	0.13 7.2E+04 0.20 0.73 0.99	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate r Volume (liters) t count rate nunter Efficiency dlection Efficiency ficiency = (C) x (D)	(B) (C) (D) (E)		cpm liters cpm cpm/dpm 0.99 cpm/dpm	0,13 7.2E+04 0.20 0.73 0.99 0.72	0.73	0.73
mple Count Rate ckground Count Rate r Volume (liters) d count rate nunter Efficiency efficiency = (C) x (D) trivity (dpm) = (B)/(E)	(B) (C) (D) (E)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0,13 7,2E+04 0,20 0,73 0,99 0,72 0,28	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate r Volume (liters) ct count rate cunter Efficiency fliction Efficiency ficiency = (C) x (D) stivity (dpm) = (B)/(E) inimum Detectable Activity (d	(B) (C) (D) (E) (F) (Ipm) = (3+4.65*SQRT	(Cb))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0,13 7,2E+04 0,20 0,73 0,99 0,72 0,28 0,37	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate r Volume (liters) et count rate sunter Efficiency fliction Efficiency fliction Efficiency fliction (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (dencentration = (F)/(2.22E9 x (dencentration = (F)/	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQR7A)) (H)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm	0,13 7,2E+04 0,20 0,73 0,99 0,72 0,28 0,37 1,77E-15	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate r Volume (liters) et count rate cunter Efficiency fliction Efficiency fliction Efficiency fliction (C) × (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (dencentration = (F)/(2.22E9 × (dekground "Strip" value (F.1)	(B) (C) (D) (E) (F) Ipm) = (3+4.65*SQR7A)) (H) Date Updated	(Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	0,13 7,2E+04 0,20 0,73 0,99 0,72 0,28 0,37 1,77E-15 7,31E-18	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate r Volume (liters) et count rate sunter Efficiency fliction Efficiency fliction Efficiency fliction (C) × (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (dencentration = (F)/(2.22E9 × (dekground "Strip" value (F.1) ET Concentration Value = (H	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQR7A)) (H) Date Updated () - (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm	0,13 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.37 1.77E-15 7.31E-18 1.76E-15	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate r Volume (liters) d count rate number Efficiency dilection Efficiency ficiency = (C) x (D) divity (dpm) = (B)/(E) minum Detectable Activity (d meentration = (F)/(2.22E9 x (d mekground "Strip" value (F.1) ET Concentration Value = (H AC (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQR7A)) (H) Date Updated () - (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml	0.13 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.37 1.77E-15 7.31E-18 1.76E-15 0.01%	0.73 0.99	0.73 0.99
mple Count Rate ekground Count Rate r Volume (liters) et count rate punter Efficiency elicetion Efficiency ficiency = (C) × (D) etrivity (dpm) = (B)/(E) enimum Detectable Activity (democentration = (F)/(2.22E9 × (elekground "Strip" value (F.1) etriconcentration Value = (Hack (or AE) Fraction = (F2)/(I) etriconcentration = (F2)/(I) etriconcentration = (F2)/(I) etriconcentration Value = (Hack (or AE) Fraction = (F2)/(I) etriconcentration = (F2)/(I) etriconcentration = (F2)/(I) etriconcentration = (F2)/(I) etriconcentration = (F2)/(I)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTA) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	0.13 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.37 1.77E-15 7.31E-18 1.76E-15 0.01% 2.30E-15	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate r Volume (liters) et count rate sunter Efficiency fliction Officiency fliction Efficiency fliction Officiency fliction Efficiency fliction Officiency	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTA) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.13 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.37 1.77E-15 7.31E-18 1.76E-15 0.01% 2.30E-15 0.01%	0.73 0.99	0.73 0.99
mple Count Rate ekground Count Rate r Volume (liters) et count rate punter Efficiency elicetion Efficiency ficiency = (C) × (D) etrivity (dpm) = (B)/(E) enimum Detectable Activity (democentration = (F)/(2.22E9 × (elekground "Strip" value (F.1) etriconcentration Value = (Hack (or AE) Fraction = (F2)/(I) etriconcentration = (F2)/(I) etriconcentration = (F2)/(I) etriconcentration Value = (Hack (or AE) Fraction = (F2)/(I) etriconcentration = (F2)/(I) etriconcentration = (F2)/(I) etriconcentration = (F2)/(I) etriconcentration = (F2)/(I)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTA) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.13 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.37 1.77E-15 7.31E-18 1.76E-15 0.01% 2.30E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99
mple Count Rate ckground Count Rate r Volume (liters) et count rate sunter Efficiency fliction Officiency fliction Efficiency fliction Officiency fliction Efficiency fliction Officiency	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTA) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.13 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.37 1.77E-15 7.31E-18 1.76E-15 0.01% 2.30E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99 0.72
mple Count Rate ckground Count Rate r Volume (liters) d count rate number Efficiency efficiency = (C) x (D) trivity (dpm) = (B)/(E) inimum Detectable Activity (d incentration = (F)/(2.22E9 x (activity)) ET Concentration Value = (H AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) and Count?	(B) (C) (D) (E) (F) Ipm) = (3+4.65*SQR7 A)) (H) Date Updated ()-(F1); (F2) () (J) = (J)/(I) (Goal<10%	4/20-4/21 6) Note: Unexpected DAC or AE f	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml uCi/ml yEs/No fraction > 100% require	0.13 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.37 1.77E-15 7.31E-18 1.76E-15 0.01% 2.30E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99 0.72
mple Count Rate ckground Count Rate (Volume (liters) t count rate unter Efficiency llection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (c ckground "Strip" value (F.1) ET Concentration value = (H AC (or AE) Fraction = (F2)/(I DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) and Count?	(B) (C) (D) (E) (F) Ipm) = (3+4.65*SQR7 A)) (H) Date Updated ()-(F1); (F2) () (J) = (J)/(I) (Goal<10%	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml uCi/ml yEs/No fraction > 100% require	0.13 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.37 1.77E-15 7.31E-18 1.76E-15 0.01% 2.30E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99

	9/5/2018	Sample ID:	20180823-05	5	RWP	2018-001	
Date:		Sample ID.	μСι/п		thing Zone:		Work Area
Occupational (DAC):	Limit:	6.00E-14					
Non-Occupational (EC):	[DAC	= 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Rac	lionuclides:	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary		Sample	d By:	David Ber	rres
Wearer:		NA		Activity Pe	rformed:	NA	
Monitored Workers:				NA			
	271					Calibration Due Date:	NA
Lapel Pump Model:	NA		Serial No.	NA			Total Control
Air Pump Model:	LV-1		Serial No.	2591		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	ite (lpm)
Collection Date	Start	Stop	Total (minute	s)		Start	Stop
8/21/2018	7:30	17:00	570			60.0	60.0
8/22/2018	7:30	17:00	570			60	60
		Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
			Minimum Air Samp	la Voluma: 5	5E+03 Li	ters	
Sample Volume:			x	1140 (minute	es) =	6.8E+04 Lit	ters (A)
Remarks: Mir	nimum sample volumes	identified are necessary to achie	eve 10% of DAC or AE	value.			
		Sect	ion II - Analysis	Data			
rument Information		Serial Number			Calibratio	n Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736	1	/10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
Varial	bles, Calculations, Res	ults	Units	1st Count		2nd Count	3rd Count
nt Date				9/4/2018	-		
nt Time (e.g., noon, 1300, etc	:.)			12:30			
ple Count Time (Ts, Tb) = T			minutes	60			
1 Counts			counts	16		P	
ple Count Rate			cpm	0.27			
eground Count Rate	50.0		epm	0.13	-	COPION	605104
Volume (liters)	(A)		liters	6.8E+04		6.8E+04	6.8E+04
count rate	(B)		cpm	0.14		0.00	0.72
nter Efficiency	(C)		cpm/dpm	0.73		0.73	0.73
ection Efficiency	(D)		0.99	0.99	-	0.99	0.99
$eiency = (C) \times (D)$	(E)		cpm/dpm	0.72	-	0.72	0.72
vity (dpm) = (B)/(E)	(F)	LV/(ENT) (C)	dpm	0.19	_		
imum Detectable Activity (dp centration = (F)/(2.22E9 x (A		(G)	dpm μCi/ml	1.25E-15	-+		
sground "Strip" value (F.I)	Date Updated	4/20-4/21	μCi/ml	7.31E-18			
Concentration Value = (H)		1120 1121	uCi/ml	1.24E-15			
C (or AE) Fraction = (F2)/(I)	(F2)		ucom	2.07%			
C = MDA/V = (G)/(A)	(J)		μCi/ml	2.42E-15			
C Fraction of DAC (or AE) =			Kentin	4.03%			
Count?	(0,000 -10/0)		Yes/No	YES		Yes	
evalls:	_ N	ote: Unexpected DAC or AE f	THE RESERVE OF THE PARTY OF THE) notification		
	*			The state of the s			and the start of
11. a - 4.1al -	David B Z-1 S1.	2000 / Na	JBu				9-4-18

	9/5/2018	Sample ID:	20180823-05	6	RWP: 2018-001	
Occupational (DAC):	Limit:		μCι/n			Work Area
		2,00E-11				
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	6.0E-14μCi/ml]	Radionucl	DU (Deple	ted Uranium)
Location:		FS12 Wood Soil Sort Area	a	Sampled By:	Dave l	Веггез
Wearer:		NA		Activity Performed	i: N	A
AND DESCRIPTION OF THE PARTY OF				NA	-	
Monitored Workers:						
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	2773	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow	Rate (lpm)
Collection Date	Start	Stop	Total (minute	s)	Start	Stop
8/21/2018	7:00	17:00	600		60.0	60.0
8/22/2018	7:00	17:00	600		60	60
		Total Time (Tc):	1200		Avg. Flow Rate (lpm)	60.0
Sample Volume: Remarks: Mir	Carl Branch Branch	s identified are necessary to achie	x ve 10% of DAC or Al	(minutes)	= 7.2E+04	Liters (A)
		Sect	ion II - Analysis			F
trument Information		Serial Number			libration Due Date	P107 1 (-)
Instrument Type		Meter	Detector	Meter		Efficiency (a)
L-2929		158817	164736	12/13/20		0.726
N/A		N/A	N/A	N/A	N/A	N/A
W. 1.	0 0 1 c n	- N-	Units	1st Count	Alpha 2nd Count	3rd Count
unt Date	bles, Calculations, Re	suits	Units	9/4/2018	2nd Count	Did Comm
unt Time (e.g., noon, 1300, etc	1			14:00		
	·.)		33. A.			
THE PARTY OF THE P			minutes	60		
nple Count Time (Ts, Tb) = T						
nple Count Time (Ts, Tb) = T al Counts			counts	60 16 0.27		
nple Count Time (Ts, Tb) = T al Counts nple Count Rate			counts	16		
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate			counts cpm cpm	16 0.27	7.2E+04	7.2E+04
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate Volume (liters)	(A)		counts	16 0.27 0.13	7.2E+04	7.2E+04
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate			counts cpm cpm liters	16 0.27 0.13 7.2E+04	7.2E+04 0.73	7.2E+04 0.73
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate Volume (liters)	(A) (B)		counts cpm cpm liters cpm	16 0.27 0.13 7.2E+04 0.14		
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency	(A) (B) (C)		counts cpm cpm liters cpm cpm/dpm	16 0.27 0.13 7.2E+04 0.14 0.73	0.73	0.73
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency	(A) (B) (C) (D)		counts cpm cpm liters cpm cpm/dpm 0.99	16 0.27 0.13 7.2E+04 0.14 0.73 0.99	0.73 0.99	0.73 0.99
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency election Efficiency iciency = (C) x (D)	(A) (B) (C) (D) (E)	Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	16 0.27 0.13 7.2E+04 0.14 0.73 0.99 0.72	0.73 0.99	0.73 0.99
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency election Efficiency election = (C) x (D) evity (dpm) = (B)/(E)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	16 0.27 0.13 7.2E+04 0.14 0.73 0.99 0.72 0.19	0.73 0.99	0.73 0.99
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency election Efficiency election = (C) x (D) eivity (dpm) = (B)/(E) enimum Detectable Activity (dpm)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	16 0.27 0.13 7.2E+04 0.14 0.73 0.99 0.72 0.19 0.37 1.19E-15 7.31E-18	0.73 0.99	0.73 0.99
and Count Time (Ts, Tb) = T al Counts and Count Rate extraction (liters) count rate unter Efficiency election Efficiency election Efficiency election (L) (L) (L) (L) (L) (L) election (L) (L) (L) (L) (L) (L) election (L) (L) (L) (L) (L) (L) election (L) (L) (L) (L) (L) (L) (L) (L) (L) election (L) (L) (L) (L) (L) (L) (L) (L) (L) election (L)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(0)) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	16 0.27 0.13 7.2E+04 0.14 0.73 0.99 0.72 0.19 0.37 1.19E-15 7.31E-18 1.18E-15	0.73 0.99	0.73 0.99
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency election Efficiency civity (dpm) = (B)/(E) nimum Detectable Activity (dp ncentration = (F)/(2.22E9 x (A ekground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(i))) (H) Date Updated - (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml	16 0.27 0.13 7.2E+04 0.14 0.73 0.99 0.72 0.19 0.37 1.19E-15 7.31E-18 1.18E-15 0.01%	0.73 0.99	0.73 0.99
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency election Efficiency ivity (dpm) = (B)/(E) nimum Detectable Activity (dpm) neentration = (F)/(2.22E9 x (A ekground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT()) (H) Date Updated - (F1); (F2)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml uCi/ml	16 0.27 0.13 7.2E+04 0.14 0.73 0.99 0.72 0.19 0.37 1.19E-15 7.31E-18 1.18E-15 0.01% 2.30E-15	0.73 0.99	0.73 0.99
raple Count Time (Ts, Tb) = T al Counts raple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency election Efficiency dictione (Ts) civity (dpm) = (B)/(E) nimum Detectable Activity (dp necentration = (F)/(2.22E9 x (A ekground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT()) (H) Date Updated - (F1); (F2)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	16 0.27 0.13 7.2E+04 0.14 0.73 0.99 0.72 0.19 0.37 1.19E-15 7.31E-18 1.18E-15 0.01% 2.30E-15 0.01%	0.73 0.99	0.73 0.99
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency election Efficiency ivity (dpm) = (B)/(E) nimum Detectable Activity (dpm) neentration = (F)/(2.22E9 x (A ekground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) om) = (3+4.65*SQRT(Om) = (4+65*SQRT(Om) = (7+1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	16 0.27 0.13 7.2E+04 0.14 0.73 0.99 0.72 0.19 0.37 1.19E-15 7.31E-18 1.18E-15 0.01% 2.30E-15 0.01%	0.73 0.99 0.72	0.73 0.99

		Secti	on I - Collection Data	le .		
Date:	9/11/2018	Sample ID:	20180827-057	RW	P: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCt/ml (I)	Breathing Zone:	General Area:	Work Are
Non-Occupational (EC):	[DAC	= 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	_	DU (Depleted	100
Location:		FS12 SCA Boundary	O. C. C. C.		David Be	
Wearer:		NA				ires
Monitored Workers:		MA	- 44	Activity Performed:	NA	
The second secon	7.2		NA NA			
Lapel Pump Model:	NA	Se	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	ite (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
8/23/2018	7:30	17:00	570	- 1	60.0	60.0
8/27/2018	7:30	15:30	480		60	60
		Total Time (Tc):	1050		Avg. Flow Rate (lpm)	60,0
	imum sample volumes		on II - Analysis Data			
rument Information		Serial Number			n Due Date	
Instrument Type L-2929		Meter	Detector	Meter	Detector	Efficiency (a)
N/A		N/A	164736	1/10/2019	1/10/2019	0.726
IVA		N/A	N/A	N/A	N/A	N/A
Variab	les, Calculations, Res	ilts	Units	1st Count	Alpha 2nd Count	3rd Count
int Date				9/11/2018	and Count	310 Count
int Time (e.g., noon, 1300, etc.)			14:00		
pple Count Time (Ts, Tb) = T			minutes	60		
al Counts			counts	16		
ple Count Rate			cpm	0.27		
kground Count Rate			cpm	0.08		- North
Volume (liters)	(A)		liters	6.3E+04	6.3E+04	6.3E+04
nter Efficiency	(B) (C)		cpm	0.19		
ection Efficiency	(D)		cpm/dpm 0.99	0.73	0.73	0.73
ciency = (C) x (D)	(E)		cpm/dpm	0.72	0.99	0.99
vity $(dpm) = (B)/(E)$	(F)		dpm	0.26	0,72	0.72
imum Detectable Activity (dpn	n) = (3+4.65*SQRT(Cl))))/(E*T) (G)	dpm	0.30		
centration = $(F)/(2.22E9 \times (A))$	(H)		μCi/ml	1.86E-15		
kground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
Concentration Value = (H) -	(F1); (F2)		uCi/ml	1.85E-15		
(or AE) Fraction = (F2)/(I)				3.08%		
C = MDA/V = (G)/(A)	(J)		μCi/ml	2.16E-15		
Fraction of DAC (or AE) = (J)/(I) (Goal<10%)			3.61%		
Count?	N.	to E Into	Yes/No	YES	Yes	
Performed Bu	David Bo	ete: Unexpected DAC or AE fra		nediate RSO notification.		7.11.10
renormed by: _	-WALA OF	100/0000	Se		Date:	9-11-18
Deviewed Dur	ES Sien	me 15			Date: 9	

		Secti	on I - Collection Da	ta		
Date:	9/11/2018	Sample ID:	20180827-058	R	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	μCı/ml (I	Breathing Zone:	General Area:	Work Area
Non-Occupational (EC):	IDAC	= 2.0E-11µCi/ml (U-238), EC=	6 0F-14uCi/ml1	Radionuclides:		Uranium)
Location:		FS12 Wood Soil Sort Are	a		Dave Ber	ics
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA	5	Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	Serial No.	2773	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
8/23/2018	7:30	17:00	570		60.0	60.0
8/27/2018	7:30	15:30	480		60	60
5,27,20,4	1.85	Total Time (Tc):	1050		Avg. Flow Rate (lpm)	60.0
	4 4-6		Minimum Air Sample V		Liters	
Sample Volume:			x105	10000	6.3E+04 Lit	ers (A)
Remarks: Mi	nimum sample volumes	identified are necessary to achie	ve 10% of DAC or AE va	lue.		
		Sect	ion II - Analysis Da	ta		
trument Information		Serial Number		Calibra	tion Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929	4	158817	164736	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varia	bles, Calculations, Res	ults	Units	1st Count	2nd Count	3rd Count
int Date			1	9/11/2018		
ant Time (e.g., noon, 1300, etc				15:00		
nple Count Time $(Ts, Tb) = T$			minutes	60	P	
al Counts			counts	8		
nple Count Rate			cpm	0.13	#VALUE!	
kground Count Rate			cpm	0.08		
Volume (liters)	(A)		liters	6.3E+04	6.3E+04	6.3E+04
count rate	(B)		cpm	0.05		
inter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ection Efficiency	(D)		0.99	0.99	0.99	0.99
ciency = (C) x (D)	(E)		cpm/dpm	0.72	0.72	0.72
ivity (dpm) = (B)/(E)	(F)	LV/(E4T) (C)	dpm	0.07	HACAT TIPL	
imum Detectable Activity (dr		(b))/(E*1) (G)	dpm	0.30 5.31E-16	#VALUE!	
centration = (F)/(2.22E9 x (A		4/00 4/01	μCi/ml			
kground "Strip" value (F.1)		4/20-4/21	uCi/ml	7.31E-18 5.23E-16		
C (or AE) Fraction = (F2)/(I)			uCi/ml			
C (or AE) Fraction = $(F2)/(I)$ C = MDA/V = $(G)/(A)$			uCi/ml	0.00%	#VALUE!	
C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(J)/(I) (Goal<10%)		μCi/ml	2.16E-15 0.01%	#VALUE!	
al Count?	(op(z) (Guar-1076)		Yes/No	Yes	#VALUE:	
at Count!	N	ote: Unexpected DAC or AE fi		the same to the sa	on.	
		1		miniculate RSO notificatio		
Performed By:	David B	erres / Dan	Be		Date:	9-11-18
		A hard of the second of the second of the				
Reviewed By:	EL Siem	15	=		Date:	7-12-18

Date:			on I - Collection			
	9/11/2018	Sample ID:			RWP: 2018-001	The Later
Occupational (DAC):	Limit:	6.00E-14	μC1/r	nl (1) Breathing Zo	one: General Area:	Work Area
Non-Occupational (EC):	[DAC	= 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionucli	des: DU (Deplete	d Uranium)
Location:		FS12 SCA Boundary		Sampled By:	David B	erres
Wearer:		NA			. NA	
Monitored Workers:				NA		
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time				Rate (lpm)
Collection Date	Start	Stop	Total (minute	es)	Start	Stop
8/28/2018	11:00	17:00	360		60.0	60.0
8/29/2018	7:30	17:30	600		60	60
		Total Time (Tc):	960		Avg. Flow Rate (lpm)	60.0
			Minimum Air Samp	le Volume: 4.5E+03	Liters	
Console Welson	(0 (1)			960 (minutes)	= 5.8E+04 L	iters (A)
Sample Volume:			х		2,02,104	ment (ray
Remarks: Mi	nimum sample volumes	identified are necessary to achie	ve 10% of DAC or Al	E value.		
			The state of the state of			
		Sect	ion II - Analysis	Data		
strument Information		Serial Number		Cal	ibration Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929	V	158817	164736	1/10/201		0,726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	_
Varia	bles, Calculations, Res	ults	Units	1st Count	2nd Count	3rd Count
ount Date				9/11/2018		
ount Time (e.g., noon, 1300, et	c.)			9:00		
mple Count Time (Ts, Tb) = T			minutes	60		
			counts			
			000.00	10		-
otal Counts			cpm	0.17		
tal Counts mple Count Rate			cpm cpm	0.17 0.08		
otal Counts mple Count Rate ackground Count Rate	(A)		cpm	0.17 0.08 5.8E+04	5.8E+04	5.8E+04
otal Counts Imple Count Rate Ickground Count Rate Ir Volume (liters)	(A) (B)		cpm cpm	0.17 0.08 5.8E+04 0.09		
tal Counts mple Count Rate tekground Count Rate r Volume (liters) tt count rate			cpm cpm liters cpm cpm/dpm	0.17 0.08 5.8E+04 0.09 0.73	0.73	0.73
tal Counts mple Count Rate ckground Count Rate r Volume (liters) et count rate nunter Efficiency	(B)		cpm cpm liters cpm	0.17 0.08 5.8E+04 0.09 0.73 0.99	0.73 0.99	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) et count rate nunter Efficiency	(B) (C)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72	0.73	0.73
otal Counts Imple Count Rate Inckground Count Rate Inckground Count Rate Inckground Count Rate Inckground Citers Inckground Count Rate Inckground Fall Country Inckground Fal	(B) (C) (D) (E)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12	0.73 0.99	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) ct count rate bunter Efficiency ficiency = (C) x (D) ctivity (dpm) = (B)/(E) inimum Detectable Activity (d	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT(6	Cb))/(E*T) (G)	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30	0.73 0.99	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) et count rate punter Efficiency efficiency = (C) x (D) etivity (dpm) = (B)/(E) enimum Detectable Activity (denicentration = (F)/(2.22E9 x (A))	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A))		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16	0.73 0.99	0.73 0.99
otal Counts Imple Count Rate Inckground Efficiency Including Inches	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (H) Date Updated	Eb))/(E*T) (G) 4/20-4/21	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16 7.31E-18	0.73 0.99	0.73 0.99
otal Counts Imple Count Rate Inckground Efficiency Including Includ	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (H) Date Updated)- (F1); (F2)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16 7.31E-18 9.36E-16	0.73 0.99	0.73 0.99
otal Counts Imple Count Rate In Volume (liters) In Count rate In Volume (liters) In Count rate In Count r	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (H) Date Updated) - (F1); (F2)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16 7.31E-18 9.36E-16 1.56%	0.73 0.99	0.73 0.99
otal Counts mple Count Rate r Volume (liters) et count rate counter Efficiency officiency = (C) x (D) etrivity (dpm) = (B)/(E) inimum Detectable Activity (d oncentration = (F)/(2.22E9 x (d oncentration = (F)/(2.27E9 x (d	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (H) Date Updated () - (F1); (F2)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16 7.31E-18 9.36E-16 1.56% 2.37E-15	0.73 0.99	0.73 0.99
ortal Counts Imple Count Rate In Volume (liters) In Count rate In Volume (liters) In Count rate In Count	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (H) Date Updated () - (F1); (F2)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16 7.31E-18 9.36E-16 1.56% 2.37E-15 3.95%	0.73 0.99 0.72	0.73 0.99
tal Counts mple Count Rate r Volume (liters) et count rate punter Efficiency fficiency = (C) x (D) etivity (dpm) = (B)/(E) minimum Detectable Activity (d meentration = (F)/(2.22E9 x (d rekground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(1) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (H) Date Updated ()-(F1); (F2) (J) (J) (Goal<10%)	4/20-4/21	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16 7.31E-18 9.36E-16 1.56% 2.37E-15 3.95% YES	0.73 0.99 0.72	0.73 0.99
ortal Counts Imple Count Rate In Volume (liters) In Count rate In Volume (liters) In Count rate In Count	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (H) Date Updated ()-(F1); (F2) (J) (J) (Goal<10%)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16 7.31E-18 9.36E-16 1.56% 2.37E-15 3.95% YES	0.73 0.99 0.72	0.73 0.99
otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d oncentration = (F)/(2.22E9 x (I) ackground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) = nal Count?	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((4-4)) (H) Date Updated (b) - (F1); (F2) (J) (Goal<10%)	4/20-4/21 iote: Unexpected DAC or AE for	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yes/No raction > 100% requ	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16 7.31E-18 9.36E-16 1.56% 2.37E-15 3.95% YES	0.73 0.99 0.72 Yes	0.73 0.99 0.72
tal Counts mple Count Rate ckground Count Rate r Volume (liters) et count rate number Efficiency fliciency = (C) x (D) etivity (dpm) = (B)/(E) etimized by the count and the country (d incentration = (F)/(2.22E9 x (I) etimized by the country (d incentration = (F)/(2.22E9 x (I) etimized by the country (d incentration = (F)/(1) etimized by the country (d incentration = (F)/(1) etimized by the country (d incentration of Date (or AE) = inal Count?	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((4-4)) (H) Date Updated (b) - (F1); (F2) (J) (Goal<10%)	4/20-4/21 iote: Unexpected DAC or AE for	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16 7.31E-18 9.36E-16 1.56% 2.37E-15 3.95% YES	0.73 0.99 0.72 Yes	0.73 0.99 0.72
otal Counts Imple Count Rate Inckground Efficiency Including Inches Inckground Efficiency Incentration = (F)/(2.22E9 × (I) Incentration = (F)/(2.22E9 × (I) Inckground "Strip" value (F.1) Incentration Value = (H) Inckground "Strip" value (F.1) Incentration Value = (H) Inches Inc	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (H) Date Updated ()-(F1); (F2) (J) (J) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE for AE	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yes/No raction > 100% requ	0.17 0.08 5.8E+04 0.09 0.73 0.99 0.72 0.12 0.30 9.43E-16 7.31E-18 9.36E-16 1.56% 2.37E-15 3.95% YES	0.73 0.99 0.72 Yes	0.73 0.99

			tion I - Collection	n Data			
Date:	9/11/2018	Sample ID:	20180903	-060	R	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11		Ci/ml (1)	Breathing Zone:	General Area:	Work Ar
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC	= 6.0F_14uCi/ml1		Radionuclides:		
Location:							
		FS12 Wood Soil Sort Ar	ea		Sampled By:	Dave Ben	res
Wearer:		NA		Act	ivity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.	N	Δ.	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	277			
Sample Information				27		Calibration Due Date:	
Collection Date	Start	Time	m			Flow Rat	te (lpm)
8/28/2018	11:00	Stop 17:00	Total (minu	ites)		Start	Stop
9/29/2018	7:00	17:30	360			60.0	60.0
	7100	Total Time (Tc):	630 990			60	60
		(-3).				Avg. Flow Rate (lpm)	60.0
rument Information		Secial Number	tion II - Analysis	s Data	Californi		
Instrument Type		Meter	Detector			ion Due Date	
L-2929		158817	164736		Meter 12/13/2018	Detector	Efficiency (a)
N/A		N/A	N/A		N/A	12/13/2018 N/A	0.726 N/A
						Alpha	NA
	les, Calculations, Res	ilts	Units	1st C	Count	2nd Count	3rd Count
nt Date				9/11/	2018		
t Time (e.g., noon, 1300, etc.)		70	11.	00		
ole Count Time (Ts, Tb) = T			minutes	6			
ole Count Rate			counts		2		
ground Count Rate			cpm	0.2			
olume (liters)	(A)		cpm liters	0.0			
ount rate	(B)		cpm	5.9E		5.9E+04	5.9E+04
ter Efficiency	(C)		cpm/dpm	0.7		0.73	0.73
ection Efficiency	(D)		0.99	0.9		0.99	0.99
ency = (C) x (D)	(E)		cpm/dpm	0.7	12	0.72	0.72
ity (dpm) = (B)/(E)	(F)		dpm	0.1	7		
mum Detectable Activity (dpn	a) = (3+4.65*SQRT(Cl))/(E*T) (G)	dpm	0.3			
antration - (EN//2 20E0 - (AN	Date Updated	1/00 1/01	μCi/ml	1,271			
entration = (F)/(2.22E9 x (A))		4/20-4/21	uCi/ml	7.311			
ground "Strip" value (F.1)	(F1). (F2)		uCi/ml	1.261			
ground "Strip" value (F.1) Concentration Value = (H) -	(F1); (F2)				9/0		
ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I)			C:(1	0.01			
ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(J)		μCi/ml	2.30I	C-15		
ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I)	(J)			2.30I 0.01	2-15 %		
ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (3)	(J) (J)/(I) (Goal<10%)	te: Unexpected DAC or AP 6.	Yes/No	2.30F 0.01 Ye	E-15 %		
ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (3)	(J) (J)/(I) (Goal<10%)	te: Unexpected DAC or AE fr	Yes/No	2.30F 0.01 Ye	E-15 %		
ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (G)/(A) Count?	(J) J)/(I) (Goal<10%) No		Yes/No action > 100% requ	2.30F 0.01 Ye	E-15 %		1.11-10
ground "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (G)/(A) Count?	(J) (J)/(I) (Goal<10%)		Yes/No action > 100% requ	2.30F 0.01 Ye	E-15 %		1-11-18

		Sect	ion I - Collection Dat	a		
Date:	9/20/2018	Sample ID:	20180911-061	RWI	2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (1)	Breathing Zone:	General Area:	Work Are
Non-Occupational (EC):	[DAC	= 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary		_	David Be	
Wearer:		NA		Activity Performed:	NA	
		INA	***	Activity I enotined.	, NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	\$	Serial No.	2591	Calibration Due Date:	3/27/2019
Sample Information	UI .	Time			Flow Ra	nte (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
9/5/2018	7:30	17:00	570		60.0	60.0
9/11/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample Vo	olume: 4.5E+03 L	iters	
						CAN
Sample Volume:	60 (lpm)		x1140	(minutes) =	6.8E+04 Lis	ters (A)
Remarks: Min	nimum sample volumes	identified are necessary to achie	eve 10% of DAC or AE value	ie.		
		Sect	ion II - Analysis Dat	1		
rument Information		Serial Number		Calibratio	n Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varia	bles, Calculations, Res	ults	Units	1st Count	2nd Count	3rd Count
nt Date				9/20/2018		
nt Time (e.g., noon, 1300, etc	:.)			10:00		
ple Count Time (Ts, Tb) = T			minutes	60		
l Counts			counts	16		
ple Count Rate			cpm	0.27		
eground Count Rate			cpm	0.08		
Volume (liters)	(A)		liters	6.8E+04	6.8E+04	6.8E+04
count rate	(B)		cpm	0.19		
nter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
	(D)		0.99	0.99	0.99	0.99
ection Efficiency			cpm/dpm	0.72	0.72	0.72
ection Efficiency eiency = (C) x (D)	(E)					
eiency = $(C) \times (D)$	(E)			0.26		
ciency = (C) x (D) vity (dpm) = (B)/(E)	(F)	(b))/(E*T) (G)	dpm	0.26		
eiency = $(C) \times (D)$	(F) om) = (3+4.65*SQRT(C	(b))/(E*T) (G)				
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpm)	(F) om) = (3+4.65*SQRT(C	(E))/(E*T) (G) 4/20-4/21	dpm dpm	0.26		
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A)	(F) om) = (3+4.65*SQRT(C) (H) Date Updated		dpm dpm μCi/ml	0.26 0.30 1.71E-15		
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H)	(F) om) = (3+4.65*SQRT(C) (H) Date Updated		dpm dpm μCi/ml uCi/ml	0.26 0.30 1.71E-15 7.31E-18 1.70E-15		
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A teground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	(F) om) = (3+4.65*SQRT(C) (H) Date Updated - (F1); (F2)		dpm dpm µCi/ml uCi/ml uCi/ml	0.26 0.30 1.71E-15 7.31E-18 1.70E-15 2.84%		
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H)	(F) om) = (3+4.65*SQRT(C) on) (H) Date Updated - (F1); (F2)		dpm dpm μCi/ml uCi/ml	0.26 0.30 1.71E-15 7.31E-18 1.70E-15 2.84% 1.99E-15		
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(F) om) = (3+4.65*SQRT(C) on) (H) Date Updated - (F1); (F2)		dpm dpm µCi/ml uCi/ml uCi/ml uCi/ml	0.26 0.30 1.71E-15 7.31E-18 1.70E-15 2.84% 1.99E-15 3.32%	Vos	
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(F) om) = (3+4.65*SQRT(C) om) = (3+4.65*SQRT(C) om) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml Yes/No	0.26 0.30 1.71E-15 7.31E-18 1.70E-15 2.84% 1.99E-15 3.32% YES	Yes	
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(F) om) = (3+4.65*SQRT(C) om) = (3+4.65*SQRT(C) om) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)		dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml Yes/No	0.26 0.30 1.71E-15 7.31E-18 1.70E-15 2.84% 1.99E-15 3.32% YES		
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(1) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = 1 Count?	(F) om) = (3+4.65*SQRT(C))) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 Tote: Unexpected DAC or AE f	dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml γes/No raction > 100% requires in	0.26 0.30 1.71E-15 7.31E-18 1.70E-15 2.84% 1.99E-15 3.32% YES		9.3.76
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(1) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = 1 Count?	(F) om) = (3+4.65*SQRT(C))) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml γes/No raction > 100% requires in	0.26 0.30 1.71E-15 7.31E-18 1.70E-15 2.84% 1.99E-15 3.32% YES		9-20-18

		Sect	ion I - Collection Da	ıta		
Date:	9/20/2018	Sample ID:	20180911-062	R	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	μCı/ml (Work Ar
Non-Occupational (EC):	IDAC	C = 2.0E-11μCi/ml (U-238), EC=	6 0F-14uCi/ml1	Radionuclides:		
	[2.1.					
Location:		FS12 Wood Soil Sort Are	a	Sampled By:	Dave Be	nes
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA NA			
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:			Serial No.			
Au Tump Model.	EV-1		Senai No.	2773	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow R	ate (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
9/5/2018	7:00	17:00	600		60.0	60.0
9/11/2018	7:00	17:00	600		60	60
		Total Time (Tc):	1200		Avg. Flow Rate (lpm)	60.0
ament Information		Secial Number	ion II - Analysis Da		tion Due Date	
Instrument Type		Meter Serial Number	Detector			F00 : (-)
L-2929		158817	164736	Meter 12/13/2018	Detector 12/13/2018	Efficiency (a)
N/A		N/A	N/A			0.726
wa		NA	N/A	N/A	N/A	N/A
Variab	les, Calculations, Res	ults	Units	1st Count	Alpha 2nd Count	3rd Count
nt Date			100	9/20/2018	and Count	Did Count
t Time (e.g., noon, 1300, etc.)			14:00		
ple Count Time (Ts, Tb) = T			minutes	60		
Counts			counts	25		1-2-
ole Count Rate			cpm	0.42		
ground Count Rate			cpm	0.08		
olume (liters)	(A)		liters	7.2E+04	7.2E+04	7.2E+04
ount rate	(B)		cpm	0.34		
ter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
etion Efficiency	(D)		0.99	0.99	0.99	0.99
$incy = (C) \times (D)$	(E)		cpm/dpm	0.72	0.72	0.72
rity (dpm) = (B)/(E) mum Detectable Activity (dpr	(F)	LW/CERTY (C)	dpm	0.47		
centration = $(F)/(2.22E9 \times (A))$		b))/(E-1) (G)	dpm	0.30 2.03F 15		
ground "Strip" value (F.1)	Date Updated	4/20-4/21	μCi/ml	2.93E-15		
Concentration Value = (H) -		4/20-4/21	uCi/ml	7.31E-18		
(or AE) Fraction = (F2)/(I)	(F2)		dCl/III	2.92E-15 0.01%		
C = MDA/V = (G)/(A)	(J)		uCi/ml	1.89E-15		
Fraction of DAC (or AE) = (μCi/ml	0.01%		
Count?	7,57 (2001-1070)		Yes/No	Yes		
	N	ote: Unexpected DAC or AE fo				
Performed By:	David Ber Ed Siem	,	3a-			9-20-18
						77 - 73 F

Date:	9/22/2018	Sample ID	20180914-0	63	RWP:	2018-001	
Occupational (DAC):	Limit:			ml (1) Bro	athing Zone:	General Area:	Work Area
		6.00E-14	C- (OF 14C:/II	D	adionuclides:	DU (Deplete	4 Uranium)
Non-Occupational (EC):	[DA	$C = 2.0E-11\mu Ci/ml$ (U-238), E6					
Location:		FS12 SCA Boundar	у	Samp	ed By:	Mike Dar	nsard
Wearer:		NA		Activity P	erformed:	NA	
Monitored Workers:				NA			
			Serial No.	NA	Ca	libration Due Date:	NA
Lapel Pump Model:	NA		Serial No.				
Air Pump Model:	LV-i		Serial No.	2591	Ca	libration Due Date:	3/27/2019
Sample Information		Time				Flow R	tate (lpm)
Collection Date	Start	Stop	Total (minu	tes)		Start	Stop
9/13/2018	7:30	18:00	630			60.0	60.0
8/16/2018	7:30	15:00	450			60	60
		Total Time (Tc)	1080		- A	vg. Flow Rate (lpm)	60.0
			Minimum Air Sam	nle Volume	4.5E+03 Liter	s	
			William All San	-			ion Al
Sample Volume:	60 (lpm)	x	1080 (minu	ites) =	6,5E+04 L	iters (A)
Barrader Mir	nimum anmala volum	es identified are necessary to ac	hieve 10% of DAC or A	E value.			
Kemarks, Mil	untum sample votum	es identified are necessary to ac	aneve 10/001 Dite of 1	Tarata in the same of the same			
		Se	ection II - Analysis	Data			
strument Information		Serial Number			Calibration I	Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736	1100	1/10/2019	1/10/2019	0.726
N/A	F	N/A	N/A		N/A	N/A	N/A
						Alpha	
Varia	bles, Calculations, R	esults	Units	1st Coun		2nd Count	3rd Count
ount Date				9/22/201	3		
	- 5			8:00			
	C.)						
ount Time (e.g., noon, 1300, et			minutes	60			
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T			counts	60 10			
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts							
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate			counts	10			
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate			counts	10 0.17		6.5E+04	6.5E+04
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters)			counts cpm cpm	10 0.17 0.08		6.5E+04	6.5E+04
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate	(A) (B)		counts cpm cpm liters	10 0.17 0.08 6.5E+04		6.5E+04 0.73	6.5E+04 0.73
ount Time (e.g., noon, 1300, et imple Count Time (Ts, Tb) = T otal Counts imple Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency	(A) (B) (C)		counts cpm cpm liters cpm	10 0.17 0.08 6.5E+04 0.09			
ount Time (e.g., noon, 1300, et imple Count Time (Ts, Tb) = T otal Counts imple Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency	(A) (B) (C) (D)		counts cpm cpm liters cpm cpm/dpm	10 0.17 0.08 6.5E+04 0.09 0.73		0.73	0.73
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D)	(A) (B) (C)		counts cpm cpm liters cpm cpm cpm 0,99	10 0.17 0.08 6.5E+04 0.09 0.73 0.99		0.73	0.73 0.99
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E)	(A) (B) (C) (D) (E)	(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	10 0.17 0.08 6.5E+04 0.09 0.73 0.99		0.73	0.73 0.99
ount Time (e.g., noon, 1300, et umple Count Time (Ts, Tb) = T otal Counts imple Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT)	(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	10 0.17 0.08 6.5E+04 0.09 0.73 0.99 0.72		0.73	0.73 0.99
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (doncentration = (F)/(2.22E9 x (A)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H)	C(Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	10 0.17 0.08 6.5E+04 0.09 0.73 0.99 0.72 0.12 0.30 8.38E-1	6	0.73	0.73 0.99
ount Time (e.g., noon, 1300, et umple Count Time (Ts, Tb) = Total Counts ount Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (doncentration = (F)/(2.22E9 × (a ackground "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm dpm	10 0.17 0.08 6.5E+04 0.09 0.73 0.99 0.72 0.12 0.30 8.38E-1	6	0.73	0.73 0.99
ount Time (e.g., noon, 1300, et umple Count Time (Ts, Tb) = Total Counts ount Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (doncentration = (F)/(2.22E9 x (aackground "Strip" value (F.1) ET Concentration Value = (H)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA) (H) Date Updated () - (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	10 0.17 0.08 6.5E+04 0.09 0.73 0.99 0.72 0.12 0.30 8.38E-1	6 8 6	0.73	0.73 0.99
ount Time (e.g., noon, 1300, et umple Count Time (Ts, Tb) = Total Counts ount Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (doncentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (H.1) AC (or AE) Fraction = (F2)/(I)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA) (H) Date Updated () - (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	10 0.17 0.08 6.5E+04 0.09 0.73 0.99 0.72 0.12 0.30 8.38E-1 7.31E-1: 8.31E-1 1.38% 2.10E-1	6 6 6 5 5	0.73	0.73 0.99
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency officiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d oncentration = (F)/(2.22E9 × (d) ackground "Strip" value (F.1) IET Concentration Value = (H) OAC (or AE) Fraction = (F2)/(I) ODC = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA) (H) Date Updated (4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0,99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml	10 0.17 0.08 6.5E+04 0.09 0.73 0.99 0.72 0.12 0.30 8.38E-1 7.31E-1: 8.31E-1	6 6 6 5 5	0.73	0.73 0.99
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) fet count rate ounter Efficiency ollection Efficiency officiency = (C) × (D) activity (dpm) = (B)/(E) finimum Detectable Activity (d concentration = (F)/(2.22E9 × (d ackground "Strip" value (F.1) (ET Concentration Value = (H DAC (or AE) Fraction = (F2)/(I) (ED C = MDA/V = (G)/(A) (MDC Fraction of DAC (or AE)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA) (H) Date Updated (4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0,99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml	10 0.17 0.08 6.5E+04 0.09 0.73 0.99 0.72 0.12 0.30 8.38E-1 7.31E-1: 8.31E-1 1.38% 2.10E-1	6 6 6 5 5	0.73	0.73 0.99
ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency officiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d oncentration = (F)/(2.22E9 × (d) ackground "Strip" value (F.1) IET Concentration Value = (H) OAC (or AE) Fraction = (F2)/(I) ODC = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA) (H) Date Updated (4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0,99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	10 0.17 0.08 6.5E+04 0.09 0.73 0.99 0.72 0.12 0.30 8.38E-1 7.31E-1 8.31E-1 1.38% 2.10E-1 3.51%	6 6 5 5	0.73 0.99 0.72	0.73 0.99

Wearer:	Limit: 2.00E-11 [DAC = 2.0E-11	Serial No. Serial No. Serial No. Total (minum 660 480 c): 1140 Minimum Air San x schieve 10% of DAC or A	Radionuclide Sampled By: Activity Performed: NA NA 2773 ple Volume: 1.4E+01 1140 (minutes)	Calibration Due Date: Calibration Due Date: Calibration Due Date: Calibration Due Date: Avg. Flow Rate (lpm) Liters	Uranium) sard NA
Non-Occupational (EC): Location: Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: LV Sample Information Collection Date \$/15/2018 \$/16/2018 Sample Volume: Remarks: Minimum	Time Start Stop Total Time (Total	Serial No. Serial No. Total (minumos) 480 e): 1140 Minimum Air San x achieve 10% of DAC or A	Radionuclide Sampled By: Activity Performed: NA NA 2773 Les) ple Volume: 1.4E+01 [minutes)	Calibration Due Date: Calibration Due Date: Calibration Due Date: Calibration Due Date: Avg. Flow Rate (lpm) Liters	NA 3/27/2019 ate (lpm) Stop 60.0 60 60.0
Location:	FS12 Wood Soil Sort NA A 7-1 Time Start Stop 7-00 18:00 Total Time (Total Time (Total Time) Total Time (Total Time) Total Time (Total Time) Total Time (Total Time)	Serial No. Serial No. Total (minu) 660 480 e): 1140 Minimum Air San x achieve 10% of DAC or A	Sampled By: Activity Performed; NA NA 2773 es) ple Volume: 1.4E+01 1140 (minutes)	Mike Dans NA Calibration Due Date: Calibration Due Date: Flow Rs Start 60.0 60 Avg. Flow Rate (lpm) Liters	NA 3/27/2019 ate (lpm) Stop 60.0 60 60.0
Wearer:	NA	Serial No. Serial No. Total (minu) 660 480 c): 1140 Minimum Air San ×	Activity Performed: NA NA 2773 es) ple Volume: L4E+01 1140 (minutes)	Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) Liters	NA 3/27/2019 ate (lpm) Stop 60.0 60 60.0
Wearer:	NA	Total (minu 660 480 c): 1140 Minimum Air San x schieve 10% of DAC or A	NA NA 2773 es) ple Volume: 1.4E+01 1140 (minutes)	Calibration Due Date: Calibration Due Date: Flow Rr Start 60.0 60 Avg. Flow Rate (lpm) Liters	3/27/2019 ate (lpm) Stop 60.0 60 60.0
Monitored Workers:	Time	Total (minu 660 480 c): 1140 Minimum Air San x schieve 10% of DAC or A	NA 2773 tes)	Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) Liters	3/27/2019 ate (lpm) Stop 60.0 60 60.0
Lapel Pump Model: No. Air Pump Model: LV Sample Information Collection Date S. 8/15/2018 7 8/16/2018 7 Sample Volume: 6 Remarks: Minimum		Total (minu 660 480 c): 1140 Minimum Air San x schieve 10% of DAC or A	NA 2773 tes)	Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) Liters	3/27/2019 ate (lpm) Stop 60.0 60 60.0
Air Pump Model: LV Sample Information Collection Date S 8/15/2018 7 8/16/2018 7 Sample Volume: 6 Remarks: Minimum		Total (minu 660 480 c): 1140 Minimum Air San x schieve 10% of DAC or A	2773 res) ple Volume: 1.4E+01 1140 (minutes)	Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) Liters	3/27/2019 ate (lpm) Stop 60.0 60 60.0
Sample Information Collection Date S 8/15/2018 7 8/16/2018 7 Sample Volume: 6 Remarks: Minimum	Time	Total (minu 660 480 c): 1140 Minimum Air San ×	ple Volume: 1.4E+01 1140 (minutes)	Start 60.0 60 Avg. Flow Rate (lpm)	Stop 60.0 60 60.0
Collection Date S 8/15/2018 7 8/16/2018 7 Sample Volume: 6 Remarks: Minimum	Start	660 480 c): 1140 Minimum Air San x schieve 10% of DAC or A	ple Volume: 1.4E+01 1140 (minutes)	Start 60.0 60 Avg. Flow Rate (lpm) Liters	Stop 60.0 60 60.0
8/15/2018 7 8/16/2018 7 Sample Volume: 6 Remarks: Minimum	7:00 18:00 7:00 15:00 Total Time (Total Time) (lpm) a sample volumes identified are necessary to a	660 480 c): 1140 Minimum Air San x schieve 10% of DAC or A	ple Volume: 1.4E+01 1140 (minutes)	60.0 60 Avg. Flow Rate (lpm)	60.0 60 60.0
Sample Volume: 6 Remarks: Minimum	7:00 15:00 Total Time (Total Time) Total Time (Total Time) Total Time (Total Time) Total Time (Total Time)	Minimum Air San x schieve 10% of DAC or A	1140 (minutes)	60 Avg. Flow Rate (lpm) Liters	60 60.0
Sample Volume: 6 Remarks: Minimum	Total Time (Total Time (Total Time) (Ipm) a sample volumes identified are necessary to a	Minimum Air San x schieve 10% of DAC or A	1140 (minutes)	Avg. Flow Rate (lpm)	60,0
Remarks: Minimum	(lpm) sample volumes identified are necessary to a	Minimum Air San x achieve 10% of DAC or A	1140 (minutes)	Liters	
Remarks: Minimum	a sample volumes identified are necessary to a	x achieve 10% of DAC or A	1140 (minutes)		ters (A)
Remarks: Minimum	a sample volumes identified are necessary to a	achieve 10% of DAC or		= 6.8E+04 Li	ters (A)
Remarks: Minimum	a sample volumes identified are necessary to a		E value.		
strument Information			LLS Value.		
	S	Castian II Amalant			
		Section II - Analysis	Data		
	Serial Numbe	r	Calil	oration Due Date	
	Meter	Detector	Meter	Detector	Efficiency (a)
L-2929	158817	164736	12/13/2018	12/13/2018	0,726
N/A	N/A	N/A	N/A	N/A	N/A
				Alpha	
Variables, C	Calculations, Results	Units	1st Count	2nd Count	3rd Count
unt Date			9/22/2018		
unt Time (e.g., noon, 1300, etc.)			10:00		
mple Count Time (Ts, Tb) = T		minutes	60		
tal Counts		counts	20		
mple Count Rate		cpm	0.33		
ckground Count Rate		cpm	0.08		
Volume (liters)	(A)	liters	6.8E+04	6.8E+04	6.8E+04
t count rate	(B)	cpm	0.25		
unter Efficiency	(C)	cpm/dpm	0.73	0.73	0.73
llection Efficiency	(D)	0.99	0.99	0.99	0.99
ficiency = (C) x (D)	(E)	cpm/dpm	0.72	0.72	0.72
tivity (dpm) = (B)/(E)	(F)	dpm	0.35		
inimum Detectable Activity (dpm) =	(3+4.65*SQRT(Cb))/(E*T) (G)	dpm	0.30		
oncentration = $(F)/(2.22E9 \times (A))$	(H)	μCi/ml	2.32E-15		111
ckground "Strip" value (F.1) Da	ate Updated 4/20-4/21	uCi/ml	7.31E-18		
ET Concentration Value = (H) - (F1)); (F2)	uCi/ml	2.31E-15		
AC (or AE) Fraction = (F2)/(I)			0.01%		
	(J)	μCi/ml	1.99E-15		
DC Fraction of DAC (or AE) = (J)/(I	I) (Goal<10%)		0.01%		
nal Count?		Yes/No	Yes		
	Note: Unexpected DAC or	AE fraction > 100% re	quires immediate RSO notific	ation.	
		1 1.12 2 2 2	1		STELL IN T
Performed By:	Tichael Doneard	Michael De	unasel	Date:	9-22-18
renormed by.	ILMOULT I MUNDENON //	the court of			

		Secti	on I - Collection Data	1		
Date:	9/22/2018	Sample ID:	20180914-065	RWP	2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (1)	Breathing Zone:	General Area:	Work Area:
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted 1	Uranium)
Location:		FS12 Block House (Bounds	ry)	Sampled By:	Mike Dansa	ird
Wearer:		NA		Activity Performed:	NA	
		11/1	214			
Monitored Workers:			NA			
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	Serial No.	3666	Calibration Due Date:	8/22/2019
Sample Information		Time			Flow Rat	e (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
8/15/2018	7:30	18:00	630	- 4	60.0	60.0
8/16/2018	7:30	15:00	450		60	60
		Total Time (Tc):	1080		Avg. Flow Rate (lpm)	60.0
	60 (lpm) nimum sample volume	s identified are necessary to achie		е.	6.5E+04 Lite	ers (A)
		Sect	ion II - Analysis Data			
strument Information		Serial Number			n Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726 N/A
N/A		N/A	N/A	N/A	N/A Alpha	IVA
	blas Calculations Re	enlts	Units	1st Count	2nd Count	3rd Count
Variables, Calculations, Results						
	ores, Carcinations, Re			9/22/2018	and count	Sid Count
ount Date					and Count	Sid Count
ount Date ount Time (e.g., noon, 1300, etc	2.)		minutes	9/22/2018	and count	STO COUNT
ount Date ount Time (e.g., noon, 1300, etc umple Count Time (Ts, Tb) = T	2.)		minutes counts	9/22/2018 12:30	Zild Count	Stateoune
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts	2.)			9/22/2018 12:30 60	2nd Count	Sid Count
ount Date ount Time (e.g., noon, 1300, etc mple Count Time (Ts, Tb) = T otal Counts mple Count Rate	2.)		counts	9/22/2018 12:30 60 13 0.22 0.08		
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts umple Count Rate ackground Count Rate	(A)		counts cpm cpm liters	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04	6.5E+04	6.5E+04
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate	(A) (B)		counts cpm cpm liters cpm	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14	6.5E+04	6.5E+04
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency	(A) (B) (C)		counts cpm cpm liters cpm cpm/dpm	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73	6.5E+04 0.73	6.5E+04 0.73
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency	(A) (B) (C) (D)		counts cpm cpm liters cpm cpm/dpm 0.99	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73 0.99	6.5E+04 0.73 0.99	6.5E+04 0.73 0.99
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D)	(A) (B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73 0.99 0.72	6.5E+04 0.73	6.5E+04 0.73
ount Date ount Time (e.g., noon, 1300, etcount Time (e.g., noon, 1300, etcount Time (Ts, Tb) = Total Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E)	(A) (B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73 0.99	6.5E+04 0.73 0.99	6.5E+04 0.73 0.99
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73 0.99 0.72 0.19	6.5E+04 0.73 0.99	6.5E+04 0.73 0.99
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d oncentration = (F)/(2.22E9 x (A))	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73 0.99 0.72 0.19 0.30	6.5E+04 0.73 0.99	6.5E+04 0.73 0.99
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d) oncentration = (F)/(2.22E9 × (A ackground "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT) (A)) (H) Date Updated	Cb)/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73 0.99 0.72 0.19 0.30 1.32E-15	6.5E+04 0.73 0.99	6.5E+04 0.73 0.99
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (d) oncentration = (F)/(2.22E9 x (d) ackground "Strip" value (F.1) EET Concentration Value = (H)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated (-(F1); (F2)	Cb)/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73 0.99 0.72 0.19 0.30 1,32E-15 7,31E-18	6.5E+04 0.73 0.99	6.5E+04 0.73 0.99
ount Date ount Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) fet count rate ounter Efficiency ollection Efficiency officiency = (C) x (D) activity (dpm) = (B)/(E) fininum Detectable Activity (d) concentration = (F)/(2.22E9 x (A) ackground "Strip" value (F.1) IET Concentration Value = (H) OAC (or AE) Fraction = (F2)/(I)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated (-(F1); (F2)	Cb)/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73 0.99 0.72 0.19 0.30 1.32E-15 7.31E-18 1.31E-15 2.19% 2.10E-15	6.5E+04 0.73 0.99	6.5E+04 0.73 0.99
count Date count Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T otal Counts ample Count Rate cackground Count Rate cackground Count Rate cackground Count Rate counter Efficiency counter Efficiency collection Efficiency contert Efficiency contert (b) contert (c) contert	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated (-(F1); (F2)	(Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73 0.99 0.72 0.19 0.30 1.32E-15 7.31E-18 1.31E-15 2.19% 2.10E-15 3.51%	6.5E+04 0.73 0.99 0.72	6.5E+04 0.73 0.99
Varia Count Date Count Time (e.g., noon, 1300, etc cample Count Time (Ts, Tb) = T Cotal Counts cample Count Rate Counter Edition Counter Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Concentration = (F)/(2.22E9 x (i Concentration = (F)/(2.27E9 x (i Concentration = (F2)/(1) Concentration Value = (H) Concentration = (F2)/(1) Concentration = (F2)/(1) Concentration = (F2)/(1) Concentration = (F2)/(1) Concentration Value = (H) Concentration = (F2)/(1)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated (-(F1); (F2)	(Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	9/22/2018 12:30 60 13 0.22 0.08 6.5E+04 0.14 0.73 0.99 0.72 0.19 0.30 1.32E-15 7.31E-18 1.31E-15 2.19% 2.10E-15 3.51% YES	6.5E+04 0.73 0.99 0.72	6.5E+04 0.73 0.99

D.	0/00/0010		on I - Collection		RWF	2018-001	
Date:	9/28/2018	Sample ID:					
Occupational (DAC):	Limit:	6.00E-14	μCι/n	n (1)	Breathing Zone:	General Area:	Work Area
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14μCi/ml]		Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary		Sa	impled By:	David Be	rres
Wearer:		NA		Activi	ty Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA	9	erial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	2591		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	ite (lpm)
Collection Date	Start	Stop	Total (minute	s)	1	Start	Stop
9/17/2018	7:30	17:00	570			60.0	60.0
9/20/2018	7:30	17:00	570		_	60	60
		Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
			Minimum Air Samp	le Volume:	4.5E+03 L	iters	
Sample Volume:	60 (lpm)	x	1140 (n	ninutes) =	6.8E+04 Li	ers (A)
					_		
Remarks: Min	imum sample volum	es identified are necessary to achie	ve 10% of DAC of Al	s value.			
		Secti	ion II - Analysis	Data			
rument Information	-	Serial Number			Calibratio	n Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736		1/10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
Variat	bles, Calculations, R	esults	Units	1st Co		2nd Count	3rd Count
int Date				9/28/2	-		
int Time (e.g., noon, 1300, etc				8:0			
nple Count Time (Ts, Tb) = T			minutes	60			
al Counts			counts	15			-
iple Count Rate			cpm	0.2			
kground Count Rate			cpm	0,0			2.00
Volume (liters)	(A)		liters	6.8E		6.8E+04	6.8E+04
count rate	(B)		cpm	0.1			
inter Efficiency	(C)		cpm/dpm	0.7		0.73	0.73
lection Efficiency	(D)		0.99	0.9	-	0.99	0.99
$ciency = (C) \times (D)$	(E)		cpm/dpm	0.7		0.72	0.72
ivity (dpm) = (B)/(E)	(F)	(01)) (77477) (73)	dpm	0.2			
imum Detectable Activity (dp		(Cb))/(E*1) (G)	dpm	0.3			-
centration = $(F)/(2.22E9 \times (A))$	-	100 101	μCi/ml	1.56F			
kground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E			
Concentration Value = (H)	- (F1); (F2)		uCi/ml	1.55F			
C (or AE) Fraction = (F2)/(I)			07.1	2.58			
C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(J) (D)(D) (Goal<10%)	`	μCi/ml	1.99E 3.32			
	(J)/(I) (Goal<10%		Yes/No			Vac	1
al Count?		Note: Unexpected DAC or AE for		YE		Yes	
			raction > 100% room		e KM I notification.		
		Note: Onexpected DAC of AE I	raction - 100 % requ	ires inimediat	C XIOO HOIMEHIOM	-	
Performed By:	Dan J R		erres	ires immediat	X 100 NO.		9-28-18

		Sec	tion I - Collect	on Data			
Date:	9/28/2018	Sample ID:	2018092	0-067	R'	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	μ	Cı/ml (1)	Breathing Zone:		Work Are
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC	= 6.0F-14uCi/ml1		Radionuclides:		
Location:			2.1		A	- (-)	
		FS12 Wood Soil Sort Ar	ea		_Sampled By:	Dave Ber	res
Wearer:		NA		A	ctivity Performed:	NA NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.	,	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.		773	Calibration Due Date:	
Sample Information		Time	_				
Collection Date	Start	Stop	Total (mir	nutes)	4 1	Flow Ra	
9/17/2018	7:00	17:00	600	iutes)	-	Start	Stop
9/20/2018	7:00	17:00	600		1	60.0	60.0
		Total Time (Tc):	1200		1	Avg. Flow Rate (lpm)	60.0
			Minimum Air Sa			ring. Flow Rate (ipin)	00.0
Remarks: Min	imum sample volumes	s identified are necessary to achie	eve 10% of DAC or				
rument Information		Serial Number			Calibrat	ion Due Date	
Instrument Type		Meter	Detect	ог	Meter	Detector	Efficiency (a)
L-2929		158817	16473		12/13/2018	12/13/2018	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
	les, Calculations, Res	ults	Units	1st Count		2nd Count	3rd Count
nt Date nt Time (e.g., noon, 1300, etc.	`				8/2018		
ple Count Time (Ts, Tb) = T)			1	4:00		
al Counts			minutes		60		
ple Count Rate			counts		20	-	
kground Count Rate			cpm		0.33		
Volume (liters)	(A)		liters		0.08	200.00	- Land 10
count rate	(B)		cpm		2E+04 0.25	7.2E+04	7.2E+04
nter Efficiency	(C)		cpm/dpm		0.73	0.73	0.73
ection Efficiency	(D)		0.99		0.99	0.99	0.73
eiency = $(C) \times (D)$	(E)		cpm/dpm		0.72	0.72	0.72
vity $(dpm) = (B)/(E)$	(F)		dpm		0.35	10.0	0.12
mum Detectable Activity (dpm		b))/(E*T) (G)	dpm	0	0.30		
centration = $(F)/(2.22E9 \times (A))$			μCi/ml	2.21	1E-15		
ground "Strip" value (F.1)		4/20-4/21	uCi/ml	7.3	1E-18		
Concentration Value = (H) -	(F1); (F2)		uCi/ml		0E-15		
(or AE) Fraction = (F2)/(I)	146			0.0	01%		
C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (3)	(J) D/(I) (Goal<10%)		μCi/ml		9E-15		
Count?	(Goai<10%)	-			01%		
Countr	N.	otas Umamouto 2 D 4 C	Yes/No		Yes		
Performed By:	1) 10	David		uires immedi	ate RSO notification		1-28-18
	Ed Spens		Serre			Date:	1-28-18 5-1-18

		Secti	ion I - Collection	Data			
Date:	9/28/2018	Sample ID:	20180920-0	58	R	WP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μC1/1	nl (1)	Breathing Zone:		Work Are
Non-Occupational (EC):	IDA	C = 2.0E-11µCi/ml (U-238), EC=	6.0E_14Ci/mII				5-7.7 2.7 2.
Location:					Radionuclides:	DU (Depleted	l Uranium)
		FS12 Block House (Bound	ry)	Sa	mpled By:	David Be	rres
Wearer:		NA		Activi	y Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA	S	erial No.	NA		Calibration Due Date:	276
Air Pump Model:	LV-1		erial No.	3666		Calibration Due Date:	
Sample Information		Time					
Collection Date	Start	Stop	Total (minute				ate (lpm)
9/17/2018	7:30	17:00	570	s)		Start 60,0	Stop
9/20/2018	7:30	17:00	570			60.0	60.0
		Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
Sample Volume:				1140 (m	4.5E+03 =	Liters 6.8E+04 Lit	ters (A)
Remarks: Mir	nimum sample volume	s identified are necessary to achiev					
rument Information			on II - Analysis l	Data			
Instrument Type	-	Serial Number Meter				tion Due Date	
L-2929		158817	Detector		Meter	Detector	Efficiency (a)
N/A		N/A	164736 N/A		1/10/2019 N/A	1/10/2019	0.726
			TVA		IVA	N/A Alpha	N/A
Variat	oles, Calculations, Res	ults	Units	1st Con	int	2nd Count	3rd Count
nt Date				9/28/2018			ora count
nt Time (e.g., noon, 1300, etc	.)			12:00			
ple Count Time (Ts, Tb) = T			minutes	60			
d Counts			counts	7			
ple Count Rate eground Count Rate			cpm	0.12			No. of the last of
Volume (liters)	(A)		cpm	0.08			
count rate	(A) (B)		liters	6.8E+0	4	6.8E+04	6.8E+04
nter Efficiency	(C)		cpm	0.04	-	100	
ection Efficiency	(D)		cpm/dpm 0,99	0.73		0.73	0.73
$iency = (C) \times (D)$	(E)		cpm/dpm	0.72		0.99	0.99
vity $(dpm) = (B)/(E)$	(F)		dpm	0.05		0.72	0.72
mum Detectable Activity (dpr	m) = (3+4.65*SQRT(C	b))/(E*T) (G)	dpm	0.30			
centration = $(F)/(2.22E9 \times (A)$) (H)		μCi/ml	3.36E-	16		
ground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-1	8		
Concentration Value = (H) -	(F1); (F2)		uCi/ml	3.29E-	16		
C (or AE) Fraction = (F2)/(I)				0.55%	0		
C = MDA/V = (G)/(A)	(J)		μCi/ml	1.99E-	15		
C Fraction of DAC (or AE) = (J)/(I) (Goal<10%)			3.32%	0		
Count?	347	otor Unamortal D.C.	Yes/No	YES		Yes	
De-C ID		Berres Daw	ction > 100% requir	es immediate l	RSO notification		2 28-18
Performed By:		1,				Date:	1-20-10
Reviewed By: _	El Sien	vers/5				Date:	9-28-18

		Secti	on I - Collection Data	1		
Date:	10/4/2018	Sample ID:	20180922-072	RWI	P: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCi/ml (I)	Breathing Zone:	General Area:	Work Are
Non-Occupational (EC):	IDAC	= 2.0E-11µCi/ml (U-238), EC=	6.0F-14uCi/ml1	Radionuclides	DU (Depleted	
	į.		c.oz r rpeninj	A 96.61		
Location:		FS12 SCA Boundary			David Ber	res
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	te (Ipm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
9/22/2018	7:30	17:00	570		60.0	60.0
9/22/2018	7:00	17:00	600		60	60
A. Toronto, A.M.	7.50	Total Time (Tc):	1170		Avg. Flow Rate (lpm)	60.0
Sample Volume:			Minimum Air Sample Vo	(minutes) =	7.0E+04 Lit	ers (A)
Remarks: Min	imum sample volumes	identified are necessary to achie	ve 10% of DAC or AE valu	e		
		Secti	ion II - Analysis Data			
rument Information		Serial Number		Calibratio	on Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
			77.7		Alpha	2.10
	oles, Calculations, Res	ults	Units	1st Count	2nd Count	3rd Count
nt Date	,			10/4/2018		
nt Time (e.g., noon, 1300, etc	.)		and the same	8:00		
ple Count Time (Ts, Tb) = T			minutes	60		
l Counts			counts	8		
ple Count Rate		-	cpm	0.13		
ground Count Rate	711		cpm	0.07	T.O.F O	705.04
Volume (liters)	(A)		liters	7.0E+04	7.0E+04	7.0E+04
count rate	(B)	-	cpm	0.06	0.72	0.72
nter Efficiency ection Efficiency	(C)		cpm/dpm 0.99	0.73	0.73	0.73
	(D)			0.99	0.99	0.99
vity (dpm) = (B)/(E)	(E)		cpm/dpm	0.72	0.72	0.72
imum Detectable Activity (dp		b))/(F*T) (C)	dpm dpm	0.29		
centration = $(F)/(2.22E9 \times (A))$		0))(L) 1)(U)	μCi/ml	5.65E-16		
kground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
Concentration Value = (H)		1120 1121	uCi/ml	5.58E-16		
C (or AE) Fraction = $(F2)/(I)$	(F4)		acum	0.93%		
C = MDA/V = (G)/(A)	(J)		uCi/ml	1.85E-15		
C Fraction of DAC (or AE) =			μCi/ml	3.08%		
d Count?	(-7.(-)		Yes/No	YES	Yes	
	N	ote: Unexpected DAC or AE fr				
Performed Ru-	David C		nu Be	· ·		10-4-18
Reviewed By:	£13,00	was 15	_		Date:	100

Date: 1	0/4/2018	Sample ID:	20180922-07		RWP: 2018-001	
		Sample ID.				
Occupational (DAC):	Limit:	2.00E-11	μCι/m	1 (1) Breathing Zo	ne: General Area:	Work Area
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclio	les: DU (Deple	eted Uranium)
Location:		FS12 Wood Soil Sort Are	a	Sampled By:	Dave	Berres
Wearer:		NA		Activity Performed		3
Monitored Workers:				NA		
	7.1		200		TAMES DISCO	22.
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA NA
Air Pump Model:	LV-1		Serial No.	2773	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow	v Rate (lpm)
Collection Date	Start	Stop	Total (minutes)	Start	Stop
9/21/2018	7:30	17:00	570		60.0	60.0
9/22/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
Remarks: Minin	num sample volume	s identified are necessary to achie	eve 10% of DAC or AE			
rument Information		Serial Number			bration Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/201	8 12/13/2018	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpba	
Variable	es, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
int Date				10/4/2018		
int Time (e.g., noon, 1300, etc.)				10:45		
iple Count Time (Ts, Tb) = T			minutes	60 10		
al Counts upple Count Rate			counts	0.17		
kground Count Rate			cpm cpm	0.07		
Volume (liters)	(A)		liters	6.8E+04	6.8E+04	6.8E+04
count rate	(B)		cpm	0.10	1,02.7	
inter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
lection Efficiency	(D)		0.99	0.99	0.99	0.99
$ciency = (C) \times (D)$	(E)		cpm/dpm	0.72	0.72	0.72
ivity (dpm) = (B)/(E)	(F)		dpm	0.13		
		Cb))/(E*T) (G)	dpm	0.29		
nimum Detectable Activity (dpm) = $(3+4.65*SQRT(Cb))/(E*T)$ (G) ncentration = $(F)/(2.22E9 \times (A))$ (H)			μCi/ml	8.86E-16		
	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
kground "Strip" value (F.1)	Concentration Value = (H) - (F1); (F2)			8.78E-16		
kground "Strip" value (F.1) Concentration Value = (H) - (0.00%		
kground "Strip" value (F.1) Concentration Value = (H) - (C (or AE) Fraction = (F2)/(I)	(75)		071.1	1 00E 15		
kground "Strip" value (F.1) Concentration Value = (H) - (C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(J)		μCi/ml	1.89E-15		
kground "Strip" value (F.1) f Concentration Value = (H) - (C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (J				0.01%		
kground "Strip" value (F.1) Concentration Value = (H) - (C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	I)/(I) (Goal<10%)	Note: Unexpected DAC or AE f	Yes/No	0.01% Yes	ation.	

		Sect	ion I - Collection	Data			
Date:	10/4/2018	Sample ID:	20180922-0	74	R	WP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/	ml (1)	Breathing Zone		Work A
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	6 0F-14uCi/ml1		Radionuclides	_	
Location:						DU (Depleted	Uranium)
		, , , , , , , , , , , , , , , , , , ,	fry)	S	Sampled By: David Berres		
Wearer;		NA		Activ	Activity Performed: NA		
Monitored Workers:				NA			
Lapel Pump Model:	NA	5	Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	3666		Calibration Due Date:	
Sample Information		Time	-				
Collection Date	Start	Stop	Total (minute	(20		Start Flow Rat	
9/21/2018	7:30	17:00	570			60.0	Stop
9/22/2018	7,30	17:00	570			60	60.0
		Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
Sample Volume: Remarks: Min		identified are necessary to achie	x ve 10% of DAC or Al		ninutes) =	6.8E+04 Lite	rs (A)
		Secti	ion II - Analysis	Data			
rument Information		Serial Number			Calibrat	tion Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736		1/10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
	les, Calculations, Res	ults	Units	1st Co	unt	2nd Count	3rd Count
nt Date				10/4/2018			
nt Time (e.g., noon, 1300, etc.) ple Count Time (Ts, Tb) = T)			9:30)		
Counts			minutes	60			
ple Count Rate			counts	14			
ground Count Rate			cpm	0.23			
Volume (liters)	(A)		cpm	0.07			
count rate	(B)		liters	6.8E+		6.8E+04	6.8E+04
nter Efficiency	(C)		cpm	0.16			
ection Efficiency	(D)		cpm/dpm 0.99	0.73		0.73	0.73
$iency = (C) \times (D)$	(E)		cpm/dpm	0.72		0.99	0.99
vity $(dpm) = (B)/(E)$	(F)		dpm	0.72		0.72	0.72
mum Detectable Activity (dpm	a) = (3+4.65*SQRT(C	b))/(E*T) (G)	dpm	0.29			
centration = $(F)/(2.22E9 \times (A))$			μCi/ml	1.50E-	15		
	Date Updated	4/20-4/21	uCi/ml	7.31E-			
Concentration Value = (H) -	(F1); (F2)		uCi/ml	1.49E-			
(or AE) Fraction = (F2)/(I)				2.489			
= MDA/V $=$ (G)/(A)	(J)		μCi/ml	1.89E-			
Fraction of DAC (or AE) = (J	I)/(I) (Goal<10%)			3.16%			
Count?			Yes/No	YES		Yes	
	N	ote: Unexpected DAC or AE fra			RSO notification		
Performed By:			<u>e</u>			Date: 1	0.4-18
Reviewed By:	El sien	ers/5				Data: (A	9-18

Date: 10		Sect	ion I - Collection			
Date, 10	/9/2018	Sample ID:	20180925-07	5	RWP: 2018-001	
Occupational (DAC):	Limit	6.00E-14	μCi/i	nl (1) Breathing Zon		
Non-Occupational (EC):	IDAC	= 2.0E-11μCi/ml (U-238), EC=	= 6.0E-14µCi/ml]	Radionuclide	s: DU (Depletes	d Uranium)
Non-Occupational (EC).	[Ditc			Sampled By:	David Be	erres
Location:		FS12 Block House (Bound	dry)		NA	
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:				NA		
Lapel Pump Model:	77.50		Serial No.	NA	Calibration Due Date:	NA
			Serial No.	3666	Calibration Due Date:	8/22/2019
Air Pump Model:	LV-I		Definition		Flow F	Rate (lpm)
Sample Information		Time			Start	Stop
Collection Date	Start	Stop	Total (minut	es)	60.0	60.0
9/24/2018	7:30	17:00	570 570		60	60
9/25/2018	7:30	17:00			Avg. Flow Rate (lpm)	60.0
		Total Time (Tc):	Minimum Air Sam	ole Volume: 4.5E+03	Liters	
Sample Volume: Remarks: Minim	60 (lpm)	es identified are necessary to ach				
			ction II - Analysis		bration Due Date	
strument Information		Serial Number			Detector	Efficiency (a)
Instrument Type		Meter	Detector	1/10/2019	2000, 600, 46	0.726
L-2929		158817	164736 N/A	N/A	N/A	N/A
N/A	_	N/A	Total Control of the		Alpha	
Vasiable	es, Calculations, Re	esults	Units	1st Count	2nd Count	3rd Count
ount Date	s, Calculations, 20			10/9/2018	0	
ount Time (e.g., noon, 1300, etc.)				8:00		
umple Count Time (Ts, Tb) = T			minutes	60		
otal Counts			counts	17		
ample Count Rate			cpm	0.28		
ackground Count Rate			cpm	0.08	6.8E+04	6.8E+04
ir Volume (liters)	(A)		liters	6.8E+04 0.20	0.02104	0.00
et count rate	(B)		cpm	0.73	0.73	0.73
to the same same same same same same same sam			cpm/dpm 0.99	0.99	0.99	0.99
	(D)		cpm/dpm	0.72	0.72	0.72
ollection Efficiency	$\text{efficiency} = (\mathbf{C}) \times (\mathbf{D}) \tag{E}$					
ollection Efficiency fficiency = (C) × (D)			dpm	0.28		
ollection Efficiency fficiency = (C) × (D) activity (dpm) = (B)/(E)	(F)	(Cb))/(E*T) (G)	dpm	0.28		
ollection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dpm	(F) n) = (3+4.65*SQRT	(Cb))/(E*T) (G)		0.30 1.86E-15		1
ollection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dpm oncentration = (F)/(2.22E9 × (A))	(F) n) = (3+4.65*SQRT	(Cb))/(E*T) (G) 4/20-4/21	dpm	0.30 1.86E-15 7.31E-18		
ollection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dpm oncentration = (F)/(2.22E9 × (A)) ackground "Strip" value (F.1)	(F) n) = (3+4.65*SQRT) (H) Date Updated		dpm μCi/ml	0.30 1.86E-15 7.31E-18 1.86E-15		
ollection Efficiency fficiency = (C) × (D) activity (dpm) = (B)/(E) finimum Detectable Activity (dpm concentration = (F)/(2.22F9 × (A)) ackground "Strip" value (F.1) AET Concentration Value = (H)	(F) n) = (3+4.65*SQRT) (H) Date Updated		dpm μCi/ml uCi/ml uCi/ml	0.30 1.86E-15 7.31E-18 1.86E-15 3.09%		
ollection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dpm oncentration = (F)/(2.22E9 × (A)) ackground "Strip" value (F.1) DET Concentration Value = (H)- DAC (or AE) Fraction = (F2)/(I)	(F) n) = (3+4.65*SQRT) (H) Date Updated (F1); (F2)	4/20-4/21	dpm μCi/ml uCi/ml	0.30 1.86E-15 7.31E-18 1.86E-15 3.09% 1.99E-15		
tetivity (dpm) = (B)/(E) Minimum Detectable Activity (dpm Concentration = (F)/(2.22E9 x (A))	(F) n) = (3+4.65*SQRT) N) (H) Date Updated (F1); (F2)	4/20-4/21	dpm µCi/ml uCi/ml uCi/ml pCi/ml	0.30 1.86E-15 7.31E-18 1.86E-15 3.09% 1.99E-15 3.32%	Vas	
ollection Efficiency fficiency = (C) × (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dpm oncentration = (F)/(2.22E9 × (A)) ackground "Strip" value (F.1) IET Concentration Value = (H)- DAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A)	(F) n) = (3+4.65*SQRT) N) (H) Date Updated (F1); (F2)	4/20-4/21	dpm μCi/ml uCi/ml uCi/ml μCi/ml μCi/ml	0.30 1.86E-15 7.31E-18 1.86E-15 3.09% 1.99E-15 3.32% YES	Yes	

			on I - Collection Dat	RW	P: 2018-001	
Date:	10/9/2018	Sample ID:	20180925-076			What Assa
Occupational (DAC):	Limit	6.00E-14	μCı/ml (1)	Breathing Zone:	General Area:	Work Area
Non-Occupational (EC):	[Di	AC = 2.0E-11µCi/ml (U-238), EC=	6.0E-14μCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location		FS12 SCA Boundary		Sampled By:	David Ben	res
				Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA	5	Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	5.000 Mg		Serial No.	2591	Calibration Due Date:	3/27/2019
	27-1				Flow Ra	
Sample Information		Time				Stop
Collection Date	Start	Stop	Total (minutes)		Start	60.0
9/24/2018	7:30	17:00	570		60,0	
9/25/2018	7:00	17:00	600	_	60	60
		Total Time (Tc):	1170		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample Ve	olume: 4.5E+03	Liters	
Sample Volume:	60 (lpr	n)	x 117	0 (minutes) =	7.0E+04 Lit	ers (A)
			a out to be a series			
Remarks: Mir	nimum sample volur	nes identified are necessary to achie	eve 10% of DAC or AE val	uė.		
		Sect	ion II - Analysis Dat	2		
		Serial Number	ion ii Trinniyaa Dat		on Due Date	
trument Information		Meter	Detector	Meter	Detector	Efficiency (a)
Instrument Type		158817	164736	1/10/2019	1/10/2019	0.726
L-2929		N/A	N/A	N/A	N/A	N/A
N/A		N/A	IVA	104	Alpha	
Venia	bles, Calculations, l	Daeulte	Units	1st Count	2nd Count	3rd Count
	bies, Calculations,	Kesmis	Carto	10/9/2018		
unt Date	. \			10:00		
unt Time (e.g., noon, 1300, et			minutes	60		
nple Count Time (Ts, Tb) = T				14		
tal Counts			counts	0.23		
nple Count Rate			cpm	0.08		
ckground Count Rate			cpm	7.0E+04	7.0E+04	7.0E+04
Volume (liters)	(A)		liters	0.15	7.05104	7,02104
	(B)		cpm		0.73	0.73
						0.73
unter Efficiency	(C)		epm/dpm	0.73		0.00
unter Efficiency llection Efficiency	(D)		0.99	0.99	0.99	0.99
unter Efficiency llection Efficiency ficiency = (C) x (D)	(D) (E)		0.99 cpm/dpm	0.99 0.72		0.99 0.72
unter Efficiency llection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E)	(D) (E) (F)	THE NATIONAL PROPERTY AND THE PROPERTY A	0.99 epm/dpm dpm	0.99 0.72 0.21	0.99	
unter Efficiency flection Efficiency ficiency = (C) × (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d	(D) (E) (F) pm) = (3+4.65*SQR	T(Cb))/(E*T) (G)	0.99 cpm/dpm dpm dpm	0.99 0.72 0.21 0.30	0.99	
unter Efficiency flection Efficiency ficiency = (C) × (D) tivity (dpm) = (B)/(E) inimum Detectable Activity (duncentration = (F)/(2.22E9 × (A))	(D) (E) (F) pm) = (3+4.65*SQR A)) (H)		0.99 cpm/dpm dpm dpm µCi/ml	0.99 0.72 0.21 0.30 1.37E-15	0.99	
unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (A) ckground "Strip" value (F.1)	(D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated	T(Cb))/(E*T) (G) 4/20-4/21	0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.37E-15 7.31E-18	0.99	
unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (A ckground "Strip" value (F.1) ET Concentration Value = (H)	(D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated (-(F1); (F2)		0.99 cpm/dpm dpm dpm µCi/ml	0.99 0.72 0.21 0.30 1.37E-15 7.31E-18 1.36E-15	0.99	
unter Efficiency flection Efficiency ficiency = (C) × (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 × (A ckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I)	(D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated (1-(F1); (F2)		0.99 cpm/dpm dpm dpm µCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.37E-15 7.31E-18 1.36E-15 2.27%	0.99	
unter Efficiency flection Efficiency ficiency = (C) × (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 × (2 ckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A)	(D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated (1-(F1); (F2)	4/20-4/21	0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.37E-15 7.31E-18 1.36E-15 2.27% 1.94E-15	0.99	
unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (A ckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	(D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated (1-(F1); (F2)	4/20-4/21	0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.37E-15 7.31E-18 1.36E-15 2.27% 1.94E-15 3.24%	0.99	
the count rate sunter Efficiency efficiency = (C) × (D) tivity (dpm) = (B)/(E) inimum Detectable Activity (descendent of the content of the c	(D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated (1-(F1); (F2)	4/20-4/21	0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.37E-15 7.31E-18 1.36E-15 2.27% 1.94E-15 3.24% YES	0.99 0.72 Yes	
unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) minum Detectable Activity (d encentration = (F)/(2.22E9 x (A ekground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	(D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated (1-(F1); (F2)	4/20-4/21	0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.37E-15 7.31E-18 1.36E-15 2.27% 1.94E-15 3.24% YES	0.99 0.72 Yes	
unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d neentration = (F)/(2.22E9 x (d ekground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) OC = MDA/V = (G)/(A) OC Fraction of DAC (or AE) = all Count?	(D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated (-(F1); (F2) (J) (J) (Goal<10	4/20-4/21 %) Note: Unexpected DAC or AE	0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.37E-15 7.31E-18 1.36E-15 2.27% 1.94E-15 3.24% YES	0.99 0.72 Yes	0.72
unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d neentration = (F)/(2.22E9 x (d ckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) = nal Count?	(D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated (-(F1); (F2) (J) (J) (Goal<10	4/20-4/21	0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml uCi/ml	0.99 0.72 0.21 0.30 1.37E-15 7.31E-18 1.36E-15 2.27% 1.94E-15 3.24% YES	0.99 0.72 Yes	

			Section I	- Collection Data			
Date:	10/9/2018	Samp	ole ID:	20180925-077	RV	/P: 2018-001	A STATE OF THE PARTY OF THE PAR
Occupational (DAC):	Limit:	2.00E-11		μCı/ml (1)	Breathing Zone:		
Non-Occupational (EC):	[DAC	$C = 2.0E-11\mu Ci/ml$ (U-23	88), EC= 6.0E-	-14μCi/ml]	Radionuclides:	DU (Depleted	Uranium)
7.00		FS12 Wood Soil	Sort Area		Sampled By:	Dave Ber	res
		441			Activity Performed:	NA	
Wearer:		INA		NA			
Monitored Workers:			5.00	1.00	261	Calibration Due Date:	NA
Lapel Pump Model:	NA		Serial	No	NA	Calibration Due Date:	We commit
Air Pump Model:	LV-1		Serial	No.	2773	Calibration Due Date:	3/27/2019
T I		Time	P			Flow R	ate (lpm)
Sample Information	C	Stop		Total (minutes)		Start	Stop
Collection Date	7:30	17,00	300	570		60.0	60.0
9/24/2018 9/25/2018	7:30	17:00		570		60	60
912312016	1.50	Total Tim	ne (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			M	nimum Air Sample Vo	lume: 1.4E+01	Liters	
			IVII		The College of the Co		iters (A)
Sample Volume:				x1140		0.3E704 E	nois (iv)
Remarks: Mir	imum sample volum	es identified are necessar	y to achieve 1	0% of DAC or AE valu	e.		
Kellarks, 1411	illian sample						
			Section	II - Analysis Data		. p. p.,	
strument Information		Serial N	umber	2.00		Detector	Efficiency (a)
Instrument Type		Meter		Detector	Meter	12/13/2018	0.726
L-2929		158817		164736	12/13/2018	N/A	N/A
N/A		N/A	100	N/A	N/A	Alpha	
					1st Count	2nd Count	3rd Count
Varia	bles, Calculations, R	esults		Units	10/9/2018		
Count Date			_		14:00		
Count Time (e.g., noon, 1300, etc				ninutes	60		
Sample Count Time (Ts, Tb) = T				counts	17		
otal Counts				cpm	0.28		
Sample Count Rate				cpm	0.08		V
Background Count Rate	(4)			liters	6.8E+04	6.8E+04	6.8E+04
Air Volume (liters)	(A)			cpm	0.20		
Net count rate	(B)		-	pm/dpm	0.73	0.73	0.73
Counter Efficiency	(C)			0.99	0.99	0.99	0.99
Collection Efficiency	(D)			pm/dpm	0.72	0.72	0.72
Efficiency = (C) x (D)	(E)			dpm	0.28		
Activity (dpm) = (B)/(E) Minimum Detectable Activity (d	(F)	F(Ch))/(F*T) (C)		dpm	0.30		
		r(coj)(C 1) (o)		μCi/ml	1.86E-15		
Concentration = (F)/(2.22E9 x (4/20-4/21		uCi/ml	7.31E-18	V	
Background "Strip" value (F.1) NET Concentration Value = (H		1,20 11.21		uCi/ml	1.86E-15		The second
					0.01%		
DAC (or AE) Fraction = $(F2)/(\Gamma)$	(J)			μCi/ml	1.99E-15		
MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE)		%)			0.01%		
	(a) (con 40			Yes/No	Yes		114
Final Count?		Natas Unavasated DA	Cor AF from		immediate RSO notifica	tion.	
Performed By	David B.	erres / Da		~			16-9-18

		Sec	tion I - Collec	tion Data			
Date:	10/2/2018	Sample ID:			R	VP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	1	μCı/ml (1)	Breathing Zone:	General Area:	Work Area
Non-Occupational (EC):	mac.	C = 2.0E-11µCi/ml (U-238), EC-	- 6 OF 14 C:/17			_	
	[DAC		- 0.0E-14μCI/mij		Radionuclides:	DU (Depleted	
Location:		FS12 SCA Boundary			Sampled By:	David Ber	res
Wearer:		NA		Ac	tivity Performed:	NA	
Monitored Workers:				NA	F154 11 11 11 11		
Lapel Pump Model:	NIA		C			0.07	
			Serial No.		IA	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	25	591	Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (m	ninutes)	1	Start	Stop
9/26/2018	7:30	17:00	57			60.0	60.0
9/27/2018	7;00	17:00	60	0	1	60	60
		Total Time (Tc):	117	70		Avg. Flow Rate (lpm)	60.0
			10.	0 1 17 1	F 071.02	• 10	
Sample Volume:	60 (lpm)		x	Sample Volume: 1170		7.0E+04 Lit	ore (A)
		and a contract to			(minutes) =	7.0E704 LH	ers (A)
Remarks: Mi	nimum sample volumes	identified are necessary to achi	eve 10% of DAC	or AE value.			- Inches
		Sec	tion II - Analy	veis Data			
rument Information		Serial Number	non 11 - Amary	313 Data	C-liber	in Du Du	
Instrument Type		Meter	Dete	otor		ion Due Date	ECC-i(e)
L-2929		158817	1647		Meter 1/10/2019	Detector 1/10/2019	Efficiency (a)
N/A		N/A	N/.		N/A	N/A	0.726 N/A
IVA		IVA	1		N/A	Alpha	N/A
Varia	bles, Calculations, Res	nits	Units	/Ist	Count	2nd Count	3rd Count
ınt Date	,		Cana	10/1/2018		and Count	ord count
ant Time (e.g., noon, 1300, et	c.)				8:00		
pple Count Time (Ts, Tb) = T			minutes		60		
al Counts			counts		12		
ple Count Rate			cpm		0.20		
kground Count Rate			cpm		0.10		
Volume (liters)	(A)		liters	7.0	E+04	7.0E+04	7.0E+04
count rate	(B)		cpm		0.10		
inter Efficiency	(C)		cpm/dpm		0.73	0.73	0.73
lection Efficiency	(D)		0.99	().99	0.99	0.99
ciency = $(C) \times (D)$	(E)		cpm/dpm	(0.72	0.72	0.72
ivity $(dpm) = (B)/(E)$	(F)		dpm	(0.14		
imum Detectable Activity (dr	om) = $(3+4.65*SQRT(0)$	(b))/(E*T) (G)	dpm	(0.33		
centration = $(F)/(2.22E9 \times (A))$	(H)		μCi/ml	8.9.	3E-16		
kground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.3	1E-18		
Γ Concentration Value = (H)	- (F1); (F2)		uCi/ml	2-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	5E-16		
C (or AE) Fraction = (F2)/(I)				1.	48%		
C = MDA/V = (G)/(A)	(J)		μCi/ml		2E-15		
C Fraction of DAC (or AE) =	(J)/(I) (Goal<10%)			3.	53%		
al Count?			Yes/No	1	ÆS	Yes	
	N	ote: Unexpected DAC or AE f	raction > 100% r	equires immedi	ate RSO notification		
	0 1 -	10	0				Value of the second
Performed By:	David Ber	mes /Daw	150			Date:	10-2-18
Frank Strain	-	1					
Reviewed By:	Ed Sie	enses / 3	_			Date:/	ひってつ

		Sect	tion I - Collection I	Data		
Date:	10/2/2018	Sample ID:	20180927-070	R	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	μCı/ml	(1) Breathing Zone	General Area:	Work Area:
Non-Occupational (EC):	IDAC	C = 2.0E-11μCi/ml (U-238), EC=	= 6.0F-14uCi/ml1	Radionuclides	DU (Depleted	Uranium)
			TOTAL STATE OF THE			
Location:		FS12 Wood Soil Sort Are	ea	Sampled By:	Dave Ben	res
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			1	NA.		
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	7.1.5.5		Serial No.	2773	Calibration Due Date:	
	LV-I		Serial No.	2113	Canoration Due Date.	3/2//2019
Sample Information		Time			Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes		Start	Stop
9/26/2018	7:00	17:00	600		60.0	60.0
9/27/2018	7:00	17:00	600		60	60
		Total Time (Tc):	1200		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample	Volume: 1.5E+01	Liters	
Sample Volume:	60 (lpm)		x 1	200 (minutes) =	7.2E+04 Lite	ers (A)
Remarks: Mir	nimum sample volume	s identified are necessary to achi	eve 10% of DAC or AE	value		
		Sec	tion II - Analysis D	ata		
rument Information		Serial Number		Calibra	ation Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
	bles, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
nt Date				10/1/2018		
nt Time (e.g., noon, 1300, etc	(.)			12:00		
1 0 .001 00 001 0			The second secon			
			minutes	60		1-11
al Counts			counts	18		-1-49
al Counts uple Count Rate			counts	18 0.30		1.00
d Counts ple Count Rate kground Count Rate			counts cpm cpm	18 0.30 0.10		7.05.04
al Counts uple Count Rate kground Count Rate Volume (liters)	(A)		counts cpm cpm liters	18 0.30 0.10 7.2E+04	7.2E+04	7.2E+04
al Counts uple Count Rate kground Count Rate Volume (liters) count rate	(A) (B)		counts cpm cpm liters cpm	18 0.30 0.10 7.2E+04 0.20		
al Counts uple Count Rate kground Count Rate Volume (liters) count rate nter Efficiency	(A) (B) (C)		counts cpm cpm liters cpm cpm/dpm	18 0.30 0.10 7.2E+04 0.20 0.73	0.73	0.73
al Counts uple Count Rate kground Count Rate Volume (liters) count rate inter Efficiency ection Efficiency	(A) (B) (C) (D)		counts cpm cpm liters cpm cpm/dpm 0.99	18 0.30 0.10 7.2E+04 0.20 0.73 0.99	0.73 0.99	0.73 0.99
al Counts uple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D)	(A) (B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72	0.73	0.73
al Counts uple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)(E)	(A) (B) (C) (D) (E)	Z.DVCZZT (O)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28	0.73 0.99	0.73 0.99
al Counts uple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) imum Detectable Activity (dp	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(6)	Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.33	0.73 0.99	0.73 0.99
al Counts uple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp ccentration = (F)/(2.22E9 x (A)	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(6))) (H)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.33 1.74E-15	0.73 0.99	0.73 0.99
pple Count Time (Ts, Tb) = T al Counts uple Count Rate kground Count Rate Volume (liters) count rate inter Efficiency lection Efficiency lection Efficiency ciency = (C) x (D) vivity (dpm) = (B)/(E) imum Detectable Activity (dp icentration = (F)/(2.22E9 x (A kground "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) sm) = (3+4.65*SQRT(6))) (H) Date Updated	Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.33 1.74E-15 7.31E-18	0.73 0.99	0.73 0.99
al Counts uple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) imum Detectable Activity (dp icentration = (F)/(2.22E9 x (A kground "Strip" value (F.1) IT Concentration Value = (H)	(A) (B) (C) (D) (E) (F) sm) = (3+4.65*SQRT(6))) (H) Date Updated		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.33 1.74E-15 7.31E-18 1.73E-15	0.73 0.99	0.73 0.99
al Counts uple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp icentration = (F)/(2.22E9 x (A kground "Strip" value (F.1) F Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(6)) (H) Date Updated -(F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.33 1.74E-15 7.31E-18 1.73E-15 0.01%	0.73 0.99	0.73 0.99
al Counts uple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency cleictory = (C) x (D) viviy (dpm) = (B)/(E) imum Detectable Activity (dp icentration = (F)/(2.22F9 x (A kground "Strip" value (F.1) F Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(6)) (J) (H) Date Updated (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.33 1.74E-15 7.31E-18 1.73E-15 0.01% 2.07E-15	0.73 0.99	0.73 0.99
al Counts uple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency cleictory = (C) x (D) viviy (dpm) = (B)/(E) imum Detectable Activity (dp icentration = (F)/(2.22F9 x (A kground "Strip" value (F.1) F Concentration Value = (H) C (or AE) Fraction = (F2)/(1) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(6)) (J) (H) Date Updated (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.33 1.74E-15 7.31E-18 1.73E-15 0.01% 2.07E-15 0.01%	0.73 0.99	0.73 0.99
al Counts uple Count Rate kground Count Rate Volume (liters) count rate nter Efficiency tection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) F Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(6)) (J) (H) (Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.33 1.74E-15 7.31E-18 1.73E-15 0.01% 2.07E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99
al Counts uple Count Rate kground Count Rate Volume (liters) count rate nter Efficiency ection Efficiency ciency = (C) x (D) civity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) C Concentration Value = (H) C (or AE) Fraction = (F2)/(1) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(6)) (J) (H) (Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.33 1.74E-15 7.31E-18 1.73E-15 0.01% 2.07E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99
I Counts ple Count Rate ground Count Rate Volume (liters) count rate nter Efficiency ection Efficiency eitency = (C) x (D) wity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A cground "Strip" value (F.1) Concentration Value = (H) Cor AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = I Count?	(A) (B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(6)) (J) (H) (Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	18 0.30 0.10 7.2E+04 0.20 0.73 0.99 0.72 0.28 0.33 1.74E-15 7.31E-18 1.73E-15 0.01% 2.07E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99

Non-Occupational (EC): □			Sect	ion I - Collection Da	ıta		
Non-Occupational (EC) DIAC = 20.611 (Critical U-238), EC = 6.05-14 (Ura) Early Ear	Date:	10/2/2018	Sample ID:	20180927-071	RV	VP: 2018-001	
Non-Occupational (EC)	Occupational (DAC):	Limit:	6.00E.14	μCı/ml (Breathing Zone:	General Area:	Work Area
Non-internal Part No	Non-Occupational (EC):	IDA		= 6.0E-14uCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Monitored Workers		į.					14 T.A
Monitored Workers NA				шуу			160
Part	Wearer:		NA		Activity Performed:	NA	
Air Pump Mode: LV-1 Serial No. 36e- Calibration Due Date № 2222919 Sample Information Start Stop Total (minus) Stop Stop<	Monitored Workers:			N/			
Sample Information	Lapel Pump Model:	NA	113	Serial No.	NA	Calibration Due Date:	NA
Start Stop Total (minutes) Start Stop	Air Pump Model:	LV-1		Serial No.	3666	Calibration Due Date:	8/22/2019
Start Stop Start Stop Start Stop Start Stop Start Stop Sp27/2018 7:30 17:00 5:70 6:00 6:	Sample Information		Time			Flow R:	ite (lpm)
9/26/2018 7:30 17:00 5:70 5:70 60.0 60.0 60.0 9/27/2018 7:30 17:00 5:70 5:70 60.0 60.0 9/27/2018 7:30 17:00 5:70 5:70 60.0 60.0 Winimum Air Sample Volume:		Start	Stop	Total (minutes)		Start	Stop
		and the second s				60.0	
Total Time (Te) 1140			17:00	570		60	60
Sample Volume: 60 (lpm) x 1140 (minutes) = 6.8E+04 Liters (A)				1140		Avg. Flow Rate (lpm)	60.0
Instrument Information Serial Number Detector Meter Detector Efficiency (Control Instrument Type Meter Detector Meter Detector Efficiency (Control Instrument Type Meter Detector Meter Detector Efficiency (Control Instrument Type N/A			s identified are necessary to achi	eve 10% of DAC or AE va	lue.	0.017.04	
Instrument Type				tion II - Anaiysis Da		in Day Date	
L-2929 158817 164736 1/10/2019 1/10/2019 0.726 N/A				Datastas			Efficiency (a)
N/A N/							
National Process Calculations							
Variables, Calculations, Results	IVA		1073	T. T.			
nt Date nt Time (e.g., noon, 1300, etc.) ple Count Time (Ts, Tb) = T dl Counts counts counts 12 ple Count Rate kground Count Rate Volume (liters) (A) iliters 6.8E+04 6.	Varia	bles, Calculations, Re	sults	Units	1st Count		3rd Count
Description Count Count				The same	10/2/2018		
Counts Counts Counts Counts Counts Counts Count Rate Copm Count Rate Count Rate	nt Time (e.g., noon, 1300, et	c.)			8:00		
Count Rate Copm 0.20 Copm 0.10	ple Count Time (Ts, Tb) = T			minutes	60		
Seground Count Rate Cpm 0.10 Seground Count Rate Cpm 0.10 Seground Count rate Cpm C	d Counts	orași e e e		counts	12		
Volume (liters) (A) liters 6.8E+04 6.8E+04 6.8E+04 6.8E+04 count rate (B) cpm 0.10 cpm 0.10 cpm 0.10 cpm 0.10 cpm 0.10 cpm/dpm 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73	ple Count Rate			cpm			
count rate (B) cpm 0.10 nter Efficiency (C) cpm/dpm 0.73 0.73 0.73 ection Efficiency (D) 0.99 <							5.077.04
nter Efficiency (C) cpm/dpm 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73						6.8E+04	0.8E+04
cection Efficiency (D) 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.72 0.72 0.72 0.72 0.72 0.72 0.72 0.72						0.72	0.73
Concentration Concentrati							
vity (dpm) = (B)/(E) (F) dpm 0.14 imum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.33 centration = (F)/(2.22E9 x (A)) (H) µCi/ml 9.16E-16 kground "Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-18 f Concentration Value = (H) - (F1); (F2) uCi/ml 9.09E-16 C (or AE) Fraction = (F2)/(I) 1.51% C = MDA/V = (G)/(A) (J) µCi/ml 2.18E-15 C Fraction of DAC (or AE) = (J)/(I) (Goal<10%)							
imum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.33 centration = (F)/(2.22E9 x (A)) (H) μCi/ml 9.16E-16 kground "Strip" value (F.1) Date Updated 4/20-4/21 μCi/ml 7.31E-18 Γ Concentration Value = (H) - (F1); (F2) μCi/ml 9.09E-16 C (or AE) Fraction = (F2)/(I) 1.51% C = MDA/V = (G)/(A) (J) μCi/ml 2.18E-15 C Fraction of DAC (or AE) = (J)/(I) (Goal<10%) 3.63%							
kground "Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-18 [*Concentration Value = (H) - (F1); (F2) uCi/ml 9.09E-16 C (or AE) Fraction = (F2)/(I) 1.51% C = MDA/V = (G)/(A) (J) µCi/ml 2.18E-15 C Fraction of DAC (or AE) = (J)/(I) (Goal<10%) 3.63%			Cb))/(E*T) (G)		0.33		
C Concentration Value = (H) - (F1); (F2) uCi/ml 9.09E-16 C (or AE) Fraction = (F2)/(I) 1.51% C = MDA/V = (G)/(A) (J) μCi/ml 2.18E-15 C Fraction of DAC (or AE) = (I)/(I) (Goal<10%) 3.63%	centration = (F)/(2.22E9 x (A	A)) (H)		μCi/ml	9.16E-16		
C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (J)/(I) (Goal<10%) 1.51% 2.18E-15 3.63%	kground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
C = MDA/V = (G)/(A) (J) μCi/ml 2.18E-15 C Fraction of DAC (or AE) = (J)/(I) (Goal<10%) 3.63%	Γ Concentration Value = (H)	- (F1); (F2)		uCi/ml	9.09E-16		
C Fraction of DAC (or AE) = (J)/(I) (Goal<10%) 3.63%	C (or AE) Fraction = (F2)/(I)						
				μCi/ml			
Count?		(J)/(I) (Goal<10%)					
	al Count?		N. J. J. J. 1816	Yes/No	YES	Yes	
Performed By: David Berry Daw 3 Date: 10-2-18 Reviewed By: Ed Stemes 15 Date: 10-2-18	NAME OF THE			raction > 100% requires	immediate RSO notificatio		10-2-18

		Sec	tion I - Collect	ion Data			
Date:	10/10/2018	Sample ID:	2018100	1-078	R	WP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	-	(Ct/ml (1)	Breathing Zone:		Work Are
Non-Occupational (EC):	[DAC	C = 2.0E-11µCi/ml (U-238), EC	= 6.0F-14uCi/ml1				
Location:			1 NO. 40 A. TAGG.		Radionuclides:	DU (Depleted	Uranium)
_		FS12 Block House (Boun	dry)		Sampled By:	David Be	res
Wearer:		NA		Acti	vity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.			1 40 40 AC 40 AC	
Air Pump Model:	LV-1		-	67		Calibration Due Date:	
	LV-1		Serial No.	366	6	Calibration Due Date:	8/22/2019
Sample Information		Time				Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (mi	nutes)	(1)	Start	Stop
9/28/2018	7:30	17:00	570			60.0	60.0
10/10/2018	7:30	17:00	570			60	60
		Total Time (Tc):	1140)		Avg. Flow Rate (lpm)	60,0
	inium sample volumes	identified are necessary to achie	tion II - Analys				
ument Information		Serial Number			Calibrat	ion Due Date	
Instrument Type		Meter	Detect	or	Meter	Detector	Efficiency (a)
L-2929		158817	16473	6	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
V. J. V.						Alpha	
t Date	les, Calculations, Res	alts	Units	1st C	to an all the last of the last	2nd Count	3rd Count
t Time (e.g., noon, 1300, etc.)	1			10/10/			
le Count Time (Ts, Tb) = T			automato a	12:			
Counts			minutes	60			
le Count Rate			counts	0.2			
ground Count Rate			cpm cpm	0.0			
olume (liters)	(A)		liters	6.8E		6.95104	7.001.01
ount rate	(B)		cpm	0.02		6.8E+04	6.8E+04
ter Efficiency	(C)		cpm/dpm	0.7		0.73	0.73
er Emciency	and the		0.99	0.9		0.99	0.99
ction Efficiency	(D)					415.5	
ency = (C) x (D)	(D) (E)		cpm/dpm	0.7	2	0.72	0.72
ency = (C) x (D) ty (dpm) = (B)/(E)	(E)					0.72	0.72
ency = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm	(E) (F) a) = (3+4.65*SQRT(CH	o))/(E*T) (G)	cpm/dpm	0.7	8	0.72	0.72
etion Efficiency ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A))	(E) (F) (E) = (3+4.65*SQRT(CE) (H)		cpm/dpm dpm dpm µCi/ml	0.7	8	0.72	0.72
ency = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 × (A)) round "Strip" value (F.1)	(E) (F) a) = (3+4.65*SQRT(CE) (H) Date Updated	(G) 4/20-4/21	cpm/dpm dpm dpm	0.7 0.2 0.3	8 0 -15	0.72	0.72
ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - (E)	(E) (F) a) = (3+4.65*SQRT(CE) (H) Date Updated		cpm/dpm dpm dpm µCi/ml	0.7 0.2 0.3 1.86F 7.31E 1.86F	8 0 -15 -18 -15	0.72	0.72
ency = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 × (A)) round "Strip" value (F.1) Concentration Value = (H) - (for AE) Fraction = (F2)/(I)	(E) (F) (S) = (3+4.65*SQRT(CH) (H) Date Updated (F1); (F2)		cpm/dpm dpm dpm µCi/ml uCi/ml	0.7 0.2 0.3 1.86E 7.31E 1.86E 3.09	8 0 -15 -18 -15 -75	0.72	0.72
ency = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 × (A)) round "Strip" value (F.1) Concentration Value = (H) - (for AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(E) (F) (I) = (3+4.65*SQRT(CI) (H) Date Updated (F1); (F2)		cpm/dpm dpm dpm µCi/ml uCi/ml	0.7 0.2 0.3 1.86E 7.31E 1.86E 3.09	8 0 -15 -18 -15 -15 %	0.72	0.72
ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) = (for AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(E) (F) (I) = (3+4.65*SQRT(CI) (H) Date Updated (F1); (F2)		cpm/dpm dpm dpm µCi/ml uCi/ml uCi/ml	0.7 0.2 0.3 1.86E 7.31E 1.86E 3.09 1.99E	8 0 -15 -18 -15 -96 -15	0.72	0.72
ency = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 × (A)) round "Strip" value (F.1) Concentration Value = (H) - (for AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(E) (F) (I) = (3+4.65*SQRT(CR (H) Date Updated (F1); (F2) (J) (J) (Goal<10%)	4/20-4/21	cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml γEs/No	0.7 0.2 0.3 1.86E 7.31E 1.86E 3.09 1.99E 3.32	8 0 1-15 -18 -15 -75 -75 -75 -75 -75	Yes	0.72
ency = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 × (A)) round "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(E) (F) (S) = (3+4.65*SQRT(CH) (H) Date Updated (F1); (F2) (J) (J) (J) (Goal<10%)	4/20-4/21 te: Unexpected DAC or AE fr.	cpm/dpm dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml Yes/No action > 100% req	0.7 0.2 0.3 1.86E 7.31E 1.86E 3.09 1.99E 3.32	8 0 1-15 -18 -15 -75 -75 -75 -75 -75	Yes	
ency = (C) × (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 × (A)) round "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(E) (F) (S) = (3+4.65*SQRT(CH) (H) Date Updated (F1); (F2) (J) (J) (J) (Goal<10%)	4/20-4/21	cpm/dpm dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml Yes/No action > 100% req	0.7 0.2 0.3 1.86E 7.31E 1.86E 3.09 1.99E 3.32	8 0 1-15 -18 -15 -75 -75 -75 -75 -75	Yes	0.72 0-10-18

ъ.	10/10/0010	Sample ID:	on I - Collection l	079 10/10/19	WP: 2018-001	
	10/10/2018	Sample ID:	μC1/m	(1) Breathing Zone:	General Area:	Work Area:
Occupational (DAC):	Limit:	2.00E-11				The second second
Non-Occupational (EC):		$[DAC = 2.0E-11 \mu Ci/ml (U-238), EC=$	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	(Uranium)
Location:		FS12 Wood Soil Sort Area		Sampled By:	Dave Ber	rres
Wearer		NA		Activity Performed:	NA	
				NA.		
Monitored Workers:			76.70		0.01 / D D.	NIA
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	
Air Pump Model:	LV-1	S	erial No.	2773	Calibration Due Date:	3/27/2019
Samula Information		Time			Flow R	ate (lpm)
Sample Information Collection Date	Start	Stop	Total (minutes	(3)	Start	Stop
9/28/2018	7:30	17:00	570		60.0	60.0
10/1/2018	7:30	17:00	570		60	60
10/1/2010	/ are	Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Samp	le Volume: 1.4E+01	Liters	
			Minimum An Samp	ic volume, 1.41.77		
Sample Volume:	60	(lpm)	х	1140 (minutes) =	6.8E+04 L	iters (A)
		olumes identified are necessary to achie	no 10% of DAC or AT	value		
Remarks: Mi	nimum sample v	blumes identified are flecessary to achie	WE 10/0 OF DAC OF THE	Tuide.		
		Sect	ion II - Analysis	Data		
ot		Serial Number	•		ation Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A	N/A	N/A	N/A
1015					Alpha	
Varia	bles, Calculatio	ns, Results	Units	1st Count	2nd Count	3rd Count
ount Date				10/10/2018		
ount Time (e.g., noon, 1300, et	c.)			14:00		
ample Count Time (Ts, Tb) = T			minutes	60		
otal Counts			counts	9		
ample Count Rate			cpm	0.15		
ackground Count Rate			cpm	0.08		
ir Volume (liters)		(A)	liters	6.8E+04	6.8E+04	6.8E+04
let count rate		(B)	cpm	0.07		
Counter Efficiency	(0		cpm/dpm	0.73	0.73	0,73
Collection Efficiency		0)	0.99	0.99	0.99	0.99
	(E	(1)	cpm/dpm	0.72	0.72	0.72
$fficiency = (C) \times (D)$			dpm	0.10		
	(F)					
activity (dpm) = (B)/(E)		SQRT(Cb))/(E*T) (G)	dpm	0.30		
ctivity (dpm) = (B)/(E) finimum Detectable Activity (d	lpm) = (3+4.65*5	SQRT(Cb))/(E*T) (G)	dpm μCi/ml	6.41E-16		
ctivity (dpm) = (B)/(E) finimum Detectable Activity (doncentration = (F)/(2.22E9 x (lpm) = (3+4.65*5 A)) (H)			6.41E-16 7.31E-18		
activity (dpm) = (B)/(E) finimum Detectable Activity (deconcentration = (F)/(2.22E9 x (ackground "Strip" value (F.1)	lpm) = (3+4.65*5 A)) (H) Date Update		μCi/ml	6.41E-16 7.31E-18 6.34E-16		
activity (dpm) = (B)/(E) finimum Detectable Activity (decentration = (F)/(2.22E9 x (lackground "Strip" value (F.1) JET Concentration Value = (H	pm) = (3+4.65*; A)) (H) Date Update) - (F1); (I	d 4/20-4/21	μCi/ml uCi/ml	6.41E-16 7.31E-18 6.34E-16 0.00%		
activity (dpm) = (B)/(E) finimum Detectable Activity (decentration = (F)/(2.22E9 x (lackground "Strip" value (F.1) JET Concentration Value = (H.2) AC (or AE) Fraction = (F2)/(I.2)	pm) = (3+4.65*; A)) (H) Date Update) - (F1); (I	d 4/20-4/21	μCi/ml uCi/ml	6.41E-16 7.31E-18 6.34E-16 0.00% 1.99E-15		
activity (dpm) = (B)/(E) finimum Detectable Activity (defoncentration = (F)/(2.22E9 x (lackground "Strip" value (F.1) JET Concentration Value = (H.2)/(I.2) ACC (or AE) Fraction = (F2)/(I.2) ADC = MDA/V = (G)/(A)	lpm) = (3+4.65*3 A)) (H) Date Update) - (F1); (I	d 4/20-4/21	μCi/ml uCi/ml uCi/ml	6.41E-16 7.31E-18 6.34E-16 0.00%		
Activity (dpm) = (B)/(E) Infinimum Detectable Activity (deconcentration = (F)/(2.22E9 x (Eackground "Strip" value (F.1) IET Concentration Value = (HE) DAC (or AE) Fraction = (F2)/(IEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE	lpm) = (3+4.65*3 A)) (H) Date Update) - (F1); (I	4 4/20-4/21 F2) <10%)	μCi/ml uCi/ml uCi/ml μCi/ml γCi/ml	6.41E-16 7.31E-18 6.34E-16 0.00% 1.99E-15 0.01% Yes		
Activity (dpm) = (B)/(E) Minimum Detectable Activity (deconcentration = (F)/(2.22E9 x (Background "Strip" value (F.1) NET Concentration Value = (HODAC (or AE) Fraction = (F2)/(IODC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE)	lpm) = (3+4.65*3 A)) (H) Date Update) - (F1); (I	4 4/20-4/21 F2)	μCi/ml uCi/ml uCi/ml μCi/ml γCi/ml	6.41E-16 7.31E-18 6.34E-16 0.00% 1.99E-15 0.01% Yes	tion.	
ifficiency = (C) x (D) cativity (dpm) = (B)/(E) dinimum Detectable Activity (deconcentration = (F)/(2.22E9 x (Background "Strip" value (F.1) NET Concentration Value = (H) OAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	(a) (b) (b) (c) (d) (d)	4/20-4/21 F2) <10%) Note: Unexpected DAC or AE	μCi/ml uCi/ml uCi/ml μCi/ml μCi/ml Yes/No fraction > 100% requ	6.41E-16 7.31E-18 6.34E-16 0.00% 1.99E-15 0.01% Yes		
Activity (dpm) = (B)/(E) Minimum Detectable Activity (deconcentration = (F)/(2.22E9 x (Background "Strip" value (F.1) NET Concentration Value = (HOAC (or AE) Fraction = (F2)/(IADC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	(a) (b) (b) (c) (d) (d)	4 4/20-4/21 F2) <10%)	μCi/ml uCi/ml uCi/ml μCi/ml μCi/ml Yes/No fraction > 100% requ	6.41E-16 7.31E-18 6.34E-16 0.00% 1.99E-15 0.01% Yes		10-10-18

Date:	10/10/2018	Sample ID:	20181001-080	R	WP: 2018-001	
Occupational (DAC):	Limit:		μCı/m		General Area:	Work Area:
	_	6.00E-14				(Jeanium)
Non-Occupational (EC):	[D	AC = 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuciides	DU (Depleted	
Location:		FS12 SCA Boundary		Sampled By:	David Be	rres
Wearer:		NA		Activity Performed:	NA	
				JA .		
Monitored Workers:			U. 1/		Calibration Due Date:	NA
Lapel Pump Model:	NA		erial No.	NA	_	
Air Pump Model:	LV-I	S	erial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow R	ate (lpm)
Collection Date	Start	Stop	Total (minutes		Start	Stop
9/28/2018	7:30	17:00	570		60.0	60.0
10/1/2018	7:00	17:00	600		60	60
		Total Time (Tc):	1170		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sampl	Volume: 4.5E+03	Liters	
	co 0-			170 (minutes)	= 7.0E+04 Li	iters (A)
Sample Volume:						
Remarks: Mi	nimum sample volu	mes identified are necessary to achie	eve 10% of DAC or AE	value.		
		Sect	ion II - Analysis l	ata		
		Serial Number	ion ii - manyata s		ration Due Date	
trument Information		Meter Senai Number	Detector	Meter	Detector	Efficiency (a)
Instrument Type L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
IVA					Alpha	
Varia	bles, Calculations,	Results	Units	1st Count	2nd Count	3rd Count
unt Date			The second	10/10/2018		
unt Time (e.g., noon, 1300, et	c.)			8:00		
			minutes	60		
mple Count Time (Ts, Tb) = T						
	i)		counts	10		
tal Counts			counts	0.17		
tal Counts mple Count Rate			epm epm	0.17 0.08		705:04
mple Count Time (Ts, Tb) = T tal Counts mple Count Rate ackground Count Rate r Volume (liters)	(A)	21	cpm cpm liters	0.17 0.08 7.0E+04	7.0E+04	7.0E+04
tal Counts mple Count Rate ckground Count Rate r Volume (liters)	(A) (B)		cpm cpm liters cpm	0.17 0.08 7.0E+04 0.09		
tal Counts mple Count Rate ckground Count Rate r Volume (liters) et count rate unter Efficiency	(A) (B) (C)		cpm cpm liters cpm cpm/dpm	0.17 0.08 7.0E+04 0.09 0.73	0.73	0.73
tal Counts mple Count Rate ckground Count Rate r Volume (liters) et count rate nunter Efficiency	(A) (B) (C) (D)		cpm cpm liters cpm cpm/dpm 0.99	0.17 0.08 7.0E+04 0.09 0.73 0.99	0.73 0.99	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) d count rate nunter Efficiency dlection Efficiency ficiency = (C) x (D)	(A) (B) (C) (D) (E)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72	0.73	0.73
tal Counts mple Count Rate ckground Count Rate r Volume (liters) et count rate nunter Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E)	(A) (B) (C) (D) (E)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72 0.12	0.73 0.99	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) ct count rate nunter Efficiency efficiency ficiency = (C) x (D) efficiency = (B)/(E) minum Detectable Activity (d	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQF		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72	0.73 0.99	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) ct count rate nunter Efficiency flictency = (C) × (D) ctivity (dpm) = (B)/(E) nimum Detectable Activity (dencentration = (F)/(2.22E9 × (A))	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQF A)) (H)		cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72 0.12 0.30	0.73 0.99	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) t count rate unter Efficiency fliciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (A) ckground "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQF A)) (H) Date Updated	2T(Cb))/(E*T) (G)	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72 0.12 0.30 7.74E-16	0.73 0.99	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) t count rate unter Efficiency flietion Efficiency flietion Efficiency flietion = (B)(E) minum Detectable Activity (d uncentration = (F)/(2.22E9 x (t uckground "Strip" value (F.1) ET Concentration Value = (H)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated () - (F1); (F2)	2T(Cb))/(E*T) (G)	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72 0.12 0.30 7.74E-16 7.31E-18	0.73 0.99	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) t count rate unter Efficiency fliction Efficiency fliction Efficiency fliction (C) × (D) trivity (dpm) = (B)/(E) minum Detectable Activity (d incentration = (F)/(2.22E9 × (i inckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(1)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQR (A)) (H) Date Updated () - (F1); (F2)	2T(Cb))/(E*T) (G)	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72 0.12 0.30 7.74E-16 7.31E-18 7.66E-16	0.73 0.99	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) et count rate nunter Efficiency ellection Efficiency ficiency = (C) x (D)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQR A)) (H) Date Updated (1)-(F1); (F2)	2T(Cb))/(E*T) (G) 4/20-4/21	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72 0.12 0.30 7.74E-16 7.31E-18 7.66E-16 1.28%	0.73 0.99	0.73 0.99
tal Counts mple Count Rate r Volume (liters) et count rate sounter Efficiency efficiency = (C) x (D) efficiency = (B)/(E) efficiency = (F)/(2.22E9 x (J) efficiency = (F)/(2.27E9 x (J) e	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQR A)) (H) Date Updated (1)-(F1); (F2)	2T(Cb))/(E*T) (G) 4/20-4/21	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72 0.12 0.30 7.74E-16 7.31E-18 7.66E-16 1.28% 1.94E-15	0.73 0.99	0.73 0.99
tal Counts mple Count Rate r Volume (liters) et count rate nunter Efficiency efficiency efficiency = (C) x (D) etivity (dpm) = (B)/(E) efficience (F)/(2.22E9 x (Journal of the County	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQR A)) (H) Date Updated (1) (F2)	2T(Cb))/(E*T) (G) 4/20-4/21	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72 0.12 0.30 7.74E-16 7.31E-18 7.66E-16 1.28% 1.94E-15 3.24% YES	0.73 0.99 0.72	0.73 0.99
tal Counts mple Count Rate ckground Count Rate r Volume (liters) it count rate unter Efficiency fliction Efficiency fliction Efficiency fliction (Efficiency fliction (Efficienc	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQR A)) (H) Date Updated (1) (F2)	2T(Cb))/(E*T) (G) 4/20-4/21 %) Note: Unexpected DAC or AE	cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.17 0.08 7.0E+04 0.09 0.73 0.99 0.72 0.12 0.30 7.74E-16 7.31E-18 7.66E-16 1.28% 1.94E-15 3.24% YES	0.73 0.99 0.72 Yes	0.73 0.99

Date:	10/11/2018	Sample ID:	on I - Collection Da 20131003-081	RW	VP: 2018-001	
	-	Sample ID.	μCı/ml (Work Area:
Occupational (DAC):	Limit:	6.00E-14				
Non-Occupational (EC):	[DA	$C = 2.0E-11\mu \text{Ci/ml}$ (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:		Uranium)
Location:		FS12 SCA Boundary		Sampled By:	David Ber	res
				Activity Performed:	NA	
Monitored Workers:			N/	Α		
	41.6			NA	Calibration Due Date:	NA
Lapel Pump Model:	NA		erial No.	The same of the sa		and the state of t
Air Pump Model:	LV-1	S	erial No.	2591	Calibration Due Date:	3/21/2019
Sample Information		Time			Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
10/2/2018	7:30	17:00	570		60.0	60.0
10/3/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample	Volume: 5.3E+03	Liters	
Sample Volume:	60 (lpm)	x 11	140 (minutes) =	6.8E+04 Lit	ers (A)
The state of the s			and an extra term			
Remarks: Mi	nimum sample volum	es identified are necessary to achie	VE 10% OF DAC OF AE V	arue.		
		Sect	ion II - Analysis Da	ata		
trument Information		Serial Number		Calibra	tion Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varia	bles, Calculations, R	esults	Units	1st Count	2nd Count	3rd Count
unt Date			0.5	10/11/2018		
unt Time (e.g., noon, 1300, et				8:00		
nple Count Time (Ts, Tb) = T			minutes	60		
			counts	12		
tal Counts				0.20		
nple Count Rate			cpm	0.20		
nple Count Rate	(A)		cpm	0.12	6.8E+04	6.8E+04
nple Count Rate ekground Count Rate Volume (liters)	(A)		cpm liters	0.12 6.8E+04	6.8E+04	6.8E+04
nple Count Rate ckground Count Rate Volume (liters) t count rate	(B)		cpm liters cpm	0.12 6.8E+04 0.08	6.8E+04 0.73	6.8E+04 0.73
nple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency	(B) (C)		cpm liters	0.12 6.8E+04		0-
nple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency	(B) (C) (D)		cpm liters cpm cpm/dpm	0.12 6.8E+04 0.08 0.73	0.73	0.73
nple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D)	(B) (C)		cpm liters cpm cpm/dpm 0.99	0.12 6.8E+04 0.08 0.73 0.99	0.73 0.99	0.73 0.99
nple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency	(B) (C) (D) (E)	(Cb))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm	0.12 6.8E+04 0.08 0.73 0.99 0.72	0.73 0.99	0.73 0.99
nple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)(E)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRT	(Cb))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.12 6.8E+04 0.08 0.73 0.99 0.72 0.11	0.73 0.99	0.73 0.99
nple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRTA)) (H)	(Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.12 6.8E+04 0.08 0.73 0.99 0.72 0.11 0.36 7.33E-16 7.31E-18	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency llection Efficiency iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (A)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H) Date Updated		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm pCi/ml	0.12 6.8E+04 0.08 0.73 0.99 0.72 0.11 0.36 7.33E-16 7.31E-18	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate volume (liters) t count rate unter Efficiency licency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (A) the country of the country of the country of the country The Concentration Value = (H) LC (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H) Date Updated () - (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.12 6.8E+04 0.08 0.73 0.99 0.72 0.11 0.36 7.33E-16 7.31E-18 7.26E-16 1.21%	0.73 0.99	0.73 0.99
rple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency llection Efficiency iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Deteable Activity (d ncentration = (F)/(2.22E9 x (z ckground *Strip* value (F.1) CT Concentration Value = (H CC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H) Date Updated () - (F1); (F2)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml uCi/ml	0.12 6.8E+04 0.08 0.73 0.99 0.72 0.11 0.36 7.33E-16 7.31E-18 7.26E-16 1.21% 2.34E-15	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency licency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (A) CKground "Strip" value (F.1) TT Concentration Value = (H) CC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H) Date Updated () - (F1); (F2)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.12 6.8E+04 0.08 0.73 0.99 0.72 0.11 0.36 7.33E-16 7.31E-18 7.26E-16 1.21% 2.34E-15 3.90%	0.73 0.99 0.72	0.73 0.99
rple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency llection Efficiency iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Deteable Activity (d ncentration = (F)/(2.22E9 x (z ckground *Strip* value (F.1) CT Concentration Value = (H CC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H) Date Updated () - (F1); (F2)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.12 6.8E+04 0.08 0.73 0.99 0.72 0.11 0.36 7.33E-16 7.31E-18 7.26E-16 1.21% 2.34E-15 3.90% YES	0.73 0.99 0.72	0.73 0.99
mple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency licency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (A) CKground "Strip" value (F.1) TT Concentration Value = (H) CC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	(B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H) Date Updated () - (F1); (F2)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.12 6.8E+04 0.08 0.73 0.99 0.72 0.11 0.36 7.33E-16 7.31E-18 7.26E-16 1.21% 2.34E-15 3.90% YES	0.73 0.99 0.72	0.73 0.99
mple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency flection Efficiency flection Efficiency fliciency = (C) x (D) flivity (dpm) = (B)/(E) fliminum Detectable Activity (d flicentration = (F)/(2.22E9 x (ackground *Strip* value (F.1) CT Concentration Value = (H) CC (or AE) Fraction = (F2)/(I) CC = MDA/V = (G)/(A) CC Fraction of DAC (or AE) = full Count?	(B) (C) (D) (E) (F) (F) (P) (P) (D) (D) (E) (F) (D) (D) (E) (F) (F) (F) (F) (F2) (F2) (F2) (F2) (F3) (4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml uCi/ml yEs/No fraction > 100% require	0.12 6.8E+04 0.08 0.73 0.99 0.72 0.11 0.36 7.33E-16 7.31E-18 7.26E-16 1.21% 2.34E-15 3.90% YES	0.73 0.99 0.72 Yes	0.73 0.99

			ction I - Collect				
Date:	10/11/2018	Sample ID	201810	03-082	R	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11		(I) (I)	Breathing Zone		_ 1 w
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC	= 6.0E-14uCi/ml1				
Location:					Radionuclides	DU (Depleted	Uranium)
Wearer:		FS12 Wood Soil Sort A	rea		Sampled By:	Dave Ber	rres
The state of the s		NA			Activity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.		NA	Colibertine D. D.	147
Air Pump Model:	LV-1		Serial No.		7	Calibration Due Date:	
Sample Information			Deriai 140.		2773	Calibration Due Date:	3/27/2019
Collection Date	Store	Time				Flow Ra	te (lpm)
10/2/2018	7:30	Stop 17:00	Total (mi			Start	Stop
10/3/2018	7:30	17:00	570		4	60.0	60.0
		Total Time (Tc):	570		-	60	60
		Total Time (10).	114			Avg. Flow Rate (lpm)	60.0
Sample Volume:	60 (lpm)		Minimum Air S	1140	(minutes) =	Liters	211
Remarks: Min	imum sample volumes	identified are necessary to achi		AF	_ (minutes) =	6.8E+04 Lite	ers (A)
		are necessary to acm	eve 10% of DAC of	AE value.			
		Sec	tion II - Analys	is Data			
rument Information		Serial Number			Calibrat	ion Due Date	
Instrument Type L-2929		Meter	Detect	or	Meter	Detector	Efficiency (a)
1,-2929 N/A		58817	16473	6	12/13/2018	12/13/2018	0.726
IVA		N/A	N/A		N/A	N/A	N/A
Variable	es, Calculations, Resu	io.				Alpha	
t Date	es, Catculations, Resu	its	Units	- 100	st Count	2nd Count	3rd Count
t Time (e.g., noon, 1300, etc.)					/11/2018		
					14:00		
ole Count Time (Ts, Tb) = T			minutes		70		
count Time (Ts, Tb) = T			minutes		60		
Counts le Count Rate			counts		15		
Counts le Count Rate ground Count Rate			counts		15 0.25		
Counts lle Count Rate ground Count Rate folume (liters)	(A)		counts		15 0.25 0.12	6.85±04	(95.04
Counts le Count Rate ground Count Rate olume (liters) ount rate	(B)		counts cpm cpm	6.	15 0.25	6.8E+04	6.8E+04
Counts le Count Rate ground Count Rate olume (liters) ount rate ter Efficiency	(B) (C)		counts cpm cpm liters	6.	15 0.25 0.12 8E+04		
Counts le Count Rate ground Count Rate olume (liters) ount rate ter Efficiency otion Efficiency	(B) (C) (D)		counts cpm cpm liters cpm	6.	15 0.25 0.12 .8E+04 0.13	6.8E+04 0.73 0.99	0.73
Counts le Count Rate ground Count Rate olume (liters) ount rate ter Efficiency ency = (C) x (D)	(B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	6.	15 0.25 0.12 .8E+04 0.13 0.73	0.73	0.73 0.99
Counts le Count Rate ground Count Rate olume (liters) ount rate ter Efficiency ency = (C) x (D) ty (dpm) = (B)/(E)	(B) (C) (D) (E)	WEAT (O)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	6.	15 0.25 0.12 8E+04 0.13 0.73 0.99	0.73 0.99	0.73
Counts le Count Rate ground Count Rate olume (liters) ount rate ter Efficiency ency = (C) x (D) ty (dpm) = (B)/(E) ount Detectable Activity (dpm	(B) (C) (D) (E) (F))=(3+4.65*SQRT(Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	6.	15 0.25 0.12 .8E+04 0.13 0.73 0.99 0.72 0.18 0.36	0.73 0.99	0.73 0.99
Counts the Count Rate ground Count Rate ground Count Rate olume (liters) ount rate ther Efficiency entry = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A))	(B) (C) (D) (E) (F)) = (3+4.65*SQRT(Cb) (H)	THE RESERVE	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	1.1	15 0.25 0.12 .8E+04 0.13 0.73 0.99 0.72 0.18 0.36 9E-15	0.73 0.99	0.73 0.99
Counts le Count Rate ground Count Rate olume (liters) ount rate ler Efficiency entry = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) round "Strip" value (F.1)	(B) (C) (D) (E) (F))= (3+4.65*SQRT(Cb) (H) Date Updated)/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	1.1	15 0.25 0.12 .8E+04 0.13 0.73 0.99 0.72 0.18 0.36 9E-15 31E-18	0.73 0.99	0.73 0.99
Counts le Count Rate ground Count Rate ground Count Rate olume (liters) ount rate ler Efficiency entry = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - ((B) (C) (D) (E) (F))= (3+4.65*SQRT(Cb) (H) Date Updated	THE RESERVE	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	1.1 7.3 1.1	15 0.25 0.12 .8E+04 0.13 0.73 0.99 0.72 0.18 0.36 9E-15 31E-18 8E-15	0.73 0.99	0.73 0.99
Counts le Count Rate ground Count Rate ground Count Rate olume (liters) butt rate ler Efficiency ency = (C) × (D) ty (dpm) = (B)/(E) hum Detectable Activity (dpm entration = (F)/(2.22E9 × (A)) ground "Strip" value (F.1) Concentration Value = (H) - (for AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(B) (C) (D) (E) (F)) = (3+4.65*SQRT(Cb) (H) Date Updated F1); (F2)	THE RESERVE	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml uCi/ml	1.1 7.3 1.1 0.	15 0.25 0.12 .8E+04 0.13 0.73 0.99 0.72 0.18 0.36 9E-15 B1E-18 8E-15 01%	0.73 0.99	0.73 0.99
Counts le Count Rate ground Count Rate ground Count Rate olume (liters) ount rate ler Efficiency entry = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - ((B) (C) (D) (E) (F)) = (3+4.65*SQRT(Cb) (H) Date Updated F1); (F2)	THE RESERVE	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	1.1 7.3 1.1 0. 2.3	15 0.25 0.12 8E+04 0.13 0.73 0.99 0.72 0.18 0.36 9E-15 31E-18 8E-15 01% 4E-15	0.73 0.99	0.73 0.99
Counts le Count Rate ground Count Rate ground Count Rate olume (liters) butt rate ler Efficiency ency = (C) × (D) ty (dpm) = (B)/(E) hum Detectable Activity (dpm entration = (F)/(2.22E9 × (A)) ground "Strip" value (F.1) Concentration Value = (H) - (for AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(B) (C) (D) (E) (F)) = (3+4.65*SQRT(Cb) (H) Date Updated F1); (F2)	THE RESERVE	counts cpm cpm liters cpm cpm/dpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	1.1 7.3 1.1 0, 2.3 0.	15 0.25 0.12 .8E+04 0.13 0.73 0.99 0.72 0.18 0.36 9E-15 31E-18 8E-15 01% 4E-15 01%	0.73 0.99	0.73 0.99
Counts le Count Rate ground Count Rate ground Count Rate olume (liters) butt rate ler Efficiency entry (C) x (D) ty (dpm) = (B)/(E) hum Detectable Activity (dpm entration = (F)/(2.2E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - (for AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J)	(B) (C) (D) (E) (F) (F) (B) = (3+4.65*SQRT(Cb) (H) Date Updated (F1); (F2) (J) (J) (Goal<10%)	4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	1.11 7.3 1.1 0. 2.3	15 0.25 0.12 8E+04 0.13 0.73 0.99 0.72 0.18 0.36 9E-15 B18-18 8E-15 01% 4E-15 01%	0.73 0.99	0.73 0.99
Counts le Count Rate ground Count Rate ground Count Rate olume (liters) butt rate ler Efficiency entry (C) x (D) ty (dpm) = (B)/(E) hum Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - (for AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J)	(B) (C) (D) (E) (F) (F) (H) Date Updated (F1); (F2) (J) (I) (Goal<10%)	4/20-4/21 e: Unexpected DAC or AE fra	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	1.11 7.3 1.1 0. 2.3	15 0.25 0.12 8E+04 0.13 0.73 0.99 0.72 0.18 0.36 9E-15 B18-18 8E-15 01% 4E-15 01%	0.73 0.99	0.73 0.99

	and the benevio	Sample ID:	on I - Collection I 20181003-083		WP: 2018-001	
4 1	10/11/2018	Sample ID.	μCı/m			Work Area:
Occupational (DAC):	Limit:	6.00E-14				
Non-Occupational (EC):	Ī	DAC = 2.0E-11µCi/ml (U-238), EC=	5.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 Block House (Boundr	y)	Sampled By:	David Be	rres
		7.11		Activity Performed:	NA	
Wearer:		NA				
Monitored Workers:				NA	44 10 40 40	NA
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	
Air Pump Model:		S	erial No.	3666	Calibration Due Date:	8/22/2019
Till Tamp Model.		av			Flow R	ate (lpm)
Sample Information		Time	Tetal (minute	(1)	Start	Stop
Collection Date	Start	Stop	Total (minute	s)	60,0	60.0
10/2/2018	7:30	17:00	570		60	60
10/3/2018	7:30	17:00 Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60,0
		Total Time (10).	1110	THE PARK	7.7.	
			Minimum Air Samp	le Volume: 5.3E+03	Liters	
Sample Volume:	60	lpm)	x	1140 (minutes) =	6.8E+04 L	iters (A)
			100/ CD 10 AT	Eline		
Remarks: Min	nimum sample vo	lumes identified are necessary to achie	ve 10% of DAC of Al	E value.		
		Sect	ion II - Analysis	Data	-	
			Ion II - Anarysis		ation Due Date	
strument Information		Serial Number	Detector	Meter	Detector	Efficiency (a)
Instrument Type		Meter		1/10/2019	1/10/2019	0.726
L-2929		158817	164736 N/A		N/A	N/A
L-2929 N/A		158817 N/A	N/A	N/A		N/A
N/A		N/A	N/A	N/A	N/A	N/A 3rd Count
N/A	bles, Calculation	N/A		N/A 1st Count	N/A Alpha	
N/A Varia		N/A	N/A	N/A 1st Count 10/11/2018	N/A Alpha	
N/A Varia ount Date ount Time (e.g., noon, 1300, et	c.)	N/A	N/A Units	N/A 1st Count 10/11/2018 12:30	N/A Alpha	
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T	c.)	N/A	N/A Units minutes	N/A Ist Count 10/11/2018 12:30 60	N/A Alpha	
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts	c.)	N/A	N/A Units minutes counts	N/A Ist Count 10/11/2018 12:30 60 15	N/A Alpha	
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate	c.)	N/A	Units Units minutes counts cpm	N/A Ist Count 10/11/2018 12:30 60 15 0.25	N/A Alpha	
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate	c.)	N/A s, Results	N/A Units minutes counts cpm cpm	N/A Ist Count 10/11/2018 12/30 60 15 0.25 0.12	N/A Alpha	
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters)	c.)	N/A s, Results	Minutes counts cpm cpm liters	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04	N/A Alpha 2nd Count	3rd Count
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) let count rate	c.)	N/A s, Results A) B)	Minutes counts cpm cpm liters cpm	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13	N/A Alpha 2nd Count	3rd Count
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts ample Count Rate ackground Count Rate ir Volume (liters) let count rate counter Efficiency	(C)	N/A s, Results A) B)	minutes counts cpm cpm liters cpm cpm/dpm	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73	N/A Alpha 2nd Count 6.8E+04	3rd Count
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) let count rate counter Efficiency follection Efficiency	(C)	N/A s, Results A) B)	minutes counts cpm cpm liters cpm cpm/dpm 0.99	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99	N/A Alpha 2nd Count 6.8E+04	3rd Count 6.8E+04
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ackground Count Rate ir Volume (liters) let count rate counter Efficiency collection Efficiency efficiency = (C) x (D)	(C) (E) (E)	N/A s, Results A) B)	minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99 0.72	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	6.8E+04
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) let count rate founter Efficiency follection Efficiency fficiency = (C) x (D) activity (dpm) = (B)(E)	(C) (C) (E) (F)	N/A s, Results A) B)	minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99 0.72 0.18	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	6.8E+04
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ackground Count Rate count rate ounter Efficiency follection Efficiency efficiency = (C) x (D) activity (dpm) = (B)/(E) dinimum Detectable Activity (d	(C) (C) (E) (F) (spm) = (3+4.65*S)	N/A s, Results A) B)	minutes counts cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99 0.72 0.18 0.36	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	6.8E+04
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) let count rate ounter Efficiency follection Efficiency ifficiency = (C) x (D) activity (dpm) = (B)/(E) Animum Detectable Activity (d Concentration = (F)/(2.22E9 x (d))	(C) (C) (E) (F) (Jpm) = (3+4.65*SA)) (H)	N/A s, Results A) B) O) QRT(Cb))/(E*T) (G)	minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99 0.72 0.18 0.36 1.19E-15	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	6.8E+04
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) let count rate counter Efficiency follection Efficiency follection Efficiency follection Efficiency follection (F) (E) concentration = (F)/(E) Concentration = (F)/(E, 22E9 x (E) Concentration = (F)/(E, 12E9 x (E) Concentration = (F	(C) (C) (E) (F) (Ipm) = (3+4.65*SA)) (H) Date Updated	N/A s, Results A) B) O) QRT(Cb))/(E*T) (G) 4/20-4/21	minutes counts cpm cpm liters cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99 0.72 0.18 0.36 1.19E-15 7.31E-18	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	6.8E+04
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts ample Count Rate ackground Count Rate ir Volume (liters) let count rate lounter Efficiency follection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E) finimum Detectable Activity (deconcentration = (F)/(2.22E9 x (C) ackground "Strip" value (F.1) JET Concentration Value = (H	(C) (C) (E) (F) (Hpm) = (3+4.65*SA)) (H) Date Updated (t) - (F1); (F)	N/A s, Results A) B) O) QRT(Cb))/(E*T) (G) 4/20-4/21	minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99 0.72 0.18 0.36 1.19E-15 7.31E-18 1.18E-15	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	6.8E+04
N/A Varia Dount Date Dount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = Total Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E) dinimum Detectable Activity (deconcentration = (F)/(2.22E9 x (Concentration =	(C) (C) (E) (F) (Ipm) = (3+4.65*S A)) (H) Date Updated (I) - (F1); (F	N/A s, Results A) B) O) QRT(Cb))/(E*T) (G) 4/20-4/21	minutes counts cpm cpm liters cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99 0.72 0.18 0.36 1.19E-15 7.31E-18 1.18E-15 1.97%	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	6.8E+04
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) et count rate ounter Efficiency ollection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E) finimum Detectable Activity (deconcentration = (F)/(2.22E9 x (Councentration = (F)/(2.2	(C) (E) (F) Ipm) = (3+4.65*S A)) (H) Date Updated (1) - (F1); (F) (J)	N/A s, Results A) B) O) QRT(Cb))/(E*T) (G) 4/20-4/21 2)	minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99 0.72 0.18 0.36 1.19E-15 7.31E-18 1.18E-15 1.97% 2.34E-15	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	6.8E+04
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) let count rate ounter Efficiency follection Efficiency ifficiency = (C) x (D) activity (dpm) = (B)/(E) Animum Detectable Activity (d Concentration = (F)/(2.22E9 x (d))	(C) (E) (F) Ipm) = (3+4.65*S A)) (H) Date Updated (1) - (F1); (F) (J)	N/A s, Results A) B) O) QRT(Cb))/(E*T) (G) 4/20-4/21 2)	minutes counts cpm cpm liters cpm cpm/dpm o.99 cpm/dpm dpm dpm uCi/ml uCi/ml	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99 0.72 0.18 0.36 1.19E-15 7.31E-18 1.18E-15 1.97% 2.34E-15 3.90%	N/A Alpha 2nd Count 6.8E+04 0.73 0.99 0.72	6.8E+04
N/A Varia ount Date ount Time (e.g., noon, 1300, et ample Count Time (Ts, Tb) = T otal Counts ample Count Rate ackground Count Rate ir Volume (liters) fet count rate ounter Efficiency follection Efficiency follection Efficiency follection Efficiency follection (F)/(2.22E9 x (c)) forcentration = (F)/(2.22E9 x (c)) forcentratio	(C) (E) (F) Ipm) = (3+4.65*S A)) (H) Date Updated (1) - (F1); (F) (J)	N/A s, Results A) B) O) QRT(Cb))/(E*T) (G) 4/20-4/21 2)	minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	N/A 1st Count 10/11/2018 12:30 60 15 0.25 0.12 6.8E+04 0.13 0.73 0.99 0.72 0.18 0.36 1.19E-15 7.31E-18 1.18E-15 1.97% 2.34E-15 3.90% YES	N/A Alpha 2nd Count 6.8E+04 0.73 0.99 0.72	6.8E+04

		Section	on I - Collection	Data		
Date:	10/17/2018	Sample ID:	20181010-08		RWP: 2018-001	
Occupational (DAC):	Limit	-	μCı/n	I (I) Breathing Z	one: General Area:	Work Area:
	100	0.002 11	OF M.C.	Padianuali	des: DU (Deple	eted Uranium)
Non-Occupational (EC): ✓		$[DAC = 2.0E-11\mu Ci/ml (U-238), EC=$	5.0E-14µCi/mij		_	
Location:		FS12 SCA Boundary		Sampled By:	David	Berres
Wearer:		NA		Activity Performed	:N	JA .
Monitored Workers:				NA		
	24.1				O.D. C. D. D.	NA
Lapel Pump Model:	NA	S	erial No.	NA.	Calibration Due Date:	
Air Pump Model:	LV-1	S	erial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow	Rate (lpm)
Collection Date	Start	Stop	Total (minute	s)	Start	Stop
10/4/2018	7:30	17:00	570		60.0	60.0
10/10/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
Sample Volume: Remarks: Mir		olumes identified are necessary to achie	ve 10% of DAC or Al		=6,8E+04	Liters (A)
			on II - Analysis		Charties Due Date	
strument Information		Serial Number	Divisio		libration Due Date Detector	Efficiency (a)
Instrument Type		Meter	Detector	1/10/20		0.726
L-2929	-	158817	164736 N/A	N/A	N/A	N/A
N/A		N/A	IVA	I. IVA	Alpha	1971
Varia	bles, Calculation	ne Rosulte	Units	1st Count	2nd Count	3rd Count
ount Date	bies, Calculation	is, resums	Contro	10/17/2018		A DECEMBER OF THE PERSON OF TH
ount Time (e.g., noon, 1300, etc	e)			8:00		
imple Count Time (Ts, Tb) = T			minutes	60		
otal Counts			counts	13	_ /	
mple Count Rate			cpm	0.22		
ackground Count Rate			cpm	0.03		1 7
r Volume (liters)		(A)	liters	6.8E+04	6.8E+04	6,8E+04
et count rate	(B)	epm	0.19		
ounter Efficiency	(C)	cpm/dpm	0.73	0.73	0.73
ollection Efficiency	(I	0)	0.99	0.99	0.99	0,99
fficiency = (C) x (D)	(E		cpm/dpm	0.72	0.72	0.72
ctivity (dpm) = (B)/(E)	(F)		dpm	0.26		-
Inimum Detectable Activity (d		QRT(Cb))/(E*T) (G)	dpm	0.21		
oncentration = $(F)/(2.22E9 \times (A))$		2002.200	μCi/ml	1.71E-15		
ackground "Strip" value (F.1)	Date Updated		uCi/ml	7.31E-18		
ET Concentration Value = (H)		2)	uCi/ml	1.70E-15		
AC (or AE) Fraction = (F2)/(I)			0:1-1	2.84% 1.40E-15		
DC = MDA/V = (G)/(A)	(J)	(109/)	μCi/ml	2.33%		
IDC Fraction of DAC (or AE) =	= (J)/(I) (Goal-	-1070)	Yes/No	YES	Yes	
inal Count?		Note: Unexpected DAC or AE				
Performed By:	David	Berres/Dowl B				10-17-18

Limit: 2.00E-11 [DAC = 2.0E-11µCi/ml (U-238), EC-FS12 Wood Soil Sort Are NA Time rt Stop 0 17:00 0 17:00 Total Time (Tc): [Ipm] [Serial No. Total (minutes) 570 570 1140 Minimum Air Sample x 1	Radionuclides: Sampled By: Activity Performed: NA NA 2773 Volume: 9.6E+00 I140 (minutes) value.	DU (Depleted Dave Ber NA Calibration Due Date: Calibration Due Date: Flow R: Start 60.0 60 Avg. Flow Rate (Ipm) Liters	NA 3/27/2019 ate (lpm) Stop 60.0 60 60.0 iters (A)
Time Time Time Time Time Time Time Time Time Total Time (Tc): (lpm) ample volumes identified are necessary to achie Sec Serial Number Meter 158817	Serial No. Total (minutes) 570 570 1140 Minimum Air Sample x 1 2ve 10% of DAC or AE tion II - Analysis D Detector 164736	Radionuclides: Sampled By: Activity Performed: NA NA 2773 2 Volume: 9.6E+90 140 (minutes) value. Calibrat Meter	DU (Depleted Dave Ber NA Calibration Due Date: Calibration Due Date: Flow R: Start 60.0 60 Avg. Flow Rate (lpm) Liters 6.8E+04 Li tion Due Date Detector	NA 3/27/2019 ate (lpm) Stop 60.0 60 60.0 iters (A)
FS12 Wood Soil Sort Are NA Time T Stop 0 17:00 0 17:00 Total Time (Tc):	Total (minutes) 570 570 1140 Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	Sampled By: Activity Performed: NA NA 2773 Volume: 9.6E+00 (minutes) value. Calibrat Meter	Calibration Due Date: Calibration Due Date: Calibration Due Date: Flow R: Start 60.0 60 Avg. Flow Rate (lpm) Liters 6.8E+04 Lition Due Date Detector	NA 3/27/2019 ate (Ipm) Stop 60.0 60 60.0 iters (A)
Time Tt. Stop 0 17:90 0 17:00 Total Time (Te):	Total (minutes) 570 570 1140 Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	Activity Performed: NA 2773 Volume: 9.6E+00 (minutes) value. Calibrat Meter	Calibration Due Date: Calibration Due Date: Flow R: Start 60.0 60 Avg. Flow Rate (lpm) Liters 6.8E+04 Lition Due Date Detector	NA 3/27/2019 ate (lpm) Stop 60.0 60 60.0 iters (A)
Time rt Stop 0 17:00 0 17:00 Total Time (Tc):	Serial No. Total (minutes) 570 570 1140 Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	NA 2773 2 Volume: 9.6E+00 1140 (minutes) value. Calibrat Meter	Calibration Due Date: Calibration Due Date: Calibration Due Date: Flow R: Start	NA 3/27/2019 ate (lpm) Stop 60.0 60 60.0 iters (A)
Time rt Stop 0 17:00 0 17:00 Total Time (Tc):	Serial No. Total (minutes) 570 570 1140 Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	NA 2773 2 Volume: 9.6E+00 1140 (minutes) value. Calibrat Meter	Calibration Due Date: Calibration Due Date: Calibration Due Date: Flow R: Start	NA 3/27/2019 ate (lpm) Stop 60.0 60 60.0 iters (A)
Time rt Stop 0 17:90 0 17:00 Total Time (Tc):	Serial No. Total (minutes) 570 570 1140 Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	NA 2773 Volume: 9.6E+00 140 (minutes) value. Calibrat Meter	Calibration Due Date:	3/27/2019 Stop 60.0 60 60.0 iters (A) Efficiency (α)
Time rt Stop 0 17:90 0 17:00 Total Time (Tc):	Total (minutes) 570 570 1140 Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	2773 Volume: 9.6E+00 (140 (minutes) value. Calibrat Meter	Calibration Due Date:	3/27/2019 Stop 60.0 60 60.0 iters (A) Efficiency (α)
Time rt. Stop 0 17:90 0 17:90 Total Time (Tc):	Total (minutes) 570 570 1140 Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	Volume: 9.6E+00 (minutes) = value. Calibrat Meter	Start 60.0 60 Avg. Flow Rate (lpm) Liters 6.8E+04 Lition Due Date Detector	Stop 60.0 60 60.0 iters (A) Efficiency (α)
rt Stop 0 17:00 0 17:00 Total Time (Tc):	570 570 1140 Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	volume: 9.6E+00 1140 (minutes) - value. Calibrat Meter	Start 60.0 60	Stop 60.0 60 60.0 siters (A)
0 17:00 0 17:00 Total Time (Te): (lpm) ample volumes identified are necessary to achi Sec Serial Number Meter 158817	570 570 1140 Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	volume: 9.6E+00 1140 (minutes) - value. Calibrat Meter	60.0 60 Avg. Flow Rate (lpm) Liters 6.8E+04 Li tion Due Date Detector	60.0 60 60.0 siters (A)
0 17:00 0 17:00 Total Time (Te): (lpm) ample volumes identified are necessary to achi Sec Serial Number Meter 158817	570 570 1140 Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	volume: 9.6E+00 1140 (minutes) - value. Calibrat Meter	60 Avg. Flow Rate (lpm) Liters 6.8E+04 Lition Due Date Detector	60 60.0 siters (A)
(lpm) (lpm) mple volumes identified are necessary to achi Sec Serial Number Meter 158817	Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	value. Calibrat Meter	Avg. Flow Rate (lpm) Liters 6.8E+04 Li tion Due Date Detector	60.0 iters (A)
(lpm) Imple volumes identified are necessary to achi Sec Serial Number Meter 158817	Minimum Air Sample x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	value. Calibrat Meter	Liters 6.8E+04 Li tion Due Date Detector	iters (Α) Efficiency (α)
Sec Serial Number Meter 158817	x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	value. Calibrat Meter	6.8E+04 Li	Efficiency (α)
Sec Serial Number Meter 158817	x 1 eve 10% of DAC or AE tion II - Analysis D Detector 164736	value. Calibrat Meter	6.8E+04 Li	Efficiency (α)
Sec Serial Number Meter 158817	eve 10% of DAC or AE tion II - Analysis D Detector 164736	value. Data Calibrat Meter	tion Due Date Detector	Efficiency (α)
Serial Number Meter 158817	Detector 164736	Calibrat Meter	Detector	
Serial Number Meter 158817	Detector 164736	Calibrat Meter	Detector	
Serial Number Meter 158817	Detector 164736	Calibrat Meter	Detector	
Meter 158817	164736	Meter	Detector	
158817	164736			
		12/13/2018	12/13/2018	2 24.4
N/A	N/A			0.726
		N/A	N/A	N/A
			Alpha	
culations, Results	Units	1st Count	2nd Count	3rd Count
	100	10/17/2018		
		14:00		
	minutes	60		
	counts	19		
	cpm	0.32		
	cpm	0.03		
(A)	liters	6.8E+04	6.8E+04	6.8E+04
(B)	cpm	0.29		
(C)	cpm/dpm	0.73	0.73	0.73
(D)	0.99	0.99	0.99	0,99
(E)	cpm/dpm	0.72	0.72	0,72
	dpm	0.40		
+4.65*SQRT(Cb))/(E*T) (G)	dpm	0.21		
(H)	μCi/ml	2.63E-15		
Updated 4/20-4/21	uCi/ml	7.31E-18		
(F2)	uCi/ml	2.62E-15		
		0.01%		
	μCi/ml	1.40E-15		
(Goal<10%)		0.01%		
	Yes/No	Yes		
Note: Unexpected DAC or AE	fraction > 100% requir	res immediate RSO notification	оп.	
				32 N A 10 40
wid Berres Dam	Ben		Date	10-17-18
MIA CALLA VOCADADO	-			
1 Siences /s				
	(A) (B) (C) (D) (E) -4.65*SQRT(Cb))/(E*T) (G) (H) Updated 4/20-4/21 (F2) (Goal<10%) Note: Unexpected DAC or AE	minutes counts cpm cpm (A) liters (B) cpm (C) cpm/dpm (D) 0.99 (E) cpm/dpm dpm dpm dpm dpm dpm dpm dpm dpm (H) µCi/ml Updated 4/20-4/21 vCi/ml (F2) uCi/ml (Goal<10%) Yes/No	10/17/2018 14:00 14:00	10/17/2018 14:00

		Section	on I - Collection	Data		
Date	10/17/2018	Sample ID:	20181010-08	6	RWP: 2018-001	
Occupational (DAC):	Limit	6.00E-14	μCi/n	al (I) Breathing 2	Zone: General A	rea: Work Area
Non-Occupational (EC):		DAC = 2.0E-11µCi/ml (U-238), EC=	6 0E-14uCi/ml]	Radionuc	ides: DU (E	Depleted Uranium)
		Action to the second se				avid Berren
Location:		FS12 Block House (Bounds	(y)			
Wearer:		NA		Activity Performe	d:	NA
Monitored Workers				NA		
Lapel Pump Model	NA	S	erial No.	NA	Calibration Due I	Date: NA
A CONTRACTOR OF THE PERSON OF		e	erial No.	3666	Calibration Due I	Date: 8/22/2019
Air Pump Model:	LV-i		CHIII AU	3000		
Sample Information		Time				Flow Rate (lpm)
Collection Date	Start	Stop	Total (minute	s)	Start	Stop
10/4/2018	7:30	17:00	570		60.0	60.0
10/10/2018	7:30	17:00	570		60	60 (mm) 60.0
		Total Time (Tc):	1140		Avg. Flow Rate ((bm)
Remarks: M	nimum sample v	olumes identified are necessary to achie	ion II - Analysis			
			100 II - Altaiysis		alibration Due Date	
strument Information		Serial Number	Detector	Mete		Efficiency (a)
Instrument Type		Meter 158817	164736	1/10/2		
L-2929		N/A	N/A	N/A		N/A
N/A	-	NA.			Alpha	
Vari	ables, Calculatio	ns. Results	Units	1st Count	2nd Conn	1 3rd Count
ount Date	iotes, caremans	ng resum		10/17/2018		
ount Time (e.g., noon, 1300, e	ic.)		- 1725	12:30		
ample Count Time (Ts, Tb) =			minutes	60	-	
otal Counts			counts	- 15	91	
imple Count Rate			cpm	0,25		
ackground Count Rate			cpm	0.03	5.001.04	6.8E+04
ir Volume (liters)		(A)	liters	6.8E+04	6.8E+04	0,62,704
et count rafe		(B)	cpm	0.22	0.73	0.73
ounter Efficiency		C)	epm/dpm 0.99	0.99	0.99	0.99
	(E	D)	cpm/dpm	0.72	0.72	0.72
	(F)		dpm	031		
fficiency = (C) x (D)		SORT(Cb))/(E*T) (G)	dpm	0.21		
ollection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E)	(nm) = (3+4 65*)	Strife of the strip	μCi/ml	2.02E-15		
fficiency = (C) x (D) activity (dpm) = (B)/(E) finimum Detectable Activity (77. Sep. 777. Sep.		
fficiency = (C) x (D) ctivity (dpm) = (B)/(E)	(A)) (H)	4/20-4/21	uCi/ml	7.31E-18		
fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (concentration = (F)/(2.22E9 x	(A)) (H) Date Update	4/20-4/21 F2)		7.31E-18 2.01E-15		
fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (concentration = (F)/(2.22E9 x ackground "Strip" value (F.1) ET Concentration Value = (F.2)	(A)) (H) Date Update (I) - (F1); (uCi/ml	2.01E-15 3.35%		
Ticiency = (C) × (D) ctivity (dpm) = (B)/(E) tinimum Detectable Activity (inimum Detectable Activity (incentration = (F)/(2.22E9 × ackground "Strip" value (F I) ET Concentration Value = (F AC (or AE) Fraction = (F2)/(I	(A)) (H) Date Update (I) - (F1); (uCi/ml	2.01E-15 3.35% 1.40E-15		
Eciency = (C) x (D) ctivity (dpm) = (B)(E) tinimum Detectable Activity (anneemtration = (F)/(2 22E9 x inneemtration = (F1)/(2 22E9 x inneemtration Value = (F1)/(2 22E9 x inneemtration Value = (F2)/(2 2E9 x inneemtration = (F2)/(2 2E9 x)/(2 2E9 x	(A)) (H) Date Update (I) - (F1); (I) (J)	F2)	uCi/ml uCi/ml	2.01E-15 3.35% 1.40E-15 2.33%		
Efficiency = (C) x (D) ctivity (dpm) = (B)/(E) framum Detectable Activity (anneentration = (F)/(2 22E9 x ackground "Strip" value (F 1) ET Concentration Value = (F AC (or AE) Fraction = (F2)/(BC = MDA/V = (G)/(A) dDC Fraction of DAC (or AE)	(A)) (H) Date Update (I) - (F1); (I) (J)	172) 172)	uCi/ml uCi/ml μCi/ml Yes/No	2.01E-15 3.35% 1.40E-15 2.33% YES	Yes	
Eciency = (C) x (D) ctivity (dpm) = (B)/(E) inimum Detectable Activity (momentration = (F)/(2.22Fe) x ackground "Strip" value (F.1) ET Concentration Value = (F.2)/(E) ET Concentration Value = (F.2)/(E) ET Concentration = (F.2)/(E) ET Concentration = (F.2)/(E) ET Concentration = (F.2)/(E) ET Concentration of (F.2)/(E) ET Concentr	(A)) (H) Date Update (I) - (F1); (i) (J) (J) (Goal)	172) 1<10%) Nøte: Unexpected DAC or AE	uCi/ml uCi/ml μCi/ml Yes/No fraction > 100% reg	2.01E-15 3.35% 1.40E-15 2.33% YES		
fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (oncentration = (F)/(2.22E9 x) ackground "Strip" value (F.1) IET Concentration Value = (F) AC (or AE) Fraction = (F2)/(I) DC = MDAV = (G)/(A) dDC Fraction of DAC (or AE) inal Count?	(A)) (H) Date Update (I) - (F1); (i) (J) (J) (Goal)	172) 172)	uCi/ml uCi/ml μCi/ml Yes/No fraction > 100% reg	2.01E-15 3.35% 1.40E-15 2.33% YES	tification.	Date: 3-27-19

correction must on form

		Section	on I - Collection Da	ta		
Date:	10/14/2018	Sample ID:	20181012-087	RV	VP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCt/ml (I) Breathing Zone:	General Area:	Work Area
Non-Occupational (EC):	IDA	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14uCi/mll	Radionuclides:	DU (Depleted	Uranium)
					David Ben	
Location:		FS12 SCA Boundary				
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA	Se	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:		S	erial No.	2591	Calibration Due Date:	3/27/2019
		Time			Flow Ra	te (Inm)
Sample Information	Co. a		Total (minutes)		Start	Stop
Collection Date 10/11/2018	7:30	Stop 17:00	570		60.0	60.0
10/11/2018	7:30	17:00	570		60	60
10/12/2010	7,50	Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
Sample Volume: Remarks: Mi		es identified are necessary to achie	x 114 we 10% of DAC or AE va		6.8E+04 Lit	ers (A)
		Secti	on II - Analysis Da	ta		
trument Information		Serial Number			tion Due Date	Carrie - 200
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
			Units	1et Count	Alpha 2nd Count	3rd Count
unt Date	ibles, Calculations, R	esuits	10/10	1st Count 10/12/2018 /0/14/		
unt Time (e.g., noon, 1300, et	ne)		10	8:00		
nple Count Time (Ts, Tb) = T			minutes	60		
tal Counts			counts	16		
nple Count Rate		4.0	cpm	0.27		
ckground Count Rate			cpm	0,05	V	
Volume (liters)	(A)		liters	6.8E+04	6.8E+04	6.8E+04
t count rate	(B)		cpm	0.22		
unter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
llection Efficiency	(D)		0.99	0.99	0.99	0,99
ficiency = (C) x (D)	(E)		cpm/dpm	0.72	0.72	0.72
tivity $(dpm) = (B)/(E)$	(F)		dpm	0.30		
nimum Detectable Activity (d		(Cb))/(E*T) (G)	dpm	0.25		
ncentration = (F)/(2.22E9 x (400 401	μCi/ml	1.99E-15 7.31E-18		
ckground "Strip" value (F.1)		4/20-4/21	uCi/ml	1.98E-15		
T Concentration Value = (H			uCi/mi	3.30%		
AC (or AE) Fraction = $(F2)/(\Gamma$			μCi/ml	1.67E-15		
DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	(J) = (J)/(I) (Goal<10%)	рсиш	2.79%		
nal Count?	(a)r(x) (Goal-107)	"	Yes/No	YES	Yes	
iai Count		Note: Unexpected DAC or AE f				1.00
		· · · · · · · · · · · · · · · · · · ·				10.14-18

Date:	10/14/2018	Sample ID:	20181012-0		RW	P: 2018-001	
Occupational (DAC):				/ml (1)	Breathing Zone:		TV-d-A
		2.00E-11		(1)		-	
Non-Occupational (EC):		$[DAC = 2.0E-11\mu Ci/ml (U-238), EC=$	6.0E-14μCi/ml]		Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 Wood Soil Sort Are	a		Sampled By:	Dave Ber	rres
Wearer:		NA			Activity Performed:	NA	
Monitored Workers:				NA	_		
	NA		Serial No.	- 1112	NA	Calibration Due Date:	NA
Lapel Pump Model:							
Air Pump Model:	LV-1		Serial No.		2773	Calibration Due Date:	3/27/2019
Sample Information		Time				Flow R:	ate (lpm)
Collection Date	Start	Stop	Total (minu	tes)		Start	Stop
10/11/2018	7:30	17:00	570			60.0	60.0
10/12/2018	7:30	17:00	570			60	60
		Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
			Minimum Air Sam	nla Volue	no: 1.1F±01 1	Liters	
Sample Volume: Remarks: Mir		(lpm) olumes identified are necessary to achie	eve 10% of DAC or A				
strument Information	-	Serial Number	ion ii Timaiyon		Calibrati	on Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736		12/13/2018	12/13/2018	0.726
N/A		N/A	N/A	_	N/A	N/A	N/A
	-					Alpha	
Varial	bles, Calculation	s, Results	Units	10	1st Count	2nd Count	3rd Count
ount Date				1	0/14/2018		
ount Time (e.g., noon, 1300, etc	c.)	3			14:00		
mple Count Time (Ts, Tb) = T			minutes		60		
otal Counts			counts		19		
mple Count Rate			cpm		0.32		A
ackground Count Rate			cpm		0.05		
r Volume (liters)		A)	liters		6.8E+04	6.8E+04	6.8E+04
et count rate	0	B)	cpm		0.27		
ounter Efficiency	(C		cpm/dpm		0.73	0.73	0.73
ollection Efficiency	(D		0.99		0.99	0.99	0.99
$ficiency = (C) \times (D)$	(E)		cpm/dpm		0.72	0,72	0.72
tivity (dpm) = (B)/(E)	(F)		dpm		0.37		
inimum Detectable Activity (dp	1.1	QRT(Cb))/(E*T) (G)	dpm		0.25		
oncentration = (F)/(2.22E9 x (A	-		μCi/ml		2.44E-15		
ckground "Strip" value (F.1)			uCi/ml		7.31E-18		
ET Concentration Value = (H)	- (F1); (F.	2)	uCi/ml		2.44E-15		
AC (or AE) Fraction = (F2)/(I)			011.1		0.01%		
DC = MDA/V = (G)/(A)	(J)	100/)	μCi/ml		1.67E-15		
DC Fraction of DAC (or AE) =	(3)/(1) (Goal<	1070)	VAV		0.01%		-
nal Count?		W. W	Yes/No		Yes		
Performed By:	David	Berres / Dow B	raction > 100% req	uires imm	ediate RSO notification		10-14-18
Reviewed By:		/*				Date:	

		Secti	on I - Collection Dat	a		
Date:	10/23/2018	Sample ID:	20181014-089	R	WP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (1)	Breathing Zone:	General Area:	Work Are
Non-Occupational (EC):	IDAC	C = 2.0E-11 µCi/ml (U-238), EC=	6.0E-14uCi/mII	Radionuclides	_	
	ĮD/IC		0.012-14µС1/т1	Radionuclides	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary		Sampled By:	David Ber	res
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA	- 1111		
Lapel Pump Model:	NA			3	W. Co	1000
		3	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	te (lnm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
10/13/2018	7:30	17:00	570		60.0	60.0
10/14/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample Vo	olume: 5.8E+03	Liters	
	sample volunes	identified are necessary to achie	on II - Analysis Data			
rument Information		Serial Number		Calibra	tion Due Date	
Instrument Type		Meter	Detector Meter		Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
	bles, Calculations, Res	ults	Units	1st Count	2nd Count	3rd Count
nt Date				10/23/2018		
nt Time (e.g., noon, 1300, etc				8:00		
ple Count Time (Ts, Tb) = T			minutes	60		
l Counts ple Count Rate			counts	25		
			cpm	0.42		
ground Count Rate /olume (liters)	as a		cpm	0.15		797.11
count rate	(A)		liters	6.8E+04	6.8E+04	6.8E+04
nter Efficiency	(B) (C)		cpm	0.27	144	
ection Efficiency	(D)		cpm/dpm 0.99	0.73	0.73	0.73
iency = (C) x (D)	(E)			0.99	0.99	0.99
vity $(dpm) = (B)/(E)$	(F)		cpm/dpm dpm	0.72	0.72	0.72
mum Detectable Activity (dp		b))/(E*T) (C)	dpm	0.39		
centration = $(F)/(2.22E9 \times (A))$		0))(L 1)(0)	μCi/ml	2.44E-15		
ground "Strip" value (F.1)		4/20-4/21	uCi/ml	7.31E-18		
Concentration Value = (H)		HAV THA	uCi/ml	2.44E-15		
(or AE) Fraction = (F2)/(I)	1 -11		SOUTH .	4.06%		
C = MDA/V = (G)/(A)	(J)		μCi/ml	2.56E-15		
Fraction of DAC (or AE) =			рсин	4.27%		
Count?	1-1-1- (3000-1070)		Yes/No	YES	Yes	
	N	ote: Unexpected DAC or AE fr				
Performed By:		1.	3e	MANAGE AND HOLIRCATIO		10-23-19
Reviewed By:	David Bo	es 15				6-29-18

Date 1003/2018	µCt/ml (1) NA NA (minutes) 570 570 1140 Ac or AE value. nalysis Data Detector 164736 N/A	Breathing Zone: Radionuclides: Sampled By: Activity Performed: NA 2773 Calibration Meter 12/13/2018 N/A 1st Count 19/137/2018	General Area: Du (Depleted Dave Bern NA Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lit Due Date 12/13/2018 N/A Alpha 2nd Count	Uranium) res NA 3/27/2019 Stop 60.0 60 60.0 ters (A) Efficiency (α) 0.726 N/A
Non-Occapational (EC)	(minutes) 570 570 1140 Air Sample Volum 1140 AC or AE value. allysis Data Detector 164736 N/A	Radionuclides: Sampled By: Activity Performed: NA 2773 Calibration Meter 12/13/2018 N/A Ist Count 18/137/2018	DU (Depleted Dave Berr NA Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit Due Date Detector 12/13/2018 N/A Alpha 2nd Count	Uranium) res NA 3/27/2019 Stop 60.0 60 60.0 ters (A) Efficiency (α) 0.726 N/A
Decision Fill Wood Soil Sort Arm Activity Performed Section Secti	NA N	Sampled By: Activity Performed: NA 2773 Calibration Meter 12/13/2018 N/A Ist Count 151 Count	Dave Berr NA Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit Due Date Detector 12/13/2018 N/A Alpha 2nd Count	NA 3/27/2019 ste (Ipm) Stop 60.0 60 60.0 ters (A) Efficiency (a) 0.726 N/A
NA	(minutes) 570 570 1140 Air Sample Volum 1140 AC or AE value. Petector 164736 N/A	Activity Performed: NA 2773 Calibration Meter 12/13/2018 N/A 1st Count 1st Count	Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit Due Date Detector 12/13/2018 N/A Alpha 2nd Count	NA 3/27/2019 ste (Ipm) Stop 60.0 60 60.0 ters (A) Efficiency (α) 0.726 N/A
Monitored Workers: NA	(minutes) 570 570 1140 Air Sample Volum 1140 AC or AE value. Petector 164736 N/A	NA 2773 Calibration Meter 12/13/2018 N/A 1st Count 19/137/2018 Sel 23 16/23 16	Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lit Due Date Detector 12/13/2018 N/A Alpha 2nd Count	3/27/2019 ste (Ipm) Stop 60.0 60 60.0 ters (A) Efficiency (a) 0.726 N/A
Monitored Workers	(minutes) 570 570 1140 Air Sample Volum 1140 AC or AE value. Petector 164736 N/A	NA 2773 Calibration Meter 12/13/2018 N/A 1st Count 19/137/2018 Sel 23 16/23 16	Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ers 6.8E+04 Lit Due Date Detector 12/13/2018 N/A Alpha 2nd Count	3/27/2019 ste (Ipm) Stop 60.0 60 60.0 ters (A) Efficiency (a) 0.726 N/A
Lapel Pump Model: NA	(minutes) 570 570 1140 Ac or AE value. allysis Data Detector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count	Start	3/27/2019 ste (Ipm) Stop 60.0 60 60.0 ters (A) Efficiency (a) 0.726 N/A
Air Pump Mode: LV-1 Serial No. 2773 Calibration Due Date: 3/27/2019	(minutes) 570 570 1140 Air Sample Volum 1140 AC or AE value. alysis Data Detector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count	Start	3/27/2019 ste (Ipm) Stop 60.0 60 60.0 ters (A) Efficiency (a) 0.726 N/A
Sample Information	(minutes) 570 570 1140 Air Sample Volum 1140 AC or AE value. alysis Data Detector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count	Start	Stop 60.0 60.0 60.0 ters (A) Efficiency (α) 0.726 N/A
Start Stop Total (minutes) Start Stop Total (minutes) Start Stop Go.0 Go.	570 570 1140 AC or AE value. allysis Data Detector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count	Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit Due Date Detector 12/13/2018 N/A Alpha 2nd Count	Stop 60.0 60 60.0 ters (A) Efficiency (α) 0.726 N/A
Collection Date Start Stop Total (minutes) Stop Go.0 Go.0	570 570 1140 AC or AE value. allysis Data Detector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count	60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit Due Date Detector 12/13/2018 N/A Alpha 2nd Count	60.0 60.0 ters (A) Efficiency (a) 0.726 N/A
10113/2018	570 1140 Air Sample Volum 1140 AC or AE value. allysis Data Detector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count	Avg. Flow Rate (lpm) ters 6.8E+04 Lit Due Date Detector 12/13/2018 N/A Alpha 2nd Count	60 60.0 ters (A) Efficiency (α) 0.726 N/A
10/14/2018	Air Sample Volum 1140 AC or AE value. Petector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count	Avg. Flow Rate (lpm) ters 6.8E+04 Lit Due Date Detector 12/13/2018 N/A Alpha 2nd Count	Efficiency (α) 0.726 N/A
Sample Volume: 60 (lpm) x 1140 minutes) 6.8E+04 Liters (A)	AC or AE value. allysis Data Detector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count	n Due Date Detector 12/13/2018 N/A Alpha 2nd Count	Efficiency (α) 0.726 N/A
Sample Volume: 60 (ipm) x 1140 (minutes) = 6.8E+04 Liters (A)	AC or AE value. Lalysis Data Detector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count 19/137/2018	6.8E+04 Lit	Efficiency (a) 0.726 N/A
Remarks Minimum sample volumes identified are necessary to achieve 10% of DAC or AE value.	alysis Data Detector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count 19/13/2018	Due Date Detector 12/13/2018 N/A Alpha 2nd Count	Efficiency (a) 0.726 N/A
Section II - Analysis Data Serial Number Calibration Due Date	alysis Data Detector 164736 N/A	Calibration Meter 12/13/2018 N/A 1st Count 19/13/2018	Due Date Detector 12/13/2018 N/A Alpha 2nd Count	0.726 N/A
Section II - Analysis Data	Detector 164736 N/A	Meter 12/13/2018 N/A 1st Count 19/137/2018	Detector 12/13/2018 N/A Alpha 2nd Count	0.726 N/A
Instrument Information	Detector 164736 N/A	Meter 12/13/2018 N/A 1st Count 19/137/2018	Detector 12/13/2018 N/A Alpha 2nd Count	0.726 N/A
Instrument Information Serial Number Detector Meter Detector Dete	Detector 164736 N/A	Meter 12/13/2018 N/A 1st Count 19/137/2018	Detector 12/13/2018 N/A Alpha 2nd Count	0.726 N/A
Instrument Type	N/A	12/13/2018 N/A 1st Count	12/13/2018 N/A Alpha 2nd Count	0.726 N/A
L-2929 158817 164736 12/13/2018 12/13/2018 0.726	N/A	12/13/2018 N/A 1st Count	N/A Alpha 2nd Count	N/A
N/A N/A	N/A	N/A 1st Count 19/13/2018 10/23/	Alpha 2nd Count	
Note: Unexpected DAC or AE Fraction = (F2/(C) Content Cont		10/13/2018 10/23	2nd Count	3rd Count
Variables, Calculations, Results Variables, Calculations, Results Variables, Calculations, Results Variables, Calculations Variables, Ca		10/13/2018 10/23		3rd Count
	(*		10	
Section Count Co			6 / 0	
minutes 60 min		10.00		
Description Count Rate Common Count Rate Common Count Rate Count Rat		60		
Comparison Count Rate Cou				
First Countrate Countra				
Count rate (B) Cpm 0.13 Cpm 0.73 0.74 0.75 0.7			COTION	6 95 104
Contract Contract			6.8E+04	0.0E+04
Some Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Collection Efficiency Efficiency			0.73	0.73
Solution Efficiency (D) (E) Cpm/dpm 0.72 0.72 0.72 0.72				
Control Con				-
tartity (apin) - (By(E)) (F) (F) (F) (F) (F) (F) (F) (F) (F) (41.2	
DC MDA/V = (G)/(A) (J) μCi/ml 1.22E-15 μCi/ml 1.21E-15 μCi/ml μCi/ml 1.21E-15 μCi/ml 1.21E-15 μCi/ml 1.21E-15 μCi/m				
Section and Count? Strip* value (F.I) Date Updated 4/20-4/21 uCi/ml 7.31E-18 uCi/ml 1.21E-15 uCi/ml uCi/ml uCi/ml uCi/ml uCi/ml uCi/ml uCi/ml uCi/ml uC	1			
ET Concentration Value = (H) - (F1); (F2) uCi/ml 1.21E-15 AC (or AE) Fraction = (F2)/(I) 0.01% DC = MDA/V = (G)/(A) (J) μCi/ml 2.56E-15 DC Fraction of DAC (or AE) = (J)/(I) (Goal<10%) 0.01% Paral Count? Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.	_			11
AC (or AE) Fraction = (F2)/(I)	1	1.21E-15		
DC = MDA/V = (G)/(A) (J) μCi/ml 2.56E-15 DC Fraction of DAC (or AE) = (J)/(I) (Goal<10%) 0.01% nal Count? Yes/No Yes Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.		0.01%		
DC Fraction of DAC (or AE) = (J)/(I) (Goal<10%) nal Count? Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.				
nal Count? Yes/No Yes Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.		0.01%		
Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.				
	0% requires imm	nediate RSO notification.		
Performed By: David Berres / Dan B				. 40.10
			Date:	10-23-18
Reviewed By: Ed Spemers 15	1		0.73 0.99 0.72 0.19 0.39 1.22E-15 7.31E-18 1.21E-15 0.01% 2.56E-15 0.01% Yes	1 0.73 0.73 0.73 0.99 0.99 0.99 0.99 0.99 0.72 0.72 0.72 0.72 0.72 0.19 0.39 1.22E-15 7.31E-18 1.21E-15 0.01% 2.56E-15 0.01% Yes 00% requires immediate RSO notification.

		Sect	ion I - Collection Dat	a		
Date:	10/23/2018	Sample ID:	20181014-091	RV	VP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (1)	Breathing Zone:	General Area:	Work Are
Non-Occupational (EC):	ID	AC = 2.0E-11µCi/ml (U-238), EC=	6.0E-14uCi/ml)	Radionuclides:		
finan.		EGIO DI LEI (D				
_			ily)		David Ber	rres
		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	3666	Calibration Due Date:	8/22/2019
Sample Information		Time			Flow Ra	
Collection Date	Start	Stop	Total (minutes)		Start	Stop
10/13/2018	7:30	17:00	570	_	60.0	60.0
10/14/2018	7:30	17:00	570	_	60	60
10/14/2010	7,50	Total Time (Tc):	1140	_	Avg. Flow Rate (lpm)	60.0
		(-3)	7.10		Trig. Tion Nate (ipin)	00.0
U. U. Jaylin			Minimum Air Sample Vo		Liters	
Sample Volume:	60 (lpr	m)	x 1140	(minutes) =	6.8E+04 Lit	ers (A)
Remarks: Mi	nimum sample volur	nes identified are necessary to achie	ve 10% of DAC or AE valu	ie.		
		Sect	ion II - Analysis Data	1		
rument Information		Serial Number	ber Calibratio		ion Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varia	bles, Calculations, 1	Results	Units	1st Count	2nd Count	3rd Count
nt Date				10/23/2018		
nt Time (e.g., noon, 1300, et	e.)			12:30		
ple Count Time (Ts, Tb) = T			minutes	60		
l Counts			counts	18		
ple Count Rate			cpm	0.30		
ground Count Rate			cpm	0.15		
/olume (liters)	(A)		liters	6.8E+04	6.8E+04	6.8E+04
count rate	(B)		cpm	р	0.02.01	0.02
nter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ection Efficiency	(D)		0.99	0.99	0.99	0.99
	(-)		cpm/dpm	0.72	0.72	0.72
	(E)					0.72
$iency = (C) \times (D)$	(E)					
riency = (C) x (D) vity (dpm) = (B)/(E)	(F)	C(Ch))/(F*T) (G)	dpm	#VALUE!		
elency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dpm)	(F) om) = (3+4.65*SQR	T(Cb))/(E*T) (G)	dpm dpm	#VALUE! 0.39		
eiency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A)	(F) om) = (3+4.65*SQR' (H)		dpm dpm μCi/ml	#VALUE! 0.39 #VALUE!		
eiency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A ground "Strip" value (F.1)	(F) om) = (3+4.65*SQR* (H) Date Updated	F(Cb))/(E*T) (G) 4/20-4/21	dpm dpm μCi/ml uCi/ml	#VALUE! 0.39 #VALUE! 7.31E-18		
ciency = (C) × (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 × (A cground "Strip" value (F.1) Concentration Value = (H)	(F) om) = (3+4.65*SQR' oh) (H) Date Updated - (F1); (F2)		dpm dpm μCi/ml	#VALUE! 0.39 #VALUE! 7.31E-18 #VALUE!		
eiency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A reground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	(F) om) = (3+4.65*SQR' h)) (H) Date Updated - (F1); (F2)		dpm dpm µCi/ml uCi/ml uCi/ml	#VALUE! 0.39 #VALUE! 7.31E-18 #VALUE! #VALUE!		
ciency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A cground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(F) om) = (3+4.65*SQR' ob) (H) Date Updated - (F1); (F2)	4/20-4/21	dpm dpm μCi/ml uCi/ml	#VALUE! 0.39 #VALUE! 7.31E-18 #VALUE! #VALUE! 2.56E-15		
tiency = (C) x (D) wity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A cground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(F) om) = (3+4.65*SQR' ob) (H) Date Updated - (F1); (F2)	4/20-4/21	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml	#VALUE! 0.39 #VALUE! 7.31E-18 #VALUE! #VALUE! 2.56E-15 4.27%		
ciency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A cground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(F) om) = (3+4.65*SQR' ob) (H) Date Updated - (F1); (F2)	4/20-4/21	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml Yes/No	#VALUE! 0.39 #VALUE! 7.31E-18 #VALUE! #VALUE! 2.56E-15 4.27% YES	Yes	
tiency = (C) x (D) wity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A cground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(F) om) = (3+4.65*SQR' ob) (H) Date Updated - (F1); (F2)	4/20-4/21	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml Yes/No	#VALUE! 0.39 #VALUE! 7.31E-18 #VALUE! #VALUE! 2.56E-15 4.27% YES		
iency = (C) x (D) vity (dpm) = (B)/(E) mum Detectable Activity (dp pentration = (F)/(2.22E9 x (A ground "Strip" value (F.1) Concentration Value = (H) (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = Count?	(F) om) = (3+4.65*SQR* ob) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%	4/20-4/21 6) Note: Unexpected DAC or AE for	dpm dpm μCi/ml uCi/ml μCi/ml γEs/No raction > 100% requires in	#VALUE! 0.39 #VALUE! 7.31E-18 #VALUE! #VALUE! 2.56E-15 4.27% YES	1.	10. 22. 10
iency = (C) x (D) wity (dpm) = (B)/(E) mum Detectable Activity (dp centration = (F)/(2.22E9 x (A cground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = Count?	(F) om) = (3+4.65*SQR* ob) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%	4/20-4/21	dpm dpm μCi/ml uCi/ml μCi/ml γEs/No raction > 100% requires in	#VALUE! 0.39 #VALUE! 7.31E-18 #VALUE! #VALUE! 2.56E-15 4.27% YES	1.	10-23-18

			ion I - Collection 1		11/1/18		
	11/1/2018	Sample ID:	20181014-090	099	RWP:	2018-001	
Occupational (DAC):	Limit:	2.00E-11	μCı/m	(I) Breathi	ng Zone:	General Area:	Work Area
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	-6.0E-14μCi/ml]	Radio	nuclides:	DU (Depleted	Uranium)
Location:		FS12 Wood Soil Sort Are		Sampled I	-	Dave Ber	
-				Activity Perfo		NA	
Monitored Workers:		Tur		NA	med.	HA	
Lapel Pump Model:			Serial No.	177	-	D 2 B B	***
	7.11		10.00	NA		llibration Due Date:	
Air Pump Model:	LV-1		Serial No.	2773	Ca	libration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	ite (lpm)
Collection Date	Start	Stop	Total (minutes			Start	Stop
10/22/2018	7:30	17:00	570			60.0	60.0
10/23/2018	7:30	17:00	570			60	60
		Total Time (Tc):	1140		A	vg. Flow Rate (lpm)	60.0
			Minimum Air Sample	Volume: 1.7E	+01 Liter		
n	(0 (1)			A 100 TO THE REAL PROPERTY.			and the
Sample Volume:	60 (ipm)		х	140 (minutes)	-	6.8E+04 Lit	ers (A)
Remarks: Min	imum sample volumes	identified are necessary to achie	eve 10% of DAC or AE	value.			
		Sect	ion II - Analysis I	ata			
rument Information		Serial Number			Calibration D	ue Date	
Instrument Type		Meter	Detector	M	eter	Detector	Efficiency (a)
L-2929		158817	164736	12/1	3/2018	12/13/2018	0.726
N/A		N/A	N/A	1	I/A	N/A	N/A
						Alpha	
Variab	les, Calculations, Res	ults	Units	1st Count		2nd Count	3rd Count
nt Date				10/31/2018			
nt Time (e.g., noon, 1300, etc.	.)			10:00			
ple Count Time (Ts, Tb) = T			minutes	60			
l Counts			counts	10			
ple Count Rate			cpm	0.17			
kground Count Rate			cpm	0.13			
Volume (liters)	(A)		liters	6.8E+04		6.8E+04	6.8E+04
count rate	(B)		cpm	0.04			
nter Efficiency	(C)		cpm/dpm	0.73		0.73	0.73
ection Efficiency	(D)		0.99	0.99		0.99	0.99
ection Efficiency	(E)		cpm/dpm	0.72		0.72	0.72
	(E)						
ciency = (C) x (D)	(F)		dpm	0.05			-
ciency = $(C) \times (D)$ vity $(dpm) = (B)/(E)$	(F)	(b))/(E*T) (G)	dpm dpm	0.05 0.37			
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpm	(F) m) = (3+4.65*SQRT(C	(b))/(E*T) (G)		1.57.51			
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpm) centration = (F)/(2.22E9 x (A)	(F) m) = (3+4.65*SQRT(C	(Eb))/(E*T) (G) 4/20-4/21	dpm	0.37			
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) kground "Strip" value (F.1)	(F) m) = (3+4.65*SQRT(C)) (H) Date Updated		dpm μCi/ml	0.37 3.36E-16			
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) kground "Strip" value (F.1) " Concentration Value = (H)	(F) m) = (3+4.65*SQRT(C)) (H) Date Updated		dpm μCi/ml uCi/ml	0.37 3.36E-16 7.31E-18			
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) forground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	(F) m) = (3+4.65*SQRT(C)) (H) Date Updated		dpm μCi/ml uCi/ml	0.37 3.36E-16 7.31E-18 3.29E-16 0.00% 2.42E-15			
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) forground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(F) m) = (3+4.65*SQRT(C))) (H) Date Updated (F1); (F2)		dpm μCi/ml uCi/ml uCi/ml	0.37 3.36E-16 7.31E-18 3.29E-16 0.00%			
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) for a contration Value = (H)- C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(F) m) = (3+4.65*SQRT(C))) (H) Date Updated (F1); (F2)		dpm μCi/ml uCi/ml uCi/ml	0.37 3.36E-16 7.31E-18 3.29E-16 0.00% 2.42E-15			
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) kground "Strip" value (F.1) Concentration Value = (H)- C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(F) m) = (3+4.65*SQRT(C))) (H) Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)		dpm μCi/ml uCi/ml uCi/ml μCi/ml γEi/ml	0.37 3.36E-16 7.31E-18 3.29E-16 0.00% 2.42E-15 0.01% Yes	otification.		
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) kground "Strip" value (F.1) T Concentration Value = (H)- C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (I) I Count?	(F) m) = (3+4.65*SQRT(C))) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 fote: Unexpected DAC or AE for	dpm μCi/ml uCi/ml uCi/ml μCi/ml γes/No raction > 100% requir	0.37 3.36E-16 7.31E-18 3.29E-16 0.00% 2.42E-15 0.01% Yes	otification.		
inency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H)- C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (I) Count?	(F) m) = (3+4.65*SQRT(C))) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 fote: Unexpected DAC or AE for	dpm μCi/ml uCi/ml uCi/ml μCi/ml γes/No raction > 100% requir	0.37 3.36E-16 7.31E-18 3.29E-16 0.00% 2.42E-15 0.01% Yes	otification.	Date:	10-31-18
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) kground "Strip" value (F.1) T Concentration Value = (H)- C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (I) I Count?	(F) m) = (3+4.65*SQRT(C))) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	dpm μCi/ml uCi/ml uCi/ml μCi/ml γes/No raction > 100% requir	0.37 3.36E-16 7.31E-18 3.29E-16 0.00% 2.42E-15 0.01% Yes	otification.		10-31-18

Occupational (DAC): ☐ Limit: 6.00E-14 Non-Occupational (EC): ☑ [DAC = 2.0E-11μCi/ml (U-238), EC=6.0 Location: FS12 SCA Boundary Wearer: NA Monitored Workers:	NA al No. Total (minutes) 570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. in H - Analysis Data Detector 164736	2591 arne: 5.0E+03 Lie (minutes) = Calibration Meter	General Area: DU (Depleted David Ber NA Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm)	NA 3/27/2019
Non-Occupational (EC):	NA al No. Total (minutes) 570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. Detector 164736	Radionuclides: Sampled By: Activity Performed: NA 2591 Lime: 5.0E+03 Lit (minutes) = Calibration Meter	DU (Depleted David Ber NA Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit	NA 3/27/2019 ste (lpm) Stop 60.0 60 60.0
Location: FS12 SCA Boundary	NA al No. Total (minutes) 570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. in H - Analysis Data Detector 164736	Sampled By: Activity Performed: NA 2591 Ime: 5.0E+03 Lime (minutes) = Calibration Meter	David Ber NA Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit	NA 3/27/2019 Stop 60.0 60 60.0
Wearer: NA NA	al No. Total (minutes) 570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. In H - Analysis Data Detector 164736	NA 2591 Ime: 5.0E+03 Lit (minutes) = Calibration Meter	Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit	NA 3/27/2019 Inte (Ipm) Stop 60.0 60 60.0
Monitored Workers: Lapel Pump Model: NA Serial Namber	al No. Total (minutes) 570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. In H - Analysis Data Detector 164736	NA 2591 Time: 5.0E+03 Lit (minutes) = Calibration Meter	Calibration Due Date: Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit	3/27/2019 ste (lpm) Stop 60.0 60 60.0
Monitored Workers: Lapel Pump Model:	al No. Total (minutes) 570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. In H - Analysis Data Detector 164736	2591 arne: 5.0E+03 Lie (minutes) = Calibration Meter	Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit	3/27/2019 ste (lpm) Stop 60.0 60 60.0
Lapel Pump Model: NA Serial Number	Total (minutes) 570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value n H - Analysis Data Detector 164736	2591 arne: 5.0E+03 Lie (minutes) = Calibration Meter	Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit	3/27/2019 ste (lpm) Stop 60.0 60 60.0
Sample Information	Total (minutes) 570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value n H - Analysis Data Detector 164736	2591 arne: 5.0E+03 Lie (minutes) = Calibration Meter	Calibration Due Date: Flow Ra Start 60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit	3/27/2019 ste (lpm) Stop 60.0 60 60.0
Sample Information	Total (minutes) 570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. Detector 164736	me: 5.0E+03 Lit (minutes) = Calibration Meter	Start	Stop 60.0 60 60.0
Collection Date Start Stop	570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. n H - Analysis Data Detector 164736	me: 5.0E+03 Lit (minutes) = Calibration Meter	Start	Stop 60.0 60 60
10/16/2017	570 570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. n H - Analysis Data Detector 164736	me: 5.0E+03 Lit (minutes) = Calibration Meter	60.0 60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit	60.0 60 60.0
10/17/2018 7:30 17:00	570 1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. n H - Analysis Data Detector 164736	me: 5.0E+03 Lit (minutes) = Calibration Meter	60 Avg. Flow Rate (lpm) ters 6.8E+04 Lit	60 60.0
Sample Volume: 60 (lpm)	1140 Minimum Air Sample Volu x 1140 10% of DAC or AE value. n H - Analysis Data Detector 164736	me: 5.0E+03 Lit (minutes) = Calibration Meter	Avg. Flow Rate (lpm) ters 6.8E+04 Lit	60.0
Sample Volume: 60 (lpm) Remarks: Minimum sample volumes identified are necessary to achieve Section Strument Information Serial Number Instrument Type Meter L-2929 158817	Minimum Air Sample Volu x 1140 10% of DAC or AE value. n H - Analysis Data Detector 164736	me: 5.0E+03 Lit (minutes) = Calibration Meter	ters 6.8E+04 Lit	
Sample Volume:	x 1140 10% of DAC or AE value. In II - Analysis Data Detector 164736	(minutes) =	6.8E+04 Lit	ters (A)
Strument Information Serial Number Instrument Type Meter L-2929 158817	Detector 164736	Meter		
Instrument Type Meter L-2929 158817	164736	Meter		
L-2929 158817	164736		Detector	
			Detector	Efficiency (a)
		1/10/2019	1/10/2019	0.726
	N/A	N/A	N/A	N/A
			Alpha	,
Variables, Calculations, Results	Units	1st Count	2nd Count	3rd Count
unt Date		10/19/2018 10/29/18	10	
unt Time (e.g., noon, 1300, etc.)		8:00	411	
mple Count Time (Ts, Tb) = T	minutes	60		
tal Counts	counts	17		
nple Count Rate	cpm	0.28		
ckground Count Rate	cpm	0.10		
Volume (liters) (A)	liters	6.8E+04	6.8E+04	6.8E+04
t count rate (B)	cpm	0.18		
unter Efficiency (C)	cpm/dpm	0.73	0,73	0.73
llection Efficiency (D)	0.99	0,99	0.99	0.99
	cpm/dpm	0.72	0.72	0.72
tivity $(dpm) = (B)/(E)$ (F)	dpm	0.26		
nimum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G)	dpm	0.33		
ncentration = $(F)/(2.22E9 \times (A))$ (H)		1.68E-15		U
ckground "Strip" value (F.1) Date Updated 4/20-4/21	uCi/ml	7.31E-18		
T Concentration Value = (H) - (F1); (F2)	uCi/ml	1.67E-15		
AC (or AE) Fraction = (F2)/(I)		2.79%		
DC = MDA/V = (G)/(A) (J)	μCi/ml	2.18E-15		
OC Fraction of DAC (or AE) = (J)/(I) (Goal<10%)	6-4/10	3.63%		
al Count?	Yes/No	YES	Yes	
Note: Unexpected DAC or AE frac				
Performed By: David Berres / Dowl Ba			Date:	10-29-18

Non-Occupational (EC):			
Non-Occupational (EC):	RWP:	2018-001	
Non-Occupational (EC):	Breathing Zone:	General Area:	Work Area:
Location: FS12 Wood Soil Sort Area Activity	Radionuclides:	DU (Depleted	(Jranium)
NA	TOY ! I !		
Monitored Workers: NA Serial No. NA	npled By:	Dave Berry	es
Lapel Pump Model: LV-1 Serial No. NA	Performed:	NA	
Air Pump Model: LV-1 Serial No. 2773			
Air Pump Model: LV-1 Serial No. 2773	Cr	alibration Due Date:	NA
Sample Information Start Stop Total (minutes)			
Collection Date Start Stop Total (minutes)		alibration Due Date:	312112019
10/16/2018		Flow Rat	ie (lpm)
10/17/2018 7:30 17:00 570	1 1	Start	Stop
Total Time (Fe): 1140		60.0	60.0
Sample Volume: 60 (lpm) x 1140 (min Remarks: Minimum sample volumes identified are necessary to achieve 10% of DAC or AE value.		60	60
Sample Volume: 60	A	vg. Flow Rate (lpm)	60.0
Section II - Analysis Data	1.5E+01 Liter:	s	
Section II - Analysis Data	nutes) =	6.8E+04 Lite	ers (A)
Section II - Analysis Data			
Instrument Type			
Instrument Type			
L-2929 158817 164736 N/A	Calibration D	Due Date	
N/A	Meter	Detector	Efficiency (a)
Variables, Calculations, Results Units 1st Count 10/29/20 int Date 10/29/20 10/20 int Time (e.g., noon, 1300, etc.) 10/20 uple Count Time (Ts, Tb) = T minutes 60 al Counts counts 13 uple Count Rate cpm 0.22 kground Count Rate cpm 0.10 Volume (liters) (A) liters 6.8E+0 count rate (B) cpm 0.12 count rate (B) cpm 0.73 ection Efficiency (D) 0.99 0.99 ciency = (C) x (D) (E) cpm/dpm 0.72 vity (dpm) = (B)(E) (F) dpm 0.33 centration = (F)/(2.22E9 x (A)) (H) μCi/ml 1.07E- kground "Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-1 C Concentration Value = (H) - (F1); (F2) uCi/ml 1.06E- C (or AE) Fraction = (F2)/(I) 0.01% 0.01%	12/13/2018	12/13/2018	0.726
Int Date	N/A	N/A	N/A
Int Date		Alpha	
Int Time (e.g., noon, 1300, etc.) Int Time (e.g., noon, 1300, etc.) Integration I		2nd Count	3rd Count
Index Ind			
Counts			
apple Count Rate cpm 0.22 kground Count Rate cpm 0.10 Volume (liters) (A) liters 6.8E+0 count rate (B) cpm 0.12 inter Efficiency (C) cpm/dpm 0.73 dection Efficiency (D) 0.99 0.99 ciency = (C) x (D) (E) cpm/dpm 0.72 vity (dpm) = (B)/(E) (F) dpm 0.16 imum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.33 icentration = (F)/(2.22E9 x (A)) (H) μCi/ml 1.07E- kground "Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-1 C Concentration Value = (H) - (F1); (F2) uCi/ml 1.06E- C (or AE) Fraction = (F2)/(I) 0.01% C = MDA/V = (G)/(A) (J) μCi/ml 2.18E-			
kground Count Rate cpm 0.10 Volume (liters) (A) liters 6.8E+0 count rate (B) cpm 0.12 nter Efficiency (C) cpm/dpm 0.73 ection Efficiency (D) 0.99 0.99 ciency = (C) x (D) (E) cpm/dpm 0.72 vity (dpm) = (B)/(E) (F) dpm 0.16 imum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.33 centration = (F)/(2.22E9 x (A)) (H) μCi/ml 1.07E- kground "Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-1 C Concentration Value = (H) - (F1); (F2) uCi/ml 1.06E- C (or AE) Fraction = (F2)(I) 0.01% C = MDA/V = (G)/(A) (J) μCi/ml 2.18E-			
Volume (liters) (A) liters (BB) count rate (B) cpm 0.12 cpm/dpm 0.73 lection Efficiency (C) cpm/dpm 0.99 0.99 ciency = (C) x (D) (E) cpm/dpm 0.72 vity (dpm) = (B)/(E) (F) dpm 0.16 imum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.33 centration = (F)/(2.22E9 x (A)) (H) (F) (F) (F) (F) (F) (F) (
count rate (B) cpm 0.12 nter Efficiency (C) cpm/dpm 0.73 ection Efficiency (D) 0.99 0.99 ciency = (C) x (D) (E) cpm/dpm 0.72 vity (dpm) = (B)/(E) (F) dpm 0.16 imum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.33 centration = (F)/(2.22E9 x (A)) (H) μCi/ml 1.07E- kground "Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-1 Concentration Value = (H) - (F1); (F2) uCi/ml 1.06E- C (or AE) Fraction = (F2)/(I) 0.01% C = MDA/V = (G)/(A) (J) μCi/ml 2.18E-	4	COETON	6 95104
Concentration Concentrati	-	6.8E+04	6.8E+04
dection Efficiency (D) 0.99 0.99 ciency = (C) x (D) (E) cpm/dpm 0.72 dvity (dpm) = (B)/(E) (F) dpm 0.16 dimum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.33 detentration = (F)/(2.22E9 x (A)) (H) μCi/ml 1.07E- kground "Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-1 F Concentration Value = (H) - (F1); (F2) uCi/ml 1.06E- C (or AE) Fraction = (F2)/(I) 0.01% C = MDA/V = (G)/(A) (J) μCi/ml 2.18E-		0,73	0.73
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		0,99	0.73
viviy (dpm) = (B)/(E) (F) dpm 0.16		0,72	0.72
$\begin{array}{llllllllllllllllllllllllllllllllllll$			7,72
Concentration = (F)/(2.22E9 x (A)) (H) μCi/ml 1.07E- kground "Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-1 Concentration Value = (H) - (F1); (F2) uCi/ml 1.06E- C (or AE) Fraction = (F2)/(I) 0.01% C = MDA/V = (G)/(A) (J) μCi/ml 2.18E-			
	15		
Γ Concentration Value = (H) - (F1); (F2) uCi/ml 1.06E- C (or AE) Fraction = (F2)/(I) 0.01% C = MDA/V = (G)/(A) (J) μCi/ml 2.18E-			
$C = MDA/V = (G)/(A)$ (J) $\mu Ci/ml$ 2.18E-			
$C = MDA/V = (G)/(A)$ (J) $\mu Ci/ml$ 2.18E-	6		
al Count? Yes/No Yes			
Note: Unexpected DAC or AE fraction > 100% requires immediate	RSO notification.		
- 10 10 10			A C 6 C 7
Performed By: David Barro / Daw Be		Date: /c	0.29.18

Limit: 6.00E-14 [DAC = 2.0E-11μCi/ml (U-238), E FS12 Block House (Box NA V-1 Time Start Stop 7:30 17:00 Total Time (Tc) 50 (lpm) n sample volumes identified are necessary to accept to the sample volumes identified are necessary to accept to the sample volumes identified are necessary to accept to the sample volumes identified are necessary to accept to the sample volumes identified are necessary to accept the sa	Serial No. Serial No. Serial No. Total (minum 570 570 570 1140 Minimum Air San	/ml (1) Breat Rad Sampleo Activity Per NA NA 3666 https://mline.com/sampleo/de/de/de/de/de/de/de/de/de/de/de/de/de/	By: Ca Ca A Liter	DU (Depleted David Ber NA alibration Due Date: Ilibration Due Date: Flow Ra Start 60.0 60 vg. Flow Rate (lpm)	NA 8/22/2019
Limit: 6.00E-14 [DAC = 2.0E-11μCi/ml (U-238), E FS12 Block House (Boundary Management of the second of the sec	Serial No. Serial No. Serial No. Serial No. Total (minum 570 570 1140 Minimum Air San x	/ml (1) Breat Rad Sampleo Activity Per NA NA 3666 https://mline.com/sampleo/de/de/de/de/de/de/de/de/de/de/de/de/de/	onuclides:	DU (Depleted David Ber NA alibration Due Date: Ilibration Due Date: Flow Ra Start 60.0 60 vg. Flow Rate (lpm)	NA 8/22/2019 ste (lpm) Stop 60.0 60 60.0
FS12 Block House (Box NA NA V-1 Time Start Stop 7:30 17:00 7:30 17:00 Total Time (Te) 50 (lpm) n sample volumes identified are necessary to ac	Serial No. Serial No. Total (minuments) 570 570 1140 Minimum Air San	Samplec Activity Per NA NA 3666 Ites) Inple Volume: 5.0 1140 (minute AE value.	By: Ca Ca A Liter	David Ber NA ulibration Due Date: ulibration Due Date: Flow Ra Start 60.0 60 vg. Flow Rate (lpm)	NA 8/22/2019 ate (Ipm) Stop 60.0 60
NA V-1 Time Start Stop 7:30 17:00 7:30 17:00 Total Time (Tc) (lpm) n sample volumes identified are necessary to ac	Serial No. Serial No. Total (minimate of the series) S70 S70 S70 Minimate of the series of the seri	NA NA 3666 tes) ple Volume: 5.0 1140 (minute AE value.	Ca Ca A Liter	NA dibration Due Date: Flow Ra Start 60.0 60 vg. Flow Rate (lpm)	NA 8/22/2019 ste (Ipm) Stop 60.0 60
NA NA	Serial No. Total (minute 570 570 570 1140 Minimum Air San x thieve 10% of DAC or a serial No.	NA NA 3666 ttes) ple Volume: 5.0 1140 (minute AE value.	Ca Ca La A	Ilibration Due Date: Flow Ra Start 60.0 60 vg. Flow Rate (lpm)	8/22/2019 ste (Ipm) Stop 60.0 60 60.0
Time	Serial No. Total (minute 570 570 570 1140 Minimum Air San x thieve 10% of DAC or a serial No.	NA 3666 ttes) ple Volume:5.0 1140	Ca A	Flow Rate (lpm) start 60.0 60 vg. Flow Rate (lpm)	8/22/2019 ste (Ipm) Stop 60.0 60 60.0
Time	Serial No. Total (minute 570 570 570 1140 Minimum Air San x thieve 10% of DAC or a serial No.	NA 3666 ttes) ple Volume:5.0 1140	Ca A	Flow Rate (lpm) start 60.0 60 vg. Flow Rate (lpm)	8/22/2019 ste (Ipm) Stop 60.0 60 60.0
Time	Serial No. Total (minute 570 570 570 1140 Minimum Air San x thieve 10% of DAC or a serial No.	asia de la comple Volume: 5.0 1140 (minute AE value.	Ca A	Flow Rate (lpm) start 60.0 60 vg. Flow Rate (lpm)	8/22/2019 ste (Ipm) Stop 60.0 60 60.0
Time	Total (minus 570 570 570 1140 Minimum Air San x	nple Volume: 5.0 1140 (minute	A E+03 Liter	Flow Ra Start 60.0 60 vg. Flow Rate (lpm)	Stop 60.0 60 60
Start Stop 7:30 17:00 7:30 17:00 Total Time (Tc. 50 (lpm) n sample volumes identified are necessary to ac	570 570 1140 Minimum Air San x	nple Volume: 5.0 1140 (minute AE value.	E+03 Liter	Start 60.0 60 vg. Flow Rate (lpm)	Stop 60.0 60 60.0
7:30 17:00 7:30 17:00 Total Time (Tc) 60 (lpm) n sample volumes identified are necessary to ac	570 570 1140 Minimum Air San x	nple Volume: 5.0 1140 (minute AE value.	E+03 Liter	60.0 60 vg. Flow Rate (lpm)	60.0 60 60.0
7:30 17:00 Total Time (To	570 1140 Minimum Air San x chieve 10% of DAC or	1140 (minute AE value.	E+03 Liter	60 vg. Flow Rate (lpm)	60 60.0
Total Time (To	Minimum Air San x hieve 10% of DAC or	1140 (minute AE value.	E+03 Liter	vg. Flow Rate (lpm)	60.0
(lpm) n sample volumes identified are necessary to ac	Minimum Air San x chieve 10% of DAC or	1140 (minute AE value.	E+03 Liter	s	
n sample volumes identified are necessary to ac	x thieve 10% of DAC or	1140 (minute AE value.			ers (A)
n sample volumes identified are necessary to ac	thieve 10% of DAC or	AE value.) =	6.8E+04 Lit	ers (A)
Se					
Se					
	ection II - Analysi				
Serial Number		s Data			
			Calibration I	Due Date	
Meter	Detecto		Meter	Detector	Efficiency (a)
158817	164736	1	10/2019	1/10/2019	0.726
N/A	N/A		N/A	N/A	N/A
				Alpha	
Calculations, Results	Units	1st Count		2nd Count	3rd Count
			-		
	100				
	-			C 017:04	6.017.04
				6.8E+04	6.8E+04
					0.72
(C)					0.73
					0.99
				0.72	0.72
(F)					
(H)				-	
); (F2)	uCi/ml				
(J)	μCi/ml				
(Goal<10%)	100				
	The second second			Yes	
Note: Unexpected DAC or A	E fraction > 100% red	uires immediate RSC	notification.		-
10-10	Pa -				. 00 16
avid Derres Dans	Ser			Date:	10-29-18
1					
((());	(A) (B) (C) (D) (E) (F) (3+4.65*SQRT(Cb))/(E*T) (G) (H) e Updated 4/20-4/21 ; (F2) (J)) (Goal<10%)	minutes counts cpm cp	10/29/2018 12:30 minutes 60 counts 7 cpm 0.12 cpm 0.10 liters 6.8E+04 (B) cpm 0.02 (C) cpm/dpm 0.73 (D) 0.99 0.99 0.99 (E) cpm/dpm 0.72 dpm 0.02 (F) dpm 0.02 (F) dpm 0.02 (F) dpm 0.03 (H) μCi/ml 1.53E-16 e Updated 4/20-4/21 uCi/ml 1.53E-16 (F2) uCi/ml 1.45E-16 0.24% (J) μCi/ml 2.18E-15 0.24% (J) μCi/ml 2.18E-15 0.24% (J) μCi/ml 2.18E-15 0.363% Yes/No YES	10/29/2018 12:30	10/29/2018 12:30

			on I - Collection 20181019-09		RWP	2018-001	
	10/30/2018	Sample ID:	μC1/n		Breathing Zone:		Work Area:
Occupational (DAC):	Limit:	6.00E-14	111	(-)	_		
Non-Occupational (EC):	Ī	DAC = 2.0E-11 µCi/ml (U-238), EC=	6.0E-14μCi/ml]		Radionuclides:	DU (Depleted	Uranium)
Location		FS12 SCA Boundary		Sa	impled By:	David Ber	res
		130			ty Performed:	NA	
Wearer:		NA.					
Monitored Workers:				NA		Law of the Sales	MA
Lapel Pump Model:	NA	S	Serial No.	NA		Calibration Due Date:	
Air Pump Model:	LV-1	S	Serial No.	2591		Calibration Due Date:	3/27/2019
		Time				Flow Ra	ite (lpm)
Sample Information	con I	Stop	Total (minute	(2)		Start	Stop
Collection Date	7:30	17:00	570		1	60.0	60.0
10/18/2018	7:30	17:00	570			60	60
10/19/2018	7.30	Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
			Minimum Air Sam			iters	= 40
Sample Volume:	60	(lpm)	x	1140 (r	minutes) =	6.8E+04 Li	ters (A)
Remarks: Mir	nimum sample vo	lumes identified are necessary to achie	eve 10% of DAC or A	E value.			
1000000			A Company of the Comp	V 10.			
		Sect	tion II - Analysis	Data	150.00		
trument Information		Serial Number				n Due Date	Efficiency (a)
Instrument Type		Meter	Detector	-	Meter 1/10/2019	1/10/2019	0.726
L-2929		158817	164736	-	N/A	N/A	N/A
N/A		N/A	N/A		IVA	Alpha	
30.0		= - 1	Units	1st C	ount I	2nd Count	3rd Count
	bles, Calculation	s, Results	Units	10/30.			
unt Date				8:0			
unt Time (e.g., noon, 1300, etc			minutes	6			
nple Count Time (Ts, Tb) = T			counts	- 1			
tal Counts			cpm	0.			
mple Count Rate			cpm	0.			The same
ckground Count Rate		A)	liters	6.8E		6.8E+04	6.8E+04
Volume (liters)		B)	cpm	0.0			
et count rate ounter Efficiency	(C		cpm/dpm	0.	73	0.73	0.73
ellection Efficiency	(D		0.99	0.	99	0.99	0.99
ficiency = (C) x (D)	(E)		cpm/dpm	0.	72	0.72	0.72
tivity $(dpm) = (B)/(E)$	(F)		dpm	0.	07		
inimum Detectable Activity (d		QRT(Cb))/(E*T) (G)	dpm		37		
oncentration = $(F)/(2.22E9 \times (A))$			μCi/ml		E-16		
ackground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml		E-18		
ET Concentration Value = (H)			uCi/ml		E-16		
AC (or AE) Fraction = (F2)/(I)					0%		
DC = MDA/V = (G)/(A)	(J)		μCi/ml		E-15		
DC Fraction of DAC (or AE)	= (J)/(I) (Goal<	(10%)			3%		
nal Count?			Yes/No		ES	Yes	
		Note: Unexpected DAC or AE	fraction > 100% req	uires immedia	te RSO notification	1.	
			•				1 2 10
	0	0 10	1/ -				IO- /A- IV
Performed Ru-	David	Berres / Daw	Be_			Date:	10-30-18

		Secti	on I - Collection	Data		
Date:	10/30/2018	Sample ID:	20181019-09	6	RWP: 2018-001	_
Occupational (DAC):	Limit:	2,00E-11		nl (1) Breathing Z		
Non-Occupational (EC):	[D	AC = 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionucli	des: DU (Deplet	ted Uranium)
Location:		FS12 Wood Soil Sort Are	a	Sampled By:	Dave F	Вентев
		271		Activity Performed	; N	Α
Wearer.		NA		And the second s		
Monitored Workers:			4.7	NA	G III - D - D-tai	NA
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	Continues and
Air Pump Model:	LV-1		Serial No.	2773	Calibration Due Date:	3/27/2019
2 116 T		Time			Flow	Rate (lpm)
Sample Information	Cont	Stop	Total (minut	es)	Start	Stop
Collection Date	7:30	17:00	570		60.0	60.0
10/18/2018	7:30	17:00	570		60	60
10/19/2018	7.30	Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sam	ple Volume: 1.7E+01	Liters	
Sample Volume:	60 (lr	om)	x	1140 (minutes)	= 6,8E+04	Liters (A)
Sample volume.	i a samula valu	mes identified are necessary to achi	ieve 10% of DAC or A	E value.		
Remarks: Mir	nimum sample volu	mes identified are necessary to dem				
		Sec	tion II - Analysis			1
trument Information		Serial Number			alibration Due Date	TOT : (m)
Instrument Type	-	Meter	Detector			Efficiency (a)
L-2929		158817	164736	12/13/2		0.726 N/A
N/A		N/A	N/A	N/A		N/A
					Alpha 2nd Count	3rd Count
Varia	bles, Calculations,	Results	Units	1st Count	2nd Count	Sid Comm
ount Date				10/30/2018		
ount Time (e.g., noon, 1300, etc			S. 44	10:00		
mple Count Time (Ts, Tb) = T			minutes	13		1, 0
tal Counts				0.22		
mple Count Rate			epm epm	0.13		
ckground Count Rate	- 4	`	liters	6.8E+04	6.8E+04	6.8E+04
r Volume (liters)	(A		cpm	0.09		
et count rate	(C)		cpm/dpm	0,73	0.73	0.73
ounter Efficiency ollection Efficiency	(D)		0.99	0.99	0.99	0.99
ficiency = (C) x (D)	(E)		cpm/dpm	0.72	0.72	0.72
inciency – (C) x (D)	(F)		dpm	0.12		
etivity $(dom) = (B)/(E)$		RT(Cb))/(E*T) (G)	dpm	0.37		
ctivity (dpm) = (B)/(E)	pm) = (3+4.65*SQ)		μCi/ml	7.94E-16		
inimum Detectable Activity (d			рсини			
finimum Detectable Activity (doncentration = (F)/(2.22E9 x (a	A)) (H)	4/20-4/21	uCi/ml	7.31E-18		
finimum Detectable Activity (d oncentration = (F)/(2.22E9 x (ackground "Strip" value (F.1)	A)) (H) Date Updated	4/20-4/21		7.87E-16		T. C
inimum Detectable Activity (doncentration = (F)/(2.22E9 × (doncentration = (F))/(2.22E9 × (don	A)) (H) Date Updated) - (F1); (F2)	4/20-4/21	uCi/ml uCi/ml	7.87E-16 0.00%		
finimum Detectable Activity (doncentration = (F)/(2.22E9 × (Ackground "Strip" value (F.1) ET Concentration Value = (H. AC (or AE) Fraction = (F2)/(I) ADC = MDA/V = (G)/(A)	A)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	uCi/ml	7.87E-16 0.00% 2.42E-15		
finimum Detectable Activity (doncentration = (F)/(2.22E9 × (Ackground "Strip" value (F.1) ET Concentration Value = (H. AC (or AE) Fraction = (F2)/(I) ADC = MDA/V = (G)/(A)	A)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	uCi/ml uCi/ml μCi/ml	7.87E-16 0.00% 2.42E-15 0.01%		
finimum Detectable Activity (doncentration = (F)/(2.22E9 × (Ackground "Strip" value (F.1) ET Concentration Value = (H. AC (or AE) Fraction = (F2)/(I) EDC = MDA/V = (G)/(A) EDC Fraction of DAC (or AE)	A)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	uCi/ml uCi/ml μCi/ml Yes/No	7.87E-16 0.00% 2.42E-15 0.01% Yes		
finimum Detectable Activity (doncentration = (F)/(2.22E9 × (Ackground "Strip" value (F.1) ET Concentration Value = (H.1) AC (or AE) Fraction = (F2)/(I) EDC = MDA/V = (G)/(A) EDC Fraction of DAC (or AE)	A)) (H) Date Updated () - (F1); (F2) (J)	4/20-4/21	uCi/ml uCi/ml μCi/ml Yes/No	7.87E-16 0.00% 2.42E-15 0.01% Yes	ification.	
inimum Detectable Activity (doncentration = (F)/(2.22E9 × (Activation of the Activation of the Activat	A)) (H) Date Updated) - (F1); (F2)) (J) = (J)/(I) (Goal<1)	4/20-4/21 0%) Note: Unexpected DAC or Al	uCi/ml uCi/ml μCi/ml γes/No E fraction > 100% rec	7.87E-16 0.00% 2.42E-15 0.01% Yes		. /0-30-/8
ctivity (dpm) = (B)/(E) finimum Detectable Activity (doncentration = (F)/(2.22E9 × (ackground "Strip" value (F.1) IET Concentration Value = (H.2) AC (or AE) Fraction = (F2)/(I) ADC = MDA/V = (G)/(A) ADC Fraction of DAC (or AE) in all Count? Performed By:	A)) (H) Date Updated) - (F1); (F2)) (J) = (J)/(I) (Goal<1)	4/20-4/21	uCi/ml uCi/ml μCi/ml Yes/No	7.87E-16 0.00% 2.42E-15 0.01% Yes		: 10-30-18

Data	10/20/2019		on I - Collection Data			
Date:	10/30/2018	Sample ID:		RWI		-
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (1)	Breathing Zone:	General Area:	Work Ar
Non-Occupational (EC):	[DA	$AC = 2.0E-11\mu Ci/ml$ (U-238), EC=	6.0E-14μCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 Block House (Boundr	ry)	Sampled By:	David Be	rres
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA.			
	344			Carl	VATE OF \$18.	
Lapel Pump Model:	NA	Se	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	Se	erial No.	3666	Calibration Due Date:	8/22/2019
Sample Information		Time			Flow R	ate (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
10/18/2018	7:30	17:00	570		60.0	60.0
10/19/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample Vol	lume: 5.5E+03 Li	ters	
Remarks: Mir	imum sample volum	es identified are necessary to achiev	on II - Analysis Data			
ument Information		Serial Number	VII 22 22001 J 010 D 110		Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (α)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Variat	oles, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
t Date				10/30/2018		
t Time (e.g., noon, 1300, etc	.)			12:30		
le Count Time $(Ts, Tb) = T$			minutes	60		
Counts			counts	12		16.00
le Count Rate			cpm	0.20		
ground Count Rate			cpm	0.13		
olume (liters)	(A)		liters	6.8E+04	6.8E+04	6.8E+04
ount rate	(B)		cpm	0.07		
ter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ction Efficiency	(D)		0.99	0.99	0.99	0.99
ency = (C) x (D) ity (dpm) = (B)/(E)	(E)		cpm/dpm	0.72	0.72	0.72
	(F)	CL) (CERT) (C)	dpm	0.10		
num Detectable Activity (dprentration = (F)/(2.22E9 x (A)		COJJ(E-1) (G)	dpm	0.37		
ground "Strip" value (F.1)	Date Updated	4/20-4/21	μCi/ml uCi/ml	6.41E-16		
Concentration Value = (H) -		1/20-1/21	uCi/ml	7.31E-18 6.34E-16		-
(or AE) Fraction = (F2)/(I)	(F4)		uci/mi			
= MDA/V = (G)/(A)	(J)		uCi/ml	1.06% 2.42E-15		
			μCi/ml	4.03%		
Fraction of DAC for AF1=1	(5001-1070)		Yes/No		Ver	
Fraction of DAC (or AE) = (Count?			T CS/INO	YES	Yes	
Count?		Note: Unexpected DAC or AE fro				
	-	Borres /Daw			Date:	10-30-18

		Secti	on I - Collection Data			
Date:	11/1/2018	Sample ID:	20181023-098	RWF	2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (I)	Breathing Zone:	General Area:	Work Area:
Non-Occupational (EC):	[DAG	$C = 2.0E-11\mu Ci/ml$ (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted U	Jranium)
Location:		FS12 SCA Boundary		Sampled By:	David Berry	es
		7 52 9 10 10 1		Activity Performed:	NA	
		1111	NA			
Monitored Workers:				261	win of Kongo	NI
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	70.00
Air Pump Model:	LV-1	S	erial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Rat	e (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
10/22/2018	7:30	17:00	570		60.0	60.0
10/23/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample Vo	lume: 5.5E+03 L	iters	
						44.5
Sample Volume:	60 (lpm))	x 1140	(minutes) =	6.8E+04 Lite	rs (A)
p. 1 16	in a samuel and home	s identified are necessary to achie	we 10% of DAC or AF valu	•		
Remarks: Mil	ilmum sample volume	is identified are necessary to active	VE 1070 OF DAC OF ALL VALU	c.		
		Sect	ion II - Analysis Data			
strument Information		Serial Number		Calibratio	n Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varial	bles, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
ount Date				10/31/2018		
ount Time (e.g., noon, 1300, etc	6)			8:00		
ample Count Time (Ts, Tb) = T			minutes	60		
otal Counts			counts	20		
ample Count Rate			cpm	0.33		
ackground Count Rate			cpm	0.13		
	(A)		liters	6.8E+04	6.8E+04	6.8E+04
ir Volume (liters)	(B)		cpm	0.20		
ir Volume (liters) let count rate					0.73	0.73
ir Volume (liters) let count rate counter Efficiency	(B)		cpm	0.20	0.73 0.99	0.99
ir Volume (liters) fet count rate counter Efficiency collection Efficiency	(B)		cpm cpm/dpm	0.20 0.73		
xir Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D)	(B) (C) (D)		cpm cpm/dpm 0.99	0.20 0.73 0.99	0.99	0.99
cir Volume (liters) let count rate counter Efficiency collection Efficiency efficiency = (C) x (D) activity (dpm) = (B)/(E)	(B) (C) (D) (E)	(Cb))/(E*T) (G)	cpm cpm/dpm 0.99 cpm/dpm	0.20 0.73 0.99 0.72	0.99	0.99
cir Volume (liters) let count rate counter Efficiency collection Efficiency efficiency = (C) x (D) cetivity (dpm) = (B)/(E) dinimum Detectable Activity (dp	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT((Cb))/(E*T) (G)	cpm cpm/dpm 0.99 cpm/dpm dpm	0.20 0.73 0.99 0.72 0.28	0.99	0.99
cir Volume (liters) let count rate counter Efficiency collection Efficiency efficiency = (C) x (D) cutivity (dpm) = (B)/(E) dinimum Detectable Activity (dpm) concentration = (F)/(2.22E9 x (A)	(B) (C) (D) (E) (F) (m) = (3+4.65*SQRT(L)) (H)	(Cb))/(E*T) (G) 4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm	0.20 0.73 0.99 0.72 0.28 0.37	0.99	0.99
cir Volume (liters) let count rate counter Efficiency collection Efficiency difficiency = (C) x (D) activity (dpm) = (B)/(E) dinimum Detectable Activity (dpm) concentration = (F)/(2.22E9 x (A) background "Strip" value (F.1)	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(A)) (H) Date Updated		cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm pCi/ml	0.20 0.73 0.99 0.72 0.28 0.37 1.86E-15	0.99	0.99
cir Volume (liters) fet count rate founter Efficiency follection Efficiency fficiency = (C) x (D) ctivity (dpm) = (B)/(E) finimum Detectable Activity (dpm) concentration = (F)/(2.22E9 x (A) fackground "Strip" value (F.1) IET Concentration Value = (H)	(B) (C) (D) (E) (F) om) = (3+4.65*SQRTe (A)) (H) Date Updated - (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	0.20 0.73 0.99 0.72 0.28 0.37 1.86E-15 7.31E-18	0.99	0.99
cir Volume (liters) let count rate counter Efficiency collection Efficiency efficiency = (C) x (D) lectivity (dpm) = (B)/(E) lectivity (dpm) = (B)/(E) lectivity (dpm) = (F)/(2.22E9 x (A) leckground "Strip" value (F.1) let Concentration Value = (H) let Concentration = (F2)/(I)	(B) (C) (D) (E) (F) om) = (3+4.65*SQRTe (A)) (H) Date Updated - (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	0.20 0.73 0.99 0.72 0.28 0.37 1.86E-15 7.31E-18 1.86E-15	0.99	0.99
cir Volume (liters) let count rate counter Efficiency collection c	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(A)) (H) Date Updated - (F1); (F2)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml	0.20 0.73 0.99 0.72 0.28 0.37 1.86E-15 7.31E-18 1.86E-15 3.09%	0.99	0.99
Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (dp Concentration = (F)/(2.22E9 x (A Background "Strip" value (F.1) NET Concentration Value = (H) OAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) =	(B) (C) (D) (E) (F) om) = (3+4.65*SQRTo (A)) (H) Date Updated - (F1); (F2)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml	0.20 0.73 0.99 0.72 0.28 0.37 1.86E-15 7.31E-18 1.86E-15 3.09% 2.42E-15	0.99	0.99
Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (dpm) Concentration = (F)/(2.22E9 x (A) Background "Strip" value (F.1) NET Concentration Value = (H) OAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) =	(B) (C) (D) (E) (F) om) = (3+4.65*SQRTo (A)) (H) Date Updated - (F1); (F2)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml vCi/ml	0.20 0.73 0.99 0.72 0.28 0.37 1.86E-15 7.31E-18 1.86E-15 3.09% 2.42E-15 4.03% YES	0.99 0.72 Yes	0.99
Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (dp Concentration = (F)/(2.22E9 x (A Background "Strip" value (F.1) NET Concentration Value = (H) DAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) = Final Count?	(B) (C) (D) (E) (F) om) = (3+4.65*SQRTo) (II) Date Updated - (F1); (F2) (J) (J) (Goal<10%	4/20-4/21) Note: Unexpected DAC or AE	cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml uCi/ml yCi/ml Yes/No fraction > 100% requires in	0.20 0.73 0.99 0.72 0.28 0.37 1.86E-15 7.31E-18 1.86E-15 3.09% 2.42E-15 4.03% YES	0.99 0.72 Yes	0.99
Air Volume (liters) Net count rate Counter Efficiency Collection = (F)/(2.22E9 x (A) Collecti	(B) (C) (D) (E) (F) om) = (3+4.65*SQRTo) (II) Date Updated - (F1); (F2) (J) (J) (Goal<10%	4/20-4/21) Note: Unexpected DAC or AE	cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml uCi/ml yCi/ml Yes/No fraction > 100% requires in	0.20 0.73 0.99 0.72 0.28 0.37 1.86E-15 7.31E-18 1.86E-15 3.09% 2.42E-15 4.03% YES	0.99 0.72 Yes	0.99
Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (dp Concentration = (F)/(2.22E9 x (A Background "Strip" value (F.1) NET Concentration Value = (H) DAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) = Final Count?	(B) (C) (D) (E) (F) om) = (3+4.65*SQRTo) (II) Date Updated - (F1); (F2) (J) (J) (Goal<10%	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml uCi/ml yCi/ml Yes/No fraction > 100% requires in	0.20 0.73 0.99 0.72 0.28 0.37 1.86E-15 7.31E-18 1.86E-15 3.09% 2.42E-15 4.03% YES	0.99 0.72 Yes	0.99

		Sect	ion I - Collection	Data			
Date:	11/1/2018	Sample ID:	20181023-10	00	RW	P: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μC1/1	nl (1)	Breathing Zone:	General Area:	Work Area
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14uCi/ml]		Radionuclides:	DU (Depleted	
Location:							n - myterensyk yr
		FS12 Block House (Bound	iry)	_	Sampled By:	David Ber	res
Wearer:		NA		A	ctivity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA	5	Serial No.	1	NA	Calibration Due Date:	NA
Air Pump Model:	1000		Serial No.		666	Calibration Due Date:	
					1 1		
Sample Information		Time			1	Flow Ra	
Collection Date	Start	Stop	Total (minute	s)		Start	Stop
10/13/2018	7:30	17:00	570			60.0	60.0
10/14/2018	7:30	17:00	570	_		60	60
		Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
			Minimum Air Samp	le Volume	5.5E+03 I	iters	
Remarks: Mir	nimum sample volume	s identified are necessary to achie	ion II - Analysis				
rument Information		Serial Number			Calibratio	on Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736		1/10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
Varial	bles, Calculations, Re	sults	Units	1s	t Count	2nd Count	3rd Count
int Date				10/	31/2018		
int Time (e.g., noon, 1300, etc					12:30		
iple Count Time (Ts, Tb) = T			minutes		60		
al Counts			counts		20		
ple Count Rate			cpm		0.33		
kground Count Rate			cpm		0.13		
Volume (liters)	(A)		liters		8E+04	6.8E+04	6.8E+04
count rate	(B)		cpm		0.20		
inter Efficiency	(C)		cpm/dpm		0.73	0.73	0.73
ection Efficiency	(D)		0.99		0.99	0.99	0.99
ciency = (C) x (D)	(E)		cpm/dpm		0.72	0.72	0.72
vity (dpm) = (B)/(E)	(F)	21 33 (CD402) (CD)	dpm		0.28		
imum Detectable Activity (dp		(b))/(E*1) (G)	dpm		0.37		
kground "Strip" value (F.1)		4/20-4/21	μCi/ml		86E-15		
	Date Updated	4/20-4/21	uCi/ml		31E-18		
C (or AE) Fraction = (F2)/(I)	- (F1); (F2)		uCi/ml		66E-15		
C = MDA/V = (G)/(A)	(J)		uCi/ml		2E-15		
C Fraction of DAC (or AE) =			μCi/ml		.03%		
Count?	(0) (Ouai 1076)		Vas/Nia			V	-
ii Codiii:		Vatar II amount 1 D 1 C 1 D 1	Yes/No		YES	Yes	
Performed By:		erres Daw B		res immed	nate KSO notification		0-3)-18
Reviewed By:	El Sien	wres Dan B.				Date:	0-31-18

Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: I Sample Information Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimu	Limit: [DAC = NA	Sample ID: 6.00E-14 2.0E-11µCi/ml (U-238), EC= FS12 SCA Boundary NA S Time Stop 17:00 17:00 Total Time (Te):	Total (minutes) 570 570 1140 Minimum Air Sample V	Sam Activity NA 2591 /olume:	Radionuclides: pled By: Performed:	DU (Depleted David Ben NA Calibration Due Date: Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm) Liters	NA 3/27/2019
Non-Occupational (EC): Location: Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: I Sample Information Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimu	[DAC =	2.0E-11µCi/ml (U-238), EC= FS12 SCA Boundary NA S Time Stop 17:00 17:00 Total Time (Tc):	NA erial No. erial No. Total (minutes) 570 570 1140 Minimum Air Sample V x 114 ve 10% of DAC or AE val	Sam Activity NA 2591 /olume: 40 (min	Radionuclides: pled By: Performed: 3.8E+03	General Area: DU (Depleted David Berr NA Calibration Due Date: Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm)	NA 3/27/2019 te (lpm) Stop 60.0 60 60.0
Location: Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: I Sample Information Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimum	NA LV-1 Start 7:30 7:30 60 (lpm)	2.0E-11µCi/ml (U-238), EC= FS12 SCA Boundary NA S Time Stop 17:00 17:00 Total Time (Tc):	Total (minutes) 570 570 1140 Minimum Air Sample V x 114 re 10% of DAC or AE val	NA 2591 /olume:	Radionuclides: pled By: Performed:	DU (Depleted David Bern NA Calibration Due Date: Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm)	NA 3/27/2019 te (lpm) Stop 60.0 60 60.0
Location: Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: I Sample Information Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimum	NA LV-1 Start 7:30 7:30 60 (lpm)	FS12 SCA Boundary NA S Time Stop 17:00 17:00 Total Time (Tc):	Total (minutes) 570 570 1140 Minimum Air Sample V x 114 re 10% of DAC or AE val	NA 2591 /olume:	performed:	David Berr NA Calibration Due Date: Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm)	NA 3/27/2019 te (lpm) Stop 60.0 60 60.0
Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: I Sample Information Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimu	NA LV-1 Start 7:30 7:30 60 (lpm)	NA S S Time Stop 17:00 17:00 Total Time (Tc):	rial No. Total (minutes) 570 570 1140 Minimum Air Sample V x 114 re 10% of DAC or AE val	NA 2591 /olume:	Performed:	Calibration Due Date: Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm)	NA 3/27/2019 te (lpm) Stop 60.0 60 60.0
Monitored Workers: Lapel Pump Model: Air Pump Model: I Sample Information Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimu	NA LV-1 Start 7:30 7:30 60 (lpm)	Stop 17:00 17:00 Total Time (Te):	rial No. Total (minutes) 570 570 1140 Minimum Air Sample V x 114 re 10% of DAC or AE val	NA 2591 /olume:	3.8E+03	Calibration Due Date: Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm)	3/27/2019 te (lpm) Stop 60.0 60 60.0
Lapel Pump Model: Air Pump Model: Sample Information Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimum	Start 7:30 7:30 60 (lpm)	Stop 17:00 17:00 Total Time (Tc):	rial No. Total (minutes) 570 570 1140 Minimum Air Sample V x 114 re 10% of DAC or AE val	NA 2591 /olume: 40 (min	3.8E+03	Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm)	3/27/2019 te (lpm) Stop 60.0 60 60.0
Lapel Pump Model: Air Pump Model: Sample Information Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimum	Start 7:30 7:30 60 (lpm)	Stop 17:00 17:00 Total Time (Tc):	rial No. Total (minutes) 570 570 1140 Minimum Air Sample V x 114 re 10% of DAC or AE val	NA 2591 /olume: 40 (min	3.8E+03	Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm)	3/27/2019 te (lpm) Stop 60.0 60 60.0
Air Pump Model: I Sample Information Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimum	Start 7:30 7:30 60 (lpm)	Stop 17:00 17:00 Total Time (Tc):	Total (minutes) 570 570 1140 Minimum Air Sample V x 114 ve 10% of DAC or AE val	/olume:	3.8E+03	Calibration Due Date: Flow Rat Start 60.0 60 Avg. Flow Rate (lpm)	3/27/2019 te (lpm) Stop 60.0 60 60.0
Sample Information Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimu	Start 7:30 7:30 (lpm)	Stop 17:00 17:00 Total Time (Tc):	Total (minutes) 570 570 1140 Minimum Air Sample V x 114 re 10% of DAC or AE val	/olume:		Start 60.0 60 Avg. Flow Rate (lpm)	Stop 60.0 60 60.0
Collection Date 10/24/2018 10/25/2018 Sample Volume: Remarks: Minimu	7:30 7:30 60 (lpm)	Stop 17:00 17:00 Total Time (Tc):	570 570 1140 Minimum Air Sample V x 114 re 10% of DAC or AE val	40 (min		Start 60.0 60 Avg. Flow Rate (lpm)	Stop 60.0 60 60.0
10/24/2018 10/25/2018 Sample Volume: Remarks: Minimu	7:30 7:30 60 (lpm)	17:00 17:00 Total Time (Tc):	570 570 1140 Minimum Air Sample V x 114 re 10% of DAC or AE val	40 (min		60.0 60 Avg. Flow Rate (lpm)	60.0 60 60.0
Sample Volume: Remarks: Minimu	7:30 [lpm]	17:00 Total Time (Tc): entified are necessary to achieve	570 570 1140 Minimum Air Sample V x 114 re 10% of DAC or AE val	40 (min		60.0 60 Avg. Flow Rate (lpm)	60.0 60 60.0
Sample Volume: Remarks: Minimu	60 (lpm)	Total Time (Tc):	Minimum Air Sample V x 114 ye 10% of DAC or AE val	40 (min		Avg. Flow Rate (lpm)	60.0
Remarks: Minimu		entified are necessary to achie	Minimum Air Sample V x 114 ye 10% of DAC or AE val	40 (min		Liters	All A
Remarks: Minimu		5.7.2	x 114 ve 10% of DAC or AE val	40 (min			rs (A)
Remarks: Minimu		5.7.2	x 114 ve 10% of DAC or AE val	40 (min			ers (A)
Remarks: Minimu		5.7.2	ve 10% of DAC or AE val	lue.	iutes) = _	0.3ET04 Lite	ers (A)
	um sample volumes id	5.7.2					
		Secti	on II - Analysis Da	to			
						14	
rument Information		Serial Number		- T	Calibrati	on Due Date	
Instrument Type	M	leter	Detector		Meter	Detector Detector	Efficiency (a)
L-2929		8817	164736		1/10/2019	1/10/2019	0.726
N/A		V/A	N/A		N/A	N/A	N/A
						Alpha	IVA
Variables,	, Calculations, Result	s	Units	1st Cour	nt	2nd Count	3rd Count
nt Date				11/1/201	8		
nt Time (e.g., noon, 1300, etc.)				8:00			
ple Count Time (Ts, Tb) = T			minutes	60			
l Counts			counts	23	7		
ple Count Rate			cpm	0,38			
ground Count Rate			cpm	0,05			
Volume (liters)	(A)		liters	6.8E+04	1	6.8E+04	6.8E+04
count rate	(B)		cpm	0.33			
nter Efficiency	(C)		cpm/dpm	0.73		0.73	0.73
ection Efficiency	(D)		0.99	0.99		0.99	0.99
$eiency = (C) \times (D)$	(E)		cpm/dpm	0.72		0.72	0.72
vity (dpm) = (B)/(E)	(F)		dpm	0.46			
mum Detectable Activity (dpm) =	= (3+4.65*SQRT(Cb))	/(E*T) (G)	dpm	0.25			
centration = $(F)/(2.22E9 \times (A))$	(H)		μCi/ml	3.05E-1	5		
ground "Strip" value (F.1) Da	ate Updated	4/20-4/21	uCi/ml	7.31E-18	8		
Concentration Value = (H) - (F1	1); (F2)		uCi/ml	3.05E-1	5		
(or AE) Fraction = (F2)/(I)				5.08%			
C = MDA/V = (G)/(A)	(J)		μCi/ml	1.67E-1			
C Fraction of DAC (or AE) = (J)/((I) (Goal<10%)			2.79%			
Count?			Yes/No	YES		Yes	
	Note	: Unexpected DAC or AE fr			SO notification		
72			1				
Performed By:	lavid Bere	res/Daw Be	_			Date: 11	1-1-18
		1				_ Date	7.0

Date:	11/1/2018	Sample ID:	20181025	5-102	RW	P: 2018-001	
Occupational (DAC):		- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		Cı/ml (I)	Breathing Zone:	General Area:	Work Area
		2.00E-11	6 OF 14C:/-11				
Non-Occupational (EC):		C = 2.0E-11μCi/ml (U-238), EC=	26.000			DU (Depleted	
Location:		FS12 Wood Soil Sort Area	1		Sampled By:	Dave Be	rres
Wearer:		NA		A	Activity Performed:	NA	
Monitored Workers:				NA	-		
	440				271	Calibration Due Date:	NA
Lapel Pump Model:	NA	S	erial No.		NA	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	FA Alles of F
Air Pump Model:	LV-1	S	erial No.	N.	2773	Calibration Due Date:	3/27/2019
Sample Information		Time				Flow R	ate (lpm)
Collection Date	Start	Stop	Total (mi	nutes)	J I	Start	Stop
10/24/2018	7:30	17:00	570			60.0	60.0
10/25/2018	7:30	17:00	570			60	60
		Total Time (Tc):	1140)		Avg. Flow Rate (lpm)	60.0
			Minimum Air S	mnle Volum	e: 1.1E+01	Liters	
			William All Si		1		in the
Sample Volume:	60 (lpm)		x	1140	(minutes) =	6.8E+04 Li	iters (A)
Remarks Mi	inimum sample volume	s identified are necessary to achie	ve 10% of DAC o	r AE value			
Kelilarks, 140	minum sample volume	s demined the necessary to demo	10 1070 0120120 0				
		Secti	ion II - Analys	sis Data			
trument Information		Serial Number			Calibrat	ion Due Date	
Instrument Type		Meter	Detec	tor	Meter	Detector	Efficiency (a)
L-2929		158817	16473	36	12/13/2018	12/13/2018	0.726
N/A	-	N/A	N/A		N/A	N/A	N/A
						Alpha	
Varia	bles, Calculations, Re	sults	Units	1	st Count	2nd Count	3rd Count
unt Date				1	1/1/2018		
unt Time (e.g., noon, 1300, et	ic.)				10:00		
nple Count Time (Ts, Tb) = T			minutes		60		
tal Counts			counts	1-	18		
mple Count Rate			cpm		0.30		
ckground Count Rate			cpm		0,05		
Volume (liters)	(A)		liters		6.8E+04	6.8E+04	6.8E+04
t count rate	(B)		cpm		0.25		
unter Efficiency	(C)		cpm/dpm		0.73	0.73	0.73
llection Efficiency	(D)		0.99		0.99	0.99	0.99
iciency = (C) x (D)	(E)		cpm/dpm		0.72	0.72	0.72
tivity (dpm) = (B)/(E)	(F)		dpm		0.35		
nimum Detectable Activity (d	pm) = (3+4.65*SQRT(Cb))/(E*T) (G)	dpm		0.25		
ncentration = $(F)/(2.22E9 \times (A))$	A)) (H)		μCi/ml	2	.29E-15		
ckground "Strip" value (F.1)		4/20-4/21	uCi/ml		7.31E-18		
T Concentration Value = (H)) - (F1); (F2)		uCi/ml	2	.28E-15		
AC (or AE) Fraction = (F2)/(I)					0.01%		
DC = MDA/V = (G)/(A)	(J)		μCi/ml	1	.67E-15		1
OC Fraction of DAC (or AE)					0.01%		
al Count?			Yes/No		Yes		
		Note: Unexpected DAC or AE fo		equires imm		n.	
			100,01	-1			
Performed Day	David Ro	res / De IRa				Date	11-1-18
renormed By:	Vavio De	iel a me					
Reviewed By:	Ed Sieu	res/Dend Be news/S				Date:	11-1-18

			ion I - Collection Da	ta		
Date:	11/1/2018	Sample ID:	20181025-103		RWP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (I) Breathing Zor	ne: General Area:	Work Are
Non-Occupational (EC):	IDAC	= 2.0E-11µCi/ml (U-238), EC=	= 6.0F-14uCi/ml1	Radionuclide		
	•			3. 7. 3. 4		
Location:		FS12 Block House (Bound	iry)	Sampled By:	David Ber	res
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA		Serial No.	NA	Calibratian Dan Data	314
Air Pump Model:					Calibration Due Date:	
7th 1 drip Model.	LV-I		Serial No.	3666	Calibration Due Date:	8/22/2019
Sample Information		Time			Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
10/24/2025	7:30	17:00	570		60.0	60.0
10/25/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
Remarks: Mi	nimum sample volumes	identified are necessary to achie	ion II - Analysis Dat			
rument Information		Serial Number		Calib	ration Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
20.20					Alpha	
	bles, Calculations, Res	ilts	Units	1st Count	2nd Count	3rd Count
nt Date nt Time (e.g., noon, 1300, etc	- \		1 1	11/1/2018		
ole Count Time (Ts, Tb) = T				12:30		
Counts			minutes	60		
ole Count Rate			counts	20		
ground Count Rate			epm	0.33		
olume (liters)	(A)		cpm liters	6.8E+04	600.04	CORVO
ount rate	(B)		cpm	0.28	6.8E+04	6.8E+04
ter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ection Efficiency	(D)		0.99	0.99	0.99	0.99
$iency = (C) \times (D)$	(E)		cpm/dpm	0.72	0.72	0.72
rity (dpm) = (B)/(E)	(F)		dpm	0.39	0,72	0.12
mum Detectable Activity (dp	m) = (3+4.65*SQRT(C	o))/(E*T) (G)	dpm	0.25		
entration = $(F)/(2.22E9 \times (A))$	(H)		μCi/ml	2.60E-15		
ground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
Concentration Value = (H)	- (F1); (F2)		uCi/ml	2.59E-15		
(or AE) Fraction = (F2)/(I)				4.31%		
C = MDA/V = (G)/(A)	(J)		μCi/ml	1.67E-15		
Fraction of DAC (or AE) =	(J)/(I) (Goal<10%)			2.79%		
Count?			Yes/No	YES	Yes	
	N	ote: Unexpected DAC or AE fr	action > 100% requires in	nmediate RSO notificat		
Performed By:	David Ber	res/Den Be	-		Date: /	1-1-2018
Reviewed By:	Ed Sie	mes/Den Be	TO STATE OF THE PERSON.		Date: //	1.1.2018

	111110000		on I - Collection D		VP: 2018-001	
	11/6/2018	Sample ID:				Work Area:
Occupational (DAC):	Limit:	6.00E-14	μCı/ml	(I) Breathing Zone:	General Area: ✓	Work Area.
Non-Occupational (EC):		$DAC = 2.0E-11\mu Ci/ml$ (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary		Sampled By:	David Be	rres
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			N	IA.		
	ATA		erial No.	NA	Calibration Due Date:	NA
Lapel Pump Model:	NA			11.00	Calibration Due Date:	- 0. A.C. (1.4)
Air Pump Model:	LV-1	18	erial No.	2591	BANKARA SALABANI	
Sample Information		Time				ate (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
10/26/2018	7:30	17:00	570		60,0	60.0
10/29/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample	Volume: 4.1E+03	Liters	
Const. Williams	60	Town)	x 1	140 (minutes) =	6.8E+04 Li	ters (A)
Sample Volume:		(lpm)	A STATE OF THE STA			
Remarks: Min	imum sample vo	lumes identified are necessary to achie	ve 10% of DAC or AE	value.		
		Sant	ion II. Analysis D	lata		
1			ion II - Analysis D		tion Due Date	
trument Information		Serial Number	Detector	Meter	Detector	Efficiency (a)
Instrument Type		Meter	164736	1/10/2019	1/10/2019	0.726
L-2929		158817		N/A	N/A	N/A
N/A		N/A	N/A	IV/A	Alpha	TWIN
207.1	- AND 150		Units	1st Count	2nd Count	3rd Count
	oles, Calculation	s, Results	Units	11/5/2018	and count	7,000
unt Date				8:00		
unt Time (e.g., noon, 1300, etc	2.)		arthur tax	60		
nple Count Time (Ts, Tb) = T			minutes	8		
al Counts			counts			
mple Count Rate			cpm	0.13		
ckground Count Rate			cpm	0.06	COPIOA	6 OF LOA
Volume (liters)		A)	liters	6.8E+04	6.8E+04	6.8E+04
t count rate	(3)	cpm	0.07		0.71
unter Efficiency	(C		epm/dpm	0.73	0.73	0.73
llection Efficiency	(D		0.99	0.99	0.99	0.99
$iciency = (C) \times (D)$	(E)		cpm/dpm	0.72	0.72	0.72
tivity (dpm) = (B)/(E)	(F)		dpm	0.10		
nimum Detectable Activity (dp	(3+4.65*S)	QRT(Cb))/(E*T) (G)	dpm	0.27		
ncentration = $(F)/(2.22E9 \times (A))$	(H)		μCi/ml	6.72E-16		
ckground "Strip" value (F.1)		4/20-4/21	uCi/ml	7.31E-18		
T Concentration Value = (H)	- (F1); (F.	2)	uCi/ml	6.65E-16		
C (or AE) Fraction = (F2)/(I)				1.11%		
DC = MDA/V = (G)/(A)	(J)		μCi/ml	1.79E-15		
OC Fraction of DAC (or AE) =	(J)/(I) (Goal<	10%)		2.98%		
De Haction of DAC (of AL)			Yes/No	YES	Yes	
nal Count?			THE RESERVE OF THE PARTY OF THE			
		Note: Unexpected DAC or AE	raction > 100% requir	es immediate RSO notification	ou.	
nal Count?	0)		raction > 100% requir	es immediate RSO notification		.1 1 10
nal Count?	David	Berres John F	raction > 100% requir	es immediate RSO notification		11-6-18

		Sect	ion I - Collection	Data		
Date:	11/6/2018	Sample ID:	20181029-1	05	RWP: 2018-001	
Occupational (DAC):	Limit:	2,00E-11	μСυ	/ml (1) Breathing Zon	ne: General Area:	Work Area:
Non-Occupational (EC):	[DA	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclide	es: DU (Deplete	d Uranium)
Location:		FS12 Wood Soil Sort Are	a	Sampled By:	Dave Be	erres
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:				NA		
	NA	17	Serial No.	NA	Calibration Due Date:	NA
Lapel Pump Model:						
Air Pump Model:	LV-1		Serial No.	2773	Calibration Due Date:	3/2//2019
Sample Information		Time			Flow F	Rate (lpm)
Collection Date	Start	Stop	Total (minut	es)	Start	Stop
10/26/2018	7:30	17:00	570		60.0	60.0
10/29/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sam	ple Volume: 1.2E+01	Liters	
Sample Volume:	60 (lpm)	1	х	1140 (minutes)	= 6.8E+04 L	iters (A)
Remarks: Mir	nimum sample volume	s identified are necessary to achie	eve 10% of DAC or A	E value.		
		Saci	tion II - Analysis	Data		
		Serial Number	ion II - Amarysis		oration Due Date	
rument Information		Meter	Detector		Detector	Efficiency (a)
Instrument Type L-2929		158817	164736			0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varia	bles, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
int Date				11/5/2018		
int Time (e.g., noon, 1300, etc	2.)			10:00		
nple Count Time (Ts, Tb) = T			minutes	60		
			counts	8		
al Counts						
			cpm	0.13		
pple Count Rate			epm epm	0.13		
nple Count Rate kground Count Rate	(A)		1000		6.8E+04	6.8E+04
nple Count Rate Ekground Count Rate Volume (liters)	(A) (B)		cpm	0.06	6.8E+04	6.8E+04
nple Count Rate kground Count Rate Volume (liters) count rate			cpm liters	0.06 6.8E+04	6.8E+04 0.73	6.8E+04 0.73
nple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency	(B)		cpm liters cpm	0.06 6.8E+04 0.07		
nple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency	(B) (C)		cpm liters cpm cpm/dpm	0.06 6.8E+04 0.07 0.73	0.73	0.73
nple Count Rate Ekground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D)	(B) (C) (D)		cpm liters cpm cpm/dpm	0.06 6.8E+04 0.07 0.73 0.99	0.73 0.99	0.73 0.99
al Counts uple Count Rate ckground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency ciency = (C) x (D) ivity (dpm) = (B)/(E) unum Detectable Activity (dpm)	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(Cb))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm	0.06 6.8E+04 0.07 0.73 0.99 0.72 0.10	0.73 0.99	0.73 0.99
aple Count Rate Extraction (Liters) Count rate Location Efficiency Location Efficiency Location Efficiency Location Efficiency Location (Liters) Location (L	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	0.06 6.8E+04 0.07 0.73 0.99 0.72 0.10 0.27 6.72E-16	0.73 0.99	0.73 0.99
aple Count Rate Extraction (Liters) Count rate Location Efficiency Location (Literature of the Country Loc	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(0)) (H) Date Updated	Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml	0.06 6.8E+04 0.07 0.73 0.99 0.72 0.10 0.27 6.72E-16 7.31E-18	0.73 0.99	0.73 0.99
reple Count Rate Extraction Tract Polymer (liters) Count rate Inter Efficiency Idection Efficiency Idection Efficiency Idection Efficiency Identify (apm) = (B)/(E) Intrimum Detectable Activity (dgracentration = (F)/(2.22E9 x (Activity and Stripur) (F.1) The Concentration Value = (H)	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(0)) (H) Date Updated		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	0.06 6.8E+04 0.07 0.73 0.99 0.72 0.10 0.27 6.72E-16 7.31E-18 6.65E-16	0.73 0.99	0.73 0.99
aple Count Rate Edground Count Rate Volume (liters) Count rate Inter Efficiency Idection Efficiency Idection Efficiency Idection Efficiency Identity (dpm) = (B)/(E) Intrimum Detectable Activity (dpm) Identity (dpm) = (F)/(2.22E9 x (Activity of the contraction	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(0)) (H) Date Updated - (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml	0.06 6.8E+04 0.07 0.73 0.99 0.72 0.10 0.27 6.72E-16 7.31E-18 6.65E-16 0.00%	0.73 0.99	0.73 0.99
raple Count Rate Ekground Count Rate Volume (liters) count rate Inter Efficiency Idection Efficiency Identification Ident	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6))) (H) Date Updated - (F1); (F2)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml	0.06 6.8E+04 0.07 0.73 0.99 0.72 0.10 0.27 6.72E-16 7.31E-18 6.65E-16 0.00% 1.79E-15	0.73 0.99	0.73 0.99
raple Count Rate Ekground Count Rate Volume (liters) Count rate Inter Efficiency Idection = (F)/(2 22E9 x (A Idection = (F)/(2 22E9 x (A Idection = (F)/(2 2EF) x (A Idection = (F)/(2 2EF) x (A Idection = (F)/(2 2EF) x (A Idection = (F)/(1 X Idection	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(6))) (H) Date Updated - (F1); (F2)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml uCi/ml	0.06 6.8E+04 0.07 0.73 0.99 0.72 0.10 0.27 6.72E-16 7.31E-18 6.65E-16 0.00% 1.79E-15 0.01%	0.73 0.99	0.73 0.99
raple Count Rate Ekground Count Rate Volume (liters) count rate Inter Efficiency Idection Efficiency Identification Ident	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(c)) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yCi/ml	0.06 6.8E+04 0.07 0.73 0.99 0.72 0.10 0.27 6.72E-16 7.31E-18 6.65E-16 0.00% 1.79E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99
raple Count Rate Ekground Count Rate Volume (liters) Count rate Inter Efficiency Idection = (F)/(2 22E9 x (A Idection = (F)/(2 22E9 x (A Idection = (F)/(2 2EF) x (A Idection = (F)/(2 2EF) x (A Idection = (F)/(2 2EF) x (A Idection = (F)/(1 X Idection	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(c)) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yCi/ml	0.06 6.8E+04 0.07 0.73 0.99 0.72 0.10 0.27 6.72E-16 7.31E-18 6.65E-16 0.00% 1.79E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99
nple Count Rate kground Count Rate Volume (liters) count rate unter Efficiency lection Efficiency lection Efficiency lection (C) x (D) ivity (dpm) = (B)/(E) immum Detectable Activity (dp incentration = (F)/(2.22E9 x (A kground "Strip" value (F.1) T Concentration Value = (H) C (or AE) Fraction = (F2)/(I) IC = MDA/V = (G)/(A) IC Fraction of DAC (or AE) = al Count?	(B) (C) (D) (E) (F) om) = (3+4.65*SQRT(c)) (H) Date Updated - (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE (cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yCi/ml	0.06 6.8E+04 0.07 0.73 0.99 0.72 0.10 0.27 6.72E-16 7.31E-18 6.65E-16 0.00% 1.79E-15 0.01% Yes	0.73 0.99 0.72	0.73 0.99

Date:	11/6/2010		on I - Collection I 20181029-106		RWP: 2018-001	
=	11/6/2018	Sample ID:	μCı/ml			Work Are
Occupational (DAC):	Limit:	6.00E-14	μсили	(1) Breathing Zone	e: ☐ General Area: ✓] WOIK Are
Non-Occupational (EC):	[DAC	= 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides	DU (Depleted	d Uranium)
Location:		FS12 (Boundry)		Sampled By:	David Be	erres
Wearer:		NA		Activity Performed:	NA	
1.7		NA .		_		
Monitored Workers:			r	NA		
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	3666	Calibration Due Date:	8/22/2019
Sample Information		Time			Flow R	ate (Ipm)
Collection Date	Start	Stop	Total (minutes		Start	Stop
10/26/2018	7:30	17:00	570		60.0	60.0
10/29/2018	7:30	17:00	570		60	60
10/27/2016	7.50	Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
Sample Volume:				140 (minutes)	Liters =6,8E+04Li	iters (A)
Remarks: Mi	nimum sample volumes	identified are necessary to achie	N. 6. C. N. 10. 1			
		Serial Number	ion II - Analysis E		ration Due Date	
trument Information		Meter	Detector	Meter	Detector	Efficiency (a)
Instrument Type		158817	164736	1/10/2019	1/10/2019	0.726
L-2929		N/A	N/A	N/A	N/A	N/A
N/A		N/A	IVA	IVA.	Alpha	1111
Vania	ables, Calculations, Res	ulte	Units	1st Count	2nd Count	3rd Count
unt Date	ibies, Calculations, Res	ints	Cuits	11/5/2018	1	
unt Time (e.g., noon, 1300, et	te)			12:30		
nple Count Time (Ts, Tb) = T			minutes	60		
			counts	14		
tal Counts						
			com	0.23		
nple Count Rate			cpm	0.23		
nple Count Rate ekground Count Rate	(A)		cpm	0.06	6.8E+04	6.8E+04
nple Count Rate ckground Count Rate Volume (liters)	(A)		cpm liters	0.06 6.8E+04	6.8E+04	6.8E+04
nple Count Rate Ekground Count Rate Volume (liters) t count rate	(B)		cpm liters cpm	0.06 6.8E+04 0.17		
nple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency	(B) (C)		cpm liters cpm cpm/dpm	0.06 6.8E+04 0.17 0.73	6.8E+04 0.73 0.99	6.8E+04 0.73 0.99
nple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency llection Efficiency	(B) (C) (D)		cpm liters cpm cpm/dpm 0.99	0.06 6.8E+04 0.17 0.73 0.99	0.73 0.99	0.73
rple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency llection Efficiency	(B) (C) (D) (E)		cpm liters cpm cpm/dpm 0.99 cpm/dpm	0.06 6.8E+04 0.17 0.73 0.99 0.72	0.73	0.73 0.99
rple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)(E)	(B) (C) (D) (E)	*DWE*TI (C)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24	0.73 0.99	0.73 0.99
nple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)(E) nimum Detectable Activity (d	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT(0	:b))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24 0.27	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency liceincy = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (A)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((CA)) (H)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm pCi/ml	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24 0.27 1.59E-15	0.73 0.99	0.73 0.99
rple Count Rate ekground Count Rate Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (d ekground "Strip" value (F.1)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((A)) (H) Date Updated	Cb))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24 0.27 1.59E-15 7.31E-18	0.73 0.99	0.73 0.99
rple Count Rate ekground Count Rate Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d neentration = (F)/(2.22E9 x (d ekground "Strip" value (F.1) T Concentration Value = (H)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((A)) (H) Date Updated () - (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm pCi/ml	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24 0.27 1.59E-15 7.31E-18 1.58E-15	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency licency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (d ckground "Strip" value (F.1) TT Concentration Value = (H)/(C) (or AE) Fraction = (F2)/(I)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((4)) (A)) (H) Date Updated) - (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24 0.27 1.59E-15 7.31E-18 1.58E-15 2.63%	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency llection Efficiency diciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (d ckground "Strip" value (F.1) TT Concentration Value = (H) CC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((A)) (M) Date Updated) - (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24 0.27 1.59E-15 7.31E-18 1.58E-15 2.63% 1.79E-15	0.73 0.99	0.73 0.99
mple Count Rate ckground Count Rate Volume (liters) t count rate unter Efficiency licency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (d ckground "Strip" value (F.1) TT Concentration Value = (H) CC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((A)) (M) Date Updated) - (F1); (F2)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24 0.27 1.59E-15 7.31E-18 1.58E-15 2.63% 1.79E-15 2.98%	0.73 0.99 0.72	0.73 0.99
mple Count Rate ckground Count Rate r Volume (liters) et count rate cunter Efficiency fliciency = (C) x (D) ctivity (dpm) = (B)/(E) inimum Detectable Activity (d concentration = (F)/(2.22E9 x (A ckground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) =	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((A)) (Date Updated (D) - (F1); (F2) (J) (J) (Goal<10%)		cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yEs/No	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24 0.27 1.59E-15 7.31E-18 1.58E-15 2.63% 1.79E-15 2.98% YES	0.73 0.99 0.72	0.73 0.99
tal Counts mple Count Rate ekground Count Rate r Volume (liters) et count rate punter Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (d encentration = (F)/(2.22E9 x (d ekground "Strip" value (F.1) ET Concentration Value = (H) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) = mal Count?	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((4-4.65*SQRT(4-6.65*SQRT(4-6.65*SQRT(4-6.65*SQRT(4-6.65*SQRT(4-6.65*SQRT(4-6.65*SQRT(4-6.65*SQRT(4-6.65*SQRT(4-6.65*SQRT(4	4/20-4/21 Note: Unexpected DAC or AE for	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yEs/No raction > 100% requir	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24 0.27 1.59E-15 7.31E-18 1.58E-15 2.63% 1.79E-15 2.98% YES	0.73 0.99 0.72 Yes	0.73 0.99 0.72
reple Count Rate ekground Count Rate Volume (liters) t count rate unter Efficiency llection Efficiency liciency = (C) x (D) livity (dpm) = (B)/(E) nimum Detectable Activity (d nenentration = (F)/(2.22E9 x (d ekground "Strip" value (F.1) TC Concentration Value = (H) CC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE) = all Count?	(B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((A)) (Date Updated (D) - (F1); (F2) (J) (J) (Goal<10%)	4/20-4/21 Note: Unexpected DAC or AE for	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml yEs/No	0.06 6.8E+04 0.17 0.73 0.99 0.72 0.24 0.27 1.59E-15 7.31E-18 1.58E-15 2.63% 1.79E-15 2.98% YES	0.73 0.99 0.72 Yes	0.73 0.99

		Section	on I - Collection	Data			
Date:	11/9/2018	Sample ID:	20181031-10	07	RWF	2018-001	
Occupational (DAC):	Limit:	6.00E-14		ml (I)	Breathing Zone:		Work Area:
Non-Occupational (EC):	[D/	AC = 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]		Radionuclides:	DU (Depleted	Uranium)
Location:		ES12 SCA Baradan		Sa	mpled By:	David Ben	es
Wearer:		***		Activi	ty Performed:	NA	
				NA			
Monitored Workers:			- dal Ma	NA		Calibration Due Date:	NA
Lapel Pump Model:	NA		erial No.				The Control of
Air Pump Model:	LV-I	S	erial No.	2591		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minut	es)	L	Start	Stop
10/30/2018	7:30	17:00	570			60.0	60.0
10/31/2018	7:30	17:00	570		-	60	60
		Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
			Minimum Air Sam	ple Volume:	4.5E+03 L	iters	
Sample Volume:	60 (lpr	n)	x	1140 (n	ninutes) =	6.8E+04 Lit	ers (A)
		nes identified are necessary to achie	ve 10% of DAC or A	E value			
Kemarks. Mi	minum sample volum	ies identified are necessary to deme	10 1070 01 15110 01 1				
		Sect	ion II - Analysis	Data			
nstrument Information		Serial Number			Calibratio	on Due Date	13771 137
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736		1/10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
		- T		4.0		Alpha 2nd Count	3rd Count
	bles, Calculations, I	Results	Units	1st Ce	The second second	2nu Count	Sid Count
ount Date				8:0			
Count Time (e.g., noon, 1300, et			minutes	60			
ample Count Time (Ts, Tb) = 7			counts	14			
otal Counts ample Count Rate			cpm	0.2			
Background Count Rate			epm	0.0			
air Volume (liters)	(A)		liters	6.8E	+04	6.8E+04	6.8E+04
Net count rate	(B)		cpm	0.1	5		
Counter Efficiency	(C)		cpm/dpm	0.7	3	0.73	0.73
Collection Efficiency	(D)		0.99	0.9		0.99	0.99
Efficiency = $(C) \times (D)$	(E)		cpm/dpm	0.7		0.72	0.72
Activity $(dpm) = (B)/(E)$	(F)		dpm	0.2	107-0		
Minimum Detectable Activity (c		Γ(Cb))/(E*T) (G)	dpm	0.3			
Concentration = $(F)/(2.22E9 \times ($		040 /40	μCi/ml	1.401			
Background "Strip" value (F.1)	and the same of th	4/20-4/21	uCi/ml	7.311			
NET Concentration Value = (H			uCi/ml	2.33			
OAC (or AE) Fraction = (F2)/(I			Ci/ml	1.991			
MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE)	(J) = (J)/(I) (Goal<10)	241	μCi/ml	3.32			
	- (3)/(1) (Goal<10	76)	Yes/No	YE		Yes	
Final Count?		Note: Unexpected DAC or AE i					
Performed By	David	1 ^	PS-	uires immediat	e R50 notification		11-9-18
Reviewed By	Ed 518	Berres / Da				Date: /	11-9-18

2 3006	- 1 to to 10		20181031-108		VP: 2018-001	
7	11/9/2018	Sample ID:	μC1/ml (Work Area:
Occupational (DAC):	Limit:	2.00E-11	•			
Non-Occupational (EC):	[DAC	= 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
		FS12 Wood Soil Sort Area		Sampled By:	Dave Ber	Tes
		444		Activity Performed:	NA	
Wearer:		NA				
Monitored Workers:			N/	4	- 7 T 1 T 1 T 2 T 1 T 1	140
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	The second secon
		S	erial No.	2773	Calibration Due Date:	3/27/2019
Air Pump Model:	LV-I				Flow P	ate (lpm)
Sample Information		Time				Stop
Collection Date	Start	Stop	Total (minutes)		Start 60.0	60.0
10/30/2018	7:30	17:00	570		60	60
10/31/2018	7:30	17:00	570		Avg. Flow Rate (lpm)	60.0
		Total Time (Tc):	1140		Avg. Flow rate (4911)	
			Minimum Air Sample	Volume: 1.4E+01	Liters	
6.000	(0 (1		x 1	140 (minutes) =	6.8E+04 L	iters (A)
Sample Volume:						
Remarks: Mi	nimum sample volume	s identified are necessary to achie	ve 10% of DAC or AE v	alue.		
		0	. II A - alsois D	ata		
			ion II - Analysis D		ation Due Date	
strument Information		Serial Number		Meter	Detector	Efficiency (a)
Instrument Type		Meter	Detector	12/13/2018	12/13/2018	0.726
L-2929		158817	164736	N/A	N/A	N/A
N/A		N/A	N/A	N/A	Alpha	
			** **	1st Count	2nd Count	3rd Count
Varia	bles, Calculations, R	esults	Units	11/9/2018	and count	
ount Date				10:00		
ount Time (e.g., noon, 1300, et			- Section 1	60		
ample Count Time (Ts, Tb) = 7			minutes	8		
otal Counts			counts	0.13		
ample Count Rate			cpm	0.08		
ackground Count Rate			cpm	6.8E+04	6.8E+04	6.8E+04
ir Volume (liters)	(A)		liters	0.05	0.00	
let count rate	(B)		epm	0.73	0.73	0.73
Counter Efficiency	(C)		cpm/dpm 0.99	0.99	0.99	0,99
ounter Emerency	(D)		0.99		0.72	0.72
	7.16		11	0.72		
Collection Efficiency	(E)		cpm/dpm	0.72	1	
Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E)	(F)	WOLLYWEND OO	dpm	0.07		
Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d	(F) lpm) = (3+4.65*SQRT	(Cb))/(E*T) (G)	dpm dpm	0,07 0.30		
Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (of Concentration = (F)/(2.22E9 x (Concentration = (F)	(F) lpm) = (3+4.65*SQRT A)) (H)		dpm dpm μCi/ml	0.07 0.30 4.89E-16		
Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (of Concentration = (F)/(2.22E9 x (Background "Strip" value (F.1)	(F) lpm) = (3+4.65*SQRT A)) (H) Date Updated	(Cb))/(E*T) (G) 4/20-4/21	dpm dpm μCi/ml uCi/ml	0.07 0.30 4.89E-16 7.31E-18		
follection Efficiency fficiency = (C) x (D) cetivity (dpm) = (B)/(E) finimum Detectable Activity (deconcentration = (F)/(2.22E9 x	(F) lpm) = (3+4.65*SQRT A)) (H) Date Updated () - (F1); (F2)		dpm dpm μCi/ml	0,07 0,30 4.89E-16 7,31E-18 4.81E-16		
follection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E) finimum Detectable Activity (decentration = (F)/(2.22E9 x (decentration)) for Concentration Value = (F) ACT Concentration Value = (F) ACT (or AE) Fraction = (F2)/(I)	(F) lpm) = (3+4.65*SQRT A)) (H) Date Updated O - (F1); (F2)		dpm dpm μCi/ml uCi/ml uCi/ml	0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.00%		
follection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E) finimum Detectable Activity (deconcentration = (F)/(2.22E9 x	(F) Ipm) = (3+4.65*SQRI A)) (H) Date Updated () - (F1); (F2)) (J)	4/20-4/21	dpm dpm μCi/ml uCi/ml	0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.00% 1.99E-15		
Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Animum Detectable Activity (of Concentration = (F)/(2.22E9 x (Background "Strip" value (F.1) NET Concentration Value = (F.2)/(I) OAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE)	(F) Ipm) = (3+4.65*SQRI A)) (H) Date Updated () - (F1); (F2)) (J)	4/20-4/21	dpm dpm µCi/ml uCi/ml uCi/ml uCi/ml	0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.00% 1.99E-15 0.01%		
Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (deconcentration = (F)/(2.22E9 x (Background "Strip" value (F.1) NET Concentration Value = (H.2)/(A) NET Concentration Value = (H.2)/(A) MDC = MDA/V = (G)/(A) MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	(F) Ipm) = (3+4.65*SQRI A)) (H) Date Updated () - (F1); (F2)) (J)	4/20-4/21	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml PCi/ml Yes/No	0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.00% 1.99E-15 0.01% Yes		
Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d Concentration = (F)/(2.22E9 x (Background "Strip" value (F.1) NET Concentration Value = (H DAC (or AE) Fraction = (F2)/(I MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	(F) Ipm) = (3+4.65*SQRI A)) (H) Date Updated () - (F1); (F2)) (J) = (J)/(1) (Goal<109)	4/20-4/21 6) Note: Unexpected DAC or AE	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml PCi/ml Yes/No	0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.00% 1.99E-15 0.01% Yes	tion.	
follection Efficiency fficiency = (C) x (D) activity (dpm) = (B)/(E) finimum Detectable Activity (deconcentration = (F)/(2.22E9 x (deconcentration)) for Concentration Value = (H) ACT Concentration Value = (H) ACT (or AE) Fraction = (F2)/(I) ADC = MDA/V = (G)/(A) ADC Fraction of DAC (or AE) Final Count?	(F) Ipm) = (3+4.65*SQRI A)) (H) Date Updated () - (F1); (F2)) (J) = (J)/(1) (Goal<109)	4/20-4/21 6) Note: Unexpected DAC or AE	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml Pes/No fraction > 100% require	0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.00% 1.99E-15 0.01% Yes	tion.	11-9-18
Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d Concentration = (F)/(2.22E9 x (Background "Strip" value (F.1) NET Concentration Value = (H DAC (or AE) Fraction = (F2)/(I MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	(F) Ipm) = (3+4.65*SQRI A)) (H) Date Updated () - (F1); (F2)) (J)	4/20-4/21 6) Note: Unexpected DAC or AE	dpm dpm µCi/ml uCi/ml uCi/ml µCi/ml PCi/ml Yes/No	0.07 0.30 4.89E-16 7.31E-18 4.81E-16 0.00% 1.99E-15 0.01% Yes	tion.	11-9-18

		Secti	ion I - Collection D	ata		
Date:	11/9/2018	Sample ID:	20181031-109	C.V	RWP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml	(I) Breathing Zo		Work Ar
Non-Occupational (EC):	IDAC	C = 2.0E-11μCi/ml (U-238), EC=	6 0E 14C:/!!			
	louc		6.0Е-14µСиниј	Radionuclio	des: DU (Deplete	d Uranium)
Location:		FS12 (Boundry)		Sampled By:	David Be	erres
Wearer		NA		Activity Performed	NA	
Monitored Workers:			N			
Lapel Pump Model:	NA		Charles		TALE STATES	
		8	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	3666	Calibration Due Date:	8/22/2019
Sample Information		Time			Flow R	ate (Ipm)
Collection Date	Start	Stop	Total (minutes)	7 5 1	Start	Stop
10/30/2018	7:30	17:00	570		60.0	60.0
10/31/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample	Volume: 4.5E+03	Liters	
				Office to the second	Diteis	
Sample Volume:	60 (lpm)		x11	(minutes)	= 6.8E+04 L	iters (A)
Remarks: Mir	imum sample volumes	identified are necessary to achie	ve 10% of DAC or AE v	alue.		
		Secti	on II - Analysis Da	ata		
rument Information		Serial Number		Cali	bration Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929	- X	158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
	oles, Calculations, Res	ults	Units	1st Count	2nd Count	3rd Count
nt Date				11/9/2018		
nt Time (e.g., noon, 1300, etc	.)		4	12:30		
ple Count Time $(Ts, Tb) = T$			minutes	60	The second second	
l Counts			counts	17		
ple Count Rate			cpm	0.28		
kground Count Rate			cpm	0.08		
Volume (liters)	(A)		liters	6.8E+04	6.8E+04	6.8E+04
count rate	(B)		cpm	0.20		
nter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ection Efficiency	(D)		0.99	0.99	0.99	0.99
	(E)		cpm/dpm	0.72	0.72	0.72
	(F)		dpm	0.28		
vity (dpm) = (B)/(E)						
vity (dpm) = (B)/(E) imum Detectable Activity (dpr	m) = (3+4.65*SQRT(C	b))/(E*T) (G)	dpm	0.30		
vity (dpm) = (B)/(E) imum Detectable Activity (dpm centration = (F)/(2.22E9 x (A)	m) = (3+4.65*SQRT(C)) (H)		μCi/ml	1.86E-15		
vity (dpm) = (B)/(E) imum Detectable Activity (dpm centration = (F)/(2.22E9 x (A) kground "Strip" value (F.1)	m) = (3+4.65*SQRT(C)) (H) Date Updated	(b))/(E*T) (G) 4/20-4/21	μCi/ml uCi/ml	1.86E-15 7.31E-18		
vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) sground "Strip" value (F.1) Concentration Value = (H)	m) = (3+4.65*SQRT(C)) (H) Date Updated		μCi/ml	1.86E-15 7.31E-18 1.86E-15		
wity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) kground "Strip" value (F.1) Concentration Value = (H)- C (or AE) Fraction = (F2)/(I)	m) = (3+4.65*SQRT(C)) (H) Date Updated		μCi/ml uCi/ml	1.86E-15 7.31E-18		
vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) sground "Strip" value (F.1) Concentration Value = (H) - C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	m) = (3+4.65*SQRT(C)) (H) Date Updated -(F1); (F2)		μCi/ml uCi/ml	1.86E-15 7.31E-18 1.86E-15 3.09% 1.99E-15		
wity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (6)	m) = (3+4.65*SQRT(C)) (H) Date Updated -(F1); (F2)		μCi/ml uCi/ml uCi/ml	1.86E-15 7.31E-18 1.86E-15 3.09%		
vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) sground "Strip" value (F.1) Concentration Value = (H) - C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (m) = (3+4.65*SQRT(C)) (H) Date Updated -(F1); (F2)		μCi/ml uCi/ml uCi/ml	1.86E-15 7.31E-18 1.86E-15 3.09% 1.99E-15	Yes	
vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) sground "Strip" value (F.1) Concentration Value = (H) - C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (m) = (3+4.65*SQRT(C))) (H) Date Updated -(F1); (F2) (J) (J)/(I) (Goal<10%)		μCi/ml uCi/ml uCi/ml μCi/ml μCi/ml Yes/No	1.86E-15 7.31E-18 1.86E-15 3.09% 1.99E-15 3.32% YES		
wity (dpm) = (B)/(E) mum Detectable Activity (dpi entration = (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H). Cor AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (Count?	m) = (3+4.65*SQRT(C)) (H) Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 ote: Unexpected DAC or AE fra	μCi/ml uCi/ml uCi/ml μCi/ml Yes/No action > 100% requires	1.86E-15 7.31E-18 1.86E-15 3.09% 1.99E-15 3.32% YES	tion.	
wity (dpm) = (B)/(E) mum Detectable Activity (dpi mum Detectable Activity (dpi mum Detectable Activity (dpi mum Detectable Activity (dpi mum Detectable (F)/(2.22E9 x (A) ground "Strip" value (F.1) Concentration Value = (H) (or AE) Fraction = (F2)/(I) C= MDA/Y = (G)/(A) Fraction of DAC (or AE) = (Count?	m) = (3+4.65*SQRT(C)) (H) Date Updated (F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 ote: Unexpected DAC or AE fra	μCi/ml uCi/ml uCi/ml μCi/ml μCi/ml Yes/No	1.86E-15 7.31E-18 1.86E-15 3.09% 1.99E-15 3.32% YES	tion.	11-9-18
ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dpi centration = (F)/(2.22E9 x (A) kground "Strip" value (F.1) f Concentration Value = (H) - C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = (I) I Count? Performed By:	m) = (3+4.65*SQRT(C))) (H) Date Updated -(F1); (F2) (J) (J)/(I) (Goal<10%)	4/20-4/21 ote: Unexpected DAC or AE fra	μCi/ml uCi/ml uCi/ml μCi/ml Yes/No action > 100% requires	1.86E-15 7.31E-18 1.86E-15 3.09% 1.99E-15 3.32% YES	Date:	11-9-18

	μCι/ml (1) 5.0E-14μCi/ml]	Radionuclides: Sampled By: Activity Performed:	General Area: DU (Depleted	Uranium) res
= 2.0E-11µCi/ml (U-238), EC= 6 FS12 Wood Soil Sort Area NA Se Se Time Stop 17:00 17:00	NA rrial No. Total (minutes)	Radionuclides: Sampled By: Activity Performed:	DU (Depleted Dave Berr NA Calibration Due Date:	Uranium) res
FS12 Wood Soil Sort Area NA Se Se Time Stop 17:00 17:00	NA erial No. Total (minutes)	Sampled By:	Dave Berr NA Calibration Due Date:	es
NA Se Se Se Time Stop 17:00 17:00	NA rrial No. rrial No. Total (minutes)	Activity Performed:	NA Calibration Due Date:	
NA Se Se Se Time Stop 17:00 17:00	NA rrial No. rrial No. Total (minutes)	NA	Calibration Due Date:	NA .
Stop 17:00 17:00	erial No.	NA	Calibration Due Date:	NA
Time Stop 17:00 17:00	erial No.	NA		NA
Time Stop 17:00 17:00	rial No. Total (minutes)	- 188		NA
Time Stop 17:00 17:00	Total (minutes)	2773	Calibration Due Date:	
Stop 17:00 17:00			A THE COURT OF THE PARTY OF THE	3/27/2019
17:00 17:00			Flow Ra	te (lpm)
17:00 17:00			Start	Stop
			60.0	60,0
	570		60	60
	1140		Avg. Flow Rate (lpm)	60.0
	3.6 : 4:-0	olume: 1.8E+01	Liters	
	Minimum Air Sample Vo	Olullic. 1.0E101		
	x 114	0 (minutes) =	6.8E+04 Lite	ers (A)
in the day was a second to achieve	o 10% of DAC or AF val	110		
identified are necessary to achiev	e 10% of DAC of AE val	uc,		
Section	on II - Analysis Dat	a		
Serial Number			ion Due Date	
Meter	Detector	Meter	Detector	Efficiency (a)
58817	164736	12/13/2018	12/13/2018	0.726
N/A	N/A	N/A	N/A	N/A
			Alpha	
ilts	Units	1st Count	2nd Count	3rd Count
		11/12/2018		
		10:00		6
	minutes	60		
	counts	8		
	cpm	0.13		
	cpm	0.15		
	liters	6.8E+04	6.8E+04	6.8E+04
	epm	-0.02		
	cpm/dpm	0.73	0.73	0.73
	0.99	0.99	0.99	0,99
	cpm/dpm	0.72	0.72	0.72
	dpm	-0.02		
b))/(E*T) (G)	dpm	0.39		
	μCi/ml	-1.53E-16		
4/20-4/21	uCi/ml	7.31E-18		
	uCi/ml	-1.60E-16		
		0.00%		
	μCi/ml	2.56E-15		/
		0.01%		
	Yes/No	Yes		
	action > 100% requires	immediate RSO notification	n.	
ote: Unexpected DAC or AE fr			1	1 17-18
1			Date:	1.16-10
1 1 -			200	1-11-10
	res / Daw B	res / Daw B —	ote: Unexpected DAC or AE fraction > 100% requires immediate RSO notification	te: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.

		Secti	on I - Collection Dat	a		
The state of the s	11/12/2018	Sample ID:	20181105-111	R	VP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μC1/ml (1)	Breathing Zone:	General Area:	Work Ar
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:		
Location:		FS12 (Boundry)	73.7.3	Sampled By:		
Wearer:				4 4 7 4 4 4 4 4 4	220	nes
A. O. W. C. W. C. W.		NA		Activity Performed:	NA	
Monitored Workers:			NA NA			
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	3666	Calibration Due Date:	8/22/2019
Sample Information		Time			Flow R	ate (Ipm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
11/1/2018	7:30	17:00	570		60.0	60.0
11/5/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
Sample Volume:	- 10	identified are necessary to achiev	x1140 we 10% of DAC or AE value on II - Analysis Data	e	6.8E+04 Li	ters (A)
rument Information		Serial Number		-	ion Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
	oles, Calculations, Res	ults	Units	1st Count	2nd Count	3rd Count
nt Date				11/12/2018		
nt Time (e.g., noon, 1300, etc. ple Count Time (Ts, Tb) = T	.)			12:30		
Counts			minutes	60		
ple Count Rate			counts	10		
ground Count Rate			cpm	0.17		
/olume (liters)	(A)		cpm liters	0.15	C DEL 04	CAD: N
ount rate	(B)		cpm	6.8E+04 0.02	6.8E+04	6.8E+04
iter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ection Efficiency	(D)		0.99	0.99	0.99	0.99
iency = (C) x (D)	(E)		cpm/dpm	0.72	0,72	0.72
rity (dpm) = (B)/(E)	(F)		dpm	0.02		
mum Detectable Activity (dpr	m) = (3+4.65*SQRT(C))	b))/(E*T) (G)	dpm	0,39		
centration = $(F)/(2.22E9 \times (A)$) (H)		μCi/ml	1.53E-16		
ground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
Concentration Value = (H) -	(F1); (F2)		uCi/ml	1.45E-16		
(or AE) Fraction = (F2)/(I)				0.24%		
C = MDA/V = (G)/(A)	(J)		μCi/ml	2.56E-15		
Fraction of DAC (or AE) = ((J)/(I) (Goal<10%)			4.27%		
Count?			Yes/No	YES	Yes	
Performed By:		res Dan Be	action > 100% requires im	mediate RSO notification		1-12-18
Reviewed By:	David Ber Ed Sieme	vs 18	_			1-12-18

		Secti	on I - Collection D	ata			
Date:	12/3/2018	Sample ID:	20181109-112		RWP:	2018-001	
Occupational (DAC):	Limit:	2.00E-11	μCı/ml	(I) Breath	ing Zone:		Work Are
Non-Occupational (EC):	TDA.		COP 14 O:/- II				
Non-Occupational (EC):	[DA	$C = 2.0E-11\mu Ci/ml$ (U-238), EC=	6.0E-14µCi/ml]	Radio	onuclides:	DU (Depleted	Uranium)
Location:		FS12 Wood Soil Sort Area	1	Sampled	By:	Dave Ben	res
Wearer:		NA		Activity Perfo	ormed:	NA	
Monitored Workers:			N	A			
Lapel Pump Model:	NA	0	erial No.	- 35		O. I.L D. D	
	NA		(U) (I) (I) (I) (I) (I) (I) (I) (I) (I) (I	NA		Calibration Due Date:	
Air Pump Model:	LV-1	S	erial No.	2773		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes)	1		Start	Stop
11/8/2018	7:30	17:00	570			60.0	60.0
11/9/2018	7:30	17:00	570			60	60
		Total Time (Tc):	1140			Avg. Flow Rate (lpm)	60.0
Remarks: Mi	nimum sample volume	s identified are necessary to achie	on II - Analysis D				
rument Information		Serial Number			Calibration	Due Date	
Instrument Type		Meter	Detector	V	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/1	13/2018	12/13/2018	0.726
N/A		N/A	N/A		N/A	N/A	N/A
1.00						Alpha	
	bles, Calculations, Re	sults	Units	1st Count		2nd Count	3rd Count
nt Date				11/30/2018			
nt Time (e.g., noon, 1300, et ple Count Time (Ts, Tb) = T			and a large of the	10:00			
Counts			minutes	19			
ple Count Rate			cpm	0.32			
ground Count Rate			cpm	0.08			
/olume (liters)	(A)		liters	6.8E+04		6.8E+04	6.8E+04
count rate	(B)		cpm	0.24			
nter Efficiency	(C)		cpm/dpm	0.73		0.73	0.73
ection Efficiency	(D)		0.99	0.99	300	0.99	0.99
$iency = (C) \times (D)$	(E)		cpm/dpm	0.72		0.72	0.72
vity $(dpm) = (B)/(E)$	(F)		dpm	0.33			
	(3+4.65*SORT)	Cb))/(E*T) (G)	dpm	0.30			
mum Detectable Activity (d				2.17E-15			
mum Detectable Activity (decentration = (F)/(2.22E9 x (A	(H)	100 101	μCi/ml				
mum Detectable Activity (detectation = (F)/(2.22E9 x (Asground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18			
mum Detectable Activity (detectation = (F)/(2.22E9 x (Astronomy Value (F.1)) Concentration Value = (H)	(H) Date Updated -(F1); (F2)	4/20-4/21		7.31E-18 2.16E-15			
mum Detectable Activity (d centration = (F)/(2.22E9 x (E ground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	Date Updated - (F1); (F2)	4/20-4/21	uCi/ml uCi/ml	7.31E-18 2.16E-15 0.01%			
mum Detectable Activity (detectation = (F)/(2.22E9 x (f)/((J) (H) Date Updated - (F1); (F2)	4/20-4/21	uCi/ml	7.31E-18 2.16E-15 0.01% 1.99E-15			
	(J) (H) Date Updated - (F1); (F2)	4/20-4/21	uCi/ml uCi/ml μCi/ml	7.31E-18 2.16E-15 0.01% 1.99E-15 0.01%			
mum Detectable Activity (determine (F)/(2.22E9 x (t)) ground "Strip" value (F.1) Concentration Value = (H) (or AE) Fraction = (F2)/(I) C= MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(J) (H) Date Updated (-(F1); (F2) (J) (J) (Goal<10%)		uCi/ml uCi/ml μCi/ml Yes/No	7.31E-18 2.16E-15 0.01% 1.99E-15 0.01% Yes	otification		
mum Detectable Activity (detectation = (F)/(2.22E9 x (detectation = (F)/(2.22E9 x (detectation = (F1))) Concentration Value = (H) Cor AE) Fraction = (F2)/(I) C = MDAV = (G)/(A) C Fraction of DAC (or AE) = 1 Count?	(J) (H) Date Updated - (F1); (F2) (J) (J)(I) (Goal<10%)	Note: Unexpected DAC or AE fr	uCi/ml uCi/ml μCi/ml Yes/No	7.31E-18 2.16E-15 0.01% 1.99E-15 0.01% Yes	notification.		U
mum Detectable Activity (detectation = {F}/(2.22E9 x (detectation = {F}/(2.22E9 x (detectation = {F}/(2.22E9 x (detectation = {F}/(2.22E9 x (detectation = {F}/(2.2E9 x (d	(J) (H) Date Updated (-(F1); (F2) (J) (J) (Goal<10%)	Note: Unexpected DAC or AE fr	uCi/ml uCi/ml μCi/ml Yes/No	7.31E-18 2.16E-15 0.01% 1.99E-15 0.01% Yes	ootification.	Date:	1/30/18

			ion I - Collection	Data			
Date:	12/3/2018	Sample ID:	20181109-1	13	RWP:	2018-001	
Occupational (DAC):	Limit:	6.00E-14	μC1/1	nl (1) Br	eathing Zone:		Work A
Non-Occupational (EC):	[DAG	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14uCi/ml1		adionuclides:		
Location:			Tipe min		-	DU (Depleted	Uranium)
Wearer:		FS12 (Boundry)		Samp	led By:	David Ber	res
- 14 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		NA		Activity P	erformed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA	\$	Serial No.	NA	(Calibration Due Date:	NA
Air Pump Model:	LV-1	8	Serial No.	3666			
Sample Information				10		Calibration Due Date:	8/22/2019
Collection Date	Start	Time	m		_	Flow Ra	te (lpm)
11/8/2018	7:30	Stop 17:00	Total (minute	s)		Start	Stop
11/9/2018	7:30	17:00	570 570		-	60.0	60.0
		Total Time (Tc):	1140		-	60	60
		(10)	1140			kvg. Flow Rate (lpm)	60.0
ument Information		Secti Serial Number	on II - Analysis l	Data	2.301		
Instrument Type		Meter Serial Number			Calibration 1	Due Date	
L-2929		158817	Detector 164736		Meter	Detector	Efficiency (α)
N/A		N/A	N/A		1/10/2019	1/10/2019	0.726
			IVA		N/A	N/A Alpha	N/A
	les, Calculations, Resi	ilts	Units	1st Count		2nd Count	3rd Count
t Date				11/30/2018			ord Count
Time (e.g., noon, 1300, etc.))			12:30			
le Count Time (Ts, Tb) = T Counts			minutes	60			
le Count Rate			counts	7			
ground Count Rate			cpm	0.12			
olume (liters)	(A)		cpm liters	0.08 6.8E+04		240.11	-
ount rate	(B)		cpm	0.04		6.8E+04	6.8E+04
er Efficiency	(C)		cpm/dpm	0.73		0.73	0.73
ction Efficiency	(D)		0.99	0.99		0.99	0.73
	(E)		cpm/dpm	0.72		0.72	0.72
ency = $(C) \times (D)$			dpm	0.05			71.0
ency = $(C) \times (D)$ ty $(dpm) = (B)/(E)$	(F)	At an area of the second secon					
ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm) = (3+4.65*SQRT(Cl))/(E*T) (G)	dpm	0.30			
ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A))	(H) = (3+4.65*SQRT(Ct		μCi/ml	3.36E-16			
ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) round "Strip" value (F.1)	(H) Date Updated	4/20-4/21	μCi/ml uCi/ml	3.36E-16 7.31E-18			
ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - (E)	(H) Date Updated		μCi/ml	3.36E-16 7.31E-18 3.29E-16		10	
ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(H) Date Updated (F1); (F2)		μCi/ml uCi/ml uCi/ml	3.36E-16 7.31E-18 3.29E-16 0.55%			
ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I)	(H) Date Updated (F1); (F2)		μCi/ml uCi/ml	3.36E-16 7.31E-18 3.29E-16 0.55% 1.99E-15			
ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(H) Date Updated (F1); (F2)		μCi/ml uCi/ml μCi/ml	3.36E-16 7.31E-18 3.29E-16 0.55% 1.99E-15 3.32%		Ver	
ency = (C) x (D) ty (dpm) = (B)/(E) tum Detectable Activity (dpm intration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) Concentration Value = (H) - (F) or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J	(H) Date Updated (F1); (F2) (J) (J) (Goal<10%)		μCi/ml uCi/ml uCi/ml μCi/ml Υes/No	3.36E-16 7.31E-18 3.29E-16 0.55% 1.99E-15 3.32% YES	notification.	Yes	

		Sect	ion I - Collection D	ata		
Date:	12/3/2018	Sample ID:	20181113-114	R	WP: 2018-001	
Occupational (DAC):	Limit:	2.00E-11	μCı/ml	(1) Breathing Zone:	General Area:	Work Are
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	6.0E-14uCi/ml1	Radionuclides:	DU (Depleted	
Location:		FS12 Wood Soil Sort Are				
Wearer:			4			ies
A STATE OF THE STA		NA		Activity Performed:	NA	
Monitored Workers:			N	A		
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2773	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
11/12/2018	7:30	17:00	570		60,0	60.0
11/13/2018	7:30	17:00	570		60	60
	1	Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
Sample Volume:				40 (minutes) =	Liters 6.8E+04 Lit	ers (A)
Remarks: Min	imum sample volumes	identified are necessary to achie	ve 10% of DAC or AE v	alue.		
		Sect	ion II - Analysis Da	nta		
ument Information		Serial Number		Calibra	ion Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	12/13/2018	12/13/2018	0.726
N/A		N/A	N/A	N/A	N/A	N/A
***					Alpha	
t Date	les, Calculations, Res	ults	Units	1st Count	2nd Count	3rd Count
	`			11/30/2018		
t Time (e.g., noon, 1300, etc. ele Count Time (Ts, Tb) = T	.)		adinasi -	10:00		
Counts			minutes	60		
ole Count Rate			counts	14		
			cpm	0.23		
ground Count Rate folume (liters)	(4)		cpm	0.08		
	(A)		liters	6.8E+04	6.8E+04	6.8E+04
ount rate	(B)		cpm	0.15		
ter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ction Efficiency	(D)		0.99	0.99	0.99	0.99
ency = (C) x (D)	(E)		epm/dpm	0.72	0.72	0.72
ity (dpm) = (B)/(E)	(F)	d 1/ //mann. 600	dpm	0.21		
num Detectable Activity (dpr entration = (F)/(2.22E9 x (A)		(b))/(E*1) (G)	dpm	0,30		
ground "Strip" value (F.1)		4/20 4/21	μCi/ml	1.40E-15		
Concentration Value = (H) -	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
	(F1); (F2)		uCi/ml	1.40E-15		
(or AE) Fraction = (F2)/(I)	m		0000	0.01%		
= MDA/V = (G)/(A) Fraction of DAC (or AE) = ((J)		μCi/ml	1.99E-15		
Traction of DAC (of AE) = (J)/(I) (Goal<10%)		W AV	0.01%		
Count?			Yes/No	Yes		
Count?	N	ofor Unormated DAC	- ati > 1000/	1 P		
	David C	ote: Unexpected DAC or AE fr	Be_	immediate RSO notification	Date: _]	la. la

	14 15 15 15 15	Comple ID:	n I - Collection	116 es 12/3/18 R	VP: 2018-001	
Date:	12/3/2018	Sample ID.	μСι/п	al (1) Breathing Zone:	General Area:	Work Area:
Occupational (DAC):	Limit:	6.00E-14				
Non-Occupational (EC):	[DA	$C = 2.0E-11\mu Ci/ml$ (U-238), EC=	5.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 (Boundry)		Sampled By:	David Be	rres
		2.7		Activity Performed:	NA	
5 S S S S S S S S S S S S S S S S S S S		THE STATE OF THE S		NA		
Monitored Workers:					0.13 - 2 - D - D	NA
Lapel Pump Model:	NA	Se	erial No.	NA	Calibration Due Date:	24 24 29
Air Pump Model:	LV-1	S	erial No.	3666	Calibration Due Date:	8/22/2019
		Time			Flow R	ate (lpm)
Sample Information	Cont	Stop	Total (minute	(s)	Start	Stop
Collection Date	7:30	17:00	570	-/	60.0	60.0
11/12/2018	7:30	17:00	570		60	60
11/13/2018	7.30	Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
				ole Volume: 5.0E+03	Liters	
			Minimum Air Samp	ole volume. S.OE 103		
Sample Volume:	60 (lpm)	x	1140 (minutes) =	6.8E+04 Li	iters (A)
			100/ -CDAC A	Euglise		
Remarks: Mi	mimum sample volum	es identified are necessary to achie	ve 10% of DAC of A	E value.		
		Cont	ion II Analysis	Data		
			ion II - Analysis		ation Due Date	
trument Information		Serial Number	Detector	Meter	Detector	Efficiency (a)
Instrument Type		Meter	164736	1/10/2019	1/10/2019	0.726
L-2929		158817	N/A	N/A	N/A	N/A
N/A		N/A	IV/A	, ,,,,	Alpha	
40.1	11 G1 Le D	Ite	Units	1st Count	2nd Count	3rd Count
	ables, Calculations, R	esuits	Cinto	11/30/2018		
unt Date				12:30		
unt Time (e.g., noon, 1300, e			minutes	60		
mple Count Time (Ts, Tb) = 7			counts	20		
tal Counts			cpm	0.33		
mple Count Rate			cpm	0.10		
ckground Count Rate	/45		liters	6.8E+04	6.8E+04	6.8E+04
	(A)					
r Volume (liters)						
r Volume (liters)	(B)		cpm	0.23	0.73	0.73
r Volume (liters) et count rate nunter Efficiency	(B) (C)		cpm cpm/dpm	0.23 0.73	0.73	0.73 0.99
r Volume (liters) et count rate eunter Efficiency llection Efficiency	(B) (C) (D)		cpm cpm/dpm 0.99	0.23 0.73 0.99		
r Volume (liters) et count rate nunter Efficiency ellection Efficiency ficiency = (C) x (D)	(B) (C) (D) (E)		cpm cpm/dpm 0.99 cpm/dpm	0.23 0.73 0.99 0.72	0.99	0.99
r Volume (liters) et count rate enter Efficiency ellection Efficiency ficiency = (C) × (D) etivity (dpm) = (B)(E)	(B) (C) (D) (E) (F)	VCP/MEST) (C)	cpm cpm/dpm 0.99 cpm/dpm dpm	0.23 0.73 0.99 0.72 0.32	0.99	0.99
r Volume (liters) et count rate cunter Efficiency ellection Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (dec	(B) (C) (D) (E) (F) (ipm) = (3+4.65*SQR)	(Cb))/(E*T) (G)	cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.23 0.73 0.99 0.72 0.32 0.33	0.99	0.99
r Volume (liters) et count rate punter Efficiency ellection Efficiency ficiency = (C) × (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (concentration = (F)/(2.22E9 × (detection = (F)/(2.22E9 × (detectio	(B) (C) (D) (E) (F) (dpm) = (3+4.65*SQR1 (A)) (H)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	0.23 0.73 0.99 0.72 0.32	0.99	0.99
r Volume (liters) et count rate punter Efficiency ellection Efficiency ficiency = (C) × (D) etivity (dpm) = (B)/(E) enimum Detectable Activity (concentration = (F)/(2.22E9 × (ackground "Strip" value (F.1)	(B) (C) (D) (E) (F) (dpm) = (3+4.65*SQRT(A)) (H) Date Updated	(Cb))/(E*T) (G) 4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	0.23 0.73 0.99 0.72 0.32 0.33 2.14E-15	0.99	0.99
r Volume (liters) et count rate punter Efficiency elicetion Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E) enimum Detectable Activity (concentration = (F)/(2.22E9 x (exeground "Strip" value (F.1) ET Concentration Value = (B	(B) (C) (D) (E) (F) (dpm) = (3+4.65*SQRT(A)) (H) Date Updated (I) - (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	0.23 0.73 0.99 0.72 0.32 0.33 2.14E-15 7.31E-18 2.13E-15	0.99	0.99
r Volume (liters) et count rate punter Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/	(B) (C) (D) (E) (F) (dpm) = (3+4.65*SQRT (A)) (H) Date Updated (I) - (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.23 0.73 0.99 0.72 0.32 0.33 2.14E-15 7.31E-18	0.99	0.99
r Volume (liters) et count rate punter Efficiency elicetion Efficiency ficiency = (C) × (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (concentration = (F)/(2.22E9 × (ackground "Strip" value (F.1) ET Concentration Value = (H.2) AC (or AE) Fraction = (F2)/(I.2) DC = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) dpm) = (3+4.65*SQRT(A)) (H) Date Updated (I) - (F1); (F2) (J)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	0.23 0.73 0.99 0.72 0.32 0.33 2.14E-15 7.31E-18 2.13E-15 3.55%	0.99	0.99
r Volume (liters) et count rate punter Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (E) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	(B) (C) (D) (E) (F) dpm) = (3+4.65*SQRT(A)) (H) Date Updated (I) - (F1); (F2) (J)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.23 0.73 0.99 0.72 0.32 0.33 2.14E-15 7.31E-18 2.13E-15 3.55% 2.18E-15 3.63%	0.99	0.99
r Volume (liters) et count rate punter Efficiency elicetion Efficiency ficiency = (C) × (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (concentration = (F)/(2.22E9 × (ackground "Strip" value (F.1) ET Concentration Value = (H.2) AC (or AE) Fraction = (F2)/(I.2) DC = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) dpm) = (3+4.65*SQRT(A)) (H) Date Updated (I) - (F1); (F2) (J)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.23 0.73 0.99 0.72 0.32 0.33 2.14E-15 7.31E-18 2.13E-15 3.55% 2.18E-15 3.63% YES	0.99 0.72 Yes	0.99
r Volume (liters) et count rate punter Efficiency ficiency = (C) x (D) etivity (dpm) = (B)/(E) inimum Detectable Activity (concentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (E) AC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A) DC Fraction of DAC (or AE)	(B) (C) (D) (E) (F) dpm) = (3+4.65*SQRT(A)) (H) Date Updated (I) - (F1); (F2) (J)	4/20-4/21 6) Note: Unexpected DAC or AE	cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml pCi/ml Yes/No fraction > 100% req	0.23 0.73 0.99 0.72 0.32 0.33 2.14E-15 7.31E-18 2.13E-15 3.55% 2.18E-15 3.63% YES	0.99 0.72 Yes	0.99
t count rate unter Efficiency llection Efficiency llection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (concentration = (F)/(2.22E9 x (concentration Value = (H)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E)/(E	(B) (C) (D) (E) (F) (dpm) = (3+4.65*SQRTA) (A)) (H) Date Updated (I) - (F1); (F2) (J) (J) = (J)/(I) (Goal<10%	4/20-4/21 6) Note: Unexpected DAC or AE	cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml pCi/ml Yes/No fraction > 100% req	0.23 0.73 0.99 0.72 0.32 0.33 2.14E-15 7.31E-18 2.13E-15 3.55% 2.18E-15 3.63% YES	0.99 0.72 Yes	0.99
r Volume (liters) It count rate nunter Efficiency Illection Efficiency Indication I	(B) (C) (D) (E) (F) dpm) = (3+4.65*SQRT(A)) (H) Date Updated (I) - (F1); (F2) (J)	4/20-4/21 6) Note: Unexpected DAC or AE	cpm cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml uCi/ml pCi/ml Yes/No fraction > 100% req	0.23 0.73 0.99 0.72 0.32 0.33 2.14E-15 7.31E-18 2.13E-15 3.55% 2.18E-15 3.63% YES	0.99 0.72 Yes tion.	0.99

Date:	12/3/2018	Sample ID:	20181115-115	RWF	2018-001	
Occupational (DAC):	Limit:		μCi/ml (1)	Breathing Zone:	The state of the s	Work Area
		6.00E-14				
Non-Occupational (EC): ✓	[DAC	= 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/mi]		DU (Depleted	
Location:		FS12 (Boundry)		Sampled By:	David Ber	res
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:		5	Serial No.	NA	Calibration Due Date:	NA
	1914 A		Serial No.	3666	Calibration Due Date:	
Air Pump Model:	LV-1		Serial No.	3000		
Sample Information		Time			Flow Ra	
Collection Date	Start	Stop	Total (minutes)		Start	Stop
11/14/2018	7:30	17:00	570		60.0	60.0
11/15/2018	7:30	17:00	570		60	60
		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
Remarks: Mi	nimum sample volume	s identified are necessary to achie	eve 10% of DAC or AE valution II - Analysis Data			
trument Information		Serial Number		Calibratio	n Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0,726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	2.10
	bles, Calculations, Re	sults	Units	1st Count	2nd Count	3rd Count
unt Date			1000	12/3/2018		
	(C.)		minutes	60		
nple Count Time (Ts, Tb) = T						
nple Count Time (Ts, Tb) = T al Counts			counts	11.		
nple Count Time (Ts, Tb) = T al Counts nple Count Rate			counts			
nple Count Time (Ts, Tb) = T al Counts nple Count Rate ekground Count Rate			counts	0.18	6.8E+04	6.8E+04
mple Count Time (Ts, Tb) = T nal Counts mple Count Rate ekground Count Rate Volume (liters)			counts cpm cpm	0.18 0.10	6.8E+04	6,8E+04
nple Count Time (Ts, Tb) = T tal Counts nple Count Rate ekground Count Rate Volume (liters) t count rate	(A)		counts cpm cpm liters	0.18 0.10 6.8E+04	6.8E+04 0.73	6.8E+04 0.73
nple Count Time (Ts, Tb) = T tal Counts nple Count Rate ekground Count Rate Volume (liters) t count rate unter Efficiency	(A) (B)		counts cpm cpm liters cpm	11 0.18 0.10 6.8E+04 0.08		0.73 0.99
nple Count Time (Ts, Tb) = T tal Counts nple Count Rate ekground Count Rate Volume (liters) t count rate unter Efficiency	(A) (B) (C)		counts cpm cpm liters cpm cpm/dpm	11 0.18 0.10 6.8E+04 0.08 0.73 0.99 0.72	0.73	0.73
mple Count Time (Ts, Tb) = T tal Counts mple Count Rate ekground Count Rate Volume (liters) t count rate unter Efficiency flection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)(E)	(A) (B) (C) (D) (E)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	11 0.18 0.10 6.8E+04 0.08 0.73 0.99 0.72 0.12	0.73 0.99	0.73 0.99
mple Count Time (Ts, Tb) = T tal Counts mple Count Rate ekground Count Rate Volume (liters) t count rate unter Efficiency llection Efficiency ficiency = (C) x (D) tivity (dpm) = (B)(E) nimum Detectable Activity (d	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(4)	Cb))/(E*T) (G)	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	11 0.18 0.10 6.8E+04 0.08 0.73 0.99 0.72 0.12 0.33	0.73 0.99	0.73 0.99
aple Count Time (Ts, Tb) = T al Counts apple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency deciency = (C) x (D) deciency = (C) x (D) deciency = (F)/(2 22E9 x (A)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(6A)) (H)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	0.18 0.10 6.8E+04 0.08 0.73 0.99 0.72 0.12 0.33 7.64E-16	0.73 0.99	0.73 0.99
aple Count Time (Ts, Tb) = T al Counts apple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency deciney = (C) x (D) tivity (dpm) = (B)(E) nimum Detectable Activity (dencentration = (F)/(2.22E9 x (A)) ekground "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (H) Date Updated	Cb))/(E*T) (G) 4/20-4/21	counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	11 0.18 0.10 6.8E+04 0.08 0.73 0.99 0.72 0.12 0.33 7.64E-16 7.31E-18	0.73 0.99	0.73 0.99
aple Count Time (Ts, Tb) = T al Counts apple Count Rate ekground Count Rate Volume (liters) count rate unter Efficiency liciency = (C) x (D) livity (dpm) = (B)/(E) nimum Detectable Activity (dencentration = (F)/(2.22E9 x (deskground "Strip" value (F.1) T Concentration Value = (H)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(4A)) (H) Date Updated ()-(F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm µCi/ml	11 0.18 0.10 6.8E+04 0.08 0.73 0.99 0.72 0.12 0.33 7.64E-16 7.31E-18	0.73 0.99	0.73 0.99
nple Count Time (Ts, Tb) = T tal Counts nple Count Rate ekground Count Rate Volume (liters) t count rate unter Efficiency literacy literacy (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (d ncentration = (F)/(2.22E9 x (I ekground "Strip" value (F.1) Tr Concentration Value = (H) AC (or AE) Fraction = (F2)/(I)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT(A)) (H) Date Updated ()-(F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml	11 0.18 0.10 6.8E+04 0.08 0.73 0.99 0.72 0.12 0.33 7.64E-16 7.3IE-18 7.56E-16 1.26%	0.73 0.99	0.73 0.99
mple Count Time (Ts, Tb) = T tal Counts mple Count Rate ekground Count Rate 'Volume (liters) t count rate unter Efficiency liceincy = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dencentration = (F)/(2.22E9 x (ickground "Strip" value (F.1) The Concentration Value = (H) CC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (B) Date Updated () - (F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml	11 0.18 0.10 6.8E+04 0.08 0.73 0.99 0.72 0.12 0.33 7.64E-16 7.31E-18 7.56E-16 1.26% 2.18E-15	0.73 0.99	0.73 0.99
unt Time (e.g., noon, 1300, et mple Count Time (Ts, Tb) = T tal Counts mple Count Rate ckground Count Rate r Volume (liters) the count rate unter Efficiency ficiency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dmcentration = (F)/(2.22E9 x (deckground "Strip" value (F.1) are Concentration value = (H)/(C) (The Concentration = (F2)/(I)/(I)/(I)/(I) (T)/(I) (T)/(I) (T)/(I)/(I)/(I)/(I)/(I)/(I)/(I)/(I)/(I)/(I	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT((A)) (H) Date Updated ()-(F1); (F2)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	11 0.18 0.10 6.8E+04 0.08 0.73 0.99 0.72 0.12 0.33 7.64E-16 7.31E-18 7.56E-16 1.26% 2.18E-15 3.63%	0.73 0.99 0.72	0.73 0.99
nple Count Time (Ts, Tb) = T nal Counts nple Count Rate ekground Count Rate Volume (liters) t count rate unter Efficiency lection Efficiency iciency = (C) x (D) tivity (dpm) = (B)/(E) nimum Detectable Activity (dencentration = (F)/(2.22E9 x (deckground "Strip" value (F.1) The Concentration Value = (H) CC (or AE) Fraction = (F2)/(I) DC = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) (pm) = (3+4.65*SQRT((A)) (H) Date Updated ()-(F1); (F2) (J) (J) = (J)/(I) (Goal<10%)		counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml uCi/ml	11 0.18 0.10 6.8E+04 0.08 0.73 0.99 0.72 0.12 0.33 7.64E-16 7.31E-18 7.56E-16 1.26% 2.18E-15 3.63% YES	0.73 0.99 0.72	0.73 0.99

Occupational (DAC): Non-Occupational (EC): Location: Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: L Sample Information Collection Date	[DAC = 2.0E-11] FS12 NA NA NA V-1 Start S 7:30 12	Ser Time ttop 7:00 7:00 Total Time (To):	μCı/ml (1)	Sampled By:	General Area: DU (Depleted UDave Berree NA Calibration Due Date: Calibration Due Date: Flow Rate Start 60.0 60	NA 3/27/2019
Non-Occupational (EC): Location: Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: L Sample Information Collection Date 11/14/2018	DAC = 2.0E-11; FS12 N/2 N/2 N/2 Start S T/30 1/2 S T/3 S T/3 S T/4 S T	ACI/ml (U-238), EC= 6. Wood Soil Sort Area A Ser Time top 7:00 Total Time (To):	NA ial No. Total (minutes) 570 570	Radionuclides: Sampled By: Activity Performed: NA	DU (Depleted U Dave Berre NA Calibration Due Date: Flow Rate Start 60.0 60	NA 3/27/2019 e (lpm) Stop 60.0 60
Location: Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: L Sample Information Collection Date 11/14/2018	FS12 NA NA V-1 Start S 7:30 15	Wood Soil Sort Area A Ser Time top 7:00 Total Time (To):	NA ital No. Total (minutes) 570 570	Sampled By: Activity Performed: NA	Dave Berre NA Calibration Due Date: Flow Rate Start 60.0 60	NA 3/27/2019 e (lpm) Stop 60.0 60
Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: Sample Information Collection Date 11/14/2018	NA	Ser Ser Time Time Top 7:00 7:00 Total Time (To):	Total (minutes) 570 570	Activity Performed:	Calibration Due Date: Calibration Due Date: Flow Rate Start 60.0 60	NA 3/27/2019 e (lpm) Stop 60.0 60
Wearer: Monitored Workers: Lapel Pump Model: Air Pump Model: Sample Information Collection Date 11/14/2018	NA	Ser Time ttop 7:00 7:00 Total Time (To):	Total (minutes) 570 570	NA	Calibration Due Date: Calibration Due Date: Flow Rate Start 60.0 60	3/27/2019 e (lpm) Stop 60.0 60
Monitored Workers: Lapel Pump Model: Air Pump Model: L Sample Information Collection Date 11/14/2018	NA	Ser Time ttop 7:00 7:00 Total Time (To):	Total (minutes) 570 570	NA	Calibration Due Date: Calibration Due Date: Flow Rate Start 60.0 60	3/27/2019 e (lpm) Stop 60.0 60
Lapel Pump Model: L Air Pump Model: L Sample Information Collection Date 11/14/2018	V-1 Start S 7:30 11	Time top 7:00 7:00 Total Time (To):	Total (minutes) 570 570	7.53.	Calibration Due Date: Flow Rate Start 60.0 60	3/27/2019 e (lpm) Stop 60.0 60
Air Pump Model: L Sample Information Collection Date 11/14/2018	V-1 Start S 7:30 11	Time top 7:00 7:00 Total Time (To):	Total (minutes) 570 570	7.53.	Calibration Due Date: Flow Rate Start 60.0 60	3/27/2019 e (lpm) Stop 60.0 60
Sample Information Collection Date 11/14/2018	Start S 7:30 17	Time top 7:00 7:00 Total Time (Tc):	Total (minutes) 570 570	2773	Start 60.0 60	Stop 60.0
Collection Date 11/14/2018	7:30	7:00 7:00 Total Time (Tc):	570 570		Start 60.0 60	Stop 60.0 60
11/14/2018	7:30	7:00 7:00 Total Time (Tc):	570 570		60.0 60	60.0 60
		7:00 Total Time (Tc):	570		60	60
11/15/2018	7:30 17	Total Time (Tc):				
			1140		Arm Flows Poto (leave)	
					Avg. Flow Rate (lpm)	0.00
			Minimum Air Sample Vol	ume: 1.5E+01 L	iters	
Sample Volume:	60 (lpm)		x 1140	(minutes) =	6.8E+04 Lite	rs (A)
		0.0	-			202
Remarks: Minimus	m sample volumes identified	are necessary to achieve	e 10% of DAC or AE value	e.		
		Section	on II - Analysis Data			
strument Information		Serial Number			on Due Date	
Instrument Type	Meter		Detector	Meter	Detector	Efficiency (a)
L-2929	158817		164736	12/13/2018	12/13/2018	0.726
N/A	N/A		N/A	N/A	N/A	N/A
					Alpha	
Variables,	Calculations, Results		Units	1st Count	2nd Count	3rd Count
ount Date				12/3/2018		
unt Time (e.g., noon, 1300, etc.)				10:00		
mple Count Time (Ts, Tb) = T			minutes	60		
tal Counts			counts	6		
mple Count Rate			cpm	0.10		
ckground Count Rate	110		cpm	0.10 6.8E+04	6.8E+04	6.8E+04
r Volume (liters)	(A)		liters	0.00	0.02704	0.02.04
et count rate	(B)		cpm cpm/dpm	0.73	0.73	0.73
ounter Efficiency	(C) (D)		0.99	0.99	0.99	0.99
ficiency = (C) x (D)	(E)		cpm/dpm	0.72	0.72	0.72
etivity $(dpm) = (B)/(E)$	(F)		dpm	0.00		
inimum Detectable Activity (dpm) =		(G)	dpm	0.33		
oncentration = $(F)/(2.22E9 \times (A))$	(H)		μCi/ml	0.00E+00		
	Date Updated 4/2	0-4/21	uCi/ml	7,31E-18		
ET Concentration Value = (H) - (F)	(F2)		uCi/ml	-7.31E-18		
AC (or AE) Fraction = (F2)/(I)				0.00%		
DC = MDA/V = (G)/(A)	(J)		μCi/ml	2.18E-15		
DC Fraction of DAC (or AE) = (J)/	(I) (Goal<10%)			0.01%		
nal Count?			Yes/No	Yes		
	Note: Unex	spected DAC or AE fra	action > 100% requires in	mmediate RSO notification		
		1.	9.30			21216
Performed By:	David Berner	12) and 1	e		Date:	2-4-18

	1	Sect	ion I - Collection	Data			
Date:	12/10/2018	Sample ID:	20181116-11	3	RWP	2018-001	
Occupational (DAC):	Limit:	2.00E-11	μCı/n	I (1) Brea	athing Zone:	General Area:	Work Are
Non-Occupational (EC):	5	[DAC = 2.0E-11μCi/ml (U-238), EC=	6.0E-14uCi/ml]	Ra	dionuclides:	DU (Depleted	
Location:		FS12 Wood Soil Sort Are		Sample			
		100	a		100	Dave Be	rres
Wearer:		NA		Activity Pe	rformed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA	S	erial No.	NA	. 19	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	2773		Calibration Due Date:	3/27/2019
Sample Information		Time					ate (lpm)
Collection Date	Start	Stop	Total (minutes		-	Start	Stop
11/16/2018	7:30	17:00	570			60.0	60.0
11/16/2018	7:30	7:31	1			60	60
11/10/2010	1.30	Total Time (Tc):	571			Avg. Flow Rate (lpm)	60.0
						rig. rion rate (ipin)	00,0
Remarks: Mit	nimum sample vol	umes identified are necessary to achie					
trument Information		Serial Number	ion II - Analysis I	ata	0.41		
Instrument Type		Meter Serial Number	Detector		Calibration		TOT -1 (m)
L-2929		158817	164736	1	Meter 2/13/2018	Detector 12/13/2018	Efficiency (α)
N/A		N/A	N/A		N/A	N/A	0.726 N/A
373.5	-		TVA		11/2	Alpha	IN/A
Varia	bles, Calculations	Results	Units	1st Count		2nd Count	3rd Count
nt Date				12/10/2018			- Va Count
nt Time (e.g., noon, 1300, etc	:.)		100	10:00			
uple Count Time (Ts, Tb) = T			minutes	60			
al Counts			counts	16			
ple Count Rate			cpm	0.27			
kground Count Rate			cpm	0.06			
Volume (liters)	(A)	liters	3.4E+04		3.4E+04	3.4E+04
count rate	(B		cpm	0.21			
	(C)		cpm/dpm	0.73		0.73	0.73
nter Efficiency						0.00	0.99
	(D)		0.99	0.99		0.99	0.77
nter Efficiency ection Efficiency ciency = (C) x (D)	(D) (E)		0.99 cpm/dpm	0.99 0.72		0.72	0.72
nter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E)	(E)						
nter Efficiency lection Efficiency ciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp	(E) (F) (m) = (3+4.65*SQ	RT(Cb))/(E*T) (G)	cpm/dpm	0.72 0.29 0.27			
nter Efficiency section Efficiency siency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A	(E) (F) m) = (3+4.65*SQ)) (H)		epm/dpm dpm dpm µCi/ml	0.72 0.29 0.27 3.78E-15			
nter Efficiency section Efficiency sciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1)	(E) (F) m) = (3+4.65*SQ)) (H) Date Updated	4/20-4/21	epm/dpm dpm dpm µCi/ml uCi/ml	0.72 0.29 0.27 3.78E-15 7.31E-18			
nter Efficiency section Efficiency siency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H)	(E) (F) m) = (3+4.65*SQ)) (H) Date Updated	4/20-4/21	epm/dpm dpm dpm µCi/ml	0.72 0.29 0.27 3.78E-15 7.31E-18 3.77E-15			
nter Efficiency section Efficiency sciency = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I)	(E) (F) m) = (3+4.65*SQ)) (H) Date Updated - (F1); (F2)	4/20-4/21	cpm/dpm dpm dpm µCi/ml uCi/ml uCi/ml	0.72 0.29 0.27 3.78E-15 7.31E-18 3.77E-15 0.02%			
nter Efficiency section Efficiency section (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(E) (F) m) = (3+4.65*SQ)) (H) Date Updated - (F1); (F2)	4/20-4/21	epm/dpm dpm dpm µCi/ml uCi/ml	0.72 0.29 0.27 3.78E-15 7.31E-18 3.77E-15 0.02% 3.57E-15			
nter Efficiency section Efficiency section Efficiency section Efficiency section = (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(E) (F) m) = (3+4.65*SQ)) (H) Date Updated - (F1); (F2)	4/20-4/21	cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml	0.72 0.29 0.27 3.78E-15 7.31E-18 3.77E-15 0.02% 3.57E-15 0.02%			
nter Efficiency section Efficiency section (C) x (D) vity (dpm) = (B)/(E) imum Detectable Activity (dp centration = (F)/(2.22E9 x (A kground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(E) (F) m) = (3+4.65*SQ)) (H) Date Updated - (F1); (F2)	4/20-4/21	cpm/dpm dpm dpm μCi/ml uCi/ml uCi/ml μCi/ml γCi/ml	0.72 0.29 0.27 3.78E-15 7.31E-18 3.77E-15 0.02% 3.57E-15 0.02% Yes			

			tion I - Collect				
	12/10/2018	Sample ID:	2018111	5-119	RV	VP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μ	Ci/ml (1)	Breathing Zone:	General Area:	Work A
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	= 6.0E-14uCi/ml]		Radionuclides:		
Location:			- Treating			DU (Depleted	
Wearer:		FS12 (Boundry)				David Be	rres
		NA			Activity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA		Serial No.		NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	5	Serial No.		3666	Calibration Due Date:	
Sample Information		Time	_				
Collection Date	Start	Stop	Total (mir	netwo)	4 4	Flow Ra	
11/16/2018	7:30	17:00	570	utes)	-	Start	Stop
	7:30	7:31	1		-	60.0	60.0
		Total Time (Tc):	571		- +	60 Avg. Flow Rate (lpm)	60.0
Sample Volume: Remarks: Min	imum sample volumes	identified are necessary to achie	of PART OF STREET		(minutes) =_	3.4E+04 Lit	ers (A)
ument Information			ion II - Analys	is Data			
Instrument Type		Serial Number Meter			Calibratio	on Due Date	
L-2929		158817	Detecto		Meter	Detector	Efficiency (a)
N/A		N/A	16473)	1/10/2019	1/10/2019	0.726
		IVA	N/A		N/A	N/A	N/A
Variabl	les, Calculations, Resi	ilts	Units	1	st Count	Alpha 2nd Count	2.10
t Date					2/10/2018	2nd Count	3rd Count
t Time (e.g., noon, 1300, etc.)					12:30		
ole Count Time (Ts, Tb) = T			minutes		60		
Counts			counts		23		
le Count Rate ground Count Rate			cpm		0.38		
olume (liters)	(AX		cpm		0.06		
ount rate	(A) (B)		liters		3.4E+04	3.4E+04	3.4E+04
er Efficiency	(C)		cpm		0.32		
etion Efficiency	(D)		cpm/dpm 0.99		0.73	0.73	0.73
ency = $(C) \times (D)$	(E)		cpm/dpm		0.72	0.99	0.99
ty (dpm) = (B)/(E)	(F)		dpm		0.45	0.72	0.72
num Detectable Activity (dpm	= (3+4.65*SQRT(Cb))))/(E*T) (G)	dpm		0.27		
entration = $(F)/(2.22E9 \times (A))$	(H)		μCi/ml	5.	91E-15		
ground "Strip" value (F.1)		4/20-4/21	uCi/ml	7	.31E-18		
Concentration Value = (H) - ((F1); (F2)		uCi/ml		91E-15		
(or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	m				0.85%		
Fraction of DAC (or AE) = (J)	(J))/(I) (Goal<10%)		μCi/ml		57E-15		
Count?	/(*) (Goal~10%)				5.95%		
	No	te: Unexpected DAC or AE fra	Yes/No	dana I	YES	Yes	
Performed By:	_ _	re / Dan F	len 100% requ	iires imme	uiate KSO notification.	Date: La	1/10/18
Reviewed By:	Ed Siem	es / 5	-			Date: 1	2/17/10

Non-Occupational (DAC)	Non-Occupational (ChC)	Date:	12/10/2010		tion I - Collecti				
Non-Occupational (I/OL)	Non-Occapational (NC)			Sample ID:	20181130	-120	R	WP: 2018-001	
Non-Occupational (Cr)	Non-Occapational (EC) \		Limit:	6.00E-14	μС	Ci/ml (1)	Breathing Zone		1 Work
Location: M-Yard Boundy Sampled By	Location: M-Yard Boundy	Non-Occupational (EC):	[DAC	= 2.0E-11μCi/ml (U-238), EC	= 6.0E-14µCi/ml]				
Wester NA	No.	Location:							
Monitored Workers Monito	Monitored Workers: Note	Wearer					Sampled By:	David Be	rres
Laped Pump Model: Na	Lapel Pump Model: NA	III. Carrier Manager of Contract of State		NA		Act	ivity Performed:	NA	
Air Pump Model: LV-1 Serial No. 2591 Calibration Due Date 3720919	Air Pump Model: LV-1 Serial No. 2591 Calibration Due Date: NA. 277/2019 Sample Information					NA			
Serial No. Se	Sample Information Time Calibration Due Date: 327/2019 Sample Information Start Slop Total (minutes) Calibration Due Date: 380p 11/29/2018 9.00 17/300 480 60.0 60.0 10/14/2018 9.00 17/300 480 10.0 60.0 Sample Volume: 60 (pm) x 9.00 Interest 1.1E+03 Liter Remarks: Minimum assuple Volume: 60 (pm) x 9.00 minimum 1.1E+03 Liter (A) Remarks: Minimum assuple volume: Section II - Author Section II - Author Na 1.00 1.00 3.8E+04 Liter (A) Transment Information Section II - Author Section II - Author Meter Detector Meter Detector Meter Detector Meter Detector Meter Detector	Lapel Pump Model:	NA		Serial No.	N/	1	Calibration Due Date:	NA
Same Collection Date Start Stop Total minute Start Stop Total minute 4 80 mode 6 80 mode 8 80 mode 9 80 mode	Sample Information Start Stop Total (minutes) Early (minutes)	Air Pump Model:	LV-I		Serial No.	250	i.	the first property of the second second	
Collection Date Start Stop Total (minutes) Start Stop Ground (minutes) Start Ground (minutes) Ground (minu	Collection Date Start	Sample Information		T:		11		Canoration Due Date:	3/27/2019
11/29/2018 9.90 17:00 480 60.0	11/29/2018 9.90 17:00 4:80 6:00		Start					Flow Ra	ite (lpm)
10/14/20/18 9.00 17:90 480 17:90 480 660 600 Total Time (Te):	10/14/2018 9:00 17:00 4:80 60 60 60 60 60 60 60					rtes)		Start	Stop
Total Time (Tc) S60 Ang. Flow Rate (μm) 60.0	Total Time (Te): 500 Any Flow Rate ([Ipm 6.0 o	10/14/2018				-	c - 1		60.0
Minimum Air Sample Volume 4.1E+03 Liters	Minimum Air Sample Volumes A1E493 Liters A1E494 Liters								
Sample Volume: 60 (lpm) x 960 (minutes) = 5.8E+04 Liters (A)	Sample Volume: 60 (lpm) x 960 (minutes) = 5,8E+04 Liters (A)							Avg. Flow Rate (ipin)	60.0
Instrument Type	Instrument Type	ument Information			ion II - Analysis	Data	0.17		
L-2929 158817 164736 1/10/2019 1/10/2019 0.726 N/A	L-2929 158817 164736 1/10/2019 1/10/2019 0.726 N/A Variables, Calculations, Results Units 1st Count 2nd Count 3rd Count 1 Time (e.g., noon, 1300, etc.) de Count Time (18, Tb) = T minutes 60 count Rate cpm 0.22 ground Count Rate cpm 0.06 olime (liters) (A) liters 5.8E+04 5.8E+04 5.8E+04 5.8E+04 count rate (B) cpm 0.16 cer Efficiency (C) cpm/dpm 0.73 0.73 0.73 cer efficiency (C) cpm/dpm 0.73 0.73 0.73 cer efficiency (C) cpm/dpm 0.72 0.79 0.99 cer efficiency (C) cpm/dpm 0.72 0.79 0.99 cer ty (dpm) = (B)(E) (F) dpm 0.22 by (dpm) = (B)(E) (F) dpm 0.22 concentration Value = (H) - (F1); (F2) ucl/ml 1.70E-15 concentration = (F2/(2)2E9 x (A)) (H) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction of DAC (or AE) = (J)(I) (Goal< 0%) (J) Fraction o	Instrument Type	- 10		Detector				
N/A N/A	N/A	L-2929		58817					Efficiency (a)
Variables, Calculations, Results In Date In	Variables, Calculations, Results In Date In	N/A		N/A					
A	Variables, Calculations, Results Units Ist Count 2nd Count 3rd Count								N/A
12/10/2018 12/	12/10/2018 12/		es, Calculations, Resu	its	Units	1st C	ount		3rd Count
Section Fire Count Cou	Section Count Time (Ts, Tb) = T					12/10/	2018		
Counts counts 13 ole Count Rate cpm 0.22 ground Count Rate cpm 0.06 olume (liters) (A) liters 5.8E+04 5.8E+04 ount rate (B) cpm 0.16 ter Efficiency (C) cpm/dpm 0.73 0.73 0.73 ctron Efficiency (D) 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.72	Counts Count Rate Count							12-5-11	
Count Rate Cou	cpm 0.22	Counts							
Second Count Rate Se	Colume (liters) Carlo C	ole Count Rate							
Section Column (liters) Caracteristic	Section Column (liters)	around Court Day							
Second	Section Sec		(4)					5.07104	
cpm/dpm 0.73 0.74 0.75 0.7	C C C C C C C C C C	olume (liters)	(A)			5 8F-		3.0ETU4	5.8E+04
Content Entreiency (D) (E) (D) (E) (D)	0.99 0.99	olume (liters)							
Compans Com	County C.f. X (D) (E) C.f. C.f. C.f. C.f. C.f. C.f. C.f. C.	ount rate ter Efficiency	(B) (C)		cpm	0.1	6		0.73
dpm 0.22 mm Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.27 mm Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.27 mm Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.27 mm Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) dpm 0.27 mm Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G) 1.70E-15 mm Detectable Activity (dpm) = (4/20.4/21	dpm 0.22	ount rate ter Efficiency ction Efficiency	(B) (C) (D)	1	cpm cpm/dpm	0.1	5	0.73	
Partiation = (F)/(2.22E9 x (A)) (H)	miration = (F)/(2.22E9 x (A))	folume (liters) ount rate ter Efficiency ction Efficiency ency = (C) x (D)	(B) (C) (D) (E)		cpm cpm/dpm 0.99	0.1 0.7 0.9	6 3 0	0.73 0.99	0.99
Second Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-18	Second Strip" value (F.1) Date Updated 4/20-4/21 uCi/ml 7.31E-18	volume (liters) ount rate ter Efficiency ction Efficiency ency = (C) x (D) ity (dpm) = (B)/(E)	(B) (C) (D) (E)	WEATH (C)	cpm cpm/dpm 0.99 cpm/dpm dpm	0.1 0.7 0.9 0.7 0.2	6 3 9 2 2	0.73 0.99	0.99
Concentration Value = (H) - (F1); (F2)	Concentration Value = (H) - (F1); (F2)	Volume (liters) ount rate ter Efficiency ction Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpm)	(B) (C) (D) (E) (F) (F) = (3+4.65*SQRT(Cb))/(E*T) (G)	cpm/dpm 0.99 cpm/dpm dpm dpm	0.1 0.7 0.9 0.7 0.2 0.2	6 3 3 9 2 2	0.73 0.99	0.99
(or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) (J) Fraction of DAC (or AE) = (J)/(I) (Goal<10%) Count? Yes/No Yes/No Yes Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.	(or AE) Fraction = (F2)/(I) 2.83% = MDA/V = (G)/(A) (J) μCi/ml 2.12E-15 Fraction of DAC (or AE) = (J)/(I) (Goal<10%) 3.54% Count? Yes/No YES Yes Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.	volume (liters) count rate eter Efficiency ection Efficiency etercy = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpm) entration = (F)/(2.22E9 x (A))	(B) (C) (D) (E) (F) = (3+4.65*SQRT(Cb) (H)		cpm/dpm 0.99 cpm/dpm dpm dpm µCi/ml	0.1 0.7 0.9 0.7 0.2 0.2 1.70E	6 3 3 9 2 2 2 7	0.73 0.99	0.99
MDA/V = (G)(A) (J)	MDA/V = (G)(A) (J)	folume (liters) ount rate ter Efficiency ction Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpm) entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1)	(B) (C) (D) (E) (F)) = (3+4.65*SQRT(Cb) (H) Date Updated		cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	0.1 0.7 0.9 0.7 0.2 0.2 1.70E	5 3 3 9 2 2 2 7 7 15 15 18	0.73 0.99	0.99
Fraction of DAC (or AE) = (J)/(I) (Goal<10%) Count? Yes/No YES Yes Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.	Fraction of DAC (or AE) = (J)/(I) (Goal<10%) Count? Yes/No YES Yes Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.	folume (liters) ount rate ter Efficiency ction Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - ((B) (C) (D) (E) (F)) = (3+4.65*SQRT(Cb) (H) Date Updated		cpm cpm/dpm 0.99 cpm/dpm dpm dpm pCi/ml uCi/ml	0.1 0.7 0.9 0.7 0.2 0.2 1.70E 7.31E	5 3 3 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	0.73 0.99	0.99
Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.	Yes/No YES Yes Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.	folume (liters) ount rate ter Efficiency etion Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - (i (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) (F) (1) = (3+4.65*SQRT(Cb) (H) (H) (Date Updated (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.1 0.7 0.9 0.7 0.2 0.2 1.70E 7.31E 1.70E 2.83	5 5 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	0.73 0.99	0.99
Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.	Note: Unexpected DAC or AE fraction > 100% requires immediate RSO notification.	olume (liters) ount rate ter Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - (i (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J)	(B) (C) (D) (E) (F) (F) (1) = (3+4.65*SQRT(Cb) (H) (H) (Date Updated (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml	0.1· 0.7· 0.9· 0.7· 0.2· 0.2· 1.70E 7.31E 1.70E 2.83°	6 3 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	0.73 0.99	0.99
		olume (liters) ount rate for Efficiency ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpm ntration = (F)/(2.22E9 x (A)) round "Strip" value (F.1) concentration Value = (H) - (i or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J)	(B) (C) (D) (E) (F) (F) (1) = (3+4.65*SQRT(Cb) (H) (H) (Date Updated (F1); (F2)		cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml uCi/ml µCi/ml	0.1 0.7 0.9 0.7 0.2 1.70E 1.70E 2.83° 2.12E 3.54°	5 5 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	0.73 0.99 0.72	0.99
0 11 0 / 0 10		olume (liters) ount rate ter Efficiency ency = (C) x (D) ity (dpm) = (B)/(E) num Detectable Activity (dpm entration = (F)/(2.22E9 x (A)) ground "Strip" value (F.1) Concentration Value = (H) - (i (or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (J)	(B) (C) (D) (E) (F) (F) (3+4.65*SQRT(Cb) (H) Date Updated (F1); (F2) (J) (J) (Goal<10%)	4/20-4/21	cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml uCi/ml μCi/ml γes/No	0.1 0.7 0.9 0.7 0.2 1.70E 7.31E 1.70E 2.83° 2.12E 3.54'	5 5 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	0.73 0.99 0.72	0.99

		Secti	on I - Collection Da	ta		
Date:	12/10/2018	Sample ID:	20181130-121	R	WP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml (I) Breathing Zone:	General Area: ✓	Work Ar
Non-Occupational (EC):	[D	AC = 2.0E-11µCi/ml (U-238), EC=	6.0E-14uCi/mll	Radionuclides	DU (Depleted	S CONTRACTOR
Location:		FS12 (Boundry)		0 110		
					David Be	rres
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			NA			
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	3666	Calibration Due Date:	8/22/2019
Sample Information		Time		1		
Collection Date	Start	Stop	Total (minutes)			ate (lpm)
11/29/2018	8:00	17:00	540	_	Start 60.0	Stop 60.0
10/14/2018	8:00	17:00	540		60	60
		Total Time (Tc):	1080		Avg. Flow Rate (lpm)	60.0
Sample Volume:	60 (lpr	n)	Minimum Air Sample Vo		Liters 6.5E+04 Lit	ers (A)
Remarks: Min	nimum sample volun	nes identified are necessary to achiev	ve 10% of DAC or AE value	ue.		
rument Information			on II - Analysis Dat			
Instrument Type		Serial Number Meter	Dittata		ion Due Date	
L-2929		158817	Detector 164736	Meter 1/10/2019	Detector 1/10/2019	Efficiency (α)
N/A		N/A	N/A	N/A	N/A	0.726 N/A
				IVA	Alpha	N/A
Varial	bles, Calculations, R	esults	Units	1st Count	2nd Count	3rd Count
nt Date				12/10/2018		
nt Time (e.g., noon, 1300, etc	:.)			12:30		
ple Count Time (Ts, Tb) = T			minutes	60		
Counts			counts	15		
ple Count Rate			cpm	0.25		
ground Count Rate			cpm	0.06		
/olume (liters)	(A)		liters	6.5E+04	6.5E+04	6.5E+04
ter Efficiency	(B)		cpm	0.19		
ection Efficiency	(C) (D)		cpm/dpm 0.99	0.73	0.73	0.73
$iency = (C) \times (D)$	(E)		cpm/dpm	0.99	0.99	0.99
rity (dpm) = (B)/(E)	(F)		dpm	0.72	0,72	0.72
mum Detectable Activity (dp		(Cb))/(E*T) (G)	dpm	0.27		
entration = $(F)/(2.22E9 \times (A))$			μCi/ml	1.84E-15		
ground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
Concentration Value = (H) -	(F1); (F2)		uCi/mI	1.83E-15		
(or AE) Fraction = (F2)/(I)				3.05%		
C = MDA/V = (G)/(A)	(J)		μCi/ml	1.89E-15		-
Fraction of DAC (or AE) =	(J)/(I) (Goal<10%)		3.14%		
Count?			Yes/No	YES	Yes	
	0 1 5	Note: Unexpected DAC or AE fra	ction > 100% requires in	nmediate RSO notification	1	
Performed By:	Daniel V	Se-			Deta: 16	2/10/18
renormed by.	,				Date.	10/10

		Sect	ion I - Collection	on Data			
Date:	12/10/2018	Sample ID:	20181204	-122	R	WP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μС	Ci/ml (1)	Breathing Zone:		Work A
Non-Occupational (EC):	IDAC	C = 2.0E-11µCi/ml (U-238), EC=	6 0E-14uCi/mII				
			O.OE-14µCBIIII]		Radionuclides	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary			Sampled By:	David Ben	res
Wearer:		NA		Act	ivity Performed:	NA	
Monitored Workers:				NA			
Lapel Pump Model:	NA	5	Serial No.	N	Α	Calibration Due Date:	NA
Air Pump Model:	LV-1	5	Serial No.	259		Calibration Due Date:	h 14.4
Sample Information		Time	_				
Collection Date	Start	Stop	Tracel (4-3		Flow Rat	
12/3/2018	7:30	17:00	Total (min	ites)		Start	Stop
12/4/2018	8:00	17:00	540			60.0	60,0
	4.00	Total Time (Tc):	1110			60	60
		Total Time (10).	1110			Avg. Flow Rate (lpm)	60.0
ument Information			ion II - Analysi	s Data			
		Serial Number				ion Due Date	
Instrument Type L-2929		Meter 158817	Detecto		Meter	Detector	Efficiency (a)
N/A		N/A	164736 N/A		1/10/2019	1/10/2019	0.726
		IVA	N/A		N/A	N/A	N/A
Variab	les, Calculations, Res	alts	Units	let (Count	Alpha 2nd Count	2.16
Date			O.M.S		/2018	2nd Count	3rd Count
Time (e.g., noon, 1300, etc.)			8:			
le Count Time (Ts, Tb) = T			minutes		0		
			counts				
Counts							
le Count Rate			cpm	0.	12		
le Count Rate ground Count Rate			cpm cpm	0.			
le Count Rate ground Count Rate olume (liters)	(A)		The second second		06	6.7E+04	6.7E+04
le Count Rate ground Count Rate olume (liters) ount rate	(B)		cpm liters cpm	0.4 6.7E 0.4	06 +04 06	6.7E+04	6.7E+04
le Count Rate pround Count Rate plume (liters) punt rate er Efficiency	(B) (C)		cpm liters cpm cpm/dpm	0.0 6.7E 0.0	06 (+04 06 73	0.73	0.73
le Count Rate ground Count Rate plume (liters) punt rate er Efficiency	(B) (C) (D)		liters cpm cpm/dpm 0.99	0.4 6.7E 0.4 0.7	06 5+04 06 73	0.73 0.99	0.73 0.99
te Count Rate ground Count Rate plume (liters) punt rate er Efficiency etion Efficiency ency = (C) x (D)	(B) (C) (D) (E)		cpm liters cpm cpm/dpm 0.99 cpm/dpm	0.0 6.7E 0.0 0.1	06 06 06 73 99	0.73	0.73
le Count Rate ground Count Rate plume (liters) punt rate er Efficiency etion Efficiency ency = (C) x (D) ty (dpm) = (B)/(E)	(B) (C) (D) (E)))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.0 6.7E 0.0 0.7 0.9	06 +04 06 73 99 72	0.73 0.99	0.73 0.99
te Count Rate ground Count Rate plume (liters) punt rate er Efficiency etion Efficiency ency = (C) x (D)	(B) (C) (D) (E) (F) (F) (F) = (3+4.65*SQRT(CI))/(E*T) (G)	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	0.9 6.7E 0.0 0.1 0.9 0.1	06 04-04 06 03 09 09 02 08 02	0.73 0.99	0.73 0.99
te Count Rate ground Count Rate plume (liters) punt rate er Efficiency etion Efficiency ency = (C) x (D) ty (dpm) = (B)/(E) num Detectable Activity (dpn ntration = (F)/(2.22E9 x (A)	(B) (C) (D) (E) (F) (F) (F) = (3+4.65*SQRT(CI	b))/(E*T) (G) 4/20-4/21	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	0.0 6.7E 0.0 0.7 0.9	06 04-04 06 03 09 09 02 08 07 08 08 07 08 08	0.73 0.99	0.73 0.99
te Count Rate ground Count Rate pount (liters) pount rate er Efficiency etion Efficiency et	(B) (C) (D) (E) (F) n) = (3+4.65*SQRT(Ct)) (H) Date Updated	2-1	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml	0.4 6.7E 0.4 0.5 0.5 0.5 0.6 0.6 0.5 5.331	06 04-04 06 03 09 02 08 07 08 07 08 07 08 07 08 07 08 08 07 08 08 08 08 08 08 08 08 08 08	0.73 0.99	0.73 0.99
te Count Rate ground Count Rate pount rate per Efficiency etion Efficiency	(B) (C) (D) (E) (F) n) = (3+4.65*SQRT(Ct)) (H) Date Updated	2-1	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml	0.0 6.7E 0.0 0.0 0.0 0.0 0.0 0.0 5.331 7.311	06 04-04 06 73 09 72 08 08 07 08 08 09 07 08 08 09 07 08 08 09 08 08 09 08 08 09 08 08 08 08 08 08 08 08 08 08	0.73 0.99	0.73 0.99
te Count Rate ground Count Rate polume (liters) pount rate er Efficiency etion Efficiency ency = (C) x (D) ty (dpm) = (B)/(E) turn Detectable Activity (dpn ntration = (F)/(2.22E9 x (A) round "Strip" value (F.1) Concentration Value = (H) - tor AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) n) = (3+4.65*SQRT(CH)) (H) Date Updated (F1); (F2)	2-1	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml	0.0 6.7E 0.0 0.1 0.2 0.2 0.2 5.331 7.311	06 04-04 06 03 09 02 08 07 08 07 08 07 08 07 08 07 08 08 07 08 08 08 08 09 09 08 08 08 08 09 09 09 09 09 09 09 09 09 09	0.73 0.99	0.73 0.99
te Count Rate ground Count Rate polume (liters) punt rate er Efficiency etion Efficiency etion (C) x (D) ty (dpm) = (B)/(E) turn Detectable Activity (dpn ntration = (F)/(2.22E9 x (A) round "Strip" value (F.1) Concentration Value = (H) or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (A	(B) (C) (D) (E) (F) (n) = (3+4.65*SQRT(Ct) (H) Date Updated (F1); (F2)	2-1	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml uCi/ml	0.0 6.7E 0.0 0.1 0.2 0.2 0.2 5.331 7.311 5.261	06 04-04 06 073 09 072 08 08 027 08 08 0-16 03-18 0-16 03-18 03-16 03-16 03-16 03-16 03-16 03-16 03-16 03-16 03-16 04-	0.73 0.99	0.73 0.99
te Count Rate ground Count Rate polume (liters) pount rate er Efficiency etion Efficiency ency = (C) x (D) ty (dpm) = (B)/(E) turn Detectable Activity (dpn ntration = (F)/(2.22E9 x (A) round "Strip" value (F.1) Concentration Value = (H) - tor AE) Fraction = (F2)/(I) = MDA/V = (G)/(A)	(B) (C) (D) (E) (F) n) = (3+4.65*SQRT(CH)) (H) Date Updated (F1); (F2)	2-1	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm μCi/ml uCi/ml	0.0 6.7E 0.0 0.1 0.2 0.3 0.2 5.331 7.311 5.261 0.88	066 0404 067 073 099 072 088 027 02-16 03-18 03-	0.73 0.99	0.73 0.99
te Count Rate ground Count Rate polume (liters) punt rate er Efficiency etion Efficiency etion (C) x (D) ty (dpm) = (B)/(E) turn Detectable Activity (dpn ntration = (F)/(2.22E9 x (A) round "Strip" value (F.1) Concentration Value = (H) or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (A	(B) (C) (D) (E) (F) n) = (3+4.65*SQRT(Ci) (H) Date Updated (F1); (F2) (J) (J) (J) (Goal<10%)	2-1	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.0 6.7E 0.0 0.0 0.0 0.0 0.0 5.331 7.311 5.261 0.88 1.841 3.00	066 6+04 06 73 79 72 08 27 E-16 3-18 E-16 3-76 E-15 5-76	0.73 0.99 0.72	0.73 0.99
le Count Rate ground Count Rate plume (liters) punt rate er Efficiency etion Efficiency ency = (C) x (D) ty (dpm) = (B)/(E) tum Detectable Activity (dpm mutation = (F)/(2.22E9 x (A) round "Strip" value (F.1) Concentration Value = (H) - or AE) Fraction = (F2)/(I) = MDA/V = (G)/(A) Fraction of DAC (or AE) = (C) Count?	(B) (C) (D) (E) (F) n) = (3+4.65*SQRT(Ci) (H) Date Updated (F1); (F2) (J) (J) (J) (Goal<10%)	4/20-4/21 4/20-4/21 ote: Unexpected DAC or AE fra	cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm dpm uCi/ml uCi/ml uCi/ml	0.0 6.7E 0.0 0.0 0.0 0.0 0.0 5.331 7.311 5.261 0.88 1.841 3.00	066 6+04 06 73 79 72 08 27 E-16 3-18 E-16 3-76 E-15 5-76	0.73 0.99 0.72	0.73 0.99

		Sect	ion I - Collectio	n Data			
Date:	1/8/2019	Sample ID:	20181206-	123	R	WP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μС	ı/ml (I)	Breathing Zone:	☐ General Area: ✓	Work Are
Non-Occupational (EC):	TDAC	C = 2.0E-11µCi/ml (U-238), EC=	6 OF 14C:/11			774. " . 1 2 5 5 5 1 1 5 7	
	[DAC		6.0E-14µCi/mij		Radionuclides	DU (Depleted	Uranium)
Location:		FS12 SCA Boundary		S	ampled By:	David Ber	res
Wearer:		NA		Activ	ity Performed:	NA	
Monitored Workers:				NA	4		
	NA		3.63	7.7.		Tolker Land & Donald	
Lapel Pump Model:	7/37		Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2591		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow Ra	te (lpm)
Collection Date	Start	Stop	Total (minu	ites)		Start	Stop
12/5/2018	8:00	15:00	420			60.0	60.0
12/6/2018	8:00	15:00	420	J 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		60	60
		Total Time (Tc):	840			Avg. Flow Rate (lpm)	60.0
			Minimum Air San	nple Volume:	5.5E+03	Liters	
Sample Volume:	60 (lpm)		x	840 (n	ninutes) =	5.0E+04 Lite	ers (A)
Remarks: Mir	nimum sample volumes	identified are necessary to achie	ve 10% of DAC or	AE value.			
		to dome	TO TOTAL OF DITLE OF T	tio value.			
		Sect	ion II - Analysis	s Data			
rument Information		Serial Number			Calibra	tion Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736		1/10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
Varial	bles, Calculations, Res	ults	Units	1st Co	unt	2nd Count	3rd Count
nt Date				12/14/2	2018		
nt Time (e.g., noon, 1300, etc	:.)			8:00	0		
ple Count Time (Ts, Tb) = T			minutes	60			
I Counts			counts	14			
ple Count Rate			cpm	0.23	3		
ground Count Rate			cpm	0.13	3		
Volume (liters)	(A)		liters	5.0E+	04	5.0E+04	5.0E+04
count rate	(B)		cpm	0.10)		
nter Efficiency	(C)		cpm/dpm	0.73	3	0.73	0.73
ection Efficiency	(D)		0.99	0.99)	0.99	0.99
$iency = (C) \times (D)$	(E)		cpm/dpm	0.72	2	0.72	0.72
vity (dpm) = (B)/(E)	(F)		dpm	0.14			
mum Detectable Activity (dp		b))/(E*T) (G)	dpm	0.37			
centration = $(F)/(2.22E9 \times (A)$			μCi/ml	1.28E	-15		
		4/20-4/21	uCi/ml	7.31E-			
eground "Strip" value (F.1)	- (F1); (F2)		uCi/ml	1.28E			
eground "Strip" value (F.1) Concentration Value = (H)				2.13			
ground "Strip" value (F.1) Concentration Value = (H) Cor AE) Fraction = (F2)/(I)					-15		
eground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A)	(J)		μCi/ml	3.28E			
sground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =				5.47	%		
sground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(J)/(I) (Goal<10%)		Yes/No	5.47° YES	8	Yes	
seground "Strip" value (F.1) Concentration Value = (H) Cor AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = Count?	(J)/(I) (Goal<10%)	ote: Unexpected DAÇ or AE fr	Yes/No	5.47° YES	8		
eground "Strip" value (F.1) Concentration Value = (H) Cor AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = Count?	(J)/(I) (Goal<10%)	1	Yes/No action > 100% requ	5.47° YES	8	n.	0.0
ground "Strip" value (F.1) Concentration Value = (H) (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) =	(J)/(I) (Goal<10%)	ote: Unexpected DAC or AE fr	Yes/No action > 100% requ	5.47° YES	8	n.	1-8-2019
eground "Strip" value (F.1) Concentration Value = (H) C (or AE) Fraction = (F2)/(I) C = MDA/V = (G)/(A) C Fraction of DAC (or AE) = Count?	(J)/(I) (Goal<10%)	serres /Da	Yes/No action > 100% requ	5.47° YES	8	n.	1.8-2019 -8-19

			on I - Collection Data		2018-001	
Date:	1/8/2019	Sample ID:		RWF		Wark Array
Occupational (DAC):	Limit:	6.00E-14	μCi/ml (1)	Breathing Zone:	General Area:	Work Area:
Non-Occupational (EC):	[DAC	C = 2.0E-11µCi/ml (U-238), EC=	6.0E-14μCi/ml]	Radionuclides:	DU (Depleted	Uranium)
Location:		FS12 (Boundry)		Sampled By:	David Ber	res
		240		Activity Performed:	NA	
Wearer:		NA	700			
Monitored Workers:			NA		6 E 2 6 B B	NA
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	
Air Pump Model:	LV-1	S	erial No.	3666	Calibration Due Date:	8/22/2019
Sample Information		Time			Flow Ra	ite (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
12/5/2018	7:30	17:00	570		60.0	60.0
12/6/2018	7:30	17:00	570		60	60
12,0,2010		Total Time (Tc):	1140		Avg. Flow Rate (lpm)	60.0
			Minimum Air Sample Vo	lume: 5.5E+03 1	iters	
						tom (A)
Sample Volume:	60 (lpm)	x1140	(minutes) =	6.8E+04 Li	ters (A)
Remarks: Mir	nimum sample volume	es identified are necessary to achie	eve 10% of DAC or AE valu	ie.		
TOTAL TALL			THE ST. P. ST. ST. D. LEWIS			
		Sect	ion II - Analysis Data			
nstrument Information		Serial Number			on Due Date	P.W : (w)
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
		150017				
L-2929		158817	164736	1/10/2019	1/10/2019	
L-2929 N/A		N/A	N/A	N/A	N/A	N/A
N/A		N/A	N/A	N/A	N/A Alpha	N/A
N/A	bles, Calculations, R	N/A		N/A 1st Count	N/A	
N/A Varia Count Date		N/A	N/A	N/A 1st Count 12/14/2018	N/A Alpha	N/A
N/A Varia Count Date Count Time (e.g., noon, 1300, etc.)	c.)	N/A	N/A Units	N/A 1st Count 12/14/2018 12:30	N/A Alpha	N/A
N/A Varia Count Date Count Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T	c.)	N/A	N/A Units minutes	N/A 1st Count 12/14/2018 12:30 60	N/A Alpha	N/A
N/A Varia Count Date Count Time (e.g., noon, 1300, etc tample Count Time (Ts, Tb) = T Total Counts	c.)	N/A	N/A Units minutes counts	N/A 1st Count 12/14/2018 12:30 60 19	N/A Alpha	N/A
N/A Varia Count Date Count Time (e.g., noon, 1300, etc cample Count Time (Ts, Tb) = T Cotal Counts Sample Count Rate	c.)	N/A	N/A Units minutes counts cpm	N/A 1st Count 12/14/2018 12:30 60 19 0.32	N/A Alpha	N/A
N/A Varia Count Date Count Time (e.g., noon, 1300, etc cample Count Time (Ts, Tb) = T Cotal Counts Counts Count Count Rate Count Rate	c.)	N/A	N/A Units minutes counts cpm cpm	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13	N/A Alpha	N/A
N/A Varia Count Date Count Time (e.g., noon, 1300, etc., ample Count Time (Ts, Tb) = T Total Counts Sample Count Rate Background Count Rate Air Volume (liters)	c.)	N/A	Minutes counts cpm cpm liters	N/A 1st Count 12/14/2018 12:30 60 19 0.32	N/A Alpha 2nd Count	N/A 3rd Count
N/A Varia Count Date Count Time (e.g., noon, 1300, etc., ample Count Time (Ts, Tb) = T Cotal Counts Sample Count Rate Background Count Rate Air Volume (liters) Net count rate	(A) (B)	N/A	minutes counts cpm cpm liters cpm	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04	N/A Alpha 2nd Count	N/A 3rd Count
N/A Varia Count Date Count Time (e.g., noon, 1300, etc., ample Count Time (Ts, Tb) = T Fotal Counts Sample Count Rate Background Count Rate Air Volume (liters) Net count rate Counter Efficiency	(A) (B) (C)	N/A	Minutes counts cpm cpm liters	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19	N/A Alpha 2nd Count 6.8E+04	N/A 3rd Count 6.8E+04
N/A Varia Count Date Count Time (e.g., noon, 1300, etc.) Count Time (Ts, Tb) = T Cotal Counts Counts Count Count Rate Count Rate Count Volume (liters) Net count rate Counter Efficiency Collection Efficiency	(A) (B) (C) (D)	N/A	minutes counts cpm cpm liters cpm cpm/dpm	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19 0.73	N/A Alpha 2nd Count 6.8E+04	N/A 3rd Count 6.8E+04
N/A Varia Count Date Count Time (e.g., noon, 1300, etc.) Count Time (Ts, Tb) = T Cotal Counts Counts Count Count Rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D)	(A) (B) (C) (D) (E)	N/A	minutes counts cpm cpm liters cpm cpm/dpm 0,99	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19 0.73 0.99	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	N/A 3rd Count 6.8E+04 0.73 0.99
N/A Varia Count Date Count Time (e.g., noon, 1300, etc sample Count Time (Ts, Tb) = T Total Counts sample Count Rate Background Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Sifficiency = (C) x (D) Activity (dpm) = (B)/(E)	(A) (B) (C) (D) (E)	N/A esults	minutes counts cpm cpm liters cpm cpm/dpm 0,99 cpm/dpm	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19 0.73 0.99 0.72	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	N/A 3rd Count 6.8E+04 0.73 0.99
N/A Varia Count Date Count Time (e.g., noon, 1300, etc. cample Count Time (Ts, Tb) = T Cotal Counts cample Count Rate cample Count Rate carpoint Count Rate carpoint Count Rate carpoint Count Rate carpoint Count Rate counter Efficiency collection Efficiency collection Efficiency difficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT	N/A esults	N/A Units minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19 0.73 0.99 0.72 0.26	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	N/A 3rd Count 6.8E+04 0.73 0.99
N/A Varia Count Date Count Time (e.g., noon, 1300, etc. cample Count Time (Ts, Tb) = T Cotal Counts cample Count Rate Background Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Gifficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d Concentration = (F)/(2.22E9 x (A))	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H)	N/A esults	minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19 0.73 0.99 0.72 0.26 0.37 1.71E-15 7.31E-18	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	N/A 3rd Count 6.8E+04 0.73 0.99
N/A Varia Count Date Count Time (e.g., noon, 1300, etc cample Count Time (Ts, Tb) = T oral Counts cample Count Rate Cackground Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency difficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d Concentration = (F)/(2.22E9 x (A Background "Strip" value (F.1)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H) Date Updated	N/A esults (Cb))(E*T) (G)	minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19 0.73 0.99 0.72 0.26 0.37 1.71E-15 7.31E-18 1.70E-15	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	N/A 3rd Count 6.8E+04 0.73 0.99
N/A Varia Count Date Count Time (e.g., noon, 1300, etc. Sample Count Time (Ts, Tb) = T Total Counts Sample Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Sifficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (d Concentration = (F)/(2.22E9 x (A Background "Strip" value (F.1) NET Concentration Value = (H)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H) Date Updated ()-(F1); (F2)	N/A esults (Cb))(E*T) (G)	minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19 0.73 0.99 0.72 0.26 0.37 1.71E-15 7.31E-18 1.70E-15 2.84%	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	N/A 3rd Count 6.8E+04 0.73 0.99
N/A Varia Count Date Count Time (e.g., noon, 1300, etc ample Count Time (Ts, Tb) = T oral Counts counter Rate Background Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Selection Efficiency Collection Efficiency Collection (F)/(E) Minimum Detectable Activity (d) Concentration (F)/(2.22E9 x (A) Background "Strip" value (F.1) NET Concentration Value = (B) DAC (or AE) Fraction = (F2)/(I)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRTA)) (H) Date Updated ()-(F1); (F2)	N/A esults (Cb))(E*T) (G)	minutes counts cpm cpm liters cpm cpm/dpm 0.99 cpm/dpm dpm dpm uCi/ml	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19 0.73 0.99 0.72 0.26 0.37 1.71E-15 7.31E-18 1.70E-15 2.84% 2.42E-15	N/A Alpha 2nd Count 6.8E+04 0.73 0.99	N/A 3rd Count 6.8E+04 0.73 0.99
N/A Varia Count Date Count Time (e.g., noon, 1300, etc Sample Count Time (Ts, Tb) = T Fotal Counts Sample Count Rate Background Count Rate Air Volume (liters) Net count rate Counter Efficiency Collection Efficiency Efficiency = (C) x (D) Activity (dpm) = (B)/(E) Minimum Detectable Activity (dd Concentration = (F)/(2.22E9 x (the Background "Strip" value (F.1) NET Concentration Value = (H) DAC (or AE) Fraction = (F2)/(I) MDC = MDA/V = (G)/(A)	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT A)) (H) Date Updated () - (F1); (F2)	N/A esults (Cb))/(E*T) (G) 4/20-4/21	minutes counts cpm cpm liters cpm cpm/dpm cpm/dpm dpm dpm dpm uCi/ml uCi/ml	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19 0.73 0.99 0.72 0.26 0.37 1.71E-15 7.31E-18 1.70E-15 2.84% 2.42E-15 4.03%	N/A Alpha 2nd Count 6.8E+04 0.73 0.99 0.72	N/A 3rd Count 6.8E+04 0.73 0.99
N/A	(A) (B) (C) (D) (E) (F) pm) = (3+4.65*SQRT A)) (H) Date Updated () - (F1); (F2)	N/A esults (Cb))/(E*T) (G) 4/20-4/21	minutes counts cpm cpm liters cpm cpm/dpm cpm/dpm dpm dpm dpm uCi/ml uCi/ml y'es/No	N/A 1st Count 12/14/2018 12:30 60 19 0.32 0.13 6.8E+04 0.19 0.73 0.99 0.72 0.26 0.37 1.71E-15 7.31E-18 1.70E-15 2.84% 2.42E-15 4.03% YES	N/A Alpha 2nd Count 6.8E+04 0.73 0.99 0.72 Yes	N/A 3rd Count 6.8E+04 0.73 0.99

		Secti	on I - Collection I	Data		
Date:	1/8/2019	Sample ID:	20181210-125		RWP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml	(I) Breathing Zon	e: General Area: 🗸	Work Are
Non-Occupational (EC):	IDAC	= 2.0E-11µCi/ml (U-238), EC=	6.0E-14uCi/ml1	Radionuclide	s: DU (Depleted	
			o.oz r.poninj	The second secon		
100				Sampled By:	David Be	rres
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:			N	IA		
Lapel Pump Model:	NA	S	erial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	erial No.	3666	Calibration Due Date:	8/22/2019
Sample Information		Time			_	
Collection Date	Start		Total (minutes)			ate (lpm)
12/7/2018	7:30	Stop 17:00	570		Start 60.0	Stop 60.0
12/10/2018	7:30	17:00	570			
12/10/2018	7.30	Total Time (Tc):	1140		60 Avg. Flow Rate (lpm)	60.0
		Total Time (10).	1140		Avg. Flow Rate (ipin)	00.0
			Minimum Air Sample	Volume: 5.0E+03	Liters	
Sample Volume:	60 (lpm)		x 1	140 (minutes)	= 6.8E+04 Li	ters (A)
and the second second second						(, -)
Remarks: Min	imum sample volumes	identified are necessary to achie	ve 10% of DAC or AE	value.		
			on II - Analysis D			
rument Information		Serial Number			ration Due Date	
Instrument Type		Meter	Detector	Meter	Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
	oles, Calculations, Res	ilts	Units	1st Count	2nd Count	3rd Count
nt Date				12/17/2018		
nt Time (e.g., noon, 1300, etc.	.)			12:30		
ple Count Time (Ts, Tb) = T			minutes	60		
l Counts			counts	17		
ple Count Rate			cpm	0.28		5-
ground Count Rate			cpm	0.10		
/olume (liters)	(A)		liters	6.8E+04	6.8E+04	6.8E+04
count rate	(B)		cpm	0.18		
nter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
ection Efficiency	(D)		0.99	0.99	0.99	0.99
$iency = (C) \times (D)$	(E)		cpm/dpm	0.72	0.72	0.72
rity (dpm) = (B)/(E)	(F)		dpm	0.26		
mum Detectable Activity (dpr		b))/(E*T) (G)	dpm	0.33		
entration = $(F)/(2.22E9 \times (A)$) (H)		μCi/ml	1.68E-15		
ground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
	Concentration Value = (H) - (F1); (F2) uCi/ml		1.67E-15		3	
(or AE) Fraction = (F2)/(I)			2.79%			
C = MDA/V = (G)/(A)	(J)		μCi/ml	2.18E-15	Lighter to the control	
Fraction of DAC (or AE) = ((J)/(I) (Goal<10%)			3.63%		
Count?			Yes/No	YES	Yes	
	N	ote: Unexpected DAC or AE fr				
		The second second	i too re require	action about		
Performed D	David B	orces /1	1 Ba			1-0-2-19
Performed By:	David B	erres /Dan	J Ben		Date:	1-8-2019

		Sect	ion I - Collectio	n Data		
Date:	1/8/2019		20181210-		RWP: 2018-001	
Occupational (DAC):	Limit:	6.00E-14		/ml (1) Breathing Zon	e: General Area: 🗸	Work Are
Non-Occupational (EC):	[DAC	= 2.0E-11µCi/ml (U-238), EC=	6.0E-14uCi/ml]	Radionuclide	s: DU (Depleted	
Location:						
				Sampled By:	David Be	rres
Wearer:		NA		Activity Performed:	NA	
Monitored Workers:				NA		
Lapel Pump Model:	NA		Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2591	Calibration Due Date:	3/27/2019
Sample Information		Time			Flow R	ate (lpm)
Collection Date	Start	Stop	Total (minu	tae)	Start	Stop
12/7/2018	7:30	15:20	470	iics)	60.0	60.0
12/10/2018	7:30	15:20	470		60	60
		Total Time (Tc):	940		Avg. Flow Rate (lpm)	60.0
			T. T. C. H. 17 3.7			
			Minimum Air San	ple Volume: 5.0E+03	Liters	
Sample Volume:	60 (lpm)		x	940 (minutes)	= 5.6E+04 Li	ters (A)
P		tamento a company and the	100/ 0010			
Kernarks; Mil	nimum sample volumes	identified are necessary to achie	ve 10% of DAC or I	AE value.		
		Sect	ion II - Analysis	Data		
rument Information		Serial Number			ration Due Date	
Instrument Type		Meter	Detector		Detector	Efficiency (a)
L-2929		158817	164736	1/10/2019	1/10/2019	0.726
N/A		N/A	N/A	N/A	N/A	N/A
					Alpha	
Varia	bles, Calculations, Resi	ılts	Units	1st Count	2nd Count	3rd Count
int Date				12/17/2018		
int Time (e.g., noon, 1300, etc	:.)			8:00		
pple Count Time (Ts, Tb) = T			minutes	60		
al Counts			counts	17		
ple Count Rate			cpm	0.28		
kground Count Rate			cpm	0.10		
Volume (liters)	(A)		liters	5.6E+04	5.6E+04	5.6E+04
count rate	(B)		cpm	0.18		
inter Efficiency	(C)		cpm/dpm	0.73	0.73	0.73
lection Efficiency	(D)		0.99	0.99	0.99	0.99
ciency = (C) x (D)	(E)		cpm/dpm	0.72	0.72	0.72
ivity (dpm) = (B)/(E)	(F)	W.S	dpm	0.26		
imum Detectable Activity (dp		b))/(E*T) (G)	dpm	0.33		
ncentration = (F)/(2.22E9 x (A			μCi/ml	2.04E-15		
kground "Strip" value (F.1)	Date Updated	4/20-4/21	uCi/ml	7.31E-18		
T Concentration Value = (H) - (F1); (F2)			uCi/ml	2.03E-15		
C (or AE) Fraction = (F2)/(I)				3.38%		
C = MDA/V = (G)/(A)	(J)		μCi/ml	2.64E-15		
Fraction of DAC (or AE) = (J)/(I) (Goal<10%)				4.40%		
			Yes/No	YES	Yes	
				ives immediate DCO actifact	an	
al Count?	N	ote: Unexpected DAC or AE fr	action > 100% requ	illes illineulate KSO notificat	iu.	
d Count?		1-		mes immediate RSO notificat		11-1
1 Count?		1-	Be_	ires ininemate X50 notificat		1/8/2019
d Count?	David B	1-		ires immediate RSO notificat		1/8/2019

			on I - Collection D		VP: 2018-001	
Date:	1/8/2019	Sample ID:				Work Area:
Occupational (DAC):	Limit:	6.00E-14	μCı/ml	(I) Breathing Zone:	General Area:	WOIK Alea.
Non-Occupational (EC):	ī	DAC = 2.0E-11µCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radionuclides:	DU (Depleted	Uranium)
		FS12 (Boundry)		Sampled By:	David Ber	res
Location:				Activity Performed:	NA	
Wearer:		NA		_		
Monitored Workers:			N	A		
Lapel Pump Model:	NA	S	Serial No.	NA	Calibration Due Date:	NA
Air Pump Model:	LV-1	S	Serial No.	3666	Calibration Due Date:	8/22/2019
					Flow Ra	ite (lpm)
Sample Information		Time	m + 1 (- i - +)	_	Start	Stop
Collection Date	Start	Stop	Total (minutes)		60.0	60.0
12/11/2018	7:30	17:00	570		60	60
12/12/2018	7:30	17:00	570		Avg. Flow Rate (lpm)	60.0
		Total Time (Tc):	1140		Avg. Flow Rate (ipin)	
			Minimum Air Sample	Volume: 5.0E+03	Liters	
Sample Volume:	60	lpm)	x 1	140 (minutes) =	6.8E+04 Li	ters (A)
				-t		
Remarks: Mi	nimum sample vo	lumes identified are necessary to achie	eve 10% of DAC or AE	value.		
		Sect	tion II - Analysis D	ata		
		Serial Number	ion it manyous z		ation Due Date	
strument Information			Detector	Meter	Detector	Efficiency (a)
Instrument Type		Meter	164736	1/10/2019	1/10/2019	0.726
L-2929		158817	N/A	N/A	N/A	N/A
N/A		N/A	N/A	IV/A	Alpha	
7.17			Units	1st Count	2nd Count	3rd Count
	bles, Calculation	s, Results	Units	12/17/2018		
ount Date				12:30		
ount Time (e.g., noon, 1300, et				60		
imple Count Time (Ts, Tb) = T			minutes	12		
otal Counts			counts	0.20		
ample Count Rate			cpm	0.10		
ackground Count Rate			cpm	6.8E+04	6.8E+04	6.8E+04
ir Volume (liters)		A)	liters	0.8E704	0.01.107	0.02.01
et count rate		3)	cpm	0.73	0.73	0.73
ounter Efficiency	(C		cpm/dpm	0.73	0.99	0.99
ollection Efficiency	(D		0.99		0.72	0.72
$ficiency = (C) \times (D) $ (E)			cpm/dpm	0.72	0.12	
	(F)		dpm	0.14		
	inimum Detectable Activity (dpm) = (3+4.65*SQRT(Cb))/(E*T) (G)		dpm μCi/ml	0.33 0.16E-16		
finimum Detectable Activity (d		ncentration = $(F)/(2.22E9 \times (A))$ (H)		9.16E-16		
finimum Detectable Activity (deconcentration = (F)/(2.22E9 x (A)) (H)		07/ 1			
finimum Detectable Activity (doncentration = (F)/(2.22E9 x (ackground "Strip" value (F.1)	A)) (H) Date Updated	4/20-4/21	uCi/ml	7.31E-18		4
finimum Detectable Activity (doncentration = (F)/(2.22E9 x (ackground "Strip" value (F.1)	A)) (H) Date Updated		uCi/ml uCi/ml	9.09E-16		
finimum Detectable Activity (do oncentration = (F)/(2.22E9 x (. ackground "Strip" value (F.1) ET Concentration Value = (H	A)) (H) Date Updated) - (F1); (F		uCi/ml	9.09E-16 1.51%		
finimum Detectable Activity (doncentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (HAC (or AE) Fraction = (F2)/(IAC = MDA/V = (G)/(A)	A)) (H) Date Updated) - (F1); (F) (J)	2)		9.09E-16 1.51% 2.18E-15		
finimum Detectable Activity (do concentration = (F)/(2.22E9 x (cackground "Strip" value (F.1) JET Concentration Value = (H DAC (or AE) Fraction = (F2)/(I ADC = MDA/V = (G)/(A)	A)) (H) Date Updated) - (F1); (F) (J)	2)	uCi/ml	9.09E-16 1.51% 2.18E-15 3.63%		
finimum Detectable Activity (doncentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (H AC (or AE) Fraction = (F2)/(I EDC = MDA/V = (G)/(A) EDC Fraction of DAC (or AE)	A)) (H) Date Updated) - (F1); (F) (J)	2)	uCi/ml μCi/ml Yes/No	9.09E-16 1.51% 2.18E-15 3.63% YES	Yes	
finimum Detectable Activity (deconcentration = (F)/(2.22E9 x (concentration = (F)/(2.22E9 x (concentration = (F.1)) The Concentration Value = (H.2) The Concentration Value = (F.2)/(I.2) The Concentration = (F.2)/(I.2) The Concentration = (F.2)/(I.2) The Concentration = (F.2)/(I.2) The Concentration of DAC (or AE)	A)) (H) Date Updated) - (F1); (F) (J)	2)	uCi/ml μCi/ml Yes/No	9.09E-16 1.51% 2.18E-15 3.63% YES		
finimum Detectable Activity (deconcentration = (F)/(2.22E9 x (concentration = (F)/(2.22E9 x (concentration = (F.1)) ET Concentration Value = (H.2) AC (or AE) Fraction = (F2)/(I.4) ADC = MDA/V = (G)/(A) ADC Fraction of DAC (or AE) Final Count?	A)) (H) Date Updated) - (F1); (F)) (J) = (J)/(1) (Goal-	Note: Unexpected DAC or AE	uCi/ml μCi/ml Yes/No fraction > 100% require	9.09E-16 1.51% 2.18E-15 3.63% YES		10.2.4
finimum Detectable Activity (doncentration = (F)/(2.22E9 x (ackground "Strip" value (F.1) ET Concentration Value = (Hand (Graft)) ET Concentration Value = (Hand (Graft)) ET Concentration = (F2)/(Indicate) ET Concentration Value = (Hand (Graft)) ET Concentration Value = (Hand (Graft)) ET Concentration of DAC (Graft) ET Concentration of DAC (Graft) ET Concentration of DAC (Graft) ET Concentration of DAC (Graft)	A)) (H) Date Updated) - (F1); (F)) (J) = (J)/(1) (Goal-	Note: Unexpected DAC or AE	uCi/ml μCi/ml Yes/No fraction > 100% require	9.09E-16 1.51% 2.18E-15 3.63% YES		1-8-2019
Concentration = (F)/(2.22E9 x (Background "Strip" value (F.1) NET Concentration Value = (H. DAC (or AE) Fraction = (F2)/(I. MDC = MDA/V = (G)/(A) MDC Fraction of DAC (or AE) Final Count?	A)) (H) Date Updated) - (F1); (F)) (J) = (J)/(1) (Goal-	Note: Unexpected DAC or AE	uCi/ml μCi/ml Yes/No	9.09E-16 1.51% 2.18E-15 3.63% YES	Date:	1-8-2019

		Secti	on I - Collection I	ata			
Date:	1/8/2019	Sample ID:	20181212-128		RWP:	2018-001	
Occupational (DAC):	Limit:	6.00E-14	μCı/ml	(I) Breatl	ning Zone:		
Non-Occupational (EC):	[DAC	C = 2.0E-11μCi/ml (U-238), EC=	6.0E-14µCi/ml]	Radi	onuclides:	DU (Deplete	d Uranium)
Location		FS12 SCA Boundary		Sampled	By:	David Be	erres
		Total Control		Activity Part	formed:	NA	
Wearer:		NA			offica.		
Monitored Workers:			1	NA		ST	1.1.
Lapel Pump Model:	NA	5	Serial No.	NA		Calibration Due Date:	NA
Air Pump Model:	LV-1		Serial No.	2591		Calibration Due Date:	3/27/2019
Sample Information		Time				Flow F	tate (lpm)
Collection Date	Start	Stop	Total (minutes)		Start	Stop
12/11/2018	7:30	15:20	470			60.0	60.0
12/12/2018	7:30	15:20	470			60	60
		Total Time (Tc):	940		I	Avg. Flow Rate (lpm)	60.0
			Minimum Air Sampl	Volume: 5.8	E+03 Lite	ers	
	100					5.6E+04 I	iters (A)
Sample Volume:	60 (lpm)		х	940 (minutes	.,	5,0E+04 L	ners (A)
Remarks: Mir	nimum sample volume	s identified are necessary to achie	eve 10% of DAC or AE	value.			
		Sect	tion II - Analysis I	Data			
trument Information		Serial Number			Calibration	Due Date	
Instrument Type		Meter	Detector		Meter	Detector	Efficiency (a)
L-2929		158817	164736	1,	10/2019	1/10/2019	0.726
N/A		N/A	N/A		N/A	N/A	N/A
						Alpha	
Varia	bles, Calculations, Re	sults	Units	1st Count		2nd Count	3rd Count
unt Date			1 1 1 1 1 1 1 1 1	1/7//19			
unt Time (e.g., noon, 1300, et	c.)			8:00			
mple Count Time (Ts, Tb) = T			minutes	60			
tal Counts			counts	28			
mple Count Rate			cpm	0.47			
ckground Count Rate			epm	0.15			
Volume (liters)	(A)		liters	5.6E+04		5.6E+04	5.6E+04
t count rate	(B)		epm	0.32			
unter Efficiency	(C)		cpm/dpm	0.73		0.73	0.73
llection Efficiency	(D)		0.99	0.99		0.99	0.99
ficiency = $(C) \times (D)$	(E)		cpm/dpm	0.72		0.72	0.72
tivity $(dpm) = (B)/(E)$	(F)		dpm	0.44			
nimum Detectable Activity (d	pm) = (3+4.65*SQRT)	(Cb))/(E*T) (G)	dpm	0.39			
encentration = $(F)/(2.22E9 \times (A))$	A)) (H)		μCi/ml	3.52E-15	- 54		
ckground "Strip" value (F.1) Date Updated 4/20-4/21		4/20-4/21	uCi/ml	7.31E-18			
T Concentration Value = (H)	T Concentration Value = (H) - (F1); (F2)		uCi/ml	3.51E-15			
AC (or AE) Fraction = (F2)/(I)	KI			5.85%			
DC = MDA/V = (G)/(A)	(J)		μCi/mI	3.11E-15			
DC Fraction of DAC (or AE) =	(J)/(I) (Goal<10%			5.18%			
nal Count?			Yes/No	YES		Yes	
		Note: Unexpected DAC or AE	fraction > 100% requi	res immediate RSC	notification.		
							1 8 0010
Performed By:	Devid El se	Berres /Da	nd Be			Date:	1-8-2019

APPENDIX C

CAP88-PC OUTPUT REPORT FOR IAAAP OPERABLE UNIT 8 AREAS

APPENDIX C REVISION 0

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APPENDIX C REVISION 0

DOSE AND RISK SUMMARIES

Non-Radon Individual Assessment Wed Jul 31 12:58:06 2019

Facility: FS-12 IAAAP Address: Iowa Army Ammunition Plant

City: Middletown

State: IA Zip: 52638

Source Category: Area Source Type: Area Emission Year: 2018 DOSE Age Group: Adult

> Comments: FS-12 Emissions FS-12 Emissions

Dataset Name: FS12 Emissions 2 Dataset Date: Jul 31, 2019 12:57 PM

Wind File: C:\Users\finkenbinec\Documents\CAP88\Wind Files\Wind

Files\14923.WND

SUMMARY Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal UB_Wall Bone_Sur Brain Breasts St_Wall SI_Wall ULI_Wall LLI_Wall Kidneys Liver Muscle Ovaries Pancreas R_Marrow Skin Spleen Testes Thymus Thyroid GB_Wall Ht_Wall Uterus ET_Reg Lung_66	3.09E-03 3.14E-03 7.56E-02 3.11E-03 3.42E-03 3.16E-03 3.17E-03 4.44E-03 2.76E-02 1.07E-02 3.33E-03 3.10E-03 3.18E-03 3.18E-03 3.18E-03 3.18E-03 3.19E-03 3.19E-03 3.19E-03 3.10E-03 3.10E-03
Effectiv	4.17E-02

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION INHALATION	1.20E-03
AIR IMMERSION GROUND SURFACE	9.15E-09 1.58E-03
INTERNAL EXTERNAL	4.01E-02 1.58E-03
TOTAL	4.17E-02

SUMMARY Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

	Selected
	Individual
Nuclide	(mrem)
	
U-234	3.67E-02
Th-230	2.15E-08
Ra-226	2.61E-09
Rn-222	1.45E-10
Po-218	2.60E-15
Pb-214	9.50E-08
At-218	9.78E-15
Bi-214	5.55E-07
Rn-218	5.66E-17
Po-214	3.08E-11
T1-210	2.17E-10
Pb-210	3.64E-10
Bi-210	5.88E-09
Hg-206	4.74E-16
Po-210	1.51E-12
T1-206	1.37E-14
U-235	7.76E-04
Th-231	2.58E-05
Pa-231	4.28E-08
Ac-227	1.44E-10
Th-227	6.85E-08
Fr-223	6.46E-10
Ra-223	7.66E-08
Rn-219	3.32E-08
At-219	0.00E+00
Bi-215	1.49E-13
Po-215	1.01E-10
Pb-211	6.52E-08
Bi-211	2.69E-08
T1-207	3.38E-08
Po-211	1.29E-11
U-238	2.89E-03
Th-234	8.24E-05
Pa-234m	1.13E-03
Pa-234	2.22E-05
TOTAL	4.17E-02

SUMMARY Page 3

CANCER RISK SUMMARY

	Selected Individual
	Total Lifetime
Cancer	Fatal Cancer Risk

PATHWAY RISK SUMMARY

	Selected Individual Total Lifetime
Pathway	Fatal Cancer Risk
INGESTION	3.51E-10
INHALATION	1.34E-08
AIR IMMERSION	4.84E-15
GROUND SURFACE	4.24E-10
INTERNAL	1.37E-08
EXTERNAL	4.24E-10
TOTAL	1.42E-08

SUMMARY Page 4

NUCLIDE RISK SUMMARY

	Selected Individual Total Lifetime
Nuclide	Fatal Cancer Risk
U-234	1.26E-08
Th-230	9.12E-15
Ra-226	1.42E-15
Rn-222	7.94E-17
Po-218	1.16E-21
Pb-216 Pb-214	5.08E-14
At-218	1.20E-21
Bi-214	2.93E-13
Rn-218	3.10E-23
Po-214	1.69E-17
T1-210	1.16E-16
Pb-210	1.63E-16
Bi-210	6.51E-16
Hg-206	2.10E-22
Po-210	8.28E-19
T1-206	1.54E-21
U-235	3.11E-10
Th-231	1.18E-11
Pa-231	2.23E-14
Ac-227	5.37E-17
Th-227	3.71E-14
Fr-223	2.41E-16
Ra-223	4.14E-14
Rn-219	1.82E-14
At-219	0.00E+00
Bi-215	6.67E-20
Po-215	5.56E-17
Pb-211	2.33E-14
Bi-211	1.47E-14
T1-207	4.34E-15
Po-211	7.08E-18
U-238	9.64E-10
Th-234	4.27E-11
Pa-234m	1.97E-10
Pa-234	1.21E-11
TOTAL	1.42E-08

SUMMARY Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem) (All Radionuclides and Pathways)

			Distance	e (m)	
Direction	n 613	2714	7894		
N	4.2E-02	3.7E-03	1.4E-03		
NNW NW WNW	1.6E-02 1.3E-02 2.3E-02	1.9E-03 1.7E-03 2.4E-03	1.1E-03 1.0E-03 1.1E-03	School	
W WSW	3.9E-02 1.8E-02	3.5E-03 2.1E-03	1.3E-03 1.1E-03	Residence;	Farm
SW SSW	9.3E-03 7.0E-03	1.5E-03 1.3E-03	9.7E-04 9.4E-04		
S SSE	1.1E-02 8.3E-03	1.6E-03 1.4E-03	1.0E-03 9.6E-04		
SSE ESE -	1.0E-02 1.7E-02	1.6E-03 2.1E-03	1.0E-03 1.1E-03		
E ENE NE	3.0E-02 3.6E-02 2.5E-02	2.9E-03 3.3E-03 2.5E-03	1.2E-03 1.3E-03 1.2E-03	Business	
NNE	2.3E-02 2.3E-02	2.4E-03	1.1E-03		

Note: Highlighted EDE values (in mrem) are applicable to the critical receptors as defined in Section 3.3.4 of this report taking into account the distance and direction from the applicable site to each receptor. The highlighted value assumes 100 percent occupancy.

SUMMARY Page 6

INDIVIDUAL LIFETIME RISK (deaths) (All Radionuclides and Pathways)

Distance (m)

Direction 613 2714 7894

Direction	.1 013	2/14	7094	
N	1.4E-08	1.2E-09	4.3E-10	
NNW	5.5E-09	6.1E-10	3.2E-10	
NW	4.3E-09	5.3E-10	3.0E-10	
WNW	7.9E-09	7.7E-10	3.4E-10	
W	1.3E-08	1.1E-09	4.1E-10	
WSW	6.2E-09	6.6E-10	3.2E-10	
SW	3.1E-09	4.5E-10	2.9E-10	
SSW	2.3E-09	4.0E-10	2.8E-10	
S	3.9E-09	5.1E-10	3.0E-10	
SSE	2.8E-09	4.3E-10	2.9E-10	
SSE	3.5E-09	4.9E-10	3.0E-10	
ESE	5.9E-09	6.6E-10	3.3E-10	
E	1.0E-08	9.5E-10	3.8E-10	
ENE	1.2E-08	1.1E-09	4.0E-10	
NE	8.5E-09	8.1E-10	3.5E-10	
NNE	7.8E-09	7.6E-10	3.4E-10	

DOSE AND SUMMARIES RISK

Non-Radon Individual Assessment Thu Apr 25 10:12:56 2019

Facility: M-Yard IAAAP
Address: Iowa Army Ammunition Plant

City: Middletown

State: IA Zip: 52638

Source Category: Area Source Type: Area Emission Year: 2018 DOSE Age Group: Adult

> Comments: M-Yard Emissions M-Yard Emissions

Dataset Name: M-Yard Emissions Dataset Date: Apr 25, 2019 10:12 AM

Wind File: C:\Users\finkenbinec\Documents\CAP88\Wind Files\Wind

Files\14923.WND

SUMMARY Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
	
Adrenal	7.70E-06
UB_Wall	7.82E-06
Bone_Sur	1.89E-04
Brain	7.74E-06
Breasts	8.50E-06
St_Wall	7.87E-06
SI_Wall	7.89E-06
ULI_Wall	8.85E-06
LLI_Wall	1.10E-05
Kidneys	6.89E-05
Liver	2.67E-05
Muscle	8.29E-06
Ovaries	7.72E-06
Pancreas	7.66E-06
R_Marrow	2.05E-05
Skin	2.38E-04
Spleen	7.81E-06
Testes	8.40E-06
Thymus	7.78E-06
Thyroid	7.96E-06
GB Wall	7.69E-06
Ht_Wall	7.76E-06
Uterus	7.71E-06
ET_Reg	1.78E-04
Lung_66	7.59E-04
Effectiv	1.05E-04

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)			
				
INGESTION INHALATION AIR IMMERSION	2.91E-06 9.82E-05 2.31E-11			
GROUND SURFACE	3.84E-06 1.01E-04			
EXTERNAL	3.84E-06			
TOTAL.	1 05E-04			

SUMMARY Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

	Selected
	Individual
Nuclide	(mrem)
· 	
U-234	9.29E-05
Th-230	5.38E-11
Ra-226	6.54E-12
Rn-222	3.64E-13
Po-218	6.50E-18
Pb-214	2.38E-10
At-218	2.44E-17
Bi-214	1.39E-09
Rn-218	1.42E-19
Po-214	7.69E-14
T1-210	5.42E-13
Pb-210	9.09E-13
Bi-210	1.47E-11
Hg-206	1.19E-18
Po-210	3.77E-15
T1-206	3.43E-17
U-235	1.95E-06
Th-231	6.43E-08
Pa-231	1.07E-10
Ac-227	3.58E-13
Th-227	1.71E-10
Fr-223	1.61E-12
Ra-223	1.91E-10
Rn-219	8.27E-11
At-219	0.00E+00
Bi-215	3.72E-16
Po-215	2.53E-13
Pb-211	1.62E-10
Bi-211	6.69E-11
T1-207	8.41E-11
Po-211	3.22E-14
U-238	7.07E-06
Th-234	1.99E-07
Pa-234m	2.73E-06
Pa-234	5.37E-08
TOTAL	1.05E-04

SUMMARY Page 3

CANCER RISK SUMMARY

	Selected Individual
	Total Lifetime
Cancer	Fatal Cancer Risk

PATHWAY RISK SUMMARY

Selected Individual Total Lifetime
Fatal Cancer Risk
8.49E-13
3.38E-11
1.22E-17
1.04E-12
3.47E-11
1.04E-12
3.57E-11

SUMMARY Page 4

NUCLIDE RISK SUMMARY

U-234 Th-230	Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
Pa-234m 4.77E-13	U-234 Th-230 Ra-226 Rn-222 Po-218 Pb-214 At-218 Bi-214 Rn-218 Po-214 Tl-210 Pb-210 Bi-210 Hg-206 Po-210 Tl-206 U-235 Th-231 Pa-231 Ac-227 Th-227 Fr-223 Ra-223 Rn-219 At-219 Bi-215 Po-215 Pb-211 Bi-211 Tl-207 Po-211 U-238	3.19E-11 2.28E-17 3.55E-18 1.98E-19 2.90E-24 1.27E-16 3.01E-24 7.33E-16 7.74E-26 4.22E-20 2.90E-19 4.07E-19 1.63E-18 5.26E-25 2.07E-21 3.86E-24 7.81E-13 2.94E-14 5.56E-17 1.34E-19 9.25E-17 6.00E-19 1.03E-16 4.53E-17 0.00E+00 1.66E-22 1.38E-19 5.80E-17 3.65E-17 1.08E-17 1.76E-20 2.36E-12
TOTAL 3.57E-11	Pa-234	2.92E-14

SUMMARY Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem) (All Radionuclides and Pathways)

			Distan	ce (m)				
Directio	n 521	3498	9463					
N NNW NW WNW	1.0E-04 4.1E-05 3.2E-05 5.9E-05	5.5E-06 3.3E-06 3.0E-06 3.9E-06	2.8E-06 2.3E-06 2.3E-06 2.4E-06	Business;	Residence	and	Farm;	School
W WSW SW SSW S	9.8E-05 4.6E-05 2.3E-05 1.7E-05 2.9E-05	5.2E-06 3.5E-06 2.8E-06 2.6E-06 3.0E-06	2.7E-06 2.4E-06 2.2E-06 2.2E-06 2.3E-06					
SSE SSE ESE E ENE NE NNE	2.1E-05 2.6E-05 4.4E-05 7.6E-05 9.1E-05 6.3E-05 5.8E-05	2.7E-06 2.9E-06 3.5E-06 4.6E-06 5.0E-06 4.1E-06 3.9E-06	2.2E-06 2.2E-06 2.4E-06 2.6E-06 2.6E-06 2.5E-06 2.4E-06					

Note: Highlighted EDE values (in mrem) are applicable to the critical receptors as defined in Section 3.3.4 of this report taking into account the distance and direction from the applicable site to each receptor. The highlighted value assumes 100 percent occupancy.

SUMMARY Page 6

INDIVIDUAL LIFETIME RISK (deaths) (All Radionuclides and Pathways)

	Distance (m)						
Direction	n 521	3498	9463				
N	3.6E-11	1.8E-12	8.4E-13				
NNW	1.4E-11	1.0E-12	6.9E-13				
NW	1.1E-11	9.4E-13	6.7E-13				
WNW	2.0E-11	1.2E-12	7.3E-13				
W	3.3E-11	1.7E-12	8.2E-13				
WSW	1.6E-11	1.1E-12	7.0E-13				
SW	7.9E-12	8.5E-13	6.5E-13				
SSW	5.8E-12	7.8E-13	6.4E-13				
S	9.7E-12	9.1E-13	6.7E-13				
SSE	7.0E-12	8.2E-13	6.5E-13				
SSE	8.8E-12	8.9E-13	6.6E-13				
ESE	1.5E-11	1.1E-12	7.1E-13				
E	2.6E-11	1.5E-12	7.7E-13				
ENE	3.1E-11	1.6E-12	8.0E-13				
NE	2.2E-11	1.3E-12	7.4E-13				
NNE	2.0E-11	1.2E-12	7.3E-13				

APPENDIX D

CALENDAR YEAR 2018 SURFACE-WATER AND SEDIMENT DATA

APPENDIX D REVISION 0

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APPENDIX D REVISION 0

Table D-1. Surface-Water Data for CY 2018

Station Name	Sample Name	Collection Date	Method	Analyte	Result	Error	Detection Limit	Units	VQ
IAAP100153	IAAP201047	04/16/18	ML-018	Gross Alpha	2.80	11.90	20.90	pCi/L	UJ
IAAP100153	IAAP201047	04/16/18	ML-018	Gross Beta	-5.46	15.70	27.30	pCi/L	UJ
IAAP100153	IAAP201047	04/16/18	ML-015	U-234	0.83	0.57	0.61	pCi/L	J
IAAP100153	IAAP201047	04/16/18	ML-015	U-235	-0.03	0.21	0.55	pCi/L	UJ
IAAP100153	IAAP201047	04/16/18	ML-015	U-238	0.79	0.55	0.53	pCi/L	J
IAAP100509	IAAP201049	04/17/18	ML-018	Gross Alpha	6.29	12.30	20.90	pCi/L	UJ
IAAP100509	IAAP201049	04/17/18	ML-018	Gross Beta	12.10	16.60	27.30	pCi/L	UJ
IAAP100509	IAAP201049	04/17/18	ML-015	U-234	0.89	0.58	0.70	pCi/L	J
IAAP100509	IAAP201049	04/17/18	ML-015	U-235	0.21	0.34	0.69	pCi/L	UJ
IAAP100509	IAAP201049	04/17/18	ML-015	U-238	0.56	0.45	0.55	pCi/L	J
IAAP100154	IAAP201051	04/16/18	ML-018	Gross Alpha	-2.10	11.30	20.90	pCi/L	UJ
IAAP100154	IAAP201051	04/16/18	ML-018	Gross Beta	5.46	16.20	27.30	pCi/L	UJ
IAAP100154	IAAP201051	04/16/18	ML-015	U-234	1.22	0.62	0.50	pCi/L	J
IAAP100154	IAAP201051	04/16/18	ML-015	U-235	0.06	0.17	0.44	pCi/L	UJ
IAAP100154	IAAP201051	04/16/18	ML-015	U-238	0.47	0.39	0.50	pCi/L	UJ
IAAP100155	IAAP201053	04/17/18	ML-018	Gross Alpha	6.29	12.30	20.90	pCi/L	UJ
IAAP100155	IAAP201053	04/17/18	ML-018	Gross Beta	15.60	16.80	27.30	pCi/L	UJ
IAAP100155	IAAP201053	04/17/18	ML-015	U-234	1.09	0.54	0.45	pCi/L	=
IAAP100155	IAAP201053	04/17/18	ML-015	U-235	0.02	0.15	0.51	pCi/L	UJ
IAAP100155	IAAP201053	04/17/18	ML-015	U-238	0.50	0.35	0.30	pCi/L	J
IAAP100155	IAAP201053-1	04/17/18	ML-018	Gross Alpha	4.19	12.00	20.90	pCi/L	UJ
IAAP100155	IAAP201053-1	04/17/18	ML-018	Gross Beta	3.12	16.10	27.30	pCi/L	UJ
IAAP100155	IAAP201053-1	04/17/18	ML-015	U-234	1.08	0.62	0.57	pCi/L	J
IAAP100155	IAAP201053-1	04/17/18	ML-015	U-235	0.17	0.27	0.50	pCi/L	UJ
IAAP100155	IAAP201053-1	04/17/18	ML-015	U-238	0.84	0.55	0.56	pCi/L	J
IAAP100155	IAAP201053-2	04/17/18	EML A-01-R MOD	U-234	0.59	0.21	0.13	pCi/L	=
IAAP100155	IAAP201053-2	04/17/18	EML A-01-R MOD	U-235	0.04	0.06	0.10	pCi/L	UJ
IAAP100155	IAAP201053-2	04/17/18	EML A-01-R MOD	U-238	0.71	0.23	0.12	pCi/L	=
IAAP100165	IAAP201057	04/17/18	ML-018	Gross Alpha	8.39	12.50	20.90	pCi/L	UJ
IAAP100165	IAAP201057	04/17/18	ML-018	Gross Beta	2.73	16.10	27.30	pCi/L	UJ
IAAP100165	IAAP201057	04/17/18	ML-015	U-234	0.63	0.43	0.42	pCi/L	J

Table D-1. Surface-Water Data for CY 2018

Station Name	Sample Name	Collection Date	Method	Analyte	Result	Error	Detection Limit	Units	VQ
IAAP100165	IAAP201057	04/17/18	ML-015	U-235	0.04	0.17	0.52	pCi/L	UJ
IAAP100165	IAAP201057	04/17/18	ML-015	U-238	0.26	0.30	0.48	pCi/L	UJ
IAAP100178	IAAP201059	04/17/18	ML-018	Gross Alpha	0.70	11.60	20.90	pCi/L	UJ
IAAP100178	IAAP201059	04/17/18	ML-018	Gross Beta	-8.20	15.60	27.30	pCi/L	UJ
IAAP100178	IAAP201059	04/17/18	ML-015	U-234	0.56	0.46	0.58	pCi/L	UJ
IAAP100178	IAAP201059	04/17/18	ML-015	U-235	0.00	0.28	0.72	pCi/L	UJ
IAAP100178	IAAP201059	04/17/18	ML-015	U-238	0.30	0.32	0.42	pCi/L	UJ
IAAP100180	IAAP201061	04/17/18	ML-018	Gross Alpha	7.69	12.40	20.90	pCi/L	UJ
IAAP100180	IAAP201061	04/17/18	ML-018	Gross Beta	-4.29	15.80	27.30	pCi/L	UJ
IAAP100180	IAAP201061	04/17/18	ML-015	U-234	0.71	0.47	0.39	pCi/L	J
IAAP100180	IAAP201061	04/17/18	ML-015	U-235	0.09	0.25	0.66	pCi/L	UJ
IAAP100180	IAAP201061	04/17/18	ML-015	U-238	0.83	0.52	0.46	pCi/L	J
IAAP100187	IAAP201063	04/17/18	ML-018	Gross Alpha	5.59	12.20	20.90	pCi/L	UJ
IAAP100187	IAAP201063	04/17/18	ML-018	Gross Beta	1.17	16.00	27.30	pCi/L	UJ
IAAP100187	IAAP201063	04/17/18	ML-015	U-234	0.29	0.33	0.56	pCi/L	UJ
IAAP100187	IAAP201063	04/17/18	ML-015	U-235	0.00	0.25	0.65	pCi/L	UJ
IAAP100187	IAAP201063	04/17/18	ML-015	U-238	0.76	0.49	0.38	pCi/L	J
IAAP177517	IAAP201065	04/16/18	ML-018	Gross Alpha	5.59	12.20	20.90	pCi/L	UJ
IAAP177517	IAAP201065	04/16/18	ML-018	Gross Beta	-4.68	15.70	27.30	pCi/L	UJ
IAAP177517	IAAP201065	04/16/18	ML-015	U-234	0.76	0.49	0.38	pCi/L	J
IAAP177517	IAAP201065	04/16/18	ML-015	U-235	0.00	0.25	0.64	pCi/L	UJ
IAAP177517	IAAP201065	04/16/18	ML-015	U-238	0.83	0.51	0.37	pCi/L	J
IAAP100153	IAAP208772	11/27/18	ML-018	Gross Alpha	-0.35	9.40	16.50	pCi/L	UJ
IAAP100153	IAAP208772	11/27/18	ML-018	Gross Beta	12.30	10.20	16.50	pCi/L	UJ
IAAP100153	IAAP208772	11/27/18	ML-015	U-234	1.17	0.62	0.54	pCi/L	J
IAAP100153	IAAP208772	11/27/18	ML-015	U-235	-0.04	0.19	0.57	pCi/L	UJ
IAAP100153	IAAP208772	11/27/18	ML-015	U-238	1.81	0.78	0.53	pCi/L	=
IAAP177509	IAAP208774	11/28/18	ML-018	Gross Alpha	11.50	10.30	16.50	pCi/L	UJ
IAAP177509	IAAP208774	11/28/18	ML-018	Gross Beta	7.42	10.00	16.50	pCi/L	UJ
IAAP177509	IAAP208774	11/28/18	ML-015	U-234	0.55	0.42	0.51	pCi/L	J
IAAP177509	IAAP208774	11/28/18	ML-015	U-235	-0.02	0.18	0.45	pCi/L	UJ

Table D-1. Surface-Water Data for CY 2018

Station Name	Sample Name	Collection Date	Method	Analyte	Result	Error	Detection Limit	Units	VQ
IAAP177509	IAAP208774	11/28/18	ML-015	U-238	0.68	0.46	0.50	pCi/L	J
IAAP100154	IAAP208776	11/27/18	ML-018	Gross Alpha	-0.70	9.38	16.50	pCi/L	UJ
IAAP100154	IAAP208776	11/27/18	ML-018	Gross Beta	15.40	10.40	16.50	pCi/L	UJ
IAAP100154	IAAP208776	11/27/18	ML-015	U-234	1.28	0.62	0.36	pCi/L	=
IAAP100154	IAAP208776	11/27/18	ML-015	U-235	-0.02	0.19	0.72	pCi/L	UJ
IAAP100154	IAAP208776	11/27/18	ML-015	U-238	0.46	0.37	0.36	pCi/L	J
IAAP100164	IAAP208778	11/27/18	ML-018	Gross Alpha	4.54	9.76	16.50	pCi/L	UJ
IAAP100164	IAAP208778	11/27/18	ML-018	Gross Beta	7.61	10.00	16.50	pCi/L	UJ
IAAP100164	IAAP208778	11/27/18	ML-015	U-234	0.61	0.40	0.33	pCi/L	J
IAAP100164	IAAP208778	11/27/18	ML-015	U-235	-0.06	0.17	0.55	pCi/L	UJ
IAAP100164	IAAP208778	11/27/18	ML-015	U-238	0.31	0.31	0.46	pCi/L	UJ
IAAP100165	IAAP208782	11/27/18	ML-018	Gross Alpha	0.00	9.43	16.50	pCi/L	UJ
IAAP100165	IAAP208782	11/27/18	ML-018	Gross Beta	6.44	9.97	16.50	pCi/L	UJ
IAAP100165	IAAP208782	11/27/18	ML-015	U-234	0.72	0.44	0.33	pCi/L	J
IAAP100165	IAAP208782	11/27/18	ML-015	U-235	-0.02	0.16	0.40	pCi/L	UJ
IAAP100165	IAAP208782	11/27/18	ML-015	U-238	0.72	0.43	0.33	pCi/L	J
IAAP100178	IAAP208784	11/28/18	ML-018	Gross Alpha	3.84	9.71	16.50	pCi/L	UJ
IAAP100178	IAAP208784	11/28/18	ML-018	Gross Beta	15.00	10.40	16.50	pCi/L	UJ
IAAP100178	IAAP208784	11/28/18	ML-015	U-234	0.50	0.39	0.50	pCi/L	J
IAAP100178	IAAP208784	11/28/18	ML-015	U-235	0.14	0.28	0.66	pCi/L	UJ
IAAP100178	IAAP208784	11/28/18	ML-015	U-238	0.27	0.29	0.45	pCi/L	UJ
IAAP100180	IAAP208786	11/28/18	ML-018	Gross Alpha	-3.14	9.19	16.50	pCi/L	UJ
IAAP100180	IAAP208786	11/28/18	ML-018	Gross Beta	10.50	10.20	16.50	pCi/L	UJ
IAAP100180	IAAP208786	11/28/18	ML-015	U-234	0.40	0.34	0.37	pCi/L	J
IAAP100180	IAAP208786	11/28/18	ML-015	U-235	0.00	0.24	0.63	pCi/L	UJ
IAAP100180	IAAP208786	11/28/18	ML-015	U-238	0.41	0.37	0.51	pCi/L	UJ
IAAP100187	IAAP208788	11/28/18	ML-018	Gross Alpha	4.89	9.79	16.50	pCi/L	UJ
IAAP100187	IAAP208788	11/28/18	ML-018	Gross Beta	4.49	9.89	16.50	pCi/L	UJ
IAAP100187	IAAP208788	11/28/18	ML-015	U-234	0.30	0.28	0.33	pCi/L	UJ
IAAP100187	IAAP208788	11/28/18	ML-015	U-235	0.04	0.16	0.49	pCi/L	UJ
IAAP100187	IAAP208788	11/28/18	ML-015	U-238	0.44	0.36	0.46	pCi/L	UJ

Table D-1. Surface-Water Data for CY 2018

Station Name	Sample Name	Collection Date	Method	Analyte	Result	Error	Detection Limit	Units	vQ
IAAP177517	IAAP208790	11/27/18	ML-018	Gross Alpha	1.75	9.56	16.50	pCi/L	UJ
IAAP177517	IAAP208790	11/27/18	ML-018	Gross Beta	12.70	10.30	16.50	pCi/L	UJ
IAAP177517	IAAP208790	11/27/18	ML-015	U-234	0.87	0.49	0.34	pCi/L	J
IAAP177517	IAAP208790	11/27/18	ML-015	U-235	-0.02	0.16	0.41	pCi/L	UJ
IAAP177517	IAAP208790	11/27/18	ML-015	U-238	0.17	0.22	0.33	pCi/L	UJ

Negative results are less than the laboratory system's background level.

VQs:

⁼ Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Table D-2. Sediment Data for CY 2018

Station Name	Sample Name	Collection Date	Method	Analyte	Result	Error	Detection Limit	Units	VQ
IAAP100153	IAAP201046	04/16/18	ML-015	U-234	0.22	0.16	0.18	pCi/g	J
IAAP100153	IAAP201046	04/16/18	ML-015	U-235	0.00	0.09	0.22	pCi/g	UJ
IAAP100153	IAAP201046	04/16/18	ML-015	U-238	0.17	0.13	0.11	pCi/g	J
IAAP100509	IAAP201048	04/17/18	ML-015	U-234	0.33	0.23	0.18	pCi/g	J
IAAP100509	IAAP201048	04/17/18	ML-015	U-235	0.00	0.12	0.31	pCi/g	UJ
IAAP100509	IAAP201048	04/17/18	ML-015	U-238	0.31	0.22	0.25	pCi/g	J
IAAP100154	IAAP201050	04/16/18	ML-015	U-234	0.92	0.40	0.15	pCi/g	=
IAAP100154	IAAP201050	04/16/18	ML-015	U-235	-0.01	0.08	0.21	pCi/g	UJ
IAAP100154	IAAP201050	04/16/18	ML-015	U-238	0.55	0.30	0.15	pCi/g	J
IAAP100155	IAAP201052	04/17/18	ML-015	U-234	0.31	0.21	0.20	pCi/g	J
IAAP100155	IAAP201052	04/17/18	ML-015	U-235	-0.03	0.08	0.26	pCi/g	UJ
IAAP100155	IAAP201052	04/17/18	ML-015	U-238	0.50	0.27	0.17	pCi/g	J
IAAP100164	IAAP201054	04/17/18	ML-015	U-234	0.85	0.37	0.14	pCi/g	=
IAAP100164	IAAP201054	04/17/18	ML-015	U-235	0.07	0.11	0.17	pCi/g	UJ
IAAP100164	IAAP201054	04/17/18	ML-015	U-238	0.91	0.38	0.14	pCi/g	=
IAAP100165	IAAP201056	04/17/18	ML-015	U-234	0.37	0.23	0.21	pCi/g	J
IAAP100165	IAAP201056	04/17/18	ML-015	U-235	0.03	0.07	0.16	pCi/g	UJ
IAAP100165	IAAP201056	04/17/18	ML-015	U-238	0.20	0.17	0.21	pCi/g	UJ
IAAP100178	IAAP201058	04/17/18	ML-015	U-234	0.71	0.35	0.17	pCi/g	=
IAAP100178	IAAP201058	04/17/18	ML-015	U-235	0.03	0.08	0.21	pCi/g	UJ
IAAP100178	IAAP201058	04/17/18	ML-015	U-238	0.55	0.30	0.17	pCi/g	J
IAAP100180	IAAP201060	04/17/18	ML-015	U-234	0.31	0.22	0.23	pCi/g	J
IAAP100180	IAAP201060	04/17/18	ML-015	U-235	0.07	0.11	0.20	pCi/g	UJ
IAAP100180	IAAP201060	04/17/18	ML-015	U-238	0.21	0.17	0.14	pCi/g	J
IAAP100187	IAAP201062	04/17/18	ML-015	U-234	0.35	0.23	0.23	pCi/g	J
IAAP100187	IAAP201062	04/17/18	ML-015	U-235	0.00	0.08	0.17	pCi/g	UJ
IAAP100187	IAAP201062	04/17/18	ML-015	U-238	0.19	0.17	0.23	pCi/g	UJ
IAAP177517	IAAP201064	04/16/18	ML-015	U-234	0.29	0.20	0.13	pCi/g	J
IAAP177517	IAAP201064	04/16/18	ML-015	U-235	0.00	0.07	0.16	pCi/g	UJ
IAAP177517	IAAP201064	04/16/18	ML-015	U-238	0.27	0.19	0.22	pCi/g	J
IAAP100153	IAAP208771	11/27/18	ML-015	U-234	0.20	0.16	0.11	pCi/g	J

Table D-2. Sediment Data for CY 2018

Station Name	Sample Name	Collection Date	Method	Analyte	Result	Error	Detection Limit	Units	VQ
IAAP100153	IAAP208771	11/27/18	ML-015	U-235	0.03	0.07	0.16	pCi/g	UJ
IAAP100153	IAAP208771	11/27/18	ML-015	U-238	0.23	0.17	0.13	pCi/g	J
IAAP177509	IAAP208773	11/28/18	ML-015	U-234	0.22	0.18	0.17	pCi/g	J
IAAP177509	IAAP208773	11/28/18	ML-015	U-235	-0.01	0.08	0.22	pCi/g	UJ
IAAP177509	IAAP208773	11/28/18	ML-015	U-238	0.51	0.27	0.14	pCi/g	J
IAAP100154	IAAP208775	11/27/18	ML-015	U-234	0.73	0.35	0.18	pCi/g	=
IAAP100154	IAAP208775	11/27/18	ML-015	U-235	0.00	0.09	0.17	pCi/g	UJ
IAAP100154	IAAP208775	11/27/18	ML-015	U-238	1.05	0.43	0.17	pCi/g	=
IAAP100155	IAAP208777	11/27/18	ML-015	U-234	0.45	0.24	0.13	pCi/g	J
IAAP100155	IAAP208777	11/27/18	ML-015	U-235	-0.01	0.07	0.18	pCi/g	UJ
IAAP100155	IAAP208777	11/27/18	ML-015	U-238	0.62	0.28	0.14	pCi/g	=
IAAP100155	IAAP208777-1	11/27/18	ML-015	U-234	0.59	0.31	0.17	pCi/g	J
IAAP100155	IAAP208777-1	11/27/18	ML-015	U-235	-0.01	0.09	0.19	pCi/g	UJ
IAAP100155	IAAP208777-1	11/27/18	ML-015	U-238	0.91	0.40	0.14	pCi/g	=
IAAP100155	IAAP208777-2	11/27/18	EML A-01-R MOD	U-234	0.40	0.13	0.06	pCi/g	=
IAAP100155	IAAP208777-2	11/27/18	EML A-01-R MOD	U-235	0.02	0.03	0.06	pCi/g	UJ
IAAP100155	IAAP208777-2	11/27/18	EML A-01-R MOD	U-238	0.51	0.14	0.04	pCi/g	=
IAAP100164	IAAP208779	11/28/18	ML-015	U-234	0.40	0.24	0.17	pCi/g	J
IAAP100164	IAAP208779	11/28/18	ML-015	U-235	-0.01	0.08	0.20	pCi/g	UJ
IAAP100164	IAAP208779	11/28/18	ML-015	U-238	0.66	0.32	0.17	pCi/g	=
IAAP100165	IAAP208781	11/27/18	ML-015	U-234	0.11	0.13	0.15	pCi/g	UJ
IAAP100165	IAAP208781	11/27/18	ML-015	U-235	0.00	0.13	0.34	pCi/g	UJ
IAAP100165	IAAP208781	11/27/18	ML-015	U-238	0.33	0.23	0.18	pCi/g	J
IAAP100178	IAAP208783	11/28/18	ML-015	U-234	0.42	0.24	0.16	pCi/g	J
IAAP100178	IAAP208783	11/28/18	ML-015	U-235	0.04	0.11	0.28	pCi/g	UJ
IAAP100178	IAAP208783	11/28/18	ML-015	U-238	0.57	0.29	0.22	pCi/g	J
IAAP100180	IAAP208785	11/28/18	ML-015	U-234	0.43	0.25	0.17	pCi/g	J
IAAP100180	IAAP208785	11/28/18	ML-015	U-235	0.04	0.08	0.18	pCi/g	UJ
IAAP100180	IAAP208785	11/28/18	ML-015	U-238	0.23	0.18	0.16	pCi/g	J
IAAP100187	IAAP208787	11/28/18	ML-015	U-234	0.75	0.36	0.16	pCi/g	=
IAAP100187	IAAP208787	11/28/18	ML-015	U-235	0.09	0.13	0.17	pCi/g	UJ

Table D-2. Sediment Data for CY 2018

Station Name	Sample Name	Collection Date	Method	Analyte	Result	Error	Detection Limit	Units	VQ
IAAP100187	IAAP208787	11/28/18	ML-015	U-238	0.64	0.33	0.26	pCi/g	J
IAAP177517	IAAP208789	11/27/18	ML-015	U-234	0.90	0.37	0.17	pCi/g	Ш
IAAP177517	IAAP208789	11/27/18	ML-015	U-235	0.03	0.08	0.20	pCi/g	UJ
IAAP177517	IAAP208789	11/27/18	ML-015	U-238	1.22	0.44	0.14	pCi/g	=

Negative results are less than the laboratory system's background level.

VQs:

⁼ Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

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